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Sierra Rutile Limited (ASX: SRX)

June 6, 2023

At Cash – The World's Largest Natural Rutile Producer (Initiation)

Recommendation: Spec Buy

Our View

Sierra Rutile Limited ("SRL", "the Company") is a July 2022 ASX listing, having been demerged from Iluka Resources Limited ("Iluka"). The Company has enjoyed generally solid results following the listing, with the 2022 NPAT of US$75.6 million a significant improvement on the 2021 figure of US$7.5 million.

SRL is in the process of extending the mine life at the 100% owned eponymous rutile project in Sierra Leone, the largest single producer of rutile globally (supplying 20-25% of the market), and with one of the highest reserve grades.

Rutile is the highest-grade titanium dioxide feedstock, and hence the most sought-after material for various downstream applications. Given that several operations are reducing production, and no major new ones are coming on stream in the short to medium term, the market is in structural deficit. As such recent years have seen a steady increase in prices, with prices expected to remain relatively strong for the foreseeable future, albeit being dependent upon the global economy.

This provides the ideal scenario for the development of the higher-grade brownfields Sembehun deposits, 30 km from the current Area 1 operations. Sembehun has the potential to add +13 years mine life to the overall operations, taking production out to at least 2039, producing an average of 170,000 tpa of rutile, plus by-products of ilmenite and zircon from 2026. Sierra Rutile is expected to produce an average of ~140,000 tpa until then. Our modelling indicates LoM direct operating costs and royalties of ~US$750 per tonne of rutile, net of by-product credits. This gives the potential for strong margins, with a forecast long term price above US$1,250/tonne.

The Company is undertaking a Definitive Feasibility Study ("DFS") on Sembehun, with an FID expected early in 2024. Development and ramp up of the ~US$337 million project (2022 PFS numbers) will run in parallel with final production from Area 1 and thus we would expect no significant drop off in production in the transition.

Sembehun benefits from being able to leverage off the significant plant and infrastructure at Area 1 and draw on the experience of the long-term operations, and the associated customers. This has several advantages, including lower capex, and should result in a smooth ramp up of the new operations.

We have modelled the current and proposed operations, and have a risked, base case after-tax valuation of A$0.53/share, diluted for our conceptual funding scenario. This valuation is at a 135% premium to the current price. The Company is currently trading at a 65% discount to our estimated FY2023 NAV of A$245.4 million, and at close to March 31, 2023 cash. The key price catalyst will be positive progress on the development and operation of Sembehun.

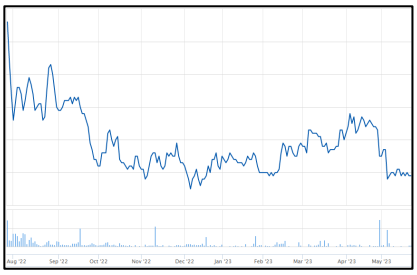
Key Points

- **Long term operation and customers:** Operations have been undertaken at the Sierra Rutile Project for ~60 years which has been a major supplier to the titanium dioxide feedstock markets, including the major pigment producers.
- **Supportive local stakeholders:** Sierra Rutile is an important contributor to the economy of Sierra Leone, as well as a major employee in the local region. As such the Project enjoys government and community support.
- **Stable country:** Sierra Leone has enjoyed stability for the last 20 years following the civil war and is ranked fourth in Africa and 50th globally in the Global Peace Index.
- **Strong market fundamentals**: Given the ongoing structural deficit, the rutile markets are set to remain robust for the foreseeable future.
- **Ongoing news flow:** Given the parallel operations and development, we expect strong positive newsflow going forward.

Summary (AUD)

Structure and Cash	
Market capitalisation (undiluted)	**$95.5 m**
Share price (June 5, 2023)	**$0.225**
Valuation/share	**$0.53**
52 week low	$0.17
52 week high	$0.65
Cash (31/3/23)	US$57.3 m
Debt (31/3/23)	US$0.0 mi
Ordinary shares (undiluted)	424.2 m
Performance rights	8.12 m
Fully diluted	432.4 m

Price chart since listing (AUD)



Directors & Management

Mr Greg Martin	Chairman
Mr Theuns de Bruyn	Managing Director & CEO
Mr Martin Alciaturi	Finance Director
Mr Graham Davidson	Non-Executive Director
Ms Joanne Palmer	Non-Executive Director
Mr Eben Lombard	COO
Mr Maurice Cole	CFO
Mr Derek Folmer	GM, Marketing
Ms Sue Wilson	General Counsel and Co Sec

Significant Shareholders

Samuel Terry Asset Management	16.5%
Perpetual Limited	15.4%
Top 20	~65%

Our conflicts of interest are disclosed on the last page of this report.

SRX – Summary of Forecasts – AUD, Past Performance - USD

Profit and Loss AUD	2022A	2023E	2024E	2025E
Revenue	353.8	334.9	314.3	315.0
Operating and other costs/ad	(277.1)	(241.3)	(241.2)	(241.2)
EBITDA	76.7	93.7	73.1	73.9
D and A	(3.3)	(5.6)	(20.2)	(35.7)
EBIT	76.7	88.0	53.0	38.2
Interest	(2.4)	-	(8.9)	(17.8)
Extraordinary (Impairment Re	32.6	-	-	-
EBT	106.8	88.0	44.1	20.4
Tax	(1.8)	(1.7)	(1.6)	(1.6)
NPAT	105.0	86.3	42.5	18.8
Cashflows AUD	**2022A**	**2023E**	**2024E**	**2025E**
Revenue	344.9	334.9	314.3	315.0
Operating Costs	(283.4)	(239.6)	(239.6)	(239.6)
Interest	0.9	-	(8.9)	(17.8)
Royalties	(1.7)	(1.7)	(1.6)	(1.6)
Income Taxes	(2.2)	(1.8)	(1.7)	(1.6)
Cashflows from operating a	**58.5**	**91.9**	**62.6**	**54.5**
Proceeds From Sale of Proje	-	-	-	-
Capital Expenditure	(27.6)	(42.5)	(247.4)	(247.4)
Cashflows from investing a	**(27.6)**	**(42.5)**	**(247.4)**	**(247.4)**
Equity Issues	-	-	115.7	-
Equity Issue Fees	-	-	(6.9)	-
Debt Raised	-	-	222.2	-
Debt Facilitation Fees	-	-	(13.3)	-
Debt Repayments	(16.2)	-	-	(37.9)
Cashflows from financing a	**(16.2)**	**-**	**317.7**	**(37.9)**
TOTAL CASHFLOWS	**14.8**	**49.3**	**132.9**	**(230.8)**
Per Share Data	**2022A**	**2023E**	**2024E**	**2025E**
EPS	0.25	0.20	0.10	0.02
Dividend C	-	-	-	-
Franking	-	-	-	-
Gross CF Per Share	0.03	0.12	0.31	(0.30)
NTA Per Share	0.44	0.58	0.90	0.53
Shares on Issue	424.2	424.2	424.2	757.6
Market Cap	91.2	91.2	91.2	162.9
EV	38.8	(8.8)	80.6	345.1
Ratios	**2022A**	**2023E**	**2024E**	**2025E**
EBITDA Margin	22%	28%	23%	23%
EV:Sales (x)	0.11	-0.03	0.26	1.10
EV:EBITDA (x)	0.51	-0.09	1.10	4.67
ROE	56%	35%	11%	5%
ROA	34%	30%	7%	3%
Interest Cover Ratio	31	N/A	8	4

Balance Sheet AUD	2022A	2023E	2024E	2025E
Cash	52.4	100.0	232.8	2.1
Debtors	74.9	27.5	25.8	25.9
Inventories	48.7	48.7	48.7	48.7
Other Financial Assets	3.5	3.5	3.5	3.5
Total Current Assets	**179.4**	**179.6**	**310.8**	**80.1**
PPE at End	74.2	111.1	338.3	550.0
Intangibles	1.0	-	-	-
Right of Use	0.2	0.2	0.2	0.2
Deferred Tax	0.0	-	-	-
Other Financial Assets (Rehab)	**55.5**	**-**	**-**	**-**
Total Non Current Assets	**130.9**	**111.3**	**338.5**	**550.2**
TOTAL ASSETS	**310.4**	**290.9**	**649.3**	**630.3**
Trade Creditors	40.2	29.5	29.5	29.5
Borrowings	-	-	-	-
Right of Use Lease	0.2	0.2	0.2	0.2
Current Tax Liabilities	0.5	0.4	0.3	0.3
Provisions	8.0	2.5	2.5	2.5
Total Current Liabilities	**49.0**	**32.7**	**32.6**	**32.6**
Provisions	12.8	12.8	12.8	12.8
Rehabilitation Provisions	61.0	-	-	-
Borrowings	-	-	222.2	184.3
Total Non-Current Liabilities	**73.8**	**12.8**	**235.1**	**197.2**
TOTAL LIABILITIES	**122.8**	**45.5**	**267.6**	**229.8**
NET ASSETS	**187.6**	**245.4**	**381.7**	**400.6**
Production	**2022A**	**2023E**	**2024E**	**2025E**
Ore Treated (kt)	10,458	11,500	11,500	11,500
Rutile Produced (kt)	136	143	133	138
Ilmenite Produced (kt)	59	67	67	67
ZIC/GIC Produced (kt)	34	37	37	37
Zircon in Con (kt)	8	9	9	9
Rutile Price (USD)	1,502	1,450	1,450	1,400
Ilmenite Price (USD)	300	300	300	300
Zircon Price (USD)	1,400	1,400	1,400	1,400
Rutile cost of production (USD)	1,198	1,212	1,305	1,257
Rutile cost ex by-products (USD)	939	979	1,054	1,015
Past Performance	**Units**	**2019A**	**2020A**	**2021A**
Rutile Production	kt	137	120	129
Zircon Production	kt	9	7	4
Total R/Z Production	kt	146	127	133
Ilmenite Production	kt	59	46	42
Cash Costs	US$m	121	127	140
Rutile cost of production	US$/t ZR	823	1,002	1,047
Rutile cost ex by-products	US$ /t R	744	929	985
Revenue	US$m	183	158	184
EBITDA	US$m	43	27	21
Capex	US$m	50	15	41

Note – The above forecasts are from the modeled base case scenario, with debt of US$160 million and equity of US$60 million (raised at A$0.25/share, US$0.18/share at the modeled ER of 0.72).

