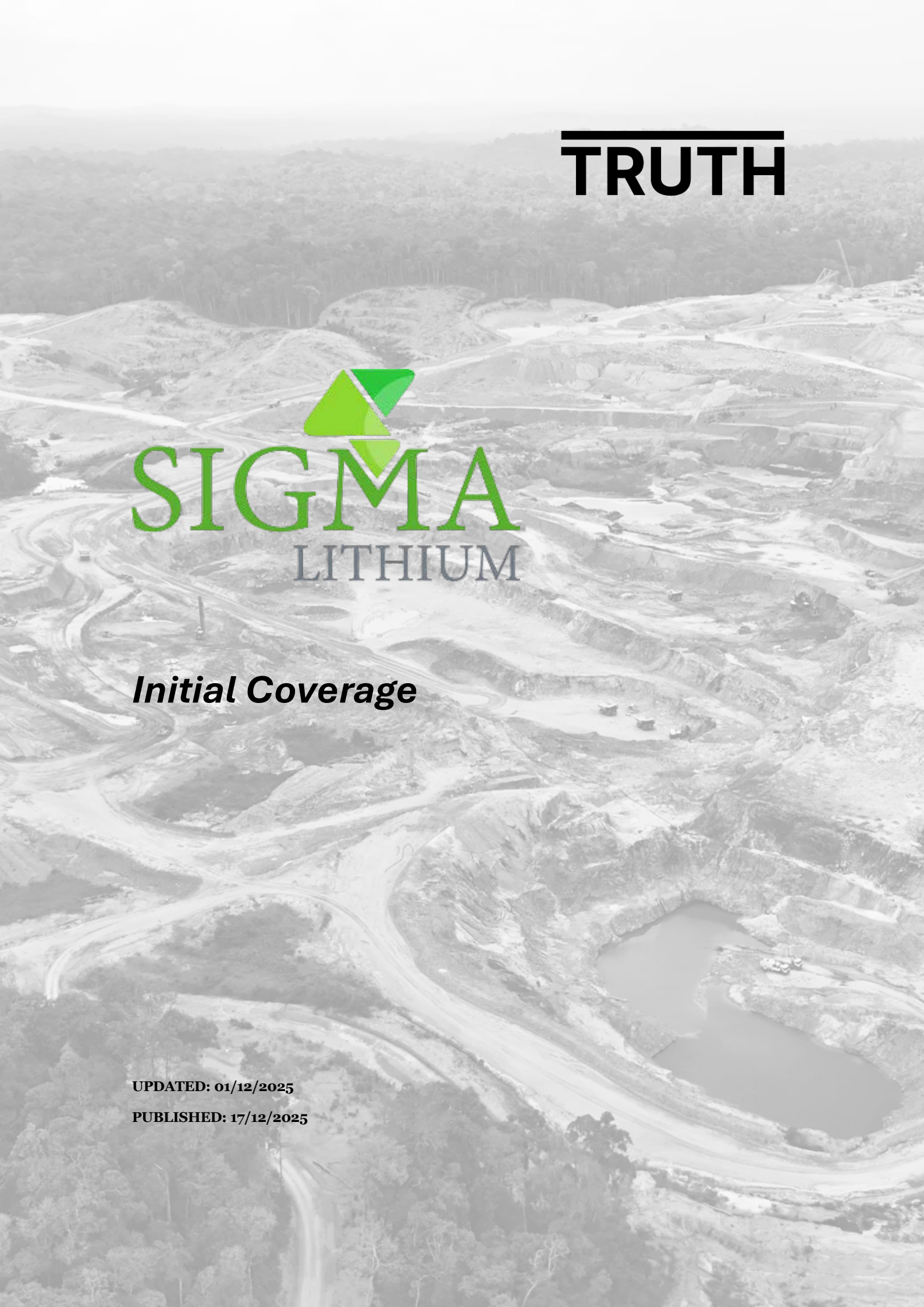
TRUTH



SIGMA LITHIUM

Initial Coverage

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TRUTH

Initial Coverage

SGML: a high-potential lithium producer, but highly leveraged to the cycle and to execution.

Sigma Lithium (Nasdaq/TSX: SGML) is one of the few lithium producers already in operation in a sector dominated by projects still under development. It produces battery-grade lithium from the Grota do Cirilo district, in Araçuaí and Itinga (Minas Gerais, Brazil). Its commercial product is targeted at the battery market. Since 2023 it has been operating Phase 1 (270 ktpà equivalent) and is planning a second processing plant (Phase 2, Barreiro) from 2026 onwards (≈520 ktpa), subject to financing and execution. Sequentially, Phase 3 (NDC–LDM) aims for 770 kt, contingent upon permitting, financing and execution.

The mine is operated as an open pit using conventional methods, in an ambitious execution environment characterised by multiple constraints. The objective is to replicate a modular scheme with adjustments in capacity and efficiency in Phases 2 and 3, but with certain considerations to bear in mind.

The geology is well understood and favourable, although the ore bodies exhibit variability that may affect continuity and metallurgical performance. In recent years, the company has undergone significant governance changes, departures of key executives and tensions related to ESG and sustainability criteria.

From a financial standpoint, Sigma combines an asset already in operation with a tight liquidity position and a demanding debt-maturity profile, which constrains its capacity to expand and makes it highly sensitive to the lithium price. The behaviour of the sector – which is highly cyclical – affects both the company's stability and the attractiveness of the project under different scenarios.

In summary, in light of **Truth Below Ground**'s technical analysis, Sigma Lithium may offer an interesting asymmetry for certain investor profiles: a real producer, with expansion still to come and a future driven by execution, lithium prices and corporate decisions.

Three things we like: already-operating production, potentially competitive costs and growth optionality.

Three things that concern us: a stretched financial profile, a complex governance track record, geological and operational variability.

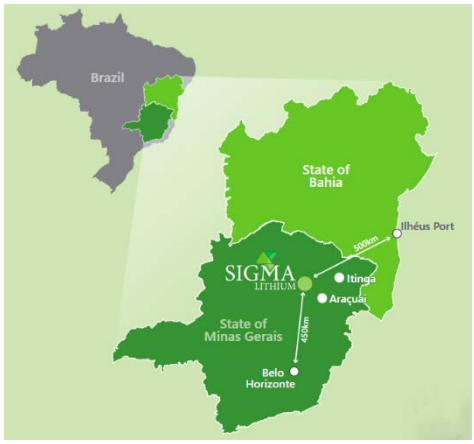
Questions we address in this report

- *What are the key risks and upside potential for Sigma Lithium?*
- *In which scenarios could its value be eroded?*
- *What would need to happen for the upside to materialise?*
- *How much could Sigma be worth with the right management team, given its current situation?*
- *What is the reasonable valuation range for the company according to our models?*

Why might Sigma Lithium (Nasdaq/TSX: SGML) be interesting now?

Sigma is at a critical juncture where operations, debt, the lithium cycle and execution will determine whether the company unlocks value or faces significant constraints, amplifying both the upside and the downside. Sigma may represent an interesting asymmetric investment, but only after thoroughly understanding the company's specific risks and operating model.

Figure 1. Sigma Lithium location.



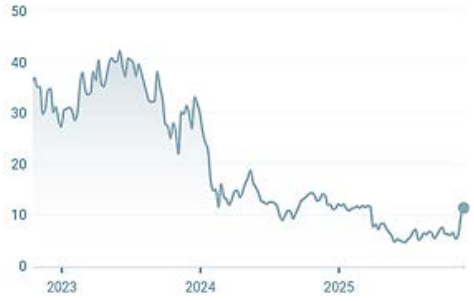
sigmalithiumcorp.com

Table 1. Key metrics.

P/share (USD)	11,5
Market cap (M USD)	1.283
Enterprise value (M USD)	1.431
Net debt (M USD)	166
Cash (M USD)	19
N° shares (M)	111
NPV phase 1 (M USD)	*See report*
NPV phase 2 (M USD)	*See report*
NPV phase 3 (M USD)	*See report*

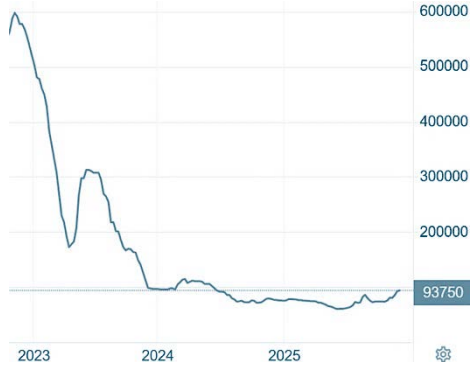
TBG estimates.

Figure 2. Stock price Sigma Lithium. Nasdaq, USD.



google.com/finance

Figure 3. LCE market price. CNY/t.



tradingeconomics.com

Lithium price

Lithium price

Lithium has been one of the most volatile commodities of the past decade. Its price (using **lithium carbonate equivalent** – **LCE** – as the standard reference) has experienced long periods of value creation and destruction, characteristic of a cyclical, relatively small industry that has grown rapidly while seeking its equilibrium point. Temporary mismatches between explosive demand and a supply side that (although responding with a certain lag (likely shorter than in other metals) has reacted very strongly, explain much of the volatility observed in recent years. In particular, the sharp supply response following the initial boom contributed to periods of oversupply that ultimately pushed prices lower.

Analysing lithium as an industrial commodity requires assessing supply and demand simultaneously over a reasonable time horizon. We consider a five-year period to be appropriate: long enough to capture current trends with rigour, yet short enough to filter out short-term noise. In the case of lithium, the price trajectory will depend on whether consumption growth (which we view as solid and underpinned by the macro-trend of electrification) can be absorbed by installed capacity and by the numerous projects entering production in the short and medium term. If the market moves into deficit and supply is slow to respond, prices should tend to rebound, moving towards an incentive price. If, on the contrary, projected supply is sufficient, the market will gravitate towards more moderate pricing, closer to the cost of the marginal producer.

DEMAND

Lithium demand has grown exponentially over the past decade. According to the International Energy Agency (IEA), global consumption exceeded 200 kt of lithium metal[2] (equivalent to ~1.1 Mt LCE) in 2024, representing year-on-year growth of nearly 30%. These figures broadly align with those published in the USGS Mineral Commodity Summaries 2025, which estimates last year's consumption at around 240 kt of contained lithium, i.e. approximately 1.28 Mt LCE. Consensus therefore suggests that between 1.1 and 1.3 Mt LCE were consumed last year, roughly three times the level of 2020.

Around 87% of demand originates from the battery sector, with electric vehicles as the primary driver and stationary storage in second place. Ninety-nine percent of these batteries contain lithium. Industrial applications not linked to batteries (ceramics, glass, lubricants, fluxes, pharmaceuticals, etc.) account for the remaining 13% and grow at far more moderate rates (around 3–4% per year) and we expect them to continue losing relative weight in global demand.

In the medium term, the IEA projects that, in a realistic scenario of technological adoption, annual consumption of lithium metal will reach around 410 kt by 2030 (~2.2 Mt LCE), driven by the expansion of the **BEV** fleet and the deployment of energy-storage systems. At TBG, we consider these assumptions coherent and see it as feasible that current consumption could double between 2024 and 2030, in light of current trends in EV sales, battery-pack energy density and average lithium content per kWh, using this scenario as a reference.

In short, demand appears robust.

SUPPLY

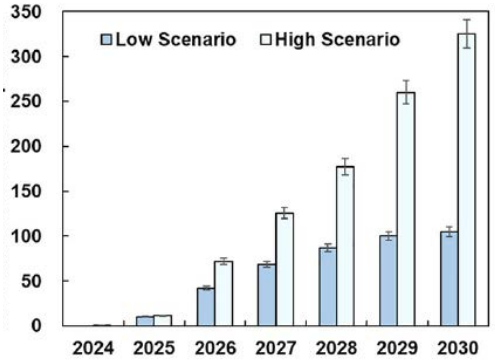
On the supply side, the response has been even more pronounced. In 2024, global production increased by more than 35%, shifting the market into surplus and triggering a price correction from the 2022 highs (above USD 70,000 per tonne LCE) to levels close to USD 9,000 per tonne LCE. This

[2] Lithium equivalents (units). In the industry, the standard benchmark is LCE (lithium carbonate equivalent). As a reference: 1 t of lithium metal (Li) ≈ 5.32 t LCE. When grades are reported as Li_2O, an approximate conversion is: 1 t Li_2O ≈ 0.465 t Li ≈ 2.47 t LCE; in percentage terms, %Li ≈ 0.465 × %Li_2O.

expansion reflects the commissioning of new mines in Australia, Argentina and Africa. The latter, which accounted for only 6% of supply in 2023, contributed nearly 30% of the additional growth in 2024, with Zimbabwe and Namibia emerging as key contributors. Argentina and Brazil also recorded production increases exceeding 60%, reinforcing a scenario of a more diversified supply base.

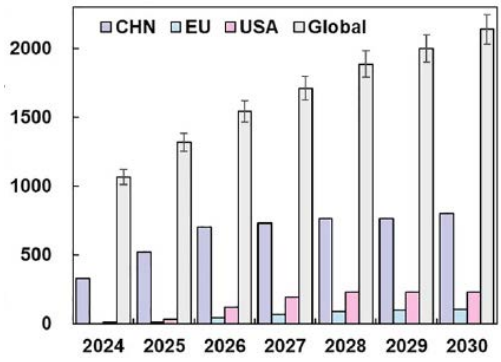
Recognised institutions and professionals (the IEA, and recent studies by Qifan Xia, André Manberger and Debin Du, among others) expect supply to remain broadly aligned with demand throughout the decade (although new capacity will be required from around 2030 onwards) largely due to the geographical diversification of supply. In a more complex geopolitical context, self-sufficiency has become a priority for multiple regions seeking to reduce their dependence on imported lithium by promoting domestic projects. This trend, visible in Europe (where lithium has been declared a critical mineral) and also in the United States under the Trump administration, acts as a driver that is not purely economic, capable of incentivising new supply and potentially creating periods of oversupply.

Figure 4. Production LCE E Europe, 2024-2030.*



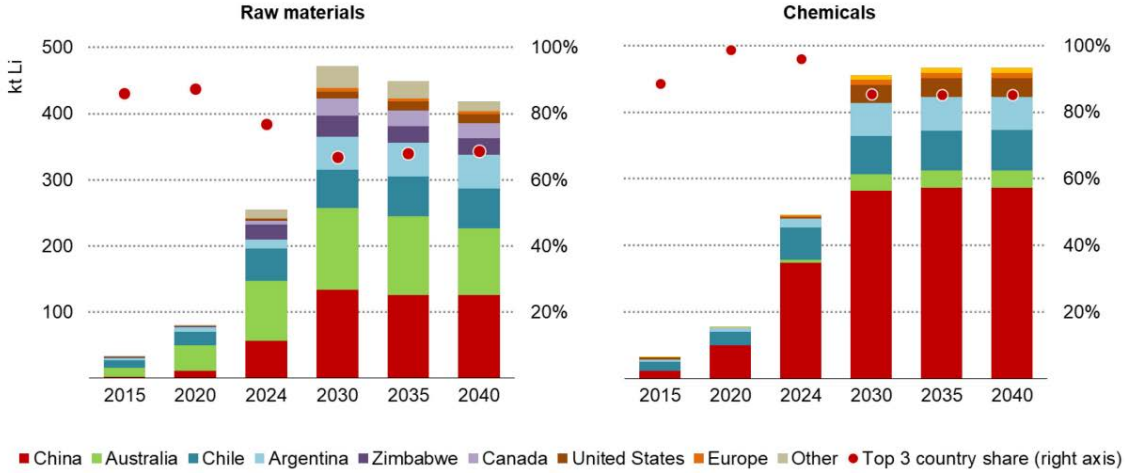
Qifan Xia, André Manberger, Debin Du.

Figure 5. Total global demand LCE E, 2024-2030.*



Qifan Xia, André Manberger, Debin Du.

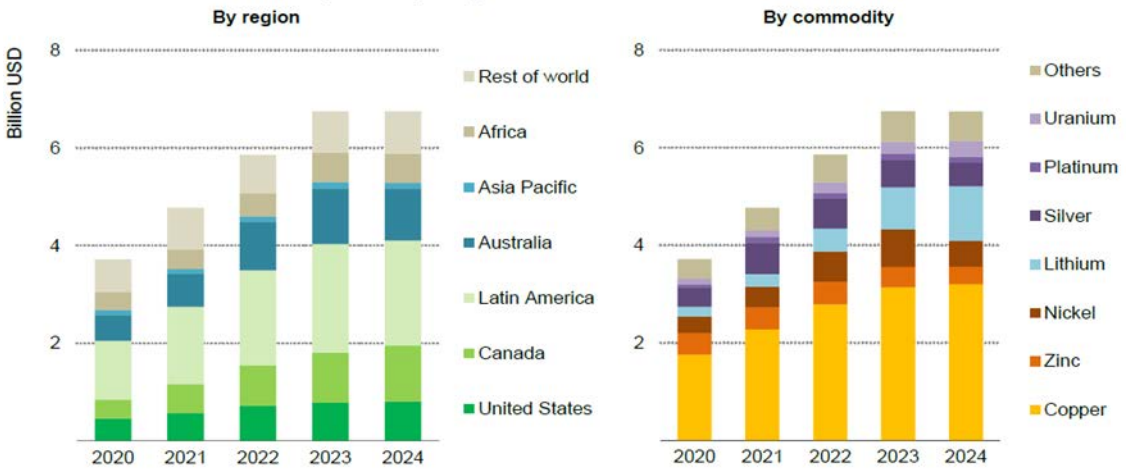
Figure 6. Global production of lithium metal by country and stage (mining vs. Chemical), 2015–2040.



International Energy Agency.

Spending on lithium-mineral exploration has followed the same trend. In 2024, approximately USD 1.2 billion was invested globally, compared with USD 1 billion the previous year. As a result, declared reserves have also increased: from 85 Mt LCE in 2018 to around 160 Mt LCE in 2024. At this level, the market holds sufficient resources to supply projected 2030 demand for several decades, at least on paper.

Figure 7. Global non-ferrous mineral exploration expenditure by region and by commodity, 2020–2024.



International Energy Agency.

According to TBG estimates, the combined capacity expansions announced by the main projects that could enter operation between 2024 and 2028 would amount to nearly 1 Mt per year of lithium carbonate equivalent (LCE). For all the reasons above, we believe that, at present and at least until 2029, installed and projected capacity exceed expected demand.

Therefore, despite strong and resilient demand, the delayed and accumulated increase in supply has pushed prices to multi-year lows, placing the price at a level that clearly disincentivises new capacity.

MARKET BALANCE

During 2025, the adjustment in the lithium market has occurred without structural destruction of capacity. The recent production pauses and operational adjustments seen in companies such as Core Lithium, IGO, Albemarle, Liontown or SQM have been driven mainly by strategic decisions rather than forced shutdowns, which limits the extent of any structural (as opposed to temporary) contraction in supply. Even brief operational suspensions—such as those reported by CATL in China—triggered short-lived price increases that faded quickly as the expectation of reduced output dissipated.

This high degree of operational elasticity in the sector (with projects able to restart within weeks, according to FastMarkets), along with active inventory management—including temporary withholding of sales by companies such as Sigma Lithium or SQM—has acted as a stabilising mechanism and supports this narrative.

In the medium term, the supply–demand balance suggests that, under a demand-growth scenario consistent with current forecasts, installed capacity and projects under development would be sufficient to maintain a relatively balanced market over the next five years. However, towards the end of the decade, new supply may be required if transport electrification and energy storage outpace current projections, or if new projects experience delays, cancellations or technical difficulties.

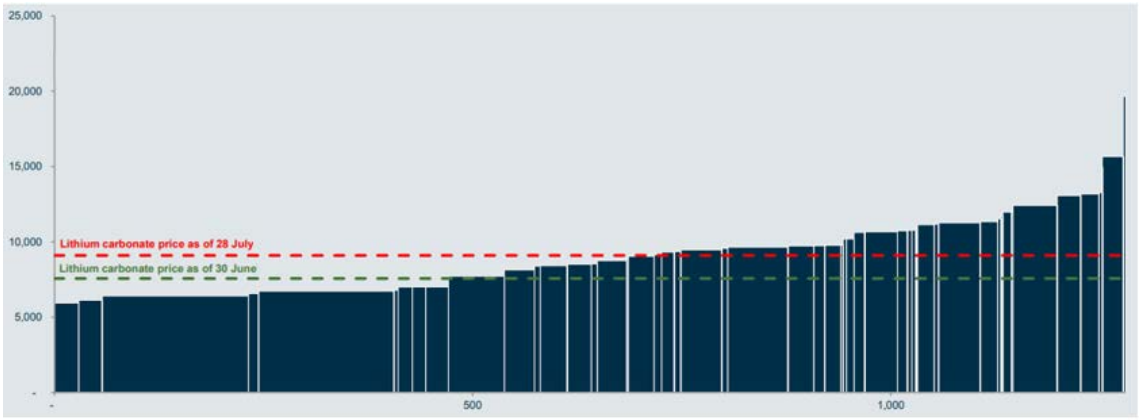
In short, the lithium market is not facing an imminent deficit. Over the coming quarters, a slight oversupply risk persists. Once the market is able to absorb this residual surplus and inventories decline, we expect prices to converge towards the marginal producer's cost level over the coming years, until fresh investment in new supply becomes necessary. If current trends continue, such a new cycle of investment and capacity expansion would reasonably be expected towards the end of this decade.

