Newsletter Seventh Edition on LinkedIn

Sigma Lithium's share price plunges 29% in two days

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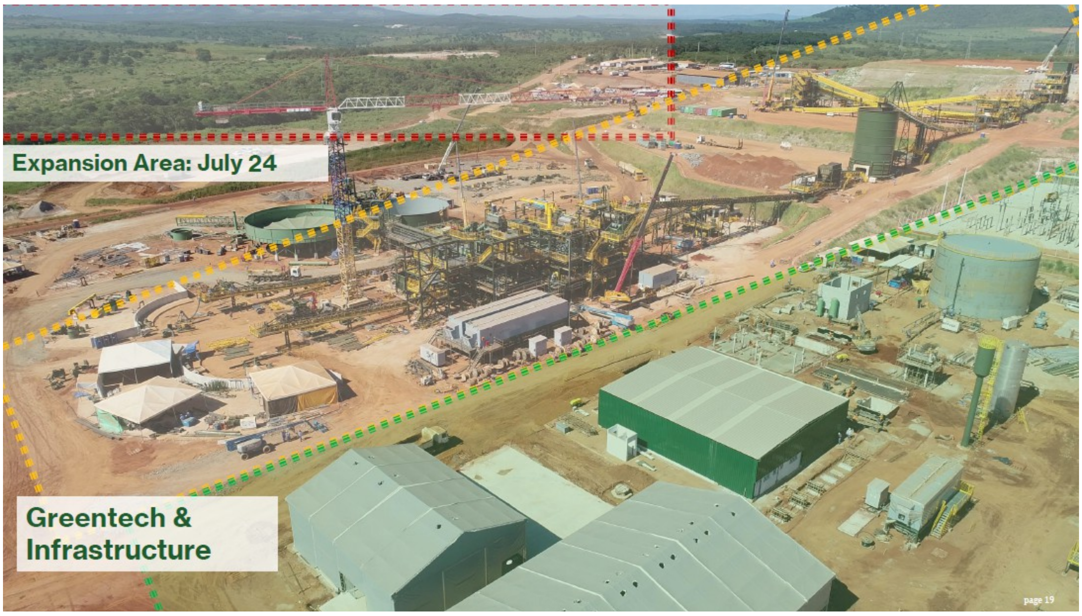


Sigma Lithium Project. November 2024 Corporate Presentation, Page 19

Welcome to this seventh issue of the Lithium Briefing from thelithiumreport.com.

This week the "markets" hammered **Sigma Lithium of Brazil**. It's share price fell by a third, although at time of writing the drop had recovered to 22%.

However in the wider context, their **share price** has **been doing what every lithium stock has been doing** since 2022: undergoing a **long decline**. Sigma is **now worth** about **one third** of what it was one year ago and only **one eighth of its peak** in May 2023.

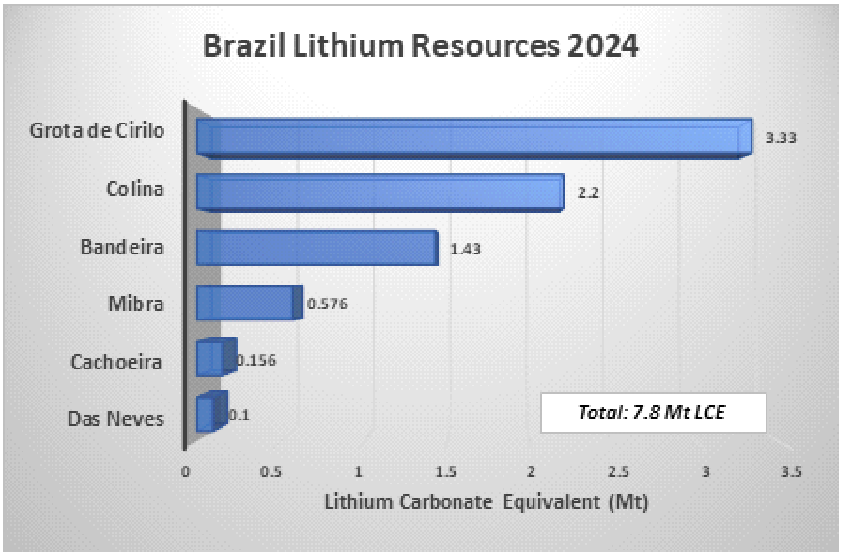
Compare that to **Albemarle**: their current value is **one third** of their **November 2022 peak**. And **SQM** are only worth **40%** of their September 2022 **peak**.

It is **hardly surprising** therefore that Sigma has **lost** so much of its **value** since **lithium prices** were more than **eight times** what they are now.

So what really is the **outlook** for **Sigma** Lithium?