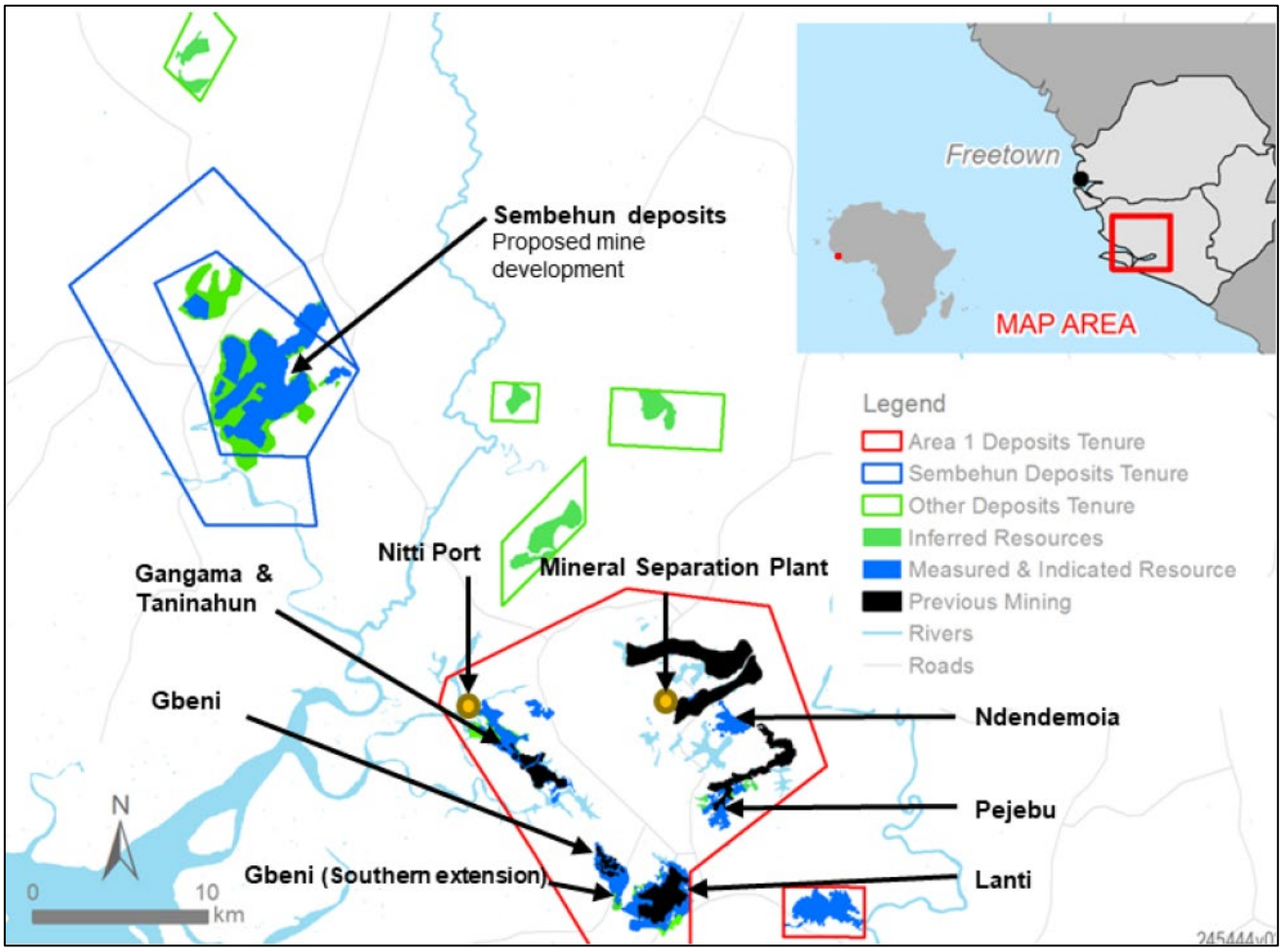
Rehabilitation provisions are only included as actuals for 2022. This is managed independently from the operations, and cash flows from this (and thus the effect on the balance sheet) are likely to change from any forecasts.

Background & Current Operations

Background

SRL is a globally significant producer of rutile, operating on deposits in Western Sierra Leone (Figure 1), that have been in production for over 60 years, albeit with a hiatus from 1995 to 2006 partly triggered by the Sierra Leone Civil War.

Figure 1: Project location (Source SRL)



SRL is a recent entry to the ASX, having listed after being demerged from Iluka, with the first day of trading being on July 27, 2022. Iluka initially acquired the then AIM-listed SRL through a merger in 2016, with SRL becoming a wholly owned subsidiary of Iluka. The consideration for the equity in SRL was A$375 million, with Iluka also assuming SRL's net debt of A$80 million – the merger was finalised on December 7, 2016.

Following operational issues in 2020 and 2021, due in part to COVID, retaining key staff and maintenance issues, Iluka was looking to place the operation on care and maintenance. However, given the importance of SRL to the economy of Sierra Leone, revised fiscal arrangements were arranged with the government, with these being ratified in early 2022.

Iluka initially started looking at options and potential third parties to help fund the planned Sembehun mine extension development in 2020 (the current Area 1 operations currently have Reserves equivalent to around four full years of production), with the demerger decision being made in early 2022. Iluka did not want to fund Sembehun alone and had a strategy to consolidate operations back into Australia, and to also concentrate on the production of rare earths.

The demerger included the following:

- Iluka shareholders were issued one SRL share for each ILU share held (with 424.4 million shares being issued),
- On listing SRL had US$20.7 million in cash and no debt; and,

- A rehabilitation trust fund was established with funds of US$45 million (reflecting estimated rehabilitation obligations as of December 21, 2021), with strictly controlled conditions as to withdrawal and usage of funds.

No other equity securities were issued as part of the demerger; however, the Company has subsequently issued 8.12 million performance rights to key personnel.

Shares, which had no issue price, reached a high of A$0.65 on the opening day of trading, however quickly slumped. Part of this was due to SRL inheriting Iluka's register with significant holdings by institutions. According to the Company around 30% of these were index-based holdings, and the relevant holders had to sell out so as not to break their investment mandates.

Operations and Strategy

The Project contains two main groups of tenements – Area 1 and Area 5 (Sembehun, Figure 1). Mining activities are currently being undertaken at Area 1, with a DFS currently being undertaken for Sembehun. Iluka completed a PFS for Sembehun in mid-2022, with this envisioning a 2 stage 15-year operation commencing in 2025, processing up to 13.6 Mt of mineralisation and producing up to 205 kt of rutile per annum, with a steady state Phase 2 average of 170 kt from 2029, for total production of 2.235 Mt. The Company has since amended this, with the DFS now predicated on going straight into the 13.6 Mtpa operation without staging.

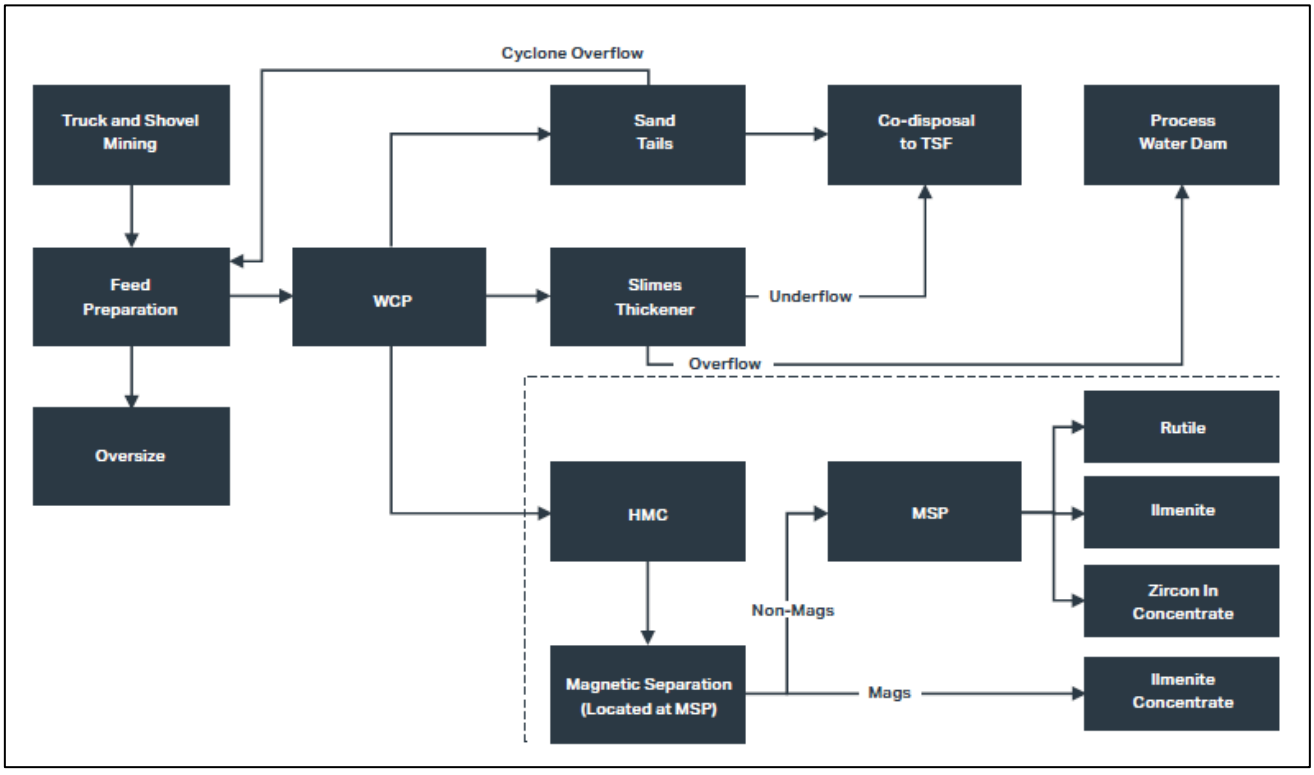
Current production is around 142 ktpa of rutile, with lesser ilmenite, and zircon/garnet in concentrate, with the ilmenite and ZIC/GIC providing between 10% and 15% of revenue. Our modelling indicates an average production of ~140 ktpa annum until 2026 during the remaining Area 1, and transitional Area 1/Sembehun operations.

The product specifications include standard grade rutile ("SGR", suitable for pigment and sponge), industrial grade rutile ("IGR", a high-quality product suited for flux core wire) and high-grade chloride ilmenite, used in direct chlorination pigment production, and also conversion to chloride slag. The SGR/IGR mix is ~86%/14%, in contrast to the global average of 96%/4%.

The Company sells to the major North American and European downstream pigment producers, including Tronox, Kronos, Chemours and Venator.

A schematic of the Sembehun mineral processing route and products is shown in Figure 2. Current operations are similar except that Area 1 does not produce an ilmenite concentrate, with the magnetic separation unit to be installed for Sembehun.

Figure 2: Schematic process block diagram (Source SRL)



The Company has been undertaking a mine life extension/resource growth programme for Area 1 – current Reserves (40.74 Mt @ 1.34% rutile see below) are sufficient to last until 2027 including an integration with the ramp of Sembehun operations, for which a FID is expected early in 2024. Current Sembehun Reserves are 173.7 Mt @ 1.5% rutile, for 2.54 Mt contained rutile, and with a significantly higher ilmenite grade than Area 1.

The rationale is that extending the Area 1 operations will allow further cash to be generated to help fund the Sembehun development, push back Sembehun financing and to take advantage of beneficial fiscal measures (ratified by the full Parliament of Sierra Leone) put in place in late 2021 – these apply to Area 1 only, with the regimes including:

- Area 1, as renegotiated – income tax being the higher of 0.5% of turnover or 25% of net profit, with a 0.5% royalty on mineral sands revenue; and,
- Sembehun (and previously at Area 1) – income tax being the higher of 3.5% of turnover or 25% of net profit, plus a royalty of 4% on mineral revenue.

Given the large carried forward tax credits, taxation currently reverts to the turnover case and will do so for several years.

However, in May 2023 the Government of Sierra Leone announced that it was looking to renegotiate the current fiscal regime (see below), and as such the Company has decided to proceed with the Sembehun development without extending the Area 1 life, given the now uncertainty over future Area 1 taxation/royalty benefits, and projected superior returns from Sembehun under identical fiscal regimes. The resource expansion work however is still underway, with the rationale that increased resources will allow for greater operational flexibility for the remaining Area 1 mine life.