TREND TOWARDS THE EQUILIBRIUM PRICE

And what is the cost of the marginal producer? Companies such as Pilbara Minerals indicate that, assuming global consumption of 1.5 Mt LCE, the 2025 cost per tonne of LCE should be from around

USD 14,000 per tonne LCE, which would be equivalent to approximately USD 1,200–1,300 per tonne of SC6. The spot price of LCE at the time of publication of this report stands at USD 13,100 per tonne, and therefore—at least on paper—a moderate recovery towards USD 14,000–15,000 per tonne could be expected once the market works through existing stock levels.

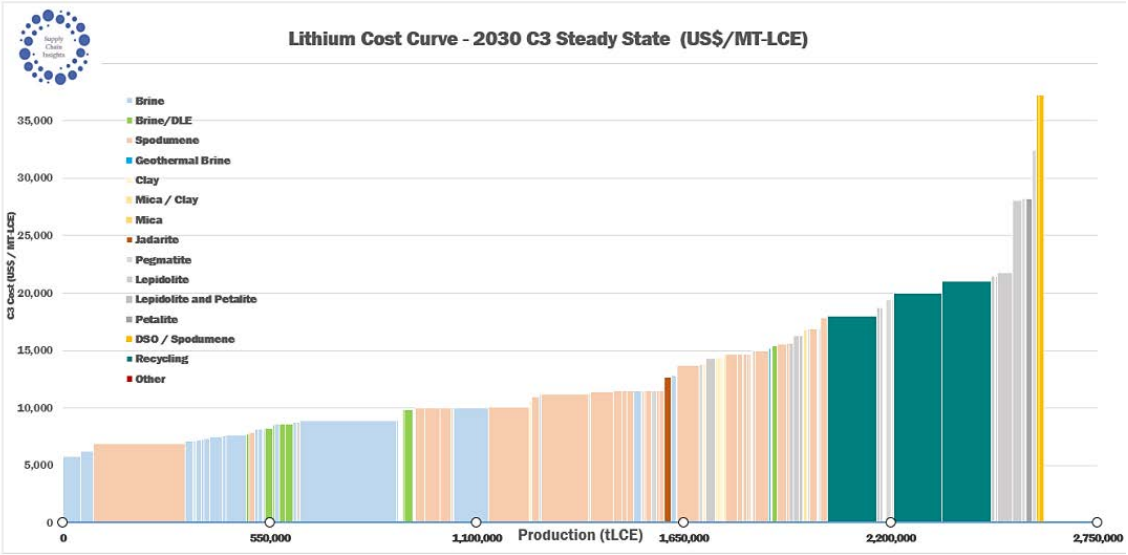
Figure 8. Global C3 cost curve for lithium carbonate (Benchmark Mineral Intelligence), June 2025, net of by-product credits, USD/kt LCE.



Benchmark Mineral Intelligence, Pilbara Minerals Limited

And this is on paper, since in the medium term it is likely—as Fastmarkets points out—that new supply will enter the market at lower cost, with more efficient projects, reshaping the cost curve once again and leaving limited room for a strong and sustained price recovery. Under these conditions, prices would tend to gravitate towards around USD 18,000 per tonne by 2030, relative to consumption of 2.2 Mt LCE.

Figure 9. Projected lithium C3 cost curve (2030).



sc-insights.com

CONCLUSION

The ease or lack thereof with which supply can follow demand will dominate the narrative. Despite the pauses and production cuts seen in some projects over recent quarters, the planned capacity expansions (with the possibility of up to 1 Mt LCE of additional supply by 2028) could keep the market well supplied and exert downward pressure on prices, which would tend to converge towards the marginal producer's cost.

We estimate that this marginal cost currently sits from around USD 14,000 per tonne LCE in 2025, assuming consumption of 1.5 Mt LCE, whereas the current spot price stands at roughly USD 13,100 per tonne. While a modest recovery may occur in the short to medium term, the gradual entry of new projects (many of which may be more efficient) is likely to shift the cost curve downward, thereby containing prices.

In this context, we do not believe that lithium prices can continue falling sustainably. The lows recorded in 2025 left nearly half of the industry operating at a loss, an unsustainable situation given that demand continues to grow robustly. We position ourselves for a volatile but meaningful price recovery, with up to 40% upside potential over the next four years.

However, although lithium demand remains structurally strong and there are clear tailwinds in the medium term, the high flexibility of supply and several emerging threats (detailed below) introduce elements of fragility to this thesis.

THREATS

Finally, we consider it important to highlight two major technological vectors that introduce significant uncertainty into this market.

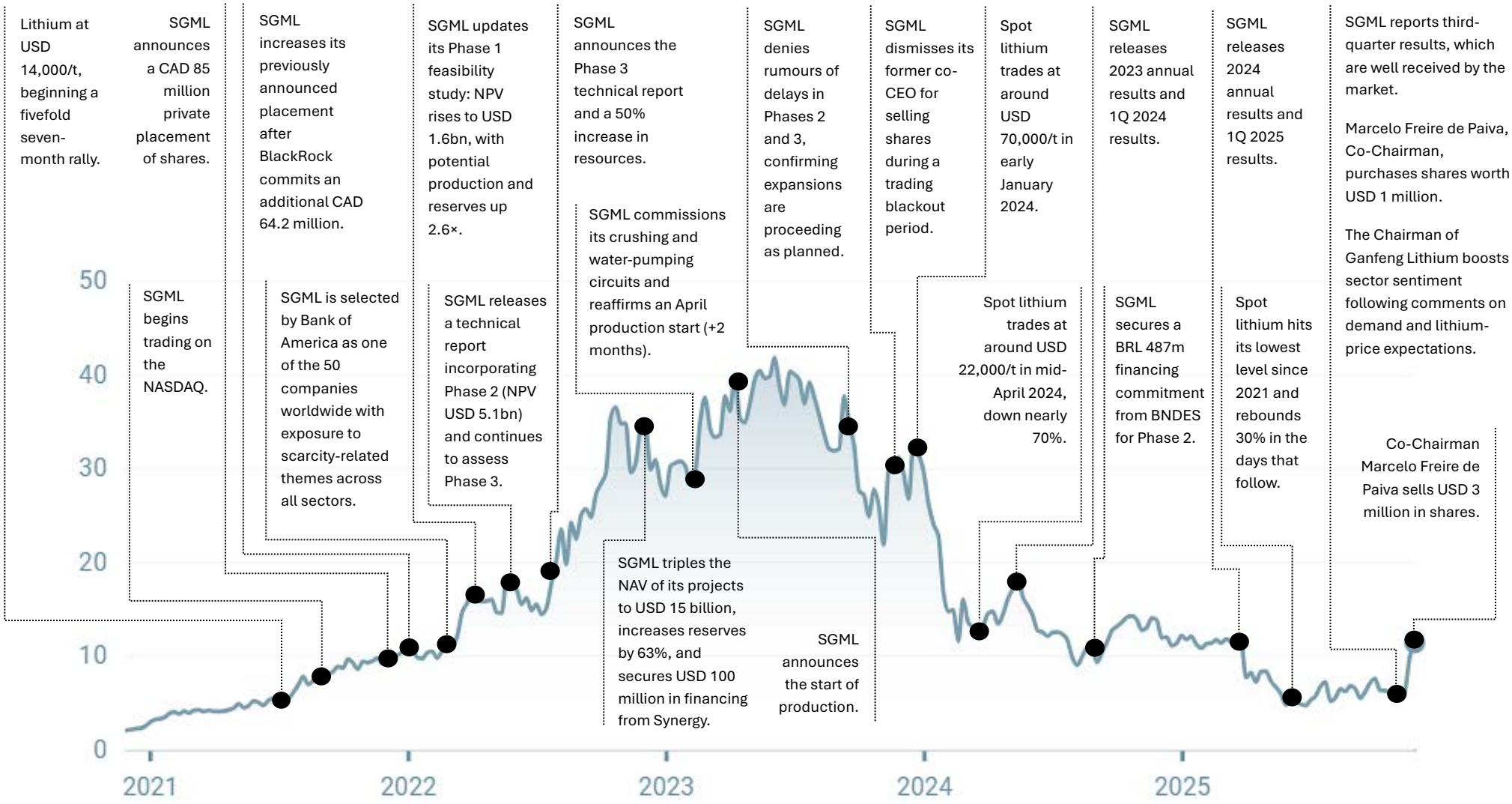
The first is direct lithium extraction (DLE), a developing technology that separates lithium ions using resins, solvents, chemical agents or membranes, eliminating the need for large evaporation ponds. DLE could drastically shorten production timelines (from months to days) and, if technical and economic viability is demonstrated, could be deployed at scale from around 2030, potentially expanding supply significantly. However, it remains in the validation phase today, with important challenges still to overcome.

The second vector is the development of sodium-ion batteries. This technology, originally conceived as an alternative during periods of high lithium prices, is being advanced by leading manufacturers such as CATL, which expect mass production from 2026 for urban mobility applications. Although sodium-ion batteries have lower energy density, their low cost and stability could make them competitive in short-range vehicles or stationary storage, partially reducing incremental lithium demand. The lithium battery supply chain, however, is more mature and efficient, raising the barrier to entry for alternative technologies — but the medium- and even short-term risk posed by this threat remains relevant.

These factors are potentially disruptive and could exert a significant long-term impact on the market, either by increasing supply or by reducing incremental lithium demand. Economically, a rise in available supply at competitive costs could, all else being equal, exert downward pressure on prices. Similarly, a moderation of expected demand in certain segments could reduce the need for new marginal capacity, which could translate into lower equilibrium prices than those expected in a scenario of fully intact demand.

Key events

Key events


Lithium at USD 14,000/t, beginning a fivefold seven-month rally.
SGML announces a CAD 85 million private placement of shares.
SGML increases its previously announced placement after BlackRock commits an additional CAD 64.2 million.
SGML updates its Phase 1 feasibility study: NPV rises to USD 1.6bn, with potential production and reserves up 2.6×.
SGML announces the Phase 3 technical report and a 50% increase in resources.
SGML commissions its crushing and water-pumping circuits and reaffirms an April production start (+2 months).
SGML denies rumours of delays in Phases 2 and 3, confirming expansions are proceeding as planned.
SGML dismisses its former co-CEO for selling shares during a trading blackout period.
Spot lithium trades at around USD 70,000/t in early January 2024.
SGML releases 2023 annual results and 1Q 2024 results.
SGML releases 2024 annual results and 1Q 2025 results.
SGML reports third-quarter results, which are well received by the market.
Marcelo Freire de Paiva, Co-Chairman, purchases shares worth USD 1 million.
The Chairman of Ganfeng Lithium boosts sector sentiment following comments on demand and lithium-price expectations.
SGML begins trading on the NASDAQ.
SGML is selected by Bank of America as one of the 50 companies worldwide with exposure to scarcity-related themes across all sectors.
SGML releases a technical report incorporating Phase 2 (NPV USD 5.1bn) and continues to assess Phase 3.
SGML triples the NAV of its projects to USD 15 billion, increases reserves by 63%, and secures USD 100 million in financing from Synergy.
SGML announces the start of production.
Spot lithium trades at around USD 22,000/t in mid-April 2024, down nearly 70%.
SGML secures a BRL 487m financing commitment from BNDES for Phase 2.
Spot lithium hits its lowest level since 2021 and rebounds 30% in the days that follow.
Co-Chairman Marcelo Freire de Paiva sells USD 3 million in shares.
50
40
30
20
10
0
2021
2022
2023
2024
2025

The events that have had the greatest impact on the share price in the company's recent history, beyond the volatile lithium-price cycle, are the following:

LITHIUM SPOT PRICE RALLY, JUNE 2021 TO MARCH 2022.

25 June 2021, +200% share-price appreciation over the period.

In August 2021, the exceptional lithium-price rally began, driven by accelerating battery demand for electric vehicles, supply rigidity, tight inventories and clearer pro-electrification policies. The rally continued until March of the following year. Lithium prices increased from around USD 14,000/t in June 2021 to nearly USD 78,000/t by March 2022. We believe this rally was a major catalyst for Sigma Lithium's share performance, which appreciated by close to 200% over the same period.

SGML SELECTED BY BANK OF AMERICA AS ONE OF 50 GLOBAL COMPANIES EXPOSED TO SCARCITY THEMES.

24 February 2022, +69% share-price appreciation in subsequent sessions.

Bank of America included Sigma Lithium among its "50 stocks for 10 scarcity themes", highlighting its ability to bring lithium supply to market in the short term. The report reinforced the thesis of structurally rising demand driven by electrification and supply-risk concerns, positioning Sigma Lithium as a winning pure play. Its ESG profile (hydropower, dry-stack tailings, water recycling) and the additional visibility from BofA and BMO conferences acted as catalysts. The result was an equity re-rating and a 69% increase in the days following the announcement.

THREE TECHNICAL MILESTONES BOOST THE THESIS: RECORD NPV, EXPANDED CAPACITY AND A 50% INCREASE IN RESOURCES.

April – June 2022, +214% share-price appreciation in subsequent sessions.

Three project updates released over several months created a powerful cumulative catalyst:

The updated feasibility study ("FS") lifted Phase 1 **NPV** to about USD 1.6 billion, increased reserves 2.6× to 34 Mt, and supported a combined Phase 1 + 2 capacity of 450 kt/a of **spodumene** concentrate.

The integrated technical report for Phases 1 and 2 outlined "outstanding economics", with a post-tax NPV of USD 5.1 billion and average annual free cash flow of USD 595 million.

The company increased total **NI 43-101** resources by 50% to 86 Mt, adding 27 Mt of high-grade ore (1.49% Li_2O) in Phase 3.

Although the share-price rally began after the third announcement, we attribute the >200% appreciation in the following months to the combined impact of all three updates.

SIGMA LITHIUM STATES THAT THE PHASE 2 AND PHASE 3 EXPANSION PLANS ARE PROCEEDING AS SCHEDULED.

29 September 2023, –30% share-price decline in subsequent sessions.

A series of headlines increased concerns regarding execution risk, particularly fears of delays to Phases 2 and 3 and potential governance issues around the company. A Reuters note on 28 September 2023 mentioning a court injunction cast doubt on the expansion timeline. Although Sigma Lithium and RIX refuted this the next day, the perception of delay persisted.

This risk ultimately materialised. Compared with the 2022 plan, which aimed to scale from 270 kt/a to 768 kt/a "in the second year" of operation, current guidance places Phase 2 commissioning in 4Q25 (with the effective ramp-up in 2026). Phase 3 remains without a firm date, is sequential to Phase 2, and depends on financing and permitting. Financing for Phase 2 also requires banking guarantees. In

summary, the industrial milestone has been delayed by roughly 12 to 18 months relative to the original plan. Expansions remain planned but at a slower pace than the market had expected in 2022.

LITHIUM SPOT PRICE COLLAPSE, JANUARY TO APRIL 2024.

January – April 2024, –50% share-price decline over the period.

Between early January and mid-April 2024, spot lithium prices fell from USD 70,000/t to USD 22,000/t, a 70% drop that forced a reset of margin expectations, NPV assumptions and sector-wide expansion plans. This led to a sharp equity correction. Sigma Lithium's share price declined from USD 30 to USD 15, a 50% fall that closely mirrored the lithium downturn. With lower implied value per tonne, the market applied a de-rating to concentrate producers and demanded greater caution in **CAPEX** and timelines.

RESULT ANNOUNCEMENTS AND IMPROVED FUNDAMENTALS IN 2025.

Later movements in the share price were influenced by the publication of 2023 and 2024 annual results, which showed that Phase 1 alone cannot sustain operations and investment without external financing.

The third-quarter 2025 results showed modest improvements in production, deleveraging and new commercial opportunities. Alongside comments by Li Liangbin (CEO of Ganfeng) on demand and price expectations, these factors triggered a 120% rally in the share price in early November.

Next key events

The performance of Sigma Lithium's share price will depend on a number of operational and financial milestones. These may increase short-term volatility, but they can also act as valuation catalysts in the medium and long term. The key milestones that investors should monitor are outlined below:

Resumption and stabilisation of operations, and higher realised lithium prices.

The restart of operations and their stabilisation, together with firmer lithium prices in the fourth quarter, are important factors to watch. These elements could provide greater operational stability and begin to ease pressure on both the income statement and operating cash flow. Realised prices and the behaviour of the spot market in upcoming earnings releases will remain key indicators to monitor.

Refinancing or extension of debt in the short and medium term.

The company currently has negative **working capital** of USD 65 million, and both the resolution of the so-called 2026 maturity wall (approximately USD 100 million) and the resumption of operations are priorities for reducing balance-sheet risk and the possibility of dilution. The focus will be on whether refinancing can be achieved, the structure used (with or without dilution), and the final cost of financing. Although indications suggest that this could be achieved through **offtake agreement**s, the recent share-price rally increases the likelihood of equity raises. Potential signals include announcements of new offtake agreements, partial replacement by BNDES/**BDMG** credit lines, extensions of existing loans or capital increases.

Bank guarantee for the BNDES loan (Phase 2).

Issuing the required bank guarantee would activate disbursements of BRL 486.8 million (USD 90.4 million) under the development loan. This would lower the average cost of capital associated with the Phase 2 expansion and strengthen the financing of the overall growth plan.

Risks and Opportunities - Legend

Risks and opportunities - Legend

Risks and opportunities have been assessed using two variables: their impact on the company and their probability of occurrence.

Impact is measured against the project's objectives, taking into account existing controls. It is classified into five levels and considers effects on CAPEX, **OPEX**, schedule, NPV, EBITDA and production. The following tables set out the quantitative and qualitative ranges used. Below, the quantitative and qualitative ranges associated with each impact level are presented.

Table 2. Quantitative criteria for classifying the impact of a risk or opportunity on the company.

Nivel	CAPEX	OPEX	Delays	NPV	EBITDA	Production
Very high	> 20%	> 10%	> 30%	> 50%	> 50%	> 15%
High	15–20%	5–10%	20–30%	20–50%	20–50%	6–15%
Moderate	8–15%	3–5%	10–20%	10–20%	10–20%	3–6%
Low	3–8%	1–3%	5–10%	5–10%	5–10%	1–3%
Very Low	< 3%	< 1%	< 5%	< 5%	< 5%	< 1%

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Table 3. Qualitative criteria for classifying the impact of a risk on the company.

Level	Occupational health and safety	Environment	Communities	Legal
Very high	Accident resulting in multiple fatalities or permanent disabilities.	Irreversible, long-term environmental damage.	Severe harm to the community, social conflict, possible shutdown.	Serious non-compliance with risk of permit revocation or penalties >20% of EBITDA.
High	Accident resulting in one fatality or permanent disability.	Significant but reversible environmental damage.	Serious harm to the community, social conflict, negative impacts.	Non-compliance with potential conviction or penalties of 3%–20% of EBITDA.
Moderate	Lost-time injury or disability below 40%.	Moderate, reversible environmental impact.	Minor incident with no serious community harm.	Non-compliance with penalties between 0.5% and 3% of EBITDA.
Low	Injury requiring medical treatment but no lost time.	Minor environmental impact, easily remediated.	Minor incident with no community harm.	Non-compliance with penalties <0.5% of EBITDA.
Very Low	Minor accident not requiring medical treatment.	Slight environmental impact, no significant harm.	No community impact.	Non-compliance ithout monetary penalty.

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Likewise, probability reflects the likelihood that the event will occur within a given period, based on current controls and observed experience. It is classified into five levels, ranging from "Very Unlikely" to "Certain". Probability will vary according to the effectiveness of existing controls and the baseline conditions and is quantified using the criteria shown in Table 5.

Table 4. Qualitative and quantitative criteria for classifying the probability of occurrence.

Nivel	Cuantitative	Qualitative
Certain	Once per week P > 80%	Occurs frequently
Probable	Once per month or more 80% ≥ P ≥ 60%	Could easily occur and has generally occurred under similar conditions.
Possible	Once or twice a year 60% ≥ P ≥ 40%	Could occur and has occurred under similar conditions here or in another company.
Unlikely	Once or twice every 10 years 40% ≥ P ≥ 20%	Has not occurred yet, but could happen.
Very unlikely	Once or twice every 50 years 20% ≥ P	Only in extreme circumstances.

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The risk or opportunity index results from multiplying impact and probability (on a 1–25 scale). This determines the position of each event on its corresponding colour map.

Risks with high impact and high probability appear in the red zone, while those with lower impact and probability fall within the green band. For opportunities, the scale is reversed.

Figure 10. Colour map for risks.

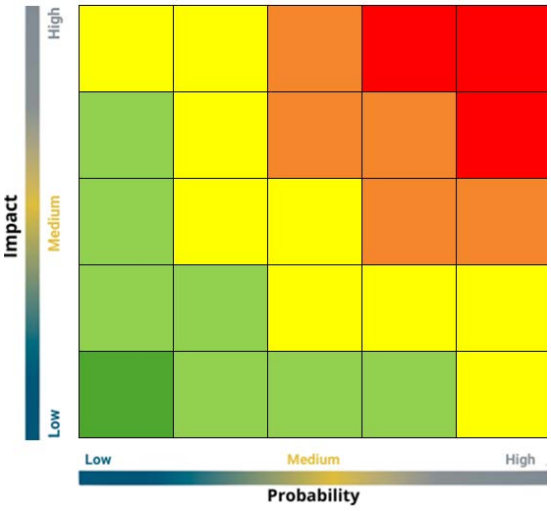
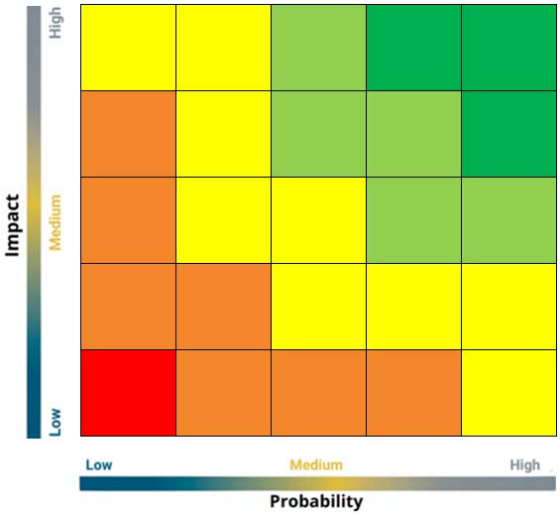


Figure 11. Colour map for opportunities.



