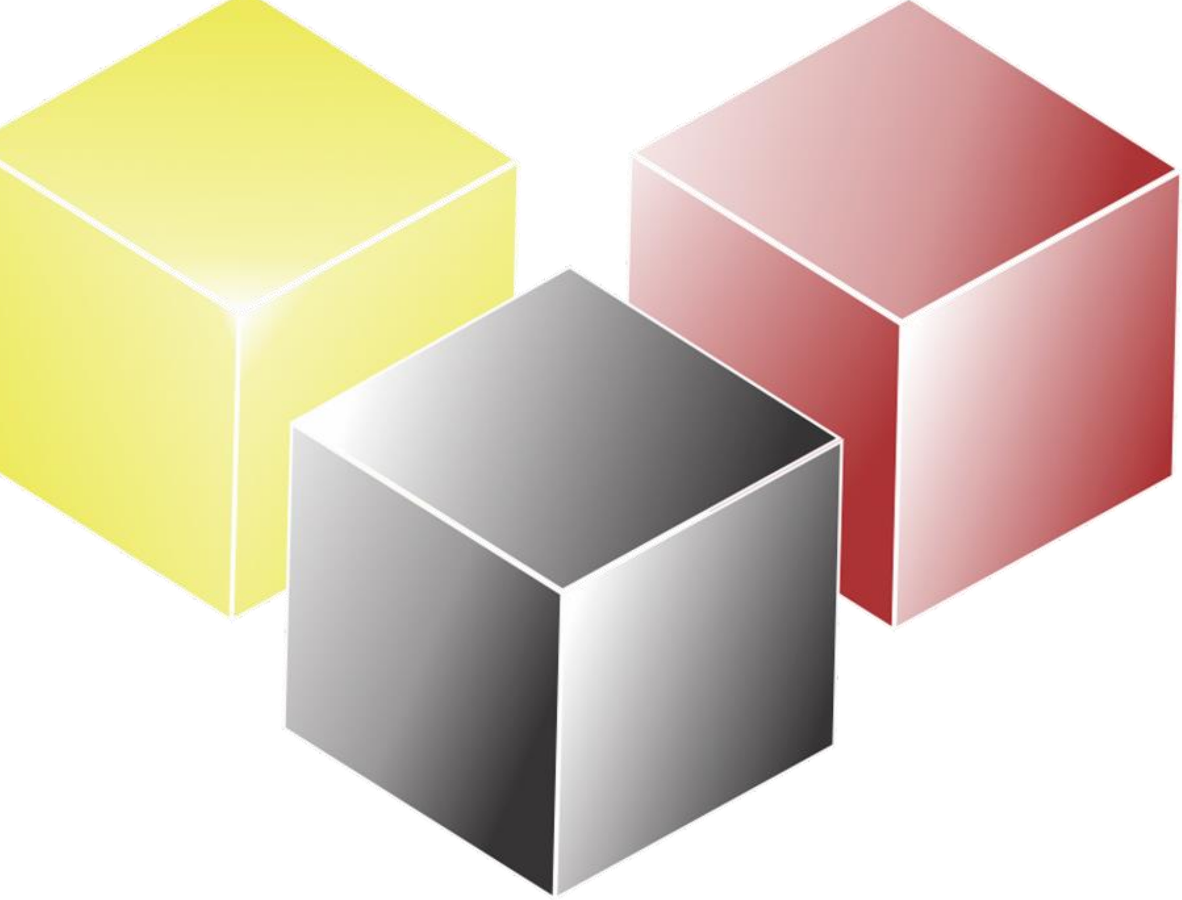

Independent Technical Report on the Mineral Resource Estimate for the Baixa Grande Salinas Lithium Project Minas Gerais, Brazil

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Independent Technical Report on the Mineral Resource Estimate for the Baixa Grande Salinas Lithium Project
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This Report, titled “Independent Technical Report on the Mineral Resource Estimate for the Baixa Grande Salinas Lithium Project, Minas Gerais, Brazil”, has an effective date of December 2, 2024, was produced by GE21 Consultoria Mineral Ltda. on behalf of Lithium Ionic Corp., and signed.

Dated at Belo Horizonte, Brazil, on February 14, 2025.

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UNITS, SYMBOLS, AND ABBREVIATIONS

Units and Symbols	
ºC	Celsius degree
cm	Centimetre(s)
m³	Cubic metre(s)
g/cm³	Gram(s) per cubic centimetre(s)
ha	Hectare
km	Kilometre(s)
kt	Kilotons (metric)
m/h	Metres per hour
m	Metre(s)
Ma	Millions of Years
mm	Millimetre(s)
Mtpy	Metric tons per year
%	Percent(age)
“	Inch
km²	Square kilometre(s)
t/m³	Tons per cubic metre
tph	Tons per hour
t	Ton(s) (metric)
US$	United States Dollars

Abbreviations	
AIG	Australian Institute of Geoscientists
ATDs	Average Transportation Distances
BRP	Baixa Grande Room and Pillar
BSL	Baixa Grande Sublevel
IBGE	Brazilian Institute of Geography and Statistics
CBL	Brazilian Lithium Company
BYD	Build Your Dreams
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
NI 43-101	Canadian National Instrument 43-101
CAPEX	Capital Expenditures
CRM	Certified Reference Materials
CAGR	Compound Annual Growth Rate
CATL	Contemporary Amperex Technology Co., Ltd.
DMS	Dense Medium Separation
DDH	Diamond Drill Holes
DLE	Direct Lithium Extraction
DCF	Discounted Cash Flow
EBPP	Eastern Brazilian Pegmatite Province
EVs	Electric Vehicles
EM	Electromagnetic
EOP	End of Period
PCA	Environmental Control Plan
EIA	Environmental Impact Assessment
EA	Exploration Authorization
EDA	Exploratory Data Analysis
FAIG	Fellow Australian Institute of Geoscientists
CFEM	Financial Compensation for the Exploration of Mineral Resources
GE21	GE21 Consultoria Mineral Ltda.

Abbreviations	
G&A	General and Administrative
GPS	Global Positioning System
HLS	Heavy Liquid Separation
HP	High Pressure
HT	High Temperature
ITR	Independent Technical Report
IP	Induced Polarization
IR	Infrared
IP	Intermediate Pressure
IT	Intermediate Temperature
I.W.S.	Intermediate Waste Storage
IRR	Internal Rate of Return
IOS	International Organization for Standardization
LOM	Life of Mine
LCE	Lithium Carbonate Equivalent
LCT	Lithium-Cesium-Tantalum
LHD	Load Haul Dump
LP	Low Pressure
LT	Low Temperature
M&I	Measured and Indicated
MP	Medium Pressure
MT	Medium Temperature
MAIG	Member Australian Institute of Geoscientists
MGLIT	MGLIT Empreendimentos Ltda.
MS	Microsoft
MSO	Mineable Stope Optimization
MRE	Mineral Resources Estimates
ANM	National Mining Agency
NIR	Near-infrared
Neolit	Neolit Minerals Participacões Ltda.
NPV	Net Present Value
NYF	Niobium-Yttrium-Fluorine
N	North
NN	Nearest Neighbour
NNW	North-northwest
OPEX	Operating Expenditures
OL	Operation License
OK	Ordinary Kriging
PSA	Particle Size Analysis
P	Pressure
PhD	Philosophy Doctor
PM	Photometric
ITR	Independent Technical Report
LI	Installation License
IEA	International Energy Agency
PDF	Portable Document Format
LP	Preliminary License
PEA	Preliminary Economic Assessment
QP	Qualified Person (as defined in NI 43-101)
QA/QC	Quality Assurance / Quality Control
RM	Radiometric
RPEEE	Reasonable Prospect for Eventual Economic Extraction
RES	Resistivity

Abbreviations	
RMR	Rock Mass Rating
ROM	Run of Mine
RQD	Rock Quality Designation
ROM	Run-of-Mine
SG&A	Selling, General & Administrative Expense
SGS	SGS Geological Services
SRM	Standard Reference Materials
S	South
SLR	Sub-Level Retreat
SC3	Spodumene Concentrate at 3%
SC5.5	Spodumene Concentrate at 5.5%
SQUI	Spodumene-quartz Intergrowth
SRP	Spodumene-rich Pegmatites
SOP	Standard Operational Procedures
SI	System of Units
T	Temperature
3D	Three-dimensional
TSXV	TSX Venture Exchange
2D	Two-dimensional
UTM	Universal Transverse Mercator
W	West
XRF	X-ray Fluorescence
XRT	X-ray Transmission
y	Year

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1 EXECUTIVE SUMMARY

1.1 Introduction and Terms of Reference

GE21 Consultoria Mineral Ltda. (GE21) was engaged by Lithium Ionic Corp. (Lithium Ionic) to prepare an Independent Technical Report (ITR) according to NI 43-101 for Lithium Resources of Baixa Grande deposit located in Minas Gerais State, Brazil (Project). This Report, entitled “Independent Technical Report on Mineral Resources Estimate for Baixa Grande Salinas Lithium Project Minas Gerais, Brazil”, outlines all relevant data and results about the Project.

The Project is in Salinas in Brazil’s “Lithium Valley” – a complex rock lithium district. The Report on Mineral Resources Estimates (MRE) includes only the Baixa Grande lithium deposits.

The effective date of this Report is December 2, 2024, and the reported Mineral Resource is contained within an optimized pit and conceptual underground mineable MRE. The Report supports the disclosure by Lithium Ionic in the news release outlining the current MRE dated February 14, 2025.

1.2 Property description and location

The Project is located in Salinas municipality in the Northern Region of the State of Minas Gerais, which covers part of the Jequitinhonha River basin, the Lithium Valley of Brazil. It is located approximately 640 km northeast of Belo Horizonte, the Minas Gerais capital city, and 100 km north of Araçuaí (population approximately 34,000) and 215 km northeast of Montes Claros (population approximately 360,000). The Project is accessible by major paved roads such as BR-251, BR-116, BR-367 and MGC-342 (Figure 1-1).

Figure 1-1: Project location

Source: GE21, 2024.

1.3 Mineral Rights of Baixa Grande Target

The Baixa Grande target is comprised of two claims: 830.833/2001 and 830.926/2017 (Baixa Grande target), as shown in Figure 1-2 and Table 1-1. The Baixa Grande target exploration licence area is in the municipality of Salinas, Minas Gerais State.

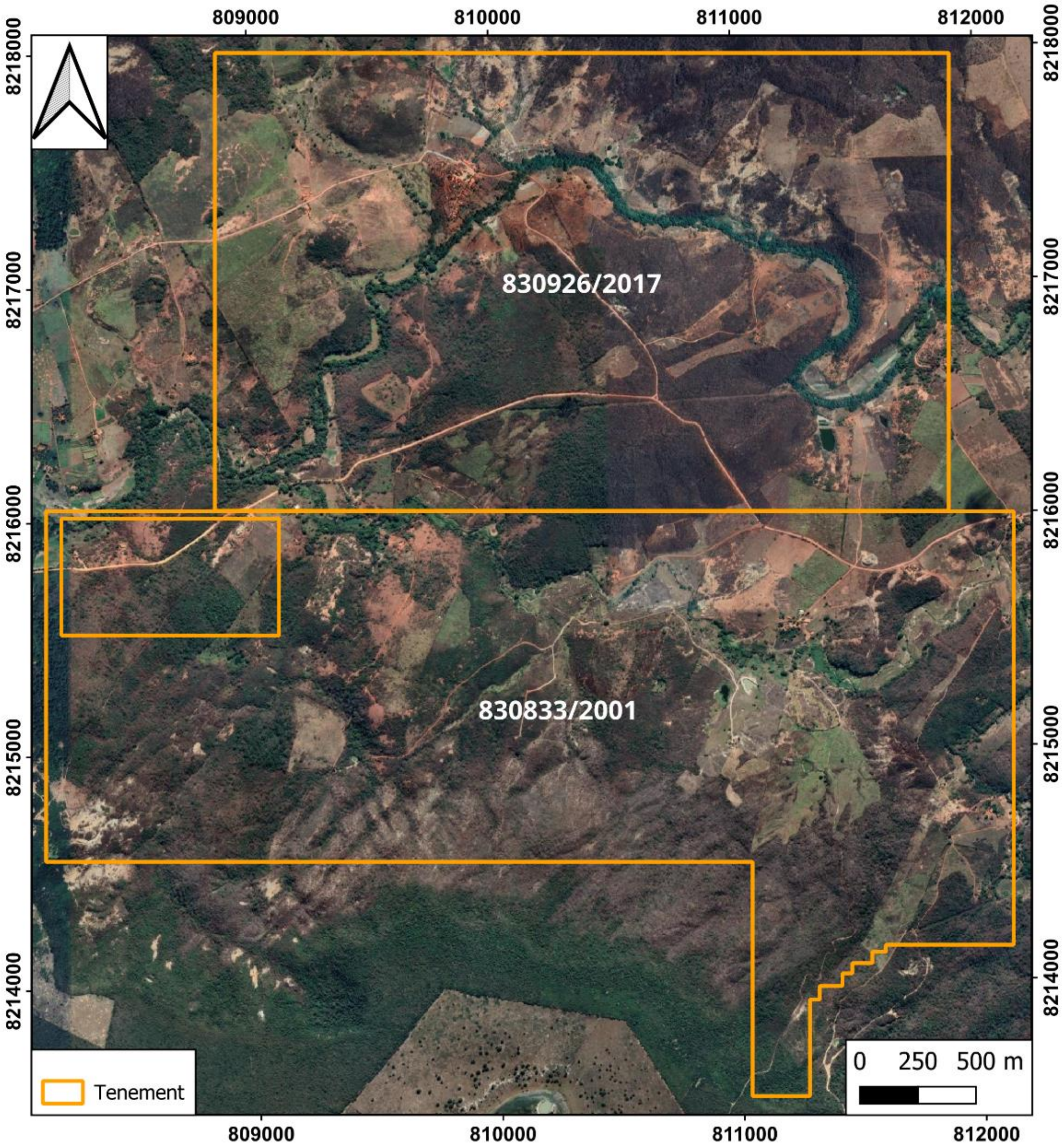


Figure 1-2: Baixa Grande target tenements map

Source: GE21, 2024.

Table 1-1: Baixa Grande target mineral tenure summary

Claim No. (ANM)	Project	Municipality (MG)	Area (ha)	Status	Ownership (ANM)
830.926/2017	Salinas	Salinas	594.09	Permit - Final Exploration Report Submitted	SALIT MINERAÇÃO LTDA (1)
830.833/2001	Salinas	Salinas	662.56	Application for Mining Concession Submitted	JOSÉ SILVA LAPA (2)
Total			**1,256.65**		

(1) Salit is 100% owned by NEOLIT.
(2) Title transfer to SALIT being processed by ANM

Source: GE21, 2024.

1.4 History

Neolit Strategic Minerals, a company acquired in March 2023 by Lithium Ionic, conducted the first drilling program at the Baixa Grande target at the end of 2022 through a contract with Energold Drilling, performing 4,037.10 m.

All works at the Baixa Grande target started in 2022 and tha author does not have historical exploration data for spodumene prior to 2022. However, old diggings (“garimpos” in Brazilian Portuguese) for gemstones and columbite-tantalite are found in the region.

Following Neolit’s assumption of responsibility for the mineral survey on the 830.833/2001 and 830.926/2017 tenements, detailed geological surveys revealed outcrops of spodumene-rich pegmatites (SRP). During Neolit’s mapping efforts, 67 rock samples were collected for geochemical analysis. Approximately 15% of the analyzed samples returned significant lithium values, supporting the exploration drilling program.

Neolit’s exploration drilling program comprised 4,037.10 m across 24 holes. This program allowed the subdivision of the Baixa Grande target into four sectors: Oeste, Sobradinho, Cubo, and Ju. Among these sectors, three – Oeste, Sobradinho, and Cubo – yielded excellent intercepts at depth. This outcome became a key factor in the acquisition of Neolit by Lithium Ionic.

1.5 Geology, Mineralization and Deposit Style

1.5.1 Regional Geology

The Salinas Project lies in the Eastern Brazilian Pegmatite Province (EBPP), located in the terranes of the Araçuaí Orogen. The EBPP, one of the largest pegmatitic populations in the world with c. 150,000 km^2, contains pegmatite districts located in eastern Minas Gerais (c. 90% of the whole province), southeastern Bahia, and Espírito Santo States of Brazil (Figure 1-3).

Granitic pegmatites represent silica-saturated magmas variably rich in H_2O and bearing fluids, as well as in other hyperfusible (fluxing) components (e.g., Li, Na), crystallized in rather closed chemical systems (cf. Cerný, 1991; London, 2008). The EBPP comprises the two known genetic types of pegmatites, both formed during the evolution of the Araçuaí Orogen: i) the anatectic pegmatites generated directly from the partial melting of country rocks, and ii) the residual pegmatites, representing late silicate melts released by fractional crystallization of parental granites. Genetic affiliation and other criteria allow pegmatite districts to be distinguished in the EBPP.

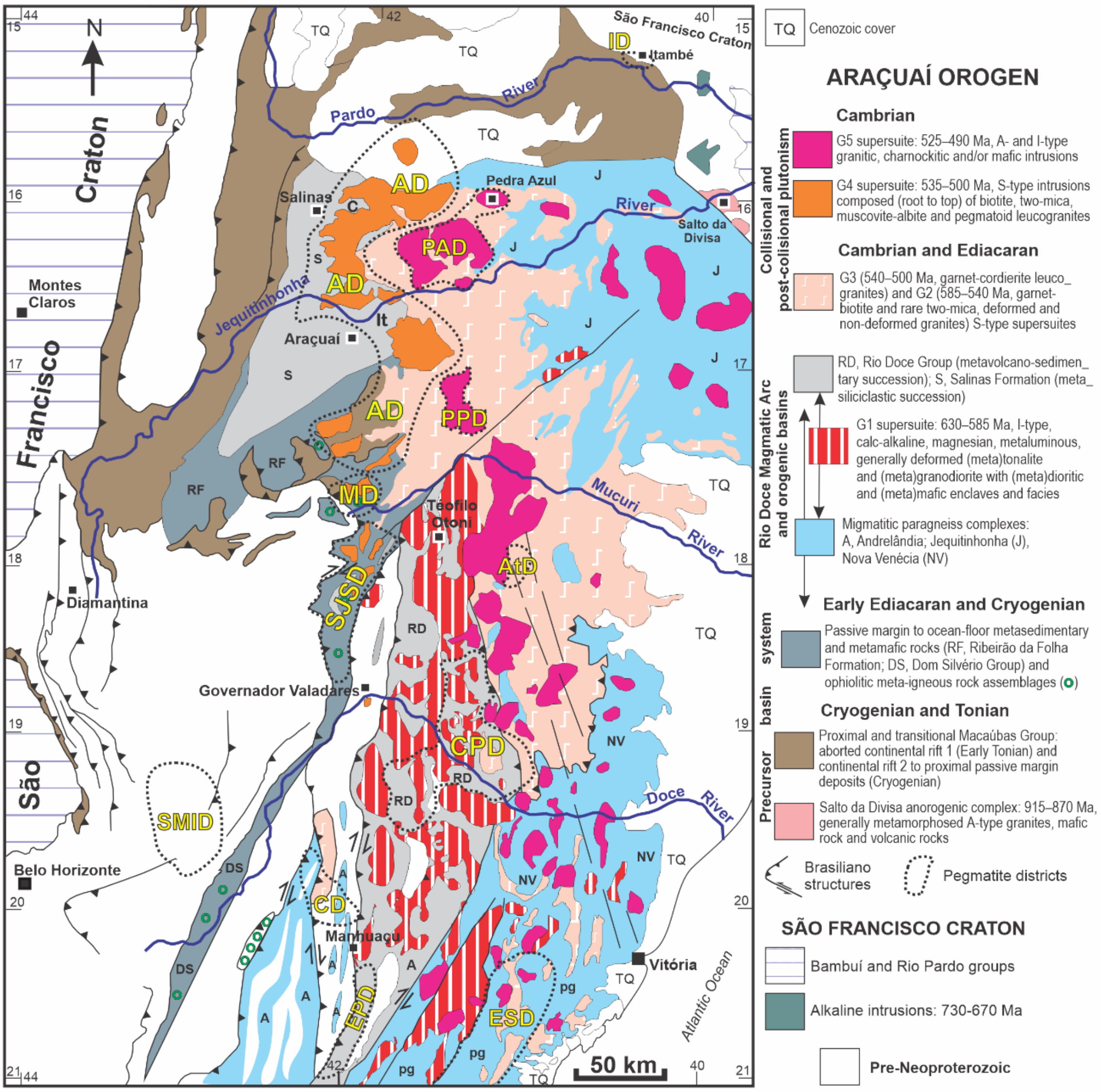


Figure 1-3: Simplified geologic map of the Araçuaí Orogen

Legend: Highlighting the granite supersuites and pegmatite districts of the Eastern Brazilian Pegmatite Province: AD, Araçuaí, including the Curralinho (C) and Itinga (It) pegmatite fields; AtD, Ataléia; CD, Caratinga; CPD, Conselheiro Pena; ESD, Espírito Santo; ID, Itambé; MD, Malacacheta; PAD, Pedra Azul; PPD, Padre Paraíso; SJSD, São José da Safira; SMID, Santa Maria de Itabira.

Source: Modified from Pedrosa-Soares et al., 2011, 2020, 2023.

1.5.2 Local Geology

The ongoing field mapping and exploration in the Baixa Grande area have revealed the existence of two geological units: (i) the Salinas Formation, consisting of banded quartz-mica schists with lenses of calcsilicate rocks, and (ii) the G4 Supersuite, represented by an extensive pegmatite swarm, mainly comprising SRP and some barren pegmatites (Figure 1-4).

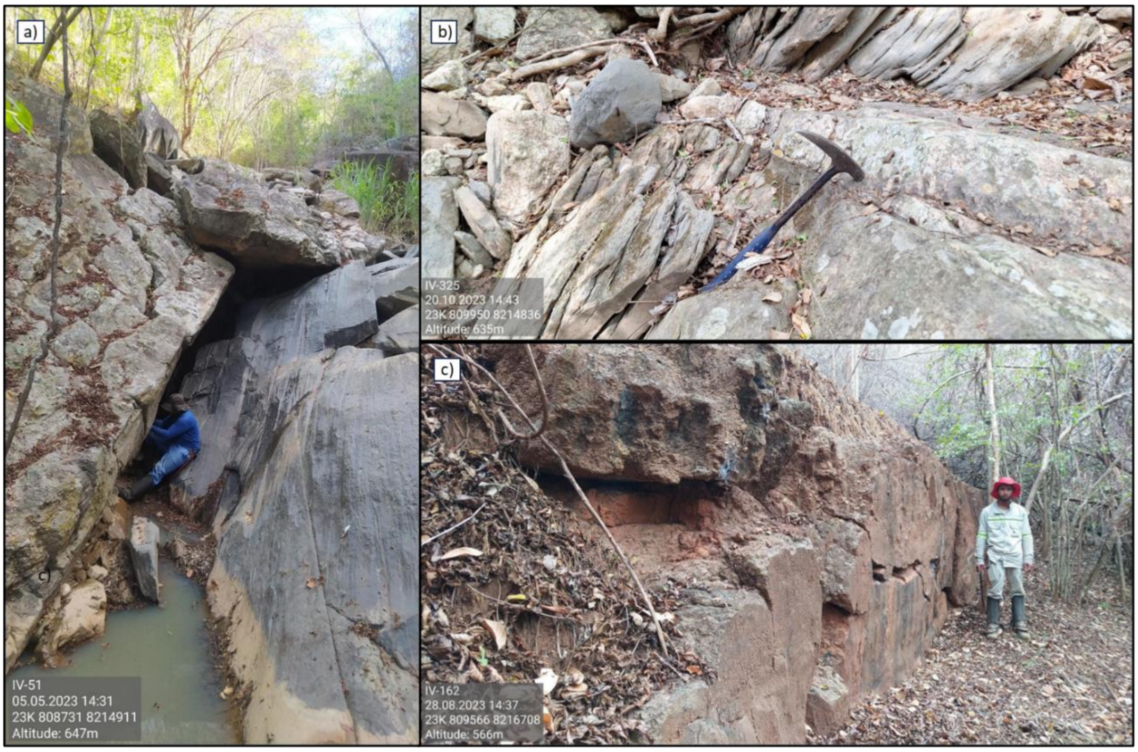


Figure 1-4: Spodumene-rich pegmatite and Pegmatite

Legend: a) Spodumene-rich pegmatite (SRP) hosted by a fracture concordant to the strike but discordant to the dip of the banded quartz-mica schist of the Salinas Formation in the Oeste sector. b) Decameter-thick pegmatite host by a fracture discordant to the S1 foliation of the Salinas schist, Oeste sector. c) Outcrop showing the subvertical Noé Pegmatite.

Source: GE21, 2024.

Owing to the significant weathering typical of tropical regions, the surface of the Baixa Grande area predominantly comprises recent residual soils resulting from the decomposition of the underlying rocks. The schist residual soil is an orange to brown fine-grained (silt to clay) eluvium. In contrast, the pegmatite soil is typically a whitish, fine to coarse-grained, powdered eluvium, with a composition dominated by quartz, kaolinized feldspar and altered muscovite. In cases of lithium mineralization, this soil can also contain fine-grained, partially to almost weathered spodumene fragments.

1.5.3 Mineralization

The SRP orebodies of the Baixa Grande target are non-zoned but rather inequigranular pegmatites composed of spodumene (on average 23 vol%), perthitic microcline, albite, quartz, and muscovite, generally totalizing more than 95% of the whole orebody volume. Cassiterite, columbite-tantalite, cookeite, garnet, malaquite, and sulphide are accessory minerals.

The SRPs of the Baixa Grande target were emplaced in the Salinas Formation, which consists of banded cordierite-quartz-mica schist with intercalations of calcsilicate rock, recording P-T conditions suitable for SRP occurrence. In the Baixa Grande target, the main host surfaces for SRP bodies are the SE-dipping fractures of the Salinas Formation.

Following the regional NE-SW structural trend, the Baixa Grande target comprises SRP swarms of NE-striking orebodies, mostly discordant hosted by schist with NW-dipping schistosity (S1). The Baixa Grande pegmatites are tabular bodies with convex lens-shaped terminations, arranged in tight and staggered (*en-échelon*) swarms, locally with branched connections linking ore bodies, as in the Oeste sector pegmatites. The host rocks of SRP orebodies in the Baixa Grande target deposit are banded to laminated cordierite-quartz-mica schists, locally containing disseminated sulphide, with intercalations of massive calcsilicate rocks. Most cordierite forms ellipsoidal (egg-shaped) stretched porphyroblasts syn-kinematic to the regional S1 schistosity.

1.5.4 Deposit Style

According to the most accepted petrologic-metallogenetic classification of pegmatites, published by Cerný (1991) and updated by Cerný and Ercit (2005) and Cerný et al. (2012), all the SRP found within the Baixa Grande deposit belong to the rare element class, Li subclass, and albite-spodumene type.

Although generally included in the LCT (Lithium-Cesium-Tantalum) family, the non-to poorly zoned SRP found in the Baixa Grande deposit, as well as all the orebodies mined in CBL’s Cachoeira Mine since the 1990s (Romeiro and Pedrosa-Soares, 2005), the Xuxa and other spodumene-rich deposits of Sigma Lithium (Sá, 1977; Delboni et al., 2023), and the Bandeira and Outro Lado deposits of Lithium Ionic, are rather poor both in Ta and Cs when compared with the complex zoned LCT pegmatites (e.g., Generosa, Jenipapo, Murundu, Urubu and others) found in the Araçuaí Pegmatite District (cf. Sá, 1977; Romeiro, 1998; Quéméneur and Lagache, 1999; Dias, 2015) and elsewhere (e.g., Cerný 1991; London, 2008; Cerný et al., 2012).

For prospection and exploration work related to spodumene-rich deposits, it is very important to distinguish between the non-to poorly zoned SRP (i.e., pegmatites of the albite-spodumene type) and the complex zoned LCT pegmatites.

1.6 Exploration

Fieldwork was conducted in the Baixa Grande target with an exploration approach encompassing chip rock sampling, soil sampling, a trench program, structural analysis and a drilling program (see Section 10, “Drilling”). These activities aim to achieve a more profound comprehension of the local geology and the identification of potential SRP.

1.7 Drilling

Lithium Ionic successfully executed 167 diamond drill holes (DDH) within the Baixa Grande Property, as detailed in Table 1-2.

All diamond drilling activities conducted within the Baixa Grande Property until December 2024 have been incorporated into the Mineral Resource estimation process. It is important to note that any drill holes completed in 2024 after this date and pending sample assay results have not been considered in this Mineral Resource statement.

Table 1-2: Baixa Grande drill holes summary

Campaigns	Drill Hole Count	Total Drilled (m)
2022	25	4,037.10
2023	104	25,103.35
2024	38	6,594.05
Total	167	35,734.50

Source: GE21, 2024.

Drill spacing typically ranges from 50 m to 150 m, with narrower spacing observed in the central portion of the drill pattern and wider spacing towards the pattern's edges. The mineralization intercepts vary in thickness, ranging from approximately 85% of the true width to nearly the true width of the mineralization.

The average pegmatite intersection spans from 0.3 m to 53 m, with an average true thickness of about 5 m. In total, 165 mineralized intercepts from DDH were utilized to model the 18 mineralized solids within the Baixa Grande Project. Each solid was assigned a numerical code in the tag column. Figure 1-5 lists the mineralized intervals from Baixa Grande drill holes that were incorporated into the 3D modelling of the mineralized solids.

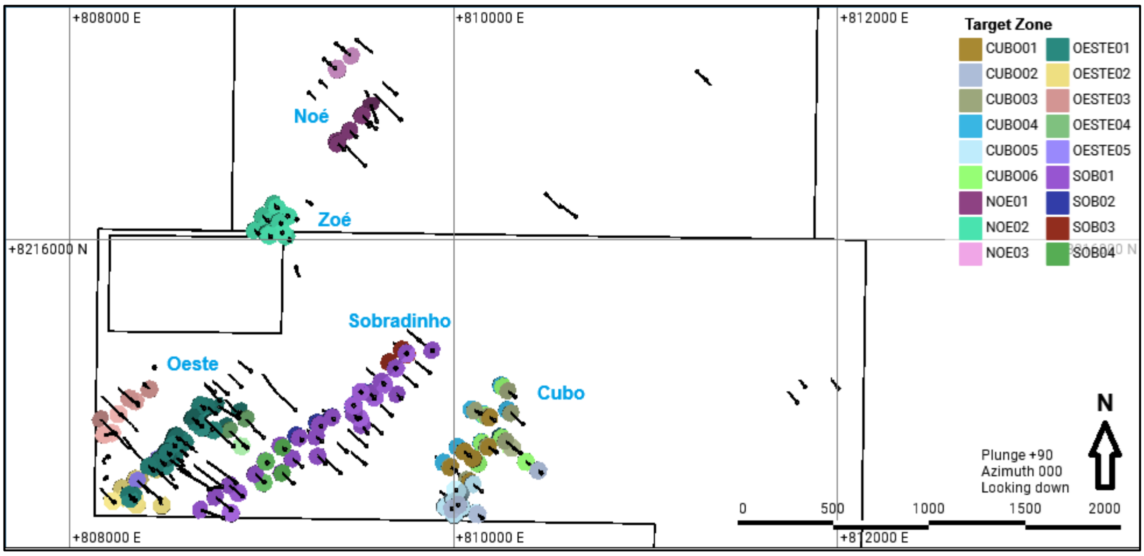


Figure 1-5: Horizontal projection of Baixa Grande drilling holes with mineralized intercepts

Source: GE21, 2024.

1.8 Sample Preparation, Analysis and Security

1.8.1 Sampling

Samples are generally prepared from NQ diameter drill cores (47.6 mm core diameter). Only the shallow drilling runs crossing the weathering zone were drilled on HQ drilling diameters. Few samples were generated on HQ diameter. The sampling procedures described in this section reflect the current Standard Operational Procedures (SOP) Lithium Ionic uses.

Sample intervals in the mineralized zones are defined based on a 1.00 m support. Mineralized samples must have a minimum length of 1.00 m and a maximum length of 1.50 m. In some specific situations, samples shorter than 1.00 m can be generated. These situations are described in detail in the SOP.

Outside the mineralized domains, the sampling support is 1.50 m, and samples can range from 1.00 m to 3.00 m.

1.8.2 Sample Preparation, Security and Custody Chain of Custody

Samples are defined and marked on-site after logging and entering the data into the database. Cores are split in half using a diamond saw. Half of the core is left in the core box, while the other half is stored in plastic bags, accompanied by a printed sample tag, and sent to the lab.

Drill core samples are prepared and analyzed by an independent commercial laboratory (SGS Geosol). The SGS Geosol facility is certified in ISO 9001, ISO 14001, and ISO 17025. The sample shipment is delivered to the SGS Geosol facility in Vespasiano, Minas Gerais, Brazil, via a parcel transport company. At all times, samples are in the custody and control of the Company's representatives until delivery to the laboratory, where samples are held in a secure enclosure until processing. SGS Geosol sends a confirmation e-mail with details of samples received upon delivery. The chain of custody of the batches was carefully maintained from collection at the drill rig to delivery at the laboratory to prevent accidental contamination or mixing of samples and render active tampering as tricky as possible.

1.8.3 Density Measurements

The density measurements were taken for every geochemical sample generated. When the drill core quality does not allow for the density assay, this is registered in the density sampling plan with a specified tag. The high frequency of density sampling aims to acquire a statistically robust database.

For the geochemical samples with more heterogeneity, three samples are taken: one on the top of the sample, another in the middle and another in the base. Homogenous geochemical samples should generate only one density sample. Density samples must have a minimum length of 10 cm and a maximum of 25 cm. Density is commonly measured in the unsampled half-cores, reflecting a faster and more dynamic drill hole data collection process. All density data is stored in a database.

1.8.4 Sample Analysis

After the preparation, the core samples are analyzed by SGS Geosol. The chemical assays are performed using SGS's analytical method ICP90A, a multi-element analysis using fusion by sodium peroxide (Na_2O_2), and finished with ICP-OES analysis. If lithium results are above 15,000 ppm, SGS Geosol re-analyzes for lithium through the ICP90Q_Li method, similar to the ICP90A but with higher Detection Limits.

1.8.5 Quality Assurance and Quality Control (QA/QC)

GE21 proposed the Quality Assurance and Quality Control (QA/QC) program that was implemented. The sample batch composition includes 5 Quality Control Samples for every 30 regular samples. The Quality Control composition of the batches is described next:

- Coarse (Preparation) and Fine (Analytical) Blanks: 6% of the batch, or two blanks per batch, one of each type.
- Standards: 6% of the batch, or two standards per batch.
- Crushed Duplicates: 3% of the batch, or 1 sample per batch.
- Pulverized Duplicates: 3% of the batch, or 1 sample per batch.

The Qualified Person (QP) believes that the sampling, sample preparation, security and analysis performed by Lithium Ionic and hired companies are suited for a Mineral Resource Estimation study. Quality Assurance procedures follow the industry's best practices, and Quality Control results are within industry standards, attesting to the quality of the assay information in the database.

1.9 Data Verification

Data verification by the QP responsible for this section of the Report, Mr. Leonardo de Moraes Soares, a senior geologist from GE21, included one site visit between September 13 and 14, 2023. The QP Carlos José Evangelista Silva, a senior geologist from GE21, also visited the Project site on November 26, 2024. Lithium Ionic allowed unlimited access to the Company's facilities during this time. During the site visits, the QP checked the field mineralization outcrops, drill rigs and core shed and reviewed information about exploration results, sampling procedures, sampling preparation, chemical analysis, topographic and drill hole deviation surveys, and discussions about interpretation of the mineralization model. Data from selected drill holes (sample custody, assays, QA/QC program, downhole surveys, lithologies, alteration and structures) was also checked and discussed with Lithium Ionic technical team.

1.10 Mineral Processing and Metallurgical Testing

There are two main processes to concentrate the spodumene content in the pegmatite ore: Dense Medium Separation (DMS), or flotation. Both processes can produce spodumene concentrate under the marketing specification of Li_2O grade above 5.5% and Fe_2O_3 below 1%.

Three samples were collected from Sobradinho, Cubo, and Oeste for a preliminary ore sorting and Heavy Liquid Separation (HLS) tests conducted by Steinert and SGS Geosol, respectively. Lithium oxide grades range from 0.95 to 1.11% for the three samples. Rare elements like niobium, tantalum, phosphate and tin are quite low. K-feldspar may be around 15-20%, based on the potash oxide content.

The flowsheet tested simulates spodumene concentration by DMS for particle size range between -6.35+0.5 mm in three heavy liquid densities (2.7 g/cm³, 2.8 g/cm³ and 2.9 g/cm³). The lithium recovery to achieve 5.50% Li_2O in concentrate would be 75.8%.

1.11 Mineral Resources Estimates

Lithium Ionic conducted comprehensive 3D geological modelling, statistical and geostatistical studies, and grade estimation for the Baixa Grande Property. This estimation considered various factors, such as the quantity and distribution of available data, interpreted controls on mineralization, mineralization style, and the quality of the sampling data. The geological modelling and estimation processes were executed by GE21 utilizing Leapfrog software. The UTM Projection – Zone 22 South in SIRGAS 2000 Datum was adopted as the reference coordinate system for the database in this Project.

1.11.1 Drilling Database

The database underwent comprehensive visual validation, considering the interrelation of tables, identifying gaps and overlaps, and ensuring the inclusion of crucial information. Using Leapfrog software, GE21 also conducted validation checks on the Collar, Survey, Assay, and Lithology tables. This stage of the work did not reveal any significant inconsistencies, as these had already been verified during the Data Verification stage.

The original Baixa Grande Target's dataset provided by Lithium Ionic encompassed data from 167 surface diamond drill holes (totalling 35,734m). The Baixa Grande database contains 3,276 assay intervals from drill holes totalling 3,778.5 m. The assay table includes data for Li_2O (%). Following a thorough review of the database, the Li_2O (%) data was used for subsequent statistical analysis, block modelling, and Mineral Resource estimation.

1.11.2 Geological Modeling

Initially, cross-sectional interpretations were crafted utilizing traditional manual techniques and advanced cartographic software platforms such as QGIS, ArcGIS, and Leapfrog software. These initial steps laid the groundwork for a robust modelling process.

The Lithium Ionic team interpreted a set of grade shell sections with an envelope delimiting zone with a cut-off grade of 0.3% Li_2O (%) defined by a natural break on Li_2O grade distribution. The interpretations obtained were transformed into a set of implicit 3D models, each aligned with a distinct strike direction corresponding to its domain.

The QP considers the geological and mineralization 3D modelling method and interpretations suitable for Mineral Resource estimation study based on the coherence with the conceptual mineralization model, adherence with drilling and sampling data and the spatial continuity of the grades inside the modelled pegmatites.

1.11.3 Geostatistical Structural Analysis

1.11.3.1 Regularization of Samples

The analysis of the sample support showed that more than 72% of the drilling samples have a length equal to 1 m. GE21 carried out the regularization of samples in 1 m for the complementary studies of statistics and geostatistics. If the residual length of the composite is less than 0.20 m, it is equally distributed within the domain boundary with a minimum coverage of 50%.

1.11.3.2 Exploratory Data Analysis (EDA)

Statistical analysis on composited drilling samples was performed for the Li_2O % variable inside each modelled horizon.

1.11.3.3 Variographic Analysis

The structural analysis of the domains was conducted to determine the variographic parameters, which are essential for determining the spatial continuity model of the grade variables and for the grade estimate.

Variograms were generated explicitly for Li_2O % within the spodumene pegmatite suite. This approach considered the geological similarity among them, enhancing the robustness of the variograms. Three distinct sets of veins were considered: Cubo, Oeste and Sobradinho.

Table 1-3 presents the variographic parameters obtained from the analyses. These parameters were applied in the process of grade estimation.

Table 1-3: Variographic parameters

Domain set	Variance	Nugget	Normal Nugget	Structure Number	Sill	Normal Sill	Major	Semi Major	Minor	Dip	Dip Azi.	Pitch
Variographic structures type: Spherical												
Cubo	0.29	0.0145	0.05	1	0.098	0.338	90	50	1.3	42	116	135
				2	0.177	0.611	100	60	4			
Oeste	0.438	0.065	0.15	1	0.172	0.394	68	90	1.5	43	115	113
				2	0.199	0.455	102	102	7.5			
Sob.	0.352	0.05	0.15	1	0.045	0.128	118	6	2.3	32	153	176
				2	0.254	0.721	170	73	1.9			
Noé and Zoé	0.325	0.00	0.00	1	0.325	0.675	450	270	1	0	0	90

Source: GE21, 2024.

1.11.4 Block Model

A block model was built to carry out the grade estimation. The model’s dimensions (16 m x 16 m x 4 m) were defined based on the quarter of minimum drilling grid spacing. The sub-blocks model was set in 2 m x 2 m x 2 m size to ensure the geometric adherence of the modelled bodies.

The dimensions of the block models and the attributes are shown in Table 1-4 and Table 1-5.

Table 1-4: Block Model Dimensions

	X	Y	Z
Minimum Coordinates (m)	807,335	8,213,800.00	-230
Maximum Coordinates (m)	811,463	8,217,720	870.00
Number of nodes	258	245	275
Block size (m)	16	16	4
Sub-Block	2	2	1
There is no rotation around the coordinate axis.			

Source: GE21, 2024.

Table 1-5: Block Model Variables Summary

Attribute Name	Type	Deals	Background	Description
02.GM_GradeShell_BG	Character	-		Grade Shell Model
OREBODY	Character	-		Spodumene Veins Model
Class	Character	-		Mineral Classification
Density	Real	4	-99	Density Values
OXCOD	Character	-		Weathering Model Code
Li_2O	Real	4	-99	Li_2O OK estimation

Source: GE21, 2024.

1.11.5 Grade Estimation

Based on the structural analysis results described in this work, the Li_2O grade estimate was carried out using the Ordinary Kriging (OK) method using the Leapfrog software. The density (%) variable was estimated using the inverse of distance weighting by applying the power parameter of two.

Each mineralized vein was estimated independently, using a hard boundary strategy, ensuring that samples from one domain did not influence neighbouring domains. The variograms were initially modelled considering the structural continuity across the entire set of domains, followed by an adjustment for honouring the specific behaviour for each domain.

1.11.6 Estimation Validation

The QP validated the estimate through visual verification and global and local bias verification using comparative methods based on the Nearest Neighbour (NN) estimate.

NN check plots were produced to validate the smoothing effect of the kriging estimate and the global bias. The results show a global bias analysis of the estimated Li_2O and density variables. Results show the expected smoothing effect of OK's grade estimation within the acceptance limits. The comparative analysis also shows that OK respects the average grades globally, and the global bias in the estimated grades is within the acceptance limits.

1.11.7 Density

The density in the spodumene pegmatites was estimated using the inverse square of distance. The schists density was defined as the mean of the 2,297 samples from the Lithium Ionic database. The weathered zone does not have measurements, and GE21 has adopted the value 1.8 g/cm³ for this domain, a common value used by other companies in the Jequitinhonha Valley region. GE21 recommends that additional density tests be carried out in weathered zones.

1.11.8 Mineral Resources Classification

The definition of Mineral Resource class was carried out by applying the following rules:

- The Measured Mineral Resource classification referenced the 50 m of the average Euclidean distance to the sample used in ordinary kriging estimation with a minimum of five composites in at least three drill holes.
- The Inferred Mineral Resource classification is all remaining estimated blocks.
- The total Mineral Resources were constrained within the boundaries of the Mining Rights and the Reasonable Prospect for Eventual Economic Extraction (RPEEE) process, which was divided into two stages: open pit and underground pit.
- The Mineral Resource classification was supported by a grade shell representing the underground mining appliance RPEEE, performed through a restricted model that limits the blocks classified as Resources generated from an economic and geometric function by the cut off grade of 0.5 Li_2O, considering the average feed grade of 1.4 Li_2O for the processing plant.

Table 1-6: Baixa Grande Open Pit Mineral Resource Estimate

Category	Resource (Mt)	Grade (%Li_2O)	Contained LCE (kt)
Measured	1.08	1.19	31.86
Indicated	5.44	1.10	147.72
Measured + Indicated	**6.52**	**1.11**	**179.58**
Inferred	11.67	0.97	280.73

Notes:
1. The spodumene pegmatite domains were modelled using composites with Li_2O grades greater than 0.3%.
2. The Mineral Resource Estimate (MRE) were prepared under the CIM Standards and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit.
3. Mineral Resources are not Mineral Reserves and are not demonstrably economically recoverable.
4. Grades reported using Dry Density.
5. The effective date of the MRE was December 2, 2024.
6. The QP responsible for Mineral Resources is geologist Leonardo Soares (MAIG #5180).
7. The MRE numbers provided have been rounded to the relative precision of the estimate. Values cannot be added due to rounding.
8. The MRE is delimited by Lithium Ionic Baixa Grande target claims (ANM).
9. The MRE was estimated using ordinary kriging in 16 m x 16 m x 4 m blocks.
10. The MRE Report Table was produced in Leapfrog software.
11. The reported MRE only contains Fresh Rock Domains using a 0.5% Li_2O cut-off for open pit resources, considering the average feed grade of 1.4 Li_2O for the processing plant.
12. The MRE was restricted by a pit shell using a selling price of 2,750 US$/t Conc., a mining cost of 2.50 US$/t mined, a processing cost of 12.50 US$/t ROM and a selling cost of 112.56 US$/t conc.

Table 1-7: Baixa Grande Underground Mineral Resource Estimate

Category	Resource (Mt)	Grade (% Li_2O)	Contained LCE (kt)
Inferred	1.23	0.83	25.19

Notes:
1. The spodumene pegmatite domains were modelled using composites with Li_2O grades greater than 0.3%.
2. The Mineral Resource Estimate (MRE) were prepared under the CIM Standards and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit.
3. Mineral Resources are not Mineral Reserves and are not demonstrably economically recoverable.
4. Grades reported using Dry Density.
5. The effective date of the MRE was December 2, 2024.
6. The QP responsible for the Mineral Resources is geologist Leonardo Soares (MAIG #5180).
7. The MRE numbers provided have been rounded to the relative precision of the estimate. Values cannot be added due to rounding.
8. The MRE is delimited by Lithium Ionic Baixa Grande target claims (ANM).
9. The MRE was estimated using ordinary kriging in 16 m x 16 m x 4 m blocks.
10. The MRE Report Table was produced using Leapfrog software.
11. The reported MRE only contains Fresh Rock Domains.

The MRE was restricted by interpreting suitable-grade shells using a 0.5% Li_2O cut-off for underground Mineral Resources, considering the average feed grade of 1.4 Li_2O for the processing plant.

1.12 Conclusions and Recommendations

Mineral Resources were estimated and limited to the areas outlined using the Mining Rights polygonal that comprise the Baixa Grande Property and the RPEEE.

The Baixa Grande database contains 3,276 assay intervals from drill holes totalling 3,778.5 m.

A set of solid-grade shells for estimation domains was created using a 0.3% Li_2O (%) threshold. These interpretations were then transformed into a series of implicit 3D models aligned between 116º and 151º strike directions. Additionally, weathering modelling was performed, considering the information provided in the logs. The model was built from implicit modelling using the Leapfrog software.

The OK estimation method was applied to the Li_2O% variable, while the Inverse Distance method was utilized for the Density variable, both based on the outcomes of a structural analysis.

The Baixa Grande Mineral Resources for open pit mining contains Measured+Indicated Mineral Resources of 6.52 Mt grading 1.11% Li_2O, containing 179,580 t of Lithium Carbonate Equivalent (LCE), with Inferred Mineral Resources of 11.67 Mt grading 0.97% Li_2O in the Inferred category, or 280,730 t of LCE. Mineral Resources for underground mining are also classified as 1.23 Mt grading 0.82 % Li_2O in the Inferred class, or 25,190 t of LCE.

