PITT STREET RESEARCH

St George Mining

Niobium newbie

Share Price: A$0.019

ASX: SGQ

Sector: Resources

15 April 2025

St George Mining (ASX: SGQ) wants to develop its Araxa Niobium-REE Project in Brazil, next door to the world's main niobium mine. Following the exploration success of WA1 Resources (ASX: WA1), which re-rated markedly after its 2022 discovery of a major niobium deposit in a remote part of Western Australia, St George now represents an attractive way to participate in the recent investor interest in niobium and ongoing interest in rare earths.

A valuable project with growth potential

SGQ delivered its maiden Independent JORC Mineral Resource Estimate (MRE) for Araxa on 1 April 2025. It now has a niobium resource of 41.2 million tonnes at 0.68% Nb_2O_5, and a Rare Earths Resource of 40.6 million tonnes at 4.13% TREO (41,300 ppm TREO). The MRE contains 280,000 tonnes of niobium oxide and 1.7 million tonnes of TREO. SGQ's immediate next step is to undertake further drilling to expand the resource and convert inferred resources to a higher confidence category. A 2013 Preliminary Economic Assessment (PEA) of Araxa derived an NPV of US$967m and a 30% Internal Rate of Return, even despite that assessment being based on close-spaced drilling over less than 10% of the project and thus possessing a smaller resource.

A critical mineral and great location to mine it

Niobium, which is a critical mineral in the US and the EU, is primarily used to make high strength steel alloys, but the metal is also potentially useful in lithium-ion batteries, so it is potentially set to increase in demand. Other than the main CBMM mine in Brazil, there are only two other producing mines globally. St George rates its chances of developing the mine as high given the location in Brazil's pro-mining Minas Gerais state, its access to existing infrastructure and similarities of its deposit to CBMM which has been in production for several decades.

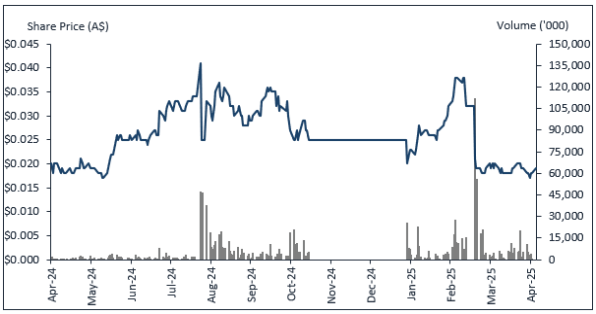
Upside could be realised if there's exploration success

With a market cap of around $50m after the Araxa transaction is complete it's reasonable to say that St George is undervalued. We used a DCF-based approach based on the 2013 PEA to value Araxa and derived an NPV of A$2.07bn in our base case and $3.2bn in our bull case. As a company with its maiden MRE and 2-3 years from production, we think could re-rate in the medium term to 25% of the NPV which is $517m/$0.14 per share for our base case and $797.8m/$0.21 per share for our bull case – both significant premiums to the current share price. Please see p. 17-21 for further details on our rationale and p. 24 for the key risks to our thesis.

Market cap. (A$ m)	50.7
# shares outstanding (m)	2,667.8
# shares fully diluted (m)	3,741.0
Market cap ful. dil. (A$ m)	71.1
Free float	100%
52-week high/low (A$)	0.041 / 0.017
Avg. 12M daily volume ('1000)	264.29
Website	stgm.com.au

Source: Company, Pitt Street Research

Share price (A$) and avg. daily volume (k, r.h.s.)



Source: Refinitiv Eikon, Pitt Street Research

Valuation metrics	
Project DCF (A$m)	517/798
Discount rate	8%
% of DCF risk-weighted to today	25%

Source: Pitt Street Research

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Disclosure: Pitt Street directors own shares in SGQ.

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Introducing St George Mining, ASX: SGQ

SGQ's Araxa project is located next to the largest source of niobium in the world.

St George Mining wants to develop its Araxa Niobium-REE Project in Brazil. This project, which covers an undeveloped niobium-REE deposit, is located next to the producing Araxa Niobium Mine, the largest source of niobium in the world (Figure 1). St George's new project, the acquisition of which was announced in August 2024 and completed in February 2025, was previously advanced by Canadian company called Itafos (TSX-V: IFOS). In an environment where WA1 Resources (ASX: WA1) re-rated to over A$1bn in mid-2024 and is still over $600m in enterprise value thanks to its transformational niobium discovery in Western Australia, St George Mining represents an attractive way to participate in the recent investor interest in niobium, and ongoing interest in rare earths.

Figure 1: Location of Araxa in Brazil

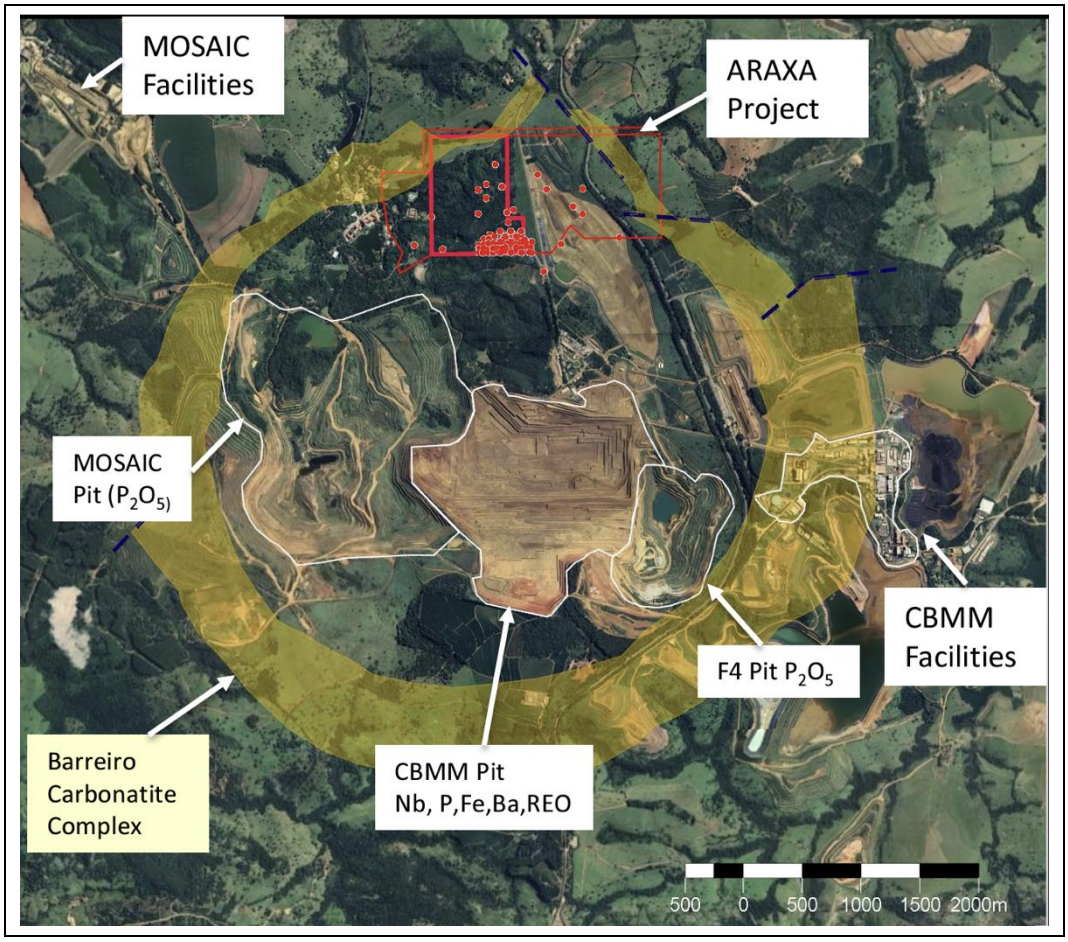
Source: Google Maps

The Araxa Niobium-REE Project has potential to be a valuable niobium and REE mine. The project is located near the town of Araxa in the state of Minas Gerais, around 370 km north-northwest of Belo Horizonte, the state capital. The neighbouring Araxa Niobium Mine (Figure 2) currently produces around 70-80% of the world's niobium. That mine is owned by the privately held Companhia Brasileira de Metalurgia e Mineracao, or CBMM for short, which is majority owned by the Moreira Salles family. CBMM has helped make that family one of the wealthiest in Brazil[1]. There is also a phosphate mine and processing plant nearby to St George's Araxa Niobium-REE Project belonging

[1] CBMM, along with a Brazilian bank called Banco Itau Unibanco SA (NYSE: ITUB), has made billionaires of four brothers: Fernando Roberto Moreira Salles (no. 344 on the Forbes list), Pedro Moreira Salles (no. 385), Joao Moreira Salles (No. 572) and Walther Moreira Salles Jr, the noted filmmaker (also No. 572).

to the Mosaic Company, a major US-based producer of phosphates and potash[2].