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At the discipline level (geology, mining, metallurgy, ESG, etc.), an aggregated colour scale is used: reddish tones indicate higher risk, while green tones indicate greater opportunity potential.

In addition to the technical analysis of impact and probability, each risk and opportunity is briefly explained and includes a short section titled “Implications for the Investor”. Its purpose is to translate the technical effect into practical consequences for production, costs, schedule, NPV, liquidity or the risk–return profile, highlighting how the risk could alter the project’s overall risk–return balance and providing actionable insight for investment-focused readers.

Risks

Risks

The main risks identified in each discipline are presented below. They are shown in the following matrix and ordered from highest to lowest risk index (impact × probability) or severity.

Table 5. Standard risk prioritisation matrix.

Index	#	Description	Discipline
VERY HIGH	22	Critical execution failure (contractor transition).	Executive Team
	24	Risk of weakened confidence and misaligned incentives among insiders.	Executive Team
	32	Liquidity risk.	Finance
	33	Risk of structural over-indebtedness.	Finance
	9	Inadequate selection of mining fleet and equipment.	Mining
	21	Execution and value-creation risk linked to track record	Executive Team
HIGH	4	The RPEEE requirement is met, but the economic parameters used are unclear (overall slope angle and DMS recovery).	Geology
	10	Geotechnical risk associated with the stability of Stockpile 5.	Mining
	11	Unrealistic mine plan in certain years.	Mining
	25	Impacts arising from fluctuations in market prices of minerals (SC6).	Sales
	1	Regulatory risk; increasing judicialisation in Minas Gerais.	Country
	12	Absence of a grade-control plan.	Mining
	16	Risk of inconsistency in reported data (technical reporting).	Mining
	18	Risk of variability in mineralogy and lithium head grade (Li_2O).	Metallurgy
	20	Risk of inconsistency in reported data (technical reporting).	Metallurgy
	23	Governance failure by the former Co-CEO and related litigation.	Executive Team
	31	Reputational risk linked to perceptions of greenwashing if ESG performance lacks independent verification.	ESG
	17	Inherent risk from transitioning from contractors to owner-operated teams.	Mining
MODERATE	34	Risk of weak internal controls and poor quality of reported information.	Finance
	2	Governance risk, local corruption and institutional volatility.	Country
	5	Resource categorisation not sufficiently robust; uncertainty regarding grade continuity and possible overestimation of tonnage.	Geology
	6	Lack of analysis of Fe and mica contents (penalising elements) and their distribution; risk to concentrate quality and volume.	Geology
	7	Risk of over- or underestimation of tonnage due to inappropriate modelling (possible overestimation of high-grade and underestimation of low-grade material).	Geology
	8	Risk of poor geological modelling and uncertainty in head grade.	Geology
	13	Geotechnical risk affecting overall stability of pits and waste dumps.	Mining
	14	15% compaction factor not achievable or not considered.	Mining
	19	Expansion-management risk due to absence of EPCM (Phases 2 and 3).	Metallurgy
	27	Risk of revision or suspension of environmental permits due to new requirements from the MPF or SEMAD in Minas Gerais, especially for Phases 2 and 3.	ESG

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Table 5 (continued). Standard risk prioritisation matrix.

MODERATE	3	Risk Description	Discipline
	26	Socio-environmental pressure in the Jequitinhonha Valley due to social vulnerability, water issues and historical legitimacy.	Country
	28	Risk arising from uncertainty in finalising offtake agreements.	Sales
	29	Pressure on water resources: variations in flows, local complaints or conflicts over water use.	ESG
	15	Waste management and geotechnical stability vulnerable to audits, non-conformities or extreme weather events.	ESG
LOW	30	Absence of a crusher for backfilling and haul roads.	Mining

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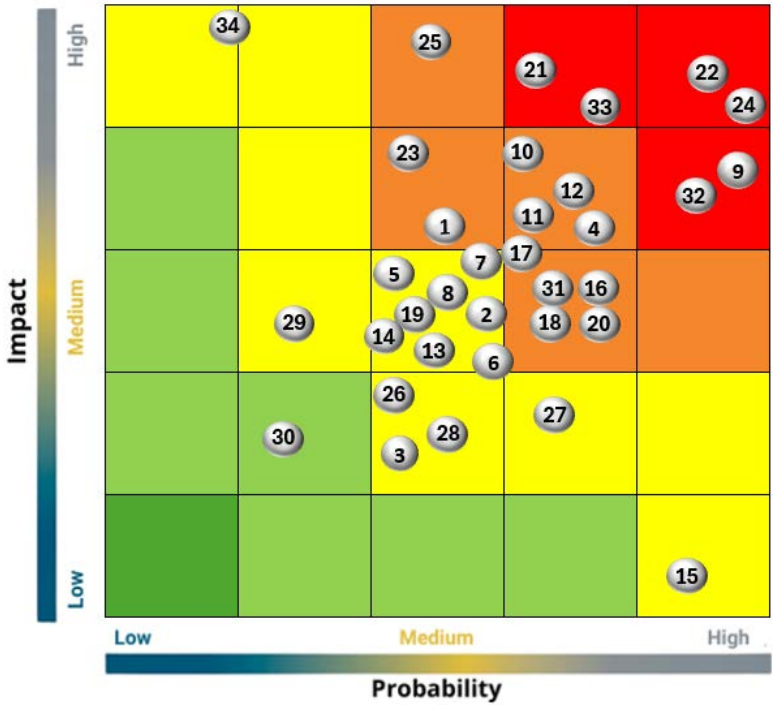
Below, we present these risks in the following colour map.

Figure 12. Standard risk prioritisation matrix



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Our analysis highlights several areas of concern (financial, operational, technical and governance-related) that could influence the assessment of this company. Notable among these are: operational execution and expansion (the contractor transition and suitability of the mining fleet), liquidity pressures and leverage, certain assumptions (**dilution/SMU**, grade control, stockpile stability, **RPEEE** parameters, metallurgical variability and the gap between design capacity and actual performance), inconsistency in data across several disciplines, and weaknesses in internal controls, in addition to ongoing legal processes with certain counterparties.

Let us briefly explain why the above factors may represent a risk for Sigma Lithium.

Country

1. Regulatory risk; increasing judicialisation in Minas Gerais.

Following several high-impact environmental incidents, oversight of large-scale mining projects has intensified, and socio-environmental conflicts frequently result in administrative appeals and legal action. In practice, this increases the likelihood of license reviews, the imposition of new conditions, schedule delays and constraints on the territorial expansion of operations.

***Implications for the investor**: higher probability of delays and cost overruns that could erode NPV and push back the cash-generation timeline.*

2. Governance risk, local corruption and institutional volatility.

Party fragmentation, political volatility and corruption risks at the local level can interfere with the processing of licences, contracts and land-access agreements. The need to engage with multiple stakeholders (state and municipal governments, federal agencies, the Federal Prosecutor's Office) increases the risk of discretionary decisions, shifts in criteria and informal requests, as well as investigations or scandals that may halt project development.

***Implications for the investor**: risk of delays or suspension of key permits, reducing visibility on expansion plans and limiting potential upside.*

3. Socio-environmental pressure in the Jequitinhonha Valley linked to social vulnerability, water resources and historical legitimacy.

The Jequitinhonha Valley is one of the poorest and most socially sensitive regions of Minas Gerais, home to traditional communities, marked structural deficiencies and a high level of social organisation and NGO activity. The arrival or expansion of a mining company can trigger conflicts over land and water use, disputes around compensation, resettlement processes and employment expectations. If not managed effectively, these tensions can escalate into protests, blockades, actions by the Public Prosecutor's Office and legal claims. For the company, this translates into the risk of operational disruptions, higher socio-environmental costs and reputational pressure, affecting schedules, permitting and, ultimately, the project's production and cash-flow profile.

***Implications for the investor:** greater operational volatility and interruption risk, with direct impact on volumes sold, costs and cash-flow forecasts.*

Geology

4. The RPEEE requirement is met, but the economic parameters used are unclear: overall pit angle and DMS recovery.

The design parameters applied to the overall pit slope angle are considered highly aggressive, and the DMS recoveries used are applied uniformly across all deposits, despite clear differences in mineralogy (varying proportions of spodumene and **petalite**). As a result, the strip ratio, economically mineable tonnages and plant recoveries may be biased. This could distort the NPV and the life of mine (LOM), and it increases the risk of reclassifications or adjustments to capital and operating costs once in operation.

***Implications for the investor:** risk that the project value is overstated and that actual CAPEX/OPEX increase, reducing NPV and the margin of safety.*

5. **Weak resource categorisation; significant uncertainty regarding grade continuity and possible overestimation of tonnage.**

An overly optimistic classification (with a higher proportion of Measured/Indicated than supported by the evidence) increases the risk of downgrades to Inferred as drilling progresses. This affects mine planning and may require revisions to reserves and schedules.

Implications for the investor: *potential downgrading of resource categories (Measured/Indicated → Inferred), reducing visibility on recoverable tonnage and forcing adjustments to the mine plan.*

6. **Lack of analysis of Fe and mica contents (penalising elements) and their distribution: risk to concentrate quality and volume.**

Iron (Fe) is a penalising element in spodumene concentrate: buyers set limits and apply deductions if they are exceeded. Without proper mapping and control of its distribution within the orebody, feed variability increases and plant grade and recoveries may decline. Exceeding specifications in shipped concentrate can trigger commercial penalties or even cargo rejection. The net effect is a lower payable per tonne due to reduced product quality and potential loss of sales.

Implications for the investor*: direct risk to realised pricing: commercial penalties, lower payable per tonne and reduced sales if the product fails to meet specifications.*

7. **Risk of over- or underestimation of tonnage due to inappropriate modelling (possible overestimation of high-grade and underestimation of low-grade material).**

Insufficient geological characterisation and unreliable grade continuity can lead to errors in ore–waste delineation, affecting head-grade stability and plant performance. This risk translates into operational variability, higher unit costs and a greater likelihood of failing to meet commercial specifications.

Implications for the investor*: increased volatility in head grade, inconsistent recoveries and rising unit costs; potential impact on production guidance and on the project's ability to generate cash.*

8. **Risk of poor geological modelling and uncertainty in head grade.**

Limited geological characterisation and irregular lithium-grade distribution can undermine mine planning and head-grade consistency at the plant. Low confidence in mineralisation continuity may cause errors in ore–waste definition, variability in performance and recoveries, higher operating costs, production deviations and a risk of failing to meet commercial specifications.

Implications for the investor*: lower operational and economic predictability; the company may miss production targets and face increases in both OPEX and CAPEX.*

Mining

9. **Inadequate selection of mining fleet and equipment.**

A fleet that is too small will be unable to achieve the required production rate and may force the replacement of equipment and redesign of ramps and pits (haul-road width, turning radii, berms). This affects both the pits and waste dumps, and even surface roads. The transition lowers availability and productivity in the short term, requires additional CAPEX and may force re-engineering of the mine plan. The risk of cost overruns and delays increases.

Implications for the investor: *risk of insufficient production, cost overruns due to equipment replacement and delays in key phases, with a direct impact on cash flow.*

10. Geotechnical risk affecting the stability of Stockpile 5.

The proximity of Stockpile 5 to the pit may require a renewed stability assessment (Xuxa) and may point to shortcomings in geotechnical design. The presence of the stockpile could destabilise the pit slope and potentially trigger slope failure. Safety factors require verification.

Implications for the investor: *geotechnical failures could halt operations, require corrective CAPEX and reduce recoverable reserves, materially impacting project value.*

11. Unrealistic mine plan in certain years.

High strip ratios (especially in Murial) and material-movement targets beyond the realistic capacity of the fleet make the plan unattainable in certain periods. This would lead to production shortfalls and/or head-grade deviations. Adjustments to the plan and phase optimisation may be required to avoid cost overruns and delays.

Implications for the investor: *high likelihood of production underperformance or grade deviations, reducing revenue and weakening key operating metrics.*

12. Absence of a grade-control plan.

The lack of a grade-control and mine–plant reconciliation system creates uncertainty around the actual ore grade, leading to sequencing errors, unplanned dilution and deviations from the mine plan. This impacts head grade, recovery stability and overall operational efficiency.

Implications for the investor: *greater uncertainty around ore tonnage and grade fed to the plant; quarterly volatility and higher risk of deviations from guidance.*

13. Geotechnical risk in the overall stability of pits and waste dumps.

The potential for pit-slope or waste-dump failures represents a critical risk for safety and operational integrity. Such failures may result in equipment losses, prolonged stoppages and reduced recoverable reserves if phases must be redesigned with flatter slopes, as well as higher CAPEX/OPEX for drainage and stabilisation.

Implications for the investor*: slope-stability events can cause prolonged shutdowns, unplanned CAPEX and loss of reserves, significantly increasing operational risk.*

14. Assumed 15% compaction factor either unachievable or not considered.

Assuming a 15% compaction factor without technical support or suitable machinery may bias the design of waste dumps and earthworks quantities. If actual compaction is lower, larger volumes and footprints will be required, increasing costs and potentially introducing stability or permitting risks.

Implications for the investor: *greater footprint and earthmoving requirements can increase CAPEX/OPEX and possible delays due to additional permitting.*

15. Absence of a crusher for backfilling and haul-road maintenance.

The lack of a dedicated crusher limits the availability of suitable material for backfilling and for stabilising ramps and pit floors. This may cause increased wear on haul roads and a slight reduction in

haulage efficiency, which in turn raises routine maintenance requirements and certain operating costs, as well as reducing blasting efficiency.

***Implications for the investor**: higher maintenance spending, lower haulage efficiency and increased operating costs that erode margins.*

16. Risk of inconsistency in data and technical reporting.

Inconsistencies in the technical report (assumptions that do not align across sections, figures that do not reconcile, omissions such as haul roads or earthworks, or undocumented methodological changes) call the reliability of the study into question. This increases the probability of cost overruns and schedule deviations. In mining, an inconsistent technical basis can translate into flawed operational decisions and costly redesigns later in the life of the asset.

***Implications for the investor:** lack of technical coherence increases the likelihood of negative surprises (overruns, redesigns, schedule slippage).*

17. Risk associated with transitioning from contractors to owner-operated mining.

Sigma Lithium is in the process of bringing mining operations in-house. While this may be positive in the long term, it presents short- and medium-term risks. The machinery market remains tight due to high demand, and there is a considerable shortage of skilled operational and maintenance personnel. Building a competent team may take time. In parallel, the company must rapidly mature its production-control, personnel and maintenance systems to operate autonomously and efficiently.

***Implications for the investor:** risk of reduced productivity and increased operational failures during the learning curve, with a negative impact on short-term cash flow.*

Metallurgy

18. Risk of variability in mineralogy and lithium head grade (Li_2O).

Mineralogical differences across zones of the orebody generate significant fluctuations in head grade, affecting feed consistency and the plant's ability to sustain Li_2O concentrate production. This variability may require frequent operational adjustments and may reduce metallurgical efficiency unless managed through appropriate planning and **blending** strategies.

The high petalite content in deposits such as LDM can reduce overall recovery and concentrate grade (for example, poorer response in DMS/flotation relative to spodumene). This may result in lower saleable production and/or contractual penalties under offtake agreements if the concentrate fails to meet agreed purity specifications.

An orebody containing both petalite and spodumene presents mineral-mixing risks, which may reduce average grade and lithium recovery. Petalite generally has lower Li_2O grade and lower market value (except for ultra-high-purity "technical" petalite, which commands premium pricing), which penalises contracts unless correctly segregated. In addition, its different chemical reactivity complicates conversion to Li_2CO_3/LiOH, increasing processing costs. Finally, mineralogical variability may hinder plant planning and reduce predictability of cash flow.

Implications for the investor: *less stable saleable production, risk of failing to meet concentrate specifications and lower revenue per tonne.*

19. Expansion-execution risk without EPCM support (Phases 2 and 3).

Phase 2 (and likely Phase 3) is expected to be managed by the **Owner's Team** rather than by an **EPC/EPCM** contractor. Although internal knowledge gained from Phase 1 is an advantage, this strategy increases engineering and execution risk, including potential delays, scope changes and cost overruns. It also strains the organisation's capacity to manage complex work packages simultaneously and increases exposure to contingencies normally absorbed by an experienced EPCM, requiring stronger governance, planning, cost control and QA/QC.

Implications for the investor: *high probability of delays and cost overruns in Phases 2 and 3; elevated execution risk that may erode expected future value.*

20. Risk of inconsistency in reported data (technical reporting).

Inconsistencies between historical and current datasets (metallurgical balances, recovery curves, concentrate specifications, particle size/moisture data and QA/QC) weaken the reliability of recovery models and plant simulations. This indicates insufficient rigour in published information and raises doubts around key project metrics.

Implications for the investor*: weaker confidence in recovery and production forecasts; increased uncertainty in the economic model.*

Executive team

21. Execution and value-creation risk linked to track record.

Limited operating credibility and a weak or uneven execution record—characterised by delays, cost overruns or slow ramp-ups—can undermine confidence and raise the cost of capital. It may also affect tendering processes, offtake negotiations and access to financing. Together, these factors increase contingencies and the likelihood of deviations, especially during expansion phases.

Implications for the investor: *higher risk premium and cost of capital; deterioration of valuation multiples if delivery falls short.*

22. Critical execution failure (contractor transition).

A failure in execution or a poorly managed transition away from contractors could create process and operational discontinuities. This may slow decision-making and undermine the confidence of customers, lenders, regulators and employees. Operational misalignments may lead to disputes that escalate into arbitration or litigation. Management may be forced to spend additional time and resources resolving conflicts, while uncertainty regarding production and timelines increases.

Implications for the investor*: operational disruptions and litigation affecting production, reputation and access to financing.*

23. Governance failure by former Co-CEO and associated litigation.

Litigation distracts management, consumes resources and prolongs uncertainty. Leadership turnover during key processes increases execution risk.

Implications for the investor: *management uncertainty that may affect strategic negotiations and corporate stability.*

🔴 **24. Risk of weakened confidence and misaligned insider incentives.**

Incentive schemes focused on share-price performance, related-party transactions or mixed communication signals can increase perceived risk and reduce long-term investor appetite. Misalignment tends to prioritise short-term tactics over sustainable value creation, affecting investment and financing decisions.

Implications for the investor*: risk of short-term decision-making that destroys long-term value.*

Sales

🟠 **25. Impacts from fluctuations in mineral market prices (SC6).**

With sales linked to spot prices, revenue and cash flow are highly sensitive to the commodity cycle. In downturns, unit margins may approach cost levels, straining liquidity. SC6 pricing is influenced by EV/battery demand, inventories, industrial policies and supply shocks. Significant or prolonged price declines reduce NPV and may force operational adjustments, CAPEX deferrals or financing renegotiations, threatening profitability or even the project's viability.

Implications for the investor: *during weak cycles, EBITDA and liquidity may compress severely, increasing financial risk.*

🟡 **26. Risk arising from uncertainty in finalising offtake agreements.**

Growing emphasis on operational and financial clarity may prompt counterparties to delay signing offtake agreements or demand higher financing costs. The absence of forward-sales contracts reduces revenue stability, increases cash-flow volatility and weakens the bankability of expansions. Although it may not materially affect sales volumes—since the company can still sell at spot—it affects financing, removing an attractive funding avenue.

Implications for the investor*: lower bankability of expansions and greater volatility in revenue and cash flow.*

ESG & Regulation

🟡 **27. Risk of environmental-permit revision or suspension due to new MPF or SEMAD requirements, especially for Phases 2 and 3.**

Licence reviews may impose new conditions, delay expansion schedules (Phases 2–3) or even suspend permits, affecting project viability. Intervention by the Federal Prosecutor's Office (**MPF**) in Minas Gerais increases the likelihood of additional requirements.

Implications for the investor: *high probability of delays in Phases 2 and 3, directly affecting production-growth upside.*

🟡 **28. Pressure on water resources: flow variability, local complaints or conflicts over water use.**

In sensitive catchments, cyclical droughts or disputes over water use can affect operational continuity, impose restrictions and increase costs (abstraction, recirculation, treatment). Territorial expansion heightens scrutiny over cumulative impacts and transparency in water management.

Implications for the investor: *increased risk of operational interruptions and higher OPEX, affecting operational stability.*

29. Waste-management and geotechnical-stability risk, vulnerable to audits, non-conformities or extreme weather events.

Dry stacking avoids tailings dams but requires rigorous geotechnical control. Failures in stockpiles or waste dumps (exacerbated by extreme rainfall) pose safety risks, cause shutdowns and necessitate costly remediation, in addition to regulatory penalties. Audits with critical findings may trigger additional obligations.

Implications for the investor*: critical events may cause prolonged shutdowns and unplanned CAPEX, worsening the project's risk–return profile.*

30. Social risk from unmet community expectations, with potential protests, legal actions or loss of local support.

High expectations around employment and social investment, if unmet, may trigger protests, legal claims or loss of the social licence to operate. Allegations regarding consultation with traditional communities increase the risk of judicialisation.

