



Sierra Rutile

ASX ANNOUNCEMENT

12 April 2024

Sembehun DFS Reinforces Strategic Value of Significant Project

Sierra Rutile Holdings Limited (ASX: SRX) (**Sierra Rutile** or the **Company**) is pleased to announce the results of the Definitive Feasibility Study (**DFS** or **Study**) for the Sembehun Project (**Sembehun** or **Project**) in Sierra Leone. All amounts in this announcement (including the Executive Summary of the DFS) are in US dollars unless otherwise noted.

Sembehun represents one of the largest and highest-grade natural rutile deposits globally, and the Study has confirmed the Project, once funded and constructed, will significantly extend the Company's mine life, materially lower its cost structure, leverage existing infrastructure, and generate significant long term value both to shareholders and the people of Sierra Leone.

HIGHLIGHTS:

Long term production profile, significantly extends Sierra Rutile's mine life.

- Expected mine life of 14 years.
- No change to previous Sembehun Ore Reserve of 173.7 Mt @ 1.46% rutile (Proved 110.6 Mt @ 1.49%, Probable 63.1 Mt @ 1.42%).
- Annual production rate target of ~14.4 Mtpa ore mined, total Sembehun LOMP of 173.8 Mt of ore treated.
- An average of 175ktpa of rutile production projected from 2028 to 2038 with 2,155kt of rutile produced over LOM.

Financial metrics confirm potential to deliver significant incremental value.

- Capex estimate (as at September 2023) reduced by 11% to \$301 million, a \$36 million reduction on the 2022 Preliminary Feasibility Study (PFS).
- Expected payback within 55 months from project commencement.
- Long term rutile price assumed at \$1,391/t with steady state cash production costs of \$600/t (net of credits).
- Sembehun Project NPV₈ (post-tax, real) \$408 million
- Internal Rate of Return of 27.8% (post-tax, real).
- LOM EBITDA \$1.7 billion.

Important Notice

In preparing the DFS, the Sembehun Ore Reserve as previously announced (see following paragraph) has not materially changed from when the Ore Reserve estimates were last reported, and is therefore not re-reported in this announcement.



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The Definitive Feasibility Study referred to in this announcement is based on a JORC Mineral Resources Estimate (Refer to Iluka Resources Ltd's ASX Release 24 February 2022 "Sembehun Ore Reserve and Mineral Resource Update, Sierra Leone", which was re-stated and released by the Company in its ASX Release on 24 March 2023 "Sierra Rutile Annual Statement of Resources and Reserves") and Ore Reserves detailed in the same announcement. The Mineral Resource Estimate and Ore Reserves underpinning the DFS have been prepared by Competent Persons in accordance with the 2012 JORC Code.

The production target referred to is based only on Mineral Resource estimates which are classified as Measured (56%), Indicated (28%) and Inferred (16%).

There is a low level of geological confidence associated with Inferred mineral resources, and there is no certainty that further exploration work will result in the determination of Indicated mineral resources or that the production target itself will be realised.

Sierra Rutile Managing Director and CEO, Theuns de Bruyn, commented:

"The Sembehun DFS clearly demonstrates the significant value the Project holds, and the ability of Sembehun to fundamentally change the cost base and economics of mineral sands production by Sierra Rutile.

"The current fourteen-year mine life also demonstrates that this is a long-term project with the potential to contribute economic benefits over an extended period of time to both Sierra Rutile and our local stakeholders in Sierra Leone."

KEY DFS OUTCOMES

The DFS confirms that the Sembehun Project is a globally significant Tier 1 natural rutile deposit and presents a commercially attractive development opportunity with significant incremental value potential for Sierra Rutile. A summary of the initial physical and financial evaluation of the Project is shown in Table 1 and within this DFS covering announcement. Additional details are also provided in the DFS Executive Summary which follows as an appendix to this covering announcement.



Key Production Outcomes	Unit	Sembehun
Life of Mine (LOM)	Years	14
LOM Ore Treated	Mt	173.8
Ore Grade	%	1.45
Ore Recovery - Rutile	%	91.4
Production – Total Rutile	kt	2,155
Production – Total Ilmenite	kt	1,242
Production – Total Zircon in Concentrate	kt	107
Annual average production rate	ktpa	175
Key Financial Outcomes		
LOM Total Revenue	\$m	3,724
LOM Cash Production Costs	\$m	1,874
Capex	\$m real	301
Sustaining Capex	\$m	120
Closure Costs	\$m	30.6
Free Cash flow	\$m	935
Long Term Rutile Price Assumption (real)	\$/t	1,391
Cash Production Costs, net of credits	\$/t rutile	622
Cash Production Costs, net of credits (steady state)	\$/t rutile	600
LOM EBITDA	\$m	1,705
Payback period	# months	55
NPV ₈ (post-tax, real)	\$m	408
IRR	%	27.8

Table 1: Production and Financial Outcomes and Economic Assumptions – Sembehun.

Contribution from Sembehun is calculated from the difference between Area 1 continuing alone, versus a combined Area 1 and Sembehun operation.

SUMMARY OF KEY STUDY ELEMENTS

1. Production Profile

Sembehun has an expected mine life of 14 years including ramp-up and tail periods. The DFS assumes an annual production rate of ~14.4 Mtpa ore mined to support an average of 175 ktpa Rutile production at steady state.

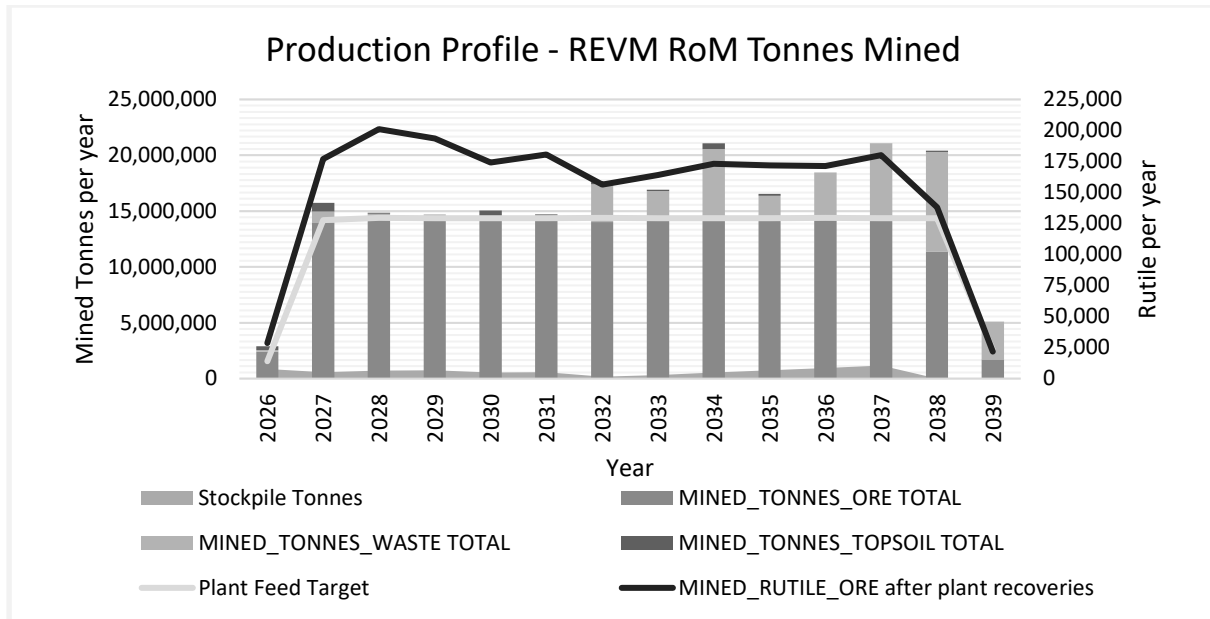


Figure 1: Annual Production Projection Sembahun

2. Financial Metrics

The Sembahun Project value was determined by calculating the difference in the value of the Company with Sembahun versus the value of the Company without Sembahun.

The scenario without Sembahun assumed a mine plan that continues operations at Area 1 until Sembahun could be ready for commissioning, but in fact that Sembahun does not proceed. This Area 1 mine plan is the same as for the with Sembahun scenario to ensure the incremental NPV represents the impact of the Sembahun Project only.¹

The scenario with Sembahun assumed that following the Study, a decision is made to progress with the execution of the Sembahun Project. Existing operations at Area 1 would continue until Sembahun is commissioned, at which time mining operations feeding the Area 1 concentrators would cease.

The capital cost estimate has been compiled using The Association for the Advancement of Cost Engineering guidelines targeting a Class 3 level of accuracy of -20% and +20% after the contingency. The overall capital cost estimate of the Project is \$301 million which includes a contingency of \$41 million (16% of the base estimate) and excludes forward escalation.

The capex estimate of \$301m (as at September 2023) is a significant reduction on the 2022 PFS figure of \$337m. The reduction was driven by a changed approach with the Company's management team implementing efficiencies, including seeking in-country earth-moving, civil engineering and product-

¹ The Area 1 mine plan considered in the DFS does not necessarily reflect the current intentions of Sierra Rutile, and will be dependent on the outcome of discussion with the Government of Sierra Leone, as further detailed in the Key Assumptions section.



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hauling contractors. For financial analysis purposes, the Sembehun execution capex of \$301 million has been escalated to \$308 million.

The capital cost estimate is summarised in table 2 below.

Bill description	Excl Growth Amount \$
Mine Site Wide	17,951,561
Concentrator	155,530,870
TSF Infrastructure	15,217,801
Process Water Infrastructure	12,979,310
Mineral Separation Plant	5,225,306
Power Plant Infrastructure	154,819
Access Road - Nitti	24,645,521
Bridge B6116	7,510,075
Stockpile Access Road	209,774
Water treatment	943,191
Camp	4,715,794
Solar Plant - Infrastructure	3,325,179
Resettlement Costs	4,491,800
Escalation to Base Date	945,791
Taxes and Duties - Withholding Tax	6,427,169
Contingency (16.1%)	41,000,000
Sembehun Rev 2 - Base Line VE	301,273,960

Table 2: Summary of capital costs

A critical aspect of the capital cost estimate, and a factor that influences Sembehun's attractive financial returns, is the reliance on the existing Mineral Separation Plant and facilities at Nitti Port, neither of which need to be replaced.

Table 3 below captures the key financial metrics for the Sembehun Project with the incremental value of the Sembehun Project determined by deducting the "Without Sembehun" case detailed in the DFS from the "With Sembehun" Case. Steady state average reflects full operating years.