The recommendation is to continue the development of the Project through additional detailed investigations and higher-confidence engineering studies. The aim is to complete a higher-confidence engineering study as the next major Project milestone.

The following recommendations are made for future work on the Property. This work will be required to upgrade Baixa Grande’s Resources to the Indicated and Measured categories and to advance to the next stage of detailed engineering and economic studies. These are listed as separate phases, as increasing the confidence of the Resources to Indicated or Measured category will be required before economic studies can be completed.

GE21 proposes the following recommendations for the continuous improvement of the Mineral Resource Estimate (MRE):

- A 50x50 m infill drilling program in the Indicated Mineral Resource classification domain, where the focus will be on Mineral Resource delineation improvement.
- A 100x100 m infill drilling program in the Inferred Mineral Resource classification domain, where the focus will be on Mineral Resource delineation improvement.
- Complementary Metallurgical tests on Noé and Zoé targets.
- Conduct an on-site density survey in the weathered zone.

Table 1-8 presents the budget estimate for the implementation of the recommendations.

Table 1-8: Planned budget recommendations

Recommended Work		Estimated Cost (US$)
Additional work to upgrade to the Indicated and Measured category	A 50x50 m infill drilling program	~$250,000
	A 100x100 m infill drilling program in the domain of the Inferred Mineral Resource classification	~$1,000,000
	Complementary Metallurgical tests	~$95,000
	Weathering zone density survey	~$15,000
	Total Estimated Costs	**$1,360,000**

Source: GE21, 2024.

2 INTRODUCTION

GE21 Consultoria Mineral Ltda. (GE21) was engaged by Lithium Ionic to prepare an Independent Technical Report using the NI 43-101 for Technical Report on Mineral Resource in Lithium Ionic's Baixa Grande deposit located in Minas Gerais State, Brazil (Project). This "Independent Technical Report on Mineral Resources Estimate for Baixa Grande Salinas Lithium Project Minas Gerais, Brazil" (Report) outlines all relevant data about the Project.

This Report and the estimates herein comply with the requirements of the Canadian Securities Administrators' National Instrument 43-101 – Standard of Disclosure for Mineral Projects (NI 43-101) and Form 43-101F1 – Technical Report (Form 43-101F1).

The Project is located in Salinas in Brazil's "Lithium Valley" – a complex rock lithium district. The Report on Mineral Resources Estimate (MRE) includes only the Baixa Grande lithium deposits.

Lithium Ionic is headquartered in Toronto, Ontario (36 Lombard Street, Floor 4, Toronto, ON, Canada, M5C 2X3) with management offices in Nova Lima and Araçuaí (Recife Street 96, Araçuaí, Minas Gerais – CEP 39600-000, Brazil). Lithium Ionic is a publicly traded Canadian exploration and development company listed on the TSX Venture Exchange (TSXV). The Company is acquiring, exploring, and developing mineral properties. Exploration is conducted through the Company's wholly owned Brazilian subsidiaries, MGLIT Empreendimentos Ltda. (MGLIT) and Neolit Minerals Participacões Ltda. (Neolit).

The effective date of this Report is December 2, 2024, and the information herein, including the reported MRE, is contained within an optimized pit and conceptual underground mineable MRE. The Report supports the disclosure by Lithium Ionic in the news release outlining the current MRE dated February 14, 2025.

2.1 Qualifications, Experience, and Independence

The Qualified Person (QP) responsible for the Mineral Resource Estimation is the geologist Leonardo de Moraes Soares, who has over 23 years of relevant experience in Geology Exploration and Mineral Resource Estimation. Mr. Soares is a full-time employee of GE21 Consultoria Mineral. He has considerable experience dealing with commodities such as iron ore, lithium, and gold. Mr. Soares is a member of the Australian Institute of Geoscientists (MAIG).

The QP Carlos José Evangelista Silva, a senior geologist from GE21 with over 18 years of experience in the mining industry, also visited the Project site on November 26, 2024.

The QP responsible for this Report's content on issues related to Mineral Processing and Metallurgical Tests, as well as Recovery Methods, is Paulo Bergman (FAusIMM, B.Sc.), a mining engineer of GE21 Consultoria Mineral, who has over 40 years of experience in mining projects. Mr. Bergman is a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM).

Bernardo Cerqueira Viana (FAIG, B.Sc.) is the reviewer of this Report. Mr. Viana has at least 22 years of experience in all aspects of mining project evaluation, from initial exploration to bankable feasibility studies. He is a senior geologist and managing director of GE21 Mineral Consulting.

Each of the authors of this Report has the required qualifications, experience, competence, and independence to be considered a "Qualified Person" as defined by NI 43-101.

Neither GE21 nor the authors of this Report have or have had any material interest vested in Lithium Ionic or any of its related entities. GE21's relationship with Lithium Ionic is strictly professional, consistent with that held between a client and an independent consultant. This Report was prepared in exchange for payment based on fees stipulated in a commercial agreement. The payment of these fees is not dependent on the results of this Report.

Table 2-1 presents the QPs Matrix of responsibility.

Table 2-1: QPs matrix of responsibility

Company	Professional	Site Visit	Responsibility
GE21	Leonardo de Moraes Soares	September 13 and 14, 2023	Sections 1, 2 to 11, 14 and partial responsibility on 12, 25, 26 and 27.
GE21	Carlos Silva	November 26, 2024	Partial responsibility on Section 12
GE21	Paulo Bergmann Moreira	-	Section 13 and partial responsibility on 25, 26 and 27.
GE21	Bernardo Horta Cerqueira Viana	-	Report Peer Reviewer
All QPs are responsible for the corresponding sections within sections related to the preceding sections of this Report.			

Source: GE21, 2024.

2.2 Effective Date

The current MRE effective date is December 2, 2024.

2.3 Units of Measure

Unless otherwise stated, the units of measurement in this Report are all metrics in the International System of Units (SI) and all monetary units are expressed in United States Dollars (US$). The UTM projection, Zone 24 South, SIRGAS 2000 datum, was adopted as a spatial reference.

3 RELIANCE ON OTHER EXPERTS

The Authors have not independently verified ownership or mineral title beyond the information that Lithium Ionic has provided. The Property description presented in this Report is not intended to represent a legal or any other opinion as to title.

Verification of property status and ownership information, presented in Section 4, has been provided to the author by Lithium Ionic's external counsel, William Freire Advogados by means of the 'Legal Opinion No. 47/2023' dated July 28,2023. The author of this report only briefly reviewed the land tenure and has not independently verified the legal status or ownership of the property, or any underlying agreements or obligations attached to its ownership. However, the author has no reason to doubt that the title situation differs from what is presented in this Report (Section 4). The author is not qualified to express any legal opinion concerning property titles or current ownership.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Project is in the Northern Region of the State of Minas Gerais, which covers part of the Jequitinhonha River basin, the Lithium Valley of Brazil. It is located approximately 640 km northeast of Belo Horizonte, the Minas Gerais capital city, and 100 km north of the city of Araçuaí (population approximately 34,000) and 215 km northeast of Montes Claros (population approximately 360,000). The Project is accessible by major paved roads such as BR-251, BR-116, BR-367 and MGC-342 (Figure 4-1).

The Mineral Resource Estimate covers delineation drilling carried out in two claims – ANM 830.833/2001 (662.56 hectares) and 830.926/2017 (594.09 hectares) of the Salinas Project, namely, the Baixa Grande target, which is located at Latitude 16° 07’ S and Longitude 42° 05’ W in the SIRGAS 2000 map projection. The SIRGAS 2000 UTM Zone 23S coordinates are 810,500 m E 8,215,750 m N.

4.2 Mineral Tenure

The legal framework for the development and use of Mineral Resources in Brazil was established by the Brazilian Federal Constitution, which was enacted on October 5, 1988 (the Brazilian Constitution) and the Brazilian Mining Code, which was enacted on January 29, 1940 (Decree-law 1985/40, later modified by Decree-law 227, of February 29, 1967). The National Mining Agency (Agência Nacional de Mineração – ANM) oversees the Mining Code. There are two main legal regimes under the Mining Code regulating Exploration and Mining in Brazil: Exploration Authorization (“Autorização de Pesquisa”) and Mining Concession (“Concessão de Lavra”).

According to the Brazilian Constitution, all Mineral Resources in Brazil are the property of the Federal Government. The Brazilian Constitution also guarantees mining companies the entire property of the mineral products mined under their respective concessions. Mineral Rights come under the jurisdiction of the Federal Government, and mining legislation is enacted at the Federal level only. To apply for and acquire mineral rights, a company must be incorporated under Brazilian law and have its management, head office, and administration domiciled in Brazil.

Figure 4-1: Project location

Source: GE21, 2024.

There are no restrictions on foreign investment in the Brazilian mining industry, except for mining companies that operate or hold mineral rights within a 150 km-wide strip of land parallel to the Brazilian terrestrial borders. In this instance, the equity interests of such companies must be mainly Brazilian-owned. Exploration and mining activities in the border zone are regulated by the Brazilian Mining Code and supporting legislation.

Applications for an Exploration Authorization (EA) are made to the ANM and are available to any company incorporated under Brazilian law that maintains a main office and administration in Brazil. EAs are granted following the submission of required documentation by a legally qualified Geologist or Mining Engineer, including an exploration plan and evidence of funds or financing for the investment forecast in the exploration plan. An annual fee per hectare, ranging from approximately US$ 0.50/ha to US$ 1.00/ha, is paid by the holder of the EA to the ANM, and a final report of the exploration work must be submitted by the end of the three years. No exploration work is permitted during the review period of a formal EA application.

EAs are valid for a maximum of three years, with a maximum extension equal to the initial period, issued at the discretion of the ANM. Annual fees per hectare increase by 50% during the extension period. After submitting a Final Exploration Report, the EA holder may request a mining concession. Mining concessions are granted by the Brazilian Ministry of Mines and Energy, have no set expiration date, and are valid until the total depletion of Mineral Resources. Mining concessions remain in good standing subject to submission of annual production reports and payments of royalties (CEFEM), which can be between 1% and 3%, to the federal government. CEFEM is 2% for Lithium in Brazil.

Areas where the maximum extension of an EA has expired and a company has failed to submit a positive Final Exploration Report and mining concession request are designated with a status of “Public Offer.” Before Decree nº 9.406/2018, the public offer is auctioned. It is awarded to a company based on the best technical proposal regarding exploration activities and previous knowledge of the specific mineral right. The winning company bid is based on which company has offered the most cash in an auction procedure.

The Project information and temporal evaluation connect current Brazilian regulations governing exploration and mining permits.

4.3 Mineral Tenure Status

The Project is comprised of two claims: 830.833/2001 and 830.926/2017 (Baixa Grande target), as shown in Figure 4-2. The Baixa Grande target exploration licence area is in the municipality of Salinas, Minas Gerais State (Figure 4-2 and Figure 4-3).

The Baixa Grande target property area comprises two tenements covering approximately 1,256.65 ha (Table 4-1).

Table 4-1: Lithium Ionic land tenure information

Claim No. (ANM)	Project	Municipality (MG)	Area (ha)	Status	Ownership (ANM)
830.926/2017	Salinas	Salinas	594.09	Permit - Final Exploration Report Submitted	SALIT MINERAÇÃO LTDA (1)
830.833/2001	Salinas	Salinas	662.56	Application for Mining Concession Submitted	JOSÉ SILVA LAPA (2)
Total			**1,256.65**		
(3) Salit is 100% owned by NEOLIT. (4) Title transfer to SALIT being processed by ANM					

Source: GE21, 2024.

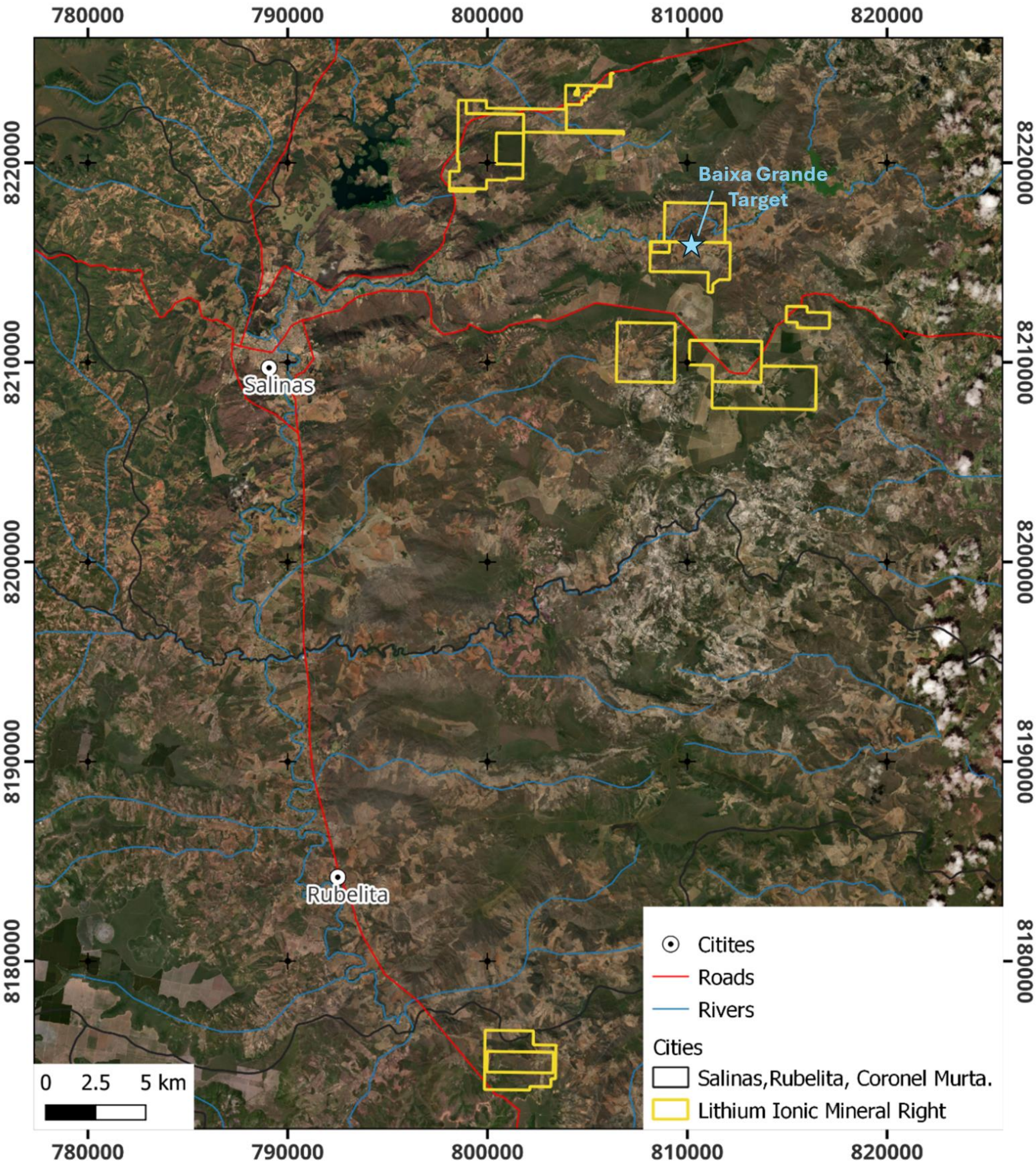


Figure 4-2: Lithium Ionic Tenements Map

Source: GE21, 2024.

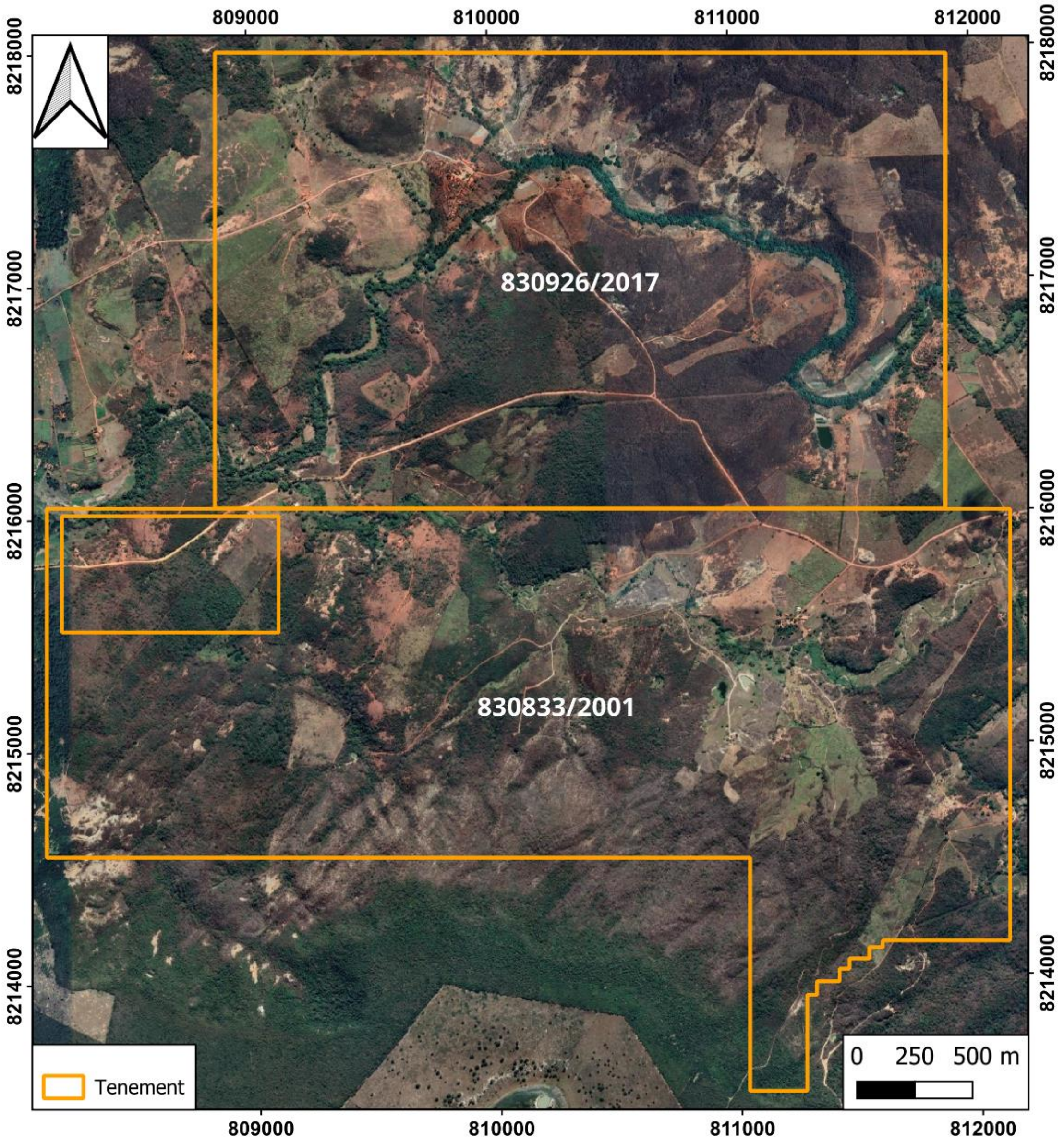


Figure 4-3: Baixa Grande target tenements map

Source: GE21, 2024.

4.4 Property Surface Rights

The owner of an Exploration Authorization (EA) is guaranteed, by law, access to perform exploration fieldwork provided adequate compensation is paid to third-party landowners, and the owner of the EA accepts all environmental liabilities resulting from the exploration work.

According to Lithium Ionic, agreements associated with the surface rights of the Baixa Grade Project are in place. Under the legislation of the Brazil Mining Code, Mineral Resources belong to the State and are granted under mineral licenses issued by the ANM. Surface rights belong to the landowner, who, under the Mining Code, are guaranteed remuneration that may arise from a mineral deposit being developed on their property. This participation is usually negotiated between the mineral rights owner and the landowner, with the remuneration being a small percentage of a production royalty or a monthly rental fee.

If an agreement is not reached, there is legislation whereby the Government will arbitrate a settlement agreement to ensure that exploration and development of the mineral rights can advance. Under the legislation, a surface right owner does not have the legal right to inhibit the exploration or development of Mineral Resources in Brazil.

Lithium Ionic, though its subsidiary Salit Mineração Ltda., has acquired the right-of-use in relation to 2 properties inside the Baixa Grande Mineral Rights area. Table 4-2 presents the current land ownership and negotiation status. Figure 4-4 give the surface owners list and their respective land inside the Baixa Grande Mineral Right.

Table 4-2: Acquisition Status – Piabanha and Sobradinho Farms

Property Name	Land Ownership	Negotiation Status
Fazenda Piabanha	Valitar Participações S.A.	Salit – Right-of-Use
Fazenda Sobradinho	Valitar Participações S.A.	Salit – Right-of-Use

Source: GE21, 2024.

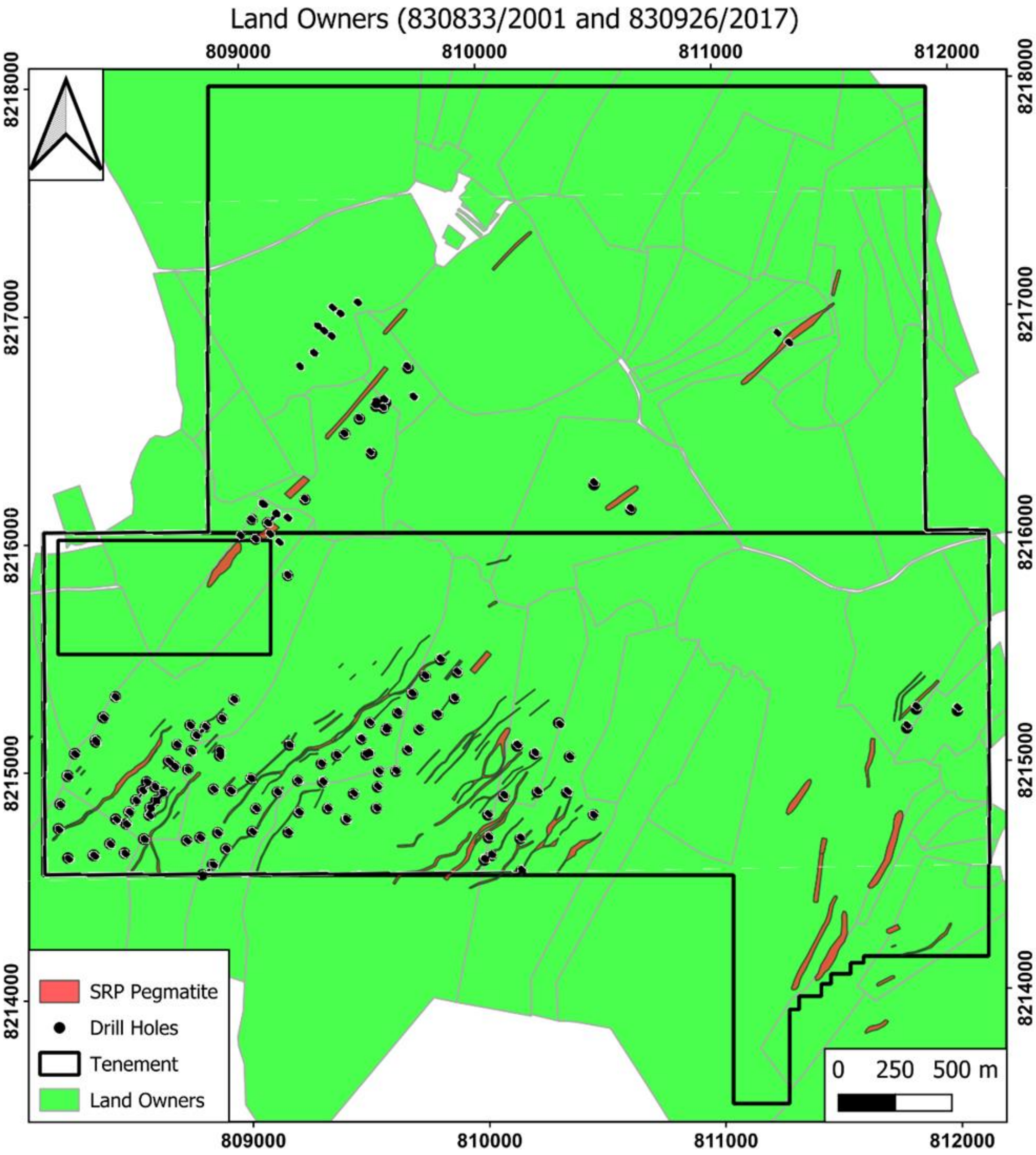


Figure 4-4: Baixa Grande Project surface rights map

Source: GE21, 2024.

4.5 Permits and Authorization

The Project currently entails only Exploration Permits; Application for Mining Concession was submitted for 830.833/2001 ANM Area.

4.6 Environmental Considerations

There are not any known environmental liabilities.

4.7 Other Significant Factors and Risks

There are not any other significant factors and risks that may affect access, title or the ability to perform work on the property.

4.8 Royalties and Encumbrances

4.8.1 CFEM Royalty

The Brazilian Government is entitled to a CFEM (Compensação Financeira pela Exploração de Recursos Minerais) Royalty, whereby the holder of a mining concession for lithium mineral is legally obligated to pay the Brazilian Government 2.0% of the gross income from sales thereof. The only deductions allowed are taxes levied on commercial sales.

4.8.2 Landowner's Statutory Royalty

According to Brazilian legislation, landowners are entitled to a royalty in connection with the mineral extraction carried out on their respective properties, in an amount equivalent to 50% of the corresponding CFEM Royalty, owed by the holder of the mining concession.

4.8.3 Royalty Agreements

There are no royalty agreements in relation to the properties or surface rights on which Baixa Grande Project is located.

4.8.4 Encumbrances

There are no encumbrances upon properties listed in Table 4-2, nor upon claim numbers 830.833/2001 and 830.926/2017.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 Accessibility

The Project is in the northern region of the State of Minas Gerais, in the municipality of Salinas, approximately 100 km north of Araçuaí and 640 km northeast of Belo Horizonte. The Project is well served by a network of public and private roads due to its proximity to the BR-251 and BR-116 highways. The Project is accessible throughout the year by a network of arterial and secondary roads (Figure 4-1).

5.2 Climate

A semi-arid climate with high temperatures year-round characterizes the region. It has a temperature mean of 24 ºC and a low annual average rainfall of 823.4 mm. Severe drought occurs from May to September, and torrential and sporadic rains occur from November to March. The average summer temperature high is 31.8 °C, and the average winter low is 15.8 °C. Exploration activities are currently conducted year-round. It is expected that any future mining activities will also be year-round.

5.3 Local Resources and Infrastructure

A network of arterial and backcountry service roads accesses the Project area. The Company has established an on-site core logging and processing facility at the Lithium Ionic Project in Salinas. One significant community are nearby, with a population of 40,000 or more.

The Municipality of Salinas is located approximately 75 km NNW of the town of Araçuaí (population: ~34,000), both connected by major sealed roads and serviced by the local municipal airports and by mobile phone network from the principal Brazilian service providers. Montes Claros is the closest major domestic airport, 230 km west of Salinas. The state of Minas Gerais is well-serviced by infrastructure, roads, hydroelectric power, and water. Also, the neighbouring states of Espirito Santo and Bahia host the ports of Vitoria and Ilhéus, respectively (Figure 4-1).

5.4 Physiography

The topography of the Baixa Grande target is situated within a well-developed creek drainage known as the Bananal Valley. The overall relief varies from 850 m at the highest elevations to 550 m inland. Its flanks have steep escarpments, while its interior comprises domes and hills ranging from 600 to 650 m. The valley relief is capped by lateritic soils that can reach up to 5 m at hilltops. To the north and south, the Bananal Valley is surrounded by high plateaus (called “chapadas” in Brazilian Portuguese) supported by metasiliciclastic rocks (Salinas Formation) and/or granites or by mudstone-sandstone packages (São Domingos Formation).

The Project area is characterized by dense thorn scrub and medium-height trees, except where it has been cleared for agriculture. The region’s natural vegetation is in a transition zone between Caatinga and Cerrado, where a mixture of species adapted to water regimes varying between dry and humid climates predominate.

The average annual precipitation is moderate compared to other regions of Brazil. The average annual measurements at the Salinas station are 823.4 mm, while the evapotranspiration averages are about 1,650 mm, a deficit of 830 mm/year, which characterizes it as a semi-arid environment.

The low precipitation can result in better geotechnical stability conditions than in tropical regions, with rainy summers (due to the lower soil erosion of the rain). In this sense, this natural stability condition is a positive evaluation for the overall risk management of the Baixa Grande target.

6 HISTORY

Neolit Strategic Minerals, a company acquired in March 2023 by Lithium Ionic, conducted the first drilling program at the Baixa Grande target at the end of 2022 through a contract with Energold Drilling, performing 4,037.10 m.

6.1 Historical Exploration

All works at the Baixa Grande target started in 2022 and the Author does not have historical exploration data for spodumene prior to 2022. However, old diggings (“garimpos” in Brazilian Portuguese) for gemstones and columbite-tantalite are found in the region.

Before the Neolit exploration drilling program, several abandoned diggings (“garimpos”) for columbite-tantalite and gemstones (mainly tourmalines) in the pegmatites have been reported in the Bananal Valley, including the vicinities of the Baixa Grande village (Pedrosa-Soares and Oliveira, 1997; Paes et al., 2016). Historically, the best-known among them is the Zoé-Dim (or Bananal) Pegmatite, a zoned body rich in giant spodumene pseudomorphs (replaced by clay minerals) explored for Nb-Ta oxides, formerly reported by Paes et al. (2016) and detailed studied by Barbosa (2021) in her MSc thesis. However, several outcrops of spodumene-rich pegmatites (SRP) found by Neolit have not been explored before the current lithium-rush.

Following Neolit’s assumption of responsibility for the mineral survey on the 830.833/2001 and 830.926/2017 tenements, detailed geological surveys were conducted, revealing several outcrops of SRP. During Neolit’s mapping efforts, 67 rock samples were collected for geochemical analysis. Approximately 15% of the analyzed samples returned significant lithium values, supporting the exploration drilling program.

Neolit’s exploration drilling program comprised 4,037.10 m across 24 holes. This program allows for the subdivision of the Baixa Grande target into four sectors: Oeste, Sobradinho, Cubo, and Ju. Among these sectors, three—Oeste, Sobradinho, and Cubo—yielded excellent intercepts at depth.

7 GEOLOGICAL SETTING AND MINERALIZATION

The Baixa Grande target from the Salinas Project lies in the Jequitinhonha River valley in the northeast of Minas Gerais state, currently known as Brazilian Lithium Valley. The region sets on the Eastern Brazilian Pegmatite Province (EBPP), one of the largest pegmatite provinces around the world with ca. 150.000 km2 (cf. synthesis and references in Pedrosa-Soares et al., 2011, 2023).

The EBPP resulted from the magmatic and tectono-metamorphic events that formed the Araçuaí Orogen from the Early Ediacaran (ca. 630 Ma) to the Late Cambrian (ca. 490 Ma). The major EBPP pegmatite populations found within the Araçuaí Orogen have been grouped into twelve pegmatite districts that include residual pegmatites (representing late silicate melts released by fractional crystallization of parent granites) and/or anatectic pegmatites (formed directly from partial melting of country rocks). Among these districts, the Araçuaí Pegmatite District includes hundreds of residual pegmatites of distinct subclasses, types, and sub-types (B, Be, Cs, Li, Sn, Ta) of the rare-element class.

They comprise two main groups of rare-element pegmatites:

1. The generally thick (up to 100 m), zoned, complex LCT (Lithium-Cesium-Tantalum) pegmatites with several lithium minerals (e.g., elbaite, lepidolite, Li-phosphates, petalite and/or spodumene) and other rare-element minerals (e.g., beryl, Bi-minerals, cassiterite, pollucite, schorlite, Ta-minerals), displaying roughly concentric to irregularly-shaped primary zones (marginal, graphic or wall, and intermediate zones, and quartz cores) cut by albite-bearing replacement bodies and fracture fillings with gem-bearing pockets.

2. The relatively thinner, unzoned to poorly zoned, spodumene-rich pegmatites (SRP) with rather simple mineralogical assemblages that include spodumene (up to 35 vol%), albite, perthite, quartz, and muscovite (combined forming up to 90-95 vol%), and accessory minerals, such as cookeite, Li-phosphates, petalite, cassiterite, Nb-Ta oxides, graphite, Fe-Mn oxides, and zabuyelita.

The rare-element pegmatites of the Araçuaí District are related to granitic intrusions, mostly composed of peraluminous (S-type), subalkaline to alkaline, muscovite-bearing leucogranites with pegmatoid cupolas, of the Cambrian (535-500 Ma.) post-collisional (post-tectonic) G4 supersuite of the Araçuaí Orogen.

The Salinas Project is in the Curralinho Pegmatite Field, a pegmatite population emerging as an outstanding target for exploring SRP in the Araçuaí District, only after the Itinga Pegmatite Field that contains the most important lithium deposits of Brazil since the 1950s, both in terms of economic resources and geological potential. As with other lithium-rich pegmatite populations worldwide, the favourable geological conditions for the outstanding abundance of both SRP and LCT pegmatites in the Curralinho Field are given by: i) the relatively low-pressure and high-temperature regimes of the regional and contact metamorphisms, recorded by the dominant country rocks (quartz-mica schists with andalusite and/or cordierite and/or sillimanite); and ii) the profusion of two-mica granite intrusions with pegmatoid cupolas emplaced in relatively shallow crustal levels. The Itinga Pegmatite Field includes the spodumene mines and deposits of CBL (Companhia Brasileira de Lítio) and Sigma Lithium, as well as Lithium Ionic's properties of its Itinga Project, such as the Bandeira and Outro Lado spodumene deposits.

The lithium ore bodies exploited, since the early 1990s, in CBL's underground mine display a closely spaced swarm of relatively narrow (6 m thick on average) but long (up to 700 m along strike) non-zoned SRP. Lithium Ionic's Bandeira deposit, located just beside CBL's mine, also shows the same pattern of a dense swarm of unzoned SRP, with some dikes reaching up to 25 m thick (cf. PEA Bandeira, Lithium Ionic, 2023). In the Sigma Lithium properties, where several large SRPs are found (e.g., Barreiro, Murial, and Xuxa), an open pit mine is currently being developed on the Xuxa SRP deposit (15 m thick x 1800 m long x 500 m).

Regardless of their size, most pegmatites in the Curralinho field are (sub-)parallel to the prominent NE-SW structural trend defined by the regional ductile foliation (the S1 schistosity: NE strike / NW dip) and a late-spaced cleavage (S2: NE strike / SE dip). However, flat and high-angle dip joint systems also potentially host some SRP.

Also following the regional NE-SW structural trend, the Baixa Grande target comprises NE-striking swarms of SRP discordantly emplaced along a SE-dipping fracture system (the S2 spaced cleavage), as well as a few spodumene-mineralized pegmatites hosted by late flat-lying joints. The Baixa Grande pegmatites are tabular bodies with convex lens-shaped terminations arranged in tight and staggered swarms. This target is in the early stages of drilling. Many of the Baixa Grande target's drilled SRP bodies are open along strike and dip.

The synthesis presented in 7.1, 7.1.1 and 7.2 were compiled from Pedrosa-Soares et al. (2009, 2011, 2020, 2023), Paes et al. (2016), and references quoted in those publications, whose repeatedly citations are removed for easier readability of the following text.

7.1 Regional Lithium History and Geology

The Salinas Project lies in the Eastern Brazilian Pegmatite Province (EBPP), located in terranes of the Araçuaí Orogen (Figure 7-1 and Figure 7-2) The EBPP, one of the largest pegmatitic populations in the world with c. 150,000 km2, contains pegmatite districts located in eastern Minas Gerais (c. 90% of the whole province), southeastern Bahia, and Espírito Santo States of Brazil.

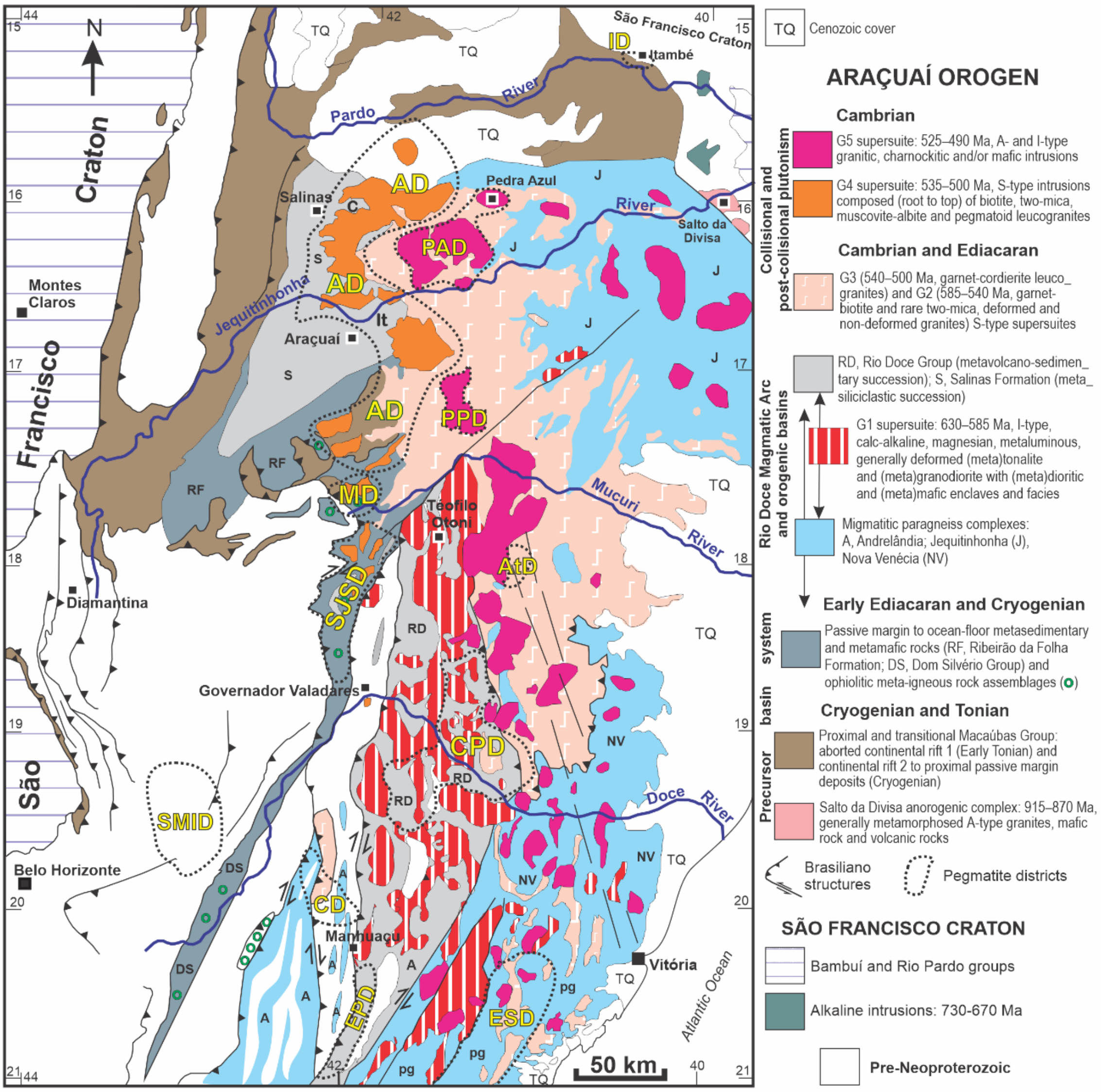


Figure 7-1: Simplified geologic map of the Araçuaí Orogen

Legend: Highlighting the granite supersuites and pegmatite districts of the Eastern Brazilian Pegmatite Province: AD, Araçuaí, including the Curralinho (C) and Itinga (It) pegmatite fields; AtD, Ataléia; CD, Caratinga; CPD, Conselheiro Pena; ESD, Espírito Santo; ID, Itambé; MD, Malacacheta; PAD, Pedra Azul; PPD, Padre Paraíso; SJSD, São José da Safira; SMID, Santa Maria de Itabira.

Source: Modified from Pedrosa-Soares et al., 2011, 2020, 2023.

The Eastern Brazilian Pegmatite Province is the most important region in the history of pegmatite studies and developing lithium deposits in Brazil. Pegmatite gemstones have been officially known in Brazil since the last decades of the 17th century, when green tourmalines, initially mistaken for emeralds, were found by the explorer Fernão Dias Paes Leme in the region of São José da Safira, a pegmatite district very rich in gem-quality elbaite (Li-bearing tourmaline). Long after, in the first decades of the 19th century, pioneer naturalists and geologists, such as Eschwege, Spix, Martius, and Saint-Hilaire, described pegmatite gem deposits located in the Jequitinhonha and Doce river valleys. In 1818, Spix and Martius reached the headwaters of the Calhauzinho and Piauí rivers in the Araçuaí region (Figure 7-4), searching for the gemstones' primary sources, particularly chrysoberyl (then called "chrysolite" locally) that was already mined there. They found a "white granite with little mica, but rich in black tourmaline" (i.e., pegmatite). At that time, spodumene (discovered and named by the Brazilian mineralogist José Bonifácio de Andrada in a volume of the Journal der Chemie, 1800) was already called "rotten chrysolite" by pioneer prospectors and gemstone diggers ("garimpeiros" in Brazilian Portuguese) of the Jequitinhonha Valley. In 1866, Charles Hartt described the N45E-trending structure of the mica schists hosting very coarse-grained "granite" veins between Araçuaí and Itinga. In 1882, Costa Sena published the first paper directly referring to spodumene (also called "triphane" at that time) in the Middle Jequitinhonha region after identifying "andalusite, cymophane (chrysoberyl) and triphane with sharp edges, in sands and gravels from streams of the Piauí river valley". He suggested that the primary deposits would also be located there. Several spodumene occurrences of the Middle Jequitinhonha Valley, among other pegmatite minerals, are described by Luiz Caetano Ferraz in his "Compendio dos Mineraes do Brasil", published in 1928.

The importance of pegmatites as economic mineral deposits greatly increased in Brazil from the Second World War due to the large production of mica, beryl, and quartz to supply the military industry of allied countries to the end of the Cold War in the early 1990s. Just after the Second World War, in 1946, the largest pegmatitic populations of Brazil were grouped into provinces by Glaycon de Paiva. Among them, the Eastern Brazilian Pegmatite Province was first defined. Since then, more than one thousand pegmatites have been mined there for gemstones, cassiterite, Li and Be ores, Nb-Ta oxides, industrial minerals (K-feldspar, muscovite, albite, quartz), collection and rare minerals, dimension stone, and minerals for esoteric purposes.

Historical milestones in the discoveries and mining of lithium deposits in the Araçuaí-Itinga region were reported by Haroldo de Sá in his PhD thesis (1977). According to him:

> The discoveries and production of cassiterite, lepidolite, and amblygonite in pegmatites of the Piauí river valley (e.g., Fumal, Generosa, Jenipapo, and Urubu) by the Estanífera do Brasil and Produco companies dated back to the early 1950s. Although spodumene has been known for a long time by gem diggers ("garimpeiros"), who called it "cambalacho" or "crisólita podre" (i.e., rotten chrysolite in reference to its similarity to chrysoberyl), its commercial production only started at the end of the 1960s at the Cachoeira mine (then owned by Companhia Estanífera do Brasil) to supply the increasing demand of the national market.

> Petalite, formerly called “escória branca” (white scoria) and very often mistaken for feldspar, was correctly identified at the end of the 1960s and immediately mined for exportation by the Companhia Estanífera do Brasil until 1972, followed by Companhia Arqueana de Minérios e Metais Ltda. Around 1977, this mining company had more than twenty distinct pegmatite bodies producing petalite, spodumene, amblygonite, lepidolite, beryl, cassiterite and columbite-tantalite.

For his PhD thesis, Haroldo de Sá (1977) compiled maps, sections and other data from the Companhia Arqueana de Minérios e Metais Ltda archives. and produced the first geochronological data for the local granites and pegmatites (whose similar ages, around 500 Ma, is evidence of a genetic link between them). He also produced the first geochemical data (K, Rb, Cs) for minerals of non-economic and pegmatites with mineralization of petalite, spodumene, lepidolite and/or pollucite. His spatial interpretation of the distribution and zoning of different Li-rich pegmatites remains realistic even with present-day knowledge.

Khalil Afgouni, an outstanding pioneer of lithium mining in Brazil and the owner of Companhia Arqueana de Minérios e Metais Ltda, with Haroldo de Sá, published a farseeing article entitled “Lithium Ore in Brazil” in the prestigious magazine Energy in 1978. In the article, they predict that

> […] another new use (for that metal) is in lithium batteries for electric cars and, if this application becomes a reality, Brazil will be a big consumer, ranking at the same level as the most developed countries in the world, with the advantage of being one of few countries producing its own raw material.

Although this is not yet a full reality, the remarkable increase in lithium ore production in the Jequitinhonha Lithium Valley results from the invaluable heritage of Arqueana’s discoveries of world-class lithium deposits.

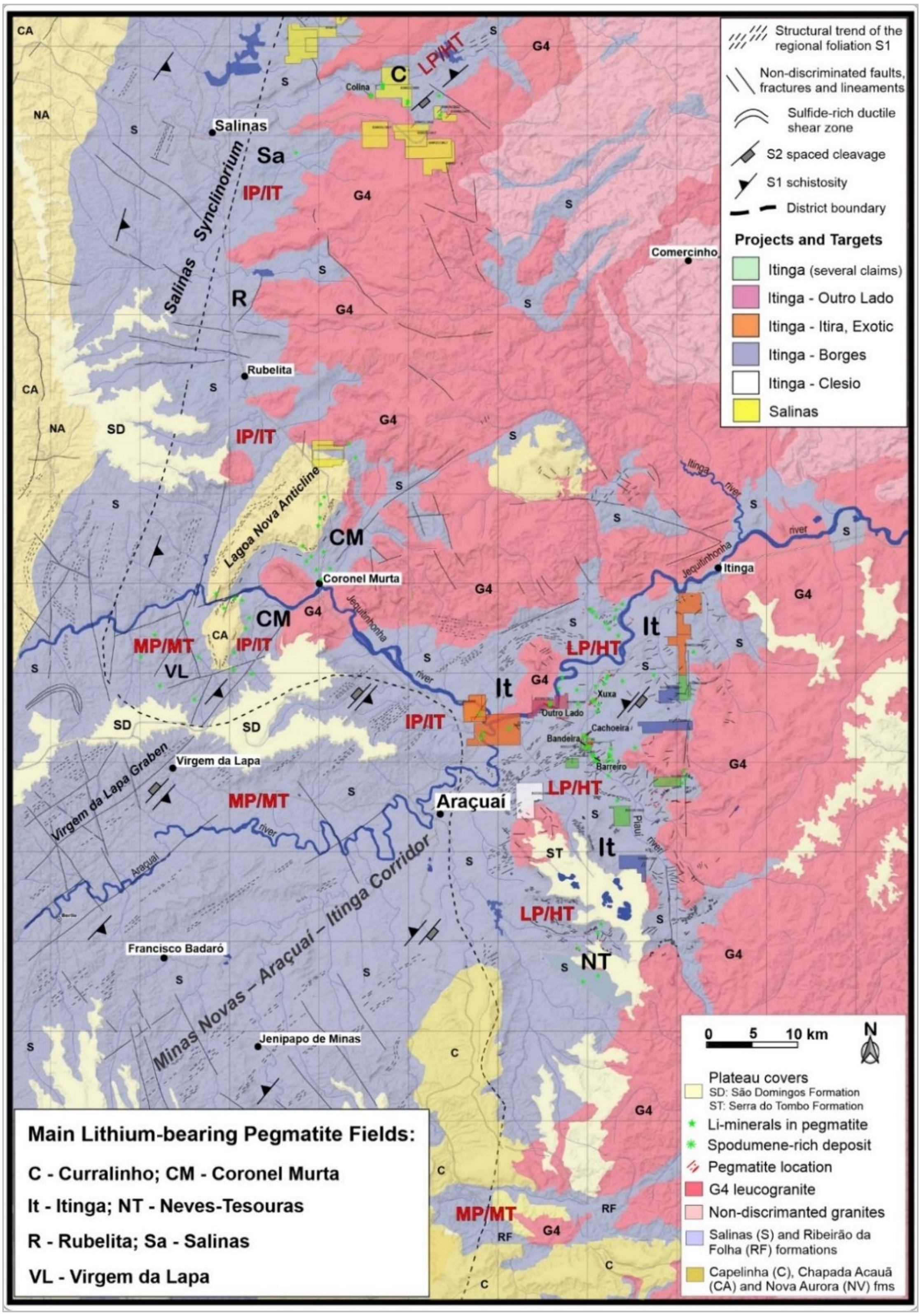


Figure 7-2: Geological map of the Araçuaí Pegmatite District

Legend: Highlighting lithium-bearing pegmatite fields (see inbox), major tectonic domains (names in italics on map), metamorphic regimes according to relative pressure (P) and temperature (T) conditions (LP/HT, low-P/high-T; IP/IT, intermediate-low P and T; and MP/MT, medium P and T), spodumene active mines (Cachoeira, Xuxa) and main spodumene deposits: Bandeira and Outro Lado (Lithium Ionic), Barreiro (Sigma), and Colina (Latin Resources).