Implications for the investor: *operational interruptions and litigation that add volatility to cash flows.*

31. Reputational risk linked to perceptions of greenwashing if ESG performance lacks independent verification.

Environmental claims (e.g., “Quintuple Zero”) without verifiable external certification may be challenged by investors, customers or regulators under heightened scrutiny. Any gap between messaging and independently verified performance damages credibility and may affect commercial agreements.

Implications for the investor*: loss of credibility and potential decline in interest from customers and institutional investors.*

Finance

32. Liquidity risk.

A systematic decline in cash quarter after quarter, combined with principal repayments of about USD 30 million over the next four months and ongoing liquidity needs to sustain operations, may strain the company’s financial position during a weak price cycle. Without a sufficient cash buffer, the company may be forced into asset sales or to seek financing under unfavourable terms. Debt peaks may compromise maintenance CAPEX or operations, affecting availability and operating costs. The risk is amplified if financial covenants are tight. Refinancing upcoming maturities with a staggered schedule and committed liquidity lines would mitigate this fragility.

Implications for the investor: possible need for dilutive financing or asset sales under unfavourable conditions.

33. Risk of structural over-indebtedness.

High, persistent and increasing leverage (and the potential to further increase long-term liabilities via offtake-linked financing for Phase 2 during a weak lithium cycle) constrains flexibility. If cash generation

is insufficient, deleveraging may depend on refinancing or dilution. While bank financing at lower cost and with grace periods reduces average cost of capital, it increases gross leverage and requires flawless execution of expansion to remain sustainable.

Debt forces prioritisation of financial servicing over efficient CAPEX, exploration or maintenance, potentially deteriorating long-term asset value. It also weakens the investment thesis, as much of the commodity-cycle upside accrues to creditors, while downside falls on shareholders, breaking the asymmetric return profile sought by investors.

***Implications for the investor**: risk–return asymmetry shifts toward creditors; shareholders bear the downside while capturing less of the upside.*

34. Risk of weak internal controls and poor quality of reported information.

The auditor's adverse opinion on internal controls for three consecutive years (2022–2024) indicates persistent deficiencies in financial-reporting processes and oversight, raising the risk of material errors. Although the financial statements carry no qualifications, this situation increases operational and governance risk and may affect institutional-investor confidence, credit ratings and the company's financing cost.

***Implications for the investor**: higher risk premium and potential increase in financing costs due to diminished institutional confidence.*

Opportunities

Opportunities

Likewise, the TBG team has identified a number of opportunities from which the company could benefit. These are listed in the following table.

Table 6. Legend for the Standard Opportunity Prioritisation Matrix.

Level	#	Description	Discipline
VERY HIGH	13	Potential to refinance via offtake agreements using uncommitted production.	Finance
	9	Strong base of founding shareholders.	Governance
HIGH	11	Financial upside from a normalisation in lithium prices.	Sales
	2	Potential for new discoveries supported by strong understanding of local geology and the district's productivity in LCT-type pegmatites.	Geology
	7	Potential to produce by-products.	Metallurgy
	4	Geometallurgical model to optimise blending in Phases 2 and 3 for petalite-rich orebodies.	Geology
	6	Scope to implement a grade-control system that enhances short-term mine planning.	Mining
	10	Opportunity to become a global benchmark in responsible lithium mining if "zero" standards are maintained.	ESG & Regulation
MODERATE	5	Risks that are straightforward to mitigate through focused technical work.	Mining
	8	Optimisation of the mineral processing flowsheet.	Metallurgy
	1	Political stability in Minas Gerais and a pro-investment state agenda that support capital attraction and the development of responsible mining projects.	Country
	3	Potential to expand certain open-pit orebodies in multiple directions.	Geology
	14	Potential to monetise fully impaired inventory/assets on the balance sheet.	Finance
LOW	12	New hedging instruments for SC6 concentrate pricing	Marketing

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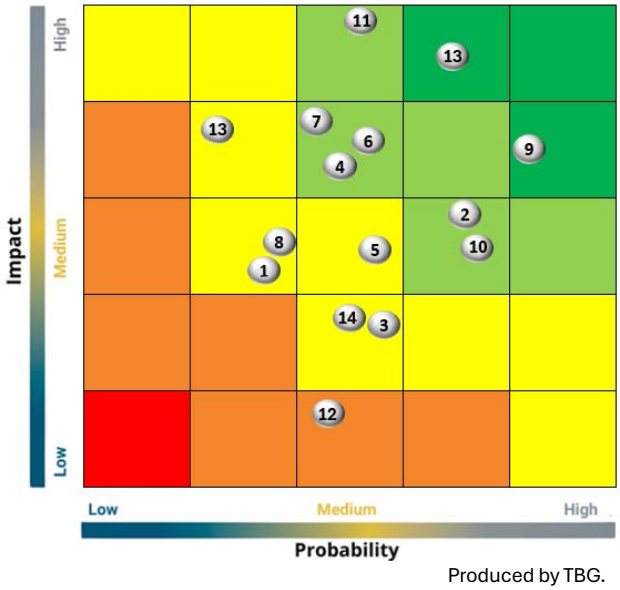
And represented, as with the risks, in a colour-coded map.

Figure 13. Opportunity Prioritisation Matrix.



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Opportunities are detailed in the next section.

Country

1. **Political stability in Minas Gerais and a pro-investment state agenda that support capital attraction and the development of responsible mining projects.**

Politically stable, pro-investment environment typically results in more predictable permitting processes and lower risk of arbitrary stoppages. It facilitates both public and private infrastructure (roads, energy, logistics), which lowers operating costs. It also improves perceived risk for banks and investors, reducing the cost of capital and easing the financing of expansions. In addition, a state agenda emphasising "responsible" projects aligns well with ESG standards, broadening the pool of potential financiers and customers.

Implications for the investor: *greater visibility around permitting and project development, reducing the risk premium and improving the cost of capital for expansions.*

Geology

2. **Potential for new discoveries due to strong understanding of local geology and the district's productivity in LCT-type pegmatites.**

With strong knowledge of local geology in a prolific field such as Araçuaí, the probability of adding resources near existing infrastructure is above average. This geological "safety belt" provides recurring optionality and may extend the life of mine (LOM) and overall project continuity.

Implications for the investor*: geological optionality that could extend* ***LOM*** *and support a growth thesis with limited additional capital.*

3. **Potential to increase the size of certain open-pit bodies in multiple directions.**

Several mineralised bodies remain open along strike and/or at depth, indicating potential for resource growth. If confirmed, this could increase tonnage, extend mine life and allow more flexibility for sequencing and scaling without external acquisitions.

Implications for the investor*: longer LOM and potential for increased future production, strengthening the long-term value of the asset.*

4. **Geometallurgical model to optimise blending in Phases 2 and 3 for petalite-rich orebodies.**

Developing a geometallurgical model that incorporates mineralogy, recoveries and penalising elements (iron content, mica/biotite) would support blending optimisation in the plant during Phases 2 and 3, which involve orebodies with significant petalite content.

Implications for the investor*: greater stability and quality of concentrate, reducing variability and improving cash flow predictability.*

Mining

5. **isks that are straightforward to mitigate through technical work.**

Certain risks can be materially reduced with appropriate execution. Issues such as Pile 5 stability or stripping peaks have relatively simple solutions (redesign, sequencing, stockpile strategy). Addressing

them stabilises costs, reduces surprises and frees operational capacity. Each mitigated item reduces the project's risk premium.

Implications for the investor: *lower operational surprises and costs, reduced risk premium and a more stable operation.*

6. Potential to implement a grade-control system that optimises tactical planning.

Implementing a robust grade-control system reduces dilution and head-grade volatility. With better information, mine and plant align more effectively, and blending becomes more predictable, which can improve effective recovery. It also strengthens reconciliation and week-to-week tactical planning. In early years, the impact on cash flow can be substantial.

Implications for the investor*: more stable head grades and recoveries can translate into increased saleable concentrate and more consistent cash flow.*

Metallurgy

7. Potential for by-product production.

There is an opportunity to generate additional revenue by selling fine fractions, including the possibility of commercialising the finer portion of the concentrate. There may also be potential to utilise petalite where present in moderate abundance (e.g., Barreiro). This strategy reduces material otherwise destined for waste disposal, improves lithium recovery, increases operating cash flow and diversifies commercial products without compromising primary spodumene production.

There could likewise be potential to recover industrial minerals that are currently treated as plant waste.

Implications for the investor: *additional revenue, reduced waste and diversified cash flow with no material CAPEX.*

8. Optimisation of mineral processing.

Plant optimisation (including improvements in ultrafine DMS, magnetic separation and liberation in intermediate stages) could increase global Li_2O recovery.

Implications for the investor: *more Li_2O recovered per tonne → direct uplift to operating cash flow and margins.*

Management team

9. Strong founding shareholder base.

A strong founder shareholding can provide patient capital, long-term vision and support counter-cyclical decisions (refinancing, plan adjustments) without sacrificing recovery potential. It also accelerates internal decision-making during critical periods. Economic alignment reduces potential conflicts of interest. In volatile cycles, this stability and resilience can be decisive.

Implications for the investor: *greater strategic stability and ability to execute critical decisions even under adverse conditions.*

ESG & regulation

10. Opportunity to become a global benchmark in responsible lithium mining if "zero" standards are maintained.

If claims (zero tailings, zero potable water, low footprint) are verified by third-party certification, the company could differentiate its product for more demanding customers. This may also accelerate permitting and reduce the risk of controversies. With ESG clauses increasingly embedded in commercial contracts, demand may become more resilient. This competitive position is difficult to *replicate without strong documentation and discipline.*

Implications for the investor: *enhanced reputation, preferential access to premium offtakers, potential for more defensive pricing and smoother permitting.*

Sales

11. Financial impacts from a normalisation in lithium prices.

Based on supply–demand fundamentals, there is potential for price recovery. Any increase improves project margins, as extraction costs remain relatively stable while revenues rise. Given Sigma Lithium's high sensitivity to lithium pricing, the effect could be material.

Implications for the investor*: direct leverage to lithium prices → price increases can significantly expand margins and NPV.*

12. New hedging tools for SC6 concentrate pricing.

his emerging tool enables the company to lock in a portion of production through financial contracts indexed to SC6. If prices collapse, the hedged volume still sells at a pre-agreed price, dampening revenue volatility. It reduces full exposure to the daily spot price and provides better margin visibility.

Implications for the investor*: reduced cash-flow volatility and improved margin visibility even under low-price scenarios.*

Finance

13. Potential refinancing via offtake agreements using uncommitted production.

Uncommitted production enables structured agreements with prepayments, floors and periodic resets to provide immediate liquidity and unlock financing for Phase 2. This approach is operationally aligned and mitigates liquidity risk, although it does not remove structural leverage risk.

Implications for the investor*: improved short-term liquidity and greater bankability of expansions without relying solely on debt.*

14. Potential monetisation of fully impaired products on the balance sheet.

When products such as old tailings or legacy stockpiles are fully impaired, their book value is zero and any revenue generated becomes, in practice, almost pure profit.

Monetisation converts what is perceived as a "loss" into incremental cash flow without requiring investment. For a company with a tight balance sheet, this acts as a liquidity buffer and reduces the need for debt or equity issuance in the short term.

Implications for the investor: *high-margin cash inflows that act as a financial buffer and reduce short-term leverage pressure.*

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Detailed report

Detailed comments by Discipline.

GEOLOGY

The Grota do Cirilo project is located within the Eastern Brazilian **Pegmatite** Province, inside the Araçuaí orogen, a well-studied **LCT (Lithium–Caesium–Tantalum)** belt whose Neoproterozoic–Cambrian evolution generated numerous swarms of residual pegmatites associated with syn- and post-collisional granites. The Araçuaí district (Itinga, Coronel Murta and Curralinho) hosts the most important lithium deposits in the province, in a geological environment well understood by the Sigma Lithium team and with reasonable potential for further discoveries close to existing infrastructure. Mineralisation is preferentially emplaced along regional foliation (NE–SW trend) and a set of conjugate fractures, a structural control that explains tabular to lenticular dykes with moderate to steep dips. More than two hundred pegmatites have been mapped within the tenements, with exploration priority around Grota do Cirilo, Genipapo and Santa Clara.

At deposit scale, the **pegmatite dyke** portfolio is heterogeneous in geometry, mineralogy and metallurgical response. Spodumene is the principal lithium carrier; petalite occurs in variable proportions depending on the body. The **gangue** assemblage (feldspars and micas) includes biotite in the enclosing schists of the Salinas Formation, a potential source of iron that may report to concentrate. The Xuxa deposit comprises a pegmatite hosted along a shear zone parallel to foliation, with average thicknesses of around 13–14 metres and verified continuity down to 250–260 metres. DMS tests support >6% Li_2O concentrate grades and a design recovery of around 60% (with peaks up to 65%). Barreiro, with average thicknesses of 35–40 metres and a more discordant structural setting, shows combined concentrate grades of 6.0–6.1% Li_2O with recoveries of 51–54%. NDC lies between the two, with petalite contents of 23–29%, recoveries of 51–53% and concentrate grades of around 5.5% Li_2O. In LDM, Maxixe and Tamboril, petalite may reach 40–60% in test samples; together with **Fe_2O_3** carry-over from biotite, global recoveries sit at 43–49% with a tendency towards lower concentrate grades. Murial (negligible petalite), which presents the lowest head grades, has returned 5.3% Li_2O concentrate at 49% recovery with controlled Fe (<1%). These differences are not marginal: they directly influence saleable tonnage and the risk of specification penalties in concentrate offtake contracts.

Exploration work is extensive and, in essence, robust. Between 2012 and 2024, approximately 650 **HQ3** diamond drillholes were completed, totalling 132,000 metres, with near-100% recovery, average spacing of 50 m (opening to 100 m at the edges) and deviation control using gyroscopic tools; **collars** were surveyed by GPS. The 1-metre sampling interval and uniform **compositing** are aligned with best practice. Independent verification of procedures and data was undertaken, including a core resampling programme with very low average differences between original and control assays, supporting analytical consistency.

Regarding densities, values determined by pycnometer are available in significant numbers for each deposit (e.g., several hundred determinations for Xuxa and Barreiro, more than a thousand for Murial). The method is accepted for these lithologies, although it does not capture porosity. Domain-based averages (spodumene-rich vs. petalite-rich zones) are applied in tonnage estimation. Given the possible density–grade correlation, it is worth noting that using a single average per domain could over- or underestimate tonnages where mineralogy varies significantly.

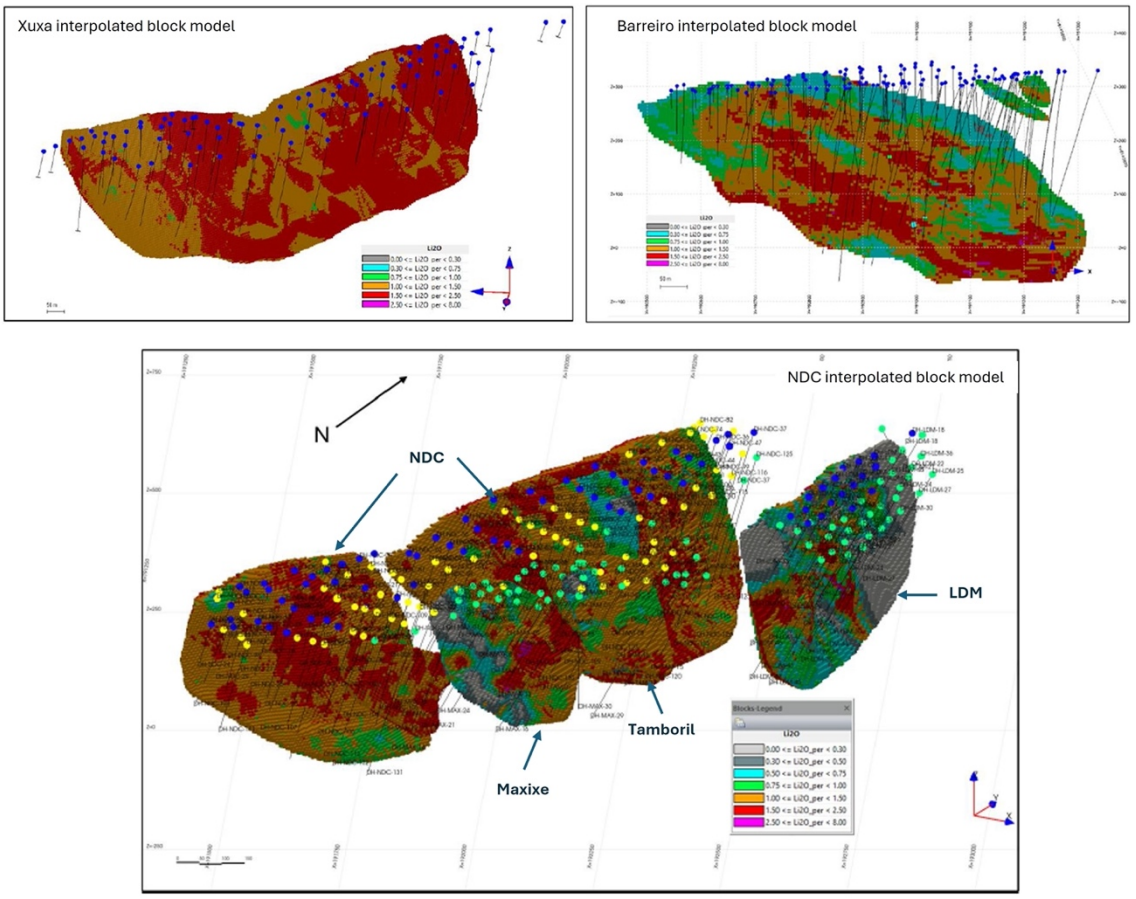
QA/QC — Quality Assurance & Quality Control

QA/QC protocols are broadly aligned with international industry standards, with only minor issues recorded and some slight bias in external laboratories; overall analytical quality is adequate for resource estimation. However, documentation focuses mainly on the 2020–2022 campaigns (years with lower drilling intensity) and provides limited comparative plots and time-series data, making it harder to assess precision and accuracy without ambiguity. Additionally, low sample recovery is observed in RC drilling in some areas, with no clear explanation of causes or mitigation measures. As sample recovery directly affects uncertainty in tonnage and grade estimation, this introduces additional variability wherever **RC** was used for control or **reconciliation** purposes.

Mineral Resource Estimation (MRE)

Ordinary kriging has been applied in Xuxa, Barreiro, NDC and Murial, while **ID²** was used in LDM, Maxixe, Tamboril and Elvira. **Variography** has only been completed for part of the portfolio; search volumes are considered optimistic and the results show significant smoothing with possible overestimation of high-grade relative to low-grade material. No top-cuts have been applied to composites despite histograms showing long tails above 4% Li_2O, and typical internal pegmatite zonation (enriched cores vs. fine-grained barren margins) is not captured in sufficient detail in the domains. Soft/hard boundaries are not explicitly documented. Iron, despite being a penalising element in concentrate, is not modelled. Category classification relies primarily on search distances with limited explicit incorporation of continuity. For an operation already in production, periodic reconciliations (e.g., from Xuxa) would be expected to support the assigned categories.

Figure 14. Isometric views of the LiO_2 interpolated for the different orebodies.



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In terms of data support, the estimation does not incorporate surface trench assays (a sampling support different from core), which is considered good practice.

Finally, regarding the RPEEE requirement (pit optimisation used to declare resources), the documentation presents inconsistencies between tables and text relating to economic parameters and the derivation of the **cut-off** grade applied, as well as other critical parameters such as global slope angles that appear overly aggressive for steeply dipping pegmatite dykes hosted in schists, and optimistic DMS recoveries for certain deposits. Applying global slope angles that are steeper than is reasonable reduces the theoretical **strip ratio**, while assuming a generalised 60% DMS recovery is optimistic in deposits with significant petalite content (LDM/Maxixe/Tamboril and parts of NDC) when compared against published metallurgical testwork. It is also unusual, and potentially confusing, to declare open-pit and underground resources jointly, as the appropriate cut-off grade differs for each mining method.

It is advisable to provide a sensitivity analysis of resource tonnage at different cut-off grades, allowing the reader to visualise the resource sensitivity to variable economic parameters.

With respect to geotechnical investigations and stability analyses, although the rock mass is generally strong and exhibits low fracturing, the 2D global stability assessments based on limit-equilibrium methods appear overly optimistic. Inter-ramp heights of up to 300 m are considered aggressive and should be justified through stability studies at inter-ramp scale. In the case of Murial, no geotechnical investigations exist to substantiate the design parameters applied.

Beyond these cautions, the geological potential of the district is clear. Several mineralised bodies remain open along strike and/or at depth, and the density of mapped pegmatites, together with the local experience of the team, supports a reasonable probability of discoveries adjacent to current operations. This potential is best captured when the geological model accurately reflects continuity, zonation and grade distribution, particularly where spodumene–petalite associations and iron in the gangue strongly influence plant performance and concentrate quality.

General opinion.

The Araçuaí district offers a high-quality geological setting, and Grota do Cirilo is supported by a robust exploration dataset (around 650 drillholes; approximately 132 km drilled; acceptable QA/QC), which underpins its potential. At the same time, the current modelling (domains and contacts, partial variography, absence of top-cuts, and lack of Fe modelling) suggests a possible underestimation of uncertainty and a positive grade bias. Additional sources of variability are introduced by low RC sample recovery, neither explained nor mitigated. Further inconsistencies remain between the technical assumptions used in the RPEEE (DMS recoveries and global slope angles) and the outcomes of metallurgical testwork, as well as a possible mismatch between compositing intervals and block size.