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Measure	Unit	Sembehun
EBITDA	\$m	1,705
Free Cash Flow	\$m	935
Sembehun Capex*	\$m	308
Sustaining Capex	\$m	120
Closure	\$m	30.6
Cash production Costs (Rutile basis)	\$/t Rutile	858
Cash Cost net of Credits (Ramp up)	\$/t Rutile	622
Cash Cost net of Credits (Steady State)	\$/t Rutile	600
NPV ₈ (Post-Tax, Real)	\$m	408
Payback	# months	55
IRR (Post-Tax, Real, pre gearing)	%	27.8%
NPV / Total Capex (Post-Tax, Real)	Ratio	133%

Table 3: Summary of key financial metrics

* For financial modelling purposes, the Sembehun execute capex is \$301m incurred in 2024-2027 and escalated to \$308 in mid-2024 to model inflation.

3. Key Assumptions

Criteria	Assumption
Long-Term Pricing	Pricing is the largest risk to Project economics and is based on TZMI Titanium Feedstock Base Price Forecast (TZMI, Issue 4 December 2023). Rutile is based on the TZMI market study from 2028 to 2035 with long term TZMI rutile prices only applied from 2036 onwards. Long-term TZMI prices were escalated from 2022 \$ terms to 2024 \$ terms using CPI of 4.1% to 2023 terms by another 2.7% to 2024 money terms (6.9% overall). This resulted in the long-term bulk rutile price of \$1301/t to be escalated to \$1391/t in 2024 terms.
Ore Grades	174 Mt at 1.45% rutile, 0.91% ilmenite, and 0.11% zircon, of which 111 Mt is classified as proved and 63 Mt as probable as announced by Iluka Resources Ltd on 24 February 2022 which was re-stated and released by the Company on 24 March 2023 in the ASX Release "Sierra Rutile Annual Statement of Resources and Reserves"
Area 1	The DFS models some continued production from Area 1 prior to and during ramp up of Sembehun. Such production would be contingent on the outcome of negotiations with the Government of Sierra Leone with respect to a restart of Area 1, part of which may involve continuing the arrangements under the Third Amendment Agreement or reaching a compromise with the Government of Sierra Leone on the fiscal arrangements and/or the Government of Sierra Leone taking an agreed equity interest.
Processing Recoveries	In relation to WCP recoveries, 94% rutile, 92% ilmenite and 97% zircon are assumed to be recovered from HMC. As for the MSP recoveries, 91.4% Rutile, 85% Ilmenite and 65% Zircon recovered to final products. MSP Rutile recovery has been reduced by expected losses of 0.4% to the WHIMS and 0.24% to the LIMS.
Operating Costs	Sembehun mining (\$4.0/t ore), Sembehun WCP (\$2.3/t ore) and haulage to Area 1 (\$14.3/t HMC) is based on the Hatch DFS estimates, the balance of SRL operating cost was derived from current cost structures at Area 1. Overhead costs are \$38.5m pa and are included for Sembehun, which include Perth-based corporate overheads of ~\$4.1m. Overhead or support cost for Sembehun has been developed



	by SRL following zero-based approach to reflect the reduced footprint of operations from 2027 onwards.
Fiscal Regime	Tax assumptions are based on the Sierra Rutile Act 2002, including the application of the third amendment agreement tax concessions to Area 1 volumes.
Timelines	The DFS assumes a timeline for execution as detailed in Table 1-3, Key Project Milestones. Delay to earlier Key Project Milestones, may lead to additional delay to later Key Milestones. The current critical path is commencement of detailed engineering work in May 2024.
Exchange Rate	The estimate base date is October 2023 (Q4,2023). No provision has been made for escalation beyond this date. The exchange rate used is 18.9389 South African Rand (ZAR) to 1 United States Dollar (USD).

Table 4: Summary of Key Assumptions

4. Mineral Resources & Ore Reserves

The Sembahun Project represents one of the largest and highest-grade natural rutile deposits globally with combined Measured and Indicated Mineral Resources for the deposit being 301 Mt of grading 1.2% rutile. It also contains ilmenite (0.7%) and zircon (0.1%).

The total combined Mineral Resource of 508 Mt is at material grading 1.1% rutile, containing 5.5 Mt of recoverable rutile. The current Mineral Resources are limited to the extent of the supporting exploration and the potential for upside is considered good.

For the Ore Reserve a total of 111 Mt grading 1.49% rutile is classified as Proved representing 64% of the reported reserve tonnage and contained rutile tonnage.

Tables 5 & 6 below provides a summary of the Mineral Resource and Ore Reserve.

Mineral Resource Category	Mineral Resource	Rutile Grade	Rutile contained
Measured	134 Mt	1.4%	1.9 Mt
Indicated	167 Mt	1.0%	1.7Mt
Inferred	207 Mt	0.9%	1.9 Mt
Total	508 Mt	1.1%	5.5Mt

Table 5: Sembahun Mineral Resource Summary

Ore Reserve Category	Diluted Ore	Rutile Grade	Rutile Contained
Proved	110.6 Mt	1.49%	1,644 kt
Probable	63.1 Mt	1.42%	896 kt
Total	173.6 Mt	1.46%	2,540 kt

Table 6: Sembahun Ore Reserve Summary

Neither the Mineral Resource or Ore Reserve have materially changed since previously announced on the Australian Securities Exchange by Iluka Resources Ltd on the 24th of February 2022, titled: "Sembahun Ore Reserve and Mineral Resource Update, Sierra Leone" which was re-stated and released by the Company in its ASX Release on 24 March 2023 "Sierra Rutile Annual Statement of Resources and Reserves".

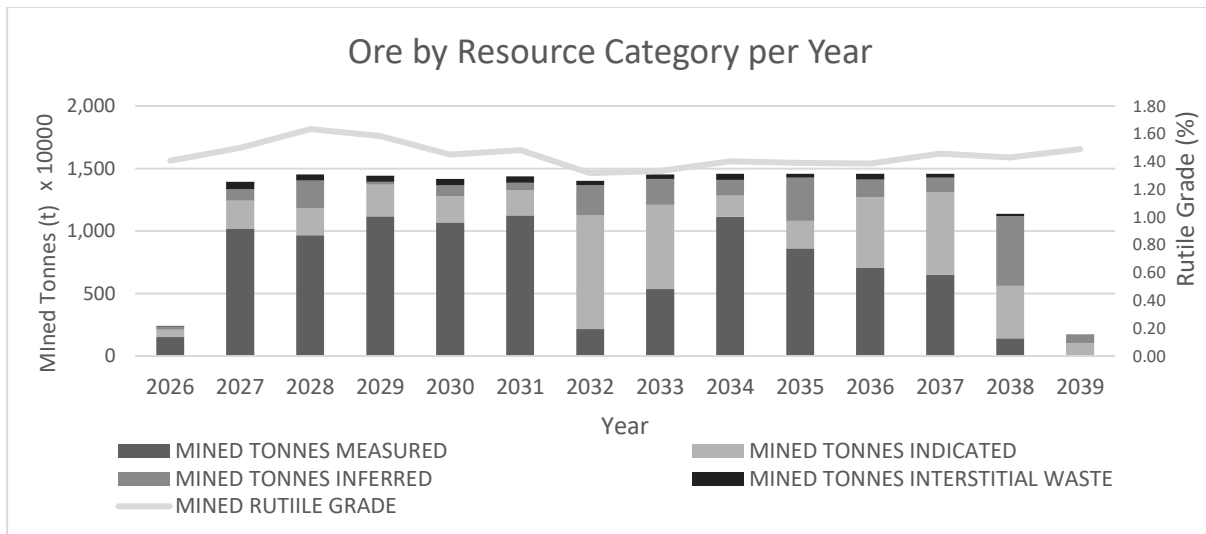


Figure 2: Resource category of target area over LOM

Interstitial waste is material within the inferred part of the resource that must be removed during mining and has been conservatively treated as waste for modelling purposes (at 0% grade) due to a lower level of confidence and does not contribute any rutile to the production target. It does contribute to mining costs (~3% of mined tonnes), hence inclusion in the model. There is a low level of geological confidence associated with this material, and there is no certainty that further exploration work will result in the determination of reserves from this material.

5. Mining

The Sembehun deposit has a LOM of 14 years from startup including the ramp-up and tail periods. The average grade of the target area is 1.45% rutile, yielding an estimated 2.1 Mt of rutile after wet concentrator plant (WCP) and mineral separation process (MSP) recoveries.

A stockpile strategy was implemented to plan a buffer between ex-pit material and the WCP feed during the wet season, based on rainfall data from Gangama. The load and haul mining method is based on similar equipment to the current operations at Area 1. A fleet of 9 Volvo EC950 excavators and 22 Volvo A60D dump trucks is estimated for the primary equipment fleet to execute ore and waste activities.

Mining opex and capex estimates are based on quotes from contractors, using a competitive process from multiple contractors. Existing site-based contractors ultimately provided the most competitive detailed quoted cost estimate which was used in the DFS. The mining capex is \$17.3 million and a total opex of \$683.0 million is expected over the life of mine. Opex to significantly decrease from 2027 with savings from Area 1 when its mining operations cease.

6. Processing and Facilities

The process plant will consist of two identical streams from the ROM tip through to HMC stockpiling. A new magnetic separation section is included at the MSP to assist with chrome rejection to meet final product specifications and de-bottlenecking to accommodate the increase in ilmenite. A ratio of 2:1 rutile to ilmenite ratio for Sembehun (over the LOM) is targeted for the current operation.



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The processing is designed based on annual ore mined of 14,440,324t (according to the PFS Mine Plan 2025-2038) and MSP Rutile Recovery Rate of 91.36 per cent.

Sembehun will be powered by a dedicated electrical power plant. The dedicated power producer will be responsible for the design, supply, installation, and operation of the plant.

7. Marketing

Since the company, its products, and its customer base are well established, sales are assumed to mirror production over the Project life. Customer testing of Project samples indicates Sembehun's product is acceptable in all rutile end-uses, even the most demanding applications such as aerospace-grade titanium sponge and premium-quality welding consumables.

Sembehun is critical to meeting the world's rutile needs since, as predicted by industry consultant TZMI. Existing reserves are nearing the end of their mine life and there are not enough first-tier resources coming into development to maintain rutile supply at historical levels.

TZMI's December 2023 forecast indicates future rutile demand is supply constrained. Since supply from existing producers and approved Projects is declining, Sierra Rutile's customers and consumers worldwide need supply from Sembehun Area 5 to maintain consumption at the 500 ktpa TiO₂ unit level seen in recent years.

Sembehun's low unit costs ensure the mine is competitive regardless of what stage the economic cycle is in. Should the market find itself in an extended downturn, Sierra Rutile will be able to compete against competitors producing by/co-product produced rutile.

8. Permitting

An Environmental, Social and Health Impact Assessment (**ESHIA**) has been undertaken in compliance with Sierra Leonean legal requirements. As far as practicable, alignment to international best practice standards was achieved in the ESHIA and the subsequently developed Environmental, Social and Health Management Plan (**ESHMP**). The ESHIA and associated ESHMP have now been approved by the Environmental Protection Agency of Sierra Leone, and are the major required government approval to proceed with the project, as Sembehun sits within the already granted Mining Lease.