Source: Modified and updated by Pedrosa-Soares et al., 2023; based on the district map by Paes et al., 2016.

Since the early 1980s, the region encompassing the Eastern Brazilian Pegmatite Province (EBPP) has been completely covered by systematic geological mapping (on a 1:100,000 scale) and experienced an outstanding increase in scientific studies supported by robust analytical data. That allowed genetic and metallogenetic links between pegmatite populations and the tectono-magmatic events of the regional geological evolution to be established. The EBPP results from the magmatic and tectono-metamorphic events that formed the Araçuaí Orogen from the Early Ediacaran (ca. 630 Ma) to the Late Cambrian (ca. 490 Ma).

These events comprise the regional deformation, metamorphism and partial melting of sedimentary and volcanic successions deposited in the Tonian-Cryogenian precursor (rift to passive margin) basin system and the Ediacaran orogenic (arc-related) basins (Figure 7-2), as well as of the continental basement. The melting events produced huge volumes of orogenic granitic rocks and thousands of pegmatites grouped into five supersuites (G1 to G5; Figure 7-1, Table 7-1).

The sedimentary and volcano-sedimentary successions involved in the tectono-metamorphic-anatectic processes that generated granites and pegmatites show two contrasting distributions of U-Pb ages for detrital grains of zircon (Figure 7-2). One is a classic multimodal age spectrum of a basin system evolved from continental rift to passive margin, represented by the Macaúbas Group and Jequitinhonha Complex.

The other age distribution shows an unimodal spectrum typical of orogenic basins largely filled by material from a rather dominant zircon source (e.g., an active magmatic arc), representing the Salinas Formation and Rio Doce Group that host most Li-bearing pegmatites in the EBPP (Figure 7-1). The Salinas Formation, comprising quartz-mica schist (metapelite) with lenses of calc-silicate rock (metamarl), metawacke (metasandstone) and metaconglomerate, is the main host unit of Li-rich pegmatites in the whole EBPP, including the SRP of the Baixa Grande target.

Tectono-metamorphic events and the G1 to G5 granitic supersuites of the Araçuaí Orogen play distinct roles concerning pegmatite abundance, distribution, genesis, and metallogenetic specialization, imposing important prospecting constraints with regards to the metallic potential of distinct pegmatite populations along the EBPP (see 7.2).

The G4 is the most important granitic supersuite related to Li-rich pegmatites, followed by the G2 supersuite. Meanwhile, the G5 and G1 supersuites are related to Be-rich pegmatites, which are generally free of or poor in Li-minerals. Tourmaline-bearing pegmatites are widespread in the EBPP, except in some Be-rich and Li-rich pegmatite clusters.

The G4 intrusions and batholiths show the classical distribution of granitic facies, from pluton root to top, found in other Li-rich pegmatite districts around the world, comprising biotite leucogranite, two-mica leucogranite, muscovite leucogranite, albite leucogranite and pegmatoid granite. Apatite, beryl, tourmaline, and garnet occur in the pegmatoid granites, and muscovite-albite leucogranites. The Salinas Formation is also the main host unit of G4 intrusions associated with Li-rich pegmatites (Figure 7-1).

7.1.1 Pegmatites

Granitic pegmatites represent silica-saturated magmas variably rich in H_2O and bearing fluids, as well as in other hyperfusible (fluxing) components (e.g., Li, Na), crystallized in rather closed chemical systems (cf. Cerný, 1991; London, 2008). The EBPP comprises the two known genetic types of pegmatites, both formed during the evolution of the Araçuaí Orogen: i) the anatectic pegmatites generated directly from the partial melting of country rocks, and ii) the residual pegmatites, representing late silicate melts released by fractional crystallization of parental granites. Genetic affiliation and other criteria allow pegmatite districts to be distinguished in the EBPP (Figure 7-2 and Table 7-2).

Table 7-1: Main features of the orogenic igneous supersuites of the Araçuaí Orogen

Supersuites	**G1**	**G2**	**G3**	**G4**	**G5**
Ages (Ma)	**630-585**	**585-540**	**540-500**	**535-500**	**525-490**
Lithotypes	Mostly tonalite and granodiorite, minor diorite to gabbronorite, with biotite, amphibole and/or pyroxenes; poor in pegmatites	Mostly biotite-garnet syenogranite to alkali feldspar granite, garnet-rich monzogranite to tonalite, and garnet-two-mica granite, locally with sillimanite, associated with external rare element pegmatites	Alkali feldspar granite to syenogranite with cordierite and/or garnet and/or sillimanite, free of or poor in biotite; poor in pegmatites	From pluton root to top: biotite granite, two-mica leucogranite, muscovite and/or albite and/or schorlite granite, pegmatoid granite; associated with external rare element pegmatites	Alkali feldspar granite to granodiorite, orthopyroxene-bearing charnockitic rocks, basic (norite) to ultrabasic rocks, and beryl-topaz pegmatites
Field Relations	Batholiths and stocks, generally rich in dioritic to mafic enclaves and facies, showing solid-state deformation and migmatization, local well-preserved igneous fabrics, associated with the arc-related metavolcano-sedimentary Rio Doce Group	Batholiths, stocks and stratoid bodies, showing solid-state deformation, metamorphism and migmatization, with common restites and xenoliths of metasedimentary rocks, and localized well-preserved igneous fabrics	Mostly autochthonous, non-deformed patches, veins, and lodes of G3 leucosome, and minor stocks, free of the regional foliation, hosted by migmatites with G2 paleosome	Balloon- to stratoid-shaped intrusions, post-kinematic concerning the regional ductile foliation, locally imposing late deformation on the regional structural trend (circumscribed intrusions)	Balloon-shaped plutons and multiple intrusions, locally rich in mafic and/or microgranular enclaves with magma mixing features, and norite-rich bodies, post-kinematic concerning the regional ductile foliation
Geochemical Signatures	metaluminous to slightly peraluminous, magnesian, calcic to alkali-calcic, medium- to high-K, expanded calc-alkaline series	strongly to weakly peraluminous, calc-alkalic to subalkalic (K > Na)	peraluminous, subalkalic (K > Na)	peraluminous, subalkalic (K > Na) to alkalic (Na > K)	metaluminous to slightly peraluminous, ferroan, high-K calc-alkalic, minor tholeiite
Petrogenetic Type	metaluminous I-type, locally peraluminous I-type	peraluminous S-type, locally peraluminous I-type	S-type	S-type	A-type and I-type
Tectonic Stage	pre-collisional to early collisional magmatic arc	late pre-collisional to late collisional	late collisional to post-collisional	post-collisional	post-collisional

Source: Pedrosa-Soares et al., 2023.

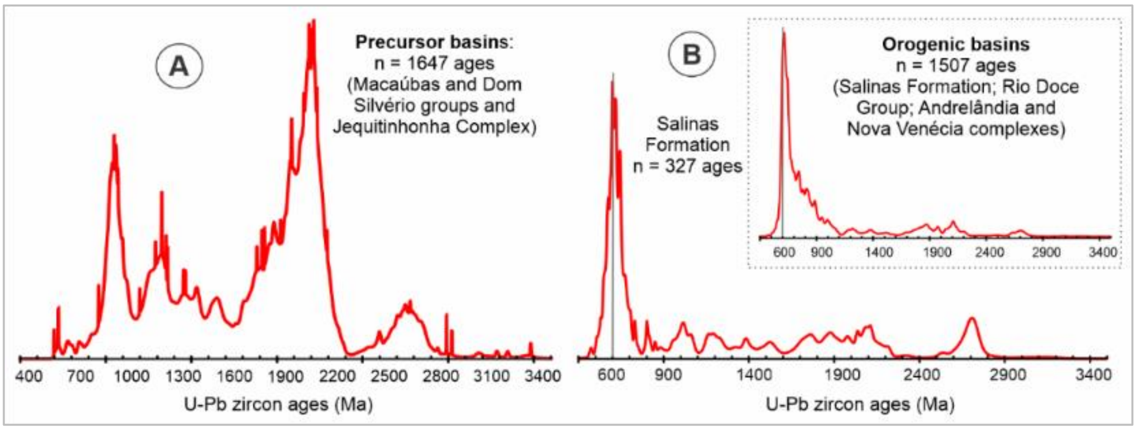


Figure 7-3: Distributions of U-Pb ages for detrital zircon grains from metamorphosed sedimentary and volcanic rocks

Legend: (A) precursor basins (e.g., Macaúbas Group and Jequitinhonha Complex), and (B) orogenic basins (e.g., Salinas Formation, Rio Doce Group) of the Araçuaí Orogen within the Eastern Brazilian Pegmatite Province.

Source: Pedrosa-Soares et al., 2023.

The anatectic pegmatites are coarse-grained quartz-feldspathic bodies (i.e., granitic leucosomes) hosted by migmatitic gneisses and micaschists, mostly formed in the collisional tectono-metamorphic event (585-540 Ma) and the post-collisional thermal event (540-490 Ma). Therefore, their spatial distribution, and genetic and metallogenetic features are directly related to the melted country rocks. Conversely, the residual pegmatites, especially those enriched in rare elements, have restricted spatial distributions and genetic links directly related to the distinct granite types from which they ultimately inherited their geochemical characteristics and metallogenetic specializations (Figure 7-2 and Figure 7-3).

Therefore, residual pegmatites released from peraluminous, subalkalic to alkalic, hydrous, S-type, two-mica leucogranites formed from the partial melting of metasedimentary rocks might have a rather distinct metallogenetic specialization (e.g., richer in Li, Cs, Ta, Sn, and P) concerning residual pegmatites (e.g., richer in Be, F, and Fe) from metaluminous, high-K calc-alkalic, ferroan, relatively anhydrous, A-type, amphibole-biotite granites formed from the partial melting of mainly igneous rocks. The first case (S-type granites) refers to Li-bearing pegmatites associated with the G4 and G2 supersuites, while the second (A-type granites) stands for the Be-bearing (but Li-free) pegmatites comprised by the G5 supersuite.

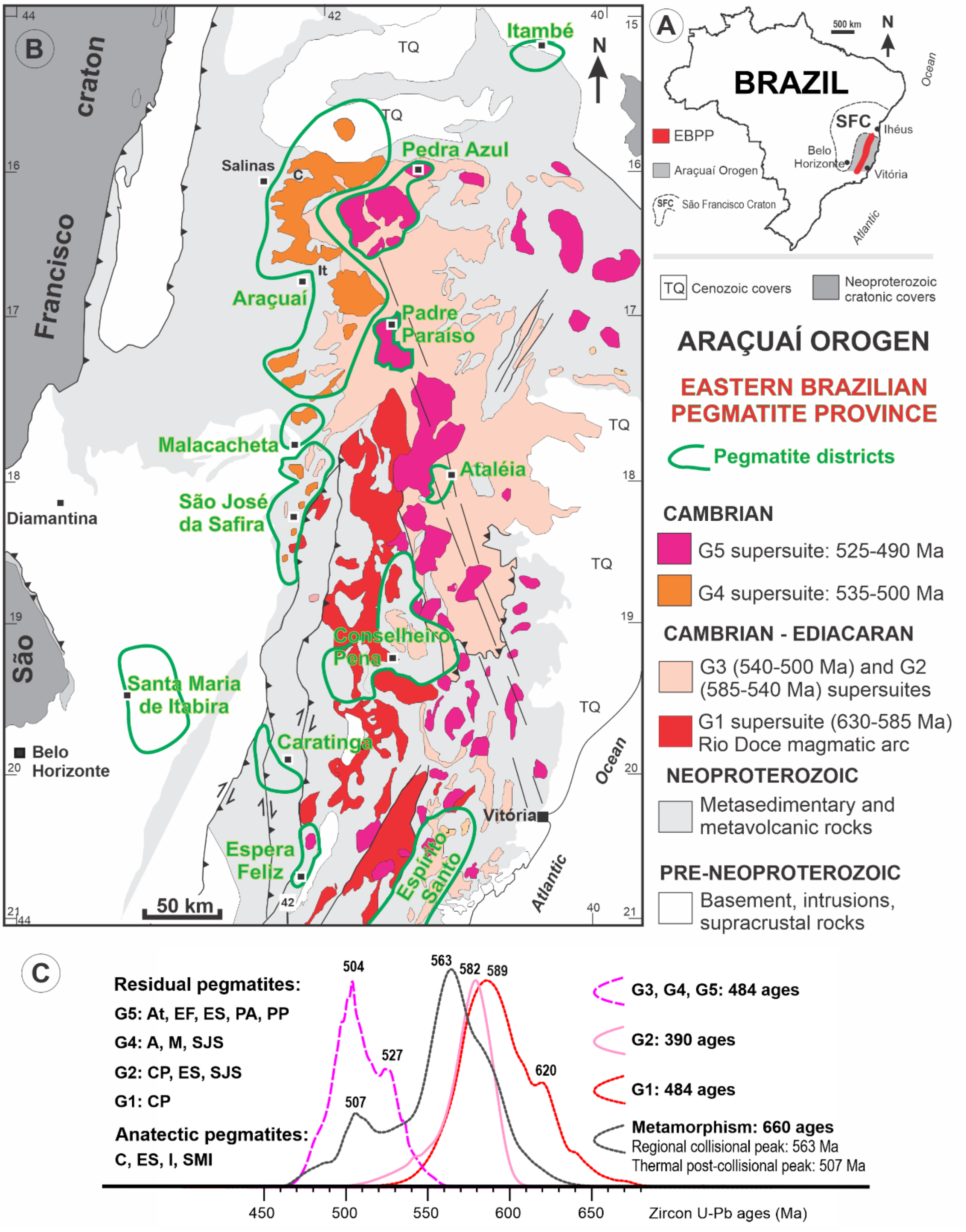


Figure 7-4: The Eastern Brazilian Pegmatite Province

Legend: A) Location of the Eastern Brazilian Pegmatite Province (EBPP) in Brazil and related to the São Francisco Craton. B) Simplified geological map highlighting the granite supersuites (G1 to G5) and EBPP pegmatite districts: A, Araçuaí, including the Curralinho (C) and Itinga (It) pegmatite fields; At, Ataléia; C, Caratinga; CP, Conselheiro Pena; EF, Espera Feliz; ES, Espírito Santo; I, Itambé; M, Malacacheta; PA, Pedra Azul; PP, Padre Paraíso; SMI, Santa Maria de Itabira; SJS, São José da Safira. C) Distribution of zircon U-Pb ages from orogenic granite supersuites (G1 to G5), regional metamorphism and post-collisional thermal events correlated to pegmatite districts.

Source: Pedrosa-Soares et al., 2023.

Table 7-2 Features of the main pegmatite districts of the eastern Brazilian Pegmatite Province

District names and ages (Ma)	Historical and present-day mineral production, and rare minerals	Genetic affiliation; class, subclass, type, subtype, and family (*)	Parent and host rocks
Itambé 508 Ma	K-feldspar, quartz crystals, mica, beryl, columbite, monazite	Anatectic; muscovite-rare element, REE, allanite-monazite, NYF	Biotite-hornblende gneisses, sillimanite-feldspar-mica schists
Pedra Azul 501 Ma	Quartz, beryl (aquamarine), topaz	Residual; ree, beryl-topaz, nyf	A-type G5 granites
Padre Paraíso 519 Ma	Quartz, beryl (aquamarine), topaz, quartz crystals, goshenite, chrysoberyl	Residual; ree, beryl-topaz, nyf	A- and i-types g5 granites and charnockites
Araçuaí 535-500 Ma	Greenish to pinkish spodumene, petalite, lepidolite, Li-phosphates, cookeite, cassiterite, columbite-tantalite, industrial minerals (perthitic K-feldspar, albite, muscovite), tourmalines (elbaite, schorlite), beryl ore and gems (aquamarine, morganite), pollucite, quartz crystals, cleavelandite, herderite and other rare phosphates, topaz, bismuthinite	Residual; mostly rare element and minor muscovite-rare element, Li, beryl, complex (spodumene, petalite, lepidolite, elbaite, amblygonite), albite-spodumene (SRP), albite, LCT	S-type G4 leucogranites; low-P/high-T (andalusite, cordierite, sillimanite) to medium-PT (garnet, staurolite, kyanite, sillimanite) mica schists to paragneisses, metasandstones, calc-silicate rocks, meta-ultramafic rocks
Ataléia 502 Ma	Quartz crystals, beryl (aquamarine), topaz, chrysoberyl	Residual; ree, beryl-topaz, nyf	A- and i-types G5 granites and charnockites
São José da Safira 545-490 Ma	Tourmalines (elbaite, schorlite), industrial minerals (perthitic K-feldspar, albite, muscovite), beryl ore and gems (aquamarine, heliodor, morganite), lepidolite, Li-phosphates, spodumene, garnet, cleavelandite, columbite-tantalite, cassiterite, bertrandite, microlite, zircon, rare phosphates	Residual; muscovite-rare element and rare element, Li, beryl, complex (elbaite, lepidolite, Li-phosphates, spodumene), LCT	S-type G4 and G2 leucogranites; medium-PT (garnet, staurolite, kyanite, sillimanite) mica schists to paragneisses, metasandstones, calc-silicate rocks, meta-ultramafic rocks
Conselheiro Pena 570-545 Ma	Industrial minerals (perthitic K-feldspar, albite, muscovite), tourmalines (elbaite, schorlite), beryl ore and gem, spodumene (kunzite), lepidolite, Li-phosphates, quartz crystals, cleavelandite, columbite-tantalite, cassiterite, rare phosphates (arrojadite, barbosalite, brasilianite, childrenite, correianevesite, eosphorite, roscherite, vivianite, etc.)	Residual; muscovite-rare element and rare element; Li, beryl, complex (elbaite, Li-phosphates, lepidolite, spodumene), LCT	S-type G2 (and I-type G1) Granites; medium-PT to intermediate low-P (garnet, staurolite, cordierite, kyanite, sillimanite), mica schists to paragneisses, metasandstones, calc-silicate rocks, meta-ultramafic rocks
Malacacheta 535-500 Ma	Muscovite, beryl, chrysoberyl; alexandrite, sapphire	Residual; muscovite-rare element, beryl, lct; and anatectic to hydrothermal processes	S-type G4 leucogranites; mica schists, meta-ultramafic rocks, migmatites
Santa Maria de Itabira 545-500 Ma	Emerald, alexandrite, aquamarine, amazonite	Quartz-feldspathic hydrothermal deposits, and pegmatites	Ultramafic schists, banded iron formations, migmatites
Caratinga 570 Ma	Kaolin, corundum (sapphire, ruby), beryl	Anatectic; abyssal, ceramic	Migmatitic paragneisses
Espera Feliz 500 Ma	Quartz crystals, beryl (aquamarine), topaz	Residual; ree, beryl-topaz; nyf	G5 granites
Espírito Santo 570-500 Ma	Kaolin, quartz, beryl (aquamarine), topaz, tourmalines (and spodumene)	Anatectic; ceramic; residual; ree, beryl-topaz, nyf (and lct)	Migmatitic paragneisses, G5 (and G2) Granites

Notes: (*) Cerný, 1991; Cerný et al., 2012. LCT, Lithium-Cesium-Tantalum; and NYF, Niobium-Yttrium-Fluorine pegmatites).

Source: Pedrosa-Soares et al., 2024, updated after Pedrosa-Soares et al., 2011.

The EBPP was subdivided into twelve pegmatite districts based on the mineral production, genetic and metallogenetic affiliation and classification, parental granite type, host rocks and metamorphic regime, and crystallization ages of a relatively large and clustered pegmatite population (Figure 7-3 and Table 7-2). Most of them are districts of residual pegmatites of the rare element class, distinguished by their affinities with the LCT (Lithium-Cesium-Tantalum) or NYF (Niobium-Yttrium-Fluorine) geochemical-metallogenetic families that, in turn, are related to distinct types of parental granites. Beryl-topaz (NYF) pegmatites cluster in districts almost completely circumscribed or very close to A-type and I-type G5 intrusions, encompassing granitic and igneous charnockitic (orthopyroxene-bearing) rocks with features of magma mingling-mixing involving mafic melts.

Contrastingly, complex LCT pegmatites and albite SRP are found in the external aureoles of S-type intrusions, mostly composed of two-mica leucogranites with pegmatoid cupolas, generally hosted by metasedimentary rocks of the greenschist to amphibolite facies. Among the EBPP Li-bearing districts, the Araçuaí Pegmatite District stands out by having the largest historical and current production of lithium ore and the only world-class spodumene deposits of Brazil. Those deposits include the CBL, Sigma, and the newly discovered deposits by other companies, such as the Bandeira and other spodumene-rich deposits of Lithium Ionic.

The Araçuaí Pegmatite District includes several LCT pegmatite fields distinguished by mineral production, pegmatite types and subtypes, and pressure-temperature (P-T) conditions of the regional and contact metamorphisms (Figure 7-4). Besides complex LCT pegmatites, SRPs are known in the Curralinho, Itinga, Neves-Tesouras and Salinas pegmatite fields. However, the Itinga and Curralinho pegmatite fields remain the most important for spodumene production and prospecting, owing to the outstanding abundance of non-zoned to poorly zoned SRP ranging from a few to dozens of m thick, hundreds to a few thousand m in length along strike, and dozens to hundreds of metres in downdip width. Many spodumene orebodies mined by Arqueana, CBL and Sigma, as well as those discovered by Lithium Ionic at Bandeira and other targets, belong to the SRP (or albite-spodumene) type.

7.2 Structural Geology

In the Araçuaí Pegmatite District (Figure 7-4), the present-day structural framework was established after four deformation events (D1, D2, DG, and DNt). Two of them (D1, D2) are directly related to the regional tectono-metamorphic evolution of the Araçuaí Orogen in the Ediacaran-Cambrian. The third deformation event (DG) was caused by the widespread and voluminous intrusions of Cambrian G4 granites that caused thermal metamorphism and significant structural disturbance on the regional fabrics along areas relatively close to granitic stocks and batholiths (Pedrosa-Soares et al. 1987, 1993, 2011; Alkmim et al., 2006; Santos et al., 2009; Peixoto et al., 2017). Much later, the last deformation event (DNt) resulted from neotectonics reactivation in the Late Tertiary (Saadi and Pedrosa-Soares, 1989). The Ediacaran-Cambrian deformation events (D1, D2, and DG) formed the structural framework that passively hosts the rare element pegmatites in the Araçuaí District (Figure 7-2). The much younger neotectonic deformation (DNt) reworked prior structures in upper crustal levels in the Late Tertiary (Miocene), forming normal faults and graben basins (e.g., the Virgem da Lapa Graben, Figure 7-2, filled by the fluvial to lacustrine sandstone-mudstone piles of the São Domingos Formation that reach more than 100 m in thickness (Saadi and Pedrosa-Soares, 1989; Pedrosa-Soares, 1997). Locally, neotectonic faults may cut and displace blocks with pegmatite deposits.

The D1 deformation results from regional tectono-metamorphic processes imposed by compressive stresses during the collisional stage (580-540 Ma) of the Araçuaí Orogen. Megascopic to macroscopic D1 structures are asymmetric tight folds with long limbs and short hinges, parasitic folds, and ductile shear zones related to thrust ramps and oblique to transcurrent strike-slip domains.

The macroscopic to microscopic D1 structures include the main regional planar structure that evolved from a cleavage to the schistosity S1 (Figure 7-5), which contains the L1 mineral/stretching lineation. S1 is generally (sub)parallel to the layering (S0) along D1 fold limbs, becoming an axial-plane surface in fold hinges (Figure 7-5). Anastomosed and S-C foliations characterize higher strain shear zones syn-kinematic to S1. Although generally very penetrative, the S1 foliation also provides host surfaces for pegmatites.

Distinct metamorphic regimes related to the D1 deformation of schists and gneisses rich in micas have been recognized in the region encompassing the Araçuaí Pegmatite District (Pedrosa-Soares et al., 1984, 1993, 1996; Costa et al., 1984; Costa, 1989; Santos et al., 2009; Peixoto et al., 2017). In the western and southwestern sectors of the region (Figure 7-2), the S1 schistosity shows syn-kinematic (syn-S1) assemblages with Fe-rich garnet (almandine), staurolite, kyanite and/or sillimanite. Such index-minerals series is typical of a medium pressure and medium temperature (MP/MT) metamorphic regime (Figure 7-2). This and quantitative geothermobarometric data characterize the M1 metamorphic event as a syn-collisional (syn-D1) Barrovian-type (MP/MT) metamorphism dating between 575-550 Ma. P and T increase from c. 3.5 kbar at 450 °C in the garnet zone at the southwest of Francisco Badaró, passing northeastwards through the staurolite, kyanite and sillimanite zones, and reaching up to 8.5 kbar at 650 °C at the southeast of Coronel Murta (Figure 7-2).

In the northeastern and northern sectors of the region, the S1 schistosity shows syn-kinematic (syn-S1) assemblages with biotite, Mn-rich garnet (spessartine), andalusite, cordierite and/or sillimanite. Such index-minerals series is typical of a low-pressure and high-temperature (LP/HT) metamorphic regime (Figure 7-4). From the most northeastern andalusite zone to the southwest of Itinga, quartz-feldspathic leucosomes with aplitic to pegmatitic textures formed from the breakdown of muscovite along the S1 foliation of cordierite-quartz-mica schists. Northeastwards, through the andalusite-cordierite, cordierite-sillimanite, sillimanite, and K-feldspar zones, increasing metamorphism and partial melting of quartz-mica schists formed migmatitic paragneisses in the eastern tip of the Itinga Pegmatite Field (Figure 7-4). The metamorphic event (M2) regionally records a low-P/high-T metamorphism with pressures from 2 kbar to 5.5 kbar under temperatures from 400 °C to 700 °C at around 540-530 Ma. The M2 metamorphism reached partial melting conditions on quartz-mica schists of the Salinas Formation with increasing anatexis rates that formed leucosome-rich migmatites (diatexites) in the easternmost sector of the Araçuaí Pegmatite District. This implies that, in deeper crustal levels, the widespread anatexis on the Salinas Formation could have produced large volumes of S-type granitic magmas in the late collisional to post-collisional stages of the Araçuaí Orogen. Indeed, the time interval of the M2 metamorphism (540-530 Ma) ages of G4 granites (535-525 Ma). Combined with the fact that the M2 metamorphism culminated in the partial melting of quartz-mica schists and paragneisses in the easternmost Araçuaí Pegmatite District, this indicates that the S-type G4 magmas originated from the anatexis of thick metasedimentary packages at deep levels of the Salinas Formation.

Along the boundary between the M1 and M2 metamorphic domains (Figure 7-2), the syn-S1 mineral assemblages include almandine and/or staurolite and andalusite and/or cordierite, characterizing an intermediate-low pressure (Buchan-type) metamorphic regime (IP/IT, Figure 7-2) transitional between the M1 Barrovian-type (MP/HT) and the M2 low-P/high-T (LP/HT) metamorphic regimes found in the Araçuaí Pegmatite Districts. Bearing in mind the relations between distinct pegmatite populations, their metallogenetic specializations and metamorphic regimes (Cerný, 1991; Cerný et al., 2012), such metamorphic characterization is of great importance for prospecting different rare element pegmatites, as Li-rich pegmatites are typically found in terranes with relatively low-P/high-T metamorphism, as occurs in the Curralinho Corridor at the Baixa Grande target in the northern part of the Araçuaí Pegmatite District (Figure 7-2).

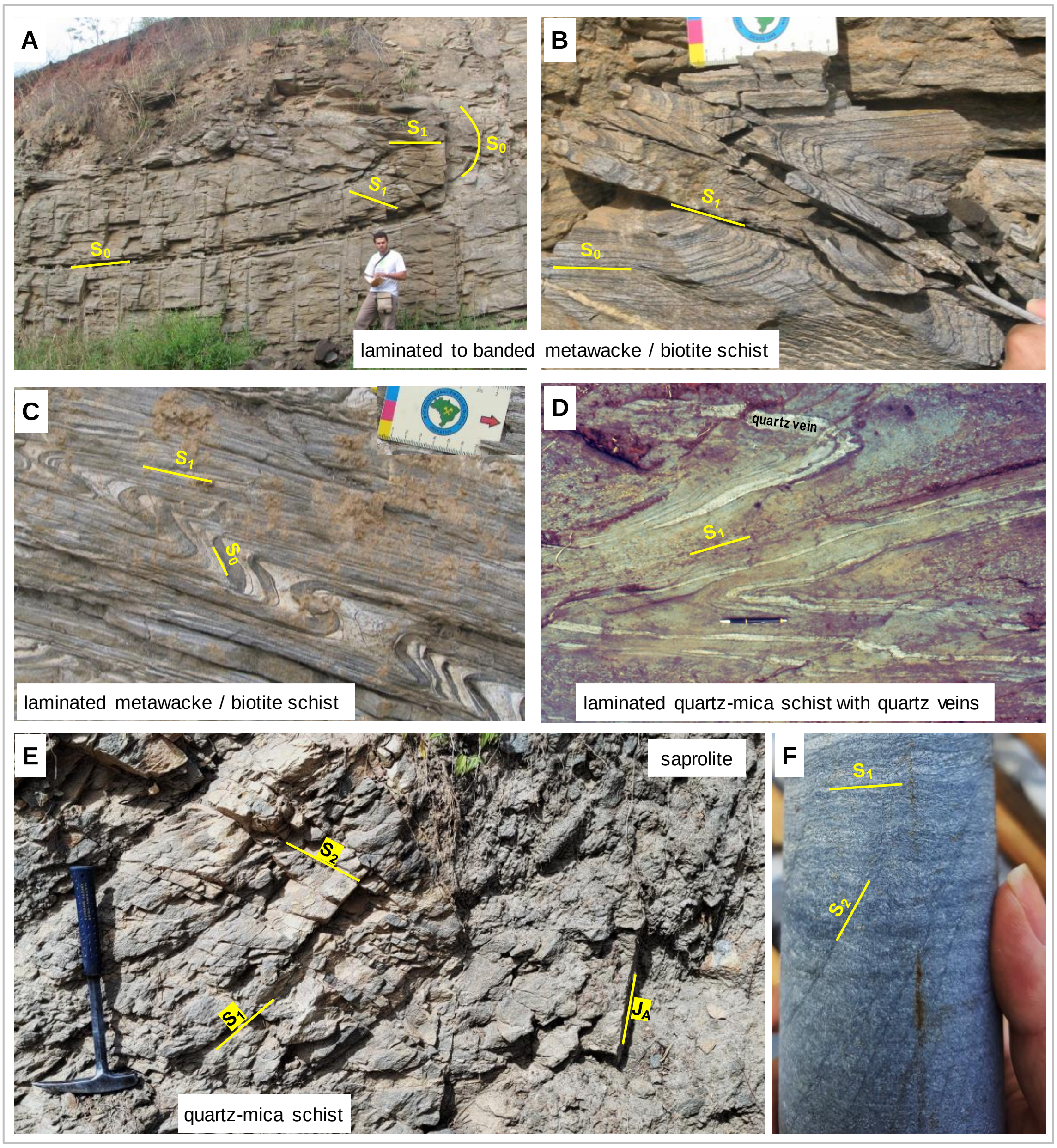


Figure 7-5: Photos from outcrops and a drill core showing structures of the deformation events D1 and D2 on the Salinas Formation in the Araçuaí Pegmatite District

Legend: (A and B) Large tight fold (A) with a hinge (B) showing the sedimentary layering (S0) cut by the low-angle dip to flat axial-plane S1 cleavage. C) Tight folds with limbs transposed by S1 foliation. D) Hinges of tight folds with metamorphic quartz veins in quartz-mica schist. E) Spaced cleavage S2 cutting the schistosity S1, and subvertical joints (JA) cutting across both S1 and S2 in the Bandeira area. F) S2 spaced foliation marked by recrystallized mica, cutting the S1 schistosity in a drill core sample from the Bandeira deposit.

Source: GE21, 2024.

The D2 deformation developed from the late collisional to the post-collisional stages of the Araçuaí Orogen, when increasing decompression conditions, imposed by the orogen gravitational collapse, gradually replaced the tangential D1 compressive stresses. In the Araçuaí Pegmatite District, the D2 deformation comprises mostly brittle structures, such as the S2 spaced cleavage, joint families, normal faults, and large open folds (flexures). The spacing between surfaces of the S2 cleavage ranges from less than one centimetre to decimetres (Figure 7-5). Locally, S2 may be very well developed in micaschists, becoming a tight crenulation cleavage to schistosity. The S2 spaced cleavage and other brittle structures, as being more open surfaces than the S1 schistosity, provided host surfaces for Li-rich pegmatites, generally the thicker ones, in the Itinga Pegmatite Field.

The latest Cambrian deformation event (DG) was caused by the intrusion of large volumes of S-type magmas that formed the G4 granites and cut across and disturbed the regional framework imprinted by the D1 and D2 deformations. The DG event deformed the regional structural trend of the host rocks around granitic plutons, forming radial fractures irradiating from the granitic plutons and imprinting ring-shaped fracture systems that reworked regional structures around the intrusions. All these DG structures can host late orogenic rare element pegmatites.

During emplacement and cooling, the G4 plutons caused contact metamorphism on their country rocks and released residual silicate melts that formed pegmatites that either crystallized within the parental granite or migrated outwards and were hosted by D1, D2 and DG structures of the Salinas Formation and other metasedimentary units. While barren and beryl-bearing pegmatites are found both within parental G4 granites and country rocks, the Li-bearing pegmatites have been only found in places rather far from (> 1 km) granite massifs, emplaced in the Salinas Formation and other metasedimentary units. The G4 batholith emplaced along the whole eastern boundary of the Araçuaí Pegmatite District is formed by multiple coalescent plutons and places an eastern limit for the occurrence of Li-bearing pegmatites.

Regionally, the deformational events formed large structures with distinct implications for the occurrence and structural control of pegmatites in the Araçuaí District, such as the Salinas Synclinorium, the Lagoa Nova Anticline, the Minas Novas-Araçuaí-Itinga Corridor, and the Curralinho Corridor (Figure 7-4).

The axial zone of the Salinas Synclinorium shows the best-preserved section of the Salinas Formation, comprising non-deformed to weakly deformed metawacke, metapelite and metaconglomerate, metamorphosed in the biotite and garnet zones of the low greenschist facies. This low-grade metasedimentary section reaches up to 2 km thick, with no evidence of pegmatite along the synclinorium keel. However, a Li-rich pegmatite cluster, including SRP bodies, was recently found to the east of the Salinas Synclinorium, along the andalusite-cordierite-bearing, low-pressure/high-temperature metamorphic zone of the Curralinho Pegmatite Field in the Baixa Grande target and surroundings (Figure 7-4).In the case of the Lagoa Nova Anticline, although there are LCT pegmatites emplaced along its structural surfaces, no SRP was yet found there, much probably due to the rather unfavourable pressure-temperature conditions of the regional and contact metamorphisms (between the medium PT (MP/MT) and intermediate PT (IP/IT) regimes).

The Minas Novas-Araçuaí-Itinga Corridor, in turn, plays a special role in the understanding of the structural control and the most favourable pressure-temperature conditions for the SRP occurrence in the Araçuaí Pegmatite District. That corridor has been characterized as a flower-shaped transpressive (during D1) to transtensive (during D2) structure (Pedrosa-Soares et al., 1993, 1996; Alkmim et al., 2006) with the S1 foliation dipping to SE in the NW flank, and to NW in the SE flank (Figure 7-4).The regional metamorphism associated with the S1 schistosity gradually increases from southwest to northeast along the corridor, reaching c. 3.5 kbar at c. 550 °C at the andalusite-cordierite zone in the Bananal river valley, where the contact metamorphism was imposed by G4 granitic intrusions also under relatively low-pressure conditions. All those tectono-metamorphic and magmatic features favourable to SRP occurrence characterize the Curralinho Pegmatite Field, similarly to the Itinga Pegmatite Field, where the most important spodumene deposits of Brazil are still located, such as the CBL and Sigma mines, and the Bandeira deposit of Lithium Ionic.

7.3 Local Geology

The ongoing field mapping and exploration in the Baixa Grande area have revealed the existence of two geological units: (i) the Salinas Formation, consisting of banded quartz-mica schists with lenses of calcsilicate rocks; and (ii) the G4 Supersuite, represented by an extensive pegmatite swarm, mainly comprising SRP and some barren pegmatites (Figure 7-6).

In the Baixa Grande target, the formerly known and the newly discovered spodumene-rich pegmatite (SRP) bodies have been grouped into distinct exploration sectors, named Oeste, Sobradinho, Cubo, Ju, and Noé sectors (Figure 7-6). These pegmatites share similar composition (all of them are SRP) and field relations, striking along NE/SW and dipping to the SE (Figure 7-6. a, b), except for the subvertical dip of the Noé Pegmatite (according to information of the early drilling stage Figure 7-6.c). Additionally, the SRP bodies tend to be open along strike and dip, with known lengths of hundreds of metres, thicknesses between 5-10 m, and downdip widths up to 250-300 m. Many already drilled SRP bodies are still open in length and width, which will certainly increase after further successful drilling campaigns.

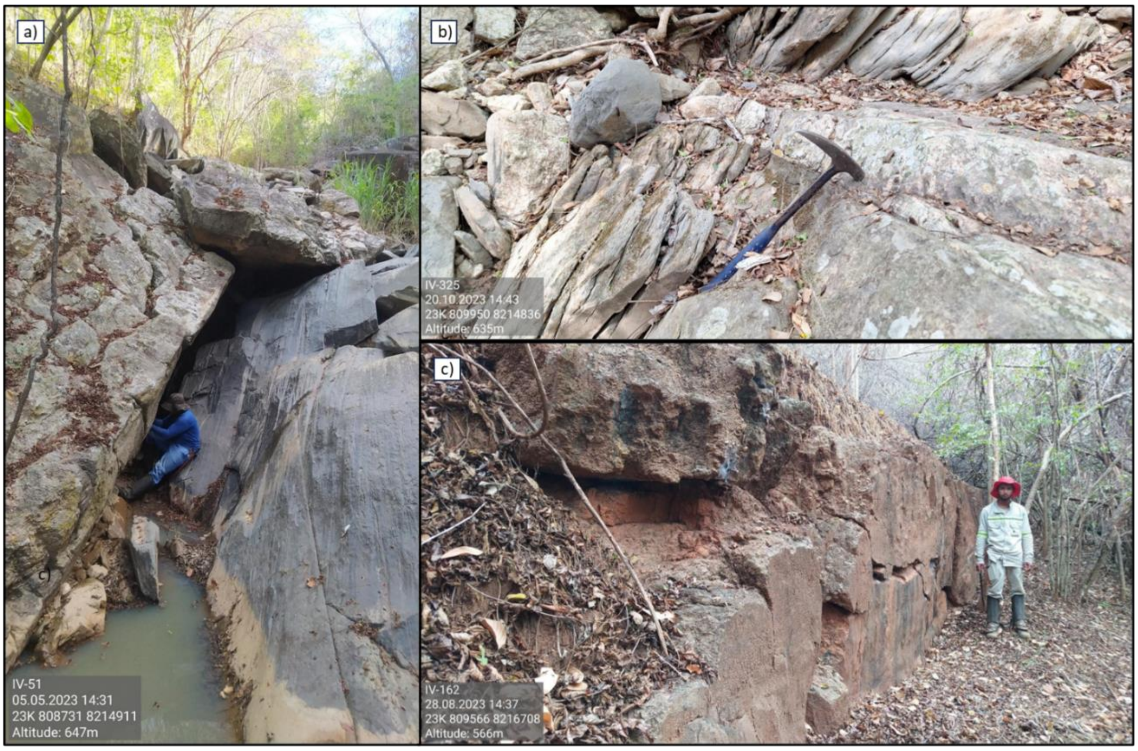


Figure 7-6: Spodumene-rich pegmatite and Pegmatite

Legend: a) Spodumene-rich pegmatite (SRP) hosted by a fracture concordant to the strike but discordant to the dip of the banded quartz-mica schist of the Salinas Formation in the Oeste sector. b) Decametre-thick pegmatite host by a fracture discordant to the S1 foliation of the Salinas schist, Oeste sector. c) Outcrop showing the subvertical Noé Pegmatite.

Source: GE21, 2024.

Owing to the significant weathering typical of tropical regions, the surface of the Baixa Grande area predominantly comprises recent residual soils resulting from the decomposition of the underlying rocks. The schist residual soil is an orange to brown fine-grained (silt to clay) eluvium. In contrast, the pegmatite soil is typically a whitish, fine to coarse-grained, powdered eluvium, with a composition dominated by quartz, kaolinized feldspar and altered muscovite. In cases of lithium mineralization, this soil can also contain fine-grained, partially to almost weathered spodumene fragments.

The Salinas Formation in the Baixa Grande area comprises an alternating package of quartz-rich and mica metasedimentary rocks. The quartz-rich rocks grade from massive to banded metawackes (metasandstones rich in a mica-bearing matrix), generally represented by quartz-rich schists and quartz-mica schists of gray colour and medium-grained texture. The quartz-rich rocks show more prominent fractures and a less penetrative S1 schistosity. The mica-rich rocks are mainly biotite schists and cordierite-biotite schists of dark gray colour and fine-to-medium-grained texture. The mica-rich schists show a more penetrative S1 schistosity and tend to be less fractured than the quartz-rich rocks (Fig. Calcsilicate rock (metamarl) intercalations are found in outcrops and drill cores (Figure 7-7).

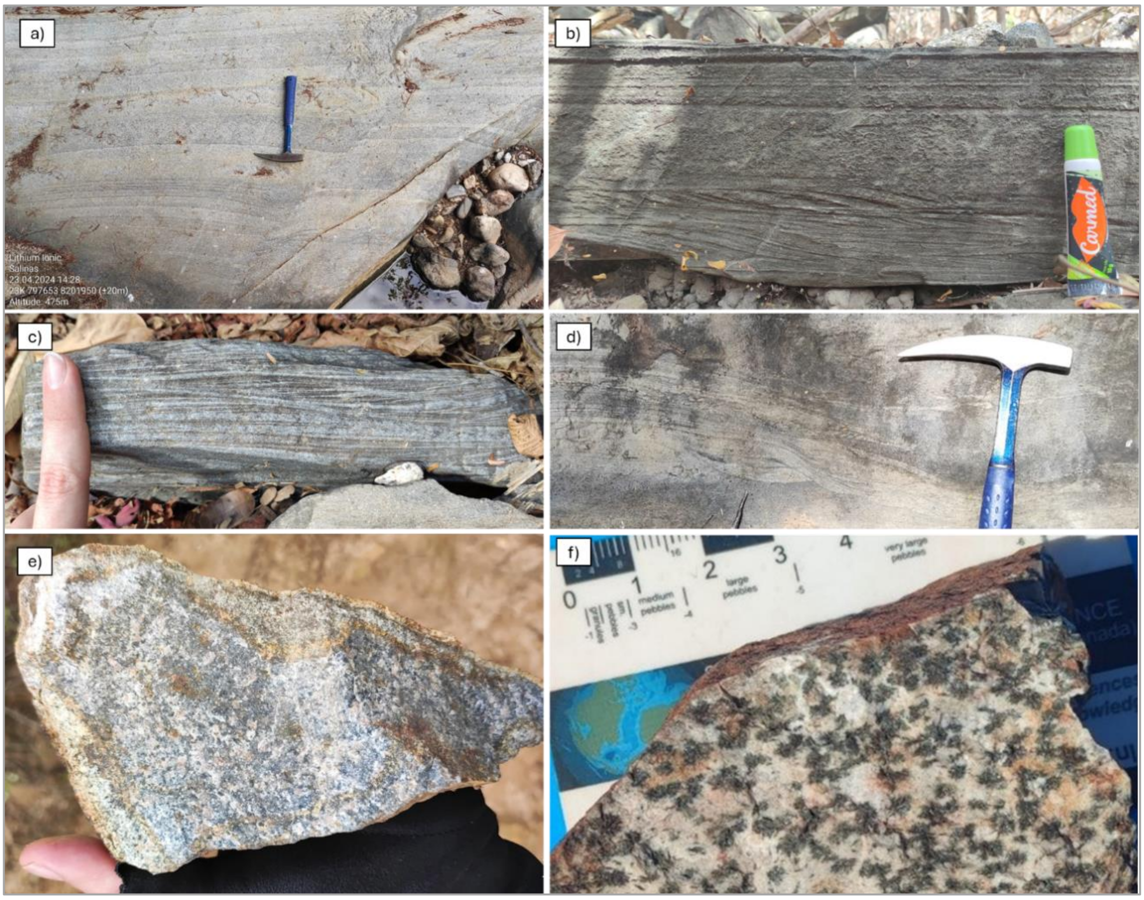


Figure 7-7: Rocks of the Salinas Formation observed in the Baixa Grande target

Legend: a) Qtz-bt schist with more quartz and fault; b), c) and d) cross-bedding on metawacke; e) and f) calcissilicatic blocks w/ grt, anf and chorl.

Source: GE21, 2024.

The mica-rich schists contain cordierite, which are index minerals of a metamorphic regime under relatively low-pressure and high-temperature conditions (Figure 7-8).

Figure 7-8: Cordierite on Qtz-Bt-Schist

Source: GE21, 2024.

The pegmatites in the Baixa Grande target constitute a swarm of several dikes with variable thicknesses (metric to decametric). They are normally discordant to the Salinas Formation schistosity and generally occur with NE strike, dipping SE. The nature of the contact between the pegmatite and the host rock is abrupt and sharp (Figure 7-9 a). Records of the pegmatites mineralized in lithium in the Baixa Grande area (i.e., SRP) can be observed in some exposed outcrops that show centimetric spodumene crystals, with whitish colour when weathered and replaced to clay minerals (kaolin). Those SRP dikes commonly show euhedral prismatic crystals ranging in size from centimetres to decimetres with a preferred orientation indicative of mineral growth orthogonal to the borders of the dike, the unidirectional solidification texture (UST) that characterizes temperature and chemical gradients inward the igneous body (Figure 7-10 a, c).

Based on the observations from these outcrops and the intercepts from the drill cores, it is possible to define the Baixa Grande mineralized bodies as non-zoned pegmatitic dikes with a simple and consistent mineralogy composed essentially of albite (32%), perthitic K-feldspar (28%), spodumene (15%), quartz (20%). Muscovite (3%) and other accessory phases (2%) are columbite-tantalite, cassiterite, apatite, garnet, pyrrhotite and malachite. The log analysis unveiled well-preserved spodumene crystals of variable sizes, typically centimetre-scale and disseminated throughout the rock. Notably, decimetre-sized crystals also occur (Figure 7-9 d).

The discordant SRP pegmatites in the Baixa Grande area are dominantly concordant in strike with the regional schistosity (S1) but discordant in dip with the host rocks. The best example is the pegmatite bodies observed in the southern region (Figure 7-6 a, Figure 7-9 a, b), where large discordant bodies dip towards the southeast. These bodies share an identical mineralogical composition, leading to the interpretation as both products of the same coeval magmatism.