Figure 2: St George's project lies adjacent to CBMM's mine



Source: St George Mining

A 2013 PEA valued St George's new project at US$967m on a 10% discount rate

There is potential for a large and valuable mining operation at Araxa. In early 2013 Itafos published a Preliminary Economic Assessment (PEA) of Araxa that valued the project at US$967m on a 10% discount rate. The Internal Rate of Return was 30%. That 2013 PEA was based on close-spaced drilling over less than 10% of the project area.

- **The 2013 PEA was based on an NI-43-101 estimate**. The Measured and Indicated resource of 6.32 million tonnes at 5.01% TREO and 1.02% Nb_2O_5 plus an Inferred Resource of 21.94 million tonnes at 3.99% TREO and 0.64% Nb_2O_5. In each case the cut-off level was a very high 2% TREO. St George Mining expects the Araxa resource can be optimised for niobium and that further drilling will significantly increase the resource.
- **St George published its maiden JORC resource in early April 2025**. It defined a total niobium resource of 41.2 million tonnes at 0.68% Nb_2O_5 (6,800ppm Nb_2O_5) comprising 1.9 million tonnes Measured, 7.37 million tonnes Indicated, and 31.93 million tonnes inferred (Figure 3). The company defined a total Rare Earths Resource of 40.6 million tonnes at

[2] Tampa, Fl. NYSE: MOS, mosaicco.com. Mosaic's Araxa phosphate mine has a resource of 519 million tonnes at 13.4% P_2O_5.

4.13% TREO (41,300ppm TREO). Araxa contains 280,000 tonnes of niobium oxide and 1.7 million tonnes of TREO.

Figure 3: Araxa's JORC resource as of 1 April 2025

JORC 2012 MRE - Grade Tonnage Report using an 0.2% Niobium cut-off

Resource Classification	Million Tonnes (MT)	Niobium (%)	TREO (%)	MREO (%)	P2O5 (%)
Measured	1.9	1.19	5.44	1.04	7.97
Indicated	7.37	0.93	4.76	0.9	9.12
M&I	**9.27**	**0.99**	**4.9**	**0.92**	**8.89**
Inferred	31.93	0.59	3.82	0.72	8.12
Total	**41.2**	**0.68**	**4.07**	**0.77**	**8.3**

JORC 2012 MRE - Grade Tonnage Report using an 2% TREO cut-off

Resource Classification	Million Tonnes (MT)	Niobium (%)	TREO (%)	MREO (%)	P2O5 (%)
Measured	1.9	1.18	5.44	1.04	7.97
Indicated	7.37	0.93	4.76	0.9	9.12
M&I	**9.27**	**0.99**	**4.9**	**0.92**	**8.89**
Inferred	31.37	0.59	3.9	0.74	8.12
Total	**40.64**	**0.68**	**4.13**	**0.78**	**8.34**

Source: Pitt Street Research, ASX announcement 1 April 2025

A 2013 PEA valued St George's new project at US$967m on a 10% discount rate

Much of the resource at Araxa is high-grade and multi-commodity. Previous drilling by Itafos has defined not only extensive high-grade niobium, but also hard rock rare earths and phosphate mineralisation. There have been more than 500 intercepts of niobium grading higher than 1% Nb_2O_5. The mineralisation commences from surface and is open in all directions. Some of the intercepts have been very rich, including 8% Nb_2O_5, 33% TREO and 32% P_2O_5.

Niobium is an emerging battery material with few current suppliers. Niobium, atomic number 41, is a light grey metal primarily used in the manufacture of High-Strength Low-Alloy (HSLA) steel. The addition of ferroniobium, an alloy of iron and niobium, makes steel lighter and stronger. Currently HLSA uses about 90% of global niobium output, but the metal is also potentially useful in lithium-ion batteries, so it is potentially set to increase in importance as a critical mineral[3]. Other than CBMM, the only other notable niobium producers at present are Niobec[4], in the Canadian province of Quebec, which was bought by a private equity firm called Magris[5] in 2014[6], and the Chinese company CMOC[7], formerly China Molybdenum, which in 2016 bought the Boa Vista mine[8] in Brazil's Goias state from Anglo American plc[9]. In 2023, mine production of niobium was estimated to be 83,000 tonnes

[3] See 'Niobium: the chemical that could help charge your electric car in minutes' by Daniel Bardsley, The National, 14 November 2022 (The National is a private English-language daily newspaper published in Abu Dhabi).
[4] This mine is located at Saint-Honore, around 500 km north of Montreal. The mine was commissioned in 1976, with ferroniobium production capacity added in 1994.
[5] See magrispm.com.
[6] A consortium led by Magris Resources, which included CEF Holdings and Temasek, bought Niobec from IAMGOLD for US$530m. Niobec reportedly produced 5,300 t of niobium metal contained in ferroniobium in 2013. Source: Alkane Resources, September 2014 quarterly report.
[7] SSE: 603993.
[8] Anglo American had started this operation in 1976. Boa Vista is located near the town of Catalao, around 260 km southeast of Goiania, the capital of Goias. The original operation from 1976 to 1999 worked a deposit called Catalao I. Mining switched to Catalao II in 2001. A plant at the nearby town of Ouvidor has been producing ferroniobium since 1977.
[9] CMOC bought Anglo American's Brazilian niobium and phosphates operations for US$1.5bn. The combined EBITDA of the businesses in calendar 2015 was US$146m.

globally[10]. Demand growth has been around 6% p.a. for more than two decades now[11].

The world is looking for new sources of niobium. The resource at Araxa owned by CBMM is significant, with a current estimate of 896 million tonnes at 1.49% Nb_2O_5. However, with demand for niobium growing strongly and control in relatively few hands, it's reasonable to expect new sources of supply to attract interest from offtakers and their downstream customers. For one thing, niobium is a critical mineral, as per both the US[12] and EU[13] lists. For another, current access to the metal tends to favour the customers of the current minority CBMM shareholders, who bought their combined 30% stake in 2011[14]. That there is strong commercial interest in St George's Project is suggested by two recent announcements:

- An October 2024 announcement that SKI, a Hong Kong trading company which deals in specialty steel materials and ferro alloys, would work with St George under a 'Strategic MoU' to support the development of Araxa.
- A January 2025 announcement of another Strategic MoU, this one with Liaoning Fangda Group, a major Chinese maker of steel and heavy mine equipment manufacturers that potentially can lead to offtake and financing.

SGQ has also signed an MoU with the government of Minas Gerais (Figure 4).

Figure 4: St George signed a Memorandum of Understanding with the government of Minas Gerais in October 2024

Source: St George Mining

[10] Source: US Geological Survey, Mineral Commodity Summaries 2024. Interestingly, the 2025 summary suggested 100,000 tonnes.
[11] Estimated by comparing USGS data from 1998 and 2023.
[12] See the 22 February 2022 press release headlined *'U.S. Geological Survey Releases 2022 List of Critical Minerals'.*
[13] Source: *The Fifth list 2023 of critical raw materials for the EU*, single-market-economy.ec.europa.eu.
[14] There were two transactions in 2011 – the Japanese/Korean transaction and the Chinese transaction. The Japanese/Korean consortium paying US$1.8bn for 15% comprised JFE Steel, Nippon Steel, Sojitz and JOGMEC plus POSCO and Korea's National Pension Service. The Chinese consortium paying US$1.95bn for another 15% comprised CITIC Group, Baosteel Group, Anshan Iron & Steel, Shougang, and Taiyuan Iron & Steel Group Co.

There is significant potential for rare earths at Araxa. St George sees the potential for another Mt Weld at Araxa. That carbonatite-hosted rare earths deposit in Western Australia was the company-maker for Lynas Rare Earths (ASX: LYC). The Itafos drillwork suggests ample neodymium and praseodymium, the main rare earths. There is potential for downstream development in rare earths.

St George is building Intellectual Property around Araxa, through collaborations with two Brazilian Federal government agencies.