Other incidental permits or licences will be required to bring the project into production, such as power generation and fuel storage licences, and these permits or licences are expected to be achieved within the normal course of business.

NEXT STEPS

Initial engagement with potential financiers and off-takers with respect to Sembehun was undertaken during 2023 to ascertain appetite and likely debt sizing. Sierra Rutile has also previously announced that royalty, subordinated debt funding and strategic equity opportunities were being investigated for Sembehun.

The DFS has clearly demonstrated the significant value of the Sembehun Project, with the NPV outlined by the study significantly more than the Company's current market capitalisation or enterprise value.



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This is relevant in the current situation where Sierra Rutile has received an unsolicited offer² to acquire the Company, and Sembehun is by far the major contributor to the strategic value of Sierra Rutile.

It is also apparent to the Company, based on previous discussions and ongoing dialogue with industry participants, that Sembehun remains a key future contributor to the stable supply of rutile, commencing within the timeframes outlined in the DFS.

Given the corporate backdrop that applies to Sierra Rutile, intended future discussions with respect to Sembehun will encompass not only resumed discussions with major development partners or strategic equity opportunities, but also key industry participants, and may occur within either the context of discrete funding or joint venture arrangements for Sembehun, or within the context of a complete corporate transaction involving Sierra Rutile.

These discussions will occur concurrently with ongoing discussions with the Government of Sierra Leone on matters relating to Area 1.

-ENDS-

This ASX Release was authorised for release to the ASX by the Board.

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² Refer to Sierra Rutile's Target Statement released to the ASX on 8 April 2024



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Mineral Resources & Ore Reserves

The information in this announcement relating to Mineral Resource and Ore Reserve estimates for the Sembehun Project is extracted from the Sembehun announcement released on the Australian Securities Exchange by Iluka Resources Ltd on the 24th of February 2022, titled: “Sembehun Ore Reserve and Mineral Resource Update, Sierra Leone” which was re-stated and released by the Company in its ASX Release on 24 March 2023 “*Sierra Rutile Annual Statement of Resources and Reserves*” (**Sembehun Announcement**), available at www.asx.com.au. Sierra Rutile confirms that it is not aware of any new information or data that materially affects the information included in the Sembehun Announcement and that all material assumptions and technical parameters underpinning the estimates in the Sembehun Announcement continue to apply and have not materially changed.

Forward looking statements

Certain statements in or in connection with this announcement contain or comprise forward looking statements. Such statements may include, but are not limited to, statements with regard to future production and grades, capital cost, capacity, sales projections and financial performance and may be (but are not necessarily) identified by the use of phrases such as “will”, “expect”, “anticipate”, “believe” and “envisage”. By their nature, forward looking statements involve risk and uncertainty because they relate to events and depend on circumstances that will occur in the future and may be outside Sierra Rutile’s control. Accordingly, results could differ materially from those set out in the forward-looking statements as a result of, among other factors, changes in economic and market conditions, success of business and operating initiatives, changes in the regulatory environment and other government actions, fluctuations in product prices and exchange rates and business and operational risk management. Subject to any continuing obligations under applicable law or relevant securities exchange listing rules, Sierra Rutile undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events.



1. Executive Summary

Important Notice to Readers

This executive summary has been extracted from the full DFS report and accordingly the following disclaimer is intended to apply to the executive summary reproduced in this document.

The Report from which this executive summary has been extracted (“Report”) was prepared by Hatch Ltd (“Hatch”), for the sole and exclusive benefit of Sierra Rutile Limited and Sierra Rutile Holdings Limited (collectively “Client”) for the purpose of assisting the Client to assess the definitive feasibility study of their Sembehun II Project Execution Strategy (the “Project”) and for the sole purpose of assisting the Client in their internal consideration of and decision whether and how to proceed with the work which is the subject of this Report. Any use of the Report by the Client is subject to the terms and conditions of the Professional Services Agreement (PSA) between Hatch and Sierra Rutile Limited dated as of September 8, 2022, as amended from time to time.

Except for the purposes legislated under Australian securities law, any use of the Report and executive summary by any third party is at that party's sole risk, and Hatch shall have no liability to any third party for any such use for any reason whatsoever, including negligence. The Report is intended to be read as a whole, and sections should not be read or relied upon out of context.

The Report contains estimates, projections and conclusions that are forward-looking information within the meaning of applicable securities laws. Forward-looking statements are based upon the responsible CP's opinion at the time that they are made, but in most cases involve significant risk and uncertainty. Although each responsible CPs has attempted to identify factors that could cause actual events or results to differ materially from those described in this report, there may be other factors that cause events or results to not be as anticipated, estimated or projected. Where permitted by Australian securities laws, Hatch has, in the preparation of this Report, relied upon certain reports, opinions and statements of certain experts (whether in relation to ‘modifying factors’ or otherwise). These reports, opinions and statements, the makers of each such report, opinion or statement and the extent of reliance are set out in cautionary statements included within the Report. Where permitted by applicable laws, Hatch hereby disclaims liability for such reports, opinions and statement(s) to the extent that they have been relied upon in the preparation of this Report. Hatch is under no obligation to update any information contained in this Report, including, without limitation, forward-looking information.



1.1 Project Design Basis

SRL is a subsidiary of Sierra Rutile Holdings Limited, listed on the Australian Stock Exchange (ASX), trading as SRX. SRL currently operates the Mine Lease Area 1 across the Moyamba and Bonthe districts which include the chiefdoms of Imperri, Lower Banta and Upper Banta. Area 1 has been in operation for over 50 years, however the mineral resources with Area 1 are nearing their end of life.

This study's main objective was to evaluate the feasibility of developing the Sembehun group of deposits (Area 5), situated in the Southern Province of Sierra Leone, approximately 30 km northwest of the existing Sierra Rutile Limited (SRL) operations. The Sembehun deposits are located exclusively in the chiefdom of Bagruwa in the Moyamba district (Figure 1-1).

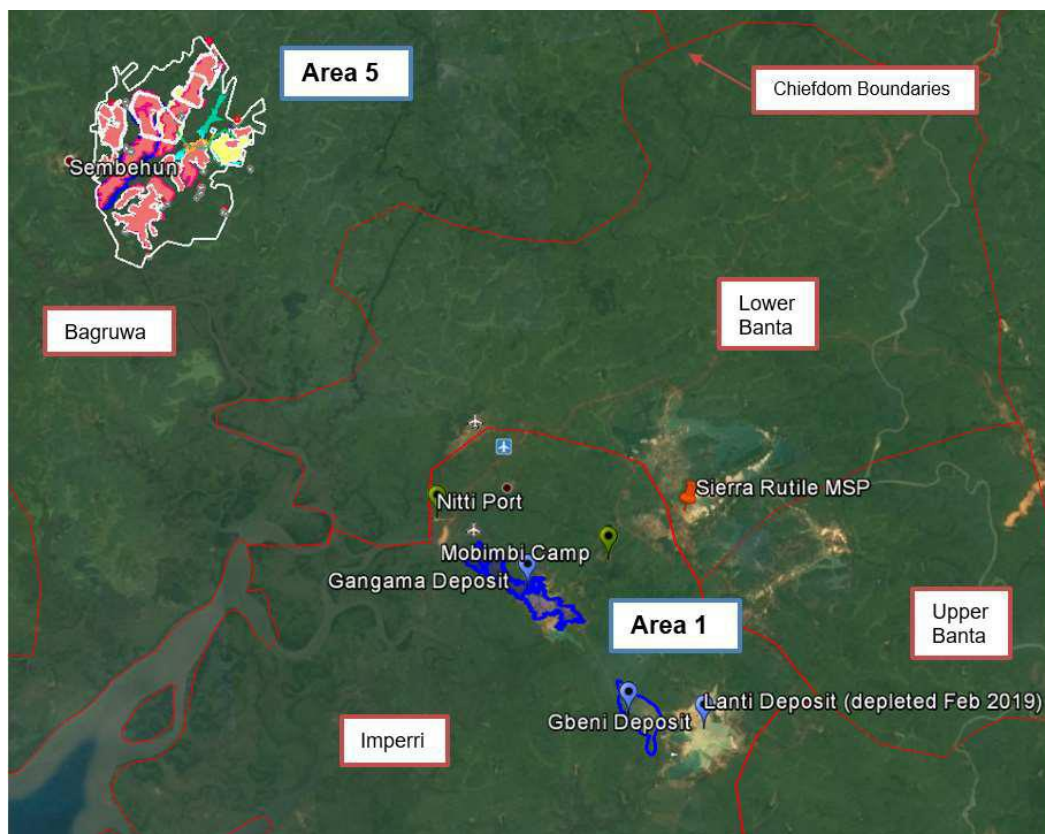


Figure 1-1: Location of Deposits in Bagruwa in the Moyamba District

The study was undertaken to fill the current MSP located at Area 1 to capacity, producing 175,000 t/a rutile on average over the life-of-mine of Sembehun during steady state operations. The wet concentrator plant (WCP) process flow sheet selected to achieve this was based on the Gangama plants operating in Area 1.

The WCP will consist of two identical process streams, fed by a direct-tip load and haul mining operation, at 14,400,000 t ore/annum. The HMC produced from the plant will be hauled by road to the existing MSP located in Area 1.



Due to the mineralogy of the HMC expected from Sembehun, indicating a rutile to ilmenite ratio of lower than two, a wet magnetic separation stage will be added to the MSP process. The magnetic stage will remove excess ilmenite from the process to realise the required rutile to ilmenite ration of two.

The final products from the MSP will be hauled by road truck to Nitti port for export.

1.2 Marketing

Sierra Rutile primarily produces two rutile grades, SGR and IGR, as well as chloride ilmenite. As a result of SRLs established track record, these products are well known in the global marketplace. In addition, SRL derives value from co-products in the form of concentrates containing varying proportions of zircon, rutile, ilmenite, and garnet.

In the medium term the market for SRLs products is undersupplied due to a lack of investment in new supply combined with declining output from existing sources. The tight supply outlook is expected to continue, such that sales in the medium to long-term are production constrained subject to being competitively priced on a value-in-use basis.

Targeting select customers is key to the marketing strategy. The target segment are consumers who derive the highest value from rutile. When viewed through the lens of the balanced to tight supply-demand environment, SRLs selling prices are expected to follow trends forecast by industry consultant TZMI, with base rutile prices varying from \$1,460 to \$1,560 per metric tonnes 2023 through 2027.

1.3 Risk and Opportunity Management

The Sembehun DFS risk and opportunity management process progressed throughout the DFS study in line with the agreed Sembehun DFS Risk Management Plan (H369702-0000-120-050-0002).

Risk workshops were undertaken monthly to mature the Sembehun DFS risk profile, identifying new study phase risks, validating existing risks, and monitoring and updating mitigation action plans.