Taken together, there is a risk that the economic tonnage and forecast concentrate production are higher than what the current data and testwork can support. The asset retains geological appeal, but resource interpretation should be approached cautiously until continuity and grade distribution are clearly and properly represented.

***Implications for the investor**: the geology provides an attractive district, but the current model presents sufficient uncertainty to materially affect NPV, life of mine and operational stability. The upside exists, but it warrants caution until reconciliation and model refinement are demonstrated.*

MINING

Mining operations at Sigma Lithium comprise several open-pit mines (Xuxa, Barreiro and NDC/Murial) and a small underground operation at Xuxa. The selection of mining methods is, in general terms, consistent with the geometry and style of the ore bodies: conventional truck-and-shovel open-pit mining at surface, and a **Transverse Sub-Level Open Stoping (TSLOS**) method with predominantly unconsolidated rockfill for the underground mine. While technically valid at the current level of detail, the underground method provides limited operational flexibility due to the use of uncemented fill, which requires a more rigid sequencing and tighter dilution control.

In the open-pit design, the pits have been optimised using standard tools (**Whittle**) and broadly comply with reasonable geometric and geotechnical parameters. However, at Barreiro certain phases include benches that do not meet the minimum width required for the proposed fleet. Sigma Lithium will need to adjust these phases (**pushbacks**) to provide sufficient working width to allow equipment to operate safely and efficiently before mining proceeds.

Surface infrastructure design (haul roads, cut/fill, turning radii, gradients) is only minimally detailed in the available drawings, making it difficult to evaluate operability. A bridge between pits is mentioned for Xuxa to cross a drainage channel, which suggests some surface infrastructure has been contemplated, but no design detail is provided.

From a geotechnical standpoint, the reported rock quality and the slope/inter-ramp criteria are broadly suitable for this stage of study. However, key model details are absent (material zoning, boundary conditions, sensitivity analyses), and treatment of waste-dump stability is incomplete: while Xuxa's Dump 03 has been analysed, there are no explicit stability calculations for Barreiro or LDM despite their scale. More importantly, Dump 5 is located very close to the crest of Xuxa's southern slope, which invalidates the existing stability verifications of the eastern slope unless the added weight of the dump is incorporated; this assessment must be repeated with the dump load included.

Dilution estimation for the open pits uses a process beginning with the resource model and applying a 1 m envelope, plus an assumed operational dilution of 3%. While the approach is described correctly, the dilution figure appears optimistic for open-pit operations using the proposed fleet. Of greater concern is the methodology used to define the **SMU (Selective Mining Unit)**: uniform conditional simulation has been used to justify an SMU size, yet this technique is designed to transfer variability from a larger support to a smaller one and simulate grade variability—not to determine SMU size. Determining the SMU through conditional simulation, as stated in the report, is incorrect. SMU size must be determined by equipment capability and bench height, typically in the range of 3–4 bucket widths (5.0–7.2 m in this case). The resulting value coincides with the report's proposal, but the methodological basis is inappropriate.

For the underground mine, the assumptions of 10% ore loss and 10% dilution are reasonable at an order-of-magnitude level, though actual operating values would be expected to be higher, particularly with unconsolidated fill.

The cut-off grade assessment contains several inconsistencies: some tables omit selling/transport costs, royalties appear to have been calculated below their applicable value (2% of price), and a concentrate transport cost referenced elsewhere in the report is not included. A significant issue is that, using the costs shown in the design tables, the calculated cut-off is 0.15% Li_2O; however, when using the costs stated in the financial section, plant costs are USD 21.06/t (instead of USD 10.7/t) and G&A is USD 22.94/t (instead of USD 4.0/t), which yields a 0.50% Li_2O cut-off—the value adopted in the report. This inconsistency between sections is recurrent throughout the document.

In mine planning, production targets are ambitious and, in several years, material movement peaks exceed what the fleet and available haulage widths could realistically achieve. At Xuxa, for example,

total material movement of 29–30 Mt/a and a peak of 40 Mt in Year 7 is unusual and not advisable in late-stage pit development due to spatial constraints; at Barreiro, annual movement reaches 41–46 Mt (Years 4–6); at Murial, some years show 36–82 Mt (Years 18–21), which is implausible for the proposed fleet. Sigma Lithium will need to refine its mine planning to eliminate such peaks and align annual movement with operational capacity.

Significant omissions appear in services and infrastructure: no details are given on permanent dewatering (despite rainfall >700 mm/year, which increases drainage requirements), workshop designs are absent, and the source of material for road construction and stemming/fill is not identified. A dedicated crushing and screening station would be advisable for this purpose; ignoring this requirement will negatively affect haul speeds, fuel consumption, maintenance and even explosives performance.

The assumed 15% swell/compaction factor for waste dumps is lower than typical values (25–30% for loose material) and may underestimate dump footprints and volumes.

Combined with inconsistencies between sections (mining costs vs. cut-off grade; omitted design elements), these issues increase the likelihood of deviations from the mine plan in terms of volumes, grades and costs.

In parallel, **grade control** is not formalised: without an RC (Reverse Circulation) programme of adequate density and QA/QC, risks of operational dilution, head-grade variability and misalignment between mine and plant increase. Early years are particularly sensitive for capital recovery and process stabilisation, so insufficient grade control may amplify existing planning and infrastructure weaknesses. Implementing RC or an equivalent sampling system is an immediate improvement opportunity relative to what is described in the report.

Regarding the fleet, it is recommended that the small equipment proposed be replaced with machinery appropriate for the scale of operations. The fleet described by Sigma Lithium is typical of small mines or civil works; such equipment is not designed for the severity and continuity of a project of this scale. Maintenance costs would escalate rapidly and equipment would wear at an unsustainable pace. Moreover, smaller fleets yield higher unit operating costs (lost economies of scale) and require more personnel in both operations and maintenance. A mine of this scale should not require 70 or more trucks, as it would create a significant logistical and maintenance burden. Sigma Lithium appears to be considering a fleet upgrade, according to press releases, which would require redesigning pits and haul roads to accommodate larger equipment. Similarly, Sigma Lithium's intention to transition to owner-operated mining is, while positive long-term, likely to present significant challenges and risks in the near and medium term.

Finally, several risks are technically resolvable: repeating Xuxa's geotechnical study including Dump 5 and drainage, and optimising the mine plan to eliminate peaks, are short-term actions with limited CAPEX that reduce operational risk and stabilise cost/production profiles.

General opinion

From a technical standpoint, and based on the information available, the overall quality of the technical report is low: it exhibits several material weaknesses and questionable decisions (fleet selection and the configuration/sequencing of the mine plan), together with significant omissions. The cut-off grade calculation and the absence of a formal grade control system require revision or, at the very least, stronger justification. These gaps undermine the traceability between resource → design → operational plan, and increase the likelihood of execution deviations. Taken together (and despite the strengths of the project, which presents attractive economic parameters) the current documentation raises concerns regarding the robustness of the designs and the practical experience of the team to execute the plan appropriately (a point discussed in greater depth in the management section).

Implications for the investor: *weaknesses in mine design, grade control and fleet sizing materially increase the risk of operational deviations during the early years, when CAPEX payback is most sensitive. An unrealistic mine plan can result in lower sellable tonnes, higher unit costs and volatility in head grade, directly affecting EBITDA and delaying payback. The transition to an owner-operated fleet adds complexity and may create bottlenecks in equipment availability and maintenance. If the inconsistencies identified (cut-off, infrastructure, waste dumps, dilution, grade control) are not corrected, the project may face cash-flow pressure and require unbudgeted additional CAPEX. For investors, this implies a higher risk of dilution, a reduced margin of safety in valuation, and an execution profile that is more fragile than the published NPV suggests.*

METALLURGY

Sigma Lithium completed construction of its Phase 1 Greentech Plant in the first quarter of 2023, commencing commercial production in April 2023.

Monthly production increased progressively through to December 2023, at which point the plant was operating at annually averaged rates consistent with nameplate capacity. Process optimisation undertaken during 2024 enabled the monthly processing rate to rise from 199 t/h to 233 t/h, while maintaining plant availability above design levels.

Mineral Resources are reported across eight pegmatite bodies: Xuxa, Barreiro, Murial, Lavra do Meio, Nezinho do Chicão, Maxixe, Tamboril and Elvira.

- Xuxa is an operating mine that commenced production in April 2023. It currently operates as an open pit with a planned life of eight years. The project also includes an underground phase of up to 360,000 t/year. This does not necessarily imply extended mine life; its feed schedule has yet to be defined, and this tonnage could be blended with open-pit material from Xuxa, as the combined feed would still fall below 1.8 Mt/year.
- Barreiro: the plan is to mine the deposit at 1.80 Mt/year. The planned open-pit life of mine is 12 years.
- Nezinho do Chicão – Lavra do Meio: the plan is to mine the deposit at 1.80 Mt/year. The planned open-pit life of mine is 16 years.
- Murial: the plan is to mine the deposit at 1.80 Mt/year. The planned open-pit life of mine is 6 years.

Table 7. Reserves summary table detailed by deposit.

Deposit	Reserves (Mt)	% Total	Head grade Li_2O (%)
Xuxa	12,40	16,25%	1,51%
Barreiro	21,80	28,57%	1,36%
NDC - LDM	31,90	41,81%	1,27%
Murial	10,20	13,37%	1,07%
TOTAL	76,30	100,00%	1,31%

Sigma Lithium.

Metallurgical testwork confirms that the district is well suited to processing via **Dense Media Separation (DMS**). Deposits dominated by spodumene (such as Xuxa, Barreiro and Murial) exhibit simpler mineralogy, better liberation characteristics, higher Li_2O grades and superior recoveries.

Conversely, deposits with a high proportion of petalite (NDC, LDM/Maxixe/Tamboril) display more

complex metallurgical behaviour, with a material impact on head grades, recoveries and the final Li_2O concentrate grade. As a result, mineralogical variability must be managed carefully on a deposit-by-deposit basis.

Table 8. Metallurgical parameters summary.

Deposit	Main mineralogy	Secondary minerals / Other	Head grade Li_2O (%)	Concentrate grade Li_2O (%)	Penalty elements / Fe_2O_3 (%)	Global recovery Li_2O (%)
Xuxa	Espodumene	Low petalite, microcline, albite, muscovite; byproducts: tantalite, columbite, cassiterite	1,27%–1,74% (1,50% average)	6%–6,16% (5,5% optional)	Fe2O3 <1% (up to 1.06–1.10% in samples with high gangue)	60.4% (up to 65% if 5.5% Li2O is accepted as the concentrate grade)
Barreiro	Espodumene	Significant petalite, cookeite, ferrisicklerite, feldspars, micas	0,88%–2,09% (1,48% average)	6% (5,5% optional)	Fe_2O_3 <0,35%	50.9% (up to 57.9% if 5.5% Li2O is accepted as the concentrate grade). Option to increase total recovery by 4.3% with a second crushing.
Nezinho do Chicão (NDC)	Espodumene	Moderate petalite, cookeite, beryl	1,08%–1,78% (1,38% average)	0,055	Fe_2O_3: 0,36–0,53%	50.6%–53.3% (includes second crushing)
Lavra do Meio, Maxixe y Tamboril	Espodumene	Significant petalite, biotite, feldspars, micas	0,74%–2,18% (1,35% average)	5,2% Li_2O / 2,87% petalite / 4,47% average	Fe_2O_3 >1% (por biotite)	0,43
Murial	Espodumene	Petalite, feldspars, micas	0,99%–1,68% (1,33% average)	0,053	Fe_2O_3 <1%	0,492

Sigma Lithium / TBG.

Table 9. Metallurgical process summary.

Deposit	Suggested process / Observations
Xuxa	Primary crushing to 9.5 mm → preliminary classification / REFLUX → DMS 2 stages (SG 2.65 and 2.90) → dry magnetic separation
Barreiro	Crushing to -10 mm → ultrafine screening / REFLUX → DMS coarse, fine and ultrafine fractions → dry magnetic separation → optional second crushing for middlings
Nezinho do Chicão (NDC)	Crushing to -9.5 mm → ultrafine screening / REFLUX → DMS 2 passes → second crushing and reincorporation of middlings → dry magnetic separation
Lavra do Meio, Maxixe y Tamboril	Crushing to -9.5 mm → ultrafine screening / optional REFLUX → two-pass DMS → floating petalite recovery → optional magnetic separation. An additional petalite DMS stage may be required.
Murial	Crushing to -9.5 mm → optional ultrafine screening / REFLUX → DMS rougher + scavenger by size fraction → optional dry magnetic separation

Sigma Lithium / TBG.

Sigma Lithium's Greentech Plant – Xuxa (Phase 1) consists primarily of a gravity-based mineral processing facility using Dense Media Separation (DMS), together with a **dry-stacking** tailings disposal system.

In its August 2025 corporate presentation, Sigma Lithium reported an annualised production of 270,000 tonnes of concentrate grading 6% Li_2O, equivalent to approximately 40,000 tonnes per year of LCE.

Figure 15. View of the crushing and DMS circuits at the current Xuxa plant.

Sigma Lithium.

The project benefits from road access via the BR-367 highway and upgraded municipal roads, as well as logistical connectivity to Belo Horizonte and the port of Vitória. It is served by a local airport and newly developed internal haul roads supporting the different mining phases.

Water supply is secured through a licensed supply of 150 m^3/h from the Jequitinhonha River, supplemented by water recycling from sedimentation ponds and a treatment plant that produces both industrial and potable water. Power is supplied via a 138 kV transmission line operated by CEMIG, with generation predominantly from hydroelectric sources.

Sigma Lithium employs a dry-stacking tailings management system, avoiding conventional tailings dams and managing tailings safely through filtration and co-disposal with waste rock.

Table 10. Estimated annualised production from Xuxa.

Parameters		Value	Source / Reference
Tonnage	t/y t/h	1,500,000 186	Xuxa design, NI 43-101, SGS 2025
Availability	%	92%	NI 43-101, SGS 2023
Head grade	%Li_2O	1,46%	NI 43-101, SGS 2025
Recovery	%Li_2O	70%	Corporate presentation, august 2025
Concentrate grade	%Li_2O	5,20%	Press releases, august 2025
Production	t/y Li_2O	14,104	Equivalent 2025
Final concentrate	t/y	271,223	Equivalent 2025
	t Li_2O	**67806**	**Estimated Q2 2025**

TBG estimates.

The calculations above constitute an in-house estimate, prepared in order to approximate the main production parameters based on publicly available information. The results suggest that the processed tonnage (1.5 Mt per year) would be below the design throughput (1.8 Mt per year). This estimate has been derived assuming a Li_2O recovery of 70%, a **head grade** of 1.46% Li_2O and a concentrate grade of

5.20% Li_2O, resulting in an estimated production in the second quarter of 2025 of approximately 68 kt of Li_2O concentrate.

Phase 2 expansion is at an early stage of execution. Pre-stripping works have been completed and critical equipment has been procured, with the objective of doubling capacity to 520,000 tonnes per year of concentrate. The incorporation of a DMS washing stage is being considered for Phase 2, with the aim of recovering the petalite present in the Barreiro ore.

Sigma Lithium has completed earthworks and continues to apply the engineering approach and supplier base proven in Phase 1 in order to mitigate execution risk. **DRA Globa**l designed the Phase 2 plant; however, it has not yet been confirmed whether the project will be executed under an EPC/EPCM contract or delivered internally by Sigma Lithium. Commissioning is currently targeted for late 2026, although delays remain possible and public information is limited.

Phase 3 envisages a third DMS concentrator, replicating the Barreiro design, with a feed rate of 1.85 Mt per year sourced from the NDC–LDM deposits. Total combined processing capacity would reach 3.9 Mt per year, producing a mixed spodumene–petalite concentrate grading approximately 5.3% Li_2O.

For Phase 3, where ore from the NDC–LDM deposits will be processed, the high petalite content of the feed (particularly at LDM) is a critical consideration. A processing flowsheet capable of producing two separate concentrates has been proposed; however, this has not yet been defined in sufficient detail for LDM, nor has the potential economic impact of blending both concentrates or selling them separately been adequately assessed. This scenario requires more detailed technical and economic feasibility studies.

In light of the above, the following table has been prepared, presenting an internal estimate of production parameters and design criteria based on publicly available information.

Table 11. Overall production estimate and design criteria for the three phases.

NI 43-101 *Technical report*, SGS 2025

		Phase 1	Phase 2	Phase 3
Production	Year	Actual	2027	2028
	Mt/y	1,1	1,8	1,8
LOM	Years	13	12	23
Tonnage	t LOM	11	21,6	28,8
	%Li_2O	1,51%	1,36%	1,27%
Xuxa based adjustment	Years	10	12	21

Table 11 (continued) – Overall production estimate and design criteria for the three phases.

Estimated production LOM

		Xuxa	Barreiro	NDC/LDM
Tonnes processed	Mtpa	1,5	1,8	1,8
Availability	%	90%	90%	90%
Recovery	%	70%	60%	50%
Head grade	%Li_2O	1,51%	1,36%	1,27%
Production	%Li_2O	14270	13219	10287
Spodumene concentrate grade	%Li_2O	5,3%	5,3%	5,3%
Petalite concentrate grade	%Li_2O	-	-	4%
Petalite production ratio		-	-	50%
Final spodumene concentrate	tpa Li_2O	269236	249419	97047
Final petalite concentrate	tpa Li_2O	-	-	128588
LCE production	tpa LCE	108870	100857	39243
Petalite production	tpa pet.	-	-	128588

TBG estimates.

Operating costs have been estimated based on actual operating data from Phase 1 and forward projections for Phases 2 and 3. Process operating costs are estimated in the range of USD 18–21 per tonne of ore, depending on the phase.

Capital expenditure has been estimated at USD 104 million for each of Phase 2 and USD 114 million for Phase 3.

General opinion

The Sigma Lithium project is currently in operation, with the Phase 1 "Greentech Plant" (Xuxa) having commenced commercial production in April 2023. The Xuxa operation has demonstrated the technical viability of processing ore via Dense Media Separation (DMS) and the ability to produce a saleable spodumene concentrate (~6% Li_2O), with recovery levels broadly in line with design expectations. This provides a solid operational precedent for the future expansion of the project.

The project benefits from strong logistical access, including connectivity to the BR-367 highway, upgraded municipal roads, a local airport, and proximity to the ports of Vitória and Belo Horizonte. It is also supported by modern infrastructure, a secure water supply and predominantly low-cost hydroelectric power, reinforcing its operational and financial competitiveness.

Experience gained during Phase 1 provides valuable operational know-how that can be leveraged in subsequent phases (Phases 2 and 3). However, the decision to execute future phases internally, without an independent third party, may introduce execution risk, as the absence of an external EPC/EPCM contractor reduces independent oversight and contingency mitigation.

For the NDC–LDM deposits, the significant presence of petalite represents a metallurgical and operational challenge, as this low-density mineral is not readily recovered through DMS and may adversely affect head grades, recoveries and final concentrate grade. This factor could have a material economic impact on production parameters and operating costs, particularly if mixed or separate concentrate sales are contemplated. Accordingly, additional deposit-specific technical and economic studies are recommended to define the optimal processing strategy and assess the economic viability of these deposits.

Implications for the investor: *the metallurgical operation is proven and capable of producing a*

commercial concentrate; however, mineralogical variability (particularly petalite in NDC–LDM) could materially affect recoveries, concentrate grade and, therefore, saleable tonnes and margins. While the expansion upside exists, it is contingent on Sigma demonstrating its ability to execute Phases 2–3 without an EPCM contractor and on validating, through further studies, the economic viability of processing mixed mineralisation.

MANAGEMENT TEAM

As of November 2025, Sigma Lithium maintains a leadership and governance structure characterised by strong capital markets expertise, evolving operational oversight, and an ongoing need to consolidate organisational maturity. Mining governance best practice highlights the importance of operational experience, geotechnical competence and leadership stability over a three- to five-year period. However, Sigma Lithium's executive team and Board of Directors remain predominantly finance-oriented.

CEO Ana Cabral-Gardner brings more than three decades of experience in investment banking at Goldman Sachs, Barclays and Merrill Lynch, having executed over USD 120 billion in transactions, but with no documented track record in operational mining leadership. CFO Felipe Peres also contributes over 30 years of experience in natural resources roles at Vale, Shell and CSN, combining IFRS consolidation expertise with deep sector knowledge, and having led the company's Nasdaq listing in 2021. The average executive tenure stands at approximately 0.8 years, well below what is typically considered stable within the mining industry. The Board of Directors reflects a similar profile, with a predominance of investment, academic and retail-operational backgrounds, and limited experience in hard-rock mining operations. Average Board tenure is approximately 1.9 years, and the departure of key operational leaders, such as former COO Brian Talbot in 2023, has further reinforced this gap.

On-site operational leadership has evolved materially. Sigma Lithium previously operated with three Co-General Managers in Brazil (Reinaldo Brandão, Keith Prentice and Iran Zan), appointed in October 2023 to strengthen execution capacity following internal restructuring. However, updated information confirms that Reinaldo Brandão is no longer with the company. He remained publicly active in his role until May 2024, when he commented on mineral reserve updates, but he was not included in the August 2025 leadership reorganisation, which consolidated operations into seven core areas led by experienced Vice Presidents reporting directly to the CEO. Current management disclosures continue to list Keith Prentice among the operational leadership, while Brandão and any specific head of mining operations are no longer referenced, without public clarification regarding his departure. The remaining on-site leadership is anchored by Prentice's extensive experience in mine development and processing across multiple jurisdictions, complemented by the continuity of Iran Zan, whose background spans geology, exploration and project execution. This streamlined team remains critical to operational stability as Sigma Lithium progresses towards owner-operated mining.