- In December 2024 St George announced a collaboration with SENAI on the manufacture of rare earth magnets in Minas Gerais. SENAI is Brazil's Serviço Nacional de Aprendizagem Industrial, that is, its National Industrial Training Service. SENAI's main function is industrial training, but it also serves an R&D function not unlike Australia's CSIRO.
- In January 2025 the R&D relationship was expanded to include EMBRAPII (Empresa Brasileira de Pesquisa e Inovacao Industrial), the Brazilian Agency for Research and Industrial Innovation, to work on both niobium and rare earths recoveries. The cost of this programme will be born 50% by EMBRAPII, 10% by SENAI and 40% by St George, with St George having exclusive commercialisation rights to the Intellectual Property for ten years.

All the infrastructure for a mine is in place at Araxa, being located as it is in an established mining district. There are sealed roads and power in place as well as a proven route to market and access to skilled workers. Moreover, Minas Gerais is, policy-wise, a great place to develop a mine, having been a centre of mining in Brazil for over 200 years and home to major iron ore, gold and diamond mines. The current governor of Minas Gerais, Romeu Zema, is pro-business and pro-mining. His administration signed a Memorandum of Understanding with St George in October 2024 where the state will assist with progressing regulatory approvals in an accelerated manner.

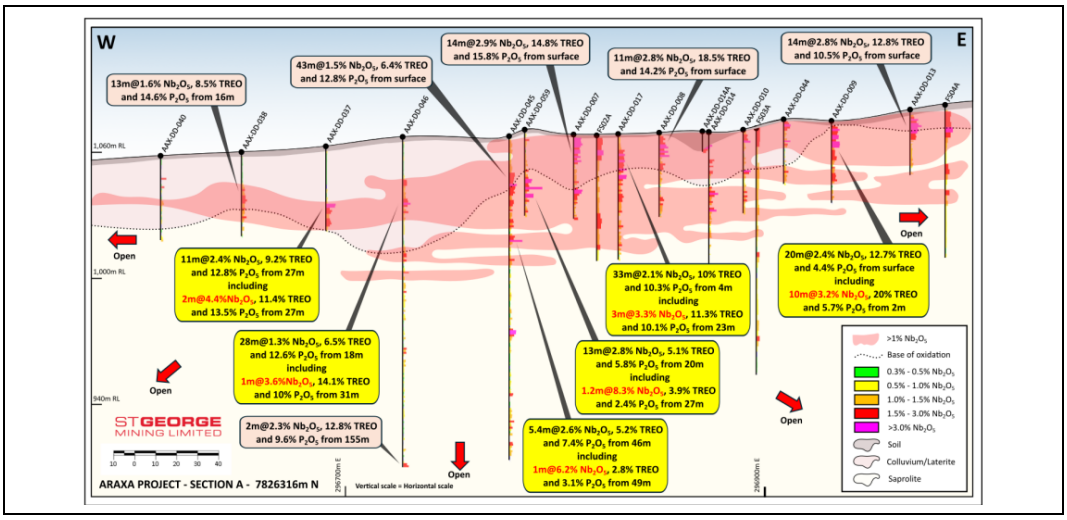
Araxa could be good for rare earths as well as niobium

Shareholders approved the Araxa Niobium-REE Project acquisition on 18 February 2025. St George has acquired the project for US$21m in cash – US$10m at close, US$6m nine months after closing, and US$5m 18 months after closing. Also, Itafos has received shares equal to a 10% stake in St George Mining as well as options and performance rights. The company raised A$20m at 2 cents per share to fund the first US$10m payment to Itafos (A$16m) as well as the inaugural drill program at Araxa and costs related to the acquisition. This placement is one of the resolutions approved by shareholders at the 18 February 2025 Extraordinary General Meeting.

5,000 metres of diamond drilling at Araxa will commence shortly now that St George controls the Araxa project

The next round of drilling at Araxa starts shortly. Only around 10% of the Araxa project area has been drilled, and in many cases the drilling hasn't gone below 50 metres (Figure 5). The Barreiro Carbonatite, which hosts the producing CBMM Araxa mine, has been confirmed by CBMM's drilling to host high-grade mineralisation down to around 800 metres. St George Mining intends an initial 5,000 metres of diamond drilling to build on its resource (both through increasing the resource and converting the existing Inferred resource to the Measured and Indicated categories) and begin to explore this depth potential.

Figure 5: Most drilling at Araxa to date has been shallow



Source: St George Mining

What happens in 2025 for St George Mining? Having just delivered its maiden JORC resource estimate for Araxa, the company intends to drill another 6,000 metres later in 2025 to further build out the resource. The company will do some metallurgical testwork, publish a fresh PEA and then move to a Preliminary Feasibility Study by late 2025.

St George's new flagship project can potentially be producing by 2027. Subject to the definition of an economic resource, and completion of a Definitive Feasibility Study, construction of the mine can potentially begin in 2026, with operations beginning in 2027. St George envisages an operation with annual production in the order of 20,000 tonnes of niobium and rare earths. St George already has a potential Engineering, Procurement, and Construction (EPC) partner for Araxa through a January 2025 MoU with Shandong Xinhai Mining Technology & Equipment, which has agreed to take equity in St George.

Ten reasons to look at St George Mining

1. **St George Mining has acquired the Araxa Niobium and REE Project in Brazil**, giving it access to a project with an existing niobium and REE resource next door to the world's largest niobium mine, in a favourable pro-mining jurisdiction.
2. **Niobium has attracted a lot of investor interest over the last two years**, thanks to the Luni discovery of WA1 Resources in the remote West Arunta region of Western Australia. St George can benefit from that interest, which is ongoing.
3. **The price of niobium has been strong**, with quotations north of US$75 per kilogram in China in late 2024, much higher than the US$45 level of several years ago.
4. **St George's Araxa project is multi-commodity**, with potential in both hard rock rare earths and niobium. The rare earths opportunity is favourable given the existing high-grade mineralisation that has been identified, and the geological similarities to Lynas's Mt Weld deposit in Western Australia.
5. **St George has a newly published JORC Resource**, of 280,000 tonnes of niobium oxide and 1.7 million tonnes of TREO.
6. **Several drill campaigns in 2025 can increase the size of the aforementioned resource,** with earlier drilling having only evaluated around 10% of the project area and only close to surface.
7. **The world is looking for new sources of niobium**, given rising demand, the metal's 'critical' status in both the US and the EU, and China's lack of a domestic source. Also driving this interest is the potential adoption of niobium as a standard in the anode of EV batteries.
8. **The Araxa jurisdiction is favourable**, with both Brazil at a Federal level and in the state of Minas Gerais being pro-mining, and the Araxa district possessing all the relevant infrastructure.
9. **The Araxa project can potentially be producing by 2027**, subject to the definition of an economic resource, completion of a Definitive Feasibility Study, and negotiation of the requisite funding, which the company can potentially achieve in 2025 and 2026.
10. **The Araxa Project is potentially very valuable**, with the 2013 PEA valuing the project at US$967m on a 10% discount rate with an IRR of 27.6%.

Why Niobium is such an important commodity today

Niobum is important for making high-strength steel alloys

What is niobium? Niobium, atomic number 41, is a soft, grey, ductile metal that has been known about since the 19th Century[15] but has only been used in industry in a serious way since the Second World War. Niobium's various applications take advantage of four properties. Firstly, it has a high melting point of around 2,468 degrees Celsius, so that it can withstand extreme temperatures. Secondly, it is exceptionally resistant to corrosion. Thirdly, it's a great alloying metal, known to markedly increase the strength of steel[16]. Fourthly, at low temperatures it is superconductive, meaning that it can carry electrical current without losing energy[17]. Niobium emerged as an important industrial metal in the mid-1930s when it was first used to stabilise stainless steel against corrosion. In the late 1950s and early 1960s came its main use as a 'microalloying' element for HSLA steel, where just a small amount of ferroniobium is sufficient to make steel much stronger[18]. Later still came niobium 'superalloys', that is, high-performance alloys with very high heat and corrosion resistance, a typical example being the C-103 alloy used in the Apollo spacecraft[19]. The battery applications of niobium have only recently been explored and applications here are still largely experimental.

What are the main products that use niobium today? Niobium is used in industry either as ferroniobium (typically 35% iron and 65% niobium) or as niobium oxide. Ferroniobium products constitute 80-90% of the total current demand and show up mainly in stainless steel, oil and gas pipelines, structural steel and automotive steel. Niobium oxide is what is used to make the superalloys in jet airplanes and other aerospace applications, military equipment and weapons, MRI machines, optical lenses, and superconducting magnets.