The Sembehun DFS Risk and Opportunity Management process commenced with a risk workshop on the 23 January 2023. The Sembehun PFS risk register served as the baseline for the Sembehun DFS study phase risk register.

Key Sembehun PFS Risks were identified as the following:

- Communities may introduce new requirements/Community dissatisfaction
- Significant increase in capital cost
- Schedule delays during project construction and commissioning
- Significant environmental event (loss event)
- Underestimation of materials within the market and logistics within the schedule/Supply chain/Logistics/Market
- Bridge and road may be overruled by the government



- Significant health or safety events.

The Sembehun DFS Risk and Opportunity Management process significantly matured the overall risk profile of the Sembehun DFS study with critical mitigations effected by the project stakeholders and Sierra Rutile team and in some instances reducing the likelihood and impact of risks to tolerable levels.

Key Sembehun DFS Risks and Mitigation Plans were identified as follows:

- Community dissatisfaction risk:
 - ◆ Mitigations implemented:
 - Regular stakeholder engagements (community leaders and local population)
 - Population influx and speculative building being monitored
 - Updating surveys relating to the RLRP
 - Stakeholder engagement plan includes mapping
 - RLRP implementation plan
 - Allowance for security measures with RLRP i.e., government – MOU in place with National Security Authorities – complete and ongoing briefings to be provided
 - Determine cut-off date for implementation (linked to construction schedule)
 - Security management plan. Completed. with Sembehun specific updates as required
 - Pedestrian and traffic control measures to ensure safe community interaction and access to properties
 - Consideration of lessons learnt from Sierra Rutile previous Foinda RAP execution
- Delay in obtaining the ESHIA license risk (At the time of publishing this report, the ESHIA Licence has been obtained).:
 - ◆ Mitigations implemented:
 - Environmental Consultants engaged and findings and associated actions incorporated into ESHIA submission
 - Primate Task Force engaged to further study respective species and propose solutions related to identified environmental and habitat impacts complementing the ESHIA recommendations
 - Development of biodiversity action plan and ESHMP, including continuation of studies, for distribution to concerned public parties if required (additional 30-days allowed for submissions)



- Sembehun geological resource variability risk:
 - ◆ Mitigations implemented:
 - Geotechnical test work provided inputs to mine model – informing sizing of mining equipment
 - Limited metallurgical test program (Zircon and Ilmenite) results incorporated to financial modelling
- Project schedule slippage, resulting in the delay of the FID and C5 commissioning risk:
 - ◆ Mitigations implemented:
 - Hatch Project Execution Plan and controls in place
 - SRL (client) inputs received and ongoing collaboration
 - Project SOP in place to address identified variances and or emerging concerns/issues
 - Schedule analysis and identification of areas to pull back completion dates
- Increase in Capex risk:
 - ◆ Mitigations implemented:
 - Validation process of the rehabilitation rate in DFS (Quantification required for hectares, Rate comparison to be obtained as used for non-legacy areas in Area 1
 - Ensure road, culverts, bridges drawings are applicable to the specification for the DFS. Engage with the government regarding the requirements and approvals
 - Secure accurate estimate from SRL freight forwarder
 - Opportunity register updated by both Hatch and SRL considering CAPEX reductions and local suppliers/contractors (rate achievement critical to estimate and schedule).

In preparation for the potential Execution of the Sembehun project, a detailed and comprehensive Project Execution risk workshop was held between SRL and Hatch project stakeholders to develop an Execution Risk Register. The Sembehun Execution risk register will be monitored and updated throughout the Sembehun Execution phase.

1.4 Geology

Exploration of the Sembehun deposits occurred in phases since the early 1970s. Pushrod and auger drilling has been undertaken down to a 60 metre x 60 metre grid spacing on areas of economically viable mineralisation and depths up to competent bedrock.

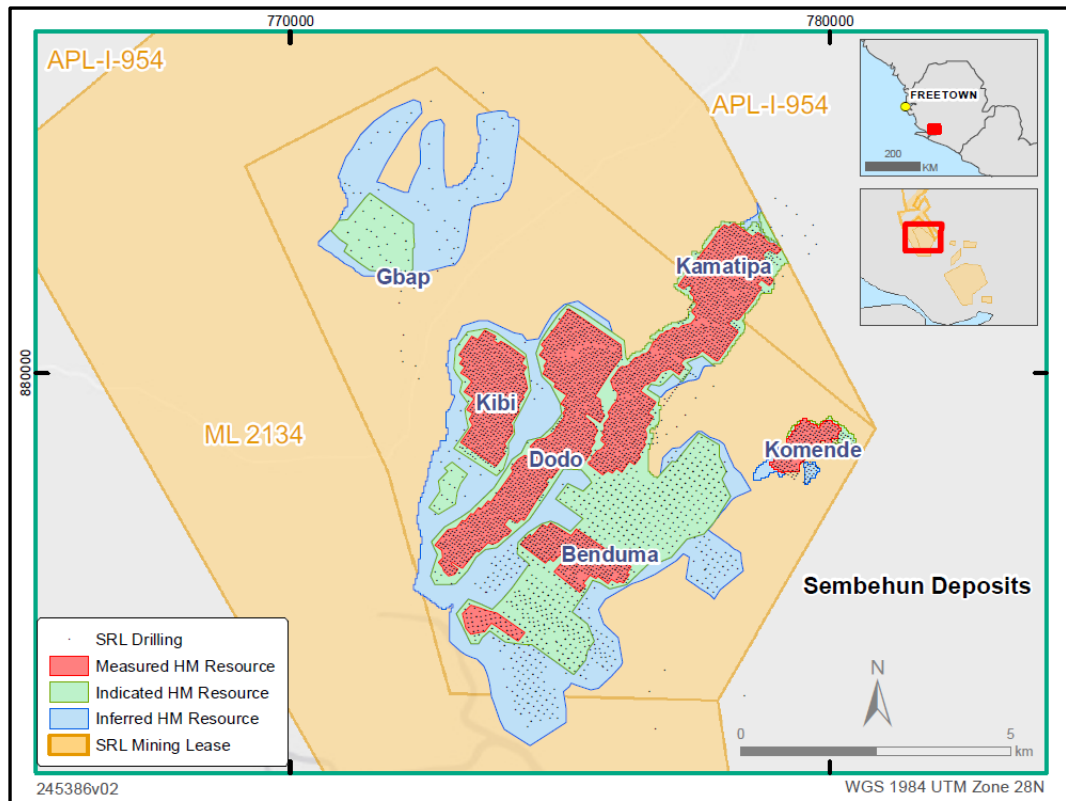


Figure 1-2: Sembehun Drill Collar Locations and JORC Category Distribution

The Mineral Resource estimates were classified as Measured, Indicated or Inferred according to the definitions of the JORC Code (2012 Ed.). The classification assigned is based on confidence of the rutile grade and considers:

- Confidence in geological and rutile grade continuity
- Data density and distribution
- Confidence in the quality of the dataset used
- Review of the search volume factor employed to assign a grade and/or kriging quality metrics for rutile.

The Mineral Resources were reported using a 0.25% rutile cut-off grade in conjunction with delimiting resource outlines based on geomorphology and the extent of drill coverage. The grade is lower than that considered economic under current mineral pricing conditions but allows for:

- Potential mineral price increases
- The recovery of ilmenite and zircon byproducts
- Consideration of more cost effective mining methods (e.g. dredging or hydraulic mining)



- Efficiencies gained from increased mine throughput.

The total combined Mineral Resource is 508 Mt of material grading 1.1% rutile containing 5.5 Mt of recoverable rutile. The combined Measured and Indicated mineral resource for the Sembehun deposit is 301 Mt of grading 1.2% rutile. The resource also contains ilmenite (0.7%) and zircon (0.1%).



Table 1-1: JORC Code (2012 Edition) Mineral Resource Summary for the Sembehun Group Deposits broken down by Resource Category

Deposit	Mineral Resource Category	Material Tonnes	In Situ HM	In Situ Slime	In Situ OS	In Situ Rutile	In Situ Ilmenite	In Situ Zircon	In Situ Rutile Tonnes	In Situ Ilmenite Tonnes	In Situ Zircon Tonnes
		(MT)	(%)	(%)	(%)	(%)	(%)	(%)	(MT)	(MT)	(MT)
Benduma	Measured	21	3.4	33	15	1.1	0.9	0.1	0.2	0.2	0.0
Benduma	Indicated	85	3.3	34	18	1.1	0.8	0.1	0.9	0.7	0.1
Benduma	Inferred	113	3.1	33	16	0.8	0.7	0.1	0.9	0.8	0.1
Benduma	Total	218	3.2	34	17	0.9	0.7	0.1	2.1	1.6	0.1
Dodo	Measured	54	3.1	35	17	1.4	0.8	0.1	0.8	0.5	0.1
Dodo	Indicated	20	3.2	39	25	1.1	0.8	0.1	0.2	0.1	0.0
Dodo	Inferred	21	3.3	35	20	1.3	0.9	0.1	0.3	0.2	0.0
Dodo	Total	95	3.2	36	20	1.3	0.8	0.1	1.2	0.8	0.1
Gbap	Measured										
Gbap	Indicated	17	3.3	33	31	1.2	0.4	0.1	0.2	0.1	0.0
Gbap	Inferred	45	6.1	29	43	1.0	0.4	0.1	0.5	0.2	0.0
Gbap	Total	62	3.6	33	32	1.0	0.4	0.1	0.6	0.2	0.1
Kamatipa	Measured	36	3.8	34	26	1.6	1.1	0.2	0.6	0.4	0.1
Kamatipa	Indicated	24	3.0	39	35	0.9	0.8	0.1	0.2	0.2	0.0
Kamatipa	Inferred	1	3.3	37	30	1.3	0.9	0.1	0.0	0.0	0.0
Kamatipa	Total	61	3.5	36	30	1.3	1.0	0.1	0.8	0.6	0.1
Kibi	Measured	19	2.8	34	19	1.3	0.6	0.1	0.3	0.1	0.0



Deposit	Mineral Resource Category	Material Tonnes	In Situ HM	In Situ Slime	In Situ OS	In Situ Rutile	In Situ Ilmenite	In Situ Zircon	In Situ Rutile Tonnes	In Situ Ilmenite Tonnes	In Situ Zircon Tonnes
		(MT)	(%)	(%)	(%)	(%)	(%)	(%)	(MT)	(MT)	(MT)
Kibi	Indicated	17	2.5	33	24	1.0	0.6	0.1	0.2	0.1	0.0
Kibi	Inferred	25	2.6	34	20	1.1	0.6	0.1	0.3	0.2	0.0
Kibi	Total	60	2.7	34	21	1.1	0.6	0.1	0.7	0.4	0.0
Komende	Measured	4	5.1	40	27	1.0	1.4	0.1	0.0	0.1	0.0
Komende	Indicated	6	4.7	54	22	0.5	1.0	0.1	0.0	0.1	0.0
Komende	Inferred	2	4.5	48	27	0.5	1.1	0.1	0.0	0.0	0.0
Komende	Total	12	4.8	48	24	0.7	1.1	0.1	0.1	0.1	0.0
Sembehun Group	Measured	134	3.4	34	20	1.4	0.9	0.1	1.9	1.2	0.1
Sembehun Group	Indicated	167	3.2	36	23	1.0	0.7	0.1	1.7	1.2	0.1
Sembehun Group	Inferred	207	3.7	33	23	0.9	0.6	0.1	1.9	1.3	0.1
Sembehun Group	Total	508	3.3	35	22	1.1	0.7	0.1	5.5	3.7	0.4

NOTES:

- Mineral Resources are reported inclusive of Ore Reserves
- In situ (dry) metric tonnage is reported
- The mineral assemblage is reported as a percentage of the in situ material
- Rounding may generate differences in the last decimal place.