Current operations at Area 1 include four wet concentrator plants (“WCP”, each of 500 – 600 tph), which supply concentrate to a single mineral separation plant (“MSP”). Final products are barged from the Company owned Nitti Port for export to customers (Figure 1).

Operations include truck and excavator mining with dozer assist; however, some wet dredge mining has been historically undertaken. Currently two WCPs (DM2:1 and DM2:2) are located at Gangama, with two separate WCPs being located at Gbeni and Lanti (DM1 and DM2), where ore is fed to mobile mining units (“MMU”) before being fed to the WCPs.

Due to constraints on mining during the wet season (July to September), stockpiles are built up during the dry to allow processing to continue. Currently stockpiles are at Lanti and Gangama. In addition, given the proximity to tidal rivers, bunds are required in some areas, including an extension that is currently under construction at Gangama.

Tails from the WCPs are returned to the mining void, with rehabilitation running concurrent with mining. Tails from the MSP are stored in purpose-built tailings storage facilities (“TSF”).

Overall recoveries from Area 1 are ~89% for rutile, 78% for ilmenite to chloride ilmenite, and 63% for zircon to zircon/garnet concentrate – the zircon grade of the concentrate is in the order of 25%. The majority of the titanium products are sold into the pigment markets, with lesser for the higher value titanium sponge.

Operational and Other Challenges

As mentioned earlier, Iluka suffered operational and cash flow issues in 2020 to 2021, which threatened the viability of operations. As a result of this the mining approach was simplified from one suitable for Australia to one more fit for purpose for the conditions in Sierra Leone. The introduction of the changed taxation treatment was also negotiated.

Fiscal Regime: As released to the market on May 4, 2023, the Government of Sierra Leone announced that it is seeking to renegotiate the terms of the Third Amendment Agreement, which introduced the current Area 1 fiscal regime. However, this was undertaken whilst Parliament is suspended prior to the presidential and parliamentary elections to be held on June 24, 2023. We wouldn’t expect any move on this until after the election, and we would expect negotiations to take place between the Company and Government prior to any final decision. We would envisage the absolute worst-case scenario being the regime at Area 1 reverting to the previous one from possibly 2024, with our modelling indicating that this could result in up to US$46 million extra having to be paid in taxes and royalties. The key impact on any changes to the fiscal regime will be on the amount of external capital required to fund Sembehun.

Plant and Maintenance: Previous issues with plant availability and maintenance (largely relating to the use of mobile mining units which are not to be used at Sembehun), have largely been resolved, with upgraded maintenance procedures in place. However, outages can still be an issue, as evidenced in the previous quarter with a pump failure causing loss of production.

Port Fire: A fire in February 2022 destroyed one of the storage sheds– this is now being rebuilt, and monies being received from insurance.

COVID-19: As expected the pandemic disrupted operations, with a significant issue being key expatriate personnel not being able to return to site due to closed borders.

Unseasonal Weather: Given the wet season, there is a requirement to build stockpiles so as the processing plants can be kept filled – the wet season largely precludes mining in some areas. In 2022 a wetter than expected season disrupted planned stockpiling operations, and thus material had to be sourced from lower grade stockpiles, negatively affecting production.

Transcend Litigation: The Company has been the respondent in litigation against a Chinese group, Transcend, regarding damage to equipment owned by Transcend. The case was won by the litigant, and the Sierra Leone courts have ruled that SRL pay damages, even whilst an appeal is in process. Should SRL win the appeal there may be a limited chance to recover the costs to the company which are in the order of US$4.3 million.

Irregular Cash Flows: This can be a challenge for the Company in managing cash flows, however, also needs to be understood by investors. Product sales involve a relatively limited number of shipments throughout the year, with these also having various credit terms, sometimes up to 90 days. As such the cash at the end of any reporting period may not actually reflect the actual position and therefore the cash, receivables and inventories position should be considered jointly when assessing financial reports.

Resources and Reserves

Project Resources and Reserves are presented in Tables 1 to 3, with Resources being inclusive of Reserves. Although not split out in Table 1 (which is a summary), total Resources at Ndendemoia and Pejebu, which are the focus of current Area 1 drilling, total 41.73 Mt, with 0.42 Mt of contained rutile, for a grade of 1% rutile.

As can be seen in Table 2, Initial Reserves were declared for these deposits in 2022, which also resulted in the Company more than replacing 2021 depletion, which should allow for a seamless transition from Area 1 to Sembehun.

Table 1: SRL JORC 2014 Compliant MRE summary– inclusive of Reserves (Source: SRL)

Area	Deposit	Mineral Resource Classification	Material	Rutile	Heavy Minerals	Ilmenite Grade	Zircon Grade	Rutile Grade	Cut-off
			Mt	Mt	%	%	%	%	% Rutile
Area 1	All	Measured	47.13	0.49	2.73	0.46	0.07	1.03	0.3%, 0.25%, 0.5%
		Indicated	147.01	1.35	5.2	0.5	0.13	0.92	
		Inferred	37.9	0.29	3.11	0.37	0.06	0.76	
		Total	232.04	2.13	4.36	0.47	0.11	0.92	
Other	All	Inferred	38.95	0.47				1.19	0.25%
Sembehun	All	Measured	133.76	1.87	3.36	0.89	0.13	1.38	0.25%
		Indicated	166.82	1.71	3.13	0.75	0.1	1.05	
		Inferred	207.21	1.94	2.87	0.65	0.1	0.93	
		Total	507.79	5.52	3.08	0.75	0.11	1.09	
Grand Total		**Measured**	**180.89**	**2.36**	**3.19**	**0.77**	**0.11**	**1.29**	**0.3%, 0.25%, 0.5%**
		Indicated	**313.83**	**3.07**	**4.1**	**0.63**	**0.11**	**0.99**	
		Inferred	**284.06**	**2.7**	**2.9**	**0.61**	**0.09**	**0.94**	
		Total	**778.78**	**8.12**	**3.45**	**0.66**	**0.11**	**1.04**	

Table 2: Area 1 Ore Reserves (Source: SRL)

Ore Reserve Category	Diluted Ore Tonnes	Rutile Grade	Rutile Content	Ilmenite Grade	Ilmenite Content	Zircon Grade	Zircon Content
	kt	%	kt	%	kt	%	kt
Gangama West							
Proved	9,799	1.39	136	0.79	77	0.12	12
Probable	4,341	1.3	56	0.74	32	0.12	5
2022 Total	**14,140**	**1.36**	**192**	**0.78**	**110**	**0.12**	**17**
Gangama North							
Proved	828	1.46	12	0.83	7	0.13	1
Probable	4,762	1.5	72	0.86	41	0.14	6
2022 Total	**5,590**	**1.5**	**84**	**0.85**	**48**	**0.13**	**8**

Ore Reserve Category	Diluted Ore Tonnes kt	Rutile Grade %	Rutile Content kt	Ilmenite Grade %	Ilmenite Content kt	Zircon Grade %	Zircon Content kt
Gangama Total							
2022 Total	**19,730**	**1.40**	**276**	**0.81**	**158**	**0.12**	**25**
2021 Total	**11,900**	**1.42**	**170**	**0.8**	**95**	**0.12**	**30**
Taninahun							
Proved	442	1.3	6	1.22	5	0.12	1
Probable	706	0.85	6	1	7	0.08	1
2022 Total	**1,148**	**1.02**	**12**	**1.09**	**13**	**0.09**	**1**
2021 Total	**2,500**	**1.3**	**32**	**1.2**	**30**	**0.1**	**1**
Gbeni							
Proved	5,731	1.2	69	0.4	23	0.07	4
Probable	1,884	1.18	22	0.39	7	0.07	1
2022 Total	**7,615**	**1.2**	**91**	**0.4**	**30**	**0.07**	**5**
2021 Total	**19,000**	**1.33**	**252**	**0.4**	**80**	**0.1**	**19**
Lanti							
Proved	-	-	-	-	-	-	-
Probable	3,097	1.64	51	0.55	17	0.1	3
2022 Total	**3,097**	**1.64**	**51**	**0.55**	**17**	**0.1**	**3**
2021 Total	**4,900**	**1.8**	**90**	**0.3**	**15**	**0.1**	**3**
Pejebu							
Proved	-	-	-	-	-	-	-
Probable	**5,629**	**1.29**	**73**	**1.14**	**64**	**0.15**	**8**
2022 Total	**5,629**	**1.29**	**73**	**1.14**	**64**	**0.15**	**8**
Ndendemoia							
Proved	-	-	-	-	-	-	-
Probable	3,520	1.29	45	0.64	23	0.25	9
2022 Total	**3,520**	**1.29**	**45**	**0.64**	**23**	**0.25**	**9**
Total							
Proved	**16,801**	**1.33**	**223**	**0.67**	**113**	**0.11**	**18**
Probable	**23,938**	**1.36**	**325**	**0.8**	**191**	**0.14**	**34**
2022 Total	**40,739**	**1.34**	**548**	**0.75**	**304**	**0.13**	**52**
2021 Total	**38,300**	**1.4**	**540**	**0.6**	**220**	**0.1**	**50**

Table 3: Sembehun Ore Reserves (Source: SRL)

Ore Reserve Category	Diluted Ore Tonnes kt	Rutile Grade %	Rutile Content kt	Ilmenite Grade %	Ilmenite Content kt	Zircon Grade %	Zircon Content kt
Benduma							
Proved	12,858	1.31	168	0.89	114	0.08	10
Probable	39,686	1.49	591	1	397	0.08	32
Total	**52,544**	**1.44**	**759**	**0.97**	**511**	**0.08**	**42**
Dodo							
Proved	47,674	1.44	687	0.86	410	0.11	52
Probable	6,368	1.32	84	0.81	52	0.1	6
Total	**54,042**	**1.43**	**771**	**0.85**	**462**	**0.11**	**58**
Kamatipa							
Proved	33,816	1.66	561	1.07	362	0.15	51
Probable	8,626	1.32	114	0.88	76	0.13	11
Total	**42,442**	**1.59**	**675**	**1.03**	**438**	**0.15**	**62**
Kibi							
Proved	14,885	1.42	211	0.61	91	0.08	12

Ore Reserve Category	Diluted Ore Tonnes	Rutile Grade	Rutile Content	Ilmenite Grade	Ilmenite Content	Zircon Grade	Zircon Content
	kt	%	kt	%	kt	%	kt
Probable	8,147	1.26	103	0.69	56	0.08	7
Total	**23,032**	**1.36**	**314**	**0.64**	**147**	**0.08**	**19**
Komende							
Proved	1,307	1.33	17	1.69	22	0.17	2
Probable	294	1.21	4	1.8	5	0.15	-
Total	**1,601**	**1.31**	**21**	**1.69**	**27**	**0.12**	**2**
Total							
Proved	**110,540**	**1.49**	**1 644**	**0.9**	**999**	**0.12**	**127**
Probable	**63,121**	**1.42**	**896**	**0.93**	**586**	**0.09**	**56**
Grand Total	**173,661**	**1.46**	**2 540**	**0.91**	**1,585**	**0.11**	**183**

Environment, Social and Governance Considerations

A vital consideration in any project (or corporation) is to meet and exceed acceptable ESG requirements, which the Company is cognizant of. SRL is a major employer of locals (~97% of the 2,200 total employees) and a major contributor to the economy of Sierra Leone (up to ~4.6% of GDP). The Company actively supports local communities, including providing education facilities and scholarships, and funding emergency and infrastructure projects amongst others.