Figure 7-9: Rocks of the Salinas Formation observed in the Baixa Grande target

Legend: a) Qtz-bt schist with more quartz and fault; b), c) and d) cross-bedding on metawacke; e) and f) calcissilicatic blocks w/ grt, anf and chorl.

Source: GE21, 2024.

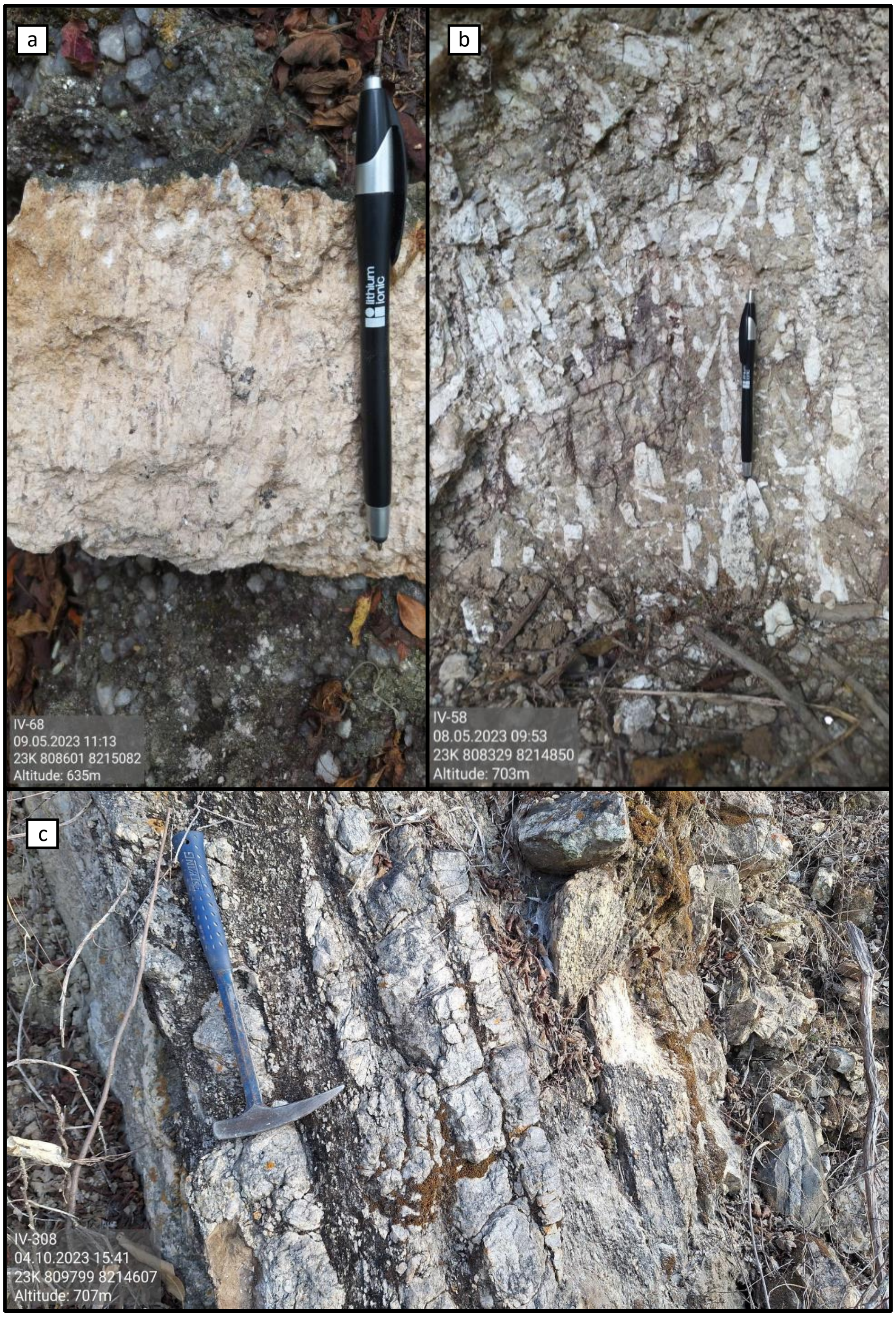


Figure 7-10: Spodumene-rich pegmatites (SRP) observed in the Baixa Grande target

Legend: a) pegmatite of ca. 15 cm thick discordant to the regional foliation (S1) of the host schists in the Oeste sector; b) weathered prismatic spodumene crystals that grew perpendicular to the contact in the Oeste sector; c) detail of the pegmatite of ca. 2 m with large crystals of spodumene in Cubo sector.

Source: GE21, 2024.

7.4 Mineralization Model

The Baixa Grande spodumene target is in the Eastern Brazilian Pegmatite Province (EBPP), which encompasses a very large region (about 150,000 km2) of Bahia, Minas Gerais, and Rio de Janeiro. Approximately 90% of the EBPP is in the eastern part of Minas Gerais state.

The Baixa Grande target consists of a series of stacked shallow southeast dipping pegmatitic intrusions with largely prevailing SRP. Individual intrusions range from metric to decametric. Lithium mineralization is related to discordant swarms of spodumene-bearing tabular pegmatites hosted by biotite-quartz schists. Macroscopically, spodumene can reach up to 28-30% of the pegmatite mass. The spodumene crystals, with microcline and albite contents, range from 30-35 vol%, with microcline content dominant over albite, quartz, and muscovite (that may reach up to 5-7% in volume) comprising over 90 vol% of the SRP bodies. The pale green-coloured spodumene crystals form elongates to roughly tabular laths, generally ranging from millimetric to centimetric in size. However, decimetric spodumene crystals have also been observed in outcrop and drill cores. The albite-microcline-quartz-rich matrix envelops spodumene crystals, and intergrowths of spodumene and quartz (squi), sometimes associated with muscovite, are common. Accessory minerals, such as columbite and tantalite, form in association with albite and quartz. Late-stage minerals include pyrrhotite and pyrite.

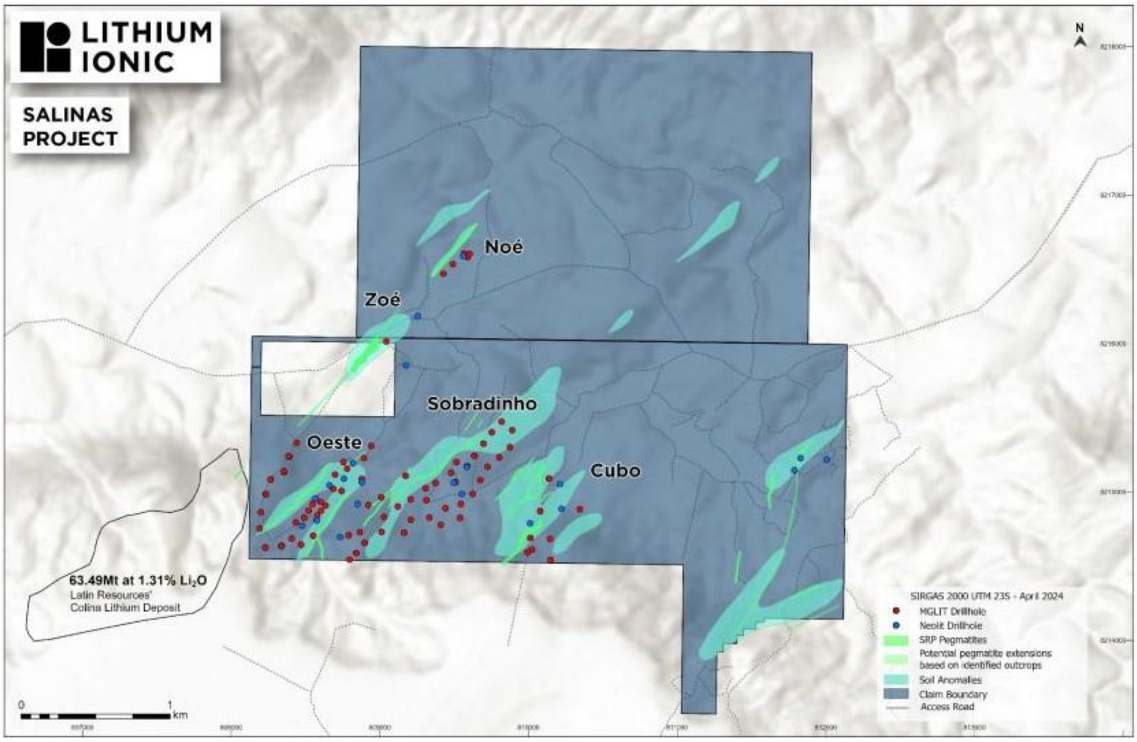


Figure 7-11: Location of the Baixa Grande target

Source: Lithium Ionic, April 2024.

The SRP orebodies of the Baixa Grande target are non-zoned but rather inequigranular pegmatites composed of spodumene (on average 23 vol%), perthitic microcline, albite, quartz, and muscovite, generally totalizing more than 95% of the whole orebody volume. Cassiterite, columbite-tantalite, cookeite, garnet, malaquite, and sulphide are accessory minerals.

The SRPs of the Baixa Grande target were emplaced in the Salinas Formation, which consists of banded cordierite-quartz-mica schist with intercalations of calcsilicate rock, recording P-T conditions suitable for SRP occurrence. In the Baixa Grande target, the main host surfaces for SRP bodies are the SE-dipping fractures of the Salinas Formation.

Following the regional NE-SW structural trend, the Baixa Grande target comprises SRP swarms of NE-striking orebodies, mostly discordant hosted by schist with NW-dipping schistosity (S1). The Baixa Grande pegmatites are tabular bodies with convex lens-shaped terminations, arranged in tight and staggered (en-échellon) swarms, locally with branched connections linking ore bodies, as in the Oeste sector pegmatites.

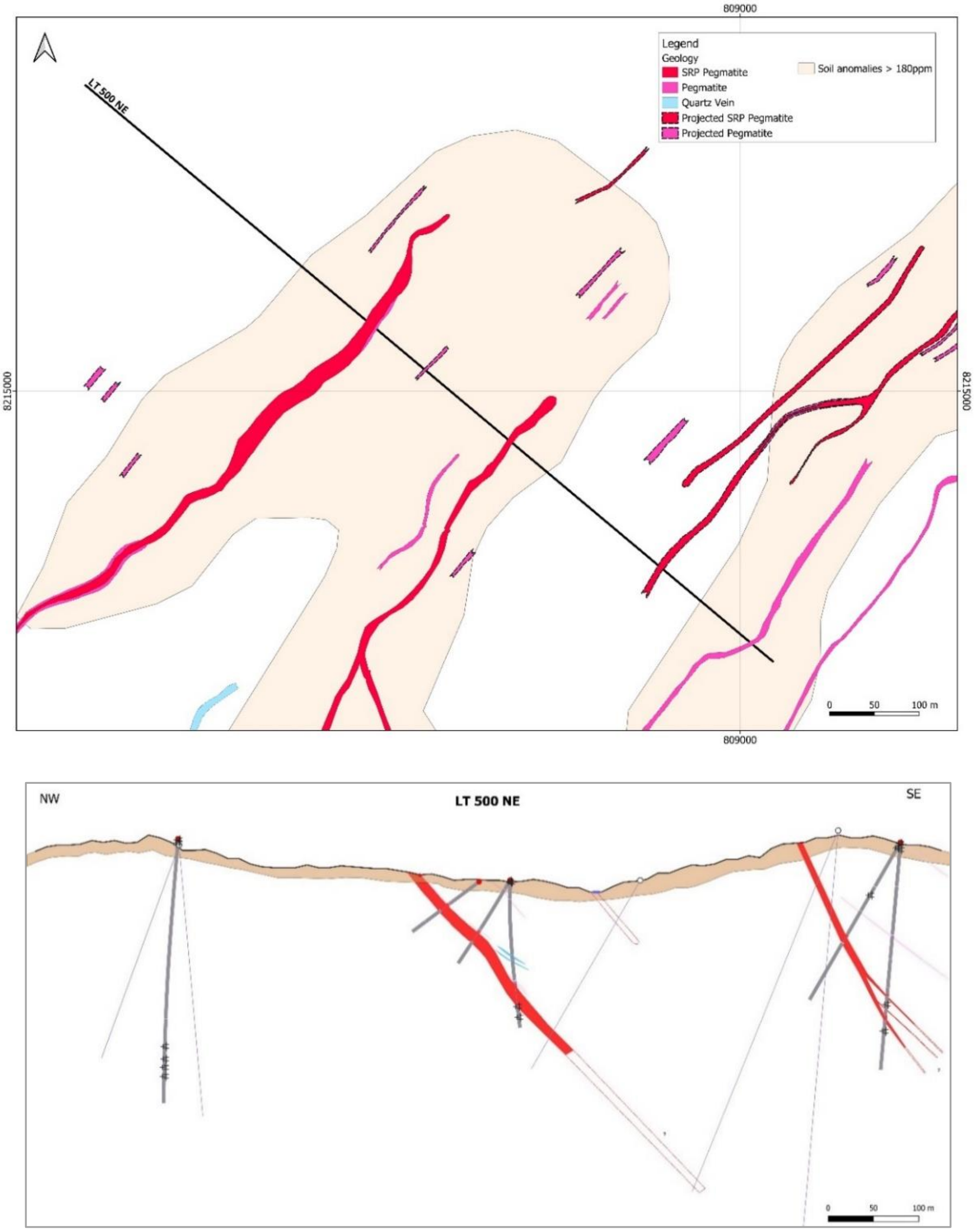


Figure 7-12: Spodumene-rich pegmatites shown in map

Legend: (a) and cross-section (b). Simplified map showing the distributions of Li anomalies in soil and drilled SRP bodies projected to the surface in the Baixa Grande target; b) Simplified cross-section showing the SRP swarm discovered in depth by Lithium Ionic after exploration work and Neolit exploration geological mapping.

Source: GE21, 2024.

The host rocks of SRP orebodies in the Baixa Grande target deposit are banded to laminated cordierite-quartz-mica schists, locally containing disseminated sulphide, with intercalations of massive calcsilicate rocks (Figure 7-13 b). Most cordierite forms ellipsoidal (egg-shaped) stretched porphyroblasts syn-kinematic to the regional S1 schistosity (Figure 7-13 a).

The banded to laminated quartz-mica schists represent metamorphosed sand-mud sediments, and the calcsilicate rocks are metamorphosed Ca-rich carbonate-mud sediments (marls). They show sharp contacts with the SRP orebodies that generally are discordant to the regional S1 foliation (often parallel to the compositional layering S0) (Figure 7-13 b). The host schists may be enriched in biotite, black to green tourmaline, and recrystallized cordierite along narrow (cm to dm) fringes of contact metamorphism imposed by pegmatites. Although the host schists may be anomalous in lithium content close to pegmatites, they show no Li-ore mineral.

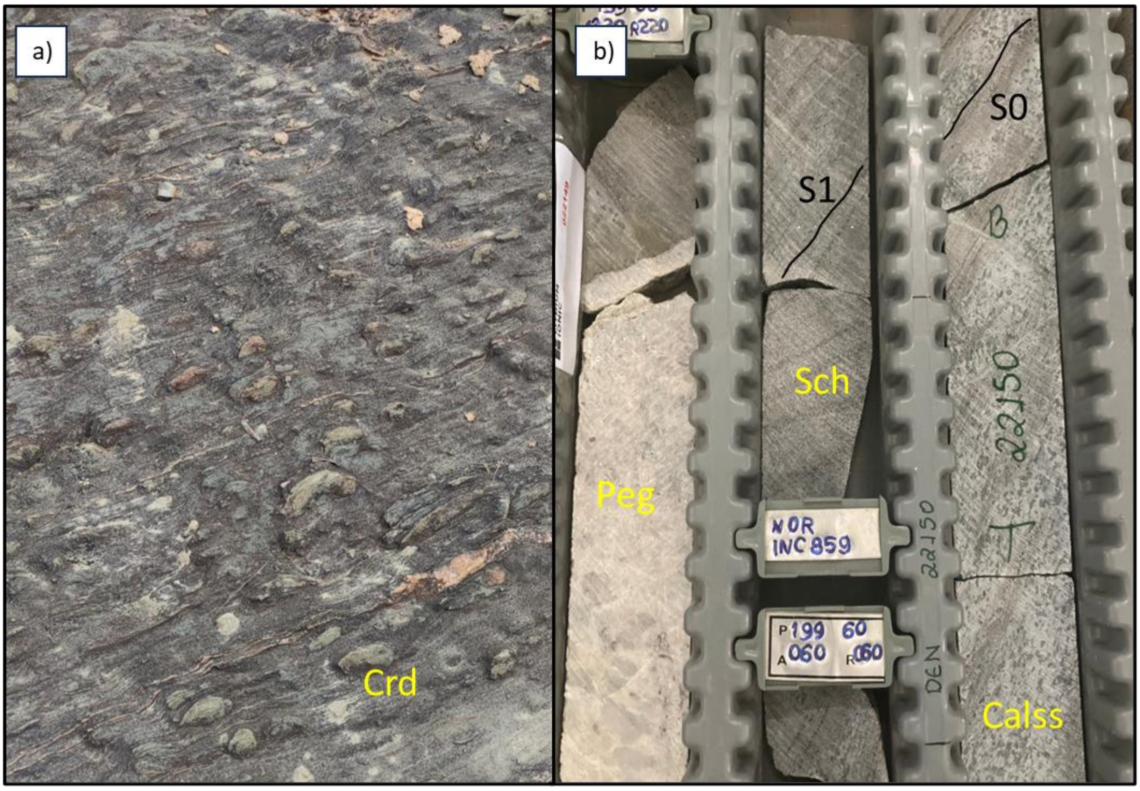


Figure 7-13: Photos from host rocks of spodumene-rich orebodies in the Baixa Grande target

Legend: a) Cordierite-quartz-mica schist rich in porphyroblasts (nodule spots) of egg-shaped (ellipsoidal) cordierite (Crd) crowded of biotite and/or quartz inclusions and coronated by biotite; b) Calcsilicate rock with porphyroblasts of amphibole and grossular garnet with S0 contact with mica schist; S1 schistosity showing the banded to laminated cordierite-quartz-mica schist.

Source: GE21, 2024.

The Baixa Grande spodumene orebodies show a rather simple mineralogical assemblage (Figure 7-14), consisting of medium – to coarse-grained spodumene crystals, reaching up to 35 vol% on average, within a fine – to medium-grained matrix mostly composed of albite, perthitic K-feldspar (microcline), quartz, muscovite, summing up to 95 vol% of the total matrix. The scarce accessory (mainly garnet and Nb-Sn-Ta oxides) and secondary minerals (cookeite, sericite, Fe-Mn oxides, clay minerals) generally comprise less than 5 vol%. Most spodumene crystals are free of hydrothermal and weathering alterations in drill cores and very poor in mineral inclusions.

The thicker SRP bodies may show a lithium-barren and thin marginal zone rich in albite, generally rather discontinuous, followed inwards by a thick internal zone rich in disseminated spodumene (although spodumene may also be more ROM in some domains than others along the internal zone). Owing to the upward migration of H_2O -rich fluids, flat-lying SRP sections close to the hanging-wall contact, as well as the top termination (head) of high-angle dip bodies, may show metasomatic units with miarolitic cavities that partially replaced the primary mineral assemblage. Many SRP bodies lack the external lithium-barren zone, showing disseminated spodumene throughout nearly the entire orebody.

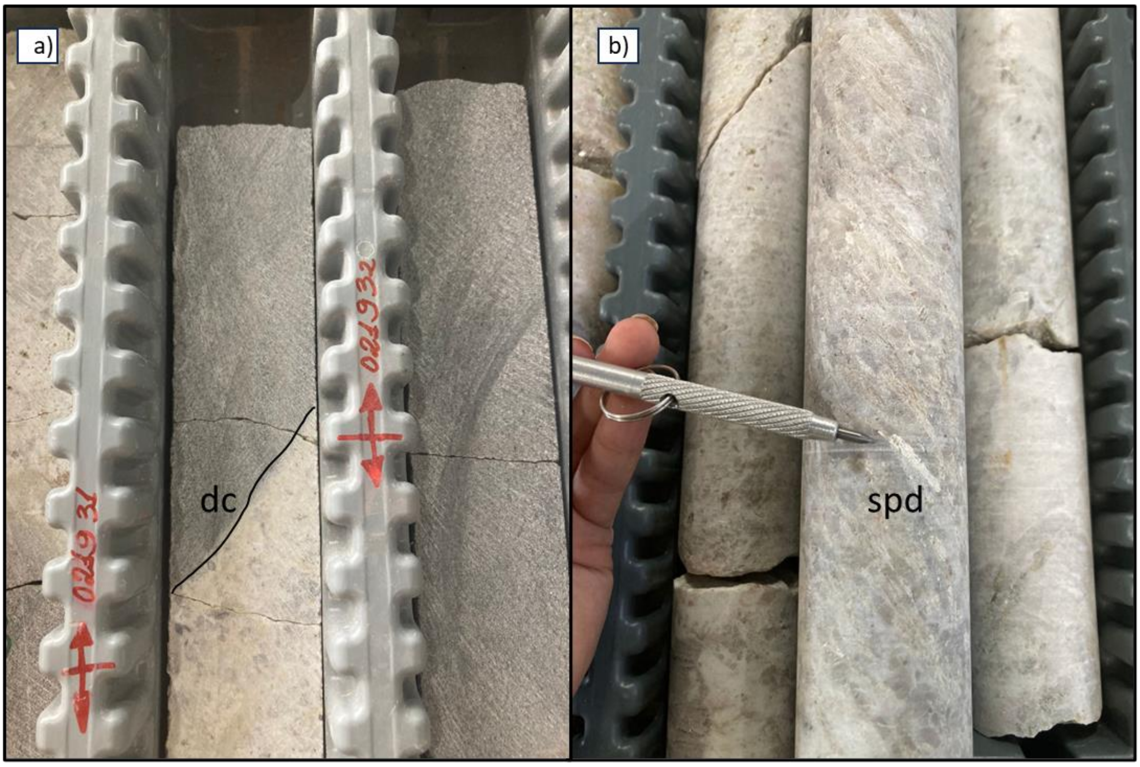


Figure 7-14: Drill core samples from spodumene-rich orebodies and their host rocks in the Baixa Grande target

Legend: a) Segment of a non-zoned SRP body with a Discordant Contact (dc) between pegmatite and quartz-mica schist; b) white spodumene laths disseminated in the quartz-albite-microcline-muscovite matrix.

Source: GE21, 2024.

8 DEPOSIT TYPES

According to the most accepted petrologic-metallogenetic classification of pegmatites, published by Cerný (1991) and updated by Cerný and Ercit (2005) and Cerný et al. (2012), all the spodumene-rich pegmatites (SRP) found within the Baixa Grande deposit belong to the rare element class, Li subclass, and albite-spodumene type.

Although generally included in the LCT (Lithium-Cesium-Tantalum) family, the non- to poorly zoned SRP found in the Baixa Grande deposit, as well as all the orebodies mined in CBL's Cachoeira Mine since the 1990s (Romeiro and Pedrosa-Soares, 2005), the Xuxa and other spodumene-rich deposits of Sigma Lithium (Sá, 1977; Delboni et al., 2023), and the Bandeira and Outro Lado deposits of Lithium Ionic, are rather poor both in Ta and Cs when compared with the complex zoned LCT pegmatites (e.g., Generosa, Jenipapo, Murundu, Urubu and others) found in the Araçuaí Pegmatite District (cf. Sá, 1977; Romeiro, 1998; Quéméneur and Lagache, 1999; Dias, 2015) and elsewhere (e.g., Cerný 1991; London, 2008; Cerný et al., 2012).

The SRP deposits consist of non-zoned to poorly zoned SRP with spodumene reaching up to 35 vol% on average, and the total modal content of spodumene, albite, K-feldspar, quartz, and white mica (muscovite and/or Li-rich mica) summing up more than 90 vol% of the whole body (Figure 8-1). Therefore, SRP bodies are very poor in accessory minerals, which are generally represented by Li-micas, Li-phosphates, Nb-Sn-Ta oxides, cookeite, carbonate and graphite. They are also poor in secondary (metasomatic) units due to their rather fluid-poor (anhydrous) nature. The SRP represented in drill core BGDD-23-025 is a typical unzoned pegmatite with spodumene crystals disseminated along almost the whole pegmatite body, except for the albite-rich borders and some sparse internal parts richer in coarse-grained K-feldspar (perthite) and quartz. Fine-grained spodumene occurs even in the thin and finer-grained (aplitic) domains that are occasionally found in the SRP bodies. The SRP bodies in the Baixa Grande target are very poor in accessory and alteration minerals, such as muscovite, garnet (spessartine), Nb-Sn-Ta oxides and phosphates, generally containing less than 5 vol% in total of those minerals if the SRP is well preserved from weathering (Figure 8-1).

As a corollary of the poorly to non-diversified mineralogy, the scarcity of rare elements, except for lithium, imposes constraints on the geochemical prospecting methods to search for spodumene-rich deposits. Conversely, the high Li content (1.4 wt% Li_2O on average) in SRP-type magmas promotes a significant decrease in the crystallization temperature and viscosity of the silicate melt, leading to the high mobility that allows such Li-rich magmas to crystallize as very large but relatively narrow SRP bodies, with hundreds to thousands of metres in length and width, but only decimetres to a few decametres in thickness.

Therefore, for prospection and exploration work related to spodumene-rich deposits, it is very important to distinguish between the non- to poorly zoned SRP (i.e., pegmatites of the albite-spodumene type; Figure 8-1) and the complex zoned LCT pegmatites.

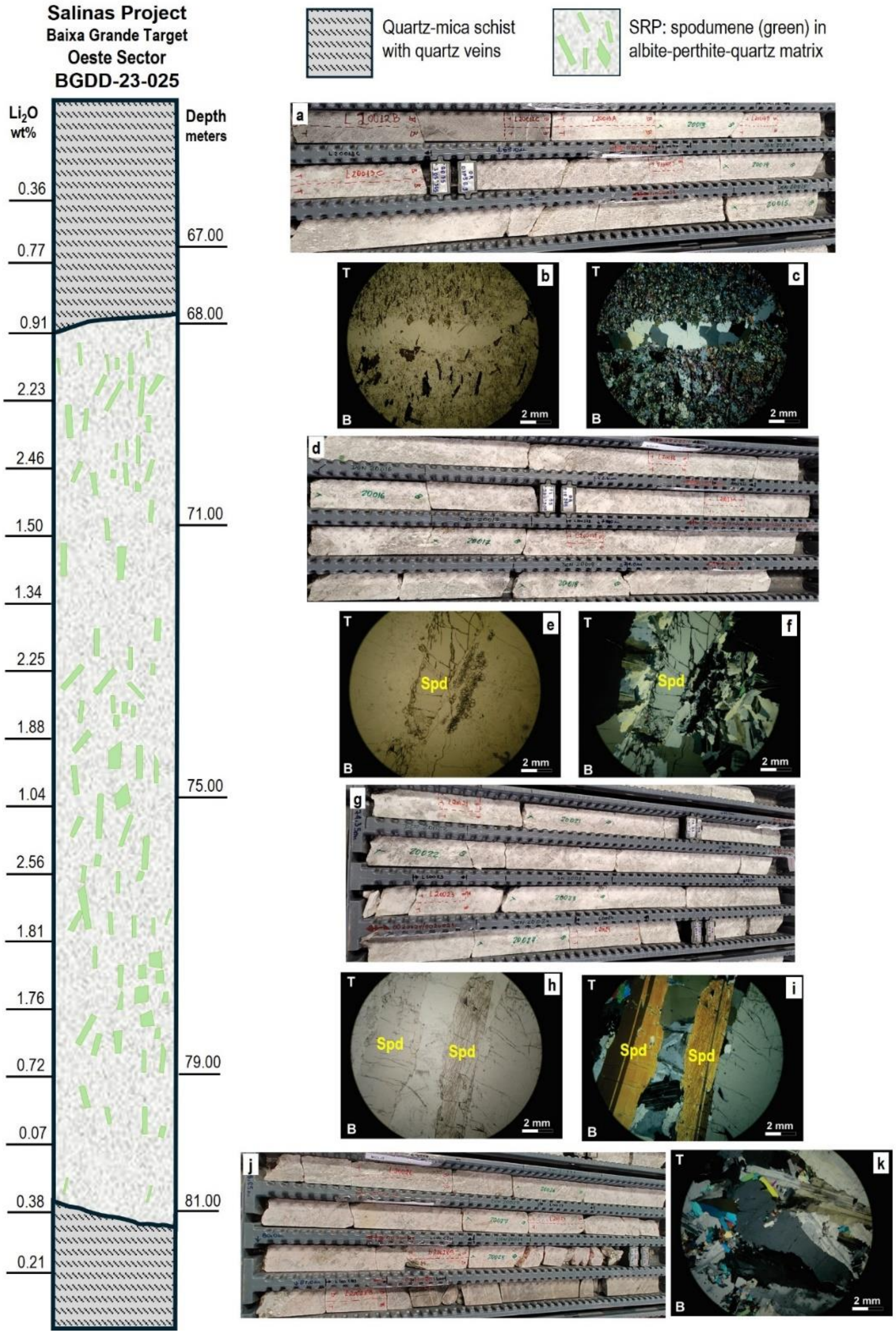


Figure 8-1: Typical intercept of a spodumene-rich pegmatite (SRP) in the Baixa Grande target

Legend: (a, d, g, and j are photos from drill core segments; b, e, and h are photomicrographs under non-polarized light; c, f, i, and k are photomicrographs under polarized light). The column-section shows spodumene crystals (green) disseminated in the SRP matrix, as well as a rather regular distribution of Li_2O content along the pegmatite, except for the spodumene-poor basal border rich in feldspars and quartz (a, d, g, j). The pegmatite contacts are sharp and discordant to the S1 schistosity of the host quartz-mica schist (a) that contains small quartz veins (b, c). Disseminated in a matrix composed of albite, K-feldspar, quartz, and scarce muscovite and garnet (e, f, h, i, k), the spodumene crystals (Spd in e, f, h, and i) are free to very poor in inclusions and/or alteration minerals.

Source: Macroscopic description (logging) and column drawing by Geologist Marianna Castro; thin section description by Geologist MSc Laura Wisniowski.

9 EXPLORATION

Fieldwork was conducted in the Baixa Grande target with an exploration approach encompassing chip rock sampling, soil sampling, a trench program, structural analysis and a drilling program (see Section 10, “Drilling”). These activities aim to achieve a more profound comprehension of the local geology and the identification of potential spodumene-rich pegmatites (SRP).

9.1 Chip Rock Sampling

The chip rock samples started to be collected during the Neolit exploration campaign, much earlier than the soil sampling campaign. The Baixa Grande target tenements, especially the south tenement, have a lot of pegmatite outcrops. Thus, the field mapping led to the recognition of pegmatite outcrops, fragments of pegmatite minerals dispersed on the surface and soils, and some old diggings and present-day artisanal mines for gemstones and columbite-tantalite (“garimpos” in Brazilian Portuguese).

Spodumene crystals were identified in pegmatites cropping out in the Cubo, Sobradinho, Oeste and Noé sectors. At the Ju sector, spodumene crystals were found in old diggings. The chip rock map (Figure 9-1) shows the location of each collected sample, with their respective lithium oxide content (Li_2O %), and the location of the pegmatite exposures that are mineralized or barren in spodumene.

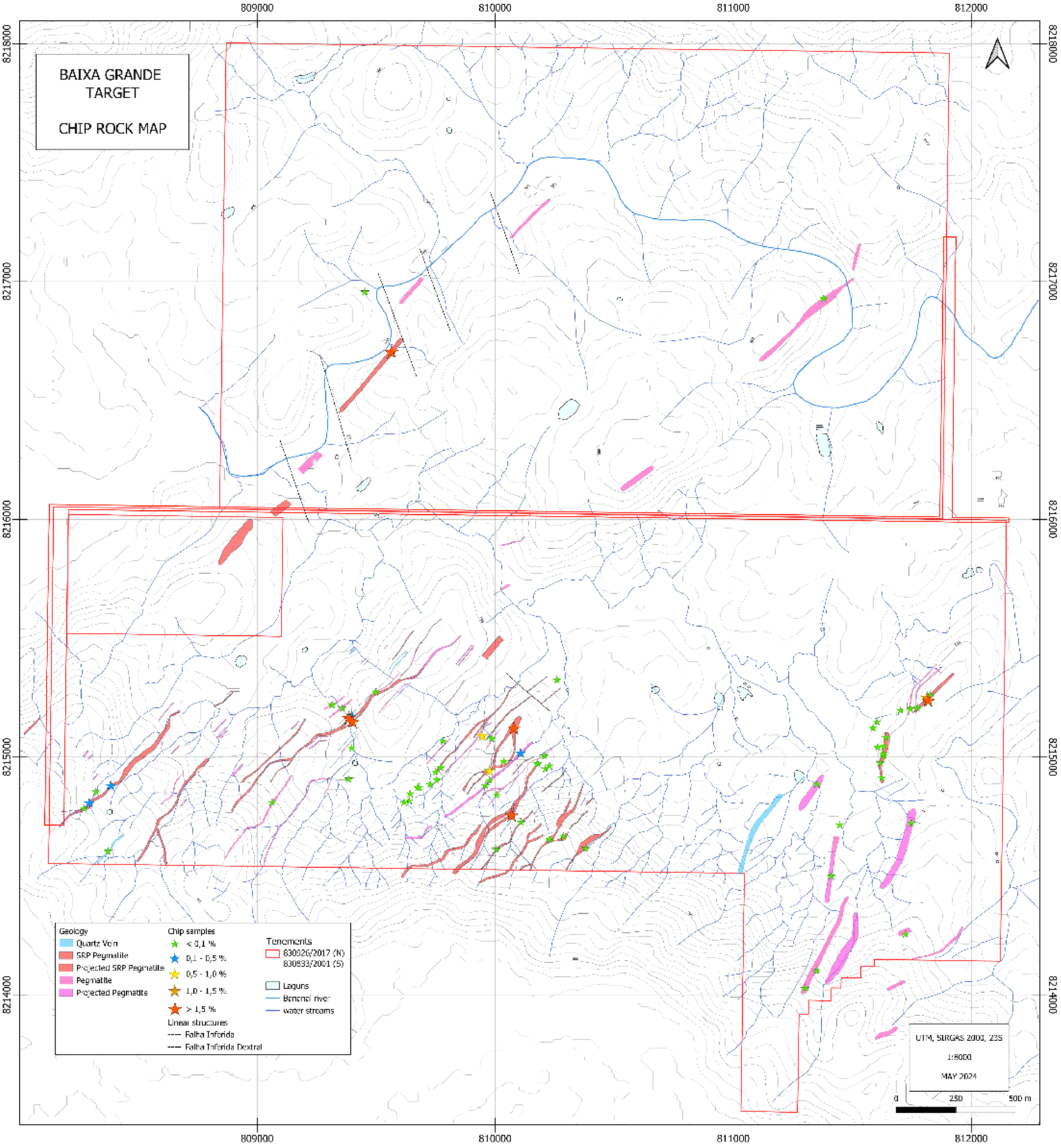


Figure 9-1: Chip rock map for the Baixa Grande target

Legend: the distribution of the collected samples and the regions where the pegmatites are exposed and inferred on the surface.

Source: GE21, 2024.

9.2 Soil Sampling Program

The soil program in the Baixa Grande target was conducted in two campaigns. The lines on both campaigns were oriented along the same azimuth N50W. The first survey had the lines spaced at regular intervals of 400 m. Within each of these lines, samples were collected every 20 m. The second survey was an infill campaign in the Oeste, Sobradinho, Cubo and Noé sectors. The lines were spaced at regular intervals of 200 m, and the samples were collected also every 20 m.

A total of 2,223 samples were collected in the Baixa Grande target, and the lithium content varied in both tenements from 10 ppm to 1,009 ppm.

Calculations based on the distribution of the results indicated a subdivision of the content as low grade (< 100 Li ppm), low to moderate grade (100-180 Li ppm), moderate to high grade (180-350 ppm), and high grade (> 350 ppm).

Based on the distribution of the results, it was possible to interpret at least ten moderates to high-grade anomalous zones that represent more favourable spots to prospect SRP (Figure 9-2). These anomalous regions are strongly oriented along the NE-SW direction, the same strike of the regional foliation and the mapped pegmatites in the Baixa Grande target.

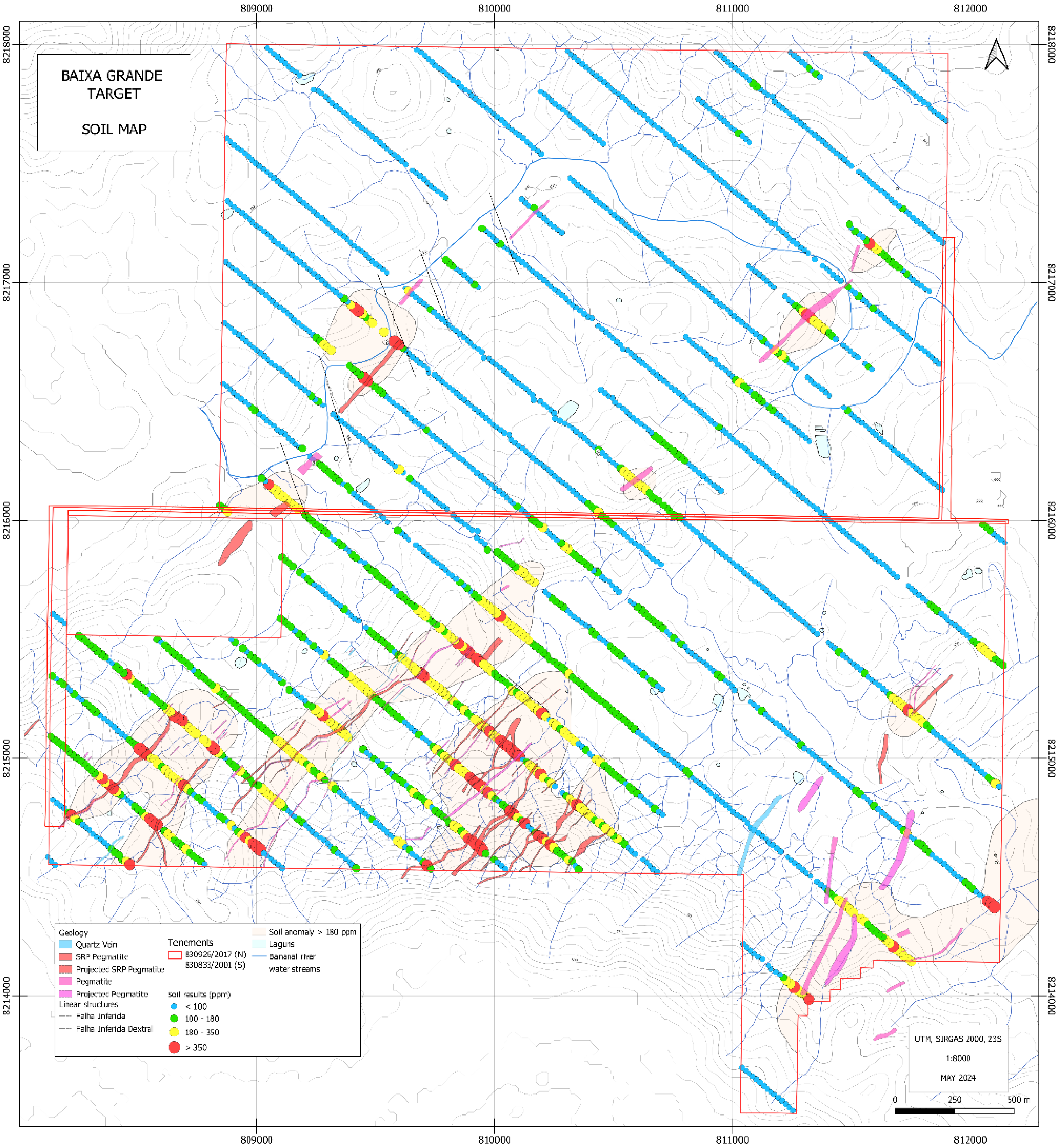


Figure 9-2: Soil geochemical map of the Baixa Grande target

Legend: The remarkable NE-SW anomalous trend is rather parallel to the NE-SW strike of the SRP.

Source: GE21, 2024.

9.3 Structural Analysis

Understanding the structural framework of the host rocks is crucial for prospecting pegmatites since the structures of country rocks host and control the migration of the silicate magmatic residues released from granitic intrusions or formed by partial melting of country rocks. Consequently, the structural framework and the rheology of host rocks determine the spatial distribution of both barren and SRP. It also influences their shapes and sizes in the Baixa Grande target. Regionally, the SRP of the Araçuaí District, including the Baixa Grande target and the whole Curralinho Pegmatite Field, are late igneous intrusions that passively hosted the structural framework of the Salinas Formation. However, some very late brittle structures may locally cut SRP. The rheology of the Salinas rocks determines the preferential host structure for pegmatites. Usually, pegmatites hosted in mica-rich schists are concordant to the S1 schistosity, such as in the Lithium Ionic’s Bandeira deposit. Meanwhile, in quartz-rich rocks (metawackes or quartz-rich schists), the brittle structures (e.g., the S2 spaced cleavage and fractures) are the preferential host structures, such as in the Baixa Grande target (Figure 9-4, Figure 9-5 and Figure 9-6). The structural map of the Baixa Grande target is shown in Figure 9-3.

The ductile and brittle structures that may host pegmatites in the Baixa Grande target were detailed mapped on the exposures of Salinas Formation rocks and pegmatites (Figure 9-4)

The prominent ductile structure is the regional foliation (S1), represented by a penetrative schistosity in Salinas mica-rich schists and a less penetrative ductile foliation in the quartz-rich rocks (metawackes and calcsilicate rocks). The regional foliation (S1) formed during the progressive tectono-metamorphic event related to the syn-collisional stage of the Araçuaí orogen. This dominant ductile structure, i.e., the regional schistosity (S1), exhibits a consistent orientation in both NE-trending strike and NW dip across the entire area. The regional foliation S1 contains the mineral and stretched lineation (L1) represented by aligned and elongated micas, and ellipsoidal cordierite porphyroblasts recrystallized along S1. The kinematic indicators related to both S1 and L1 regionally indicate tectonic transport from NE to SW during the D1 deformation phase (Santos et al., 2009).

In contrast, the brittle structures, represented by the spaced fracture cleavage (S2) and other fracture systems, cut the ductile structures and have been interpreted as related to the gravitational collapse of the orogen during the post-collisional phase (D2 deformation event) and, locally, also to the emplacement of granite intrusions (DG deformation event). The most important brittle structure hosting SRP in the Baixa Grande target is the NE-trending and SE-dipping, spaced fracture cleavage (S2; Figure 9-5 B, C; and Figure 9-6). The S2 spaced cleavage is, generally, the more penetrative brittle structure in the entire area (Figure 9-5 B, C). Other brittle structures are represented by fracture systems (or families), occasionally joints, that cut the S1 schistosity and other structures of the Salinas rocks (Figure 9-4, Figure 9-5 and Figure 9-6).

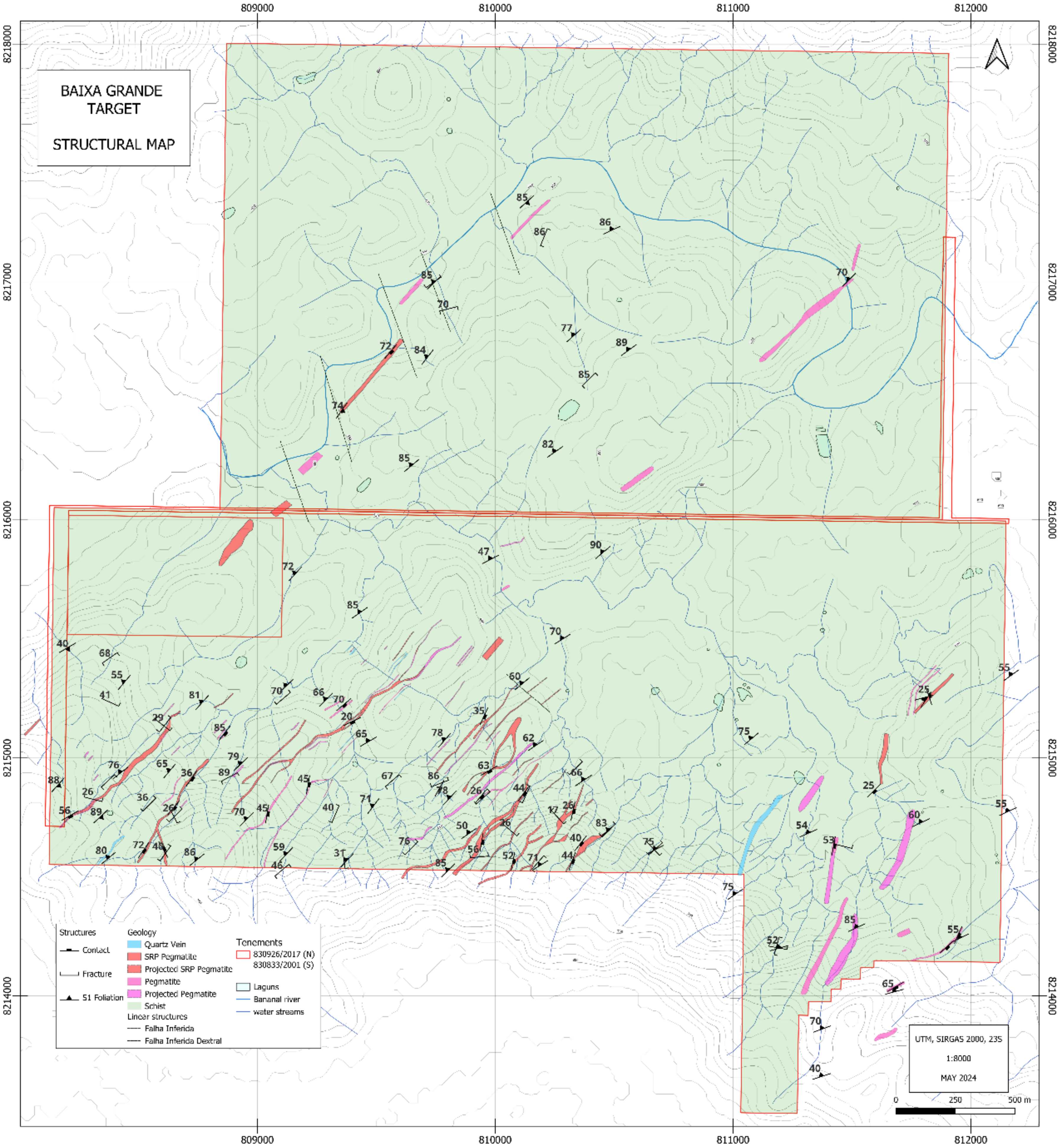


Figure 9-3: Structural map of the Baixa Grande target emphasizing the distribution of the mapped structures

Source: GE21, 2024

Some pegmatite bodies were projected based on the intercepts of drill holes and others were mapped on fieldwork. The attitude of each contact is based on fieldwork measures.

The brittle structures are represented by a series of fractures, occasionally joints, intersecting the S1 schistosity and are part of a conjugate system denoted F1 and F2 (Figure 9-6). Each structure was denoted as either F1 (fractures with a moderate to subvertical dip) or F2 (subvertical fractures). This conjugate system presence may vary depending on the outcrop. The F1 structure seems more pervasive in the entire region than the F2 (Figure 9-5 B). There is also another fracture system related to developing a cleavage fracture (secondary foliation S2), in which the SRP pegmatites are allocated (Figure 9-6). The S2 structure seems more pervasive in the entire region than all the other fractures (Figure 9-6 B, C).

Understanding the structural patterns in the host rocks is crucial for prospecting pegmatites since these structures serve as the surfaces that guide the migration of the silicate magmatic residues. Consequently, they profoundly influence the shape and continuity of the pegmatite bodies enriched in spodumene in the Baixa Grande target.