The Sembehun mineral resource was publicly reported in a release through the Australian Stock Exchange by Iluka Resources Ltd on the 24 February 2022, “Sembehun Ore Reserve and Mineral Resource Update, Sierra Leone”, which was re-stated and released by the Company in its ASX Release on 24 March 2023 “Sierra Rutile Annual Statement of Resources and Reserves”.

Sierra Rutile Limited confirms that it is not aware of any new information or data that materially affects the information included in the original announcement, and that all material assumptions and technical parameters underpinning the estimates in the announcement continue to apply and have not materially changed. Sierra Rutile Limited confirms that the format and context in which the Competent Person’s findings are presented have not been materially modified from the original market announcement.

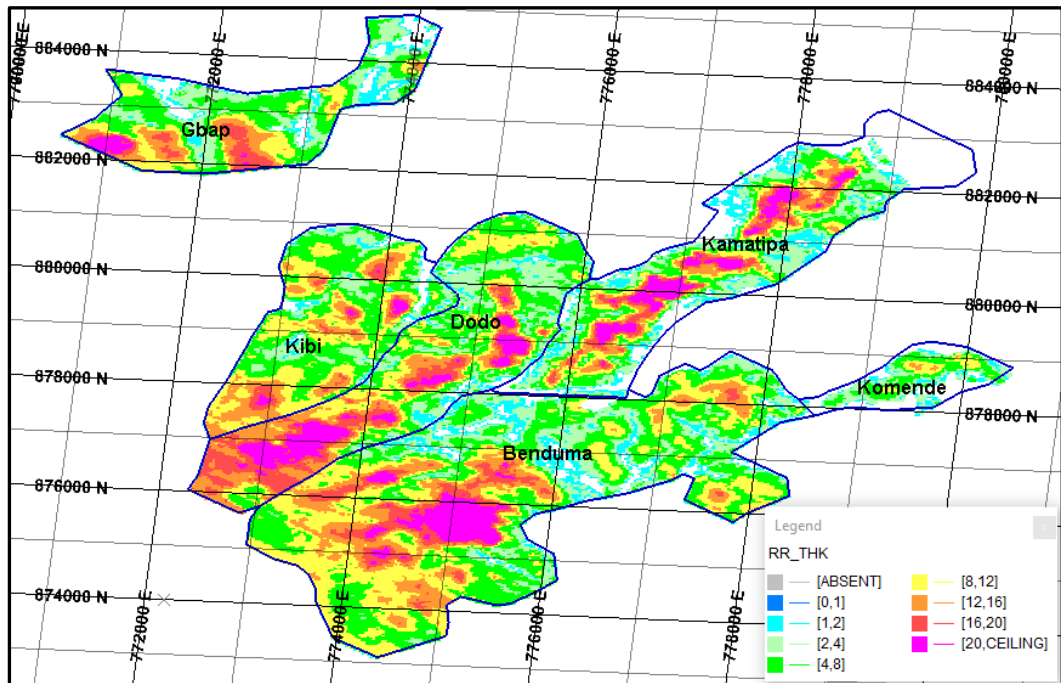


Figure 1-3: Plan Showing the Rutile Grade * Resource Thickness Endowment for the Sembehun Deposits

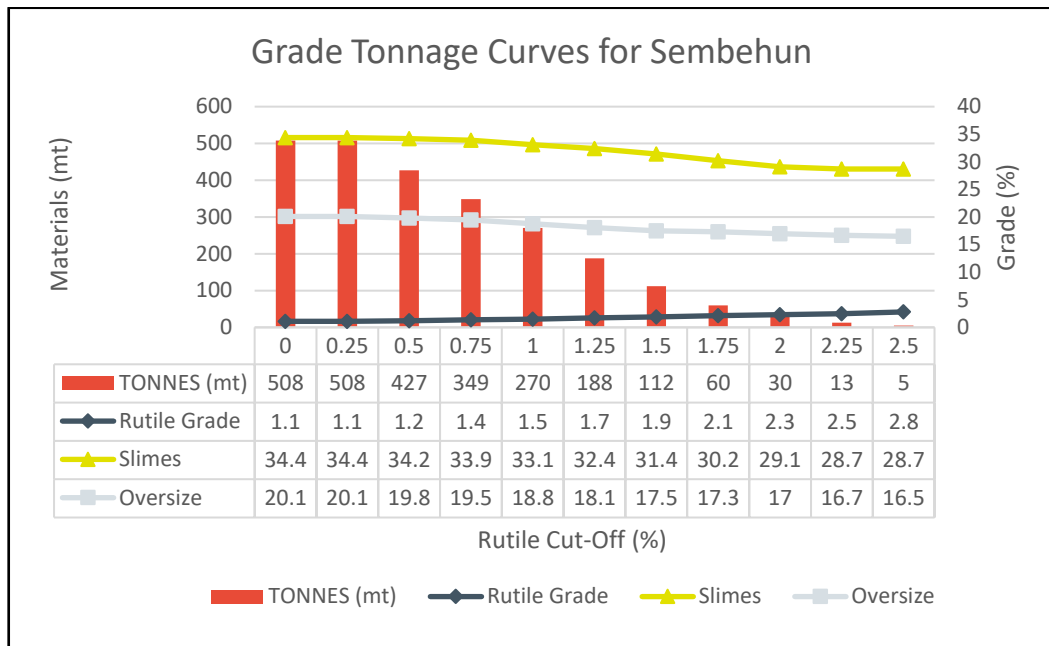
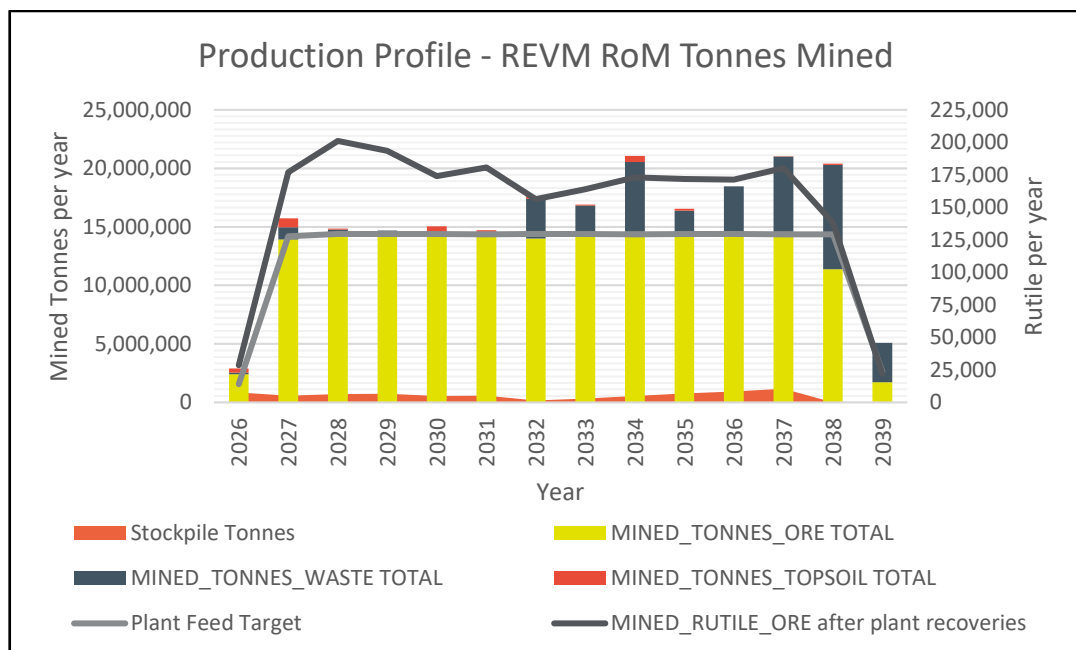


Figure 1-4: Grade Tonnage Curve for the Sembehun Rutile Mineralisation

1.5 Mining

The Sembehun deposit has a life of mine (LOM) of 14-years from May 2026 to May 2039 including the ramp-up and tail periods. The average grade of the target area is 1.45% rutile yielding an estimated 2.1 Mt of rutile after WCP and MSP recoveries.



A margin ranking exercise was conducted and subsequently a cut-off grade of 1.0% rutile was applied to these blocks to generate a production profile that yields 175 ktpa of rutile



on average at the MSP from ROM production of 14.4 Mtpa. This is based on a WCP recovery of 94% and an MSP recovery of 92.0%.

A stockpile strategy was implemented to plan a buffer between ex-pit material and the WCP feed during the wet season which was based on rainfall data from Gangama. The stockpile size was planned at a peak capacity of 1.2 Mt to minimise the footprint around the WCP.

The load and haul mining method is based on similar equipment than the current operations at Lanti. A fleet of 9 Volvo EC950 excavators and 22 Volvo A60D dump trucks is estimated for the primary equipment fleet to execute ore and waste activities.

Mining OPEX and CAPEX estimates are based on quotes from contractors. The mining CAPEX is \$17.3M and a total OPEX of \$683.0M is expected over the life of mine.

1.6 Metallurgical Test Work and Processing Facilities

1.6.1 Metallurgical Test Work

Bulk processing test work was performed by Light Deep Earth (LDE) on three ROM samples from the Sembehun deposits namely: Dodo, Kamatipa and Komende and on one Gangama (Area 1) rougher head feed sample for comparison purposes. A four-stage spiral circuit (rougher, middlings/scavenger, cleaner and recleaner) was tested.

The rutile recoveries for the four samples were materially different with Gangama outperforming the Sembehun deposits.

1.6.2 Processing Facilities

The process plant will consist of two identical streams from ROM tip through to HMC stockpiling. A new magnetic separation section is included at the MSP to assist with chrome rejection to meet final product specifications and de-bottlenecking to accommodate the increase in ilmenite. A ratio of 2:1 rutile to ilmenite ratio for Sembehun (over LOM) is targeted for the current operation. Each process stream will be designed with the capability of processing 50% of the ROM feed.