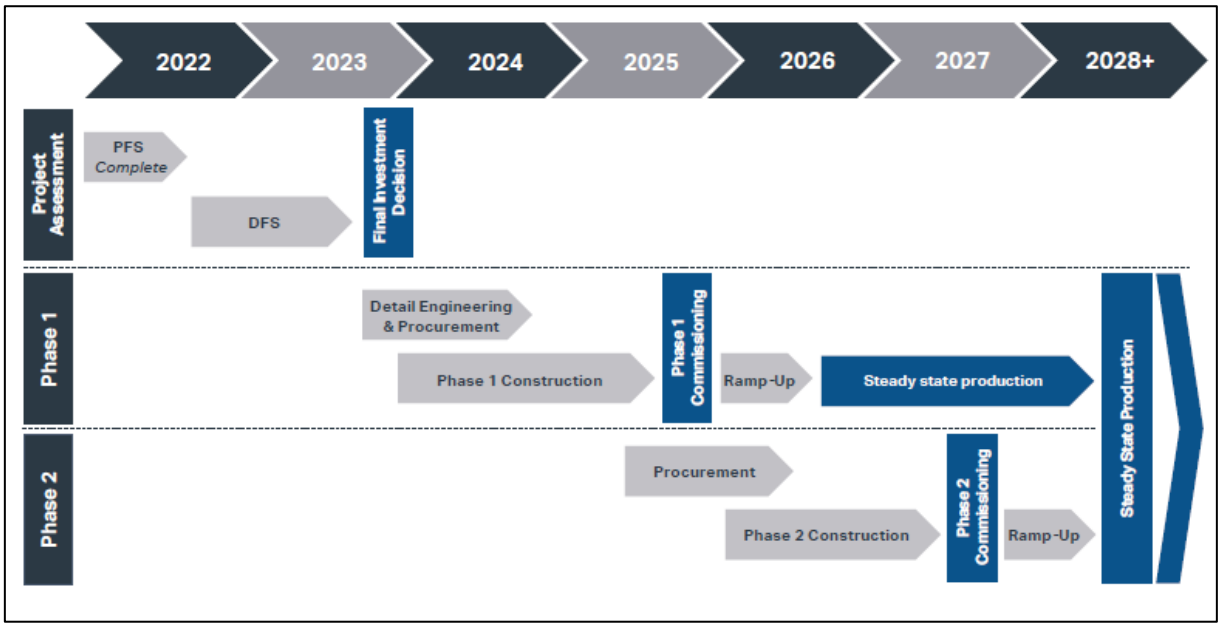
Social considerations are also important in the new Sembehun development, with the need for resettlement of some villages – as such applicable Resettlement Action Plans ("RAP") are being enacted, which will need to meet the requirements of the Equator Principles ("EP") for lenders to consider funding Sembehun.

The Transition to Sembehun

Given that Area 1 is nearing the end of its life, the Company is now advancing plans to transition operations to Sembehun, a brownfields project located some 30 km from the Area 1 MSP (Figure 1). The wish not to have to solely fund Sembehun was one of the reasons behind Iluka's ultimate demerger of SRL.

The indicative PFS timeline for the Sembehun development is shown in Figure 3 – note that this will now change with the decision to move straight into the full development of Sembehun as soon as practicable (without staging), and without the previously planned Area 1 mine life extension. As mentioned previously this has partly come about with the uncertainty over the fiscal regime brought about by the recent announcement by the Government.

Figure 3: Indicative Sembehun timeline (Source: SRL)



Some aspects of the transition strategy and DFS for Sembehun include:

- Operations at Sembehun will leverage off the existing infrastructure at Area 1, including the MSP, the port and some miscellaneous infrastructure,
- There will be a phased transition from operations at Area 1 to Sembehun, allowing for the operations to continue to supply the strong customer base,
- Benefits in now moving to a single stage, instead of two stage development at Sembehun include:
    - Overcoming the uncertainty in the Area 1 fiscal regime, and hence uncertainty in potential cashflows,
    - Certainty in the structure and amount of the project financing – our modelling indicates that ~US$50 million extra could be payable should the Area 1 fiscal regime revert to the original one from 2024,
    - Improving the efficiencies in the overall project execution,
    - Minimising the risk of uneconomic production from the tail end of the lower grade and higher cost Area 1 operations,
    - Increasing the project valuation (as supported by our modelling).
- Current activities are targeted at an FID early in CY2024, with activities including the technical and financial studies for the DFS, studies for the Environmental, Social and Health Impact Assessment ("ESHIA") and progressing the RAPs with the need to relocate a number of villages.

Our estimate is that SRL will have reserves of between US$60 million and US$70 million by the end of CY2023, and with the potential for Area 1 to contribute up to a further US$80 million in cash during the Sembehun construction period, which will be able to be put towards the Sembehun development. The Company's wish is to dilute shareholders as little as possible.

Also, the accelerated cashflows from the earlier development of Sembehun are expected to increase the debt carrying capacity of project by more than the expected increase in peak funding.

SRL is now looking at financing options and has had early talks with several potential project financiers, with more advanced talks now proceeding. Other sources of finance may include forward sales amongst others. The Company has appointed global mining finance advisers Cutfield Freeman and Co ("Cutfield") to assist in arranging the debt funding for Sembehun.

Pre-Feasibility Study

The PFS for Sembehun was completed in mid-2022 by Iluka, with results initially published in the de-merger document. Key parameters and outcomes are presented in Table 4 below. Note that figures below will change with the ongoing DFS, as well as the change in strategy to a single-phase development.

Table 4: Sembehun PFS Outcomes (Source: SRL)

Overview	
Location	Moyamba district, Sierra Leone
Ownership	100%
Products	SGR, IGR, High-grade ilmenite and ilmenite concentrate, ZIC
Status	PFS completed. The PFS has been completed to an Association for the Advancement of Cost Engineering (**AACE**) Class 4 level, with target accuracy within the range of +20% to +50% on the high side of the range and -15% to -30% on the low side of the range, before the contingency is considered.
Key PFS Highlights	
Ore Reserves	174 Mt @ 1.46% rutile for 2.54 Mt contained rutile
Mineral Resources	508 Mt @ 1.10% rutile for 5.53 Mt contained rutile
Mine life	>13 years (based on current Sembehun Ore Reserves)
Mining method	Dry mining (truck and excavator) via contract mining services
Steady state average annual production	176 ktpa rutile (exclusive of TIC), 98 ktpa ilmenite (including ilmenite in concentrate) and 13 ktpa ZIC (contained zircon)

Processing	Run of mine ore will be processed in a new wet processing plant to produce HMC. The HMC will be transported to the existing MSP complex where it will be processed into the various products. A magnetic separation circuit will be constructed at the MSP to improve separation of ilmenite from rutile and debottleneck the existing MSP.
Project[1] Net Present Value (8%, ungeared, post tax, real)	US$318m
Project[1] IRR (post tax, real)	24%
Pre-production capital cost - Phase 1 (real)	US$284m
Pre-production capital cost - Phase 2 (real)	US$52m
Pre-production capital cost - Total (real)	US$337m
Construction time	Phase 1: 18-24 months | Phase 2: 18-24 months
Steady state average unit cash costs of production (real)	US$726/t of rutile and zircon produced (excluding royalties and rehabilitation)
Steady state average unit cash costs of production, net of co-product credits2 (real)	US$535/t of rutile produced (excluding royalties and rehabilitation)

Estimated operating costs are presented in Table 5, and capital expenditure in Table 6. Note that in Table 5 we have calculated the costs per RoM tonne based on published estimated production data and provided per tonne of product costs. With the change is strategy we would envisage that all Sembehun costs will revert to what is ascribed to Phase 2 in Table 5. The change in capital expenditure will involve the bringing forward of the Phase 2 costs to Phase 1. There could also be the potential to lower the capex, given that the PFS was undertaken under a large company approach.

Table 5: Sembehun PFS estimated operating costs (Source: SRL, TCL analysis)

Area	USD Operating Costs Per Tonne Rutile and Per Tonne RoM					
	Phase 1 - Rutile[1]	Phase 2 - Rutile[1]	Total - Rutile[2]	Phase 1 - RoM[2]	Phase 2 - RoM[2]	Total - RoM[2]
Mining	$191	$250	$245	$2.56	$3.20	$3.15
WCP	$218	$176	$180	$2.93	$2.26	$2.31
Logistics to MSP	$35	$35	$35	$0.47	$0.45	$0.45
MSP	$108	$100	$101	$1.45	$1.28	$1.30
Logistics to Port	$10	$10	$10	$0.13	$0.13	$0.13
Port	$22	$12	$13	$0.30	$0.15	$0.17
Overheads	$456	$228	$248	$6.12	$2.92	$3.20
Selling Costs	$6	$6	$6	$0.08	$0.08	$0.08
Total	$1,046	$817	$837	$14.04	$10.47	$10.78

1. SRL data.
2. TCL analysis.

Table 6: Sembehun PFS estimated capital costs (Source: SRL)

Sembehun Capital Cost Breakdown (real, US$m)	Phase 1	Phase 2	Total
Direct			
Mine development	4	-	4
Wet concentrator plant	83	21	104
Mineral separation plant	-	4	4
Non-process infrastructure	46	1	46
Indirect			
Indirects1	90	16	106
Contingency2	63	11	73
Project total costs	**284**	**52**	**337**

1. Indirect costs include project management, technical services, EPCM, sub consultants, temporary construction facilities, site wide capitalised costs, commissioning, start-up inventories, spares, insurance, land acquisition and freight costs.
2. Contingency costs represent 28% of the base capital expenditure estimate.

Key items of the capital equipment and civils presented in the PFS include:

- **WCPs** – two WCPs and associated civils/infrastructure will ultimately be required,
- **TSF** – a new tailings storage facility is required to store tailings prior to mine voids being available to take tailings from the WCPs,
- **MSP** – The current MSP will be utilized, however with the addition of a magnetic circuit for improved ilmenite processing,
- **Port** – the existing port facilities will be utilized, with no new storage facility required,
- **Roads** – new roads and bridges will be constructed where necessary, in addition to utilizing existing roads and bridges to the Sembehun site,
- **Power** – The preferred option is to use an independent power provider, with generation including some solar/battery hybrid capacity. A maximum power requirement of 13.5 MW has been estimated,
- **Water** – All runoff water from the WCPs will be captured and drained ultimately to a new process water dam with an estimated capacity of 2 Mm^3 – in addition to being recirculated back to the WCP, some will be further treated to be used as potable water for the camp,
- **Camp –** A new 113-person modular camp will be constructed at Sembehun to accommodate senior and management staff directly involved in the Sembehun operations – this will include facilities considered as customary for a mine camp; and,
- **Mining fleet –** given that the plan is to use contract mining, the key mining fleet will be owned by the contractor.

The bulk of the Sembehun capital expenditure will be in civil/earthworks, and not mechanical installations. The main mechanical items include the two WCPs, one in Phase 1 and the second in Phase 2; and a new magnetic separation circuit in Phase 2 at the current MSP at Area 1.