Why is niobium being considered as battery mineral? Many research groups have been experimenting with niobium in the anode of batteries, as part of chemistries such as NTO, that is, niobium-titanium oxide[20]. A niobium-based anode could potentially have a very long life because, unlike the carbon usually found in the anode, niobium doesn't change volume during charge and discharge cycles, eliminating issues such as 'dendrite growth'[21], which can lead to battery self-discharge and other safety concerns. An additional benefit of niobium is high ionic conductivity, so the battery could recharge faster[22].

What are the sources of niobium? Niobium is primarily found in the minerals pyrochlore, columbite and tantalite. Pyrochlore and columbite are the

[15] Niobium was discovered in 1801 by the Englishman Charles Hatchett (1765-1847). For many years it was believed that niobium and tantalum, atomic No. 73, were the same element due to work by William Hyde Wollaston (1766-1828). After niobium was rediscovered in 1844 by the German Heinrich Rose (1795-1864) it was isolated in 1864 by the Swedish chemist Christian Wilhelm Blomstrand (1826-1897), whose work contributed to various proofs that it was different from tantalum.

[16] It achieves this through 'grain refinement' - the smaller the size of the grains in the steel, the higher the strength and formability. Niobium achieves this grain refinement by controlling the level of carbide precipitation in the steel.

[17] This is the backbone behind the powerful magnets in Magnetic Resonance Imaging machines, where the magnets are made of two coils of wire, either of niobium and titanium or niobium and tin, with the coils embedded in copper.

[18] One memorable illustration of the way in which niobium achieves this is the estimate that the 7,300 tonnes of wrought iron in the Eiffel Tower could be replaced with just 2,000 tonnes of HSLA steel. Source: *The Elements of Power: Gadgets, guns, and the struggle for a sustainable future in the rare metal age* by David S. Abraham (New Haven, Ct, Yale University Press, 2017).

[19] C-103 is an alloy of niobium, titanium, hafnium and zirconium that was developed in 1965 and was initially used in the structure of the Apollo Lunar Command Module rocket nozzles.

[20] Toshiba's SCiB, that is, Super Charge ion Battery, which has an NTO anode, can provide a mileage of up to 320 km, reaching 90% capacity after six minutes. Further, it can fast charge to 80% capacity after 25,000 cycles. See global.toshiba/ww/products-solutions/battery/scib.html.

[21] Dendrites are metallic microstructures that form when extra lithium ions accumulate on the anode surface and cannot be absorbed into the anode in time. They can cause short circuits and lead to catastrophic failures and even fires.

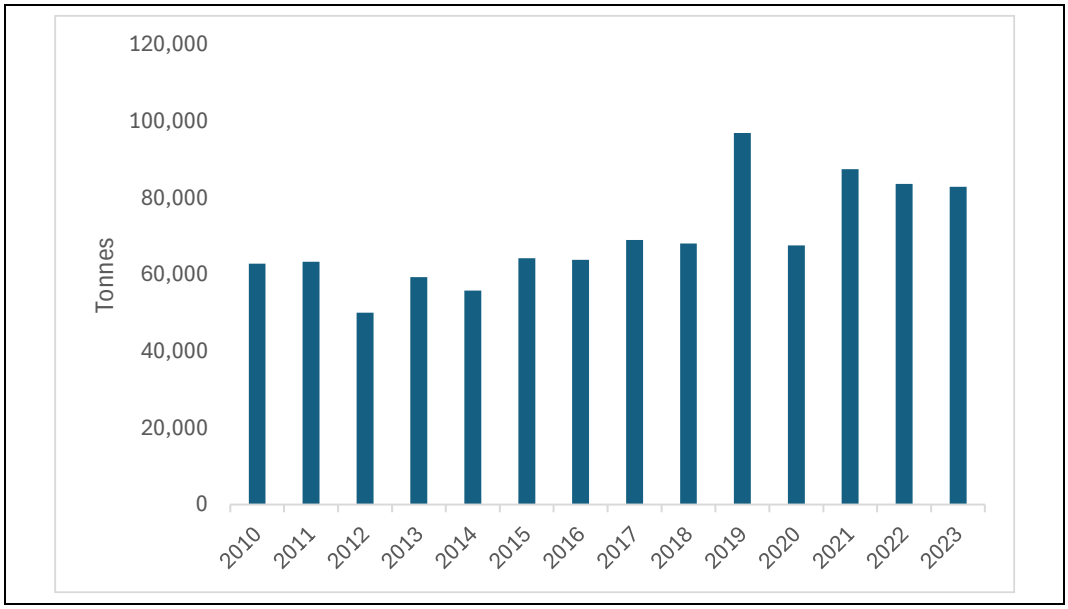
[22] A UK startup called Nyobolt, which is pioneering a niobium-tungsten oxide anode, recently attracted a lot of attention with a test where one of its batteries charged from 10% to 80% in a mere 4 minutes 37 seconds, and that the battery had successfully gone through over 4,000 fast-charge cycles, suggesting a lifespan of more than 1 million km. Interestingly, that was from a 'graphite-dominant' anode solution. The company claims that its results can get even better once niobium anodes are applied. See *'Nyobolt's cells are closer to production than we could imagine'* by Gustavo Henrique Ruffo, Auto Evolution, 15 August 2024.

primary niobium minerals[23], and pyrochlore is the basis of CBMM's Araxa mine and St George's new project. Part of the world's supply of niobium comes from tantalum mines processing tantalite where niobium is by-product[24].

Niobum demand has risen 6% p.a. since the 1990s

What is supply/demand dynamics for niobium? The United States Geological Survey has estimated world niobium production in 2023, from primary and secondary sources, at around 83,000 tonnes, with 75,000 tonnes of that coming from Brazil. Output has risen roughly 6% p.a. since the late 1990s[25] thanks to high market demand for ferroniobium in specialty steel applications (Figure 6).

Figure 6: Estimated world niobium output, 2010-2023



Source: US Geological Survey

Why is the supply base for niobium so narrow? It's unusual for a commodity where demand has grown as briskly as niobium to still be in so few hands. As we note above, there are just three notable mines. CBMM's Araxa still constitutes 70-80% of total world output decades after it started up in 1961[26], and the other two were both commissioned in 1976, close to 50 years ago[27]. We believe there are three explanations for this:

- **Consistent management at Araxa.** The Moreira Salles family has controlled CBMM since 1965 and has worked to grow the overall niobium market through investment in R&D and maintenance of prices at reasonable levels.
- **The size of the Araxa deposit.** There is enough niobium at Araxa to last for several hundred years at current rates of global use.
- **Perceived Intellectual Property barriers.** The processing techniques for producing niobium from mined ore at Araxa are proprietary to CBMM,

[23] Niobium was in previously known as columbium, particularly in North America, until the International Union of Pure and Applied Chemistry officially adopted 'niobium' as the element's official name in 1950.
[24] The biggest suppliers of this by-product niobium are Russia, the DRC and Rwanda.
[25] Source: USGS Mineral Commodity Summaries data
[26] CBMM sold 92,000 tonnes of ferroniobium equivalent in 2023, with the company estimating that the world market was 124,000 tonnes. Source: CBMM 2023 Sustainability Report.
[27] Market share for Niobec and Boa Vista has been estimated at 8% and 6% respectively – see the NioCorp presentation from October 2016 titled *'Superalloy materials: strengthening our eorld'*, slide 29.

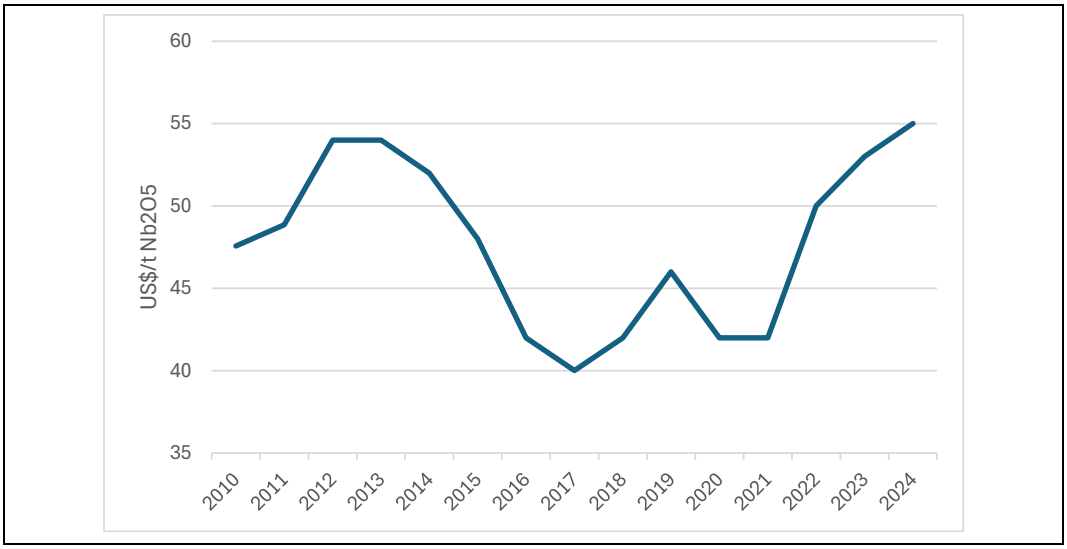
and closely guarded, to the point where, it is claimed, the mine's minority owners 'have never been allowed to carry out technical due diligence work'[28]. This may have historically provided a 'soft' barrier to entry for companies without deep pockets.