From a governance perspective, Sigma Lithium's corporate history includes events relevant to risk assessment. The dismissal of co-founder and former co-CEO Calvyn Gardner in early 2023, following share trading during a **blackout** period, resulted in legal proceedings across multiple jurisdictions. Community and Indigenous relations remain an area of focus in the Jequitinhonha Valley, where disputes related to **FPIC (Free, Prior and Informed Consent)** and water resource management persisted through 2025. Federal authorities requested temporary suspensions until consultation processes were strengthened, a position contested by the company. In addition, Grant Thornton identified material weaknesses in financial internal controls as at 31 December 2024, and Board turnover during 2024 and 2025 exceeded typical industry levels. These governance risks coexist with a strong ESG profile, reflected in recognitions such as Forbes 50 Over 50 (2025), Mining Person of the Year (2023), Industrial Leader of the Year (2024), and participation in the Brazilian delegation to COP30.

Multiple sources during 2025 place insider ownership between 1.7% and 4.58%, with an average estimate of approximately 3.2%, consistent with external analyses. The CEO holds 2.68% with no recent sales, while other executives executed share sales during 2025 at prices below the annual highs. Overall, insider activity reflects net selling. A10 Investimentos retains a 43% equity stake, reinforcing ownership concentration and strategic influence. While lower insider ownership is not uncommon in CAPEX-intensive companies with strong institutional participation, it contrasts with sector benchmarks of 5–10% for improved alignment.

Sigma Lithium's strategic positioning remains a key strength. The CEO maintains robust access to global financing networks, and recent governance appointments have strengthened links with Middle Eastern investor groups. ESG differentiation through the Quintuple Zero Green Lithium framework continues to appeal to battery and automotive customers. In Brazil, institutional backing from A10 Investimentos and the CFO's long-standing relationships with regulators and financial stakeholders add a degree of stability.

The broader labour environment continues to impose structural constraints. Global mining studies highlight severe talent shortages, with over 70% of industry leaders reporting production impacts and 86% indicating increased hiring difficulty. In Brazil, 2024 data from FGV IBRE show that approximately 60% of companies face challenges in hiring or retaining staff, a relevant constraint for Sigma Lithium's operational progress. Although Minas Gerais remains the country's largest mining labour hub, shortages of specialised profiles persist nationwide, increasing execution risk as the company transitions towards owner-operated mining.

Operationally, Sigma Lithium assumed direct control of mining activities following the termination of its contractor agreement, temporarily suspending production during equipment and process upgrades. Production began to resume in late November 2025, with a progressive ramp-up expected through the first quarter of 2026. Execution risk remains elevated, particularly following Brandão's departure, given his role as a key operational figure. Successful stabilisation over the next 12–18 months would materially improve confidence in the company's leadership capabilities. Conversely, delays, staffing constraints or inconsistent production could sustain or increase the risk profile. While the remaining on-site technical leadership is competent, the recent transition highlights the importance of organisational continuity during this new phase of operational autonomy.

General opinion

Overall, Sigma Lithium enters 2026 with strong ESG credentials, deep access to capital markets and experienced operational leadership still in place. However, governance maturity, low insider ownership alignment, gaps in mining experience at Board level, talent pressures and the departure of a key operational leader represent material risks. The upcoming operating cycle will be decisive in determining whether the company can translate its strategic advantages into sustainable operational performance amid a likely gradual recovery in lithium markets.

***Implications for the investor**: Sigma Lithium's ability to execute its expansion plans is critically dependent on stable leadership with proven mining operational experience. Elevated turnover, short average tenure, limited equity alignment and reliance on financial profiles increase execution risk at a pivotal stage. A successful transition to owner-operated mining could act as a significant re-rating catalyst; however, persistent operational inefficiencies or ongoing litigation could increase the cost of capital and undermine the growth thesis.*

SALES

The spodumene concentrate marketed by Sigma Lithium (SC5.5–SC6.0) is sold into a relatively young but increasingly professionalised market. Approximately 80% of volumes have historically been placed under medium-term supply contracts (offtake agreements), with the remainder sold on the spot market. Pricing is typically indexed to published benchmarks (most commonly SC6 CIF China) and adjusted for Li_2O grade (with penalties of approximately 2% of price for each 0.1% deviation in grade), **impurities**, moisture content and logistics terms (**FOB/CIF**). Provisional settlement at shipment, followed by a final adjustment once the agreed index average is fixed, is standard industry practice.

As a result, Sigma Lithium has recognised material adjustments to revenue and trade receivables over the past two years. During the recent price downturn, realised prices have frequently settled below provisional values, negatively affecting reported earnings and working capital.

While the company has operated with offtake agreements in the past, it currently has 100% of its production uncommitted. This maximises flexibility to respond to price volatility, including the ability to defer sales, a strategy that carries risk, as seen in Q2 2025. It also reduces bankability. Some buyers may be delaying or negotiating more cautiously before entering multi-year agreements while the dispute with LG Energy Solution is resolved and certain financial and operational aspects become clearer. This could temporarily moderate commercial momentum with new counterparties.

We do not treat this as a material commercial risk in terms of sales execution, as the company can continue to sell its full production at spot prices. However, a loss of confidence among counterparties would represent a more relevant risk in other areas, particularly financing, as it could remove one of the key funding avenues provided by offtake agreements should such a scenario materialise.

At present, the most significant commercial risk for Sigma Lithium is its full exposure to spot concentrate prices. The 2023–2025 cycle has been weak and, when spot prices decline, realised revenue per tonne becomes highly constrained and cash generation more volatile.

On the opportunity side, we believe the key lever is not simply securing “any” offtake agreement, nor the nominal ability to sign up to USD 300 million of offtakes as announced by the company, but rather how the commercial strategy is structured. In our view, a mixed strategy could be attractive. This would involve contracting a portion of capacity, not 100%, particularly if liquidity needs are moderate, under favourable terms such as clear indexation, a price floor, no exclusivity, periodic reviews and prepayment to support liquidity. The remaining capacity would be left uncommitted to capture upside during market recoveries. Such a balance would stabilise cash flow and liquidity, improve bankability for Phase 2, and preserve optionality in a rising lithium price environment.

A secondary, more modest opportunity lies in the emergence of SC6 futures on regulated markets. Liquidity remains limited and **basis risk** is present, but these instruments could allow partial hedging to smooth revenue volatility.

Finally, Sigma Lithium has built a brand proposition centred on ESG attributes. During favourable cycles, this has translated into pricing premia over standard formulas. For example, in 2024 the company executed a shipment to LX International priced at 9% of the lithium hydroxide index, and reported prices equivalent to 8.75% on other cargoes that year. In the current weaker cycle, the company is no longer announcing sales at such premia, and pricing has converged towards indexed or spot references. Accordingly, the ESG effect should not be overstated relative to supply–demand fundamentals and logistical and metallurgical execution.

General opinion

Overall, Sigma Lithium’s marketing strategy is characterised by high commercial flexibility, full spot exposure and scope for improvement if it secures well-structured offtake agreements, not large in

volume, that provide revenue stability, prepayment and transparent pricing mechanisms. The LG case introduces noise and may slow contract execution, while reduced bankability is the natural cost of prioritising flexibility. The principal risk remains spot price exposure, as realised cash inflows currently depend entirely on market prices, adding volatility to revenues.

In our view, the commercial strategy has the potential to provide liquidity to meet short-term needs and support Phase 2 expansion, although in its current form it may not be optimal. The company continues to announce the possibility of offtake agreements, but these have yet to materialise.

The opportunity is clear: to pivot towards a mixed strategy combining a limited number of well-calibrated offtake agreements, covering part of production with price floors, no exclusivity and reasonable prepayments, while leaving the remainder exposed to spot markets to capture upside. SC6 futures may be used tactically as a light hedge, but not as a core pillar. ESG premia exists but should not be viewed as a decisive opportunity in isolation.

Implications for the investor: *Sigma Lithium's commercial strategy offers full flexibility but also full exposure to spot pricing, materially increasing volatility in revenues, margins and liquidity, particularly during downcycles. The absence of offtakes reduces Phase 2 bankability and increases reliance on working capital. Upside exists through potential lithium price recovery and occasional ESG premia, but it will remain constrained unless a mixed strategy is implemented that secures minimum cash-flow stability, prepayment and favourable pricing terms. For investors, the risk–return profile will depend critically on how and when a small number of well-structured offtake agreements are executed, rather than on headline sales volumes.*

ESG, REGULATION AND LOCAL-NATIONAL CONTEXT

Local and National Context

Brazil is an economy with a strong reliance on extractive industries and a regulatory framework that combines an ambition to attract investment with a tradition of robust oversight, particularly following several high-impact environmental incidents over the past decade. While the country has well-established technical institutions (**ANM**, IBAMA, MPF), its political ecosystem is characterised by volatility, party fragmentation, corruption risks and a recurrent tendency towards the judicialisation of socio-environmental conflicts. For large-scale mining projects, this translates into an environment that is broadly investment-friendly, but with a high likelihood of regulatory intervention and multi-layered scrutiny, potentially affecting schedules, permitting and territorial expansion.

Minas Gerais is Brazil's largest mining hub and, at the same time, the most demanding jurisdiction in terms of environmental requirements, tailings management and institutional oversight. The state has been governed since 2019 by Romeu Zema (Partido Novo), re-elected in 2022, whose political programme is clearly pro-investment, pro-infrastructure and focused on economic diversification. This orientation, however, coexists with a significantly tightened regulatory apparatus following the Mariana and Brumadinho disasters. As a result, **SEMAD**, ANM and the Federal Public Prosecutor's Office (MPF) exercise intense supervision over licensing, geotechnical stability, water use and consultation processes with traditional communities. Consequently, Minas Gerais offers a relatively stable institutional platform for investment, but with a level of environmental, social and legal scrutiny well above the national average.

ESG and Regulation

Grota do Cirilo operates in the Jequitinhonha Valley (Minas Gerais) under the "Quintuple Zero Green Lithium" proposition: net-zero carbon emissions, no hazardous chemicals, no tailings dams, no use of potable water and 100% renewable energy. The Greentech plant has reached operational stability in

Phase 1, with peak throughput of around 900 t/day and a record shipment of 27,500 t to IRH Global Trading. The company is progressing with capacity expansion towards 520,000 tpa of concentrate after securing the full environmental licence (construction, installation and operation) for Barreiro. This milestone underpins the regulatory framework for the next growth phase, provided that all associated environmental conditions continue to be met.

From an environmental standpoint, the process design reduces the footprint of conventional mining risks: physical separation via DMS, no hazardous reagents, and dry stacking of tailings instead of conventional tailings dams. While this materially lowers the risk of catastrophic failures, it shifts the burden towards rigorous geotechnical control of waste piles and dumps, particularly under intense rainfall events. Ongoing audits will need to validate stability, waste classification, drainage design and monitoring systems to avoid contingencies or remediation obligations.

Water management is the most sensitive environmental variable. The project operates under a concession of 150 m^3/h from the Jequitinhonha River and reports recirculation rates above 90%, stating that it does not use potable water but **treated effluents**. Nevertheless, territorial expansion, cyclical droughts and scrutiny of cumulative impacts increase the likelihood of regulatory reviews. As a result, water traceability (balances, effluent quality and contingency plans) will remain a continuous focus for regulators.

On the social side, the project is located in one of the most vulnerable regions of Minas Gerais and has created more than 500 direct jobs, supported by training initiatives under the “Green Lithium Valley” strategy. This creates genuine opportunities for local development, but also raises expectations around employment, infrastructure and social investment. If these expectations are not translated into verifiable commitments, they may evolve into conflict or loss of community support. A credible ESG narrative therefore requires tangible benefits, clear communication and accessible grievance mechanisms.

A key element of the regulatory environment is the role of the Federal Public Prosecutor’s Office (MPF), which in September 2025 sought the suspension of mining permits across Minas Gerais due to alleged deficiencies in consultation with traditional communities and potential water impacts. Although this was a state-wide initiative, it introduces a regulatory risk that could result in additional requirements, licence reviews or new conditions for Phases 2 and 3. Mitigation will depend on demonstrating strengthened consultation processes, updating **EIA/RIMA** studies and maintaining documented dialogue with indigenous and quilombola communities.

From a governance and compliance perspective, securing the full licence for Barreiro is a positive step, but further expansion will require updates and external audits to validate ongoing compliance. The company reports ESG metrics and has strengthened production traceability; however, the “Quintuple Zero” attributes have not yet been backed by internationally recognised third-party certifications. This does not negate the effort, but it does expose the company to reputational risk if the market perceives a gap between claims and independent verification. The operational conclusion is straightforward: what is communicated internally should be externally measured, audited and certified.

Mine closure and rehabilitation are covered by approved **PRADs**. Their effectiveness will depend on the provision of financial guarantees, post-closure monitoring plans and strict compliance with conditions imposed by SEMAD and ANM. Under extreme climate scenarios, the robustness of these measures (drainage design, slope stability and emergency response planning) will have a direct impact on operational continuity and costs.

In terms of social licence, the combination of local employment, training programmes and local supply chains offers levers to reinforce community support. The recent long-tenor (16-year) financing from BNDES signals institutional backing for green industrialisation, although its practical deployment will

also depend on sustained ESG performance and compliance over time. Consistency between commitments, execution and dialogue remains the most effective safeguard of social legitimacy.

Looking ahead, Sigma Lithium's competitive advantage lies in consolidating its position as a lithium producer with externally verified "zero" standards. Achieving this would not only improve access to demanding customers, but also enhance resilience to increasingly stringent regulations in Europe, the United States and Asia. The opportunity is clear, but it requires documentary discipline, periodic audits and consistency between what is promised and what is demonstrably delivered.

At the same time, the risk landscape remains active: potential reviews or suspensions of environmental permits, water stress during dry cycles, geotechnical stability of waste piles under extreme weather, social risk if local benefits are not realised, and reputational exposure if environmental claims are questioned. Managing these risks requires technical evidence, engagement with third parties and transparent public reporting of progress and findings.

General opinion

The project has made meaningful progress: full licensing at Barreiro, stable Phase 1 operations, and a process design (DMS and dry stacking) that mitigates several structural risks typical of mining. Nevertheless, the hydrological setting and planned expansion introduce vulnerabilities that must be addressed through transparent water balances, continuous monitoring and robust contingency planning. The increased involvement of the MPF raises the regulatory and social bar, making enhanced consultation and updated studies a prerequisite for maintaining permits and schedules. From a reputational standpoint, the "Quintuple Zero" narrative is an asset, but its ultimate strength will depend on independent audits that convert ambition into verifiable certification.

Implications for the investor: *the ESG and regulatory framework in Minas Gerais offers institutional stability but also entails high levels of scrutiny and judicial risk that can materially affect expansion timelines and CAPEX. Sigma Lithium's ESG positioning is differentiating, yet still dependent on external certification to become a tangible competitive advantage. Phases 2 and 3 face heightened water and community scrutiny, meaning that any deviation could translate into delays, additional costs or operational constraints. The upside exists—through ESG premiums, improved access to finance and preference from premium customers—but it requires disciplined execution, verifiable documentation and consistent social engagement for the risk–return profile to be attractive.*

FINANCE

Although the audit reports for 2022, 2023 and 2024 do not include material qualifications, the auditor has reiterated in all three years an adverse opinion on internal controls over financial reporting. This points to persistent deficiencies in reporting and oversight processes that may adversely affect investor perception, particularly among institutional investors, increase the cost of capital and constrain access to new funding sources.

The company's gross margin has contracted by approximately 75% since 2023, reflecting the sharp deterioration in lithium prices, only partially offset by cost-containment measures. Several operational and financial factors warrant close monitoring.

First, Sigma Lithium has historically operated with a large fleet of small- to medium-sized equipment relative to the scale of its mining operations. This choice does not appear to be supported by a robust technical rationale (as detailed in the Mining section of this report), beyond a potential reduction in stripping ratios associated with narrower haul roads and smaller pit geometries. At the same time, our metallurgical review indicates that plant throughput has remained below nominal design capacity,

although annualised equivalent production has been sustained at approximately 270,000 t of concentrate.

The recently announced termination of the mining contractor, combined with the transition towards a larger, owner-operated fleet, introduces mixed signals. A more efficient fleet could indeed reduce unit costs, which Sigma estimates at around 20%, raising the legitimate question of why such changes were not implemented earlier. However, if higher-grade material selection has implicitly supported past performance (something that cannot be independently confirmed), future costs could rise as average feed grades decline.

The company is also exposed to accounting volatility driven by BRL/USD exchange rate movements. Revenues are denominated in US dollars, while most operating costs and debt are incurred in Brazilian reais. In 2024, the depreciation of the BRL resulted in a non-cash foreign exchange loss of approximately USD 45 million, recognised as a financial expense. In 2025, the partial appreciation of the BRL has generated the opposite effect, with foreign exchange gains of around USD 15 million recorded up to June, also non-cash, partially reversing the prior year's impact.

Revenue quality is further affected by the provisional pricing mechanism used in spodumene concentrate sales. Initial shipment prices are subject to later adjustment based on market indices at settlement. During this interval, accounts receivable remain exposed to price volatility. This risk materialised in 2024, when negative pricing adjustments of nearly USD 40 million were recognised, affecting both revenues and receivables. While current market conditions appear more stable (albeit at depressed levels), such negative adjustments are now less likely. In a recovery scenario, adjustments could even turn positive.

Despite Phase 1 being fully operational, the company continues to report losses, and operating cash flows are insufficient to fund the full operating and investment cycle. Financial equilibrium therefore remains dependent on external financing and on the evolution of the lithium price cycle.

From an alignment-of-interests perspective, there is room for improvement. The **RSU** incentive scheme is primarily linked to market capitalisation, with limited direct linkage to profitability or return on capital metrics. In our view, this weakens alignment between management and long-term shareholders.

In addition, several related-party transactions raise governance concerns, including:

- The repurchase of mining royalties from a former executive for USD 5 million.
- Advisory fees paid to a board member of approximately CAD 300,000 (USD 405,000).
- Annual royalty payments of around CAD 1.4 million (USD 1.89 million) to an entity in which the CEO reportedly holds indirect economic interests.
- An initial USD 15 million loan (extendable to USD 21 million) at a 15% interest rate to a related entity for land acquisition, apparently coupled with future royalty arrangements.

It is reasonable to question whether these transactions could have been structured on more favourable terms for Sigma Lithium.

The balance sheet also reflects a tendency to capitalise exploration expenditure. In 2023 and 2024, capitalised exploration and evaluation assets amounted to CAD 23 million (USD 31 million) and CAD 4 million (USD 5.4 million) respectively. While lithium price assumptions used in reserve estimation appear reasonable, this practice introduces impairment risk, which could erode equity and potentially affect debt covenants. Notably, in 2024 the company already recognised approximately USD 7 million in costs linked to financing covenant breaches.

As of the most recent reported quarter, cash stood at only USD 6 million, against current liabilities of approximately USD 128 million. Even when considering total current assets, net working capital is clearly negative. This leaves the company highly dependent on operational turnover (which was disrupted for nearly one month) and on the rollover of short-term credit facilities.

Quarterly production costs of roughly 60,000 t at USD 500/t imply cash requirements of approximately USD 30 million per quarter. While management has stated that receivables have been monetised and that cash as of 13 November stood at USD 29 million, debt maturities remain a critical pressure point. Approximately USD 30 million of principal falls due over the coming quarters, with an additional USD 100 million maturing in 2026. This represents a significant debt wall.

The company has announced plans to monetise fully impaired inventory, with a potential value of up to USD 33 million according to its own estimates. This would provide a one-off liquidity inflow, although proceeds are highly sensitive to realised sale prices due to the high weight of logistics costs. Importantly, this is not a recurring source of cash.

Sigma Lithium has also highlighted its ability to secure liquidity through offtake agreements, potentially involving pre-financing in exchange for future production. While this could ease near-term liquidity, it does not eliminate the risk of structural over-leverage.

Overall, we view structural indebtedness as elevated, largely as a consequence of growth financing. This creates fragility in the investment thesis if expansion execution is delayed, as a substantial portion of the upside would accrue to lenders, while downside risk would be borne primarily by equity holders.

Part of the debt was contracted under demanding terms during a period of lithium price euphoria. Phase 2 was financed through a USD 100 million senior secured loan, backed by Brazilian assets, maturing in 2026 and carrying a cost close to 12%. This facility may prove insufficient to fully complete Phase 2.

Phase 3 financing relies on development loans from BNDES and BDMG, with far more competitive rates (around 4%) and grace periods of up to two years. However, BNDES disbursement requires a bank guarantee letter which, based on publicly available information, has not yet been provided. Any delay or rejection would constitute a key vulnerability, potentially forcing the company into more expensive or dilutive alternatives.