Area 1 Extension

The Company is currently looking at two main options to further grow resources to increase operational flexibility for the remaining life at Area 1:

- Drilling at Ndendemoia (previously completed) and Pejebu with a view to add further Resources and Reserves above those as presented in the 2022 Resource and Reserve Upgrade; and,
- Investigating the possibility of draining the Mogbweno pond (the site of historic dredge mining adjacent to the MSP) and retreating tailings as a feed supplement to the MSP.

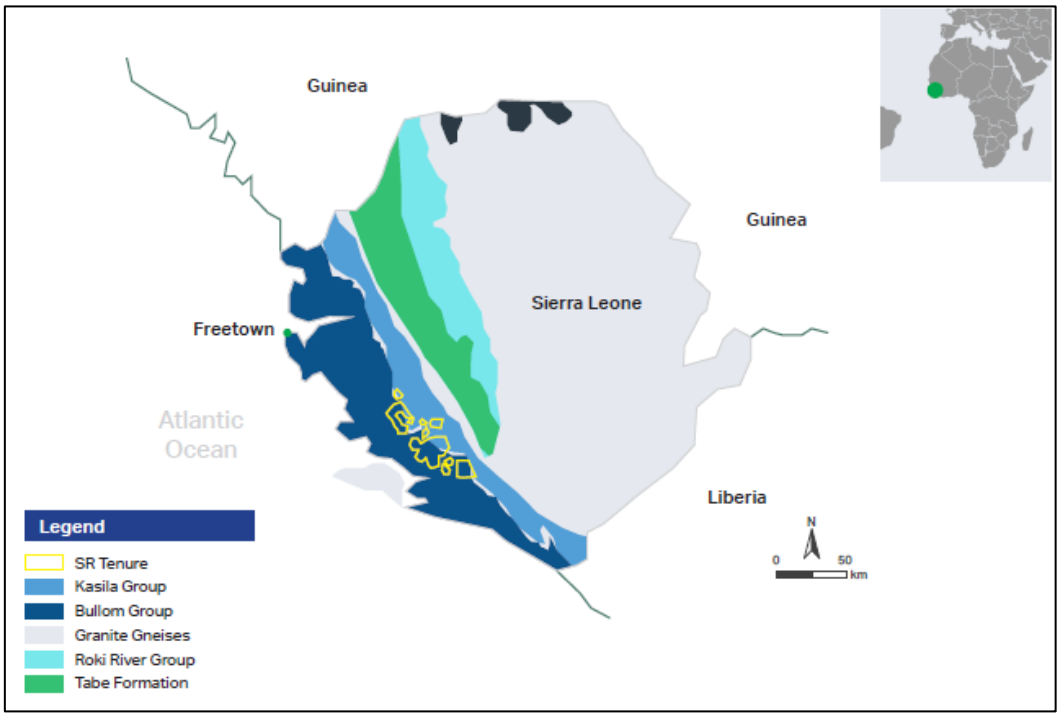
Results of the drilling are expected to be included in an updated Resources and Reserve statement to be delivered in Q3, 2023, and, if investigations are positive, the Company expects that construction of a relocatable modular spiral plant to treat the Mogbweno tailings could commence in early 2024, with commissioning a few months later.

Geology and Mineralisation

The Geology of Sierra Leone is dominated by rocks of the West African Craton, flanked on the west by ~550 Ma rocks of the Pan-African Orogenic Belt, including the Kasila Group (Figure 4).

The heavy mineral sands have been sourced by erosion of the Kasila Group gneisses on a topographic high, and deposited in structurally controlled channels, erosional valleys or alluvial fans on a topographically lower coastal plain. The minerals are generally angular, indicating that they are proximal to their source. Also, heavy mineral grades generally decrease with increasing distance from the source, providing a grade profile along the mineralised channels. The mineralisation is hosted in a succession of unconsolidated alluvial material, including sand and clay, with sandy clay being the dominant lithology, and overlain by laterite and topsoil.

Figure 4: Sierra Leone geology (Source: SRL)



Ongoing Activities

In additions to continuing operations at Area 1, key activities include:

- Drilling and Resource/Reserve estimation at Ndendemoia and Pejebu – updated Resources/Reserves expected in Q3, 2023,
- Mogbweno pond tails studies – results expected in H2, 2023,
- Sembehun DFS and ESHIA studies which are expected to be finished, and an FID made in early 2024,
- Further progressing the RAPs for Sembehun; and,
- Talks with potential financiers are currently in progress with a financial advisor being appointed.

Area 1 operations are largely proceeding according to schedule, including building up stockpiles to feed the processing plants during the wet season, which is expected to start within the next month. Also, a tidal bund has been completed at Gangama, which will allow further mining of this higher-grade material.

The Company expects little positive cash flow during Q2, 2023, due mainly to a lack of sales/shipments in Q1, and significant capital expenditure as raised in the March 2023 Quarterly Report. However, positive cash flow is expected in Q3. Earnings have also been impacted by lower rutile prices (and proportionally less of the industrial grade material being sold), driven by decreased demand due to fears of recession in the main European and North American markets.

Valuation

We have undertaken a valuation of SRL, with this presented in Table 7. This valuation is very sensitive to changes in revenue and operating costs factors – for detail please refer to Figure 9 and Table 9. The per share valuation is calculated on the share structure diluted for our conceptual funding scenario.

The valuation includes current operations at Area 1, planned operations at Sembehun, Australian head office expenses and current cash, converted to Australian dollars. Key parameters are shown at the bottom of the valuation table.

This is a base case valuation, and we would expect uplift with ongoing advancement of, and successful development of Sembehun, along with continuing positive results from the current operations.

We have adjusted the previously published mine scheduling to allow for the change in the Sembehun strategy – the adjusted schedule is yet to be published by the Company, but our view is that it should not be materially different from that used in our modelling.

Table 7: SRL valuation AUD (Source: TCL Analysis)

SRX risked, funded, after tax per share valuation						
Asset	**Total AUD**	**Ownership**	**Per Share**	**Risk Multiplier**	**Risked AUD**	**Risked/Share**
Area 1 NPV	A$223 m	100%	A$0.294	100%	A$223 m	A$0.294
Sembehun NPV	A$297 m	100%	A$0.393	40%	A$119 m	A$0.157
Corporate Overheads	-A$17 m	100%	-A$0.022	100%	-A$17 m	-A$0.022
Cash -31/3/23	A$79.6 m	100%	A$0.105	100%	A$80 m	A$0.105
Total	**A$583 m**		**A$0.770**		**A$405 m**	**A$0.534**
Project modelling parameters	Shares – FD[1]	758 m	Post Tax			
	Discount Rate	10%	AUD/USD	0.72		
	Rutile Price Av LoM	US$1,352/t				

1. Shares are diluted for our conceptual funding scenario

We have not included the Rehabilitation Trust Fund, as it is in effect a net zero sum asset, with strict controls on its usage. As such it has little value on the overall NPV, except for timing discounting of outflows.

We have included a conceptual funding scenario for Sembehun, which comprises the following, in addition to using forecast cash at hand – requirements are based on the capex figures as presented in the 2022 PFS:

- Total additional funding requirements of US$220 million,
- This includes US$160 million in debt, with a term of five years and interest rate of 8%; and,
- Equity of US$60 million (A$83.3 million), raised at a price of A$0.25/share (333.3 million shares issued)

This is our conceptual scenario only, and the mix and amount of the actual project financing will differ from what we have used. This includes the possibility for input, particularly with regards to infrastructure, from international development organizations. The amount of debt/equity funding required is also dependent on the Company's cash position at the time of the FID for Sembehun. Table 8 presents the sensitivity of the SRL valuation to changes in debt amount and the equity raise price.

Table 8: SRL per share sensitivity to different debt amounts and equity prices (Source: TCL analysis)

Capital Raising Sensitivity			
Debt Raised \ Equity Price ->	A$0.200	A$0.250	A$0.300
US$140,000,000	A$0.413	A$0.466	A$0.509
US$160,000,000	A$0.481	A$0.534	A$0.576
US$180,000,000	A$0.576	A$0.626	A$0.664
US$200,000,000	A$0.719	A$0.756	A$0.783
US$220,000,000	A$0.954	A$0.954	A$0.954

Our Australian head office costs assume A$2 million per year over the life of the modelled project and discounted at 8%.

We note that should the fiscal regime at Area 1 revert to that as previous from CY2024 (an extreme worst-case scenario), the Area 1 valuation will decrease by ~A$0.07/share using the current modelled diluted equity structure. Our modelling also indicates that this will also increase the tax and royalty take by ~US$46 million and increase the amount of external funding required for Sembehun by the same amount.

Our valuation numbers have been converted to Australian dollars using an AUD/USD exchange rate of 0.72, which we consider as a reasonable long term rate.

Area 1/Sembehun DCF Valuation

In undertaking this we have generally used costs and production profiles as published in Company presentations, including the Demerger Booklet and the more recent Resources and Reserves update release, however with the production profiles being adjusted to suit the single-phase development strategy at Sembehun.

A graphic of material moved/treated is shown in Figure 5, and for valuable heavy mineral production in Figures 6 and 7. Estimated revenue, EBITDA and capex are presented in Figure 8.

Figure 5: SRL material moved and treated (Source: SRL, TCL analysis)

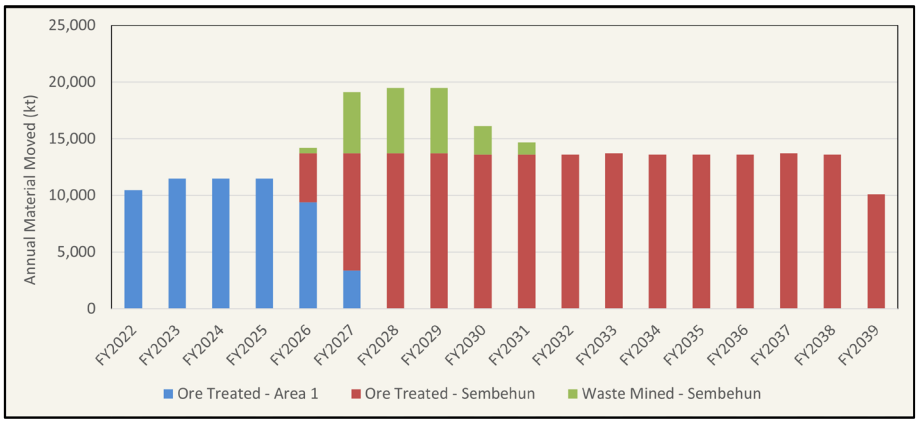


Figure 6: SRL VHM production profile (Source: SRL, TCL analysis)

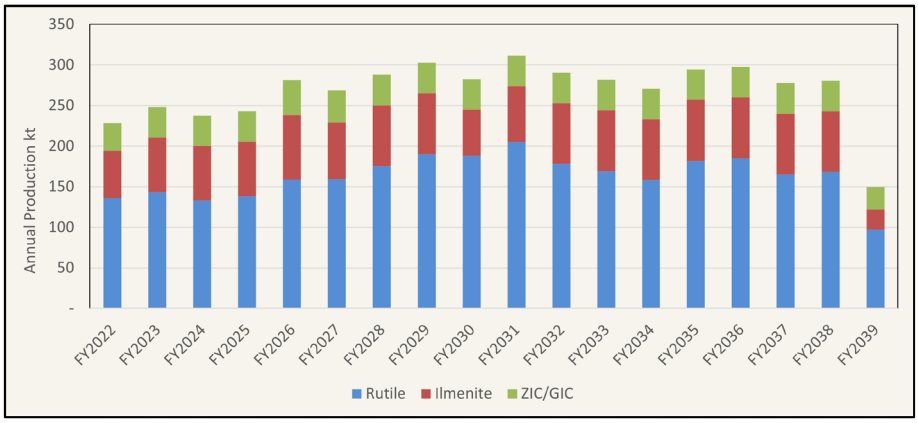


Figure 7: SRL rutile production profile (Source: SRL, TCL analysis)