Figure 9-4: Quartz-biotite schist showing the regional schistosity

Legend: A) quartz-biotite schist showing the regional schistosity (S1) cut by fractures in the Baixa Grande target (UTM: 809,325 / 8,214,796); B) scheme highlighting the structures in the same outcrop (a): regional ductile foliation (schistosity S1) and a fracture conjugated system (F1, with moderate to subvertical dip; and F2, subvertical).

Source: GE21, 2024.

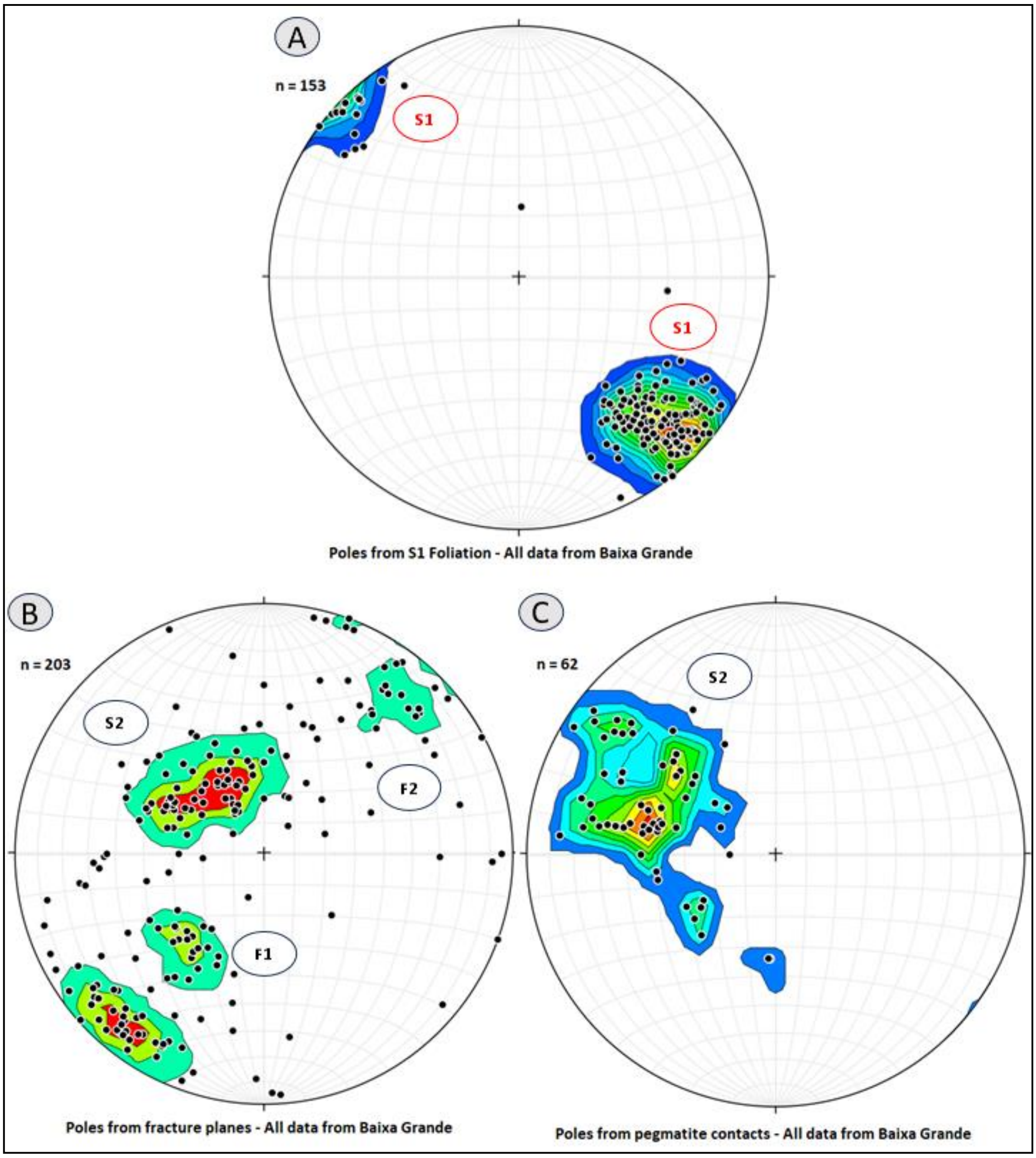


Figure 9-5: Stereograms that represent poles

Legend: A) schistosity (S1) planes in quartz-biotite schist in the Baixa Grande target; B) fracture conjugate system (F1 and F2) and the S2 spaced fracture cleavage that hosts the SRP in the Baixa Grande target; C) contacts of spodumene-rich and barren pegmatites hosted by the S2 spaced fracture cleavage mostly dipping to SE.

Source: GE21, 2024.

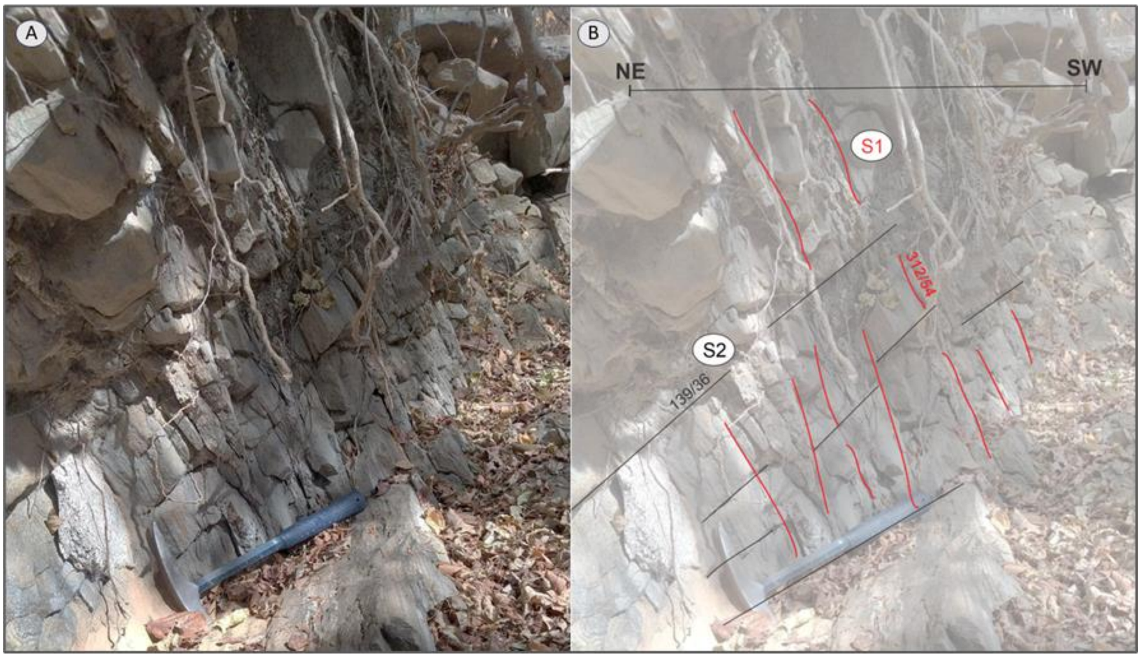


Figure 9-6: Quartz-biotite schist cut by distinct fractures in the Baixa Grande target

Legend: A) quartz-biotite schist cut by distinct fractures in the Baixa Grande target (UTM: 809,241 / 8,214,767); B) scheme highlighting the cross-cutting structures in the same outcrop (a): regional spaced fracture cleavage (S2 surfaces that hosts the SRP in the Baixa Grande target) and the quartz-biotite schist schistosity (S1).

Source: GE21, 2024.

10 DRILLING

10.1 Lithium Ionic Drilling Campaigns

Lithium Ionic successfully executed 167 diamond drill holes within the Baixa Grande Property, as detailed in Table 10-1, Table 10-2 and Figure 10-1.

All diamond drilling activities conducted within the Baixa Grande Property until December 2024 have been incorporated into the Mineral Resource estimation process. It is important to note that any drill holes completed in 2024 after this date and pending sample assay results have not been considered in the present Mineral Resource statement.

Table 10-1: Baixa Grande Drill Holes Summary

Campaigns	Drill Hole Count	Total Drilled (m)
2022	25	4,037.10
2023	104	25,103.35
2024	38	6,594.05
Total	167	35,734.50

Source: GE21, 2024.

10.2 Drill Type

In general terms, drilling operations were conducted using core techniques with NQ core size specifications, featuring a 47.6 mm core diameter, except for initial drilling runs crossing the weathering zone, which was drilled in HQ diameter (77.8 mm). The diameter was chosen to ensure the retrieval core sample is representative and adequate to mineralization type and deposit characteristics. The relation between core diameter and sample length is essential for accurate geological logging, adequate sample support, and sufficient material supply for future metallurgical testing.

10.3 Lithium Ionic Drilling Campaigns

Two Brazilian-based companies undertook the 2022-2024 Drill Program in Baixa Grande:

- Energold Drilling TM (https://energold.com/);
- GEOSOL Ltda (https://www.geosol.com.br).

10.4 Drill hole Surveying

A differential GPS surveyed all drill hole collars, and the driller placed the landmarks once the hole had been completed.

The drill holes were drilled with a plunge between 40º to 80º. Boreholes are oriented at approximated azimuths 320° and 145°, perpendicular to both general orientations of the pegmatite intrusions.

Lithium Ionic used the REFLEX GYRO-IQ™ downhole survey tool to obtain all downhole survey data.

According to The REFLEX GYRO-IQ™ website, the tool can maintain high accuracy of surveys. The device is connected to a cloud-based data hub, with a secure chain of custody and QA/QC application with real-time access to drilling survey data. Data transfer from field to office ensures minimum clerical errors related to processing and interpretation.

Lithium Ionic rented the downhole Reflex tool and completed all hole surveys at various locations and attitudes, where all necessary surveys were done in real time. Lithium Ionic staff had quick access to results through the cloud-based data hub. The design of the high-speed survey allowed Lithium Ionic field staff (including geologists and drillers) to obtain the following:

- Survey speeds of more than 150 m surveyed per minute.
- No significant issues with the accuracy of results, which was confirmed once holes were plotted on a 3D modelling software.
- Continuous survey data coming from the tool's north-seeking sensors assisted with GPS.

The Report's authors have no way of verifying the accuracy of the survey method; hence, the authors will rely on the statements and information provided by Lithium Ionic.

10.5 Core Orientation

Lithium Ionic began implementing REFLEX ACT III to establish core orientation for drill holes within the Baixa Grande Project after July 2023. As of the effective date, core orientation has been determined for four drill holes. Lithium Ionic has consistently integrated core orientation into its drilling program.

The Reflex core orientation system is based on recovering the core barrel orientation after a run. The Reflex orientation tool begins the orientation process by inserting the device in the core barrel using a specially made shoe. The tool records core barrel orientation each minute during a core run. The Reflex sleeve that attaches to the upper drill rod measures the direction of the top-of-hole using built-in accelerometers. Upon completion of a run, the drill string is left undisturbed while the communication tool, which is on the surface, counts down the time to the next reading; after this, the barrel can be withdrawn. On the surface, the tool is inserted into the end of the barrel, and the barrel is rotated until it indicates that the barrel is in the same up-down position as it was in the hole. The core, barrel, and shoe are then marked using a level to confirm verticality in the upward position. After the line is split, the top of the core marks is transferred along the length of the recovered core.

The Report's authors have no way to verify the accuracy of the orientation method; the authors will rely on the statements and information provided by Lithium Ionic.

10.6 Drill Core Chain of Custody

The drill cores are primarily stored in plastic or wooden boxes. By internal protocols, It was always transported by the drilling companies from the drilling site directly to the Lithium Ionic core shed in Salinas. Lithium Ionics's staff receives all core boxes delivered.

10.7 Core Logging Procedures

Lithium Ionic adheres to a core logging methodology, which geologists and technicians carry out.

In summary, the following procedures are conducted:

- Preparation of drilling site.
- Collar Drilling location.
- Verify and validate meterage and quality of drill cores in the field.
- Core survey drilling.
- Photographs of the core box.
- Detailed petrographic and geological structural core logging.
- Geotechnical logging (RQD, weathering types).
- Sample geochemistry logging programming and QA/QC procedures.
- Drill core density determinations for each programmed sample.
- Core sample preparation for geochemistry analysis.
- Logistics protocols for sending samples to the laboratory.

Each procedure has its respective sheet and is stored in digital form within Lithium Ionic customized database system.

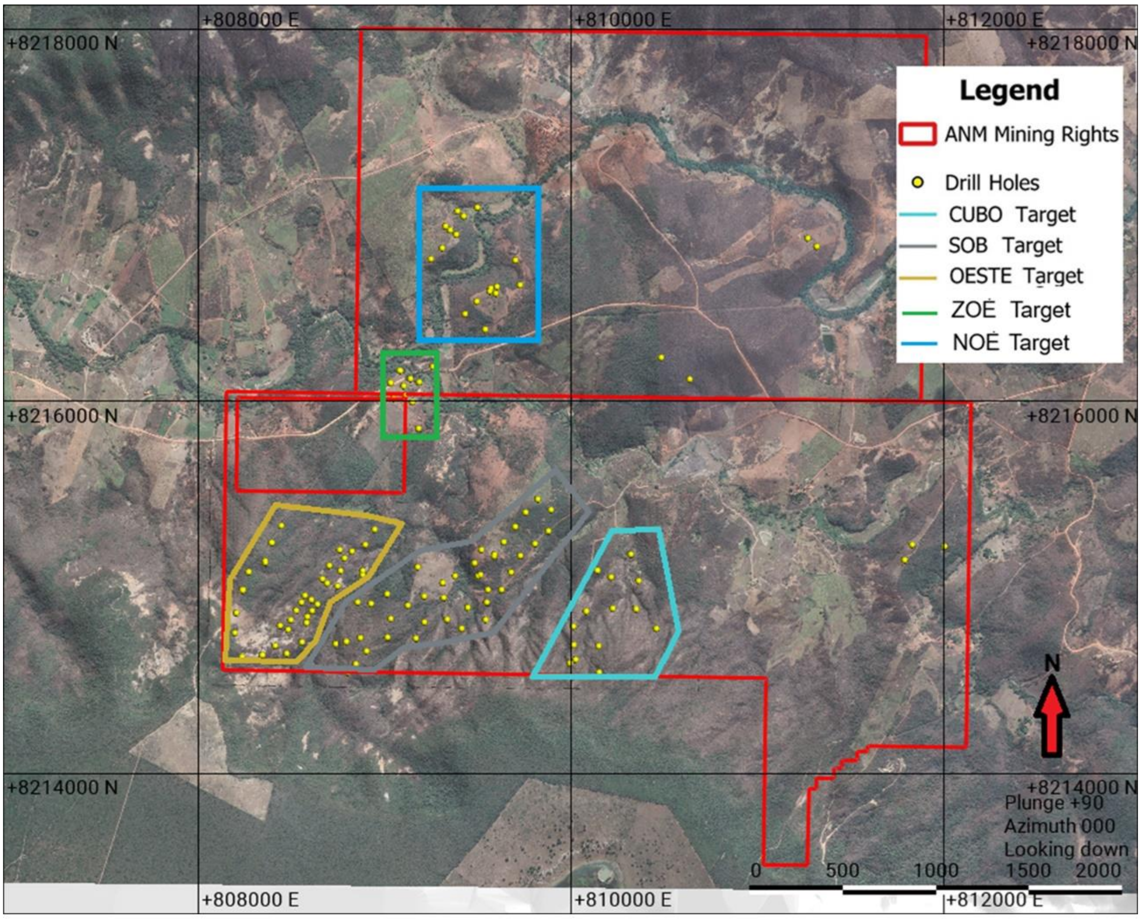


Figure 10-1: Lithium Ionic Drill Holes and Trenches

Source: GE21, 2024.

Table 10-2: Baixa Grande Drill Holes

Hole ID	X	Y	Z	Max Depth	Hole ID	X	Y	Z	Max Depth
BGDD-23-025	808686.84	8215021.92	645.10	106.3	BGDD-23-084	809208.11	8214951.49	618.44	160.25
BGDD-23-026	808580.18	8214841.85	685.34	180.85	BGDD-23-085	809308.03	8215024.38	606.53	151.7
BGDD-23-027	808687.30	8215021.51	645.08	161.7	BGDD-23-086	808789.65	8214707.82	726.31	150.75
BGDD-23-028	808580.57	8214841.58	685.52	229.7	BGDD-23-087	809120.31	8214902.53	634.88	150.95
BGDD-23-029	808601.85	8214933.25	684.61	138.4	BGDD-23-088	808923.20	8214912.44	645.30	323.05
BGDD-23-030	808634.58	8214908.91	680.13	166.25	BGDD-23-089	808865.49	8214727.97	724.95	411.6
BGDD-23-031	808742.63	8215006.59	635.70	230.75	BGDD-23-090	809889.68	8215416.78	616.98	200.45
BGDD-23-032	808520.67	8214875.27	694.23	117.05	BGDD-23-091	808234.87	8214987.10	746.70	220.2
BGDD-23-033	808635.10	8214908.51	680.13	270.1	BGDD-23-092	808605.82	8214873.72	681.85	110.6
BGDD-23-034	808698.73	8215116.86	631.83	123.15	BGDD-23-093	808231.62	8214986.61	746.75	260
BGDD-23-035	808434.64	8214794.03	728.09	379.75	BGDD-23-094	808923.11	8214911.41	645.37	443.7
BGDD-23-036	808754.90	8215201.34	615.03	146.1	BGDD-23-095	808548.69	8214918.95	687.28	73.55
BGDD-23-037	808551.11	8214705.19	721.25	368.7	BGDD-23-096	809028.40	8214831.38	664.66	432
BGDD-23-038	808780.49	8215156.46	615.72	186.35	BGDD-23-097	808491.22	8214825.09	711.14	100.4
BGDD-23-039	808408.15	8214686.42	740.36	250.7	BGDD-23-098	808235.08	8214984.92	746.75	300.1
BGDD-23-040	808339.54	8214636.36	750.01	244.85	BGDD-23-099	808491.91	8214824.35	711.18	399.2
BGDD-23-041	808891.77	8215229.23	605.84	166.3	BGDD-23-100	809011.32	8214731.68	690.70	198.9
BGDD-23-042	808469.39	8214644.73	734.56	310.15	BGDD-23-101	808878.49	8215088.39	610.74	210.55
BGDD-23-043	808942.25	8215310.89	606.67	162.7	BGDD-23-102	810022.56	8214611.77	694.77	264.4
BGDD-23-044	809173.90	8215108.55	624.11	424.6	BGDD-23-103	809011.81	8214731.01	690.87	250.45
BGDD-23-045	809510.81	8215066.99	618.67	144.2	BGDD-23-104	808354.86	8215133.46	719.74	280.45
BGDD-23-046	808340.40	8214635.82	750.23	310.05	BGDD-23-105	809163.67	8214725.75	646.59	220.25
BGDD-23-047	808470.12	8214644.17	734.69	436.05	BGDD-23-106	808898.34	8214657.45	734.47	220.45
BGDD-23-048	809586.32	8215175.66	642.10	232.5	BGDD-23-107	809992.21	8214593.07	701.53	129.95
BGDD-23-049	809623.77	8214987.17	604.83	291.45	BGDD-23-108	808354.47	8215133.85	719.76	240
BGDD-23-050	808336.96	8214636.00	750.46	336.8	BGDD-23-109	810021.95	8214611.73	694.73	170.5
BGDD-23-051	809635.37	8215243.71	630.82	252.2	BGDD-23-110	808898.94	8214657.01	734.50	253.95
BGDD-23-052	809675.16	8215080.41	608.34	175	BGDD-23-111	809209.20	8214812.83	628.50	220.5
BGDD-23-053	809636.12	8215243.09	630.93	190	BGDD-23-112	808354.00	8215141.00	710.00	282.2
BGDD-23-054	808552.27	8214705.58	721.32	418.9	BGDD-23-113	809992.48	8214591.86	701.64	162.45
BGDD-23-055	808339.22	8214637.42	750.28	249.5	BGDD-23-114	808840.94	8214588.29	751.74	251
BGDD-23-056	809724.79	8215169.48	608.36	205.2	BGDD-23-115	810011.99	8214690.28	672.81	81.75
BGDD-23-057	809697.03	8215325.69	627.55	170.25	BGDD-23-116	809008.81	8214963.61	635.80	341.15
BGDD-23-058	809803.41	8215233.79	601.25	227.55	BGDD-23-117	810147.88	8214543.46	719.29	300.5
BGDD-23-059	809697.80	8215324.99	627.54	160.8	BGDD-23-118	810011.38	8214690.03	672.88	161.1
BGDD-23-060	809875.44	8215302.39	597.25	201.25	BGDD-23-119	810079.20	8214870.27	626.20	180.3
BGDD-23-061	808339.36	8214635.26	750.32	250.6	BGDD-23-120	808841.52	8214587.80	751.68	313.3
BGDD-23-062	809753.33	8215402.73	635.69	182.9	BGDD-23-121	809009.57	8214964.05	635.71	371.2
BGDD-23-063	808233.58	8214983.69	746.60	480.1	BGDD-23-122	810078.97	8214872.48	626.01	280.35
SLCU-D001	810137.00	8215091.00	591.00	123.4	BGDD-23-123	808797.63	8214544.42	758.18	290.3
SLCU-D001B	810140.09	8215090.41	600.12	35.9	BGDD-23-124	810145.27	8214684.25	685.21	330.1
SLCU-D002	810212.01	8215054.53	590.71	170	BGDD-23-125	810346.21	8214884.19	605.74	350.4
SLCU-D003	810221.20	8214886.81	600.90	280.55	BGDD-23-126	809566.43	8216605.68	597.38	150.65
SLCU-D011	810009.98	8214789.83	647.32	280.6	BGDD-23-127	809490.84	8216535.06	596.26	160.15
SLJU-D007	811788.87	8215146.59	623.02	76.95	BGDD-23-128	809819.02	8215473.35	633.36	175.8
SLJU-D008	811788.74	8215147.07	623.02	115.85	BGDD-24-129	809593.42	8216578.49	589.54	248.95
SLJU-D009	812004.13	8215220.02	608.94	136.85	BGDD-24-130	809427.86	8216467.95	567.67	140.9
SLJU-D010	811829.56	8215229.05	620.68	78.15	BGDD-24-131	809044.14	8216013.44	561.61	124.1
SLOE-D012	808477.46	8214772.52	719.16	153.1	BGDD-24-132	808387.80	8215240.55	680.31	300
SLOE-D013	808575.84	8214809.71	696.43	172.7	BGDD-24-133	809044.58	8216013.07	561.63	110.95
SLOE-D014	808661.61	8215044.84	643.46	90.4	BGDD-24-134	809599.00	8216614.11	585.44	250.35
SLOE-D015	808567.39	8214955.67	675.01	96.2	BGDD-24-135	809428.11	8216467.83	567.66	211.9
SLOE-D016	808820.12	8215193.11	605.69	127.6	BGDD-24-138	810634.93	8216117.94	632.03	200.9
SLOE-D018	808850.64	8214919.50	649.87	262.8	BGDD-24-136	810347.50	8214882.60	595.04	350.75
SLOE-D019	808733.29	8214696.05	708.32	300	BGDD-24-139	810360.39	8215034.70	574.61	255.1
SLOE-D020	808576.86	8214808.90	696.37	298.85	BGDD-24-141	810318.44	8215177.24	561.67	281.1
SLOE-D021	808878.31	8215065.85	614.44	193.8	BGDD-24-143	810455.51	8214778.20	621.65	419.4
SLOE-D022	808758.95	8215088.90	618.66	130.4	BGDD-24-137	809535.95	8216384.76	564.58	320.6
SLSB-D004	809498.42	8215061.54	614.77	85.8	BGDD-24-140	809098.46	8216081.17	548.15	171.45
SLSB-D005	809551.13	8214986.68	607.15	223.8	BGDD-24-142	809029.44	8216096.50	551.50	122.45
SLSB-D006	809584.55	8215167.84	641.73	93.35	BGDD-24-145	810481.46	8216233.97	647.15	200.15
SLZO-D017	809177.83	8215852.65	567.47	210.4	BGDD-24-144	809698.27	8216756.57	576.73	182.05
SLZO-D023	809255.16	8216184.97	554.06	75.2	BGDD-24-146	809348.23	8216918.24	581.41	200.85
SLZO-D024	809560.97	8216590.25	598.85	224.35	BGDD-24-148	809380.62	8216894.35	588.76	70.95
BGDD-23-064	809544.87	8214919.32	619.90	253.6	BGDD-24-149	809420.35	8216992.94	557.71	200.55
BGDD-23-065	809753.95	8215402.13	635.69	204.75	BGDD-24-151	809723.22	8216623.22	600.33	330.1
BGDD-23-066	809442.51	8214890.86	606.60	166.6	BGDD-24-152	809494.30	8217039.97	556.93	217.2
BGDD-23-067	809331.95	8214827.63	617.56	206.6	BGDD-24-153	809305.34	8216821.92	596.95	101.25

Hole ID	X	Y	Z	Max Depth
BGDD-23-068	808390.73	8215239.27	690.94	290.85
BGDD-23-069	809409.42	8214778.59	626.89	303.4
BGDD-23-070	808229.57	8214626.19	767.58	203.5
BGDD-23-071	808266.36	8215082.89	734.00	260.2
BGDD-23-072	808440.80	8215330.78	666.51	379.95
BGDD-23-073	809538.61	8214825.92	627.99	252.9
BGDD-23-074	808230.18	8214625.62	767.51	257.75
BGDD-23-075	808265.65	8215083.70	733.90	250
BGDD-23-076	809312.89	8214944.29	600.33	202.7
BGDD-23-077	808199.64	8214862.77	763.15	410.95
BGDD-23-078	808790.72	8214708.78	726.16	356.15
BGDD-23-079	809374.27	8215060.71	595.38	151.05
BGDD-23-080	808264.55	8215082.57	734.20	250
BGDD-23-081	809516.08	8215201.50	637.89	180.2
BGDD-23-082	808191.08	8214755.10	766.75	380.4
BGDD-23-083	809478.84	8215130.10	622.99	130.5
BGDD-24-154	809244.65	8216763.13	588.68	100.5
BGDD-24-155	809323.06	8216939.01	577.52	232.05
BGDD-24-160	809387.42	8217019.63	558.41	249.2
BGDD-24-147	809076.72	8216165.38	551.27	102.2
BGDD-24-150	809134.48	8216120.46	553.05	60.05
BGDD-24-150A	809134.21	8216119.55	553.05	26.95
BGDD-24-156	809105.97	8216033.11	566.32	61.15
BGDD-24-157	809144.87	8215996.32	566.70	99.95
BGDD-24-158	809145.48	8215996.12	566.64	66.85
BGDD-24-162	808981.00	8216028.00	574.00	87
BGDD-24-163	809182.00	8216102.00	563.00	44.95
BGDD-24-164	809027.00	8216099.00	566.00	80.05
BGDD-24-165	809081.00	8216163.00	552.00	80.15
BGDD-24-159	811269.10	8216874.08	607.17	180.7
BGDD-24-161	811317.02	8216829.98	601.64	110.3

Source: GE21, 2024.

10.8 Drilling Intercepts Results

Drill spacing typically ranges from 50 m to 150 m, with narrower spacing observed in the central portion of the drill pattern and wider spacing towards the pattern's edges. The mineralization intercepts vary in thickness, ranging from approximately 85% of the true width to nearly the true width of the mineralization.

The average pegmatite intersection spans from 0.3 m to 53 m, with an average true thickness of about 5 m. In total, 165 mineralized intercepts from diamond drill holes (DDH) were utilized to model the 18 mineralized solids within the Baixa Grande Project. Each solid was assigned a numerical code in the tag column.

Table 10-3 presents a list of the mineralized intervals from Baixa Grande drill holes that were incorporated into the 3D modeling of the mineralized solids (Figure 10-2 and Figure 10-3).

Table 10-3: Drill Holes mineralized intervals intercepted by the grade shell model

Hole	From	To	Li_2O	Zone	holeid	From	To	Li_2O	Zone
BGDD-23-122	90.59	97.59	1.01	CUBO01	BGDD-23-125	259.95	277.12	0.60	CUBO04
BGDD-23-122	99.59	105.77	1.45	CUBO03	BGDD-24-141	183.17	190.17	0.77	
BGDD-23-102	65.94	89.24	0.83	CUBO05	BGDD-23-025	68.20	80.20	1.60	OESTE01
BGDD-23-107	76.08	87.99	1.51		BGDD-23-027	113.89	137.93	0.85	
BGDD-23-109	108.26	144.46	0.96		BGDD-23-029	61.94	76.94	1.09	
BGDD-23-113	106.51	124.24	0.93		BGDD-23-030	94.16	104.16	1.34	
BGDD-23-115	26.89	34.35	0.15		BGDD-23-032	40.38	56.38	1.38	
BGDD-23-115	34.95	44.95	1.36		SLOE-D013	97.70	108.52	1.59	
BGDD-23-117	194.30	205.30	0.98		SLOE-D014	43.84	55.20	1.53	
BGDD-23-118	26.02	79.22	0.94		SLOE-D015	36.60	50.36	1.22	
BGDD-23-124	114.00	123.60	0.78		SLOE-D018	235.80	253.00	1.01	
BGDD-24-136	257.05	266.05	0.38	CUBO06	SLOE-D022	102.68	110.12	1.09	
BGDD-24-143	338.65	343.65	0.26		BGDD-23-092	84.89	94.89	1.34	
BGDD-23-126	115.49	126.47	1.08	NOE01	BGDD-23-095	42.16	57.16	1.59	
BGDD-23-127	88.60	94.20	1.63		BGDD-23-097	63.12	75.00	1.60	
BGDD-24-129	204.60	212.05	1.26		BGDD-23-099	109.22	114.22	0.93	
BGDD-24-130	83.20	90.20	1.24		BGDD-23-037	293.40	298.40	0.41	OESTE02
BGDD-24-135	181.88	192.07	1.44		BGDD-23-039	179.40	186.37	1.05	
BGDD-24-137	287.47	294.14	0.69		BGDD-23-042	236.65	245.45	0.62	
BGDD-24-131	37.95	56.95	1.15	NOE02	BGDD-23-046	222.05	239.10	0.92	
BGDD-24-133	30.27	45.27	1.53		BGDD-23-047	370.70	377.70	1.30	
BGDD-24-140	19.70	33.70	1.32		BGDD-23-050	243.48	251.48	0.42	
BGDD-24-142	31.62	36.62	1.61		BGDD-23-061	166.62	171.62	0.88	
BGDD-24-147	22.95	28.95	0.86		BGDD-23-074	141.44	150.44	1.03	
BGDD-24-156	23.99	38.99	0.91		BGDD-23-071	212.75	222.75	1.01	OESTE03
BGDD-24-162	50.45	57.45	1.12		BGDD-23-098	199.70	208.70	1.58	
BGDD-24-165	50.00	55.00	1.22		BGDD-23-112	244.35	253.35	1.05	
BGDD-24-148	34.05	40.89	0.68	NOE03	BGDD-23-088	231.46	241.46	1.25	OESTE04
BGDD-23-100	120.18	129.25	1.13	SOB01	BGDD-23-116	235.00	245.00	1.31	
BGDD-23-110	178.25	189.25	1.43		BGDD-23-079	29.67	37.45	1.56	SOB02
BGDD-23-114	209.62	214.62	1.15		BGDD-23-083	61.62	67.35	1.27	
BGDD-23-120	274.30	292.22	0.63		BGDD-23-085	58.65	63.65	1.39	

Source: GE21, 2024.

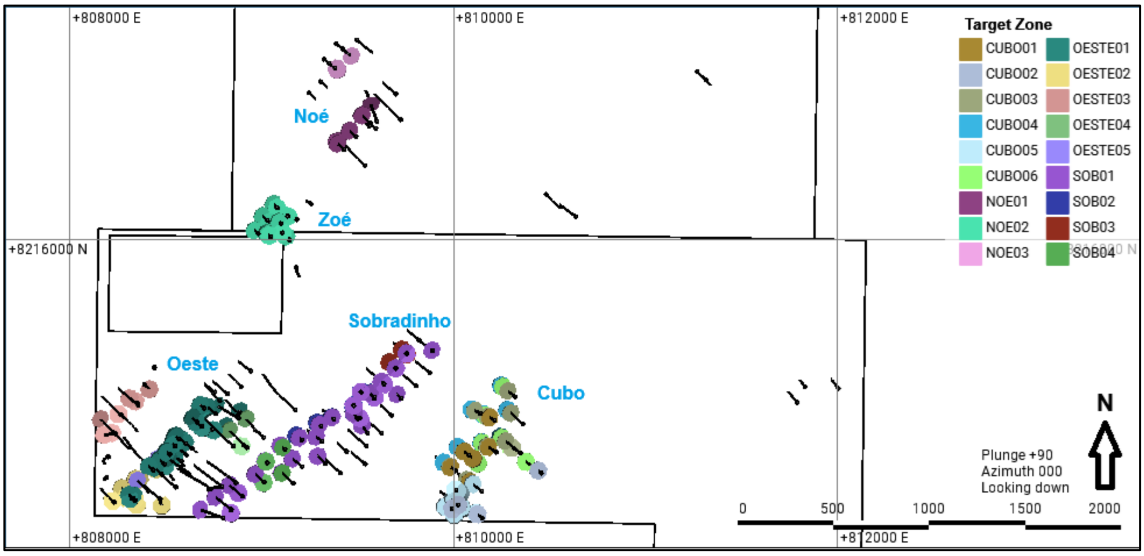


Figure 10-2: Horizontal Projection of Baixa Grande Drilling Holes with Mineralized Intercepts

Source: GE21, 2024.

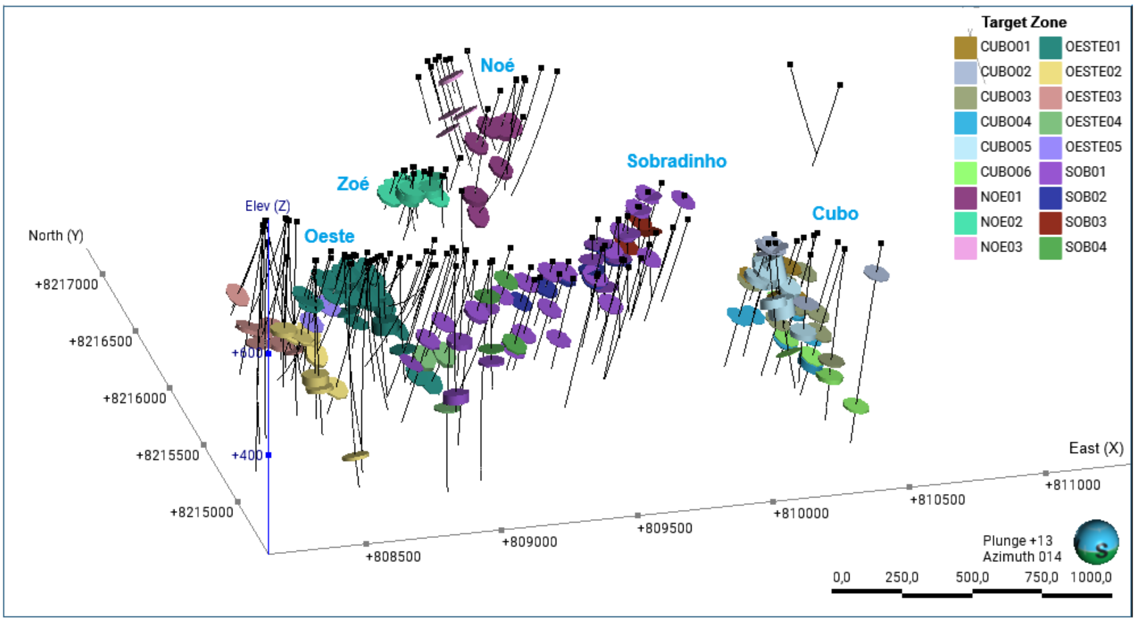


Figure 10-3: Oblique View of Drill Holes with Mineralized Intercepts

Source: GE21, 2024.

10.9 QP's Comments

The QP considers procedures applied by Lithium Ionic in current drilling campaigns to be compliant with the best practices of the mineral industry. Using historical drilling information from previous drilling campaigns, with no use of grade results, is considered appropriate for geological modelling.

Drilling intercepts in spodumene pegmatites show drilling grid spacing, continuity of mineralized structures, and grades that satisfy the basic requirements for MRE purposes.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Sampling

Samples are generally prepared from NQ diameter drill cores (47.6 mm core diameter). Only the shallow drilling runs crossing the weathering zone were drilled on HQ drilling diameters. Few samples were generated on HQ diameter. The sampling procedures described in this section reflect the current Standard Operational Procedures (SOP) Lithium Ionic uses.

Sample intervals in the mineralized zones are defined based on a 1.00 m support. Mineralized samples must have a minimum length of 1.00 m and a maximum length of 1.50 m. In some specific situations, samples shorter than 1.00 m can be generated. These situations are described in detail in the SOP.

Outside the mineralized domains, the sampling support is 1.50 m, and samples can range from 1.00 m to 3.00 m.

The visual indicators for sample interval definition include lithological contacts, structures, and mineralization.

The sample collection and sample definition procedures adopted by Lithium Ionic are described below:

- The drill core is brought in by the drilling contractor team one or more times per shift, from the drill rig to a drill logging and sampling area.
- The disposition and orientation of boxes are checked, and the depth lengths are marked.
- Core boxes are photographed (three boxes per picture) and logged.
- Sample intervals are marked with a pencil in the core box.
- Before sampling, the drill core is marked by a line drawn along the core at high angles to the foliation to orient the saw cut. The right side of the core is selected as a sample. The other half of the core is retained for future reference.
- Sample tags are attached to the core box at the end of each sample.
- Sample bags are numbered before sampling.
- Sample tags are inserted in the bags only after samples are bagged.
- After the samples are tagged and bagged, they are weighted.
- The core is cut lengthwise along the core axis. A Geologist defines the position of the cut, and a Geology Technician performs the cutting.
- For weathered material, a spatula or a machete is used to split the sample into two subsamples along the drilling direction.
- Fresh rock cores are cut in half using a diamond saw and flushed with water between cuts.
- After bagging, the samples are weighed, and the weight is registered.
- Batches are assembled and sent to the laboratory.

The standard batch size is 35 samples, consisting of 29 core samples and 6 quality control samples.

11.2 Sample Preparation, Security and Custody Chain of Custody

Samples are defined and marked on-site after logging and entering the data into the database. Cores are split in half using a diamond saw. Half of the core is left in the core box, while the other half is stored in plastic bags, accompanied by a printed sample tag, and sent to the lab.

Drill core samples are prepared and analyzed by an independent commercial laboratory (SGS Geosol). The SGS Geosol facility is certified in ISO 9001, ISO 14001, and ISO 17025. The sample shipment is delivered to the SGS Geosol facility in Vespasiano, Minas Gerais, Brazil, via a parcel transport company. At all times, samples are in the custody and control of the Company's representatives until delivery to the laboratory, where samples are held in a secure enclosure until processing. SGS Geosol sends a confirmation e-mail with details of samples received upon delivery. The chain of custody of the batches was carefully maintained from collection at the drill rig to delivery at the laboratory to prevent accidental contamination or mixing of samples and render active tampering as tricky as possible.

All samples received at SGS Geosol are inventoried and weighed before processing. Samples are dried at 105°C, crushed to 75% passing a 3 mm sieve, homogenized, split (jones riffle splitter), and pulverized (250 to 300 g of sample) in a steel mill to 95% passing 150 mesh.

11.3 Density Measurements

The density SOP currently in use by Lithium Ionic states that density measurements are taken for every geochemical sample generated. When the drill core quality does not allow for the density assay, this should be registered in the density sampling plan with a specified tag. The high frequency of density sampling aims to acquire a statistically robust database.

For the geochemical samples with more heterogeneity, three samples should be taken: one on the top of the sample, the other in the middle and the other in the base. Homogenous geochemical samples should generate only one density sample. Density samples must have a minimum length of 10 cm and a maximum of 25 cm. Density is commonly measured in the unsampled half-cores, resulting in a faster and more dynamic drill hole data collection process. All density data is stored in a database. A summary of the procedures described in the density SOP is presented next:

- Sample selection and registration in the density plan.
- Weighing of the sample.
- Weighing of the sample while submerged.
- Density values are acquired from the following formula:

$$D = \frac{P_A}{(P_A - P_B)}$$

D = Density.

P_A = Sample weight (in the air).

P_B = Sample weight (submerged in water).

The density assay procedures do not include drying or sample sealing with paraffin.

GE21 recommends duplicate density assays campaign, using the SOP procedure in one sample and a procedure that includes drying and sealing in the other sample. For the sealed samples, the density formula to be used is:

$$D_S = \frac{P_S}{\left(P_P - P_J\right) - \left(P_P - P_S\right)} \cdot Dp$$

D_S = Dry Density.

P_S =Dry sample weight (in the air).

P_P = Sealed sample weight (in the air).

P_J= Sealed sample weight (submerged in water).

Dp = Paraffin density.

11.4 Sample Analysis

After the preparation, the core samples are analyzed by SGS Geosol. The chemical assays are performed using SGS's analytical method ICP90A, a multi-element analysis using fusion by sodium peroxide (Na_2O_2), and finished with ICP-OES analysis. If lithium results are above 15000 ppm, SGS Geosol re-analyzes for lithium through the ICP90Q_Li method, similar to the ICP90A but with higher Detection Limits.

All the chemical analyses conducted by SGS Geosol are reported to Lithium Ionic on PDF format certificates, which are also accompanied by an MS Excel digital file.

11.5 Quality Assurance and Quality Control (QA/QC)

The independent company GE21 proposed the Quality Assurance and Quality Control (QA/QC) program that was implemented. The sample batch composition includes 5 Quality Control Samples for every 30 regular samples. The Quality Control composition of the batches is described next:

- Coarse (Preparation) and Fine (Analytical) Blanks: 6% of the batch, or two blanks per batch, one of each type.
- Standards: 6% of the batch, or two standards per batch.
- Crushed Duplicates: 3% of the batch, or 1 sample per batch.
- Pulverized Duplicates: 3% of the batch, or 1 sample per batch.

Figure 11-1 presents the batch composition scheme for batches with mineralized samples or zones and unmineralized batches. Table 11-1 presents the proportion of Quality Control samples in the Lithium Ionic geochemical database.

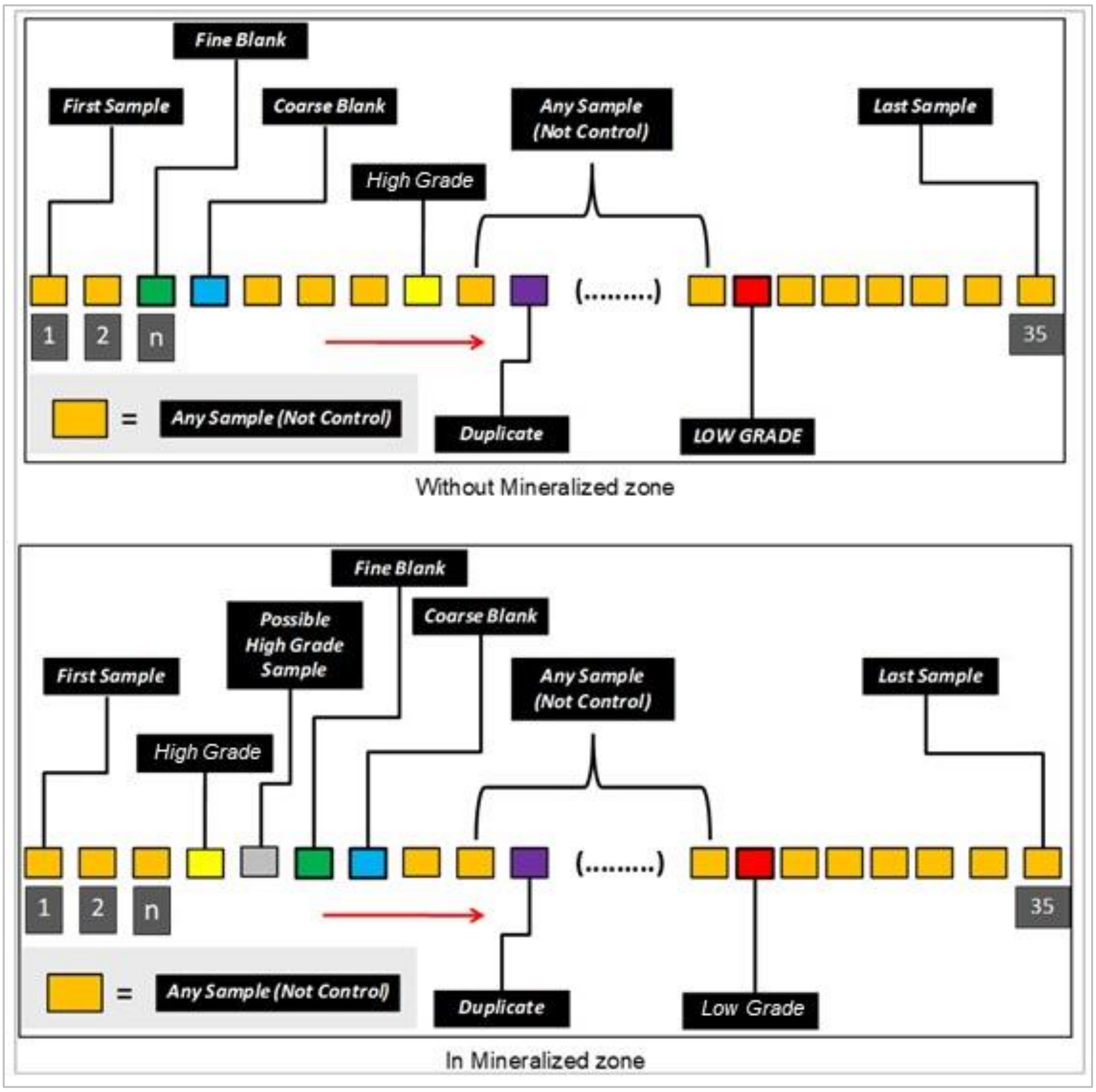


Figure 11-1: QA/QC program

Source: GE21, 2024.

Table 11-1: QA/QC program summary

CRM Type	ID	Number of Samples	Percentage of Database
BLK	ITAK-QF-16	58	1.8%
	ITAK-QF-18	52	1.6%
	ITAK-QG-01	104	3.2%
CRM	ITAK-1100	104	3.2%
	ITAK-1101	105	3.2%
DUP	PULVERIZED	101	3.1%
	CRUSHED	102	3.1%
TOTAL		**626**	**19.1%**

Source: GE21, 2024.

11.5.1 Preparation Blank – Coarse Blank

Preparation blank samples are inserted in the sample batch before the physical preparation of the samples. This measure helps to track any contamination problems that might occur in the granulometric reduction or sample-splitting processes. Blank samples are inserted at the beginning of the possibly mineralized intervals, following the sequence:

- Mineralized sample.
- Analytical/Fine Blank.
- Preparation/Coarse Blank.

If an unmineralized batch is assembled, blank samples must be inserted at the beginning of the batch.

Lithium Ionic uses a commercial blank, ITAK-QG-01, as its Coarse Blank material. More than 95% of the Coarse Blank samples are below the 2x Detection Limit threshold, indicating no major contamination problems. Figure 11-2 presents the Preparation Blank control chart for Lithium.