General Opinion

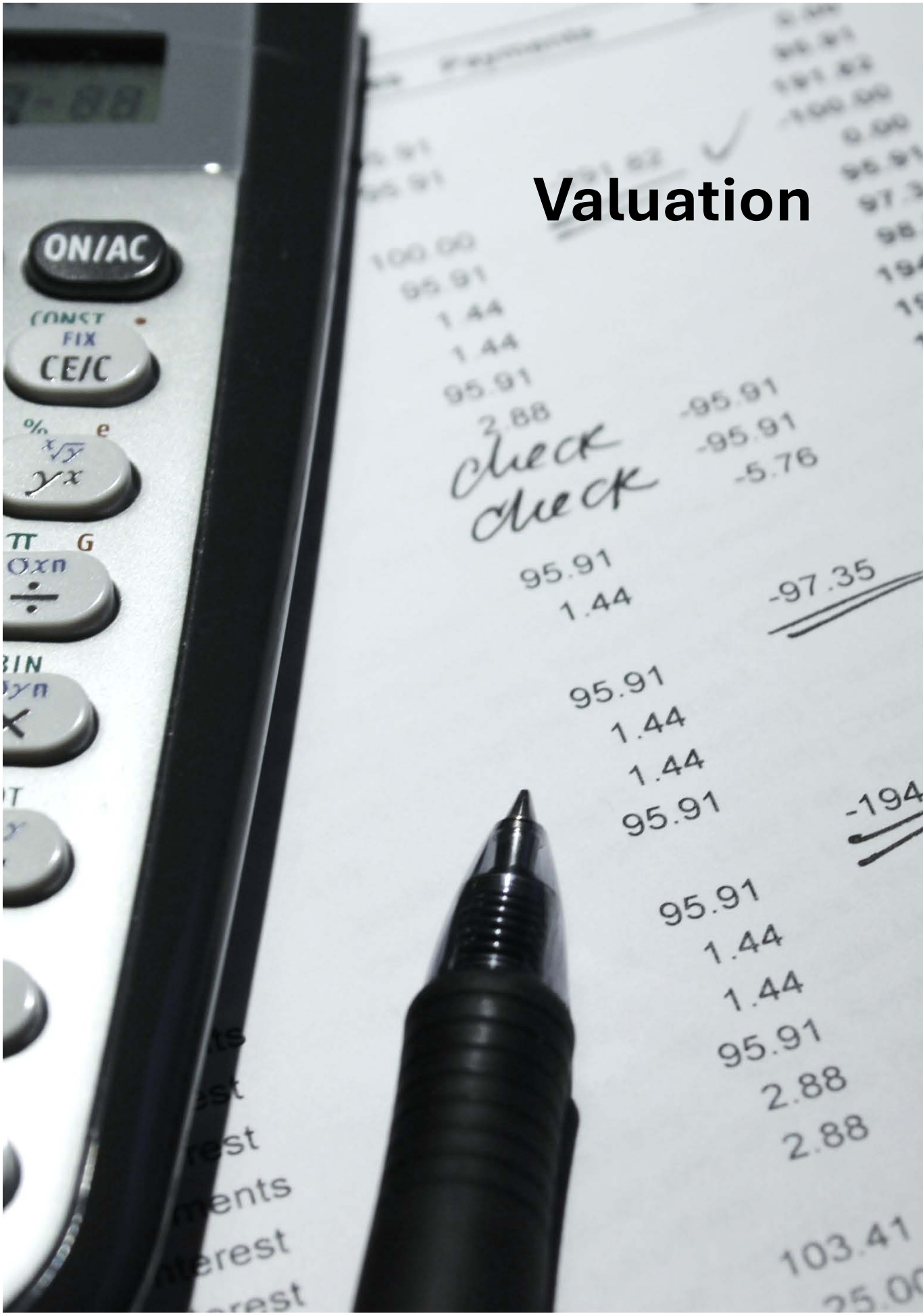
Sigma Lithium presents a complex financial profile, shaped by three structural factors: high leverage, sustained cash depletion and a weak lithium price cycle, compounded by internal control deficiencies and related-party transactions. Taken together, these elements warrant caution and may limit the appeal of the equity to certain investor profiles.

The company functions as a highly leveraged vehicle on the lithium cycle. The investment thesis depends critically on a sustained recovery in lithium prices, a successful refinancing of near-term maturities and disciplined operational execution. In a favourable scenario (price normalisation, smooth refinancing and orderly execution) the **intrinsic value** could expand materially, particularly if Phase 2 is successfully delivered and capacity doubles. Conversely, if market conditions remain weak or financial milestones are delayed, leverage may become unsustainable, shifting the risk–return balance unfavourably.

From a financial standpoint, while not a distressed asset per se, Sigma Lithium increasingly resembles a special situation requiring a high tolerance for risk or, at a minimum, close monitoring until key catalysts (such as refinancing or a tangible improvement in liquidity) are achieved.

Implications for the investor: *Sigma Lithium's financial position exhibits material fragility: very limited liquidity, concentrated debt maturities, questioned internal controls and accounting volatility that complicates cash flow forecasting. The investment case hinges on successful refinancing and a recovery in lithium prices. Until these milestones are secured, the risks of dilution, expensive financing or equity pressure remain elevated, tilting the risk–return profile towards investors with higher risk tolerance.*

Valuation


ON/AC
CE/C
95.91
1.44
95.91
1.44
95.91
1.44
95.91
2.88
2.88
-97.35
-194
103.41

Valuation

To value Sigma Lithium, we employ two complementary approaches.

1. Project-level Discounted Cash Flow (DCF)

Our primary valuation tool is a project-level discounted cash flow (DCF) model. We explicitly model the three development scenarios that reflect the growth paths outlined by the company itself:

- Phase 1 only (current operating configuration),
- Phases 1 + 2, which represents the company's next strategic objective,
- Phases 1 + 2 + 3, corresponding to full project expansion.

For a lithium producer with phased growth, a DCF framework is particularly appropriate, as it allows us to capture:

- The progressive increase in production over time.
- The timing and intensity of CAPEX.
- Ramp-up dynamics.
- And the embedded optionality associated with executing Phases 2 and 3, which remain conditional on financing, execution capability and, in the case of Phase 3, permitting.

The methodology is not without limitations. First, it discounts cash flows over a very long horizon (c. 24 years), meaning that distant cash flows contribute marginally to present value. Second, while Phase 1 is modelled with a finite mine life of 14 years, the company could, in practice, extend operations by processing ore from deposits originally earmarked for Phases 2 and 3 through the existing plant. In such a scenario, the mine plan, capital allocation and cash flow profile would change materially, something that a static DCF cannot fully anticipate.

2. EV/EBITDA Multiple Analysis

The second approach treats Sigma Lithium not as a finite project, but as an operating company. As such, it provides a complementary, not substitutive, perspective to the DCF. This method is based on forward EV/EBITDA multiples for 2026 and 2027, benchmarked against sector norms.

EV/EBITDA measures how much the market is paying for operating performance before depreciation, interest and tax. It is particularly useful when other metrics (such as P/E or free cash flow yield) lose relevance due to accounting losses or heavy growth CAPEX. In cyclical mining companies, EBITDA represents the most direct link between the underlying commodity price and operating cash generation, and the multiple allows for comparability against peers and across normalised price scenarios.

Accordingly, we analyse Sigma Lithium through two lenses:

- A near-term view, reflecting the reality of Phase 1 in operation during 2026–2027, and
- A growth-adjusted view, incorporating the commissioning of Phase 2 from 2027 onwards.

MARGIN OF SAFETY

Based on the valuation outputs, we then derive an intrinsic value per share under a value-investing framework, explicitly incorporating the concept of margin of safety.

What is Margin of Safety?

Margin of safety is rooted in the recognition that, even with rigorous analysis and high conviction, valuation is inherently uncertain. Rather than relying on optimistic upside projections, value investing focuses on acquiring assets at a meaningful discount to intrinsic value, such that errors in assumptions or unforeseen adverse events are partially absorbed by the valuation gap.

This concept, is defined as the difference between an asset's intrinsic value and the price paid for it. The larger this gap, the lower the risk of permanent capital loss and the greater the capacity to withstand estimation errors, execution risk or external shocks. The objective is not to predict the future with precision, but to invest with a built-in buffer that protects capital and improves the probability of achieving attractive long-term returns.

In practical terms, the margin of safety is calculated as:

$$Margin\ of\ safety\ (\%) = \left(1 - \frac{Current\ price}{Intrinsic\ value}\right) \times\ 100$$

Methodology 1: Discounted Cash-Flow

Key assumptions.

1. **Production, Operations and Ramp-ups**

We model three operating configurations:

- Phase 1: current operation, producing c. 270 kt per annum of SC6 spodumene concentrate.
- Phases 1 + 2: addition of the Barreiro Greentech Plant, increasing total capacity to c. 520 kt per annum.
- Phases 1 + 2 + 3: inclusion of NDC, taking total capacity to c. 745 kt per annum.

Company production guidance has been progressively revised downwards over recent quarters. In all cases, the commercial reference product is assumed to be SC6, with pricing adjusted for concentrate grade.

We explicitly assume delays in ramp-up execution, with:

- Phase 2 entering operations in 2027, and
- Phase 3 entering operations in 2029.

(See Table 11.)

2. **Recoveries and Blending**

Global lithium recoveries reported in the NI 43-101 are maintained for Phase 1, but are reduced for subsequent phases to reflect higher mineralogical complexity:

- Phase 2: 60% recovery
- Phase 3: 50% recovery

Concentrate grade is calibrated by deposit according to mineralogy (spodumene versus petalite). Where petalite content is high, we assume the sale of two separate products, spodumene and petalite concentrates, each with distinct grades, pricing and penalties. (See Table 11.)

3. Lithium Price – SC6 Concentrate

As discussed earlier in this report, we see cautious grounds for medium-term optimism on lithium prices. We therefore adopt a tiered price deck:

i. Short term.

- (2025) USD 750/t SC6

Sigma Lithium estimated an average realised price of USD 641/t in Q3 2023. We assume that provisional pricing adjustments may lift the 2025 realised average.

ii. Transition period.

- 2026: USD 1,150/t
- 2027: USD 1,250/t
- 2028: USD 1,350/t
- 2029: USD 1,500/t

iii. Long-term normalised price.

- USD 1,700/t SC6 from 2030 onwards, representing convergence towards a marginal cost equilibrium.

This long-term price is used as the primary driver in our NPV sensitivity analysis.

Prices are referenced to SC6 CIF China, adjusted for grade (approximately ±2% of price per 0.1% Li_2O deviation from 6.0%).

4. Lithium Price – Petalite Concentrate

Petalite concentrate is priced at a 50% discount to SC6, adjusted for grade. No commercial premium is assumed, and the product is treated as standard quality.

Further metallurgical testwork may be required to better characterise petalite from the NDC and LDM deposits.

5. Operating Costs (OPEX)

Sigma Lithium reported:

- AISC of USD 594/t in Q2 2025 (c. 68,368 t produced),
- AISC of USD 663/t in the most recent quarter (c. 44,000 t produced).

Assuming economies of scale, we adopt:

- USD 600/t for Phase 1 (270 ktpa),
- USD 550/t for Phase 2.

A sensitivity analysis is performed around these assumptions for all three phases.

6. Capital Expenditure (CAPEX)

We adopt the company's CAPEX estimates from the technical report:

- USD 104 million for Phase 2,
- USD 114 million for Phase 3.

These figures are slightly above the nominal estimates (USD 101.23 million), incorporating contingency for cost inflation.

No equity dilution is assumed in the valuation. Expansions are modelled as debt-financed, with short-term working capital covered without capital increases.

7. Tax Regime and Royalties

The project is located in Brazil, where the statutory corporate tax rate is 34%. However, Sigma Lithium benefits from the SUDENE incentive, reducing IRPJ by 75% and resulting in an effective tax rate of approximately 15% for 10 years per project.

Royalties include:

- 2% CFEM on gross sales payable to the government,
- 1% royalty on gross sales payable to landowners (related parties).

8. Working Capital

Working capital assumptions are taken directly from the NI 43-101 Technical Report and validated by TBG.

9. Financial Structure

Capacity expansions are assumed to be financed through conventional debt, with no equity dilution.

Debt repayment is not explicitly modelled within project cash flows. Instead, net debt is deducted at the equity valuation level, acting as a penalty to NPV for each development phase.

10. Discount Rate

An 8% real discount rate is used as the base case, in line with standard industry practice for lithium projects.

Sensitivity analysis is performed, as the effective WACC could be higher given execution, country and financial risk.

11. Exchange Rate

The base case assumes a constant exchange rate. However, continued depreciation of the Brazilian Real could partially offset medium- to long-term OPEX inflation and therefore represents a potential upside to costs.

12. Mine Life Assumptions

Operational years assumed for each phase are:

- Phase 1: 13 years (2023–2035)
- Phase 2: 12 years (2027–2039)
- Phase 3: 21 years (2029–2049)

13. Methodological Framework

NPV is calculated using unlevered free cash flows, focusing on the intrinsic economic performance of the asset prior to financing decisions. Depreciation and amortisation are not included in the construction of cash flows.

Base Case Definition

The above assumptions define TBG's base case, intended as an independent and updated interpretation of the project economics relative to the NI 43-101, incorporating operational, pricing and timing developments that have emerged since its publication.

A summary of the key input variables is presented in the following table.

Table 12. Base case. Key indicators for Phase 1, Phase 1 + 2, and Phase 1 + 2 + 3 based on DCF

Phase 1	LOM	2025	2026	2027	2028	2029
Total concentrate (Mt)	2,6	0,27	0,27	0,27	0,27	0,27
Avg. realised price (USD)	1.333	750	1150	1250	1350	1500
Gross revenue (M USD)	3.030	161	265	288	311	346
Net revenue (M USD)	1.281	-18	103	126	149	184
Unlevered FCF (M USD)	969	-3	103	124	134	164
Cash cost (USD/t)	600					
NPV @8% (M USD)	**591**					

TBG estimates.

Phase 1 + 2	LOM	2025	2026	2027	2028	2029
Total concentrate (Mt)	5,6	0,27	0,27	0,52	0,52	0,52
Avg. realised price (USD)	1.486	750	1150	1250	1350	1500
Gross revenue (M USD)	7.298	161	265	555	599	666
Net revenue (M USD)	3.854	-18	103	269	313	380
Unlevered FCF (M USD)	3.016	-13	111	240	265	322
Cash cost (USD/t)	579					
NPV @8% (M USD)	**1666**					

TBG estimates.

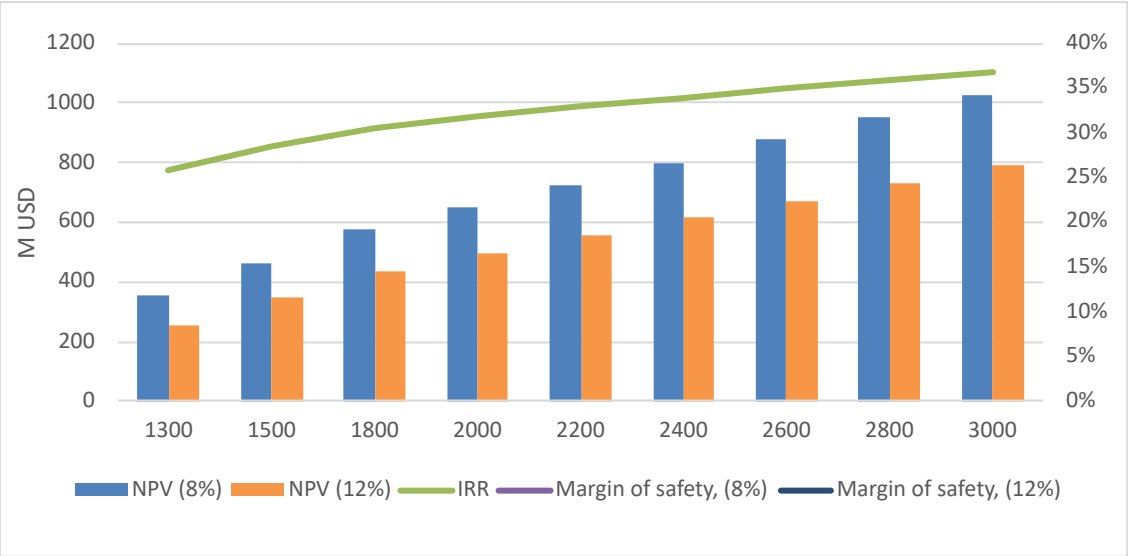
Phase 1 + 2 + 3	LOM	2025	2026	2027	2028	2029
Total concentrate (Mt)	10,3	0,27	0,27	0,52	0,52	0,73
Avg. realised price (USD)	1.247	750	1150	1250	1350	1500
Gross revenue (M USD)	12.513	161	265	555	599	973
Net revenue (M USD)	6.662	-18	103	269	313	573
Unlevered FCF (M USD)	5.315	-13	121	249	273	494
Cash cost (USD/t)	566					
NPV @8% (M USD)	**2002**					

TBG estimates.

Valuation

Below is the valuation presentation in USD millions (left-hand vertical axis) for the different stages of project development (Phase 1, Phases 1 + 2, and Phases 1 + 2 + 3), across a range of long-term SC6 concentrate prices in USD (horizontal axis) and discount rates, also showing the margin of safety implied by the current share price at the date of this report (right-hand vertical axis)

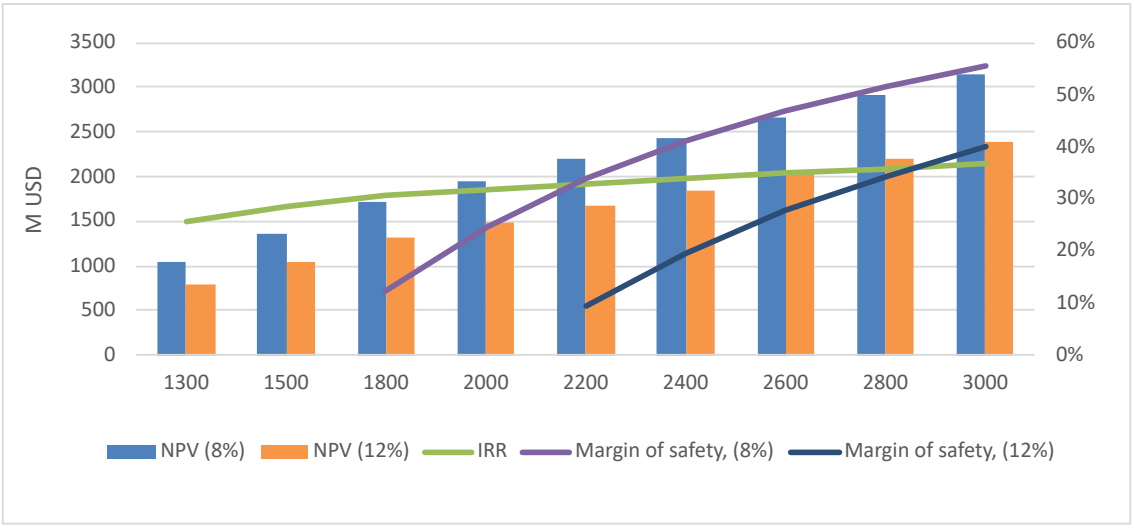
Figure 16. Phase 1. NPV (USD million, left-hand vertical axis), margin of safety and IRR (%, right-hand vertical axis) for different SC6 concentrate prices.



TBG estimates.

If we consider Phase 1 in isolation, the margin of safety is negative (and therefore not shown on the chart) for any price level under our tiered pricing framework, both during the transition period and at long-term prices. Assigning an intrinsic value to Sigma Lithium based solely on Phase 1 operations over its stated mine life of 13 years does not make sense. Neither the market nor we take this view, because even in a downside scenario where Phases 2 and 3 are not executed, we believe there is sufficient mineral inventory to extend the life of mine of Phase 1 and continue operating with a single processing plant.

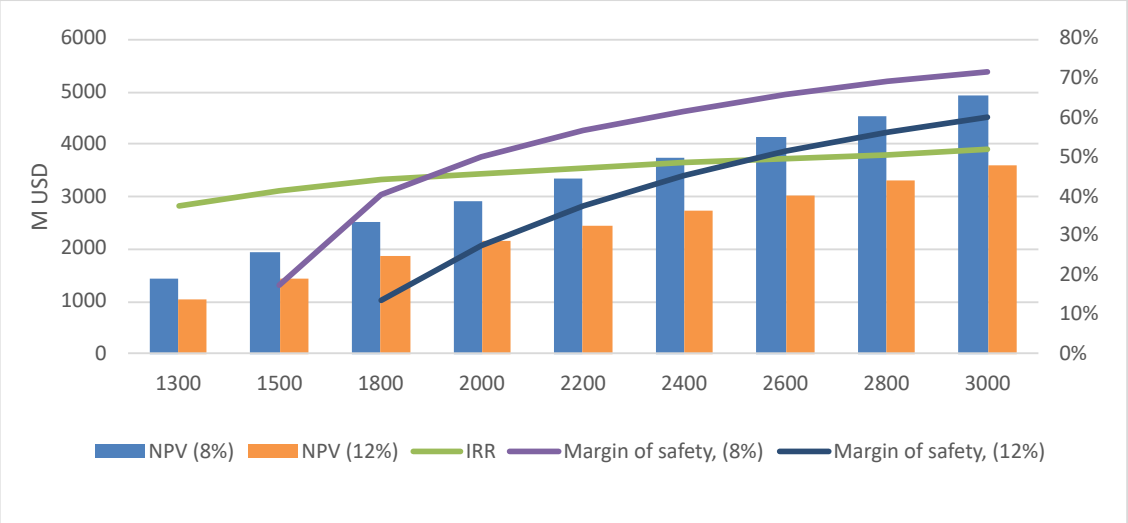
Figure 17. Phase 1 + 2. NPV (USD million, left-hand vertical axis), margin of safety and IRR (%, right-hand vertical axis) for different SC6 concentrate prices.



TBG estimates.

If Phase 2 is successfully brought into operation in 2027, the attractiveness of the project increases materially. Under this scenario, the project would offer a discount of at least 10%, assuming a long-term SC6 price of USD 1,800/t when discounted at 8%, and USD 2,200/t SC6 when discounted at 12%.