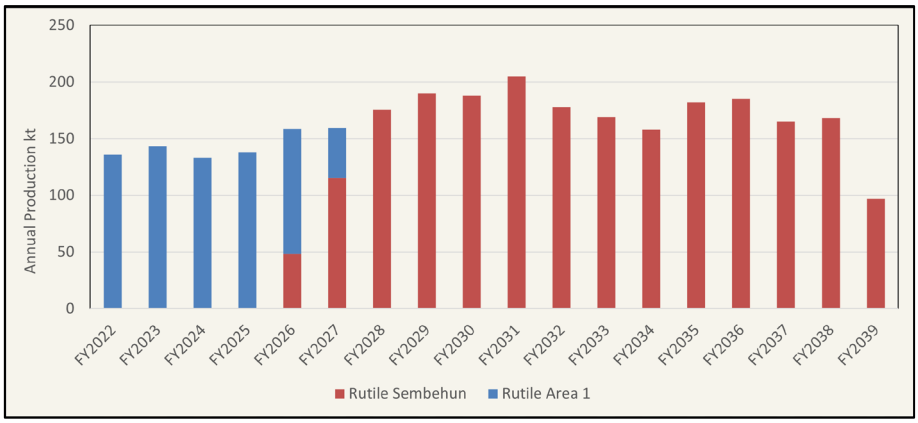
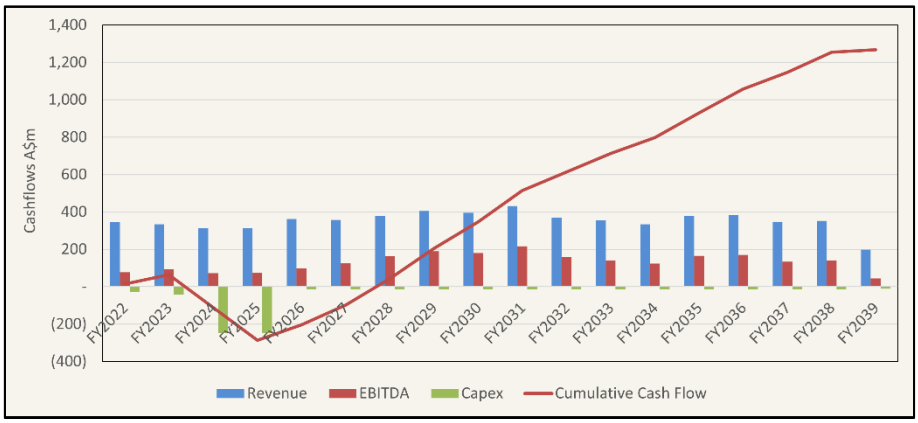


Figure 8: SRL pre-tax/pre-funding cashflows (Source: TCL analysis)



We have based operating costs on actual figures for Area 1, and those derived from the per unit of rutile costs for Sembehun (refer Table 5) – direct operating costs used include:

- US$15/RoM tonne for Area 1,
- US$10.50/RoM tonne for Sembehun.

The difference between the Sembehun costs and other costs can be attributed to economies of scale as well as considerably shorter trucking distances for the RoM material to the WCPs. Although the trucking of concentrates to the MSP is longer, volumetrically this is muck less than that of the mineralisation.

Flat price curves have been used for ilmenite (US$300/tonne) and zircon (US$1,400/tonne for contained zircon in concentrate). We have used a price curve for rutile, starting at US$1450/tonne in 2023, trending to a long-term price of US$1,300/tonne from 2032.

Sensitivity Analysis

The valuation is very sensitive to revenue factors and operating costs, as shown in Figure 9 and Table 9. Revenue factors will include grade and recoveries, as well as the overall revenues received. Changes in revenue also feed into the royalties that will be paid at Sembehun.

Note that the figures are unrisked overall project valuations.

Figure 9: SRL sensitivity to +-20% changes (Source: TCL analysis)

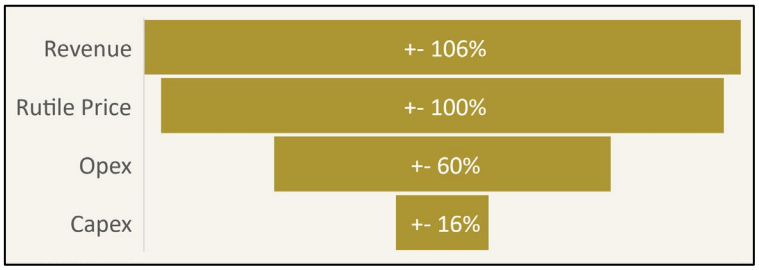


Table 9: SRL sensitivity to +-20% changes (Source: TCL analysis)

Sierra Rutile Project valuation unrisked - 100% basis - post-tax				
Change	Revenue	Rutile	Opex	Capex
-20%	-A$ 29.19	A$ 1.96	A$ 830.08	A$ 622.56
-10%	A$ 253.86	A$ 266.83	A$ 675.97	A$ 567.91
0%	A$ 520.22	A$ 520.22	A$ 520.22	A$ 520.22
10%	A$ 774.78	A$ 762.25	A$ 363.42	A$ 472.52
20%	A$ 1,017.31	A$ 992.63	A$ 190.44	A$ 424.71

Board and Management

Mr Greg Martin – Chairman

Mr Martin contributes 40 years' experience in the mining, utilities, financial services, energy and energy related infrastructure sectors in Australia, New Zealand and internationally. Mr Martin currently serves as an independent, non-executive Director and Chair of Global Energy Ventures, non-executive Chair of Hunter Water Corporation, non-executive Deputy Chair of Western Power Corporation and non-executive Chair of Mawson Infrastructure Group. Mr Martin was a non-executive director and Chairman of Iluka from 2013 to 2022. Mr Martin holds a Bachelor of Economics from the University of Sydney and a Bachelor of Laws from Western Sydney University. He is also a Fellow of the Australian Institute of Management and a Member of the Australian Institute of Company Directors. As well as chairing the Board, Mr Martin chairs the Company's People & Nomination Committee.

Mr Theuns de Bruyn – Managing Director & CEO

Mr de Bruyn joined Sierra Rutile in August 2019, as the Chief Operating Officer and was appointed Chief Executive Officer in January 2021. He has over 25 years' experience in the mineral sector, starting his career with BHP where he worked across various commodities and departments including Operations and Business Development. Mr de Bruyn has held a range of senior positions including Executive Vice President of Processing with Lonmin Platinum and as Chief Operating Officer for Metorex. Mr de Bruyn holds a Bachelor of Engineering in Chemical Engineering from the University of Pretoria and a Master of Business Administration from Heriot Watt University.

Mr Martin Alciaturi – Non-Executive Director

Mr Alciaturi has more than 40 years' experience across investment banking, corporate finance, and as a mining executive. Mr Alciaturi is currently a Non-Executive Director at 29Metals. His previous roles include Partner in Charge of Corporate Finance at Ernst & Young Perth, Head of Corporate Finance (Perth) at Macquarie Capital and Chief Financial Officer at Aquila Resources. Mr Alciaturi holds a Bachelor of Science (with honours) in Mechanical Engineering from University College London, and a Graduate Diploma in Applied Finance and Investment from the Financial Services Institute of Australia. He is a Fellow of Chartered Accountants Australia and New Zealand, and a member of the Australian Institute of Company Directors.

Mr Graham Davidson – Non-Executive Director

Mr Davidson has over 30 years' professional experience of executive and board positions with a track record of leading large multicultural teams on natural resource projects, across three continents. Mr Davidson is currently Managing Director at Millstream Consultants. He has held a range of senior positions including Managing Director of Rio Tinto's Simandou project, Chief Executive Officer of Rio Tinto's Port Waratah Coal Services and General Manager of Operations at Rio Tinto's Uranium project in Namibia. Mr Davidson has also served on several non-profit and governing boards. Mr Davidson holds a Bachelor of Engineering in Mechanical Engineering from Newcastle University and a Diploma of Maintenance Management from Central Queensland University. He is also a member of the UK Institute of Directors, member of the Australian Institute of Company Directors and the Institute of Engineers Australia and various associations within. Mr Davidson chairs the Company's Sustainability & Social Accountability Committee.

Ms Joanne Palmer – Non-Executive Director

Ms Palmer has over 26 years' of industry experience providing audit and assurance services on company listings, mergers, acquisitions and takeovers and significant experience in auditing internal mining companies. Ms Palmer is currently a Non-Executive Director of Paladin Energy, a Non-Executive Director of NextOre, a company operating in the mining technology field, and a Councillor and Treasurer of the Association of Australian Mining and Exploration Companies (AMEC). Prior to her existing roles, Ms Palmer was an equity Partner at EY in the Assurance Practice and led EY's Financial Accounting Advisory Services team in Perth for three years prior to her departure. Ms Palmer holders a Bachelor of Science (with honours) in Mathematics and Statistics from the University of Birmingham. She is a fellow of both the Chartered Accountants Australia and New Zealand and Institute of Chartered Accountants in England & Wales. She also holds a graduate diploma from the Australian Institute of Company Directors and is a Registered Company Auditor with the Australian Securities and Investments Commission. Ms Palmer chairs the Company's Audit & Risk Committee.

Mr Eben Lombard – Chief Operating Officer

Mr Lombard joined Sierra Rutile in August 2020 and served as the General Manager Services. He was appointed as Chief Operating Officer in December 2021. He has 22 years' experience in metals and minerals processing in various commodities including steel, chrome, platinum, copper, cobalt and lead and worked for Arcelor Mittal Steel in his early career. Mr Lombard held senior positions including Head of Processing/Production in Arcelor Mittal Steel, Samancor Chrome, Lonmin Platinum,

Metorex and ERG Africa as well as General Manager in the ZIMCO and the Welding Alloys Groups. Mr Lombard holds a Bachelor of Science in Metallurgical Engineering from the University of Pretoria, a Master of Business Administration from the University of the Free State and a Certificate in the Fundamentals of Financial Management from Stellenbosch University.

Mr Maurice Cole – Chief Financial Officer

Mr Cole joined Sierra Rutile in October 2017 as Finance Manager and was promoted in September 2019 to the position of Chief Finance Officer. He has over 30 years' experience in the Accounting and Auditing. He started his career with KPMG and has worked in various sector including Energy, Banking, Petroleum and mining. Mr Cole previously held a number of senior positions including Financial Controller, Chief Finance Officer and Managing Director of the biggest Petroleum Company in Sierra Leone (NP(SL)LTD) before joining Sierra Rutile. Mr Cole holds qualifications from the Association of Chartered Certified Accountants of England and Wales and the Association of Accounting Technicians of England. He is also a Fellow of the Association of Chartered Accountants of England and Wales and a Fellow of the Association of Chartered Accountants of Sierra Leone.