Type of control	Blank
Reference	ITAK QG-01
Variable	Li ppm
Number of analysis	104

Blank code	QG-01
Limit of Detection (LOD)	10.0
Upper limit (2 x LOD)	20.0
Reference Valeu (REF)	5.0
Standard deviation	10.120

Minimum	10.0
Maximum	108.0
Average	12.9
Median	10.0

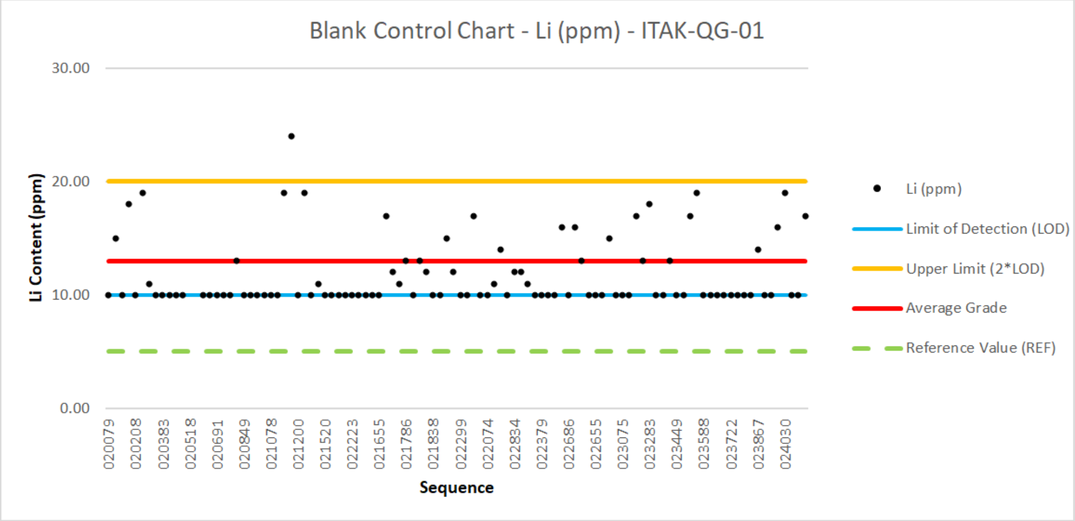


Figure 11-2: Blank Control Chart – ITAK QG-01

Source: GE21, 2024.

11.5.2 Analytical Blank – Fine Blank

Analytical or Fine Blank samples are inserted in the analytical batches after the samples' physical preparation. This type of blank sample is used to assess contamination problems that might occur in the sample digestion or sample fusion processes and/or to evaluate miscalibrations of analytical equipment (in this case, ICP-OES). Blank Samples are inserted at the beginning of the possibly mineralized intervals, following the sequence:

- Mineralized sample.
- Analytical/Fine Blank.
- Preparation/Coarse Blank.

If an unmineralized batch is assembled, blank samples must be inserted at the beginning of the batch.

For its QA/QC Program, Lithium Ionic uses two commercial Fine Blank samples: ITAK-QF-16 and ITAK-QF-18. No samples of this control type have returned grades higher than the 2x Detection Limit threshold, indicating no contamination or calibration problems in the final stages of the geochemical analysis. Figure 11-3 and Figure 11-4 present the Analytical Blanks control charts for Lithium:

Type of control	Blank
Reference	ITAK QF-16
Variable	Li ppm
Number of analysis	58

Blank Code	QF-16
Limit of Detection (LOD)	10.0
Upper limit (2 x LOD)	20.0
Reference Value (REF)	36.6
Standard deviation	2.903

Minimum	10.0
Maximum	19.0
Average	12.4
Median	11.0

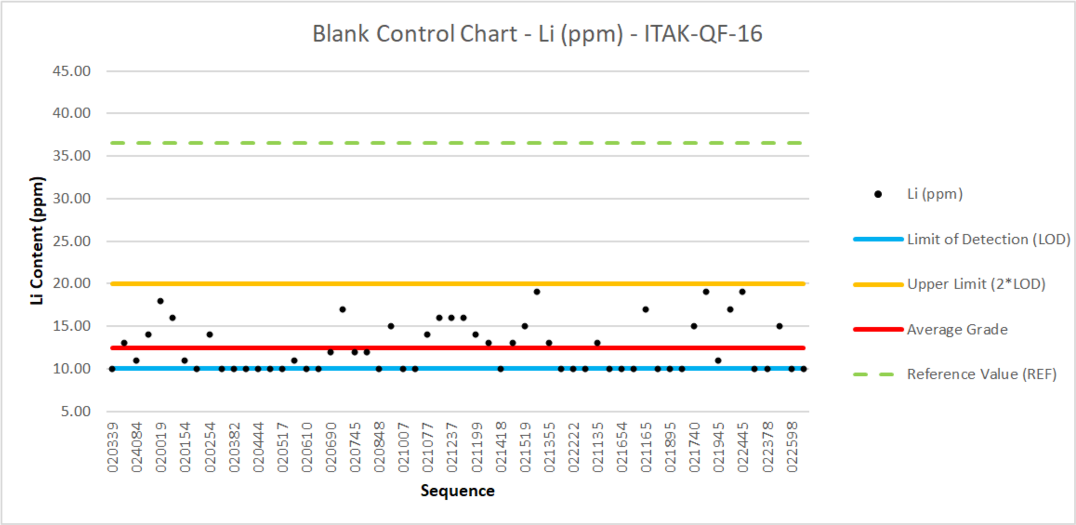


Figure 11-3: Blank control chart – ITAK QF-16

Source: GE21, 2024.

Type of control	Blank
Reference	ITAK QF-18
Variable	Li ppm
Number of analysis	52

Blank code	QF-18
Limit of Detection (LOD)	10.0
Upper limit (2 x LOD)	20.0
Reference Valeu (REF)	18.3
Standard deviation	2.674

Minimum	10.0
Maximum	19.0
Average	12.4
Median	11.5

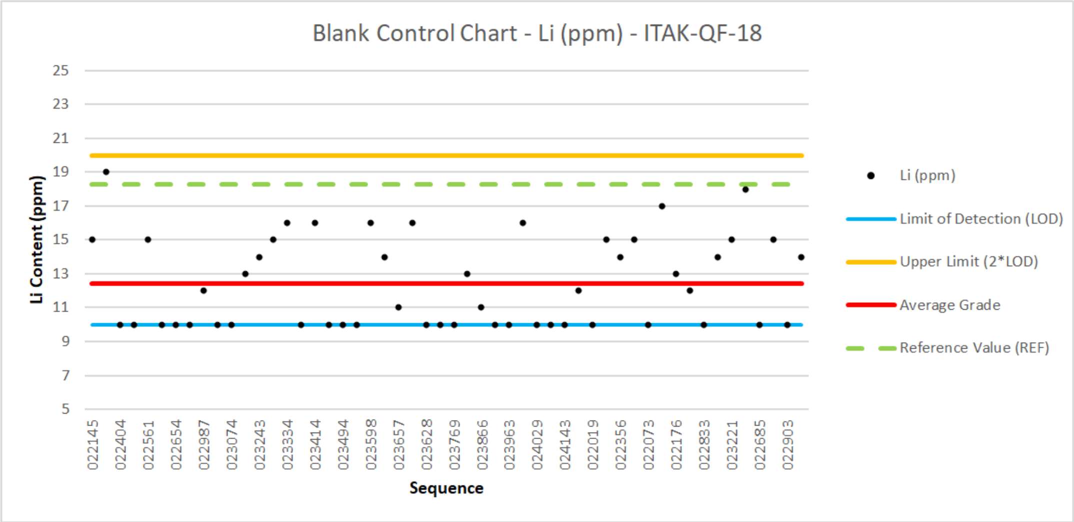


Figure 11-4: Blank control chart – ITAK QF-18

Source: GE21, 2024.

11.5.3 Certified/Standard Reference Material – CRM/SRM

Certified or Standard Reference Materials are reference materials for which one or more parameters have been certified by a technically valid and recognized procedure. A certifying body has issued a Certificate or other accurate documentation. These materials are used as Quality Control Samples to evaluate the accuracy of the analytical methods and procedures.

Lithium Ionic uses 2 CRMs in the Baixa Grande Project: ITAK – 1100 and ITAK – 1101. These Reference Materials evaluate high and low-grade assay results.

High-grade reference materials are inserted at the beginning of the possible mineralized zones. The insertion can occur immediately or a few samples before the mineralized zone. The low-grade Materials are inserted at the end of the zone where the geologist interprets mineralization. The insertion can be immediately after or a few samples after the mineralized zone. The order of the Reference Materials can be changed based on geological features or mineralization characteristics.

Figure 11-5 to

Figure 11-6 present Lithium's CRM control charts. From the 143 CRM assay results, approximately 60% are constrained within the 2x Standard Deviation limits. Considering a 3x Standard Deviation upper and lower limit, almost 90% of the samples are constrained within these boundaries. Both Certified Materials assays have presented biases below 1.5%. Two results of CRM ITAK 1101 present values below the detection limit. Lithium Ionic had identified that these samples were incorrectly labelled in the database. The Lithium Ionic team will review this information.

Type of Control	CRM
Reference	ITAK-1100
Variable	Li (%)
Number of analysis	104

Code	ITAK-1100
Certificate Value	0.2430
Standard Deviation	0.0036
Upper limit (+2SD)	0.2502
Lower limit (-2SD)	0.2358

Minimum	0.2128
Maximum	0.2588
Average	0.2458
Median	0.2467
Bias	1.13%

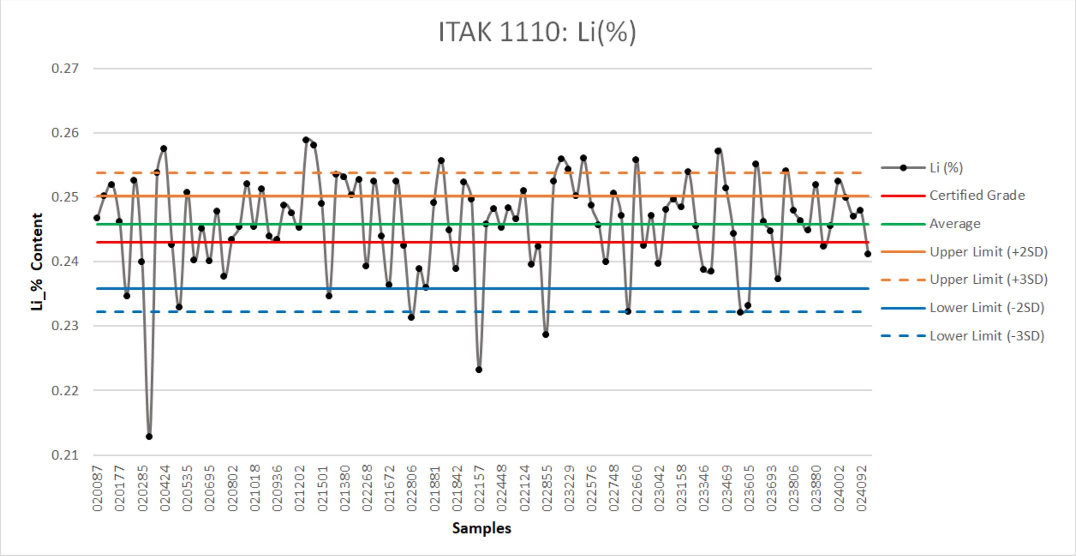


Figure 11-5: Standard reference material chart – ITAK 1100

Source: GE21, 2024.

Type of Control	CRM
Reference	ITAK-1101
Variable	Li (%)
Number of analysis	105

Code	ITAK-1101
Certificate Value	0.671
Standard desviation	0.010
Upper limit (+2SD)	0.691
Lower limit (-2SD)	0.651

Minimum	0.2556
Maximum	0.7155
Average	0.6750
Median	0.6831
Bias	0.601%

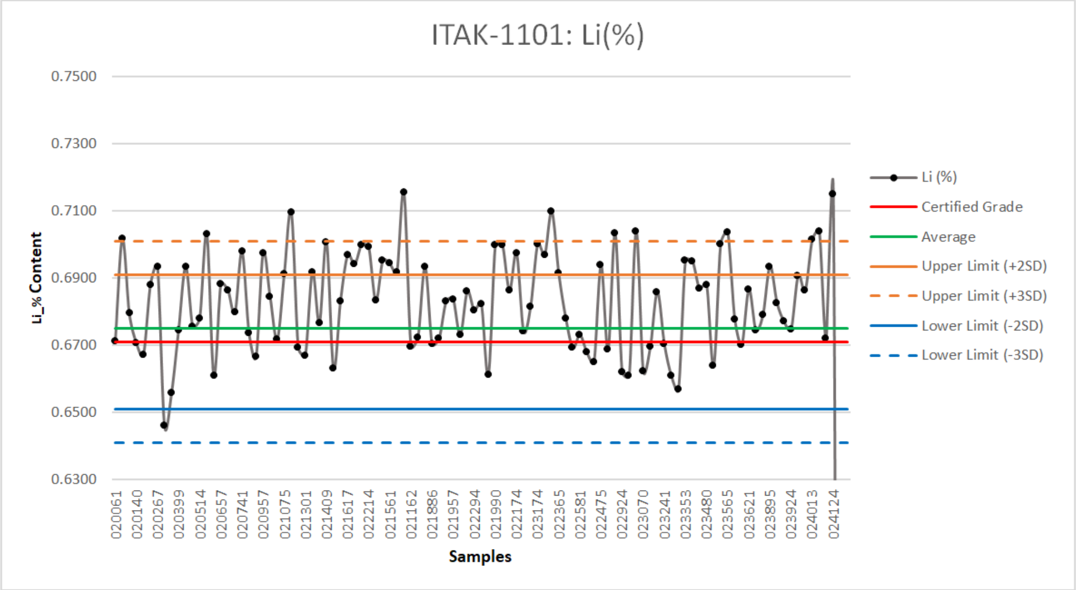


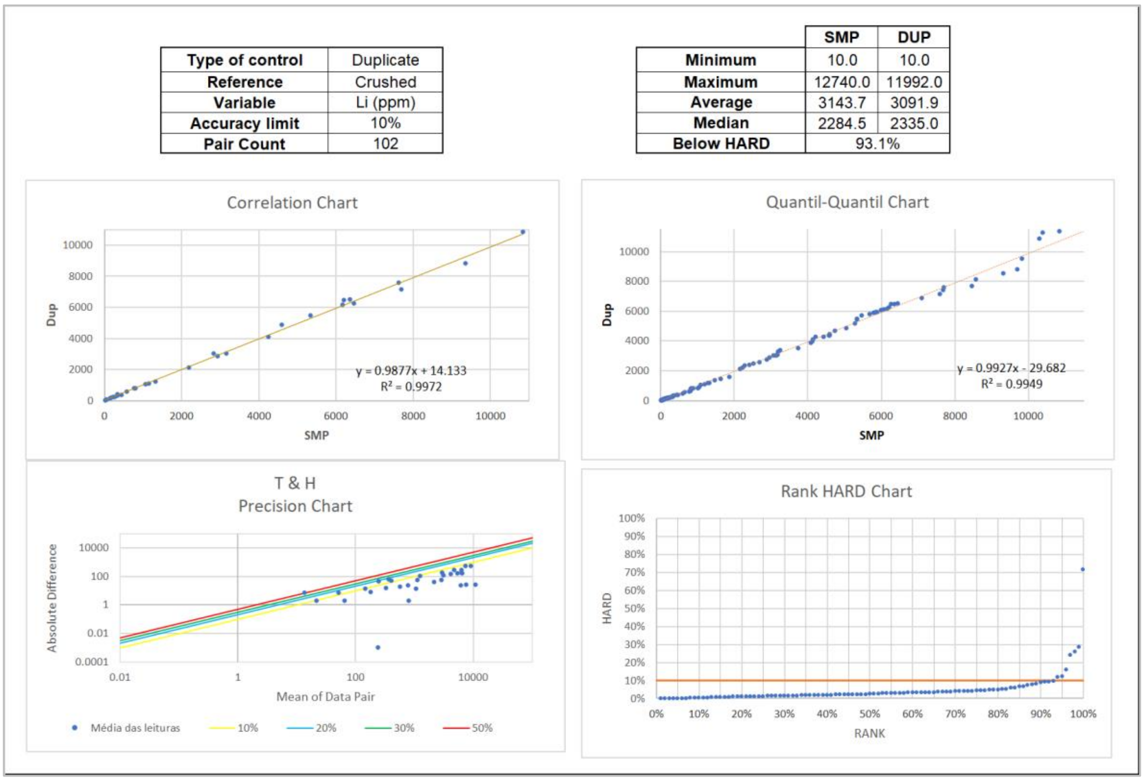
Figure 11-6: Standard reference material chart – ITAK 1101

Source: GE21, 2024.

11.5.4 Crushed Duplicates

Duplicates are used in the Quality Control program to evaluate the geochemical analysis's precision. The insertion of blind duplicates of crushed material is used to test the laboratory's reproducibility and determine if the crushing process generates bias or imprecision in the results.

A total of 70 crushed duplicates were evaluated. Control charts for this control type show high correlations and good reproducibility, with over 90% of the samples falling below the 10% HARD limit. Figure 11-7 presents the control chart.



Type of control	Duplicate
Reference	Crushed
Variable	Li (ppm)
Accuracy limit	10%
Pair Count	102

	SMP	DUP
Minimum	10.0	10.0
Maximum	12740.0	11992.0
Average	3143.7	3091.9
Median	2284.5	2335.0
Below HARD	93.1%	

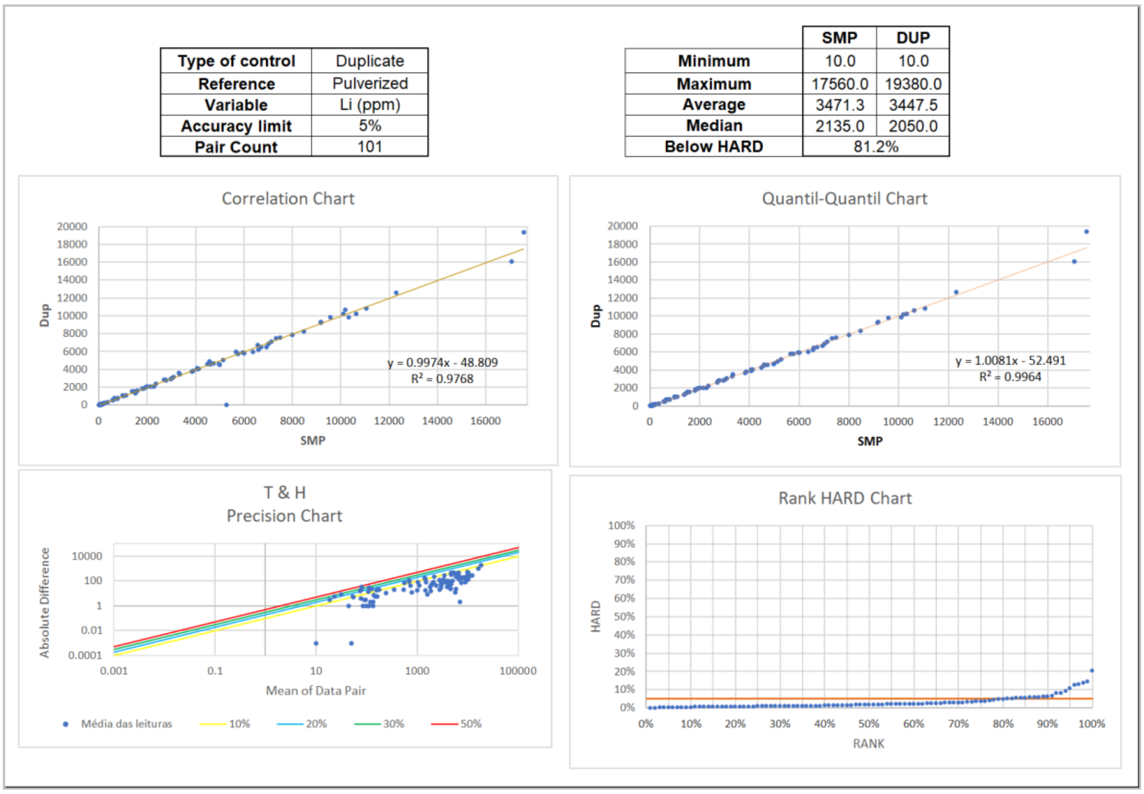
Figure 11-7: Crushed duplicates control chart

Source: GE21, 2024.

11.5.5 Pulverized duplicates

Duplicates are used in the Quality Control program to evaluate the precision of geochemical analysis. The insertion of blind duplicates of pulverized material is used to test the laboratory’s reproducibility and if the milling process is not generating bias or imprecision in the results.

A total of 69 pulverized duplicates were evaluated. Control charts for this control type show high correlations and good reproducibility, with over 80% of the samples falling below the 5% HARD limit. Figure 11-8 presents the control chart.



Type of control	Duplicate
Reference	Pulverized
Variable	Li (ppm)
Accuracy limit	5%
Pair Count	101

	SMP	DUP
Minimum	10.0	10.0
Maximum	17560.0	19380.0
Average	3471.3	3447.5
Median	2135.0	2050.0
Below HARD	81.2%	

Figure 11-8: Pulverized Duplicates Control Chart

Source: GE21, 2024.

11.6 QP Opinion

The Qualified Person believes that the sampling, sample preparation, security and analysis performed by Lithium Ionic and hired companies are suitable for a Mineral Resource Estimation study. Quality Assurance procedures follow the industry's best practices, and Quality Control results are within industry standards, attesting to the quality of the assay information in the database.

12 DATA VERIFICATION

This section covers the data verification of the Baixa Grande target from Salinas Lithium Project sampling, assay and survey procedures and quality with results stored in the database used for the Mineral Resources Estimates (MRE).

Data verification by the QP Mr. Leonardo de Moraes Soares, a senior geologist from GE21, included one site visit on September 13 and 14, 2023. The QP Carlos José Evangelista Silva, a senior geologist from GE21, also visited the Project site on November 26, 2024. Lithium Ionic allowed unlimited access to the Company’s facilities during this time. During the site visits, the QPs checked in the field mineralization outcrops, drill rigs and core shed, as well as reviewed information about exploration results, sampling procedures, sampling preparation, chemical analysis, topographic and drill hole deviation surveys, discussions about interpretation about mineralization model. Data from selected drill holes (sample custody, assays, QA/QC program, downhole surveys, lithologies, alteration and structures) was also checked and discussed with Lithium Ionic technical team.

12.1 Historical drilling data (Previous Operators)

For this Report, historical data refers to all the data before 2023. On March 13, 2023, Lithium Ionic acquired 100% of the Baixa Grande Salinas Project pursuant to its acquisition of Neolit Minerals Participações Ltda which owns the project. Lithium Ionic relogged drilling campaigns by Neolit before 2023 with 24 drill holes, but these campaigns were not resampled (Figure 12-1).

Neolit did not implement the QA/QC program, and Lithium Ionic only used the related information to guide drilling planning and geological modelling. Still, assay information was not used to grade estimation or Mineral Resource classification.

During the site visits in 2023 and 2024, the QPs accessed Neolit campaign drill core boxes on the Lithium Ionic core shed and checked some spodumene pegmatite drill hole intercepts.

Figure 12-1: Historical drilling data

Legenda: Neolit’s drilling campaign core boxes.

Source: GE21, 2023.

12.2 Lithium Ionic Drilling Database (2015-2023)

The Lithium Ionic team maintained and validated the exploration data at the Project site. Physical copies of all the drill hole information and core boxes are managed and stored by the Lithium Ionic team at the core shed and project office at the same address in Salinas municipality (Figure 12-2).

Figure 12-2: Drill core box and physical copies of all the drill hole information

Source: GE21, 2024.

12.3 Drill Hole Logging

The responsible geologists carry out the geological description of drill cores using a paper logging spreadsheet. The same logging geologist inserts the subsequent data into the official database. First, drill hole ID, target, logging date and core diameter were recorded. Then, the geologist described the lithological types with delimiting intervals representative of lithological contacts, structural information and weathering conditions at the logging time (Figure 12-3). After that, a sampling plan was generated at database management, including the QA/QC sample program inserted in the sample numbering sequence (Figure 12-4).

Lithological contacts were marked on the core box with a blue or black pen on the left side of the trough.

Figure 12-3: Drill hole logging bench

Source: GE21, 2024.

Figure 12-4: Including QA/QC sample program

Source: GE21, 2024.

The QP checked drill core boxes by comparing filled logging sheets with observed geological intercepts (generally hosting schists and spodumene pegmatites). The style of mineralization and mineralogical characterization observed in drill cores was also discussed with the Lithium Ionic technical team, and the conceptual geological interpretation of the mineralization zones is considered reliable for MRE purposes.

In the QP’s opinion, geological logging aligns with the best practices of the mineral industry, and it is appropriate for geological modelling for the MRE.

12.4 Drilling Methods and Sampling Procedures

Mr. Soares checked drill hole rig sites during the site visit in 2023. Current Lithium Ionic’s drilling campaigns, operated by the Geosol drilling company, carry on in the Baixa Grande target on the Salinas Project (Figure 12-5).

Figure 12-5: Drilling methods and sampling procedures

Source: GE21, 2023.

Drilling methods and sampling procedures verified at rig sites comply with best mineral industry practices. Aluminum plates correctly identify drill core boxes with hole number, depth interval and box number. Runs are also well identified by depth, length, and core recovery (Figure 12-6).

Figure 12-6: Documentation and identification of witness boxes

Source: GE21, 2024.

Site safety signs, safety fences and plastic chains directed to preserve safety, indicate risks and personal protective equipment, and isolate the operational area were verified at rig sites. The QP recognizes this set of standardized procedures as being under good practices for the industry.

12.5 Style of Mineralization

The QP carried out field checks on pegmatite outcrops on the field and inspected drill hole intercepts on the core shed and drill rig sites. It was possible to certify that the interpretation of the mineralization model is compliant with the style of mineralization described in the geological inspection (Figure 12-7).

Figure 12-7: Style of mineralization

Legend: The style of mineralization observed at the field outcrops and drill core intercepts.

Source: GE21, 2023.

12.6 Collar Location Validations

All drill hole collar locations are surveyed using the GPS Geodetic method. Collar surveying measurements were done by a third-party contracted team and were monitored and audited by Lithium Ionic's geologists.

The QP inspected some drill hole collar landmarks at the Baixa Grande target on the field. Coordinates registered on aluminum plates were compared with handheld GPS coordinates and located on the drill hole location map (Figure 12-8). The QP detected no Issues.

Figure 12-8: Collar location validations

Source: GE21, 2024.

12.7 Downhole Survey and Core Orientation Validation

Downhole surveys have been completed on all diamond drill holes. Core orientation was applied to Lithium Ionic drilling campaigns. These surveys are registered on a database by Reflex company professional tools data. Systems were presented to the QP on the core shed (Figure 12-9).

Figure 12-9: Downhole survey and core orientation validation

Source: GE21, 2023.

12.8 Analytical Validations

Analytical validations, including the QA/QC program and analysis of results also presented in Section 13 of this Report, were discussed in the technical visit with the technical responsible. All the procedures are based on best industry practices, and the QP considers the results inside acceptance limits.

12.9 QP’s Opinion

The QP has reviewed the adequacy of the exploration information and the property’s visual, physical, and geological characteristics and has found no significant issues or inconsistencies that would cause one to question the validity of the data. The QP is satisfied with including the exploration data, comprising the drilling, drill litho-logs, and sample assays, for Mineral Resource modelling, evaluation and estimation as presented in this Report.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

The lithium minerals present in the pegmatites of the Baixa Grande deposit have been routinely characterized through systematic logging of drilling cores. From core intervals, selected samples are taken by describing thin polished sections under an optical microscope. Those descriptions, macroscopic (log) and microscopic (thin sections), are accompanied by modal evaluation (in vol%) of spodumene versus matrix contents, and within the matrix, the quantities of minerals identified, particularly those that may significantly interfere with ore processing.

The spodumene mineralized material from the Baixa Grande deposit contains the following main gangue minerals: albite, quartz, perthitic potassium feldspar and muscovite.

There are two main processes to concentrate the spodumene content in the mineralized pegmatite: Dense Media Separation (DMS), or flotation. Both processes can produce spodumene concentrate under the marketing specification of Li_2O grade above 5.5% and Fe_2O_3 below 1%.

Three samples were collected from Sobradinho, Cubo and Oeste for preliminary ore sorting tests by Steinert, as well as Heavy Liquid Separation (HLS) tests by SGS Geosol.

13.1 Samples Selected for Preliminary Test Work

Drill core samples from three different project bodies were selected to conduct ore sorting and HLS tests with Salinas mineralized material, and to conduct ore sorting and HLS tests with Salinas ore: West, Sobradinho, and Cubo.

The sample from the Oeste body comprised drill holes BGDD-23-046 and BGDD-23-074, both of which exhibited fractures along the selected intersections.

The sample from the Sobradinho body consisted of drill hole BGDD-23-079, and the sample from the Cubo e body consisted of drill holes BGDD-23-102 and BGDD-23-109. The selected intersections exhibited intact pegmatite without fractures in all three drill holes. Figure 13-1 to Figure 13-3 shows the sample intersected for each drill hole.

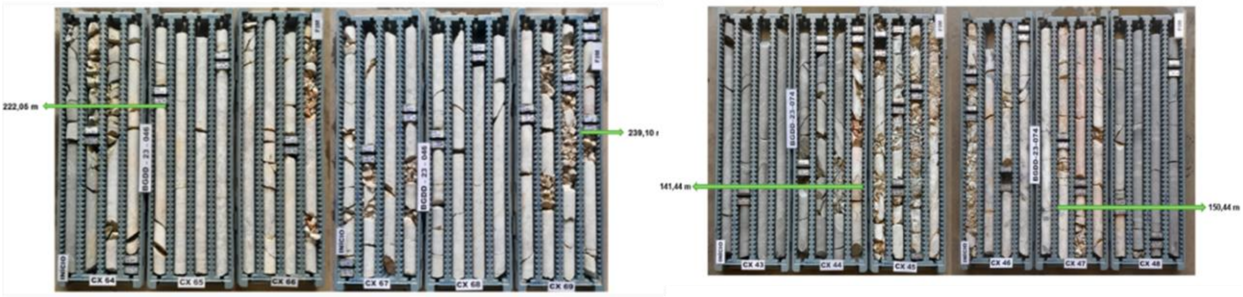


Figure 13-1: Selected intersection from drill holes BGDD-23-046 and 074 (Oeste)

Source: GE21, 2024.

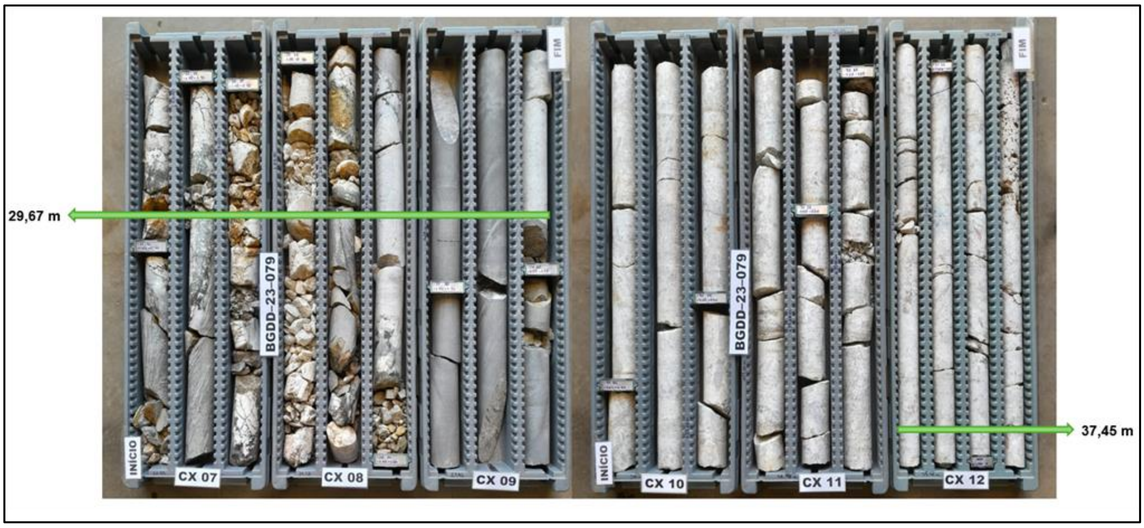


Figure 13-2: Selected intersection from drill hole BGDD-23-079 (Sobradinho)

Source: GE21, 2024.

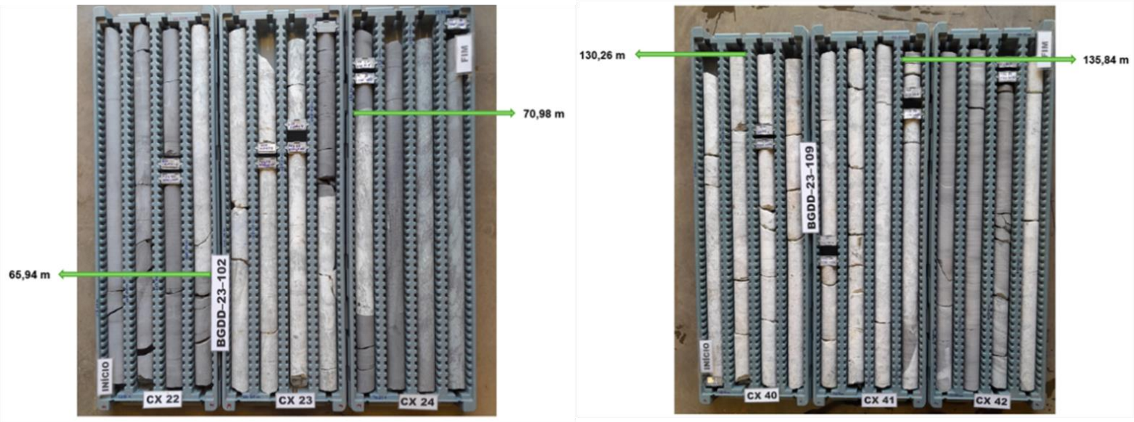


Figure 13-3: Selected intersection from drill holes BGDD-23-102 and 109 (Cubo)

Source: GE21, 2024.

Figure 13-4 presents the Baixa Grande map showing the three bodies and drill hole locations where the samples were selected.

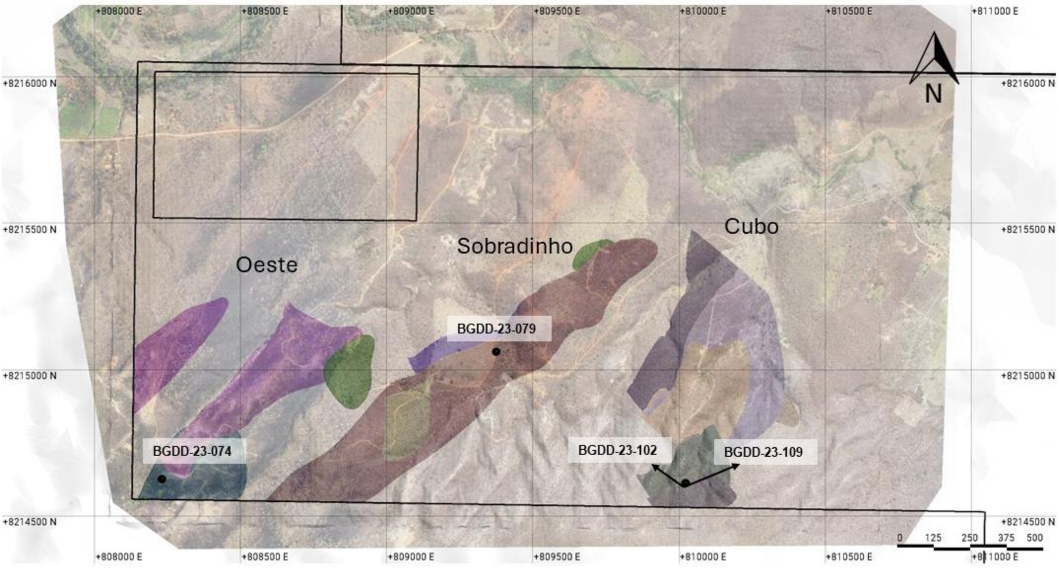


Figure 13-4: Baixa Grande deposit showing drill hole locations for sample selection

Source: GE21, 2024.

Table 13-1 below presents the chemical analysis of these three samples from the Baixa Grande deposit.

Table 13-1: Chemical analysis of selected samples for metallurgical tests

Baixa Grande Ore Bodies	Ba	Be	CaO	Fe_2O_3	K_2O	Li_2O	MgO	Nb	P_2O_5	Sn	Ta
	ppm	ppm	%	%	%	%	%	ppm	%	ppm	ppm
Oeste	40	182	0,28	1,27	1,93	0,95	0,27	<10	0,17	60	<10
Sobradinho	45	131	0,43	1,31	2,83	1,11	0,22	<10	0,27	<50	16
Cubo	194	192	0,87	1,94	2,55	1,01	0,56	15	0,23	<50	15

Source: GE21, 2024.

Lithium oxide grade ranges from 0.95 to 1.11% for the three samples. Iron oxide is above the spodumene concentrate spec limit of 1%. Rare elements like niobium, tantalum, phosphate, and tin are quite low. K-feldspar may be around 15-20%, based on the potash oxide content.

The flowsheet, shown in Figure 13-5, evaluates simulated spodumene concentration using DMS and a combination of DMS and ore sorting. The particle sizes used in ore sorting tests were 31.5–19.5 mm and 19.5–7.5 mm. Three heavy liquid densities (2.7 g/cm³, 2.8 g/cm³ and 2.9 g/cm³) and two particle size ranges (12.7–6.35 mm and 6.35–0.5 mm) were used for HLS test work.

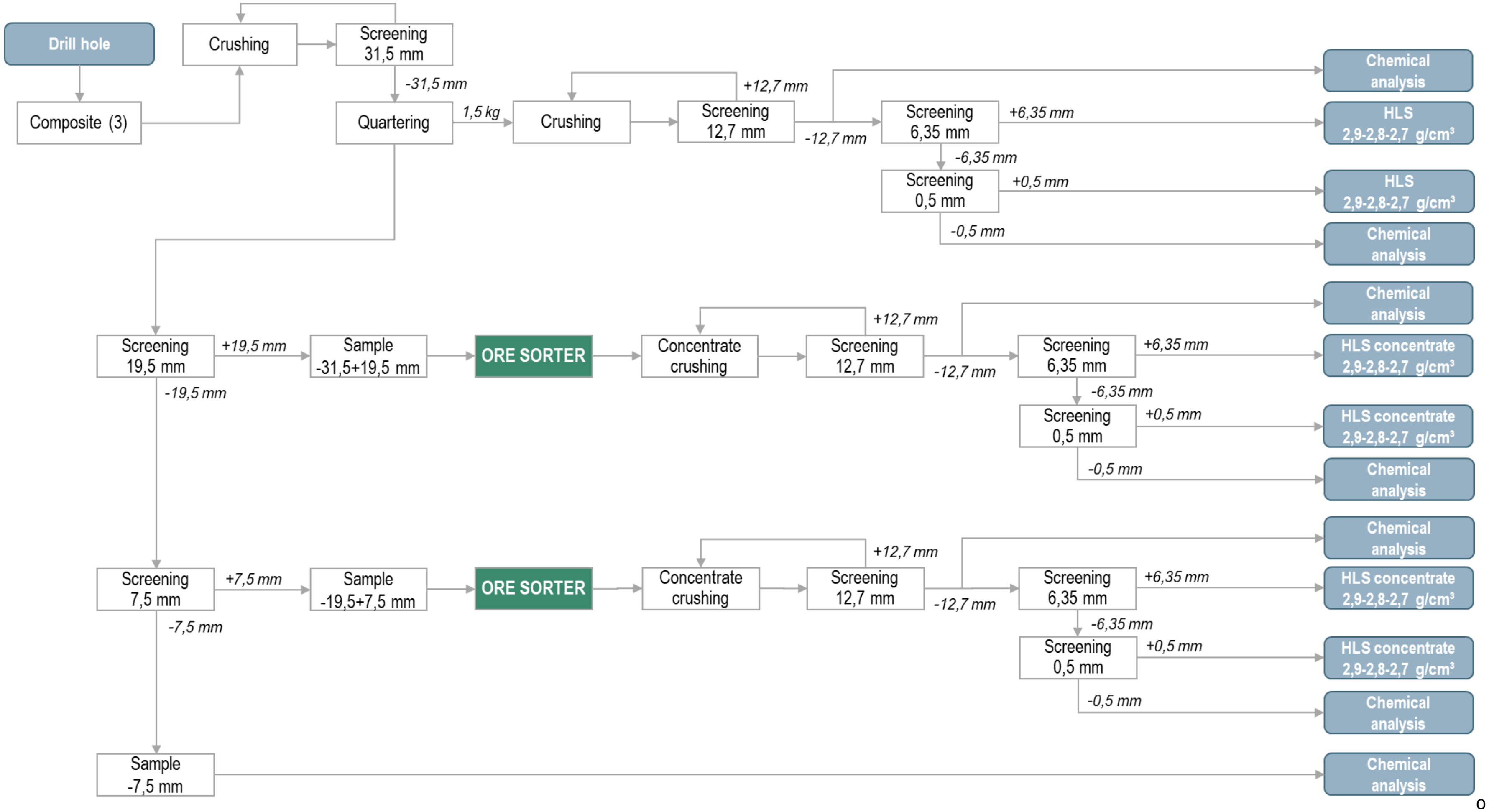


Figure 13-5: Test work program flowsheet

Source: GE21, 2024.

13.2 Test Work Results

The average HLS results without pre-concentration are presented in Figure 13-6 for coarse and fine fractions. The selected core drill results for the HLS tests indicated that the spodumene size liberation is around 9,5 mm to generate a concentrate under marketing specification.

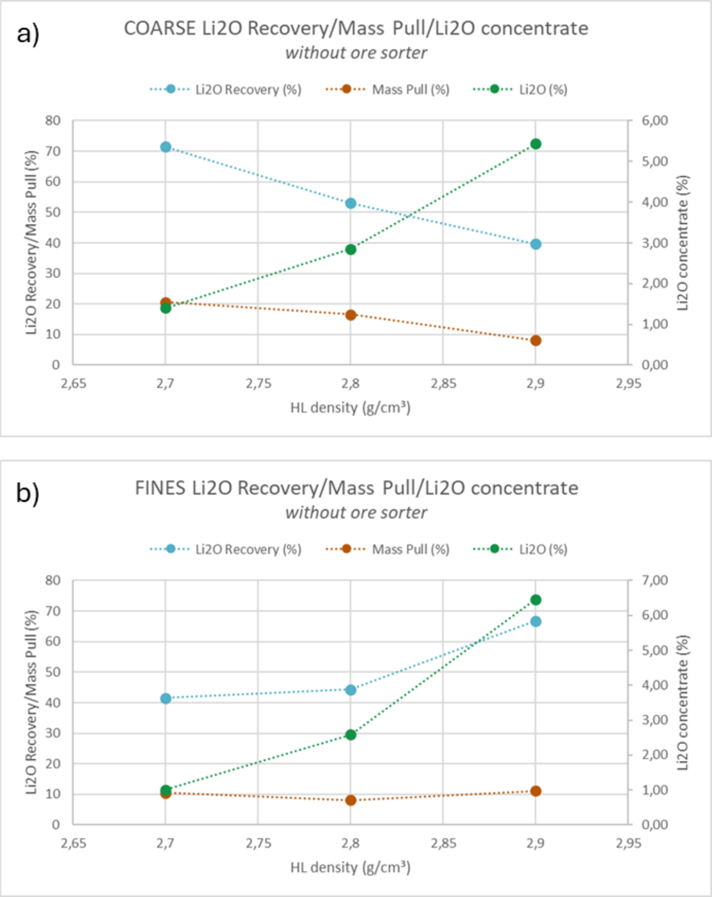


Figure 13-6: HLS results without ore sorting

Source: GE21, 2024.

The results of the combined flowsheet using ore sorting and HLS are shown in Figure 13-7. It was possible to obtain spodumene concentrate within the marketing spec for Li_2O grade.

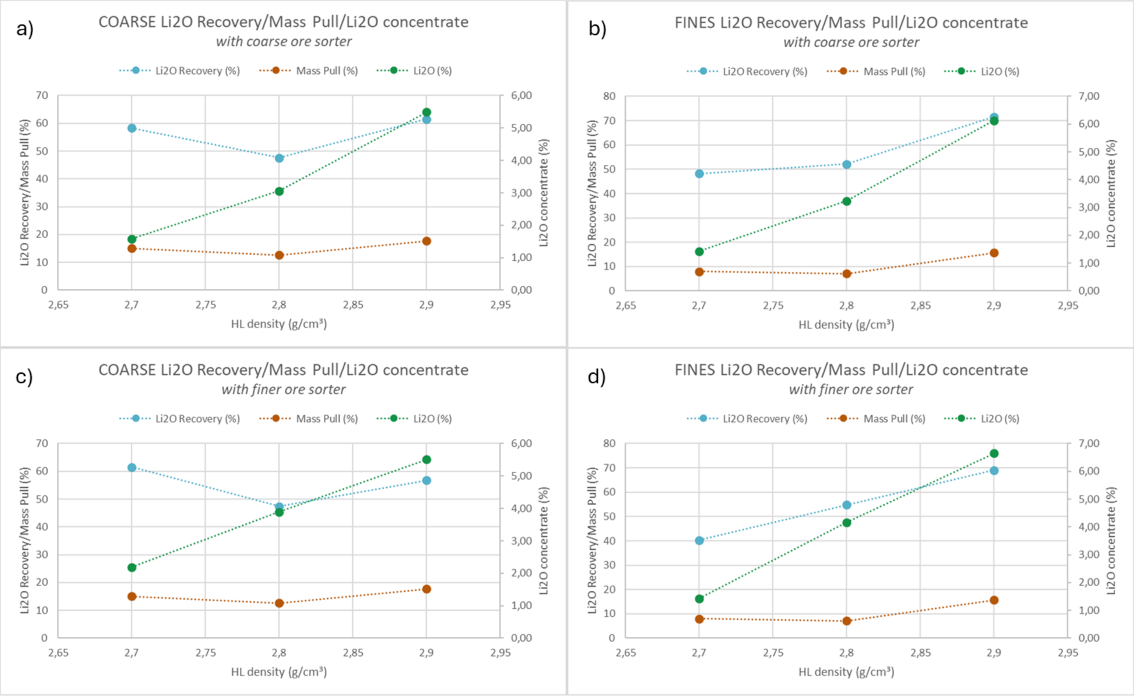


Figure 13-7: HLS results for tests with ore sorting

Source: GE21, 2024.

The ore sorting achieved a Li_2O upgrade in the concentrate, reaching 1.34% and 1.39% for the fine and coarse-size fractions, respectively. Lithium oxide recovery for the ore sorting step was 79.8% and 86.1%, shown in Figure 13-8.

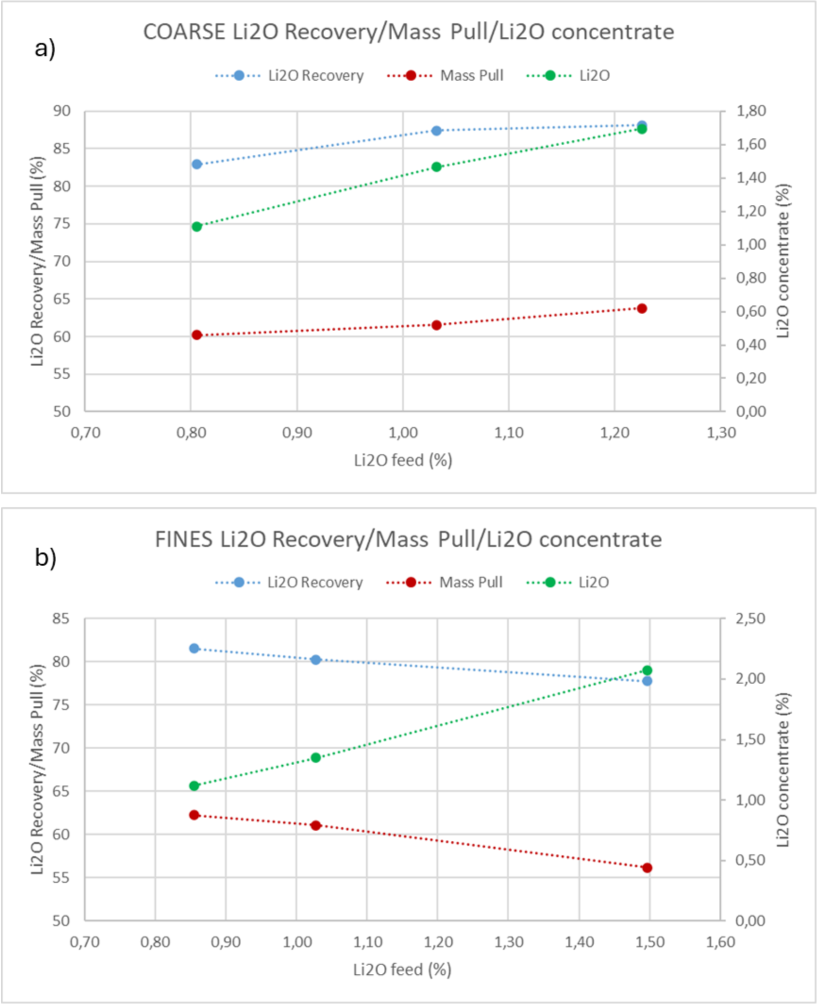


Figure 13-8: Ore sorting results

Source: GE21, 2024.