Grota de Cirilo

Sigma's **Grota de Cirilo** mine entered production in 2023. It is the **largest resource in Brazil**, holding about **3.33 Mt LCE** out of Brazil's total resource of **7.8 Mt LCE**.



From "The Lithium Report 2025 – 2035: The Next 10 Years". Page 336.

Grota de Cirilo actually consists of a number of separate pegmatites that each have to be mined with a separate open pit. These are:

Pegmatite	Phase	M+I Resource
Xuxa	Phase One	562 kt LCE
Barreiro	Phase Two	861 kt LCE
NDC	Phase Three	1300 kt LCE
Muril	Phase Four	466 kt LCE

A factor to bear in mind for future expansion is that while the first two bodies being mined, known as **"Xuxa"** and **"Barreiro"** are **spodumene** deposits, the others contain a mixture of spodumene and **petalite** in varying ratios. The **largest body** of all called "NDC" (NEZINHO DO CHICÃO) now upgraded to **1.3 Mt LCE** will be mined in Phase 3 and is a mixture of **petalite and spodumene**.

At the moment Sigma are achieving about **65% recovery** from the spodumene in Xuxa but this will **fall** to **58%** in Phase 2 and further to **51%** in Phase 3, partly due to the petalite, partly due to the slightly lower spodumene content.

The fact that they are reported to be upgrading their mining equipment and changing contractor (causing the share price drop) may be intended to improve recovery in Phase 2 and 3.

Wisely, Sigma **did not try** and develop a **downstream chemicals plant** as well, which given the difficulties other mines have experienced trying to do that in recent years may have compromised the project. The high level of petalite in Phase 3 is also a disincentive to doing that.

In **2024**, Sigma delivered **240 kt SC5.5** and we forecast they would deliver **300 kt** this year: Sigma are indicating they will deliver only **270 kt** this year which is in line with their earlier statements for Phase 1 production. Phase 2 has taken longer to come on stream than predicted. The upside of keeping ore in the ground is that it can be sold later when prices rise again.

Phase 2 (Barreiro) is under construction and is now scheduled to come on stream next year, taking total capacity to **520 ktpa SC5.5**. In their September 2025 Strategy Presentation, Sigma still indicate 2026 production at that level so they have not apparently slowed down their expansion plans. But it would **not be surprising** if full Phase 2 production is not reached until **2027** and Phase 3 slips into **2028** or later.

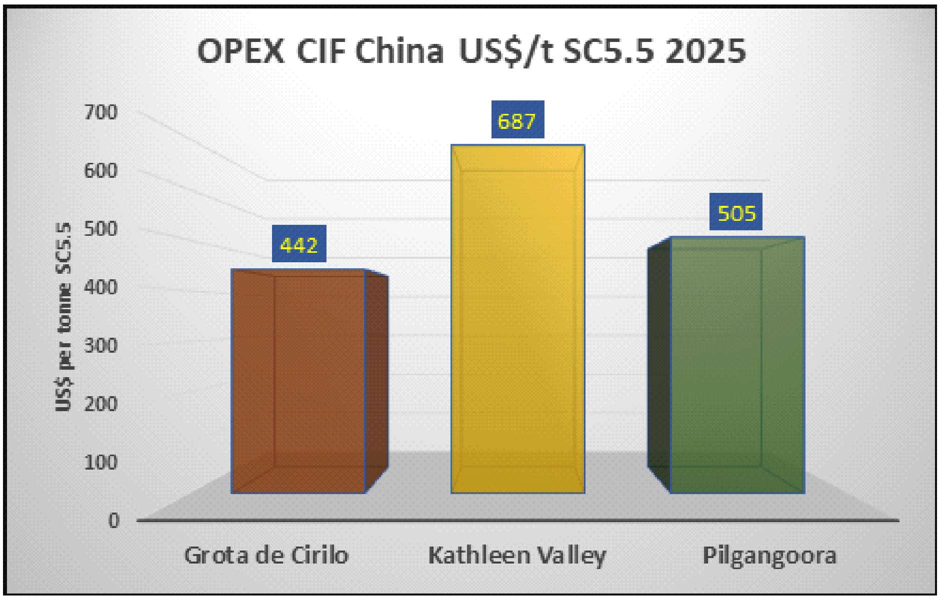
Operating Costs

Compared to Australia, **Brazil** has a **significant cost advantage**. While **all of the Australian producers** except Greenbushes are **losing money**, **Sigma** is definitely still **in the black**. Achieving a CIF cost of **US$442** per tonne SC 5.5 to China is excellent. Their AISC in 2025 is about US$600 per tonne.