Figure 18. Phase 1 + 2 + 3. NPV (USD million, left-hand vertical axis), margin of safety and IRR (%, right-hand vertical axis) for different SC6 concentrate prices.



TBG estimates.

Assuming Phase 3 enters into operation from 2029 onwards, the project appears clearly undervalued at long-term SC6 concentrate prices from USD 1,500 per tonne (at an 8% discount rate) and from USD 1,800 per tonne (12%).

Below is a summary table of the valuation based on the DCF analysis, considering the three execution phases, using an 8% discount rate and three fixed price scenarios applied across the full life of mine (LOM): USD 1,000 per tonne, USD 1,300 per tonne, and USD 1,500 per tonne.

Table 13. Summary table of DCF valuation for different lithium price scenarios (+30% or +50%) and expansion phases, using an 8% discount rate.

	Phase 1	Phase 1+2	Phase 1+2+3
Share price (USD)	11,53	11,53	11,53
Market cap (M USD)	1.283	1.284	1.284
Enterprise value (M USD)	1.431	1.536	1.650
Gross debt (M USD)	166	270	384
Cash (M USD)	19	19	19
Number of shares (M)	111	111	111
Avg. Realised lithium price USD[3]	963	983	789
After tax NPV (M USD) (8%)	81	409	502
Margin of safety (%)	–	–	–
Lithium price 1300 USD			
After tax NPV (M USD) (8%)	388	1.099	1.477
Margin of safety (%)	–	–	–
Lithium price 1500 USD			
After tax NPV (M USD) (8%)	592	1.559	2.127
Margin of safety (%)	–	**2%**	**27%**

TBG estimates.

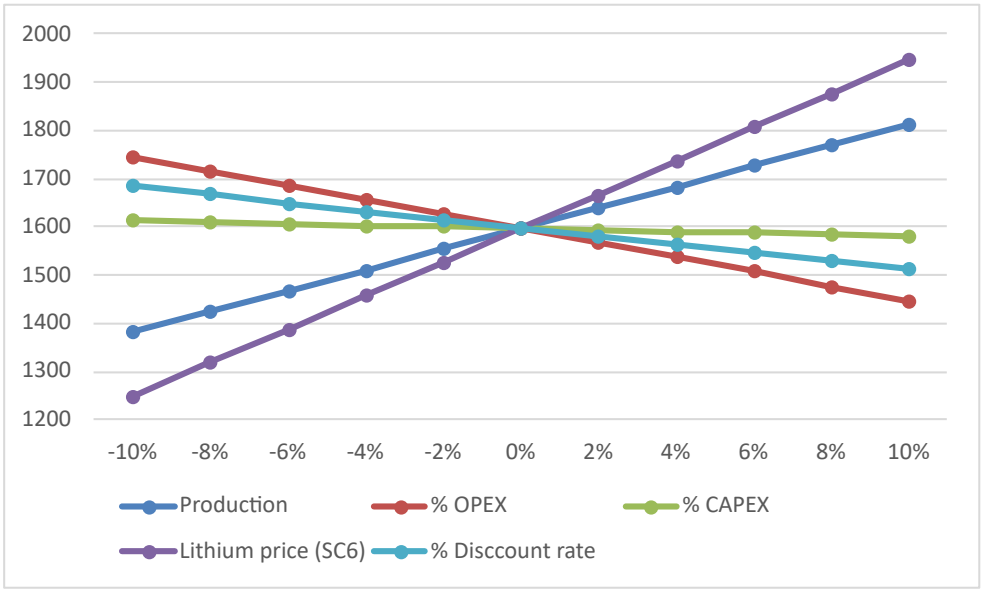
[3] The average realised lithium price reflects the net price actually received by the company after quality, commercial and logistics adjustments, and represents the estimated average over the full life of mine.

SENSITIVITY ANALYSIS

But how do the key drivers discussed above affect the project's NPV? To address this, we exclude sensitivity analysis for both the full expansion scenario, given its execution, financing and permitting constraints, and for Phase 1.

We present this for Phase 1 + 2 through a sensitivity analysis relative to our base case.

Figure 19. Sensitivity analysis based on variations in key drivers.



TBG estimates.

The project shows a high degree of resilience to CAPEX deviations, both for expansion and sustaining capital: reasonable variations in these items have only a limited impact on NPV, which remains within an approximate ±10% range. By contrast, the analysis highlights Sigma Lithium's strong sensitivity to the lithium price and, to a lesser extent, to the production profile (and changes in guidance) and OPEX.

A ±10% change in the SC6 concentrate price results in a far more amplified impact on NPV than changes of similar magnitude in CAPEX or even in the discount rate, evidencing significant operational and commodity price leverage. While this configuration is common in the mining industry, it underscores that value creation or destruction for shareholders will depend primarily on lithium price dynamics and on the company's ability to sustain volumes and costs in the lower part of the cost curve.

Methodology 2: Relative Valuation Using Multiples.

Sigma Lithium is a relatively young company that has successfully brought a lithium mine into operation, but after almost two years of full operations it has yet to generate profits or positive free cash flow. The initial plan envisaged a rapid ramp-up across its three phases; however, accumulated delays and the need for additional financing even for Phase 2 mean that future growth is increasingly best viewed as optionality.

Operational experience has diverged from the assumptions set out in the technical studies, which may reduce the usefulness of a DCF based on those projected cash flows for certain investors. In addition, metrics such as P/E, dividend yield or free cash flow yield provide little insight, as the company is not yet profitable and does not generate free cash flow.

In this context, and as a second valuation approach that is complementary rather than substitutive to the DCF, the EV/EBITDA multiple is the most informative tool. It captures the operating capacity of the

asset while taking capital structure into account, remains meaningful even in the presence of accounting losses, and allows Sigma Lithium to be compared with other lithium producers at different points in the cycle or against a normalised sector benchmark.

Assumptions

The key assumptions underlying the EV/EBITDA valuation are as follows:

1. **Production.** Annual production for 2026 and 2027 is assumed at 270,000 tonnes of concentrate. An additional scenario considers the initial Phase 2 ramp-up, with production reaching 520,000 t/y.
2. **Time horizon**. Projected EV/EBITDA multiples are analysed for three scenarios: 2026, 2027, and 2027 with Phase 2 ramp-up.
3. **Lithium price (SC6 concentrate).** Prices assumed for 2026 and 2027 are the transition prices towards long-term equilibrium used in the DCF: USD 1,150/t SC6 for 2026 and USD 1,250/t SC6 for 2027.
4. **Price penalties**. A grade penalty of 12% to the SC6 reference price is applied, consistent with the DCF, equivalent to a 2% price reduction for each 0.1% deviation below 6.0% Li_2O, assuming a sold concentrate grade of 5.4%.
5. **OPEX**. Operating costs for the 2026 and 2027 scenarios are assumed at USD 600/t of concentrate produced. The ramp-up scenario assumes a lower cost of USD 550/t.
6. **CAPEX.** We adopt the company's own CAPEX estimate for Phase 2 (USD 104 million), as used in the technical report modelling. No additional equity dilution is assumed, with expansions financed through debt and short-term working capital without capital increases.

Valuation

Based on these assumptions, we project EBITDA for 2026 and 2027 (Phase 1 in operation), as well as an additional 2027 scenario at normalised prices with Phase 2 operational. Phase 3 is excluded, as it remains uncertain and is not expected to enter operation before 2029, being subject to permitting, financing and execution risk.

Table 14. Implied EV/EBITDA under the 2026, 2027 and normalised price scenarios.

	2026	2027	Normalised Price & *ramp-up* 1+2
Price SC6 (USD/t)	1150	1250	1700
Sales (MUSD)	273	297	778
EBITDA (MUSD)	76	98	381
Number of shares (M)	111	111	111
Share price (USD)	10,4	10,4	10,4
Equity (MUSD)	92	92	92
Market cap (MUSD)	1153	1153	1153
Gross debt (MUSD)	166	166	270
Cash (MUSD)	19	19	19
Enterprise value (MUSD)	1300	1300	1404
EV/sales (x)	4,8	4,4	1,8
EV/EBITDA (x)	17,2	13,3	3,7
Margin of safety 8,5x EV/EBITDA (%)	–	–	65%

TBG estimates.

Under our operating and lithium price assumptions, Sigma Lithium would generate EBITDA of approximately USD 76 million in 2026 and USD 98 million in 2027. At these levels, the current share price implies an EV/EBITDA multiple of c. 15x for 2026 and c. 12x for 2027 (Phase 1).

By way of reference, established Tier-1 producers (Albemarle, SQM, etc.) have historically traded around 10x–13x EV/EBITDA in normalised environments, while smaller or higher-risk assets have at times traded below 6x. Sigma Lithium is currently a single-country producer with a limited operating track record and high sensitivity to lithium prices, albeit with clear growth optionality. In our view, a 7x–9x EV/EBITDA multiple is reasonable, consistent with recent analysis by Rock Hoffman (Bank of America), who places a fair multiple for Sigma at around 8.5x EV/EBITDA. On this basis, the Phase 1 scenarios for 2026 and 2027 offer no margin of safety at present.

In an alternative scenario where SC6 prices rise to USD 1,700/t and Phase 2 is fully operational from 2027, projected EBITDA increases materially and the implied EV/EBITDA multiple falls well below the ranges noted above. Under this scenario, the margin of safety at an 8.5x EV/EBITDA multiple would be around 65%.

The range of outcomes is therefore wide. Ultimately, it is for the investor to assess whether the implied multiples are consistent with their own view of the risks, opportunities and the likelihood of their materialisation.

VALUATION CONCLUSION

Under our estimates, at current lithium prices and with only Phase 1 in operation, the investment thesis offers no margin of safety, suggesting that the market is already pricing in a meaningful portion of the growth optionality and that assigning Sigma an intrinsic value limited to the 13-year LOM of Phase 1 is not representative. Phase 2 improves the economic profile, but the margin of safety remains limited and highly dependent on higher prices and successful execution; in fact, Figure 16 shows that prices of USD 1,800/t and Phase 2 in operation would be required to achieve even a modest margin of safety. This message is reinforced by the relative valuation: the implied Phase 1 multiples for 2026–2027 do not offer a margin of safety versus a reasonable 7–9x range, whereas a scenario with normalized prices and higher production does deliver a high margin of safety (≈65% at 8.5x EV/EBITDA).

The clear asymmetry emerges with Phase 3, where the margin of safety becomes materially high also under the DCF methodology: the project moves into undervalued territory at more reasonable long-term price assumptions.

Overall, the valuation indicates that shareholder value creation depends little on the asset's current state and largely on the successful execution of the expansion phase.

Report Conclusions

Sigma Lithium is an operating producer that has demonstrated the technical ability to generate lithium concentrate at competitive costs, validating both the deposit and the process and providing a tangible base of value. The district offers genuine growth optionality, and Phases 2 and 3 could transform the project's scale if executed as planned.

That potential is, however, offset by several material uncertainties. On the commercial side, the absence of long-term offtake agreements leaves the company fully exposed to the spot market, increasing revenue volatility and reducing the visibility needed to plan expansions and meet debt maturities. Financially, current cash flow is insufficient to internally fund Phase 2 or comfortably address the repayment schedule: in a low-price or only normalized price environment, Sigma may be forced to refinance under tight conditions, accept additional dilution, or sell assets on unfavourable terms.

Governance and management stability remain points of caution. Recent changes in the executive team and board, together with prior episodes of controversy, erode perceptions of continuity and discipline. At the same time, the transition to new deposits with different mineralogies, the need to improve dilution control, and the operation of a larger, owner-operated fleet increase operational risk at a company that has not yet built a long track record of stability.

The project's economics are strongly conditioned by the lithium price. A meaningful recovery in SC6 could significantly re-rate the company, given its operating leverage, expansion capacity, and retail investors' perception of Sigma as a "lithium vehicle." Conversely, a prolonged period of low or only modestly improved prices would complicate debt refinancing and could force defensive decisions that destroy shareholder value.

From a valuation perspective, our models suggest that at current lithium prices and recent share levels, the market already discounts at least a significant portion of Phase 2: there is no margin of safety if only Phase 1 is considered, and it remains limited even when Phase 2 is incorporated, except under materially higher concentrate price scenarios. Clear asymmetry appears only if the company manages to finance, build, and operate Phase 3 as well, in which case the project does show meaningful undervaluation.

Overall, Sigma Lithium exhibits the classic duality of many mining developments in transition: an attractive asset already in operation with real growth potential, but accompanied by unresolved financial, commercial, operational, and governance risks which, combined with the current point in the lithium cycle, place the company in a complex situation. For investors, this is a high-risk, high-potential company, where value creation will depend on securing sufficient liquidity, executing refinancing and offtakes on reasonable terms, stabilizing management, and completing expansions with technical and capital discipline.

Ultimately, its value will depend on successfully ensuring adequate liquidity, rebuilding commercial credibility, stabilizing leadership, and executing expansion with technical rigor. If these challenges are overcome, significant value can be captured; if not, exposure to external factors and financial fragility could lead to substantial value destruction. At this stage, the company warrants close monitoring and a dynamic, milestone-based assessment before it can be considered a fully mature investment within the lithium sector.

Glossary

Haulage — Transport of material from the mine face to the plant or waste dump. It directly affects cost per tonne and productivity; bottlenecks here reduce overall operation throughput.

ANM (Agência Nacional de Mineração) — Brazil's mining regulator. Grants and oversees titles, reporting, and technical obligations; compliance is a prerequisite to operate and expand.

Dry stacking — Disposal of dewatered tailings without dams, stacked and compacted in piles. Reduces hydrological risk and environmental liabilities, but requires robust geotechnical control and well-designed drainage.

BBWi (Bond Ball Work Index) — Measure of ore hardness for comminution. A higher BBWi implies higher energy consumption (higher cost) to achieve the same degree of crushing.

BEV — Battery Electric Vehicle, referring to fully electric cars that run exclusively on energy stored in rechargeable batteries

Blackout — Period during which executives and certain employees of a listed company are prohibited from trading the company's shares, typically because they may possess inside information (e.g., ahead of results or material announcements).

Blending — Mixing ores or concentrates to keep impurities (e.g., As) below penalty thresholds.

BNDES / BDMG — Brazilian development banks. Provide long-tenor, competitively priced debt, usually subject to strict technical and environmental conditions.

CAPEX / OPEX — CAPEX: upfront investment in mine, plant, power/water, and infrastructure; it conditions feasibility and NPV. OPEX: operating costs (energy, reagents, labour). Their balance determines project profitability.

CIF / FOB — Shipping terms. CIF includes freight and insurance to the destination port; FOB delivers at the origin port. They define who bears logistics costs and risks.

Collar — Coordinates of the start of each drillhole. Ensures correct spatial positioning of drilling data, critical for resource estimation.

Compositing — Grouping individual samples (e.g., to 1–2 m) to standardize statistical support. Avoids bias in estimation and facilitates modelling.

Cut-off grade — Minimum grade that makes processing economic under given price and cost assumptions. Determines what goes to the plant versus waste.

Bulk density — Rock density; essential for tonnage estimation (t/m^3).

Dilution — Mixing of waste with mined ore; lowers grade and value; must be modelled in PEA/PFS/FS.

Pegmatite dyke — Tabular body hosting lithium mineralization (spodumene/petalite). Geometry dictates mining method and selectivity.

DMS (Dense Media Separation) — Density separation using a heavy medium (e.g., ferrosilicon). Key physical process to concentrate spodumene without chemical reagents.

DRA (engineering) — Engineering firm experienced in DMS designs. Replicating proven schemes can shorten the learning curve.

Treated effluents — Treated wastewater reused in the process. Reduces freshwater consumption and may be a permitting requirement.

EIA / RIMA — Environmental Impact Assessment and Report in Brazil. Support licensing and define operating and expansion conditions.

Enterprise Value (EV) — Company value = market cap + net debt − cash (and adjustments). Useful for comparisons with resources (EV/lb) or NPV.

EPC / EPCM — Construction contracts. EPC (turnkey) transfers more risk to the contractor; EPCM is owner-managed project delivery (more control, more coordination).

Spodumene / Petalite — Lithium minerals. Spodumene concentrates better via DMS; high petalite typically lowers recovery and concentrate grade.

ESG — Environmental, Social, and Governance framework. Influences permitting, social license, cost of capital, and access to demanding customers.

Fe_2O_3 (iron oxides) — Penalizable impurity in concentrate contracts. High levels may force blending or price discounts.

FeSi (ferrosilicon) — Metallic powder that creates the dense medium in DMS. Its consumption and recovery directly impact operating costs.

Flowsheet — Process flow diagram (crushing, DMS, magnetic separation, etc.). Summarizes the industrial "recipe" and bottlenecks.

FPIC (Free, Prior, and Informed Consent) — International principle requiring Indigenous peoples (and, in some frameworks, other affected communities) to be able to accept or reject projects affecting their lands, resources, or livelihoods, freely, prior to decisions, and with full, accessible information.

Gangue — Non-economic minerals (micas, clays) that can interfere with processing; increase consumptions and reduce recoveries.

Grade control — Close-spaced sampling (typically RC) guiding day-to-day mining. Reduces dilution and stabilizes head grade.

Greenwashing — Reputational risk from environmental claims not verified by third parties. Can affect customers, regulators, and investors.

Green Lithium Valley — Company-communicated local employment and training programs. Relevant for social license and talent retention.

HQ / HQ3 — Diamond core diameters. Larger diameters provide better geological control and lower sample loss risk.

Head grade — Average grade of ore fed to the plant. Primary lever for production and cash generation per tonne.

ID^2 (Inverse Distance Squared) — Estimation method weighting samples by the inverse of distance squared.

Impurities (Al, Na, K, etc.) — Undesirable elements in concentrate. Contracts set limits; exceedances lead to discounts or rejection.

Ordinary kriging — Standard geostatistical technique to interpolate grades using variograms. Reference method for resource classification and planning.

LCE (Lithium Carbonate Equivalent) — Common unit converting different lithium products to carbonate equivalent for market comparisons.

LCT — Lithium-Cesium-Tantalum pegmatites typical of spodumene/petalite deposits; the geological type at Grota do Cirilo.

LOM (Life of Mine) — Planned mine life based on reserves and plan. More stable LOM means more predictable cash flow.

Middlings — Intermediate DMS fractions with ambiguous density/grade. Proper retreatment increases recovery; poor handling increases tailings losses.

MPF / SEMAD — Federal Prosecutor's Office (MPF) and state environmental authority (SEMAD). Can impose reviews, conditions, or enhanced oversight.

NI 43-101 — Canadian technical disclosure standard; requires a Qualified Person, CIM-compliant MRE, and PEA/PFS cautions.

NPV (Net Present Value) — Present value of discounted cash flows; key metric in PEA/PFS/FS and sensitivity analyses.

Off-spec — Product outside contractual specifications (e.g., high Fe or low grade). May trigger penalties or shipment rejection.

Off-takers — Medium-term buyers of concentrate/cathodes; may provide prepayments and commercial stability.

Offtake agreement — Medium-term supply contract with pricing formulas (indexation, floors, collars) and sometimes prepayment. Provides visibility and liquidity.

Owner's Team — Owner-led execution instead of external EPCM. Offers more control but requires stronger internal coordination capacity.

Pegmatite — Coarse-grained igneous rock hosting lithium as spodumene or petalite. Geometry and continuity define mining selectivity.

Petalite — Lithium mineral less dense and more friable than spodumene. Tends to generate fines and reduce DMS effectiveness.

PRAD — Mine closure and land rehabilitation plan. Defines site restoration and required financial guarantees.

Pushback — Internal pit phase mined sequentially. Organizes sequencing, controls operating widths, and manages strip ratio over time.

QA/QC — Quality Assurance: procedures to maintain data quality. Quality Control: checks (control samples) verifying standards during data collection.

RC (Reverse Circulation) — Drilling method producing rock cuttings; faster and cheaper than diamond core, suitable for volumetric sampling but not detailed structural analysis.

Reconciliation — Comparison between model, mined material, and plant output. Detects estimation bias and corrects plans.

RPEEE (Reasonable Prospects for Eventual Economic Extraction) — Requirement for Mineral Resources: the CP/QP must consider reasonable technical and economic assumptions appropriate to project stage and market conditions.

RSU (Restricted Stock Units) — Equity incentives. Align management with performance per defined metrics.

SC5.5 / SC6 — Commercial spodumene concentrate grades (5.5% and 6.0% Li_2O). Price and specification benchmarks.

SEMAD — Minas Gerais environmental authority. Issues licenses and conditions; oversight continues throughout mine life.

SMU (Selective Mining Unit) — Practical minimum mining unit set by equipment size and bench height. Determines selectivity and operational dilution.

SLOS / TLSLOS — (Transverse) Sub-Level Open Stopping underground methods. Efficient but sensitive to backfill quality and dilution control.

Spot vs. index — Daily market pricing (spot) versus indexed formulas (e.g., SC6 CIF China). Spot offers optionality; indexation offers visibility.

Strip ratio — Waste-to-ore ratio. High strip raises cost per tonne and can make a pushback uneconomic.

Tailings — Processing residues. Disposal method (dry stack vs. dam) drives environmental risk and closure cost.

Throughput — Processing rate (t/h or t/y). The plant's "tempo"; stability improves revenue predictability.

Intrinsic value — The fundamental value of an asset or company based on analysis, not the current market price.

Variogram / Variography — Statistical tool measuring spatial continuity of grades. Essential for representative kriging.

Whittle — Standard pit optimization software. Helps define phases and pushbacks to maximize value.

Working capital — Short-term liquidity measure; can be very volatile in mining with provisional pricing.

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