Why the market structures are changing, allowing companies like St George to come in? We argue that two factors are currently at work:

- **Niobium is now a 'critical' mineral**, meaning that public policy in multiple jurisdictions is encouraging new sources of supply, preferably at home or at least controlled by reliable allies.
- **The market is now significant enough to favour 'knowledge diffusion'**. As new entrants do their own flowsheet development, the 'knowledge cartel' now controlled by CBMM, CMOC and others will be broken. A good analogy is the rare earths sector, where historically Chinese state institutions had the knowhow and policed it carefully, but now multiple companies outside China led by Lynas have done, or are doing, their own learnings.

St George's main challenge: The opaque pricing of niobium. There is no futures market for niobium, but prices are available from subscription services that track the commodity in China and elsewhere (Figure 7). For example, at metal.com[29], Nb_2O_5 at 99.5% purity was quoted at 405-415 CNY per kilogram on 23 December 2024, which was about US$55-57 per kilogram. This is slightly above the US$50 per kilogram price Itafos used in its 2013 PEA. Only subscribers to metal.com could look at a time series. One of the challenges St George will face once it moves forward with its Araxa project is explaining to investors and other potential stakeholders the current market conditions for niobium. St George could manage this in this same way that CBMM has – through long-term offtake contracts with certain industry participants and direct marketing to end-users.

Figure 7: Our estimate of niobium prices over time



Source: US Geological Survey and other industry sources.

[28] See *'Brazil's richest family forging $13 billion niobium dream'* by Cristiane Lucchesi and Alex Cuadros, Bloomberg, 14 March 2013.
[29] metal.com/Niobium-Tantalum.

Araxa can potentially be a rare earths play

The rare earth oxide grades at Araxa are more than 4%

There is already a significant high-grade REE resource at Araxa, as evidenced in its recent JORC Resource with rare earth oxide grades at more than 4%. St George sees potential for this to increase, since:

- Intercepts in previous drilling have gone as high as 33% TREO.
- The host is a carbonatite (i.e. hard rock REE, not clay hosted).
- Only about 10% of the project area has been close space drilled, and most drilling was shallow, whereas the Barreiro Carbonatite is known to host mineralisation down to at least 800 metres.

Carbonatites are a major source of rare earths. Carbonatites are rare igneous rocks where at least 50% of the rock's volume is carbonate minerals such as calcite, dolomite and siderite, while silicon dioxide is less than 20% by weight. Carbonatites are a major source of rare earths. Until recently, more than 60% of the world's mined rare earths came from carbonatites[30], with notable examples being Bayan Obo, the monster rare earths deposit in China's Inner Mongolia province[31], but also Mountain Pass in California, the only rare earths producer in the United States[32], and Lynas's Mt Weld in Western Australia[33]. Carbonatites are not the only source of rare earths. There are also deposits in alkaline igneous rocks[34], in heavy mineral sands[35], and in regolith-hosted ionic-adsorption clays[36]. The advantage of hard rock rare earths in carbonatites is that they tend to be higher grade than other styles, the deposits are closer to the surface, and they are better understood thanks to Mountain Pass and Mt Weld.

Araxa is already around halfway towards being as large as Mt Weld was just six years ago

There is potential for another Mt Weld in the Barreiro carbonatite which hosts Araxa. The Barreiro carbonatite-alkaline igneous complex at Araxa is a series of five mapped carbonatite intrusives, with geophysical indications of more in the district. As with other magmatic carbonatites around the world, extensive hydrothermally altered zones up to 2.5 km wide surround the Barreiro carbonatites and are often enriched for rare earths. The core Barreiro carbonatite is a circular shaped intrusion with a diameter of around 5 km. This bears some similarities to Mt Weld in that both are examples of supergene lateritic mineralisation, where deep weathering and fluid leaching of a primary carbonatite creates a secondary REE-enriched laterite crust over the primary carbonatite. Such weathering can go far below the surface - the laterite cover, over the carbonatite that covers the CBMM mine, is up to 230 metres thick. In the weathering zone heavy rare earths can be found because of the higher mobility of light rare earths during weathering. St George believes that its Araxa project can be another Mt Weld. That deposit had a resource in mid-2018 of 55.4 million tonnes at 5.4% TREO[37]. St George is already around halfway there, with a TREO grade of 4.13% on its 40.64 million tonnes (Figure 8).

[30] See Zhou et. al., Minerals 2017, 7(11), 203.
[31] Resource estimated at 957 million tonnes at 6% TREO for a total of 57.4 million tonnes TREO – See Fan et al. (2014), Ore Geology Reviews Volume 63, December 2014, Pages 510-519.
[32] Proven and Probable Reserves of 25.8 million tonnes at 6.2% TREO for 1.6 million tonnes TREO – Source: MP Materials 2023 10-K.
[33] Mt Weld's JORC 2012 Resource as at August 2024 was 106.6 million tonnes at 4.1% TREO for 4.389 million tonnes TREO.
[34] A good example being the Kvanefjeld Rare Earths Project of Energy Transition Minerals (ASX: ETM) in southern Greenland. The Nechalacho Project of Vital Metals (ASX: VML) in Canada is another example.
[35] Around 5% of the world's rare earths production comes from monazite-bearing mineral sands deposits, predominantly in India.
[36] The largest of which is the massive Zudong deposit in Jiangxi Province of southern China.
[37] See the Lynas market release dated 6 August 2018 and headlined '*Lynas announces a 60% increase to Mt Weld Ore Reserves, one of the world's richest sources of Rare Earths*'.

Figure 8: Araxa rare earths resource, as per the 2025 JORC Resource

JORC 2012 MRE - Grade Tonnage Report using an 0.2% Niobium cut-off

Resource Classification	Million Tonnes (MT)	Niobium (%)	TREO (%)	MREO (%)	P2O5 (%)
Measured	1.9	1.19	5.44	1.04	7.97
Indicated	7.37	0.93	4.76	0.9	9.12
M&I	**9.27**	**0.99**	**4.9**	**0.92**	**8.89**
Inferred	31.93	0.59	3.82	0.72	8.12
Total	**41.2**	**0.68**	**4.07**	**0.77**	**8.3**

JORC 2012 MRE - Grade Tonnage Report using an 2% TREO cut-off

Resource Classification	Million Tonnes (MT)	Niobium (%)	TREO (%)	MREO (%)	P2O5 (%)
Measured	1.9	1.18	5.44	1.04	7.97
Indicated	7.37	0.93	4.76	0.9	9.12
M&I	**9.27**	**0.99**	**4.9**	**0.92**	**8.89**
Inferred	31.37	0.59	3.9	0.74	8.12
Total	**40.64**	**0.68**	**4.13**	**0.78**	**8.34**

Source: Pitt Street Research

The drill work to date bodes well, with very high grades from surface down to 60 metres, and MREO averaging 20% TREO in those grades. Like Mt Weld, St George's Araxa rare earths are monazite-hosted with the light rare earths of neodymium and praseodymium predominating although there are trace elements of the key heavy rare earths, dysprosium and terbium.