The plant can be sub-divided into the following areas:

- Feed preparation including oversize removal and desliming
- Wet concentrator
- HMC stacking
- Slimes thickening (single thickener for total duty)
- Tailings handling and disposal
- Water supply and distribution
- Air supply and distribution
- Magnetic separation (located at MSP)
- Non-mags handling and mags stockpile (located at MSP)

A high-level Block Flow Diagram (BFD) is shown in Figure 1-5. For the detailed BFD please see H369702-1000-210-252-0001-0001.

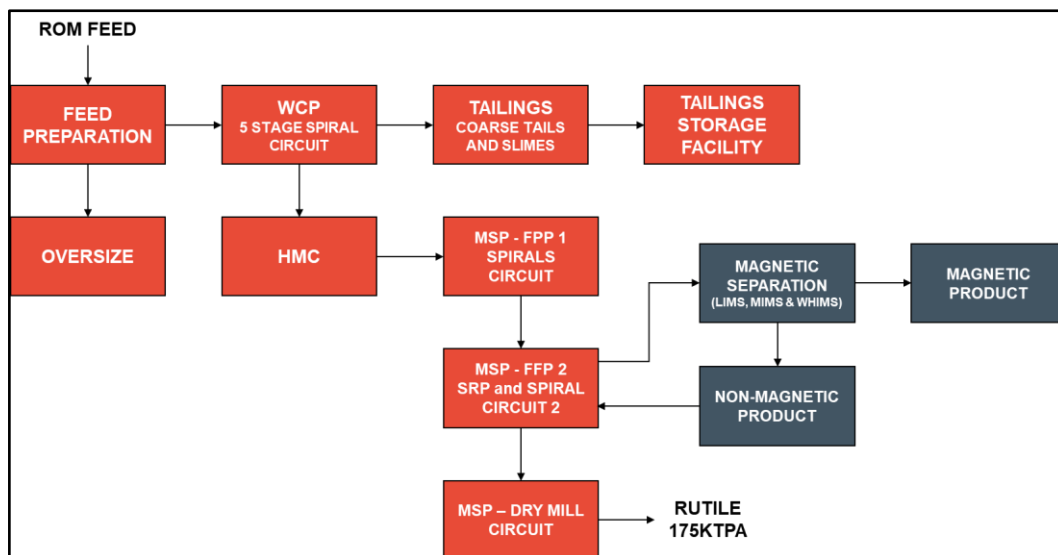


Figure 1-5: High Level Block Flow Diagram

The Process Design Criteria (PDC – H369702-2000-210-210-0001) establishes the process engineering design and operational requirements of the processing of the Sembehun group of deposits.

The design basis of the plant is as follows and is shown in the complete PDC document.

Table 1-2: Design Basis of the Plant

Parameter	Value	Unit	Reference/ Comment
Annual ore mined	14,440,324	tpa	PFS Mine Plan 2025 – 2038
ROM feed rate	2155	t/h	Calculated with 76.5% WCP Utilisation
ROM Moisture Content	10	% w/w	Mine Plan
WCP Runtime	76.5	%	Client Specification
WCP Rutile Recovery	~94	%	LIMN Models
MSP Rutile Recovery	91.36	%	92% – Client Specification WHIMS losses defined by testwork (0.4%), LIMS losses assumed, typical (0.24%)



1.7 Civil Infrastructure

The Prefeasibility Study (PFS) formed the basis of infrastructure design for the DFS Study. Layouts developed in the PFS were further refined to produce models and drawings in line with a DFS level of detail. The purpose of the DFS was to produce bills of quantities of sufficient accuracy to obtain prices from the market for CAPEX expenditure estimation.

Infrastructure includes the following:

- Access road linking the existing mining operation in Area 1 with the new WCP in Area 5
- Bridge over the Gbangbaia River on the access road
- On plant roads to allow access to facilities, fuel depot and HMC stockpile
- Access ramp to ROM tip
- Earthworks terrace to accommodate new plant
- Earthworks terrace to accommodate accommodation camp
- Earthworks terraces to accommodate ROM stockpiles
- Earthworks terraces for the thermal plant and solar field
- Site buildings for both accommodation camp and plant
- Sewer and water reticulation for both camp and plant
- Stormwater drain and channel system to divert contaminated run off from plant and ROM stockpiles to silt trap structures
- Fencing.

1.8 Electrical

Electrical power at the Sembehun site will be provided by a dedicated power plant. The dedicated power producer will be responsible for the design, supply, installation, and operation of the plant. Electrical power will be reticulated at 11 kV, 50 Hz. The calculated maximum Process Design Load at the Sembehun site is 18,334 kVA.

Major electrical facilities to be installed at the Sembehun site include:

- 11 kV main electrical distribution substation comprising a concrete and masonry building adjacent to the power plant
- A PFC unit installed in a self-standing, weatherproof enclosure complete with capacitors, reactors and switching devices adjacent to the 11 kV main electrical distribution substation
- E-houses comprising prefabricated structures installed on concrete columns with adjacent concrete transformer bays distributed throughout the process plant



- E-house skids comprising prefabricated structures and transformers mounted on skid bases installed at remote pump station locations
- Electrical miniature substations comprising MV switchgear, transformer and LV switchgear contained within a weatherproof enclosure.

Electrical power at the new Magnetic Separation Plant in Area 1 will be supplied from a spare feeder in the existing switchboard MV1 at the MSP. Electrical power will be reticulated at 4.16 kV, 60 Hz. The calculated maximum Process Design Load for the Magnetic Separation Plant in Area 1 is 369 kVA.

Major electrical facilities to be installed at the Sembehun site include:

- An E-house comprising a prefabricated structure installed on concrete columns with adjacent concrete transformer bay adjacent to the new Magnetic Separation Plant.

1.9 Control and Automation

Where possible the C&A system was designed using components similar to the existing plant at Gangama. This will speed-up initial training of Operating and Maintenance staff.

The plant layout 3D model was used to create physical and logical network plans. P&IDs were developed using industry best practices and further refined during a HAZOP process. From the P&IDs Instrument and Valve Lists were developed.

The design includes a dedicated main control room from where process operation can be viewed and controlled.

1.10 Mechanical

Mechanical engineering was well developed from work executed during the PFS with the basis being the plant layout, 3D models, and mechanical equipment list. The focus areas were to prepare equipment specifications for pricing and producing DFS level plant arrangement drawings.

Following the process definition studies and flow-sheet development, equipment specifications and subsequent market enquiries were developed for selected mechanical equipment. Depending on the criticality or size of the equipment, different procurement package approaches were taken to ensure a form of pricing was obtained under severe time constraints. A mechanical equipment list (MEL) was developed from the PFDs and P&IDs for all the tagged mechanical equipment. All equipment quantities were taken from the PFDs and the equipment list.

In parallel, a plant 3D model was developed. The development of the 3D model was based on past studies and technical guidance from inhouse consultants. After layout concept and option development, the preferred layout was selected and refined based on multidiscipline internal and client reviews.

Design input was provided by the process engineering for all flowrates, volumes, rheology, and process input by populating datasheets for all packages. Vendors were responsible for sizing supplied equipment based on the datasheets issued in the



procurement documentation. Basic sizing calculations were conducted for the platework, conveyor and pump packages.

1.11 Piping

The piping design was based on the piping design criteria as the basis of engineering and design. Piping material specifications were developed based on the nature, process conditions and mechanical characteristics of the fluid commodities. Manual valves for isolation, throttling and other purpose were selected in collaboration with the client.

The basis for the design of the P&IDs was the approved PFDs as well as the mass balance provided by the process engineering team. The P&IDs are a consolidation of all engineering specifications and requirements to meet the process design.

A team of experienced piping designers worked in collaboration with other discipline designers to develop a workable 3D model. Piping MTOs were extracted from these intelligent models and consolidated into a BOQ which was packaged to be issued to material suppliers as well as SMPP contractors for budget quotes.

1.12 Power Supply

Power for the project will be supplied by a power supply Contractor who will design, construct, commission, test, operate and maintain the power plant (the Contractor will be the owner of the plant) under a mutually agreed Power Purchase Agreement.

Key power requirements for the project are:

- Power Plant Maximum Demand – 12.3 MW
- Power Plant Average Demand – 9.5 MW
- Average Annual Consumption – 71,880 MWh/year.

A competitive bidding process was followed to obtain power supply quotes from the market and select an optimum vendor offering. The solutions proposed from the bidders varied from thermal only to a combination of thermal with solar and a Battery Energy Storage System (BESS) in a hybrid solution.

The preferred option selected for the project is a hybrid power plant. The installed capacity for the thermal generating units is 17 MW and includes a N+2 redundancy on normal operating load. The thermal units are capable of running on either Diesel, MFO or HFO which gives flexibility in terms of the fuel supply options to the site over the lifetime of the mine.

The renewable portion includes a 13 MWp PV solar field and 8.25 MWh BESS and will contribute 22% of the total power demand.

Various fuel supply options (Gas, Diesel, MFO, HFO) have been considered for the power plant. Fuel suppliers have been engaged to determine the viability of the various fuels and upfront costs. The fuel selected for the power plant is MFO. The fuel selection was based on the certainty of the logistics to deliver the fuel to site and the fuel pricing to still have a competitive overall cost of electricity.



Due to the IPP arrangement, the bulk of the power plant capital costs are included in the power supply tariff which are accounted for in the OPEX estimate for the project. A detailed breakdown has been developed which clearly identifies the scope of work responsibilities between the power supply contractor and SRL. For the items included in SRLs scope of work, the costs have been developed using inhouse database information and is included in the CAPEX estimate.

Based on the fuel selected and parameters shown above the overall cost of electricity for SRL is expected to be \$0.258/kWh.

1.13 Human Resources

A comprehensive Human Resource strategy has been developed considering all the key requirements necessary for the establishment of the Sembehun project as it moves from construction through to the commissioning and to a steady state of production. This includes the development of a detailed manpower plan, recruitment, training and development and a framework of policies and procedures that comply with Sierra Leone's Labour Laws.

1.14 Project Execution and Overall Master Schedule

The Sembehun project has passed through many phases and studies as listed below:

- ◆ 2017-2018: Sembehun Mine Development Project PFS followed by the DFS
- ◆ 2019: Scoping Workshop
- ◆ 2020: Sembehun II Concept Study
- ◆ 2020: Sembehun II Pre-PFS
- ◆ 2022: Sembehun II PFS
- ◆ 2022: Sembehun II DFS

A Project Execution Plan for the Sembehun II Project was developed during this DFS phase. The Project is to be executed in a single phase.

The scheduling strategy for the project is based on a Financial Investment Decision date of January 2024, board approval in February 2024, Hatch award March 2024 and a constrained C5 commissioning date for the first stream of October 2026. Consideration for civil works in the wet season have also been included.

To achieve these timelines, the development of engineering for the DFS was matured and developed to a greater degree to allow negotiations for award of early packages as opposed to an execution round of procurement. This pertains to the civil works, road and bridge and several packages where Critical Vendor Data is required. The balance of the packages will undergo further engineering development in execution as well as a return to open market bidding. These packages will be signed off and awarded on an approved "Contract Planning and Recommendation Form" (CPRF) and will not require the Tender Evaluation and Recommendation to be updated.