13.3 Conclusion

The three mineralization samples from the Baixa Grande Project present encouraging results for pre-concentration through ore sorting and DMS concentration. However, more tests must be done using diluted samples (simulating the mining technique) to support engineering development in defining spodumene size liberation, Li_2O recovery, Li_2O concentrate grade, and mass recovery to the concentrate.

13.4 QP's Opinion

The tests with the composited sample indicate that it is suitable for concentration using HLS, with and without pre-concentration with sensor-based sorting.

It is strongly recommended that the number of metallurgical test works, including variability samples covering the whole deposit, be increased to confirm the process route. The Noé and Zoé targets which were submitted to new drilling campaign in 2024 also are included in this recommendation to new metallurgical test works.

Heavy Liquid Separation (HLS) is an exploratory characterization that indicates the method’s suitability to the sample tested. It is strongly recommended that tests be carried out with Dense Media Separation (DMS) to confirm the results obtained.

A mass balance is required considering the entire process – pre-concentration and concentration.

14 MINERAL RESOURCES ESTIMATES

Lithium Ionic conducted comprehensive 3D geological modelling, statistical and geostatistical studies, and grade estimation for the Baixa Grande Property. This estimation considered various factors, such as the quantity and distribution of available data, interpreted controls on mineralization, mineralization style, and the quality of the sampling data. GE21 carried out a validation process of Mineral Resources Estimates (MRE) for the Baixa Grande target from Lithium Ionic.

The geological modelling and estimation processes were executed utilizing Leapfrog software. The UTM Projection – Zone 22 South in SIRGAS 2000 Datum was adopted as the reference coordinate system for the database in this Project.

14.1 Drilling Database

The database underwent a comprehensive visual validation, considering the interrelation of tables, identifying gaps and overlaps, and ensuring the inclusion of crucial information. Using Leapfrog software, GE21 also conducted validation checks on the Collar, Survey, Assay, and Lithology tables. This stage of the work did not reveal any significant inconsistencies, as these had already been verified during the Data Verification stage.

The MRE was based on data derived from drill hole databases, incorporating lithology logs and assay results from HQ drill core samples. The topographic surface bounds the extent of these estimates. Figure 14-1 illustrates the spatial distribution of the utilized drill holes.

The original dataset provided by Lithium Ionic encompassed data from 167 surface diamond drill holes (totalling 35,734 m).

The Baixa Grande database contains 3,276 assay intervals from drill holes totalling 3,778.5 m.

The assay table includes data for Li_2O (%). Following a thorough review of the database, the Li_2O (%) data was used for subsequent statistical analysis, block modelling, and Mineral Resource estimation.

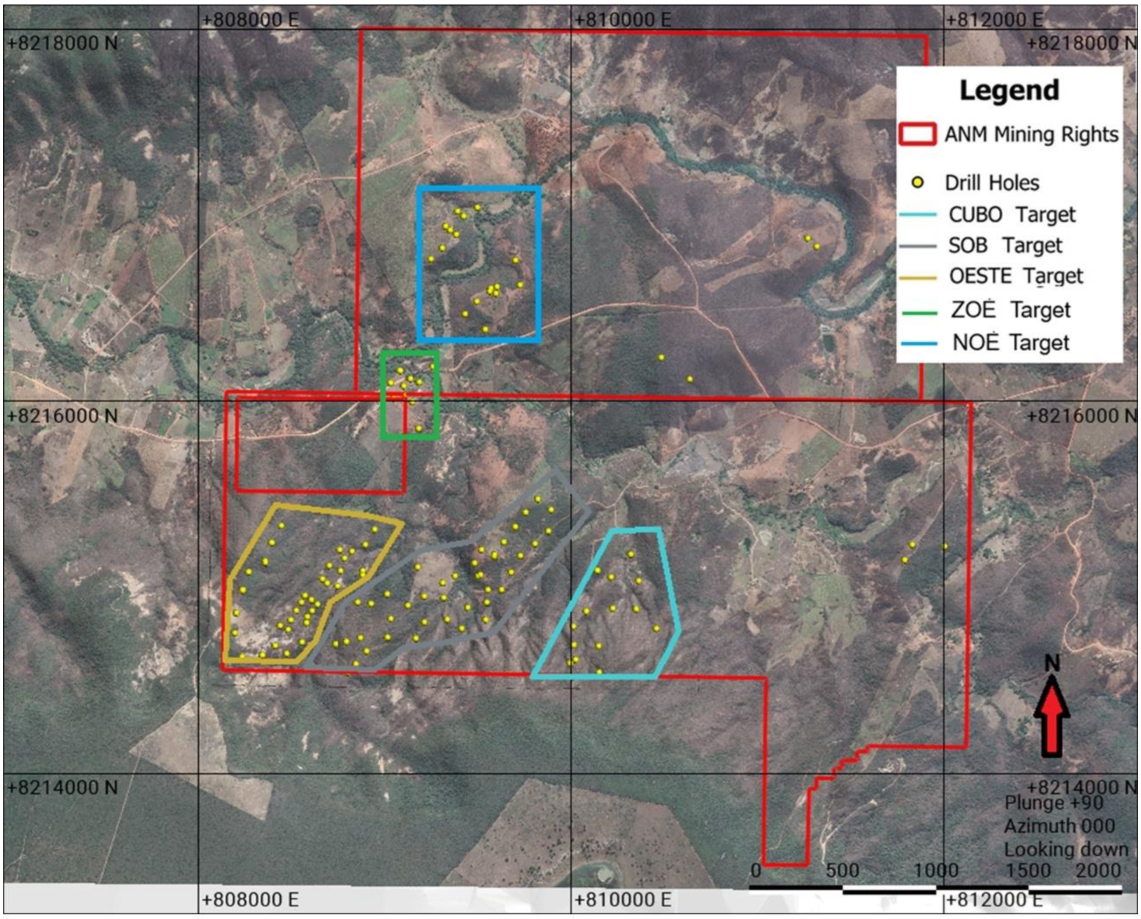


Figure 14-1: Drill hole Location Map

Source: GE21, 2024.

14.2 Geological Modeling

Lithium Ionic undertook a geological interpretation, encompassing all documented spodumene pegmatite intervals within the Baixa Grande deposit. Initially, cross-sectional interpretations were crafted utilizing traditional manual techniques and advanced cartographic software platforms such as QGIS, ArcGIS, and Leapfrog software. These initial steps laid the groundwork for a robust modelling process.

The Lithium Ionic team interpreted a set of grade shell sections with an envelope delimiting zone with a cut-off grade of 0.3% Li_2O (%) (Figure 14-2 and Figure 14-3) defined by a natural break on Li_2O grade distribution. The interpretations obtained were transformed into a set of implicit 3D models, each aligned with a distinct strike direction corresponding to its domain (Table 14-1, Figure 14-4 and Figure 14-5).

Table 14-1: Strike directions for each domain

Domain	Dip and Strike
Cubo	33º/116º
Oeste	49º/117º
Sobradinho	35º/ 151º
Noé	90°/040°
Zoé	0°/0°

Source: GE21, 2024.

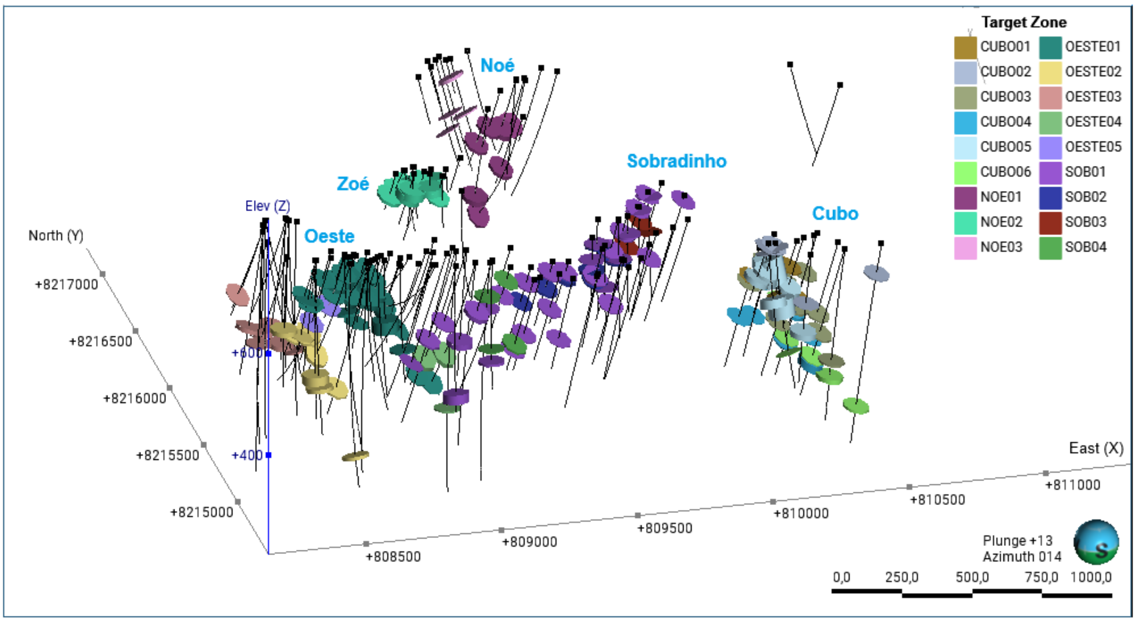


Figure 14-2: Assays Composites within the Li_2O > 0.3%

Legend: Assays Composites within the Li_2O > 0.3% limit in pegmatite veins grouped by separated lenses and dykes.

Source: GE21, 2024.

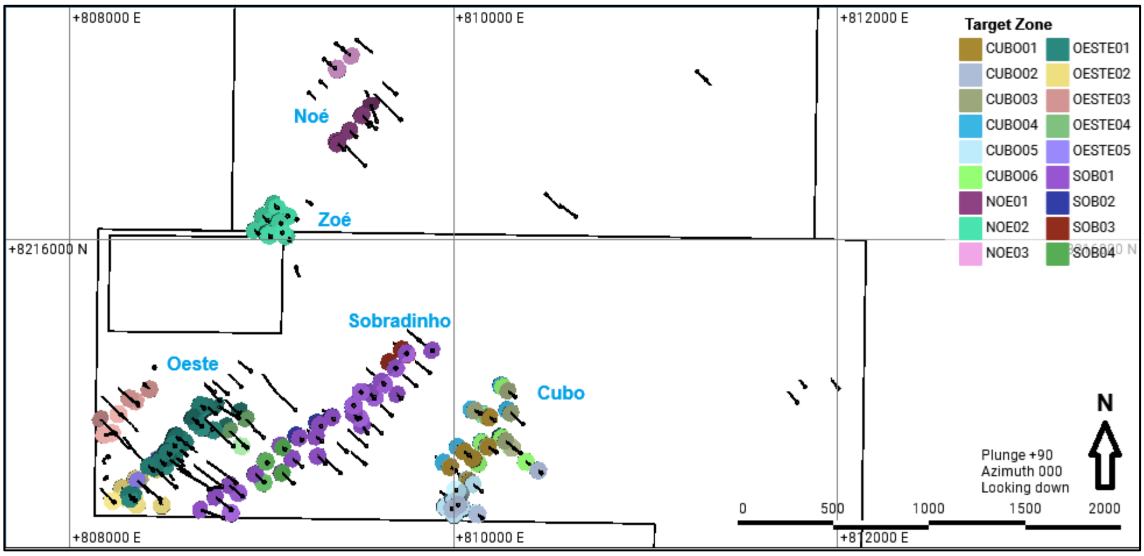


Figure 14-3: Plan view of assay Composites within the Li_2O > 0,3%

Legend: Plan view of assay Composites within the Li_2O > 0,3% limit in pegmatite veins grouped by separated lenses and dykes.

Source: GE21, 2024.

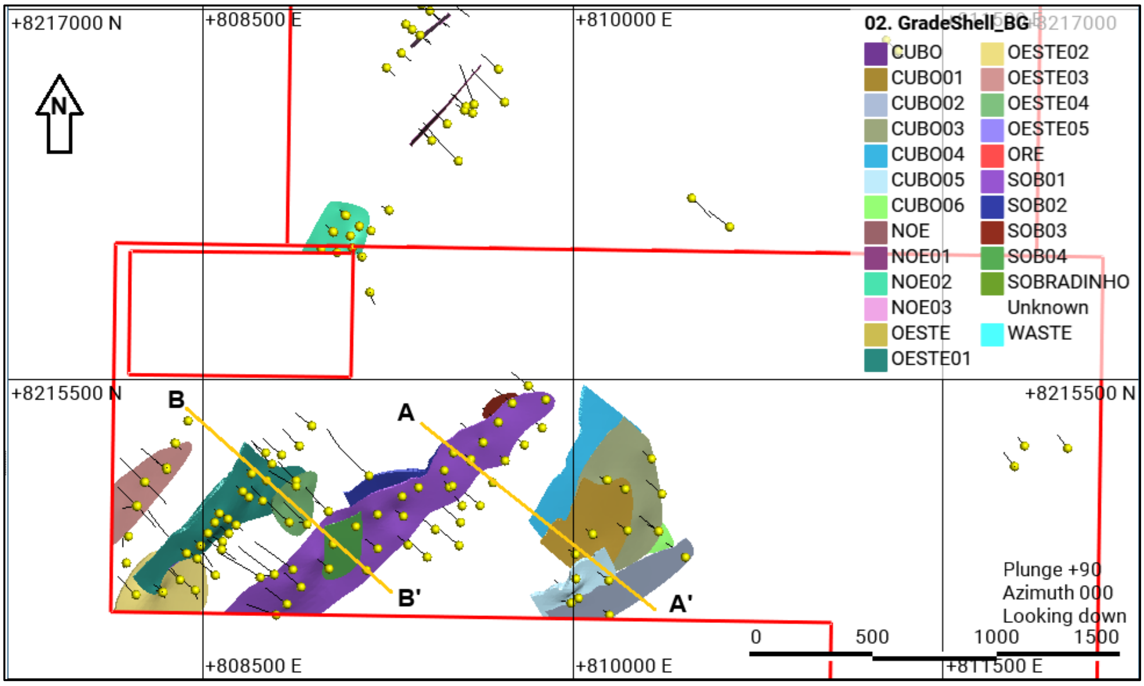


Figure 14-4: Spodumene grade shells modelled with assays composites Li_2O > 0.3 % – plan view

Legend: Spodumene grade shells modelled with assays composites Li_2O > 0.3 % - horizontal view plan showing sections A-A’ and B-B’.

Source: GE21, 2024.

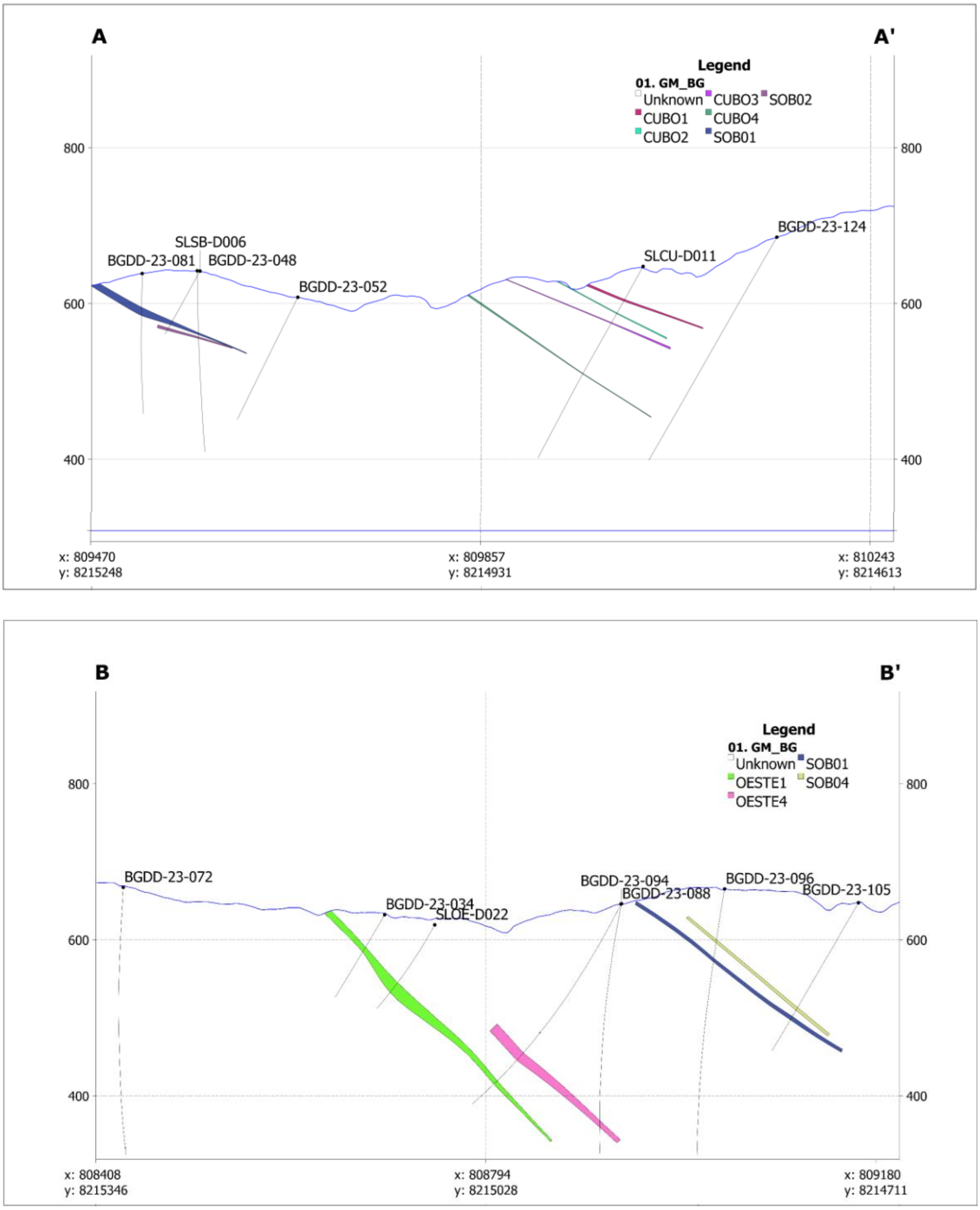


Figure 14-5: Spodumene grades shells model – assays composites Li_2O > 0.3 % – vertical sections

Legend: Spodumene grades shells model – assays composites Li_2O > 0.3 % – section views A-A' (above) and B-B' (below).

Source: GE21, 2024.

Lithium Ionic also conducted weathering modelling based on the descriptions provided in the geological and geotechnical logging (Figure 14-6).

The QP considers the geological and mineralization 3D modelling method and interpretations suitable for Mineral Resource estimation study based on the coherence with the conceptual mineralization model, adherence with drilling and sampling data and the spatial continuity of the grades inside the modelled pegmatites.

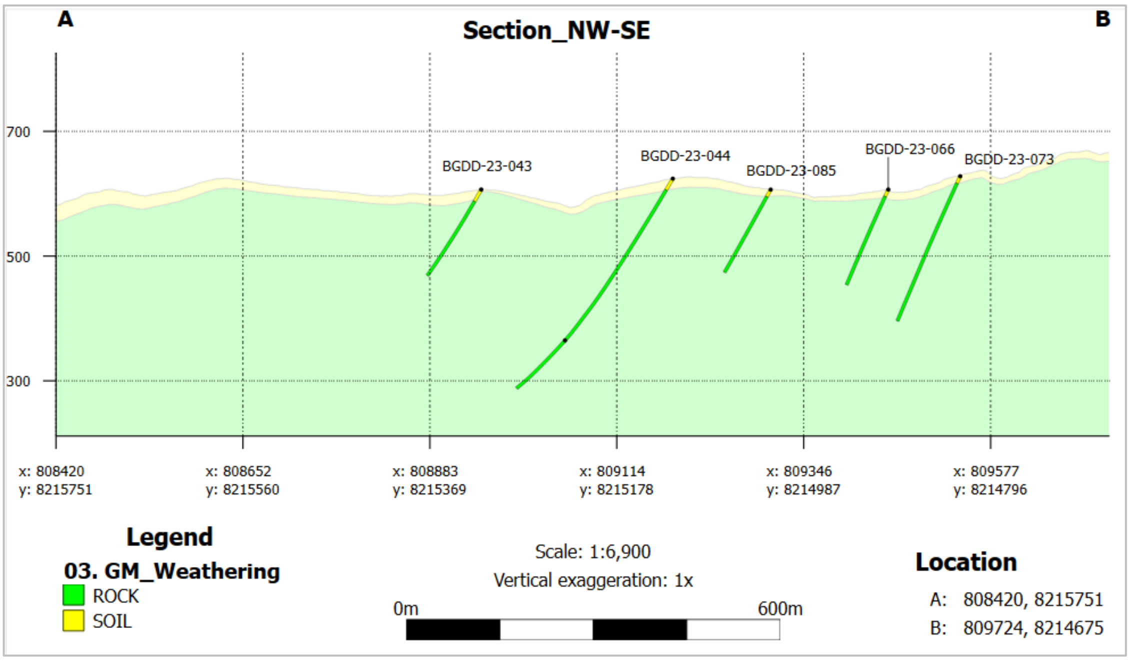


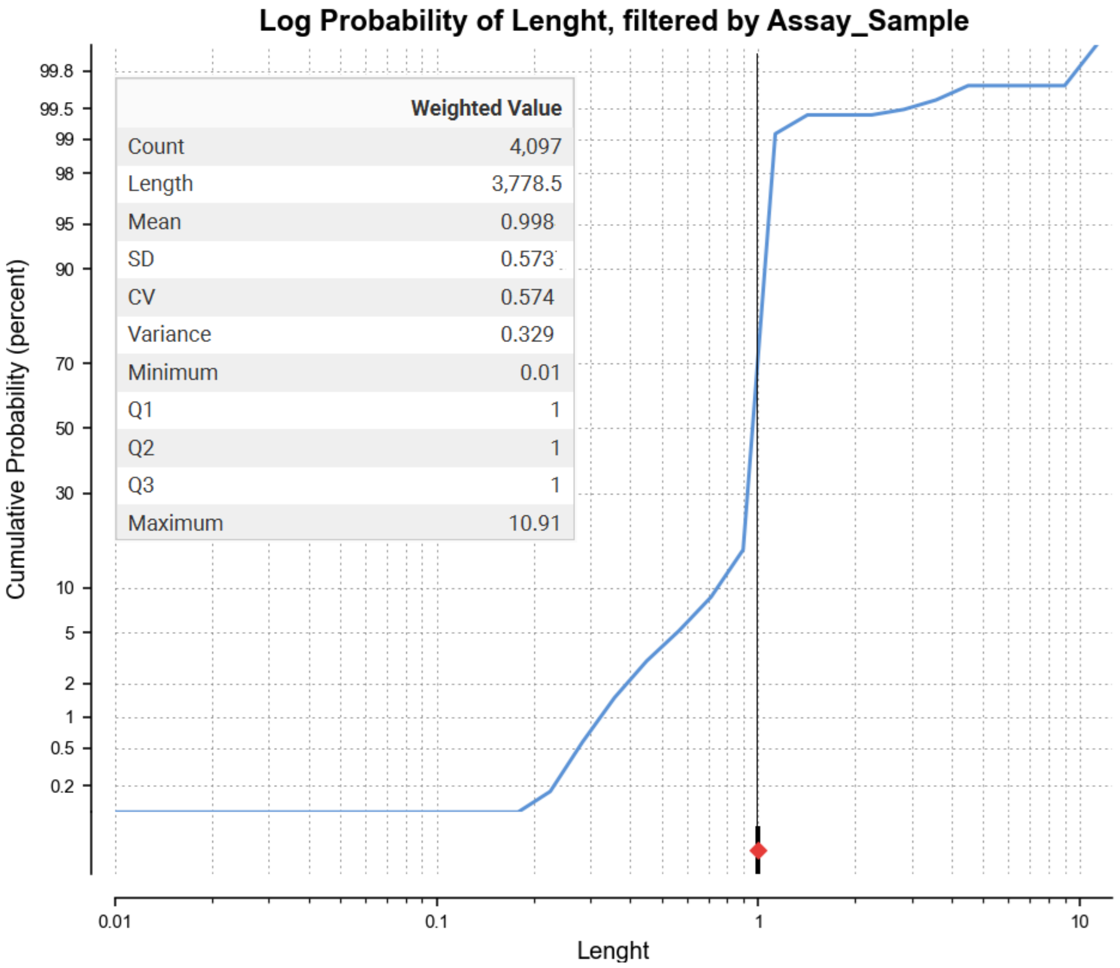
Figure 14-6: Weathering zone model section view

Source: GE21, 2024.

14.3 Geostatistical Structural Analysis

14.3.1 Regularization of samples

The analysis of the sample support showed that more than 72% of the drilling samples have a length equal to 1 m. GE21 carried out the regularization of samples in 1 m for the complementary studies of statistics and geostatistics (Figure 14-7). If the residual length of the composite is less than 0.20 m, it is equally distributed within the domain boundary with a minimum coverage of 50%.



	Weighted Value
Count	4,097
Length	3,778.5
Mean	0.998
SD	0.573
CV	0.574
Variance	0.329
Minimum	0.01
Q1	1
Q2	1
Q3	1
Maximum	10.91

Figure 14-7: Baixa Grande assays interval length statistics

Source: GE21, 2024.

14.3.2 Exploratory Data Analysis (EDA)

Statistical analysis on composited drilling samples was performed for the Li_2O % variable inside each modelled horizon. Figure 14-8 and Table 14-2 show the box plots and summary statistics for pegmatite veins by target.

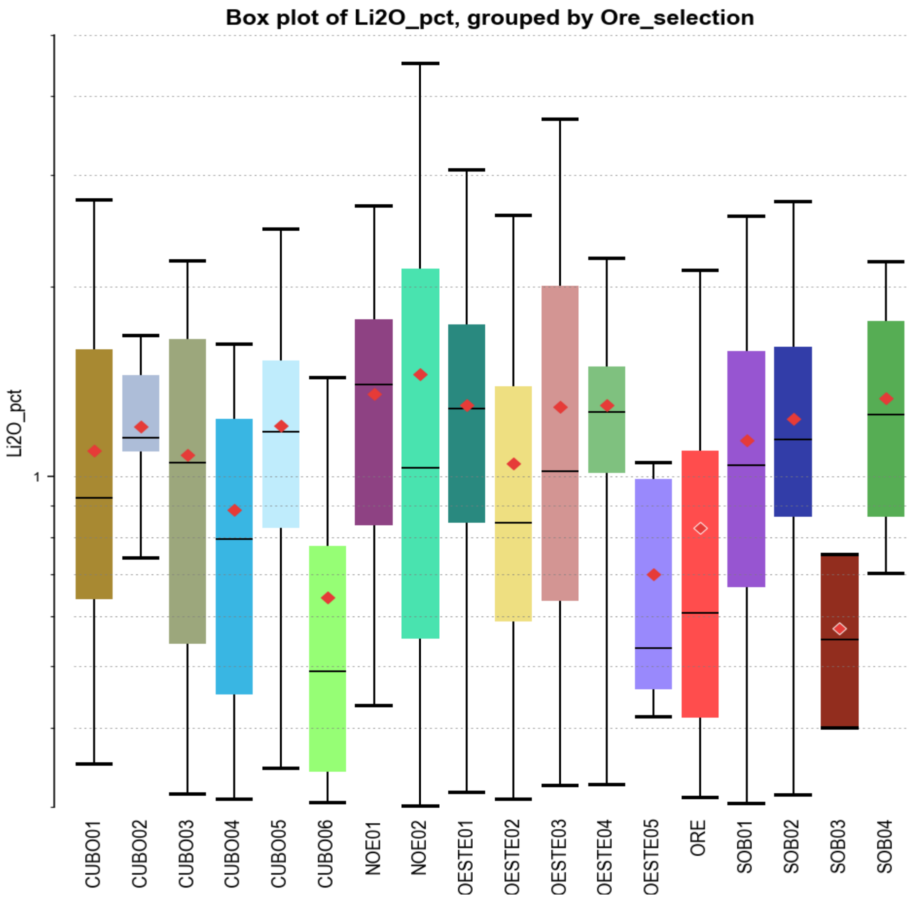


Figure 14-8: Li_2O (%) Spodumene pegmatite veins model box plots

Source: GE21, 2024.

Table 14-2: Summary of statistics for spodumene pegmatite veins

Variable	Vein ID	Count	Mean	Coefficient of variation	Variance	Minimum	Lower quartile	Median	Upper quartile	Maximum
Li_2O _pct	CUBO01	19	1.10	0.61	0.45	0.35	0.64	0.92	1.59	2.74
	CUBO02	7	1.20	0.27	0.11	0.74	1.10	1.15	1.45	1.67
	CUBO03	30	1.08	0.55	0.36	0.31	0.54	1.05	1.65	2.20
	CUBO04	28	0.89	0.52	0.21	0.31	0.45	0.80	1.23	1.62
	CUBO05	133	1.20	0.39	0.22	0.35	0.83	1.18	1.53	2.46
	CUBO06	19	0.64	0.63	0.16	0.30	0.34	0.49	0.78	1.57
	NOE01	44	1.35	0.41	0.31	0.43	0.84	1.40	1.77	2.68
	NOE02	82	1.45	0.76	1.21	0.30	0.55	1.03	2.13	4.65
	NOE03	9	0.84	0.28	0.06	0.46	0.65	0.99	0.99	1.14
	OESTE01	195	1.30	0.46	0.36	0.32	0.84	1.28	1.74	3.06
	OESTE02	60	1.05	0.60	0.40	0.31	0.59	0.85	1.39	3.12
	OESTE03	35	1.29	0.67	0.74	0.32	0.64	1.02	2.01	3.67
	OESTE04	23	1.30	0.35	0.21	0.33	1.01	1.27	1.50	2.39
	OESTE05	8	0.70	0.38	0.07	0.42	0.46	0.53	0.99	1.05
	ORE	50	0.83	0.70	0.34	0.31	0.42	0.61	1.10	2.78
	SOB01	87	1.14	0.50	0.32	0.30	0.67	1.04	1.58	2.58
	SOB02	30	1.23	0.45	0.31	0.31	0.86	1.14	1.61	2.83
	SOB03	3	0.58	0.31	0.03	0.40	0.40	0.55	0.75	0.75
	SOB04	10	1.33	0.39	0.27	0.70	0.86	1.25	1.76	2.19
	Total	**4,097**	**0.37**	**1.48**	**0.30**	**0.00**	**0.07**	**0.16**	**0.33**	**4.65**

Source: GE21, 2024.

14.3.3 Variographic Analysis

The structural analysis of the domains was conducted to determine the variographic parameters, which are essential for determining the spatial continuity model of the grade variables and for the grade estimate.

Variograms were generated explicitly for Li_2O % within the spodumene pegmatite suite. This approach considered the geological similarity among them, enhancing the robustness of the variograms. Three distinct sets of veins were considered:

- Cubo
- Oeste
- Sobradinho
- Noé and Zoé (no sufficient samples for a robust variogram)

The variographic analysis was executed using Leapfrog software. Figure 14-9 to Figure 14-14 show the variograms for the Li_2O % variable for each set of pegmatite domains. Additionally, Table 14-3 presents the variographic parameters obtained from the analyses. These parameters were applied in the process of grade estimation.

Table 14-3: Variographic parameters

Domain set	Variance	Nugget	Normal Nugget	Structure Number	Sill	Normal Sill	Major	Semi Major	Minor	Dip	Dip Azi.	Pitch
Variographic structures type: Spherical												
Cubo	0.29	0.0145	0.05	1	0.098	0.338	90	50	1.3	42	116	135
				2	0.177	0.611	100	60	4			
Oeste	0.438	0.065	0.15	1	0.172	0.394	68	90	1.5	43	115	113
				2	0.199	0.455	102	102	7.5			
Sob.	0.352	0.05	0.15	1	0.045	0.128	118	6	2.3	32	153	176
				2	0.254	0.721	170	73	1.9			
Noé and Zoé	0.325	0.00	0.00	1	0.325	0.675	450	270	1	0	0	90

Source: GE21, 2024.

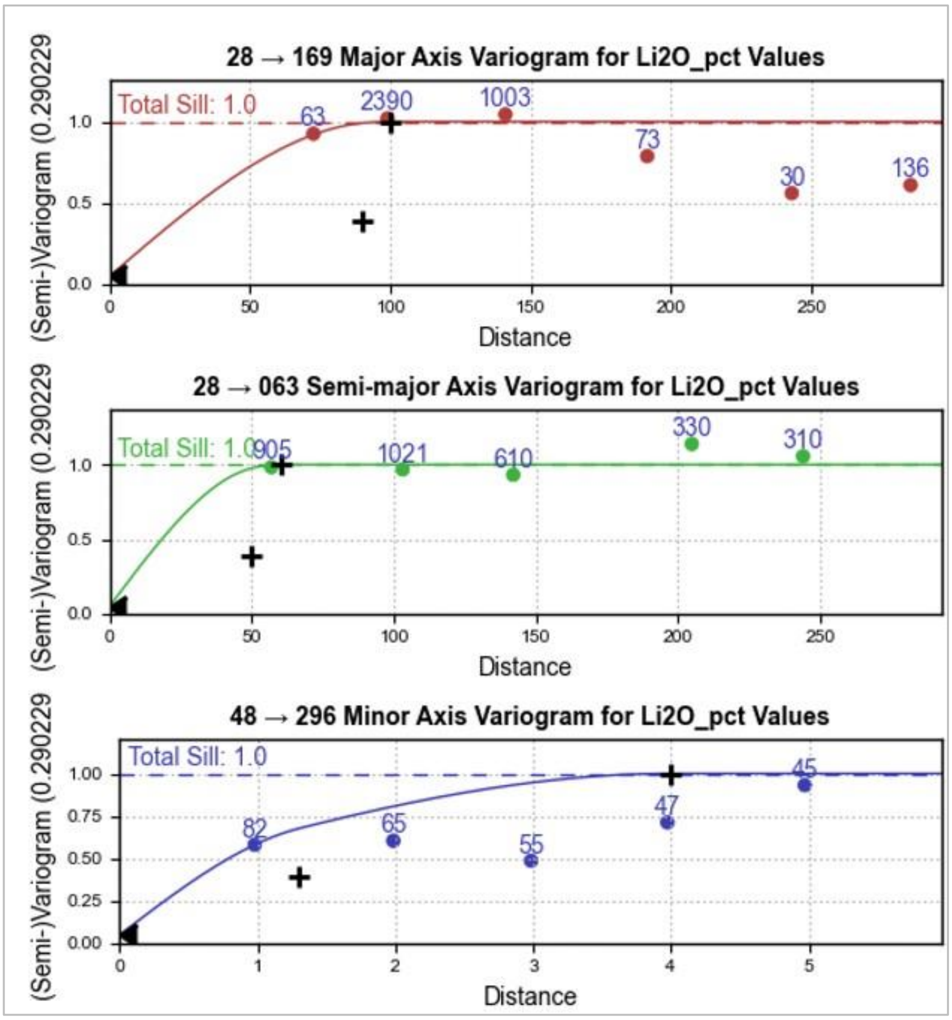


Figure 14-9: Variographic model – Cubo

Source: GE21, 2024.

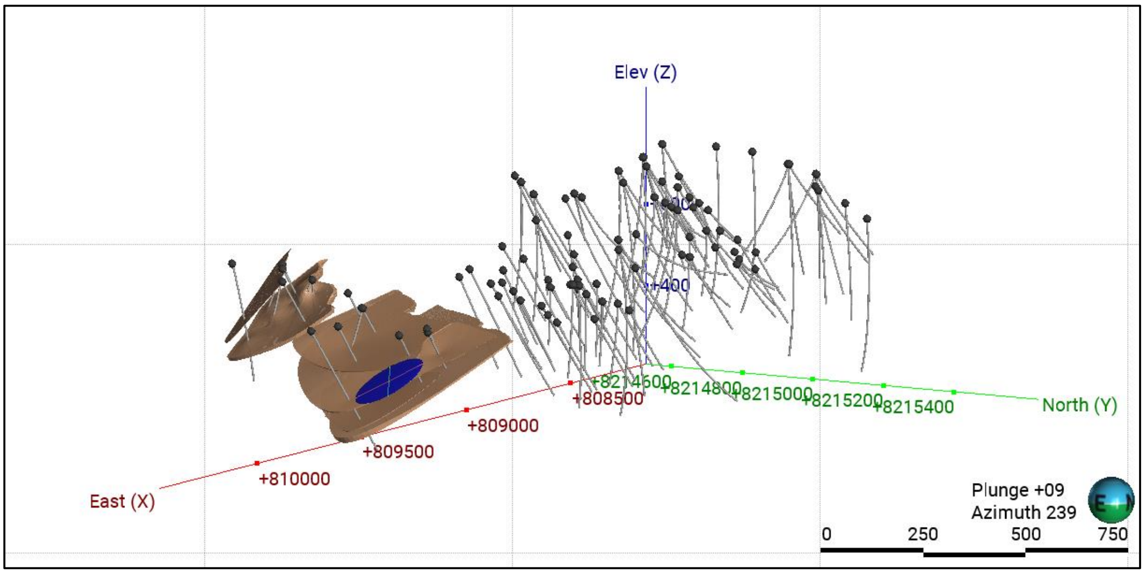


Figure 14-10: Variographic ellipsoid – Cubo

Source: GE21, 2024.

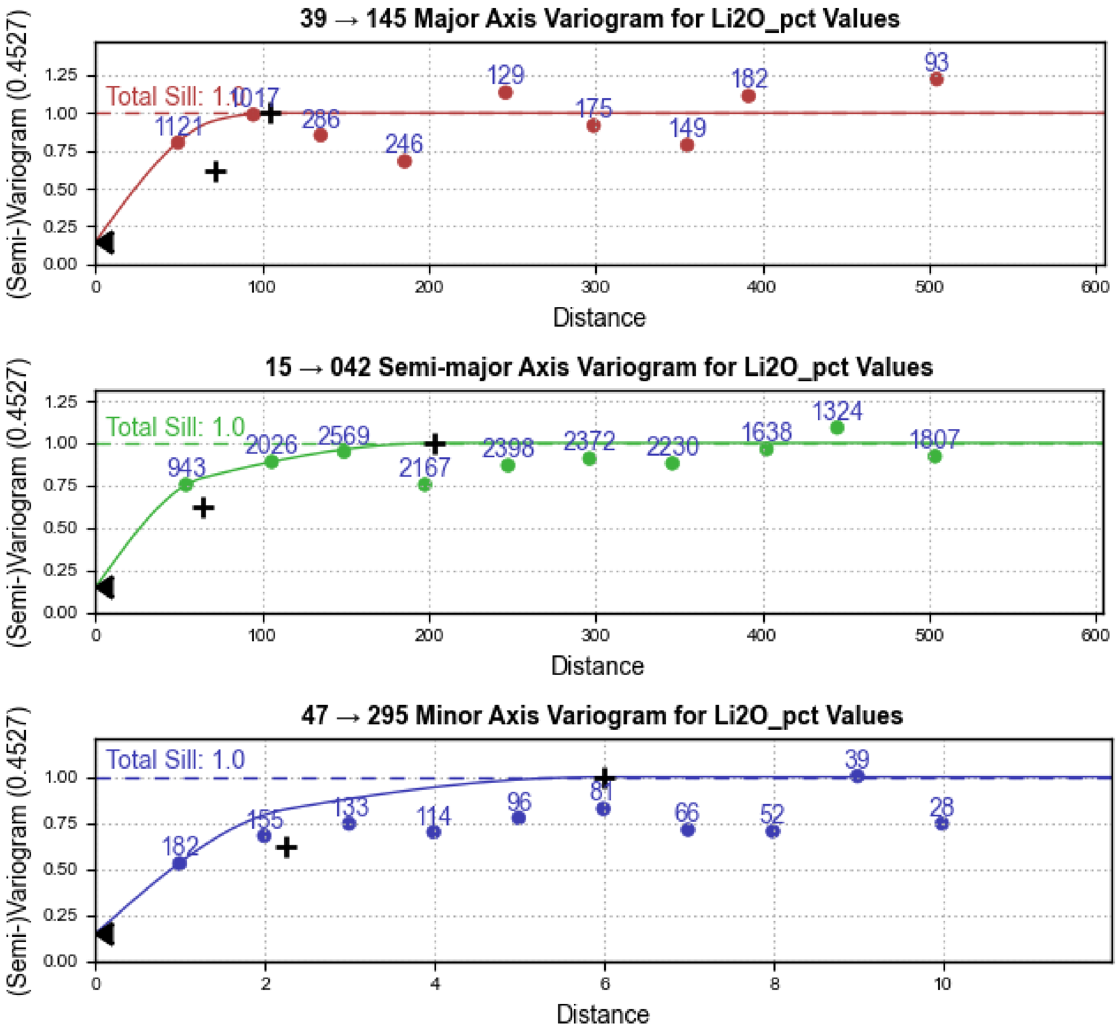


Figure 14-11: Variographic model – Oeste

Source: GE21, 2024.

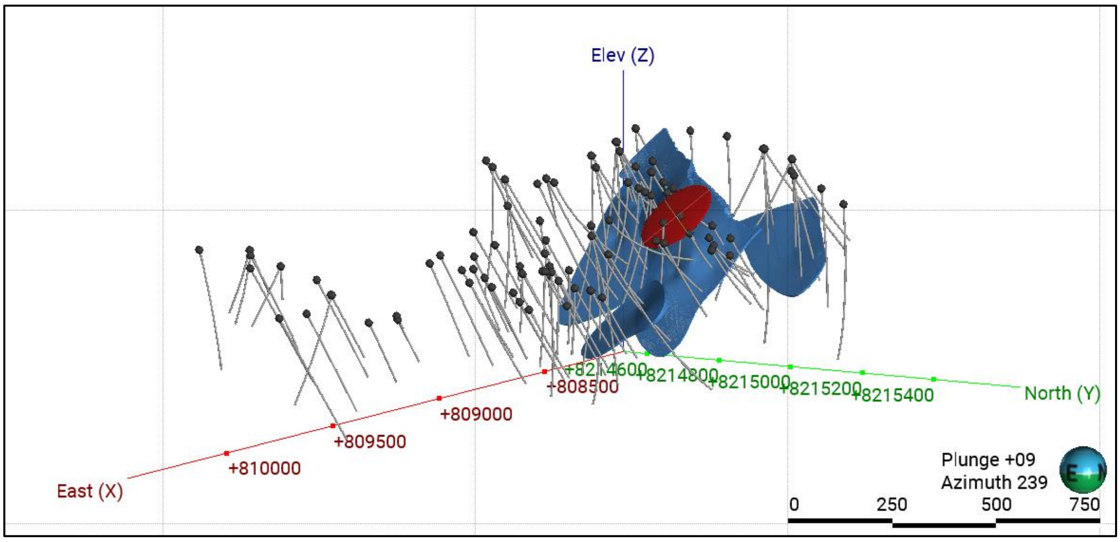


Figure 14-12: Variographic ellipsoid – Oeste

Source: GE21, 2024.

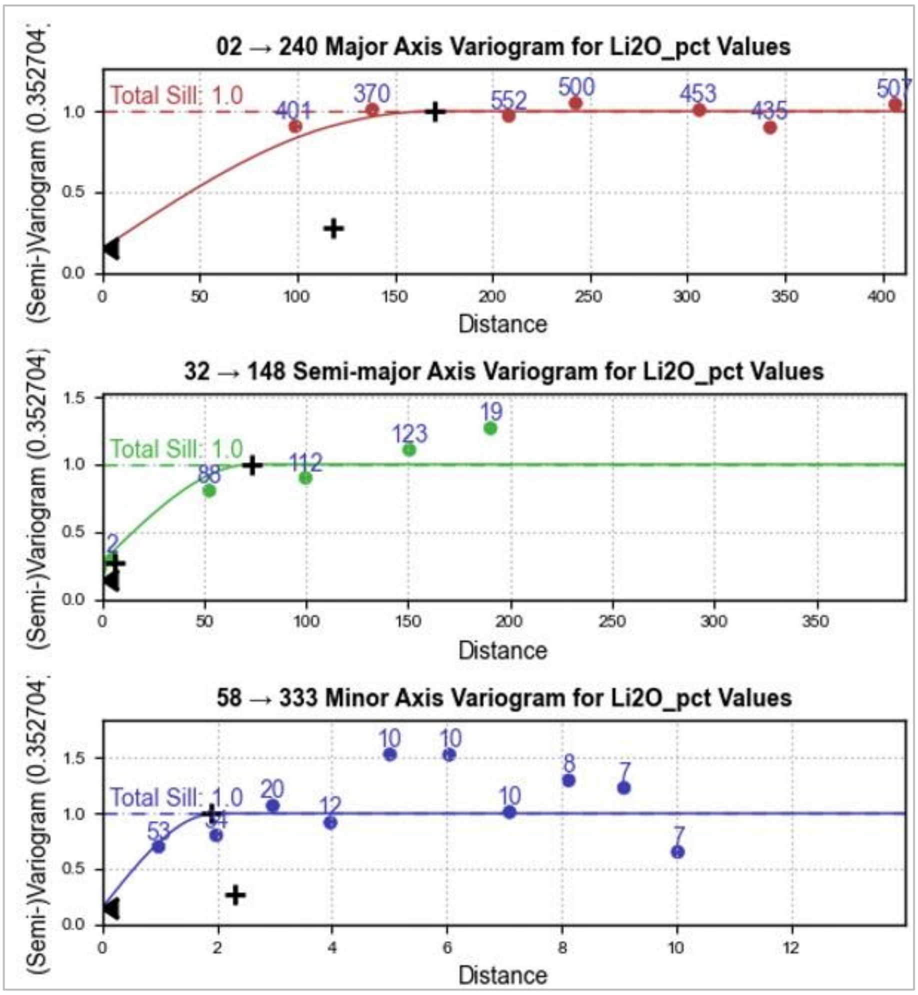


Figure 14-13: Variographic model – Sobradinho

Source: GE21, 2024.