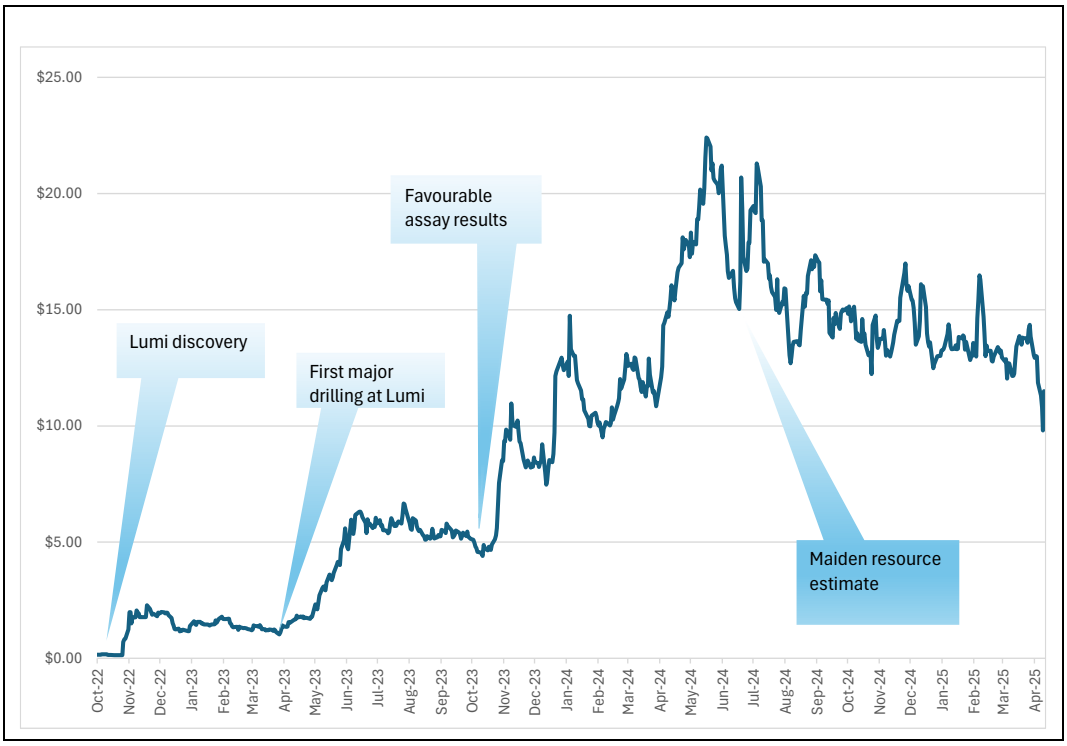
What's next? We think the deeper diamond drilling in 2025 has potential for considerably widening the scope of Araxa as a rare earths play by probing the weathered laterites below 60 metres. A challenge for St George Mining should the new rare earths discoveries be significant is working out the right flow sheet to maximise yield of both rare earths and niobium.

Who are the would-be players in niobium?

The exploration success of WA1 Resources (Figure 9) has prompted several ASX-listed companies to put together niobium exploration projects. A potentially important player is NioCorp Developments because it could represent the first US domestic source of niobium since the 1950s. St George Mining will be important because it has now placed a resource estimate on a niobium project that is not too many years away from being 'shovel ready', and there is a long history of producing commercial niobium products from the Araxa region.

WA1 Resources is still capitalised at more than A$600m

Figure 9: The spectacular rise of WA1 Resources



Source: Pitt Street Research

WA1 Resources has made niobium attractive to ASX investors. The Perth-based WA1 Resources (ASX: WA1) made a major niobium discovery in October 2022 at its West Arunta Project in remote east-central Western Australia, on the border of the Northern Territory around 490 km south of Halls Creek. The Luni deposit at West Arunta was arguably the most significant niobium discovery in more than 70 years, with an Inferred Resource being estimated in July 2024 of 200 million tonnes at 1.0% N_b2O_5. WA1 stock re-rated from 15 cents in October 2022 to over A$22 in May 2024. It is now back at under $12, giving the company an enterprise value of over A$800m. The potential downside for WA1 Resources is twofold. One is the fact that the resource is still Inferred. The other is the extreme remoteness of the project. It's instructive that BHP's Nebo and Babel nickel-copper deposits in the West Musgrave region are still on the drawing board, even though they were discovered by WMC Resources way back in 2000.

NioCorp Developments represents a potentially important American player. This Nasdaq-listed company[38] is developing the Elk Creek Critical Minerals

[38] Nasdaq: NB, Denver, Co., niocorp.com.

Project in southeastern Nebraska. This project, near the town of Elk Creek in Johnson County, around 130 km south of Omaha, covers a carbonatite rich in niobium as well as scandium, titanium and rare earths. The current Indicated and Inferred Resource at Elk Creek (NI-43-101) is 297.1 million tonnes at 0.47% Ni_2O_5 (Figure 10). A June 2022 Feasibility Study valued the project on a post-tax basis and an 8% discount rate of US$2.35bn with an IRR of 27.6%.

Figure 10: NioCorp resource at the Elk Creek Critical Minerals Project

Category	Million tonnes	Nb2O5	TREO	TiO2	Sc g/t
Indicated	188.8	0.51%	0.34%	2.24%	0.01%
Inferred	108.3	0.39%	0.38%	1.92%	0.01%
Total	297.1	0.47%	0.35%	2.12%	0.01%

Source: NioCorp

The potential upside to be realised

Our base case is US$1,281.5/A$2,066.9m while our bull case is US$1,978.6m or A$3,191.2m.

We have undertaken our own modelling of Araxa, utilising metrics from the 2013 Preliminary Economic Assessment[39] (Figure 11 to Figure 15). We put a tentative valuation on Araxa of US$1,281.5m or A$2,066.9m in our base case and US$1,978.6m or A$3,191.2m in our optimistic case, assuming production commencing in 2029 and then using PEA assumptions regarding opex and capex as a starting point while accounting for inflation and productivity improvements. As we mentioned on the front page, we think the company could re-rate to 25% of the NPV. This is $516.7m in our base case and $797.8m in our bull case and these equate to $0.14 per share and $0.21 per share, which represent premiums to the current share price of 627% and 1022% respectively.

Our approach is cognisant of two potential shortcomings in the 2013 work, namely:

- **Niobium production costs,** we have adjusted Itafos's PEA for post-2013 inflation. Itafos's consultants modelled US$10,000 in 2013, but we take the view that that was a conservative estimate at the time given the difficulties of ascertaining CBMM's production costs and the bench-scale nature of Itafos's work at the time. We understand St George, with its new team, which includes some ex-CBMM people, is confident that it can generate a figure even below US$10,000 once the entire flowsheet is optimised. As e note below, for conservatism's sake we use the 2013 data and adjust for inflation.
- **Capex.** Itafos estimated capex of more than US$600m for the project in 2013, over two Phases - $406.05m in Phase 1 and $214.48m in Phase 2. Although the layperson might reasonably assume a higher figure given inflation, we understand St George's team regards this as excessively more than will be required. Globe Metals and Mining (ASX: GBE), with its Kanyika Niobium Project in Malawi, with the benefit of more than a decade of work by early 2024[40] has estimated around US$260m for its project, which has been modelled as considerably larger than the Itafos's PEA for Araxa – i.e. 3,155 tonnes p.a. of Nb_2O_5 a year versus 1,832 tonnes tonnes p.a. for peak production as per the Itafos PEA. Obviously, the two projects have some differences, although we think they have enough similarities to employ these assumptions. And so, our capex number is US$300m in our base case and US$250m in our optimistic case.

St George's next study has potential to come up with stronger numbers, given the knowledgeable talent which the company has recruited and what has been learned by industry about niobium processing.

Base case

One of the biggest problems facing us was inflation since the 2013 PEA was completed. We cannot simply assume the same figures as was provided then. At the same time, to simply apply 102% higher figures (in line with the headline inflation rate in Brazil[41]) would be unreasonable too, giving no room for SGQ to make efficiencies of its own. Our base case assumed 70% inflation and then 3% annual increases for corporate expenses, while mining and operating costs remaining a fixed figure per tonne of production. We also changed the discount rate from 10% to 8%. Otherwise, we have stuck with

[39] https://itafos.com/site/assets/files/1755/itafos-araxa_technical_report_vfinal.pdf
[40] See the Globe market release from 5 February 2024 headlined *'Robust optimisation study results support Globe's Kanyika Niobium Project'.*
[41] Pitt Street Research assessment utilising inflationtool.com; estimating that R$1 in 2012 is R$2.03 in 2025.

the original assumptions in mining and production metrics, niobium pricing (which is determined through private contracts rather than on a metals exchange), tax and royalty rates.

As an investment decision has not been made, we have simply used a mining operating model and have not made any assumptions as to the debt-equity split and repayment terms of any financing facility – just as the original PEA did not. Any equity financing will dilute shareholder value, and any debt financing repayment will reduce cash flows. As goes without saying, the NPV vary dependant on the discount rate as well as prevailing exchange rates.