Stream 1 is to achieve C5 Commissioning by October 2026 with stream 2 following in December 2026.

At the time of publishing this report, some of the base dates for the DFS are in the past. The project team have tabled a bridging stage (see Chapter 29) to commence immediately after the DFS completion and this, together with the advanced levels of DFS engineering and the vendor engagements and negotiations carried out during the optimisation stage, ensure a quicker startup and thus minimise the effects caused by the delay to the DFS completion.

The primary execution related risks around project success include the following factors:

- Above average rainfall quantities during the field execution period
- Global manpower shortage issues which can impact both equipment fabrication and field execution.

Key project milestones are shown (Table 1-3).

Table 1-3: Key Project Milestones

Description	Date
MSP Engineering Start	17-April-24
MS1 Complete: Approved for Detail Design	23-Aug-24
MS2 Complete: Design Model Complete	02-Jul-25
MS3 Complete: Approved for Construction	16-Jul-25
Construction Start	22-Nov-24
Commissioning Start	05-Aug-26
Construction Complete	26-Aug-26
Stream 1: Commissioning Complete	28-Oct-26
Stream 2: Commissioning Complete	08-Dec-26

1.15 HSEC (including ESHIA)

An Environmental, Social and Health Impact Assessment (ESHIA) has been undertaken in compliance with Sierra Leonean legal requirements, specifically the Environment Protection Agency Act 2022 (Act No. 15 of 2022), the Environmental Impact Assessment (EIA) Supplementary Act (2010), and the Environmental Protection (Mines and Minerals) Regulations 2013 (Statutory Instrument No. 10 of 2013) which establishes the rules and procedures for an ESHIA. As far as practicable, alignment to international best practice standards was achieved in the ESHIA and subsequently developed Environmental, Social and Health Management Plan (ESHMP). These included the International Finance Corporation’s (IFC) Performance Standards (PS) (2012), World Bank Group (WBG)/IFC General Environmental, Health and Safety Guidelines, 2007 (WBG/IFC-EHS guidelines) and the Equator Principles (EPs).



Digby Wells Environmental (Jersey) Limited (hereinafter Digby Wells) and CEMMATS Group Limited (hereinafter CEMMATS) have been jointly appointed with Anchor Environmental Consultants (Pty Ltd) (hereinafter Anchor) to provide environmental and social consultancy services and undertake the environmental regulatory process for the Project. The consultants were managed by Sustain Consulting (Pty) Ltd.

Numerous bio-physical, social and socio-economic studies were undertaken as part of the ESHIA process. Studies undertaken during 2022 – 2023 built on studies undertaken by Earth Systems during the 2017 – 2019 ESHIA conducted under the Sembehun Prefeasibility Study (PFS) and DFS (I).

No fatal flaws were identified during any of the studies undertaken. The major risks to the feasibility of the Sembehun Project include:

- The physical displacement of ~1,858 people, comprising 454 households from 10 villages within the Project Development Area (PDA), as well as the economic displacement of these persons and other persons with land within the PDA, who are mainly reliant on subsistence livelihood practices. Social infrastructure will also be impacted. To mitigate and manage these risks, a comprehensive inventory of loss has been compiled as part of the household surveys conducted during the ESHIA, and an entitlement matrix has been developed. This forms part the Resettlement and Livelihood Restoration Plan (RLRP) developed for the Project. The effective management of the resettlement and livelihood restoration process will be critical to the success of the execution of the Sembehun Project
- Tangible cultural heritage resources will need to be resettled and/or compensated for as part of the RLRP. These include cemeteries, stand-alone graves, and secret society infrastructure. These aspects have been documented in the Cultural Heritage specialist study, which furthermore outlines mitigation and management measures in this regard. A Chance Finds Procedure has been developed for the ongoing management of unknown cultural heritage resources throughout the LOM. Influx into the PDA from opportunistic migrants in search of compensation benefits from the resettlement process, as well as influx of job seekers and persons in search of economic opportunities from the Project, comprises another major potential risk to the Project. A detailed Influx Management Plan has been developed as part of the ESHIA for implementation by the Project team
- Disruption to the bio-physical environment in the form of vegetation clearance, stripping of soils, alteration of the hydrogeological and hydrogeological regimes, as well as pollution incidents impacting on soils, air, biodiversity and Project Affected Communities, have been identified, described and evaluated in various specialist studies and the ESHIA itself. Comprehensive mitigation and management plans have been developed
- Biodiversity studies included botany and habitats, non-primate and primate mammals, herpetofauna, avifauna, freshwater ecology, and marine and estuarine studies. Several Species of Conservation Concern (SCC) occur within the PDA and the



broader Area of Influence (AoI) of the Project resulting in Critical Habitat being identified as part of the Critical Habitat Assessment (CHA). SCC include Western Chimpanzee (Critically Endangered), Sooty mangabey (Vulnerable); the African, White-Bellied Pangolin (Endangered, not observed but has a high Likelihood of Occurrence (LOO) in the PDA), the Black-Bellied Pangolin (Near Threatened, also not observed but has a high LOO in the PDA), Timneh Parrot (Endangered), six freshwater fish species, the Common Eagle Ray (Critically Endangered), as well as other estuarine and marine species. The consolidated CHA determined unavoidable impacts will occur on the following Critical Habitat:

- ◆ Degraded Evergreen Lowland Forest (0.45 km²)
- ◆ Riverine Forests (0.14 km²)
- ◆ Inland Valley Swamps (IVS) (1.44 km²)
- ◆ Mangrove Forests (0.06 km²).

Mitigation and management measures have been included in the ESHIA/ESHMP, and a Biodiversity Action Plan (BAP) was being developed at the time of compilation of this report.

Copies of the ESHIA/ESHMP were made available in various locations for public review over a 2-week period, and the EPA-SL instructed the ESHIA consultants and SRL, to undertake public disclosure meetings as follows:

- Sembehun Town – 23 October 2023
- Moyamba Town – 24 October 2023
- Area 1 – 25 October 2023
- Freetown – 27 October 2023.

The meetings were well attended, and no major stakeholder concerns were raised, which had not been addressed in the ESHIA/ESHMP. Therefore, no changes to the ESHIA/ESHMP would be required. Concurrently, minutes of the meetings, as well as an issues and response register were being compiled by the ESHIA consultants, which were appended to the ESHIA/ESHMP for final approval by the EPA-SL Board.

The ESHIA and ESHMP was submitted to the EPA-SL on 16 September 2023. The EPA-SL approved the publication of the ESHIA on 28 September 2023 and the final approval was completed by the EPA board of Directors on 26 January 2024.

1.16 Capital Costs

1.16.1 Capital Cost Main Summary

The capital cost estimate has been compiled using AACE guidelines targeting a Class 3 level of accuracy of -20% and +20% after contingency is considered with key inputs as follows:



- Major mechanical equipment pricing based on multiple (High Definition) adjudicated budget quotations recommended by the engineering and procurement team
- Minor equipment based on escalated database rates from recently committed quotations
- Installation rates based on adjudicated tendered prices from the market
- EPCM calculated based on the Project Execution Plan (PEP), organisational chart, project rates and include sub-consultants and expenses
- Owners’ cost determined by the client
- Contingency determined from a QRA.

Estimate accuracy has been verified in a QRA and the results are between -11.9% and +13.1% over 90% of the confidence interval (P5 and P95).

The capital cost is provided in USD terms with a base date of October 2023 (Q4,2023).

The overall capital cost estimate of the project is \$301,273,960 which includes contingency at P80 confidence level of \$41,000,000 or 16% of base estimate but excludes forward escalation. The base cost for the estimate is \$260,273,960.

The capital cost estimate summary is provided in Table 1-4. The overall capital costs below include all the direct costs, indirect costs, and provisions, but excludes forward escalation.

Table 1-4: Capital Cost Estimate Summary by Area

Level	Description	Including Growth	% of TIC
1	Sembehun FEL3	301,273,960	100%
2	Direct Costs	190,279,123	63.2%
2	Indirect Costs	62,621,877	20.8%
2	Provisions	48,372,000	16.1%

Table 1-5: Capital Cost Estimate Summary Level 4

Level	WBS	Bill description	Excl Growth Amount	Incl Growth Amount
1		Sembehun Rev 2 – Base Line VE	297,728,946	301,273,960
2		Direct Costs	186,734,109	190,279,123
3	1000	Mine Site Wide	17,937,145	17,951,561
4	1120	Mine Infrastructure	17,937,145	17,951,561
4	1420	Mine Disposal Infrastructure		0
4	1620	Mine Field Pipework Infrastructure		0



			Excl Growth	Incl Growth
Level	WBS	Bill description	Amount	Amount
4	1630	Mine Field Pipework and Boosters		0
3	2000	Concentrator	127,459,942	129,523,546
4	2120	WCP Infrastructure	11,856,842	12,419,494
4	2130	WCP Plant Wide	13,149,501	13,577,118
4	2150	WCP Offices and Facilities	435,008	447,936
4	2160	WCP Utilities	1,169,038	1,174,764
4	2230	Feed Preparation Circuit	31,487,420	32,031,960
4	2330	Spiral Circuit	24,927,959	25,205,166
4	2430	Concentrate Stacking	423,802	429,333
4	2620	TSF Infrastructure	11,026,860	11,026,860
4	2630	TSF Pumps and Piping	15,690,620	15,782,612
4	2720	Process Water Infrastructure	9,426,557	9,426,557
4	2730	Process Water Tanks and Pumps	7,866,336	8,001,748
3	3000	Mineral Separation Plant	3,635,450	3,692,327
4	3930	Magnetic Separation	3,635,450	3,692,327
3	5000	Infrastructure	37,701,571	39,111,688
4	5120	Power Plant Infrastructure	112,862	118,545
4	5130	Power Plant	3,759,503	3,759,503
4	5220	Access Roads	23,647,899	24,782,108
4	5230	Transport Equipment		0
4	5330	Communication/IT		0
4	5430	Water treatment	722,200	722,200
4	5460	Plant Piperacks	2,876,307	2,973,208
4	5530	Process Control Systems	599,165	599,165
4	5620	Camp Infrastructure	1,061,869	1,113,866
4	5630	Camp Equipment		0
4	5650	Camp Buildings	2,497,009	2,497,009
4	5710	Solar Plant	2,424,757	2,546,084
3	7000	Construction Indirects		0
4	7100	Temporary Access Roads		0
3	8000	Other Capitalised costs		0