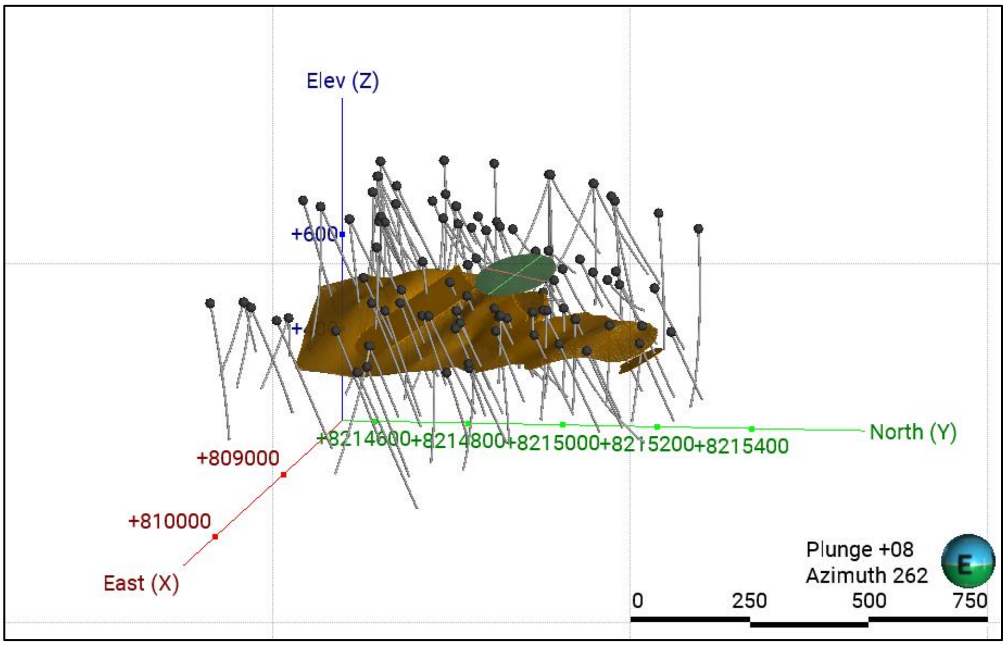


Figure 14-14: Variographic ellipsoid – Sobradinho

Source: GE21, 2024.

14.4 Block Model

A block model was built to carry out the grade estimation. The model's dimensions (16 m x 16 m x 4 m) were defined based on the quarter of minimum drilling grid spacing. The sub-blocks model was set in 2 m x 2 m x 2 m size to ensure the geometric adherence of the modelled bodies.

The dimensions of the block models and the attributes are shown in Table 14-4 and Table 14-5.

Table 14-4: Block model dimensions

	X	Y	Z
Minimum Coordinates (m)	807335	8213800.00	-230
Maximum Coordinates (m)	811463	8217720	870.00
Number of nodes	258	245	275
Block size (m)	16	16	4
Sub-Block	2	2	1
There is no rotation around the coordinate axis.			

Source: GE21, 2024.

Table 14-5: Block model variables summary

Attribute Name	Type	Deals	Background	Description
02.GM_GradeShell_BG	Character	-		Grade Shell Model
OREBODY	Character	-		Spodumene Veins Model
Class	Character	-		Mineral Classification
Density	Real	4	-99	Density Values
OXCOD	Character	-		Weathering Model Code
Li_2O	Real	4	-99	Li_2O OK estimation

Source: GE21, 2024.

14.5 Grade Estimation

Based on the structural analysis results described above, the Li_2O grade estimate was carried out using the Ordinary Kriging (OK) method using the Leapfrog software. The density (%) variable was estimated using the inverse square of distance .

Each mineralized vein was estimated independently, using a hard boundary strategy to ensure that samples from one domain did not influence neighbouring domains. The variograms were initially modelled considering the structural continuity across the entire set of domains, followed by an adjustment for honouring the specific behaviour for each domain. Table 14-6 shows the main parameters of the kriging strategy applied in the grade estimation.

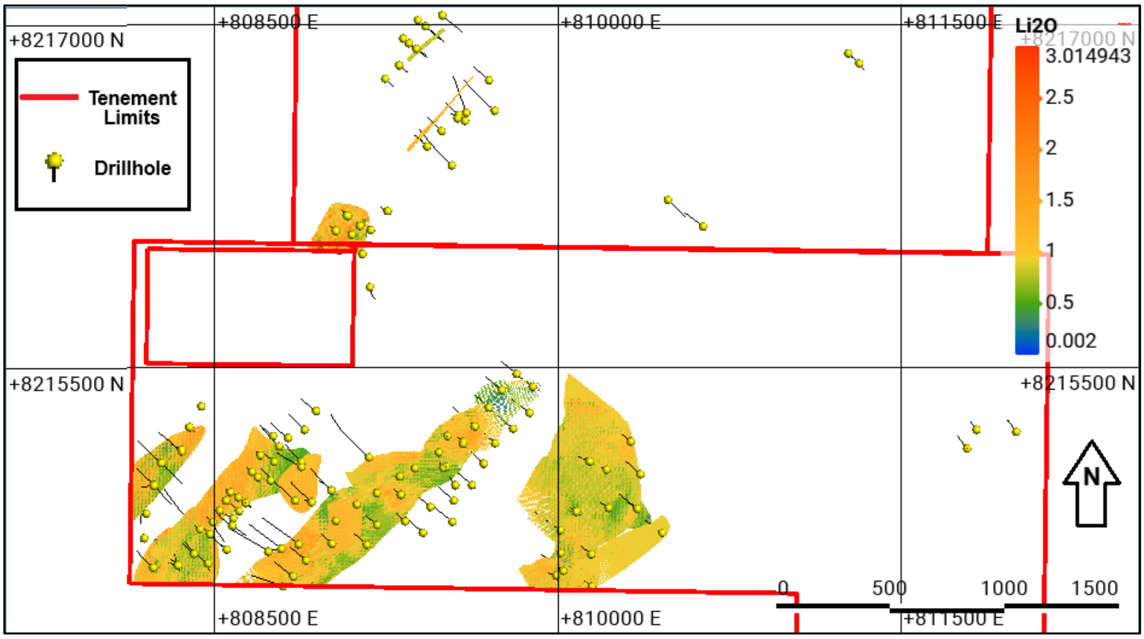


Figure 14-15: Estimated Li_2O block model

Source: GE21, 2024.

Table 14-6: Kriging parameters

Variable / Domain	Step of estimate	Ellipsoid Ranges			Number of Samples		
		Major	Semi-major	Minor	Minimum	Maximum	Max. by Drill Holes
Li_2O – Cubo	Step 1	100	60	4	6	20	2
	Step 2	200	120	8	6	20	2
	Step 3	400	240	16	4	20	2
	Step 4	1600	960	64	4	20	2
Li_2O – Oeste	Step 1	102	102	7.5	6	20	2
	Step 2	204	204	15	6	20	2
	Step 3	408	408	30	4	20	2
	Step 4	1600	1600	120	4	20	2
Li_2O – Sobradinho	Step 1	170	73	1.9	6	20	2
	Step 2	340	146	4	6	20	2
	Step 3	680	292	8	4	20	2
	Step 4	1400	600	40	4	20	2
Li_2O – Noé and Zoé	Step 1	170	73	1.9	6	20	2
	Step 2	340	146	4	6	20	2
	Step 3	680	292	8	4	20	2
	Step 4	1400	600	40	4	20	2
Density	Step 1	1000	1000	500	8	24	4

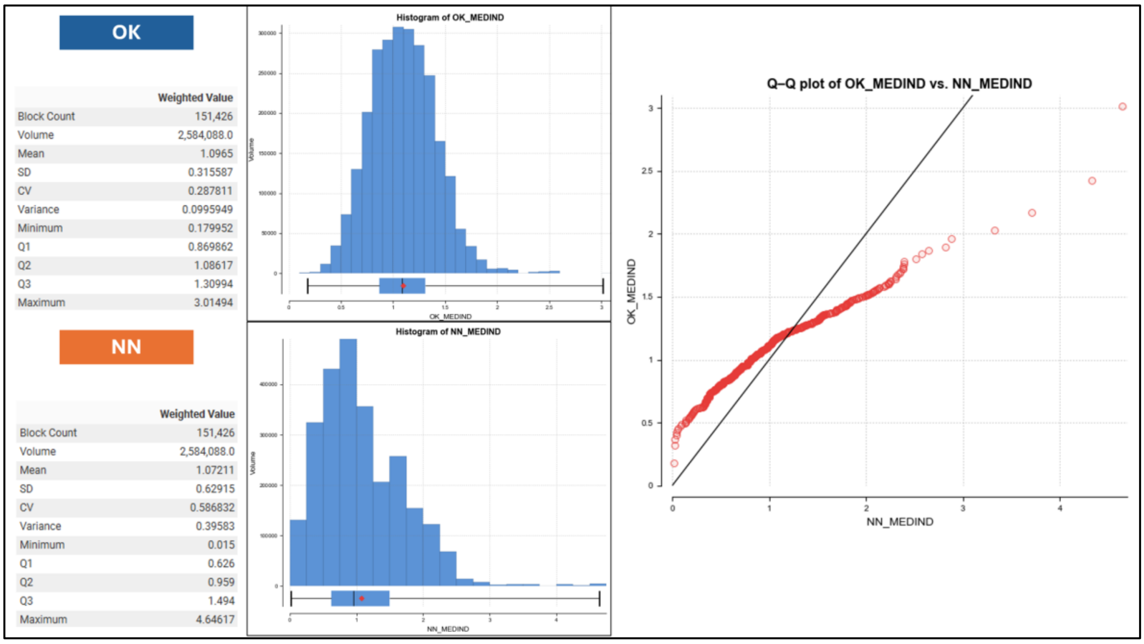
General Parameters:
Dynamic variable orientation for estimation was applied to each domain in Leapfrog software.
Moving neighbourhood from ellipsoid, Dip = 100° Dip Azimuth = 60° Pitch = 4° (Cubo).
Moving neighbourhood from ellipsoid, Dip = 102° Dip Azimuth = 102° Pitch = 7.5° (Oeste).
Moving neighbourhood from ellipsoid, Dip = 170° Dip Azimuth = 73° Pitch = 1.9° (Sobradinho).
Moving neighbourhood from ellipsoid, Dip = 0° Dip Azimuth = 0° Pitch = 90° (Noé and Zoé).

Source: GE21, 2024.

14.6 Estimation Validation

The QP validated the estimate through visual verification and global and local bias verification using comparative methods based on the Nearest Neighbour (NN) estimate.

NN check plots were produced to validate the smoothing effect of the kriging estimate and the global bias. Figure 14-16 and Figure 14-17 show the results of global bias analysis of the estimated Li_2O and density variables. Results show the expected smoothing effect of OK's grade estimation within the acceptance limits. The comparative analysis also shows that OK respects the average grades globally, and the global bias in the estimated grades is within the acceptance limits.


OK

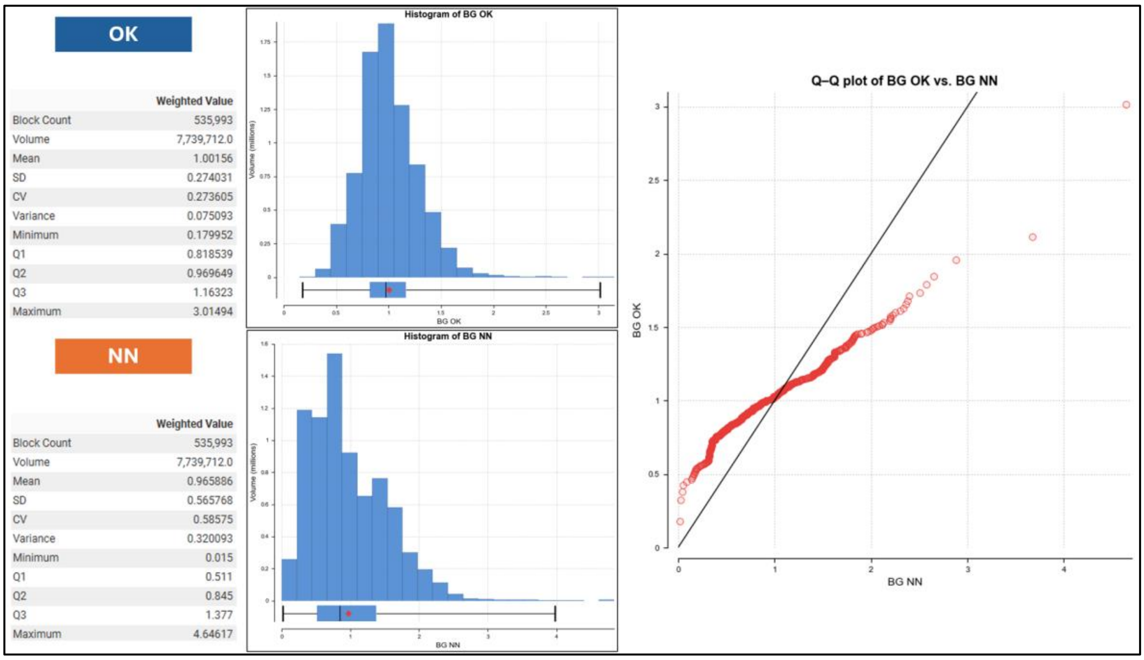
	Weighted Value
Block Count	151,426
Volume	2,584,088.0
Mean	1.0965
SD	0.315587
CV	0.287811
Variance	0.0995949
Minimum	0.179952
Q1	0.869862
Q2	1.08617
Q3	1.30994
Maximum	3.01494

NN

	Weighted Value
Block Count	151,426
Volume	2,584,088.0
Mean	1.07211
SD	0.62915
CV	0.586832
Variance	0.39583
Minimum	0.015
Q1	0.626
Q2	0.959
Q3	1.494
Maximum	4.64617

Figure 14-16: Estimation validation – NN check to Li_2O – Measured and Indicated Resources

Source: GE21, 2024.


OK

	Weighted Value
Block Count	535,993
Volume	7,739,712.0
Mean	1.00156
SD	0.274031
CV	0.273605
Variance	0.075093
Minimum	0.179952
Q1	0.818539
Q2	0.969649
Q3	1.16323
Maximum	3.01494

NN

	Weighted Value
Block Count	535,993
Volume	7,739,712.0
Mean	0.965886
SD	0.565768
CV	0.58575
Variance	0.320093
Minimum	0.015
Q1	0.511
Q2	0.845
Q3	1.377
Maximum	4.64617

Figure 14-17: Estimation validation – NN check to Li_2O

Source: GE21, 2024.

The local bias assessment by the Swath-Plot method aims to analyze the occurrence of local bias and smoothing effect by comparing the average grades for the model through OK and the NN method in swath coordinate intervals graphs along the X, Y, and Z axes. Figure 14-18 and Figure 14-19 show the validation results of the Li_2O % and Density swath plots.

The results from the swath plots show that the smoothing effect or local and global bias are inside acceptance limits for MRE purposes.

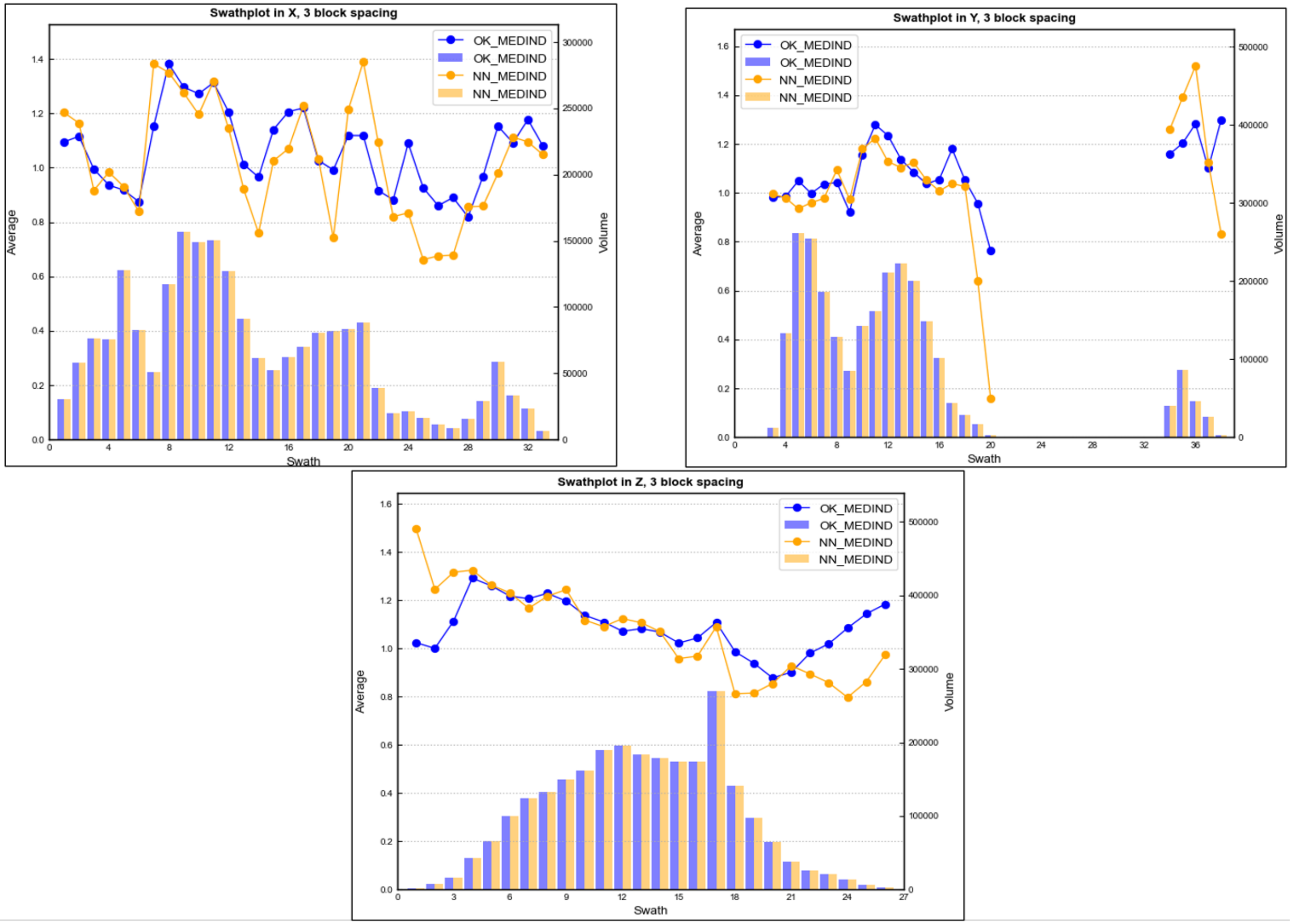


Figure 14-18: Estimation validation for measured and indicated classified blocks – Swath Plot – Li_2O

Source: GE21, 2024.

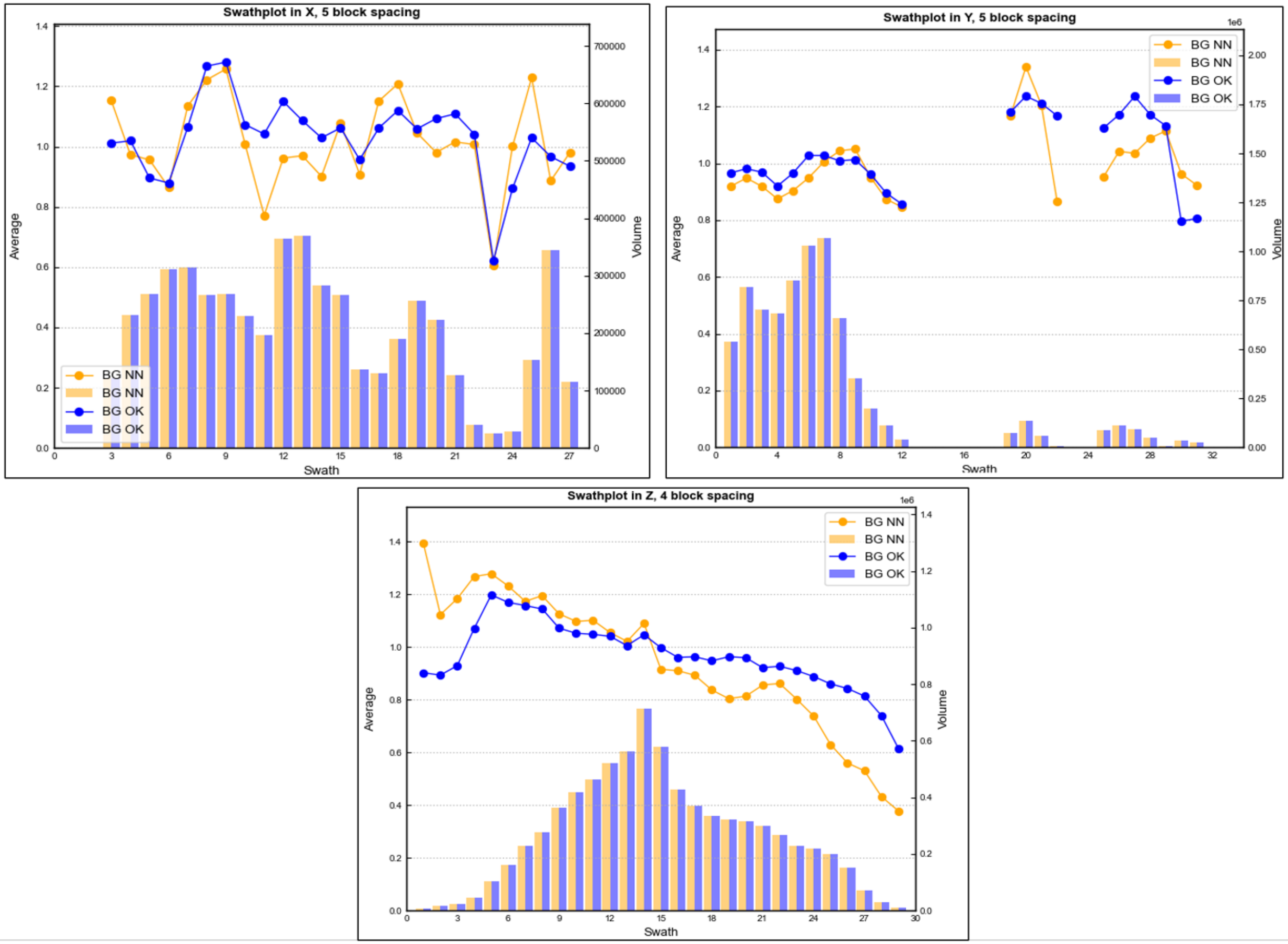


Figure 14-19: Estimation validation – Swath Plot – density

Source: GE21, 2024.

14.7 Density

The density in the spodumene pegmatites was estimated by Inverse square of Distance. The schists density was defined as the mean of the 2,297 samples from the Lithium Ionic database. The weathered zone does not have measurements, and GE21 has adopted the value 1.8 g/cm³ for this domain, a common value used by other companies in the Jequitinhonha Valley region. GE21 recommends that additional density tests be carried out in weathered zones.

Table 14-7 shows the densities of estimated domains and the adopted densities of the host rocks.

Table 14-7: Density values

Domains	Density g/cm³
Shists Rocks	2.80
Weathered Zone	1.80
Spodumene Pegmatites	Estimated by IDW individually by target

Source: GE21, 2024.

14.8 Mineral Resources Classification

The Mineral Resource was classified based on CIM Standards and CIM Guidelines, utilizing geostatistical and classical methods, along with economically and mining-appropriate parameters relevant to the deposit type.

The classification boundaries made by GE21 for the Measured, Indicated, and Inferred categories were established through an approach that considered a comprehensive set of factors.

These factors included the adequacy of geological interpretation, sampling procedure and chemical analysis, the sample grid spacing, the survey methodology, and the quality of assay data.

Additionally, drilling spacing and the progressive expansion of the search radius during grade estimation stages were also considered, as well as the average anisotropic distance of the samples and the continuity of mineralization zones and estimated grades.

This multi-faceted approach ensured the robustness and accuracy of the classification process.

The definition of Mineral Resource class was carried out by applying the following rules:

- The Measured Mineral Resource classification referenced the 50 m of the average Euclidean distance to the sample used in ordinary kriging estimation with a minimum of five composites in at least three drill holes.
- The Indicated Mineral Resource classification referenced the 100 m of the average Euclidean distance to the sample used in ordinary kriging with a minimum of five composites in at least three drill holes.
- The Inferred Mineral Resource classification is all remaining estimated blocks.

- The total Mineral Resources were constrained within the boundaries of the Mining Rights and the Reasonable Prospect for Eventual Economic Extraction (RPEEE) process, which was divided into two stages: open pit and underground pit.

The Mineral Resource classification was supported by a grade shell representing the underground mining appliance RPEEE, performed through a restricted model that limits the blocks classified as Resources generated from an economic and geometric function by the cut off grade of 0.5 Li_2O, based on an average feed grade of 1.4 for the processing plant.

The parameters applied in pit optimization are presented in Table 14-8.

Table 14-8: First pass parameters for Open Pit RPEEE

Item			Unit	Value
Revenue	Financial	Selling Price	US$/t conc	2 750
		Discount rate	%	8
Physical	ROM	Density	g/cm³	model
		Grades	% Li_2O	model
	Mining	Mining Recovery	%	100
		Dilution		0
	Block Model dimensions	X	m	8
		Y		8
		Z		4
	Overall Slope Angle	Soil / Saprolite	°	37
		Fresh Rock		56
	Processing	Metallurgical Recovery	%	65.0
		Concentrate Grade	% Li_2O	5.5
		Cut-off Grade	% Li_2O	0.50
Costs		Mining	US$/t mined	2.50
		Processing	US$/t ROM	12.50
		G&A		3.00
		Transportation	US$/t conc	112.56

Resources are shown in Table 14-9 and Table 14-10, Figure 14-20 and Figure 14-21.

Table 14-9: Baixa Grande Open Pit Mineral Resource Estimate

Category	Resource (Mt)	Grade (%Li_2O)	Contained LCE (kt)
Measured	1.08	1.19	31.86
Indicated	5.44	1.10	147.72
Measured + Indicated	6.52	1.11	179.58
Inferred	11.67	0.97	280.73

Notes:

1. The spodumene pegmatite domains were modelled using composites with Li_2O grades greater than 0.3%.
2. The Mineral Resource Estimate (MRE) were prepared under the CIM Standards and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit.
3. Mineral Resources are not Mineral Reserves and are not demonstrably economically recoverable.
4. Grades reported using Dry Density.
5. The effective date of the MRE was December 2, 2024.
6. The QP responsible for Mineral Resources is geologist Leonardo Soares (MAIG #5180).
7. The MRE numbers provided have been rounded to the relative precision of the estimate. Values cannot be added due to rounding.
8. The MRE is delimited by Lithium Ionic Baixa Grande target claims (ANM).
9. The MRE was estimated using ordinary kriging in 16 m x 16 m x 4 m blocks.
10. The MRE Report Table was produced in Leapfrog software.
11. The reported MRE only contains Fresh Rock Domains using a 0.5% Li_2O cut-off for open pit resources, considering the average feed grade of 1.4 Li_2O for the processing plant.
12. The MRE was restricted by a pit shell using a selling price of 2,750 US$/t Conc., a mining cost of 2.50 US$/t mined, a processing cost of 12.50 US$/t ROM and a selling cost of 112.56 US$/t conc.

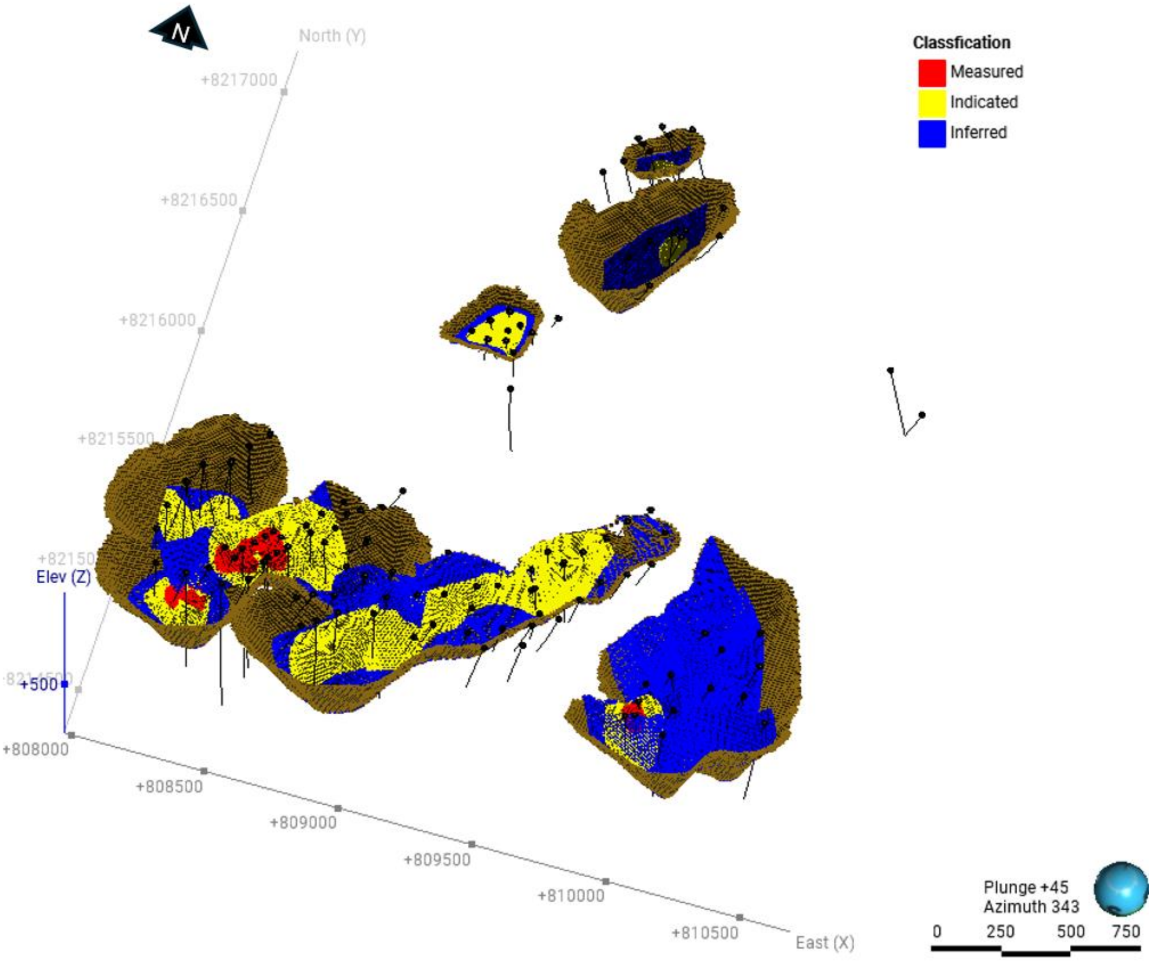


Figure 14-20: Open pit optimization with RPEEE

Source: GE21, 2024.

Table 14-10: Baixa Grande Underground Mineral Resource Estimate

Category	Resource (Mt)	Grade (%Li_2O)	Contained LCE (kt)
Inferred	1.23	0.83	25.19

Notes:
1. The spodumene pegmatite domains were modelled using composites with Li2O grades greater than 0.3%.
2. The Mineral Resource Estimate (MRE) were prepared under the CIM Standards and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit.
3. Mineral Resources are not Mineral Reserves and are not demonstrably economically recoverable.
4. Grades reported using Dry Density.
5. The effective date of the MRE was December 2, 2024.
6. The QP responsible for the Mineral Resources is geologist Leonardo Soares (MAIG #5180).
7. The MRE numbers provided have been rounded to the relative precision of the estimate. Values cannot be added due to rounding.
8. The MRE is delimited by Lithium Ionic Baixa Grande target claims (ANM).
9. The MRE was estimated using ordinary kriging in 16 m x 16 m x 4 m blocks.
10. The MRE Report Table was produced using Leapfrog software.
11. The reported MRE only contains Fresh Rock Domains.
12. The MRE was restricted by interpreting suitable-grade shells using a 0.5% Li2O cut-off for underground Mineral Resources, considering the average feed grade of 1.4 Li2O for the processing plant.

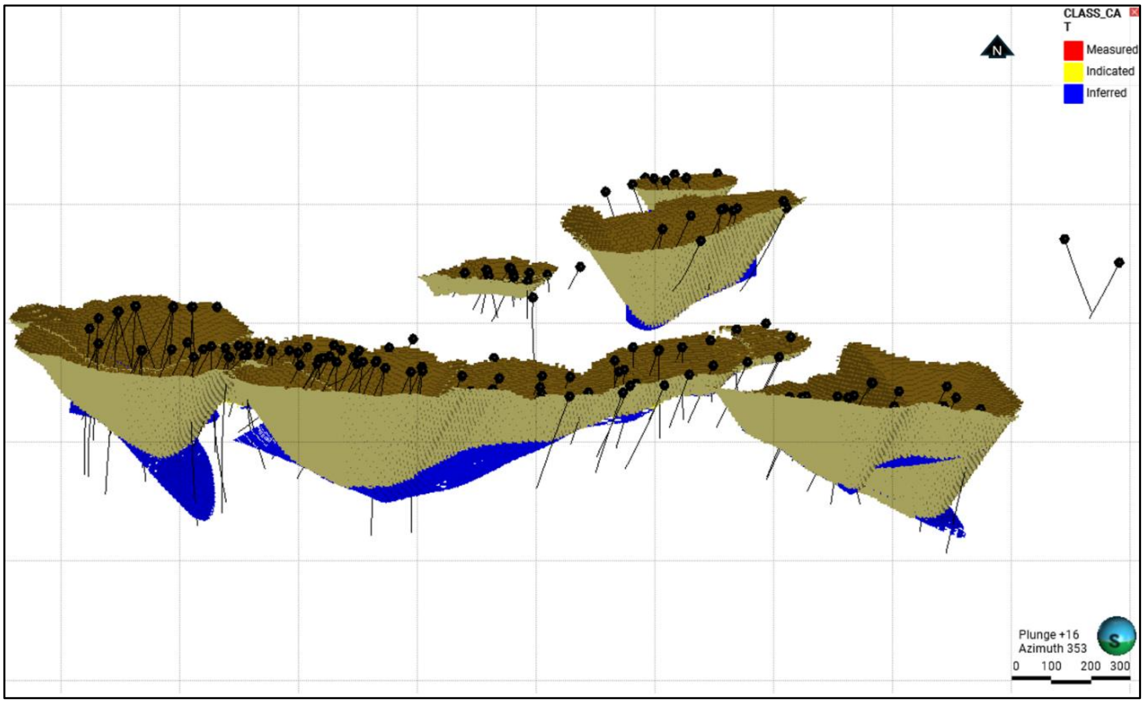


Figure 14-21: Underground optimization with RPEEE

Source: GE21, 2024.

15 MINERAL RESERVES ESTIMATES

Not applied.

16 MINING METHODS

Not applied.

17 RECOVERY METHODS

Not applied.

18 PROJECT INFRASTRUCTURE

Not applied.

19 MARKET STUDIES AND CONTRACTS

Not applied.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACTS

Not applied.

21 CAPITAL AND OPERATING COSTS

Not applied.

22 ECONOMIC ANALYSIS

Not applied.

23 ADJACENT PROPERTIES

The Baixa Grande lithium ore deposit, registered under ANM 830.926/2017 and ANM 830.833/2001, is located adjacent to the mineralized areas of spodumene-bearing pegmatites, which include the Colina deposit of the Latin Resources.

Figure 23-1 shows the locations of the mineral rights of Latin Resources, that includes Colina lithium ore deposit, and other lithium mining right areas from third-party companies surrounding the Baixa Grande Project.

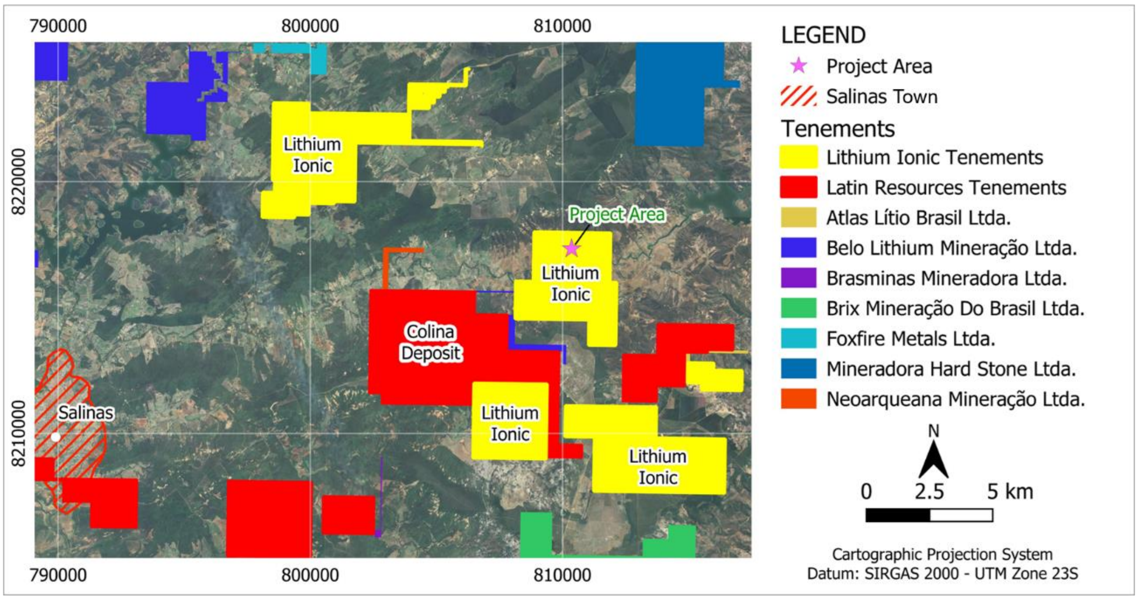


Figure 23-1 Lithium Ionic Mining Right Areas (in yellow) and, in the Surrounding Areas, Latin Resources Tenements (in red)

Source: GE21, 2024.

24 OTHER RELEVANT DATA AND INFORMATION

There is no relevant information that affects the opinions offered in this Report.

25 INTERPRETATION AND CONCLUSIONS

25.1 Geology and Mineral Resources

Mineral Resources were estimated and limited to the areas outlined using the Mining Rights polygonal that comprise the Baixa Grande Property and the Reasonable Prospect for Eventual Economic Extraction (RPEEE).

The Baixa Grande database contains 3,276 diamond drill hole assay intervals covering 3,055.47 m.

A set of solid-grade shells for estimation domains was created using a 0.3% Li_2O (%) threshold. These interpretations were then transformed into a series of implicit 3D models aligned between 116º and 151º strike directions. Additionally, weathering modelling was performed, considering the information provided in the logs. The model was built from implicit modelling using the Leapfrog software.

The Ordinary Kriging (OK) estimation method was applied to the Li_2O % variable, while the Inverse Distance method was utilized for the Density variable, both based on the outcomes of a structural analysis.

The mathematical/geostatistical criterion for classifying the Mineral Resource was based on:

- The Measured Mineral Resource classification referenced the 50 m of the Average Euclidean distance to sample (AvgD) used in ordinary kriging estimation with a minimum of five composites in at least three different drill holes.
- The Indicated Mineral Resource classification referenced the 100 m of the Average Euclidean distance to sample (AvgD) used in ordinary kriging with a minimum of five composites in at least three different drill holes.
- The Inferred Mineral Resource classification is all remaining estimated blocks.
- The total Mineral Resources were constrained within the boundaries of the Mining Rights and the RPEEE pit, which was divided into two stages: open pit and underground pit.

The Baixa Grande Mineral Resources for open pit mining contains Measured+Indicated Mineral Resources of 6.52 Mt grading 1.11% Li_2O, containing 179,580 t of Lithium Carbonate Equivalent (LCE), with Inferred Mineral Resources of 11.67 Mt grading 0.97% Li_2O in the Inferred category, or 280,730 t of LCE. Mineral Resources for underground mining are also classified as 1.23 Mt grading 0.82 % Li_2O in the Inferred class, or 25,190 t of LCE.

26 RECOMMENDATIONS

The primary recommendation is to continue the development of the Project through additional detailed investigations and higher confidence engineering studies. The aim is to complete a higher-confidence engineering study as the next major Project milestone.

The following recommendations are made concerning future work on the Property. This work will be required to upgrade Baixa Grande's Resources to the Indicated and Measured category and to advance to the next stage of detailed engineering and economic studies. These are listed as separate phases, as increasing the confidence of the Resources to Indicated or Measured category will be required before economic studies.

26.1 Work Required to Increase Confidence in the Resource

26.1.1 Geology and Mineral Resources Estimates

GE21 proposes the following recommendations for the continuous improvement of the Mineral Resources Estimate (MRE):

- A 50x50 m infill drilling program in the Indicated Mineral Resource classification domain where will focus on Mineral Resource delineation improvement.
- A 100x100 m infill drilling program in the Inferred Mineral Resource classification domain where will focus on Mineral Resource delineation improvement.
- Complementary Metallurgical tests on Noé and Zoé targets.
- Conduct an on-site density survey in the weathered zone.

Table 26-1 presents the budget estimate for the implementation of the recommendations.

Table 26-1: Planned budget recommendations

Recommended Work		Estimated Cost (US$)
Additional work to upgrade to the Indicated and Measured category	A 50x50 m infill drilling program	~$250,000
	A 100x100 m infill drilling program in the domain of the Inferred Mineral Resource classification	~$1,000,000
	Complementary Metallurgical tests	~$95,000
	Weathering zone density survey	~$15,000
	Total Estimated Costs	**$1,360,000**

Source: GE21, 2024.

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APPENDIX A – CERTIFICATE OF QUALIFIED PERSON

QP CERTIFICATE OF LEONARDO DE MORAES SOARES

I, Leonardo de Moraes Soares, MAIG (#5180), as an author of the independent technical report titled “Independent Technical Report on the Mineral Resource Estimate for the Baixa Grande Salinas Lithium Project, Minas Gerais, Brazil” (Report), prepared on behalf of Lithium Ionic Corp. (Issuer), do hereby certify that, dated February 14, 2025, with an effective date of December 2, 2024.

1. I am a Geologist for GE21 Consultoria Mineral Ltda. on Avenida Afonso Pena, 3130, 9th floor, Savassi, Belo Horizonte, MG, Brazil – CEP 30130-910.
2. I hold the following academic qualifications: a B.A.Sc. in Geology from the Federal University of Minas Gerais in Belo Horizonte, Brazil.
3. I am a professional Geologist with over 23 years of experience in the mining industry. My relevant experience for this Technical Report includes:
    - I have 9 years of experience as a specialist geologist in exploration, geotechnics and grade control on mining companies in Brazil;
    - 13 years of experience in consultancy companies as a specialist for several commodities, including Lithium projects in Mineral Resource estimate and geostatistics.
4. I meet all the education, work experience, and professional registration requirements of a “qualified person” as defined in Section 1.1 of National Instrument 43-101.
5. I am responsible for Sections 2 to 11 and 14, partially responsible for section 12, and its corresponding parts within Sections 1, 25 and 26 of the Report.
6. I have inspected the Project site on September 13 and 14, 2023.
7. I am independent of the Issuer, the issuer’s subsidiaries, and the project, applying all the tests in section 1.5 of NI 43-101.
8. I have prior involvement with the property that is the subject of the technical report as author of previous independent technical report on mineral resource estimate.
9. I have read National Instrument 43-101, and the parts of the Technical Report I am responsible for have been prepared in compliance with this Instrument, including the CIM Definition Standards on Mineral Resources and Mineral Reserves.
10. At the effective date of the Technical Report, and at the date it was filed, to the best of my knowledge, information, and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Belo Horizonte, Brazil, February 14, 2025.

<Signed and sealed in the original>

Leonardo de Moraes Soares

QP CERTIFICATE OF CARLOS JOSÉ EVANGELISTA SILVA

I, Carlos José Evangelista da Silva, MAIG (#7868), as an author of the independent technical report titled "Independent Technical Report on the Mineral Resource Estimate for the Baixa Grande Salinas Lithium Project, Minas Gerais, Brazil" (Report), prepared on behalf of Lithium Ionic Corp. (Issuer), do hereby certify that, dated February 14, 2025, with an effective date of December 2, 2024.

1. I am a Geologist for GE21 Consultoria Mineral Ltda. on Avenida Afonso Pena, 3130, 9th floor, Savassi, Belo Horizonte, MG, Brazil – CEP 30130-910.
2. I hold the following academic qualifications: a B.A.Sc. in Geology from the Federal University of Minas Gerais in Belo Horizonte, Brazil; and a master's degree in engineering in Mineral Technology from the Postgraduate Program in Mining, Metallurgical and Materials Engineering (PPGE3M) at the Federal University of Rio Grande do Sul, Brazil.
3. I am a professional Geologist with over 18 years of experience in the mining industry. My relevant experience for this Technical Report includes:

- I have 12 years of experience as a specialist geologist in Mineral exploration:
- 2006 to 2011 – Geologist in Coffey Mining Brazil, which provides advice, assistance, and audits for the mineral exploration, project development, and geological assessments for JORC and NI 43-101.
- 2011 to 2014 – Geologist in Colossus Minerals, Serra Pelada - Gold Project in Curionópolis – Pará – Brasil. Which assists in brownfield exploration projects.
- 2014 to 2016 - Geologist in SMCA - Sociedade Mineira de Cobre de Angola, Mavio Copper Project – Maquela do Zombo – Uige - Angola, which provides mineral resource management. • I have six years of experience in consultancy companies as a specialist in resource estimate and geostatistics:
- 2018 to present – Resource Geologist of GE21 Consultoria Mineral, which provides advice, assistance, and audits for the Mineral Resource Estimation and mineral exploration for JORC and NI 43-101 reports..

4. I meet all the education, work experience, and professional registration requirements of a "qualified person" as defined in Section 1.1 of National Instrument 43-101.
5. I am partially responsible for Section 12 and its corresponding parts within Sections 1, 25 and 26 of the Report.
6. I have inspected the Project site on November 26, 2024.
7. I am independent of the Issuer, the issuer's subsidiaries, and the project, applying all the tests in section 1.5 of NI 43-101.
8. I have no prior involvement with the property that is the subject of the technical report.
9. I have read National Instrument 43-101, and the parts of the Technical Report I am responsible for have been prepared in compliance with this Instrument, including the CIM Definition Standards on Mineral Resources and Mineral Reserves.
10. At the effective date of the Technical Report, and at the date it was filed, to the best of my knowledge, information, and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Belo Horizonte, Brazil, February 14, 2025.

<Signed and sealed in the original>

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Carlos José Evangelista Silva

QP CERTIFICATE OF PAULO ROBERTO BERGMAN MOREIRA

I, Paulo Roberto Bergman Moreira, FAusIMM (#333121), as an author of the independent technical report entitled “Independent Technical Report on the Mineral Resource Estimate for the Baixa Grande Salinas Lithium Project, Minas Gerais, Brazil” (Report), prepared on behalf of Lithium Ionic Corp. (Issuer), do hereby certify that, dated February 14, 2025, with an effective date of December 2, 2024.

1. I am a Mining Engineer and Director of Operations in GE21 Consultoria Mineral Ltda., which is located on Avenida Afonso Pena, 3130, 9th floor, Savassi, Belo Horizonte, MG, Brazil – CEP 30130-910.
2. I have a B.A.Sc. in Mining Engineering from the Federal University of Minas Gerais in Belo Horizonte, Minas Gerais, Brazil.
3. I am a professional Mining Engineer with over 40 years of experience in the mining industry. My relevant experience for this Technical Report includes:
    - 30 years in mining and plant operation management, including AngloGold, Yamana, Jaguar Mining and Buritirama Mineração;
    - 10 years in engineering development and consultancy in the mining industry, including gold, iron, manganese, rare earth elements and others.
4. I meet all the education, work experience, and professional registration requirements of a “qualified person” as defined in Section 1.1 of National Instrument 43-101.
5. I am responsible for Section 13 and its corresponding parts within Sections 1, 25 and 26 of the Report.
6. I have not visited the project site to date.
7. I am independent of the Issuer, the issuer’s subsidiaries, and the project, applying all the tests in section 1.5 of NI 43-101.
8. I have prior involvement with the property that is the subject of the technical report as author of previous independent technical report on mineral resource estimate.
9. I have read National Instrument 43-101, and the parts of the Technical Report I am responsible for have been prepared in compliance with this Instrument, including the CIM Definition Standards on Mineral Resources and Mineral Reserves.
10. At the effective date of the Technical Report, and at the date it was filed, to the best of my knowledge, information, and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Belo Horizonte, Brazil, February 14, 2025.

<Signed and sealed in the original>

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Paulo Roberto Bergman Moreira