Figure 11: Araxa project mining and production metrics (Base Case)

Mining and production		
Metrics	**Units**	**Value**
Total Measured Resources	Mt	1.32
Total Indicated Resources	MT	5.02
Total Measured & Indicated	Mt	6.34
Grade	%	1.02%
Life of Mine	Years	40
Mining recoveries	%	100%
Plant Recovery Factor for REO	%	92%
Leaching Efficiency	%	41%
Annual Production Phase 1 (ROM)	tpa	119,454
Annual Production Phase 2	tpa	239,645
Annual Production Phase 3	tpa	384,981
TREO Grade (1-2)	%	7.96%
TREO Grade (1-2)	%	4.96%
REO Recovery	%	92%
REO Production (Years 1-6)	tpa	8,748
REO Production (Year 7 -)	tpa	17,550
Niobium grade	%	2%
Leaching efficiency	%	41%
Niobium production (Years 2-5)	tpa	742
Niobium production (from Year 10)	tpa	1,488

Source: Company, Pitt Street Research

Figure 12: Araxa General & Economic Assumptions (Base Case)

General and Economic		
Metrics	**Units**	**Value**
Discount rate (real, post tax) (%)	%	8%
TREO price	US$/t	$35,000
Niobium price	US$/t	$50,000
Tax rate	%	34%
Original NPV	US$m	$967
Exchange rate AUD/USD	A$1=US$	0.62
Original NPV in AUD (now)	A$m	1,560
New NPV	US$m	1,689
New NPV	A$m	2,725

Source: Company, Pitt Street Research

Figure 13: Araxa opex assumptions (Base Case)

Opex assumptions		
Metrics	**Units**	**Value**
REA Reagent Costs	US$t/TREO	
Phase 1		13,035.75
Phase 2		13,035.75
Phase 3		16,756.51
Niobium production costs (LOM)	US$t/niobium	17,000.00
Mining costs	US$t/TREO	
Phase 1 & 2		612.20
Phase 3		903.24
Labour Costs	US$t/TREO	
Phase 1		2,794.80
Phase 2 & 3		1,398.93
Contingency	% of Opex	10%
Maintenance	% of Opex	5%
SG&A	US$m	21.25
CFEM (royalty)	US$t/TREO	32.61
Inflation rise in SG&A	%	3%
Inflation rise in others	%	70%

Source: Company, Pitt Street Research

Figure 14: Araxa capex assumptions (Base Case)

Capex assumptions		
Metrics	**Units**	**Value**
Initial Capex	US$m	
Phase 1		150
Phase 2		150
Sustaining capex (first 20 years)	US$m	11.90
Sustaining capex (last 20 years)	US$m	6.80
Inflation assumption	%	70%

Source: Company, Pitt Street Research.

Figure 15: The sensitivity of Araxa's NPV to various discount rates and Australian dollar to US dollar rates (Base Case)

Discount rate	NPV in US$m	AUD/USD	NPV in A$m
4%	$2,562.44	**0.580**	$2,209.40
5%	$2,125.40	**0.590**	$2,171.95
6%	$1,779.93	**0.600**	$2,135.75
7%	$1,504.01	**0.610**	$2,100.74
8%	$1,281.45	**0.620**	$2,066.86
9%	$1,100.21	**0.630**	$2,034.05
10%	$951.28	**0.640**	$2,002.27
11%	$827.86	**0.650**	$1,971.46
12%	$724.73	**0.660**	$1,941.59

Source: Company, Pitt Street Research

Our Bull Case

Our bull case is US$1,978.6m or A$3,191.2m, with the former figure representing a 105% premium to the 2013 PEA.

Our bull case is US$1,978.6m or A$3,191.2m, with the former figure representing a 105% premium to the 2013 PEA. The differences are:

- We went with the original capex figures with no inflation, and
- We assumed only 40% inflation for mining, labour and REA Reagent costs.

Both of these give greater scope for new production efficiencies to be realised than our base case did (see Figure 16 to Figure 19). Our other mining, production and economic assumptions are the same as above.

As in our base case, we simply used a mining operating model and have not made any assumptions as to the debt-equity split and repayment terms of any financing facility – just as the original PEA did not.

Figure 16: Araxa General and Economic Assumptions (Optimistic Case)

General and Economic		
Metrics	**Units**	**Value**
Discount rate (real, post tax) (%)	%	8%
TREO price	US$/t	$35,000
Niobium price	US$/t	$50,000
Tax rate	%	34%
Original NPV	US$m	$967
Exchange rate AUD/USD	A$1=US$	0.62
Original NPV in AUD (now)	A$m	1,560
New NPV	US$m	1,689
New NPV	A$m	2,725
Discount/premium	%	75%

Source: Company, Pitt Street Research

Figure 17: Araxa opex assumptions (Optimistic Case)

Opex assumptions		
Metrics	**Units**	**Value**
REA Reagent Costs	US$t/TREO	
Phase 1		10,735.33
Phase 2		10,735.33
Phase 3		13,799.48
Niobium production costs (LOM)	US$t/niobium	14,000.00
Mining costs	US$t/TREO	
Phase 1 & 2		504.17
Phase 3		743.85
Labour Costs	US$t/TREO	
Phase 1		2,301.60
Phase 2 & 3		1,152.06
Contingency	% of Opex	10%
Maintenance	% of Opex	5%
SG&A	US$m	17.50
CFEM (royalty)	US$t/TREO	32.61
Inflation rise in SG&A (annual)	%	3%
Inflation rise in other costs (2012-2025)	%	40%

Source: Company, Pitt Street Research

Figure 18: Araxa capex assumptions (Optimistic Case)

Capex assumptions		
Metrics	**Units**	**Value**
Initial Capex	US$m	
Phase 1		125
Phase 2		125
Sustaining capex (first 20 years)		
First 20 years	US$m	7.00
Last 20 years	US$m	4.00

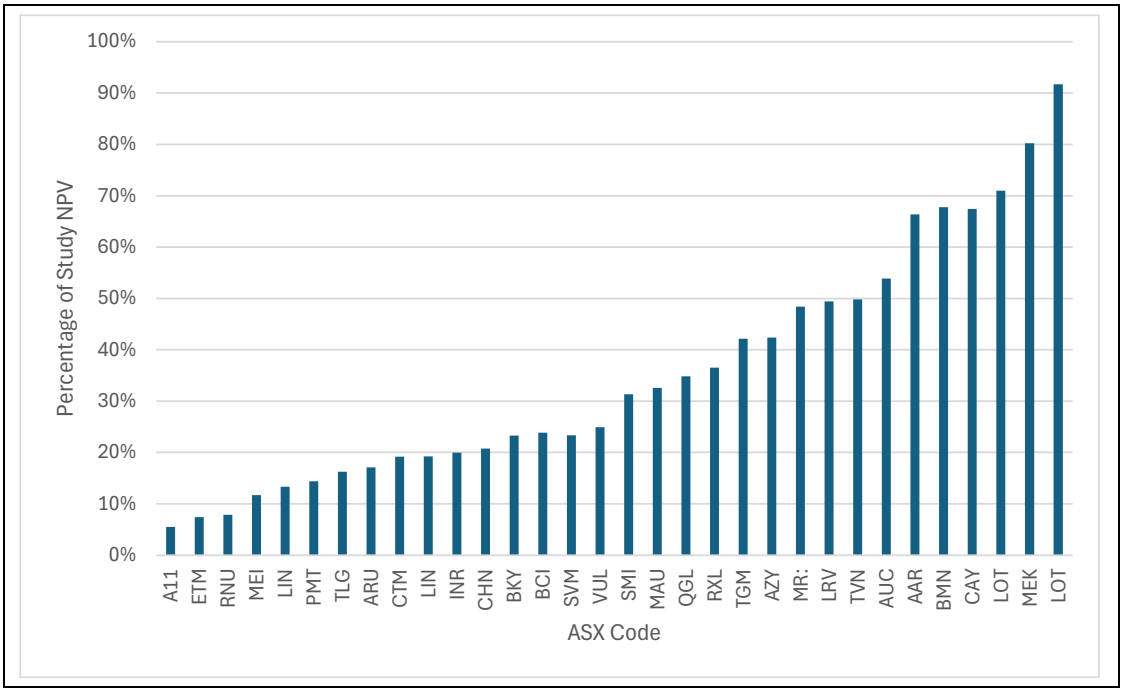
Source: Company, Pitt Street Research.