Mr Derek Folmer – General Manager Marketing

Mr Folmer joined Sierra Rutile in April 2013 and transitioned to be Vice President TiO2 Sales for the Americas and Europe for Iluka in 2017. He will be reappointed as General Manager Marketing by Sierra Rutile post Demerger. Mr Folmer has over 25 years of commercial experience in the mineral sands sector, including 9 years of active involvement with Sierra Rutile, where he was Chief Marketing Officer and also a director of the company's in-country board. He has also held previous senior positions including General Manager Sales and Marketing for Rutile and Zircon at Rio Tinto. Mr Folmer holds a Bachelor of Engineering in Mining Engineering and a Master of Business Administration in Finance, both from McGill University, and is a member of the Quebec Order of Engineers.

Ms Sue Wilson – General Counsel and Company Secretary

Ms Wilson is an experienced General Counsel and senior executive. She is currently a consultant at Iluka after retiring as General Counsel and Company Secretary of Iluka in September 2021. Sue was previously the Head of Company Secretariat at South32 following the demerger from BHP Billiton. She was also General Counsel and Company Secretary and a member of the executive team at Bankwest and HBOS Australia. Prior to joining Bankwest, Ms Wilson was a partner of law firm Parker & Parker (now part of Herbert Smith Freehills). She is currently the Chair of aged care provider, Amana Living. She was previously the Pro Chancellor and a member of the Council at Curtin University, Chairman of the WA State Council of the Governance Institute of Australia and is a former non-executive director of Western Power. Ms Wilson holds a Bachelor of Jurisprudence and a Bachelor of Laws from the University of Western Australia. In 2021, Sue was awarded an Honorary Doctorate from Curtin University for exceptional leadership and wise counsel to Curtin University and the community. She is also a Fellow of the Australian Institute of Company Directors and the Governance Institute of Australia.

Key Threats/Risks

- **Production and Costs:** Given the sensitivity of the operation to changes in operating costs, keeping costs under control, including by managing production and reducing downtime is a key consideration. We have seen several instances of the Project throwing curveballs, with the resultant negative impact on financial performance, and with the operation being close to shutting down at times. Costs and operations are the factors that management has control over, unlike prices.
- **Equity Markets:** The key effect will be on any equity raising that may have to be undertaken – depressed markets will result in more dilutive raisings.
- **Product Prices:** Given the sensitivity of the Project to prices, falling prices are a threat to the financial performance of Sierra Rutile, as well as the potential for Sembehun to be financed.
- **Global Economy:** The mineral sands market can be a considered as a proxy for global GDP, and thus global (and regional) economic conditions and sentiment will flow through to demand for key products, largely the pigment market, with feedstock prices being leveraged to economic conditions.
- **Financing Mix:** The mix of financing will be crucial, as, at current share prices, any significant equity raising will be highly dilutive to shareholders. The ultimate structure will be highly dependent upon the performance of operations, as well as the outcome of any changes to the Area 1 fiscal regime.
- **Sovereign Risk:** Although the Company enjoys generally good relations with a supportive Government, the recent announcement regarding the fiscal regime shows that there is always some element of sovereign risk when operating in Africa.

Background – The Mineral Sands Industry

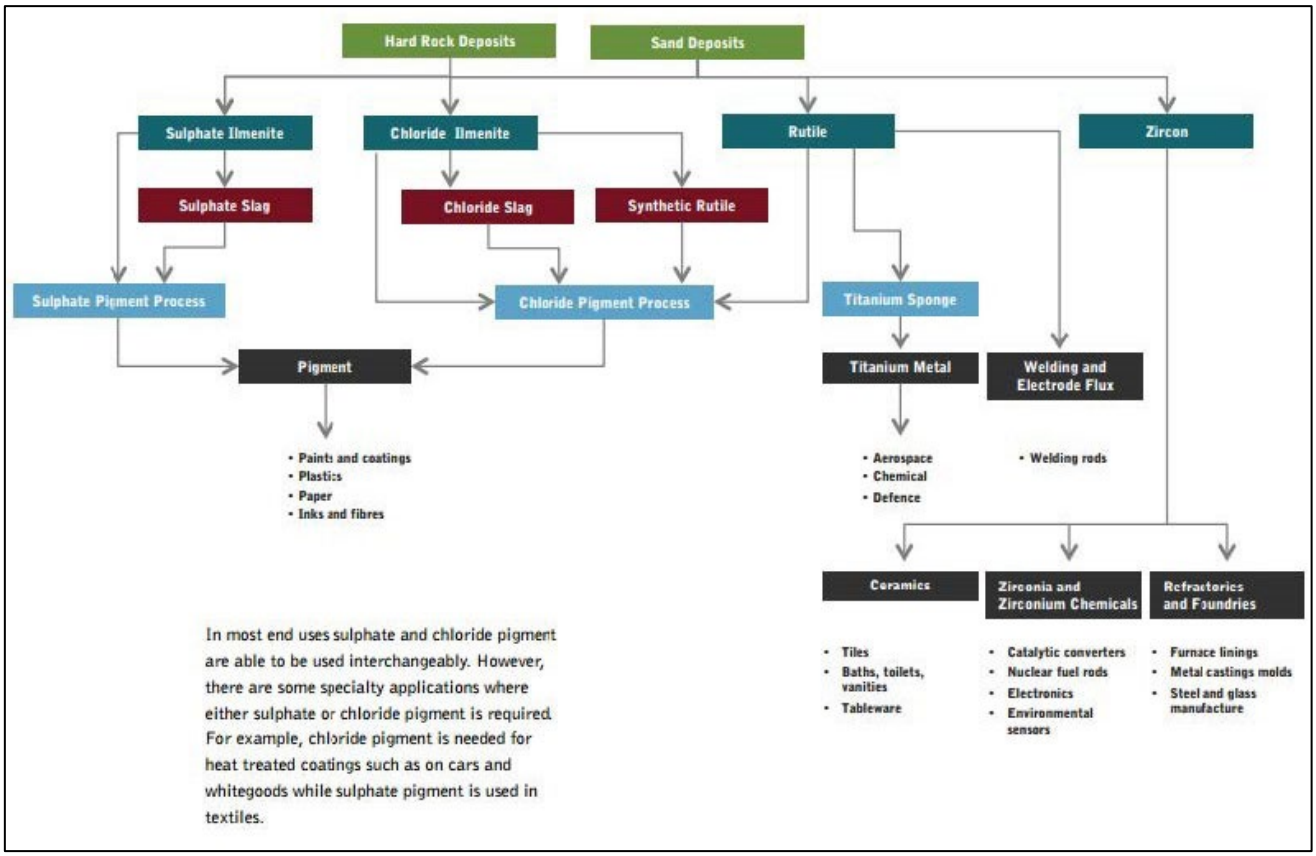
Introduction

The mineral sands industry is the key supplier of zircon and titanium dioxide minerals worldwide - these are key feedstocks for industrial uses, with Africa being a major global producer, particularly of rutile and zircon.

In 2022 global production included 1.4 Mt of zircon and 8.9 Mt of titanium dioxide feedstock – the industry structure is shown in Figure A1, and industry share of the different titanium products in Table A1.

Given the end usage, the markets (US$4.5 billion for titanium dioxide feedstocks and US$1.7 billion for zircon) can be considered as a proxy for global GDP, and with intensity of usage strongly linked to per capita GDP.

Figure A1: Mineral sands industry structure (Source: Iluka)



Titanium Dioxide

The majority (90%) of titanium dioxide is used in the pigment industry, being used in various products, including paints, coatings, paper and inks. It is a key white pigment in that it has a high refractive index (whiteness), provides UV protection and in non-toxic.

Other uses include for metal (military, aerospace and specialty applications) and for welding rod core wire.

Pigment is produced from the titanium dioxide feedstocks using two main routes – chloride and sulphate, with chloride generally being cleaner and requiring higher grade feedstocks (Table A1). Most Chinese capacity is for sulphate grade feedstock; western producers generally use the cleaner chloride process. In 2022 (total production 8.9 Mt) the major titanium dioxide feedstock producer was China (38%) with Mozambique producing 13.5% and South Africa 10%. Australia produced ~7.4%. However, all Chinese production is Ilmenite, with Australia, Sierra Leone and South Africa being the main rutile producers.

Unlike zircon, where the market is supplied by a single product, titanium dioxide market is fed by several products feeding the different processing routes. Key products sold by producers are shown in Table A1 and Figures A1 and A2. What can be

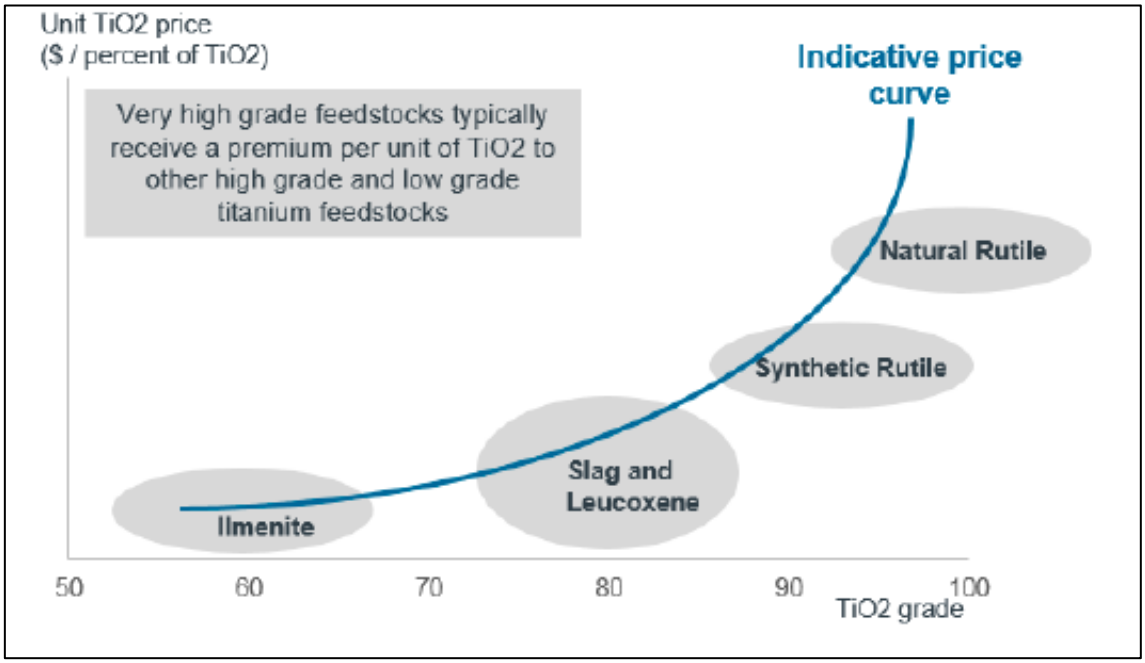
seen is that 37% of the products sold to end users and pigment manufacturers are upgraded products, with the remaining 73% being raw materials. In addition, approximately 55% of feedstocks are chloride grade and 45% sulphate grade.

Table A1: Titanium dioxide products sold, 2022 (Source: Adapted from Iluka)

Titanium dioxide products sold			
Product, approx market share	**TiO_2%**	**Notes**	**End Uses**
Rutile – 8%	95-97	Mined product	Pigments, metal
Synthetic rutile – 8%	88-95	Upgraded from ilmenite in a furnace	Pigments
Ilmenite Sulphate – 45% Chloride – 10%	 52-54 58-62	 Processed to pigment - sulphate processing Processed to pigment - chloride processing	Pigments
Slag Sulphate – 10% Chloride – 16% Upgraded – 3%	 80-85 85-90 95	 Upgraded from sulphate ilmenite in a furnace Upgraded from chloride ilmenite in a furnace Upgraded from ilmenite	Pigments

Rutile, having the highest grade, is the preferred feedstock, in that it requires less processing and produces less waste (including CO_2) than other feedstocks (Table A1). This is also reflected in the price differential for the different feedstocks (Figure A2).