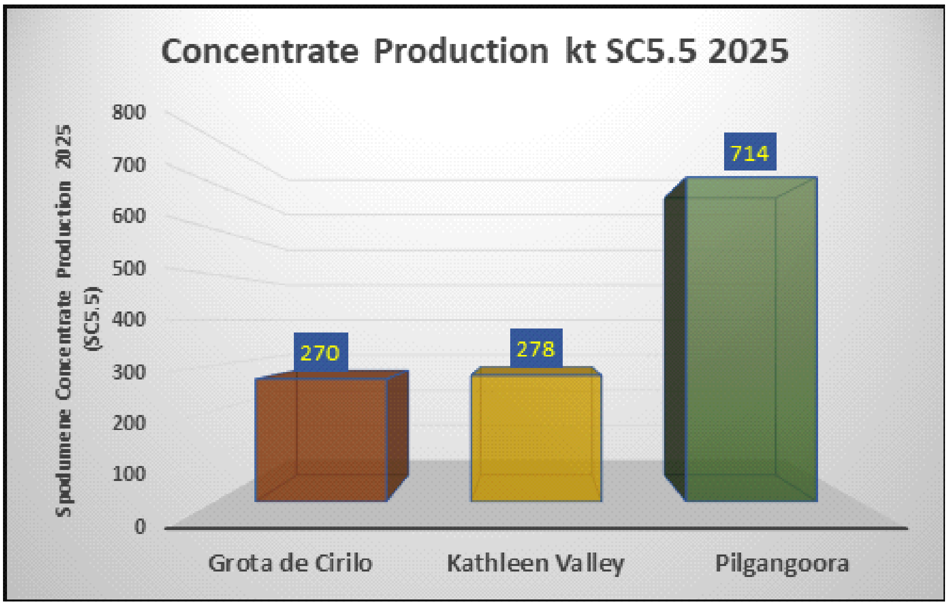
Let's compare that to **Kathleen Valley** (Liontown Resources) and **Pilgangoora** (Pilbara Minerals).

The FOB cost for **Kathleen Valley** is **US$584**/t SC5.2. We don't now what their CIF cost is, but Pilgangoora do publish both FOB and CIF figures, the difference being US$70 per tonne. Assuming Liontown pays the same as Pilbara Minerals for shipment to China, that would put KV's CIF cost at **US$687**/t adjusted for SC5.5.

Pilgangoora has OPEX of US$478/t SC5.2 CIF ($406/t FOB) this year and their production is more than double that of Sigma at 755 kt SC5.2 this year. Adjusted to SC5.5, this gives a CIF cost of **US$505**/t SC5.5.



Comparing the production figures is revealing as well.



So the cost advantage that Brazil has is quite evident. Grota de Cirilo is a **similar size** of operation to **Kathleen Valley** but has OPEX **one third lower**. Output at Pilgangoora is 2.6 times as high but OPEX is 15% higher.

When Phase 2 comes on stream, Grota de Cirilo will be producing 520 ktpa SC5.5, matching planned expansion at Kathleen Valley.

So Grota de Cirilo is **well placed** to continue as a significant lithium producer. The only negative factor is that Phase 3, which will mine the largest pegmatite body, NDC, will be producing both spodumene and petalite. But reading of the March 2025 technical report shows that **petalite will only account for 14% of concentrate production from NDC**. In fact, the main difference between NDC and the first two pegmatites (Xuxa, Barreiro) is the higher petalite concentration in the ore of 6 – 10% but the spodumene concentration, although somewhat lower, is in the same range, 10% - 15%. So the petalite content is mostly additional to the spodumene in the first two bodies, not instead of it. In addition there is **plenty of demand for petalite** since **China stopped supplying** western customers from **Bikita** and **Bernic Lake.**

Conclusion

Grota de Cirilo is an **important project** since it is the **largest lithium deposit in Brazil**, comparable in size and planned output to Kathleen Valley in Australia. The grade is actually slightly higher than Kathleen Valley and the total amount of ore slightly lower. Grota de Cirilo will have to dig three open pits and build three concentrator plants, which is a disadvantage, but Kathleen Valley is primarily an underground mine, which is more expensive than an open pit operation. As both mines expand, **production costs should continue to fall**.

Given the **clear cost advantage** the project has over Australian producers (except Greenbushes) and the **low capital expenditure** required for expansion, Grota de Cirilo should **continue to be a**

significant supplier of lithium concentrate. In 2024 the mine life was only 13 years but another 480 kt LCE was added to NDC in early 2025 and the potential Phase 4 “Murial” deposit would add another **466 kt LCE.** Together they would add 20 years production at current output or 10 years once full output is reached. “Murial” appears to be reasonably economical, requiring a market price of US$800/t SC5.5 to be worthwhile, according to the technical report. Therefore a reasonable 20 year mine life also now appears achievable.

The Lithium Report 2025 – 2035: The Next 10 Years. Everything you need to know about upstream lithium supply.