Figure 19: Araxa's NPV to various discount rates and Australian dollar to US dollar rates

Discount rate	NPV in US$m	AUD/USD	NPV in A$m
4%	$3,886.88	**0.580**	$3,411.32
5%	$3,235.38	**0.590**	$3,353.50
6%	$2,720.72	**0.600**	$3,297.61
7%	$2,309.88	**0.610**	$3,243.55
8%	$1,978.57	**0.620**	$3,191.23
9%	$1,708.77	**0.630**	$3,140.58
10%	$1,487.02	**0.640**	$3,091.51
11%	$1,303.13	**0.650**	$3,043.95
12%	$1,149.38	**0.660**	$2,997.83

Source: Company, Pitt Street Research

Figure 20: Percentage of Study NPV for a range of ASX-listed companies capitalised at more than A$100m



Source: Company data, Pitt Street Research.

What could SGQ trade at today?

We think SGQ could trade at 25% of the project's NPV which is A$516.7m (or $0.15 per share) in our base case and A$797.8m (or $0.23 per share) in our optimistic case.

We used a percentage of NPV approach. As Figure 20 shows, Development-stage resource companies tend to trade on a wide range of percentages to their published study NPVs, reflecting the risks associated with getting projects funded, built and operational in an environment where commodity prices are moving around

We think an appropriate figure for St George as of April 2025 is 25% of NPV.

This reflects the fact that work still needs to be done to move the project into a fresh PEA, then a Pre-Feasibility Study and Bankable Feasibility Study; followed by eventual production. Offsetting these (and thus meaning it doesn't deserve lower than 20%) are the faster pathway to development for Araxa, St George's securing offtake and the willingness of Shandong Xinhai to take equity, and also the fact that the current commodity prices are favourable for a successful project based on the old 2013 numbers.

This approach yields a valuation above A$500m specifically Base case $516.7m, Optimistic case $797.8m, as per Figure 21. These translate to 15 cents per share in our Base case and 23 cents per share for our Optimistic case. Obviously, investors need to be cognisant of two risk factors. First, it is almost certain there'll be dilution (i.e. increases to the number of shares on issue as capital is raised to fund the project's development). Secondly, It is entirely plausible later studies, particularly the Definitive and Bankable Feasibility Studies, could derive lower or higher NPVs, particularly if resource expansion is delivered (upside) or when financing is accounted for (downside). Figure 22 and Figure 23 depict the sensitivity of SGQ's valuation when using different percentages of NPV.

Figure 21: Our valuation range for St George Mining

Metric	Base	Optimistic
Project NPV (A$m)	**$2,066.86**	**$3,191.23**
% of NPV	20%	50%
Equity value (A$m)	**413.37**	**1,595.62**
Shares on Issue (m)	3,741	3,741
Implied Share Price	**0.110**	**0.427**
Today's Share price	0.019	0.019
Upside (%)	*482%*	*2145%*

Source: Company, Pitt Street Research

Figure 22: The potential market cap and share price of SGQ using various percentages of NPV (base case)

% of NPV	SGQ Eq. Value (A$m)	Per share
5%	$103.34	$0.028
10%	$206.69	$0.055
15%	$310.03	$0.083
20%	$413.37	$0.110
25%	**$516.71**	**$0.138**
50%	$1,033.43	$0.276
75%	$1,550.14	$0.414
100%	$2,066.86	$0.552

Source: Pitt Street Research

Figure 23: The potential market cap and share price of SGQ using various percentages of NPV (base case)

% of NPV	SGQ Eq. Value (A$m)	Per share
5%	$159.56	$0.043
10%	$319.12	$0.085
15%	$478.69	$0.128
20%	$638.25	$0.171
25%	**$797.81**	**$0.213**
50%	$1,595.62	$0.427
75%	$2,393.43	$0.640
100%	$3,191.23	$0.853

Source: Pitt Street Research

The risks

We see the following key risks to our thesis on St George Mining:

- **Exploration risk:** There is no certainty that exploration work will find any further mineralisation. Moreover, even if mineralisation is found, there is no certainty that it will be able to be extracted economically. The ability of the company to continue with its exploration activities could be affected by a range of factors including geological conditions, weather conditions, unanticipated operational and technical difficulties, unanticipated metallurgical problems, industrial disputes, supply chain issues and Indigenous heritage factors.
- **Funding risk**: As an early-stage explorer that is not generating revenue St George will inevitably need future financing to realise its ambitions with the project. It is not a certainty that such financing could be raised, and any financing deals could be dilutive to investors and/or inhibitive on the company's operations
- **Regulatory risk.** The company's ability to explore is contingent on possessing all necessary permits necessary and abiding by all regulation including taxation, industrial relations, health and safety, environment protection and license consent. Any withdrawal of consent by regulators, or inability to obtain any permits necessary for further exploration could put shareholder value in jeopardy.
- **Underlying commodity risk**: St George is exposed to commodity price risk, which depends on various macroeconomic factors as well as demand and supply dynamics of the underlying commodity. A continued lull in commodity prices could mean that investors fail to be interested in the company, even if it is otherwise on track.
- **Key personnel risk**: There is the risk the company may lose key personnel and be unable to replace them and/or their contribution to the business.

Appendix I – Capital structure

The Araxa acquisition has involved a large expansion in shares on issue and fully diluted shares. This involves the following issues of shares and options:

- **A placement in December 2024 to raise $3m in working capital**, being 150 million shares at 2 cents per share and 75 million free-attaching two-year options (1-for-2) exercisable at 4 cents.
- **Stock to Itafos, allowing that company to have a 10% interest in St George Mining.** Itafos received 266.8 million shares, 86.1 million 2-year options exercisable at 4 cents and 11.1 million performance rights
- **A placement to raise A$20 to settle on the initial tranche of Araxa**, this being raised by placing 1,000 million shares and 500 million 2-year options exercisable at 4 cents.
- **Shares and options to advisers**, who are receiving 162.5 million shares and 200 million.

For the estimated capital structure after, see **Error! Reference source not found.** below.

Figure 24: SGQ's capital structure

SECURITIES	Number
Listed shares	2,667,822,434
Listed options	900,299,263
Unlisted options	49,224,209
Performance shares	123,611,100
TOTAL	3,740,957,006

OPTIONS				
Code	Number	Expiry date	Expiry price	Note
Listed				
SGQO	39,188,238	12/31/2025	$0.100	
SGQOC	861,111,025	2/24/2027	$0.040	
TOTAL	900,299,263			
Unlisted				
SGQAQ	10,000,000	12/13/2025	$0.057	
SGQAB	39,224,209	11/17/2026	$0.060	
TOTAL	49,224,209	5/23/4351	$0.839	$0.000

PERFORMANCE RIGHTS		
Code	Number	Note
None	123,611,100	
TOTAL	123,611,100	

Source: Company

Appendix II – Analysts' qualifications

Stuart Roberts, lead analyst on this report, has been an equities analyst since 2002.

- Stuart obtained a Master of Applied Finance and Investment from the Securities Institute of Australia in 2002. Previously, from the Securities Institute of Australia, he obtained a Certificate of Financial Markets (1994) and a Graduate Diploma in Finance and Investment (1999).
- Stuart joined Southern Cross Equities as an equities analyst in April 2001. From February 2002 to July 2013, his research speciality at Southern Cross Equities and its acquirer, Bell Potter Securities, was Healthcare and Biotechnology. During this time, he covered a variety of established healthcare companies, such as CSL, Cochlear and Resmed, as well as numerous emerging companies. Stuart was a Healthcare and Biotechnology analyst at Baillieu Holst from October 2013 to January 2015.
- After 15 months over 2015–2016 doing Investor Relations for two ASX-listed cancer drug developers, Stuart founded NDF Research in May 2016 to provide issuer-sponsored equity research on ASX-listed Life Sciences companies.
- In July 2016, with Marc Kennis, Stuart co-founded Pitt Street Research Pty Ltd, which provides issuer-sponsored research on ASX-listed companies across the entire market, including Life Sciences companies.
- Since 2018, Stuart has led Pitt Street Research's Resources Sector franchise, spearheading research on both mining and energy companies.

Nick Sundich is an equities research analyst at Pitt Street Research.

- Nick obtained a Bachelor of Commerce/Bachelor of Arts from the University of Sydney in 2018. He has also completed the CFA Investment Foundations program.
- He joined Pitt Street Research in January 2022. Previously he worked for over three years as a financial journalist at Stockhead.
- While at university, he worked for a handful of corporate advisory firms

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