Figure A2: Titanium dioxide feedstock pricing (Source: Iluka)



Significant producers of overall titanium dioxide feedstocks include Rio Tinto (Richards Bay in South Africa, QIT – Madagascar and Titanium Quebec), Kenmare (Momo in Mozambique) and Tronox (Namakwa Sands and KZN in South Africa, and various operations in Australia).

Sierra Rutile is currently the world's largest single producer of rutile at ~142 ktpa, with other players including Base Resources (76.5 kt in CY22) and Tronox, which has the capacity to produce 182 ktpa (including leucoxene), and which produced 159,124 tonnes in 2022, again including leucoxene.

Zircon

The zircon market is supplied by one product, zircon. The major use for zircon is in ceramics, with this comprising some 49% of the 2022 global demand of 1.4 Mt, with approximately 90% of the ceramics demand from tile manufacture. Other uses include chemicals and other specialty uses (19%) and in refractory/foundry products (11%).

Urbanisation is seen to be the key driver of zircon demand, largely due to increasing demand for tiles and other ceramic products.

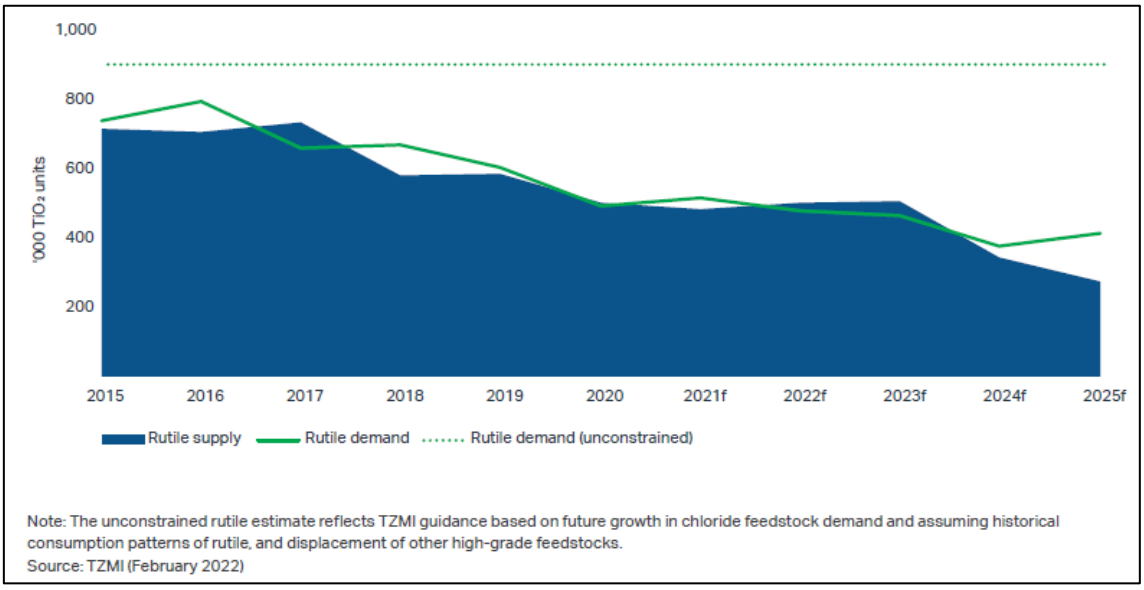
Australia is the largest supplier globally, providing 38% (600 kt) of the world's production in 2022, with Iluka alone supplying 22% (303 kt) of the global demand. Other significant producers include Tronox with 14% (200 kt), and with Sheffield Resources (ASX: SFX) potentially supply up to 150 kt zircon per annum from the 50% owned Thunderbird Mine in Western Australia.

Supply Deficits

Forecasters see deficits both in the titanium feedstock and zirconium markets, with older operations running down and only few operations coming on stream. With titanium this is particularly relevant in the case of the high-quality rutile, with forecast market dynamics shown in Figure A3. One reason for this is the forecast increase in demand for feedstocks for the chloride pigment process, with an anticipated CAGR of 4.4% from 2022 to 2025, compared to a -2.8% CAGR for sulphate feedstocks over the same period.

Sierra is ideally placed to take advantage of this given the quality of its product, and with the market dynamics leading to recent increases in price, with net realised FOB process increasing from ~US$700/tonne in 2016 to US$1544/tonne in the December 2022 quarter. We have however seen some softening in the March 2023 quarter, with prices of US$1,417/tonne reflecting decreasing confidence in the northern hemisphere markets. Where this will lead is up to speculation.

Figure A3: Forecast rutile market dynamics (Source: Sierra, from TZMI)



Note: The unconstrained rutile estimate reflects TZMI guidance based on future growth in chloride feedstock demand and assuming historical consumption patterns of rutile, and displacement of other high-grade feedstocks.
Source: TZMI (February 2022)

With regards to zircon, the forecast is again for significant reduction in production from existing operations, with this pointing to a reduction in existing supply to ~750,000 t by 2025. This has followed a period where potential supply has been greater than demand due to overstocking and hence weighed on prices. Also, community unrest at Rio's Richard Bay Minerals operations recently caused supply disruption supply disruption.

Pricing

Pricing forecasts for rutile and ilmenite are presented in Figures A4 and A5. These were undertaken by TZMI and used in the Sembehun PFS. However, as mentioned, demand and hence pricing is positively correlated to global economic conditions and sentiment, and as such we have seen a fall in rutile price received by SRL in the March quarter.

Figure A4: Forecast rutile price (Source: SRL, from TZMI)

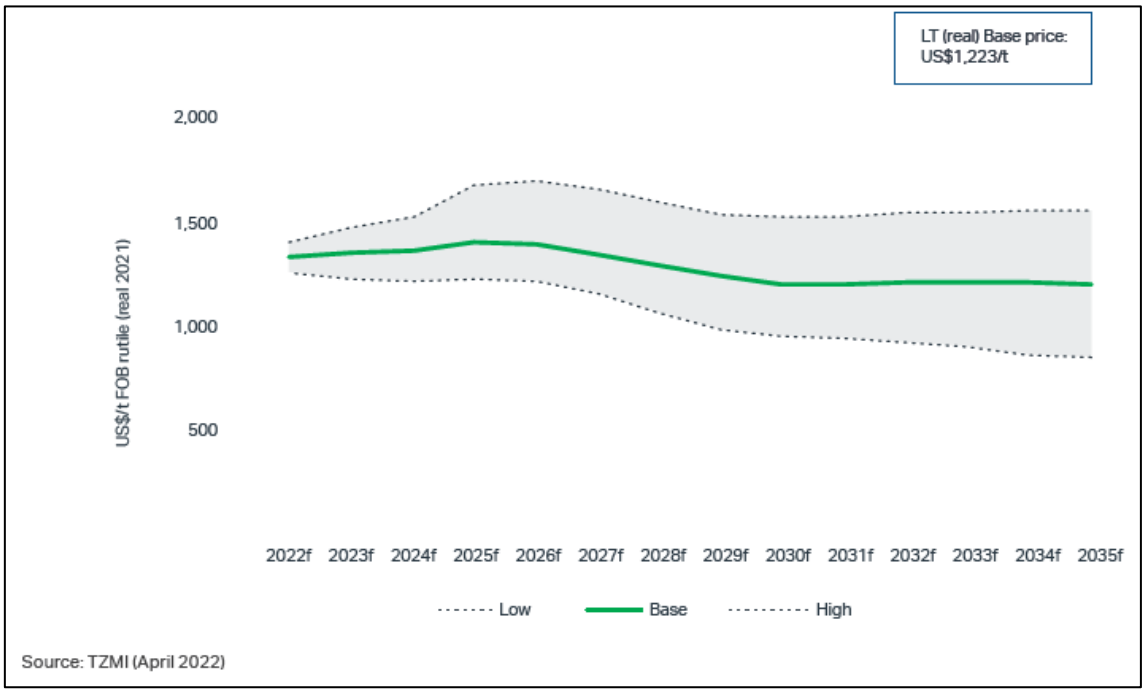
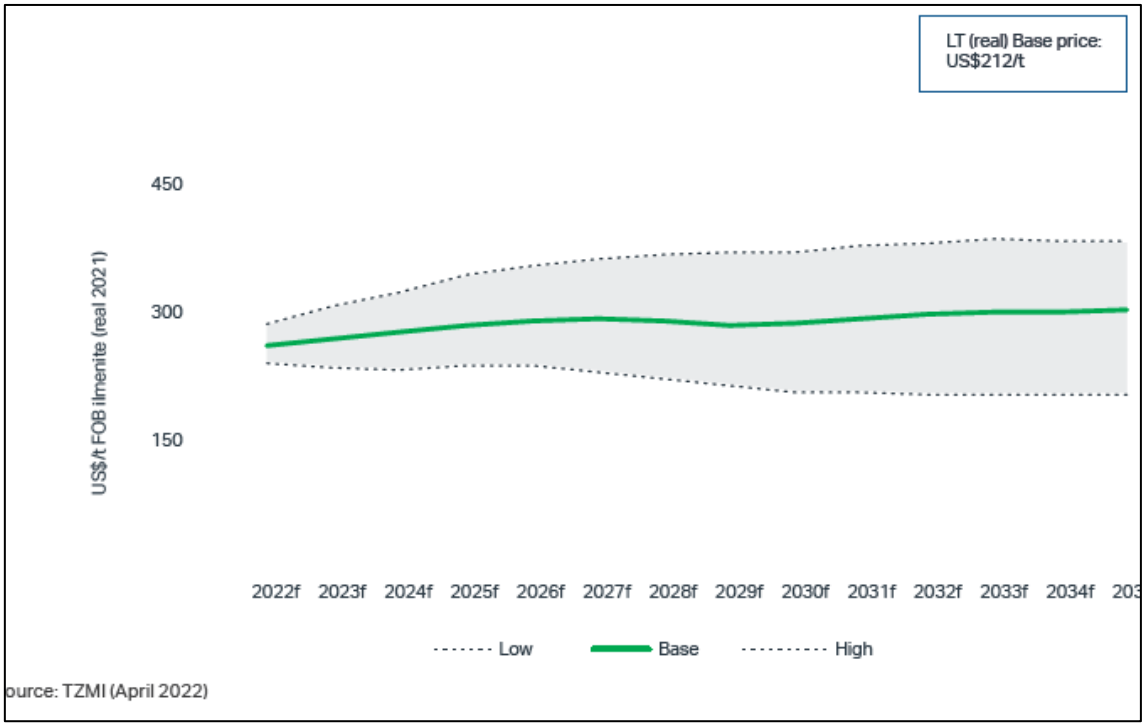


Figure A5: Forecast ilmenite price (Source: SRL, from TZMI)



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Taylor Collison Interests: At the time of writing of this report, Taylor Collison, Principals and Staff hold 4 million shares in Sierra.

Analyst Certification: The Analyst certifies that the views expressed in this document accurately reflect their personal, professional opinion about the financial product(s) to which this document refers.

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