			Excl Growth	Incl Growth
Level	WBS	Bill description	Amount	Amount
4	8110	Plant Mobile Equipment		0
2		Indirect Costs	62,621,877	62,621,877
3	9000	Project Indirect Costs	62,621,877	62,621,877
4	9100	Temporary Facilities And Services	151,577	151,577
4	9300	Spares	3,443,321	3,443,321
4	9400	Vendor Commissioning	527,483	527,483
4	9500	Sub Consultants	1,485,000	1,485,000
4	9600	EPCM Costs	37,227,498	37,227,498
4	9700	Owners Costs	15,295,198	15,295,198
4	9800	Resettlement Costs	4,491,800	4,491,800
2		Provisions	48,372,960	48,372,960
3	10000	Project Provisions	48,372,960	48,372,960
4	10100	Escalation	945,791	945,791
4	10300	Taxes and Duties	6,427,169	6,427,169
4	10400	Contingency	41,000,000	41,000,000

Table 1-6: Capital Cost Estimate Summary by Area

			Incl Growth
Level	WBS	Bill description	Amount
1		Sembehun Rev 2 – Base Line VE	301,273,960
3	1000	Mine Site Wide	17,951,561
3	2000	Concentrator	155,530,870
4	2620	TSF Infrastructure	15,217,801
4	2720	Process Water Infrastructure	12,979,310
3	3000	Mineral Separation Plant	5,225,306
4	5120	Power Plant Infrastructure	154,819
4	5220	Access Road – Nitti	24,645,521
4	5220	Bridge B6116	7,510,075
4	5220	Stockpile Access Road	209,774
4	5430	Water treatment	943,191
4	5620	Camp	4,715,794



			Incl Growth
Level	WBS	Bill description	Amount
4	5710	Solar Plant – Infrastructure	3,325,179
4	9800	Resettlement Costs	4,491,800
4	10100	Escalation to Base Date	945,791
4	10300	Taxes and Duties – Withholding Tax	6,427,169
4	10400	Contingency	41,000,000

Table 1-7: Rate Maturity Matrix

Maturity Matrix – Direct Costs			
Rate Matrix Code	Rate Matrix Description	Amount	%
C	Escalated/Factored from Previous Committed <1 Year	995,185	0.5%
EA	Budget Quote – Multiple (High Definition)	153,160,117	82.0%
EB	Budget Quote – Multiple (Low Definition)	7,085,324	3.8%
F	Budget Quote – Single	21,733,980	11.6%
K	Fixed Price – Uncommitted PO – Supply and Install	3,759,503	2.0%
Totals		186,734,109	100.0%

1.17 Operating Costs

The operating cost estimate for Sembehun (Area 5) is developed by Hatch using a combination of vendor information, sub-contractor information, factors and SRL data.

The base date for the operating cost estimate is September 2023.

The costs are divided into the following categories:

- Mining
- WCP
- Logistics to MSP
- MSP (Magnetic Separation Plant only)
- Camp and Accommodation.

The operating costs were calculated on a monthly basis based on the mine plan (SEM_DFS_REVM). The total plant throughput is 2,155 tph, at 76.5% utilisation.

The high level OPEX breakdown is shown below:

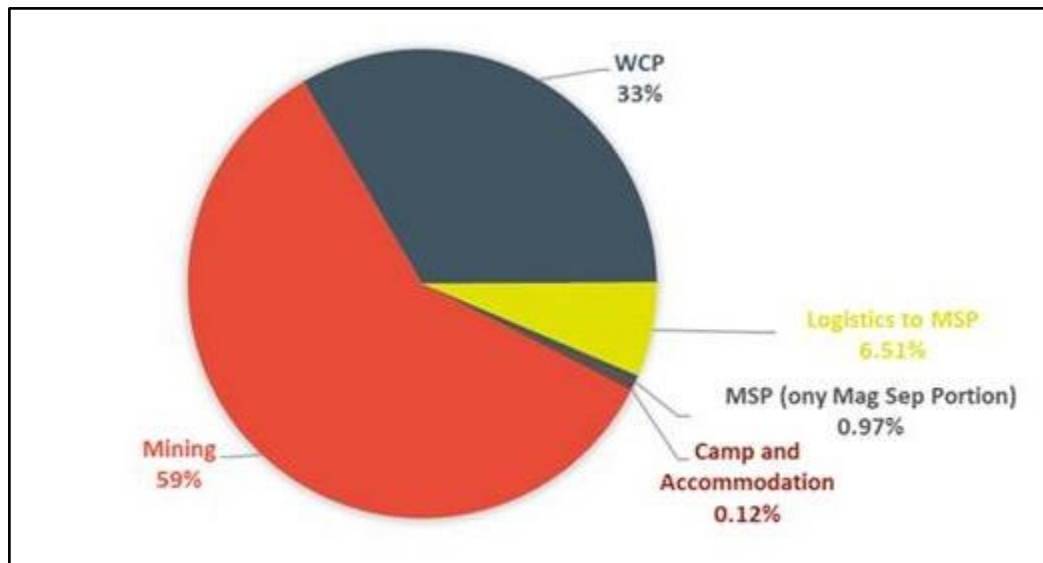


Figure 1-6: High Level OPEX Breakdown

SRL were responsible to develop the cost for the following areas:

- MSP costs are modelled based on fixed and variable cost drivers as derived from the 2024 budget (This excludes the Magnetic Separation Plant)
- Haulage cost to Port is modelled based on fixed and variable cost drivers as derived from the 2024 budget
- Port is modelled based on fixed and variable cost drivers as derived from the 2024 budget
- Engineering Services which reduce from \$5.45m in 2024 to \$3.31m with Sembehun only in 2027 (includes Engineering Admin, Electrical Services, Central Workshop, Facilities and Maintenance and the Light Vehicle Garage)
- Area 1 Power Cost is based on a diesel power supply contract during until 2026, with an IPP providing a hybrid solution from 2027 onwards at lower cost. This cost is modelled from first principles and amounts to ~\$0.35/KWHR with Area 1 only, which reduces to ~\$0.26/KWHR with Sembehun from 2027 onwards)
- Technical Services and Q&A which increases from \$4.56mm in 2024 to \$5.94m with Sembehun only in 2027(includes Laboratory, Metallurgy, Mine Planning, Geology, Crop Compensation, Survey, and Geology)
- General Administration which reduces from \$4.95m to \$3.38m with Sembehun only in 2027
- Finance which reduces from \$1.67m to \$1.46m with Sembehun only in 2027
- Information Technology which reduces from \$1.22m to \$1.28m with Sembehun only in 2027



- Community Affairs which reduce from \$0.88m to \$0.73m with Sembehun only in 2027 (this excludes \$14.9m of delayed RAP included as stay in business capex)
- HR, Training and Camp which reduces from \$4.41m to \$2.84m with Sembehun in 2027 (HR Operations, HR Organisational development, HR Pool, and Camps)
- Environmental Rehab, Health and Safety which reduces from \$3.19m to \$2.87m with Sembehun only in 2027 (Environment, Rehab, Safety and Clinic)
- Security which reduces from \$2.3m to \$1.77m with Sembehun in 2027
- Commercial Services which reduce from \$1.8m to \$1.72m with Sembehun in 2027 (Fuel, Contracts, Procurement and Warehouse)
- Surface Rent, Mining Lease and Agricultural Development Fund reduces from \$1.82 to \$1.6m with Sembehun only in 2027
- Insurance reduces from \$4.07m to \$3.51m with Sembehun only in 2027
- Banking Charges and Audit Fees at \$0.1m in 2024 and remains unchanged for Sembehun in 2027
- Freetown Office Costs which reduce from \$1.15m reduces to \$1.14m with Sembehun only in 2027
- Other Corporate Costs (Perth) at \$4.09m in 2024 and remains unchanged for Sembehun in 2027
- Johannesburg Office Costs at \$0.78m in 2024 and remains unchanged for Sembehun in 2027
- Marketing Costs at \$0.96m in 2024 and remains unchanged for Sembehun in 2027
- Selling Costs at \$1.04m in 2024 has been modelled for Sembehun in 2027 at 0.25% of rutile sales, plus \$2.77/t rutile plus \$0.485m per year which amounts to Royalties which are modelled at 0.5% of revenue for Area 1 (Third Amendment) and is modelled as 4% of revenue for Sembehun.

For Area 1 cost is based on the approved B24 budget and for Sembehun the support costs were estimate on a bottom-up cost basis from first principles by each department and is supported by a detailed organogram which is used to calculate labour cost and reflects the anticipated support cost levels once Sembehun is the only WCP in operations from 2027 onwards.

1.18 Financial Analysis

The purpose of the financial analysis chapter is to set out the financial evaluation results based on the DFS for the Sembehun project.

The Sembehun project is valued by calculating the difference in the value of SRL with Sembehun versus the value of SRL without Sembehun. That is, the value of the Sembehun project is calculated as its incremental value added to SRL Area 1. Hence, two scenarios have been modelled as follows:



- “SRL Without Sembehun”: This scenario assumes that following the conclusion of the Sembehun DFS, a decision is made to not proceed with execution of the Sembehun project. The Area 1 mine plan is the same as for “SRL With Sembehun” case to ensure the incremental NPV value as reported represents the impact of the Sembehun project only
- “SRL With Sembehun”: This scenario assumes that following the conclusion of the Sembehun DFS, a decision is made to progress with the execution of the Sembehun project. Existing operations at Area 1 would continue until phase 1 of Sembehun becomes active, at which time mining operations feeding the DM2-1 and DM2-2 concentrators would cease. Pejebu ore to DM1/4 and Ndendemoia ore to DM2 ensures there is no production gap before Sembehun is commissioned.

Key operating parameters of the two scenarios are demonstrated in the following table.

Metric	Unit	"Without Sembehun"	"with Sembehun"	Sembehun Incremental
		(A)	(B)	(B – A)
Area 1 Virgin Ore Treated, Mt	Mt	23.5	23.5	0
Area 1 Mogbwemo Tails, Mt	Mt	0	0	0
Sembehun Ore Treated	Mt	0	173.8	173.8
Sembehun First Production	Date	N/A	1-Oct-26	1-Oct-26
Area 1 Operations End Date	Date	31-Dec-26	31-Dec-26	0
Area 1 and Sembehun Operations Duration	Years	3	15.4	12.4
SRL Lom Rutile Produced, Kt	Kt	306.3	2,461.2	2,155

The table below captures the key financial metrics for Area 1, and the Sembehun project with the value of the Sembehun project determined by deducting the “Without Sembehun” case from the “With Sembehun” Case. Steady state average reflects full operating years.

Measure	Unit	"Without Sembehun"	"With Sembehun"	Sembehun Incremental
		(A)	(B)	(B - A)
Production - Total Rutile	kt	306.3	2461.2	2154.9
Production - Total Ilmenite	kt	99.4	1341.7	1242.3
Production - Total Zircon	kt	18	125.6	107.6
Rutile Revenue ¹	\$m	452.6	3668.8	3216.2
Co-Product Revenue	\$m	64.9	572.5	507.6
Total Revenue	\$m	517.5	4241.3	3723.8



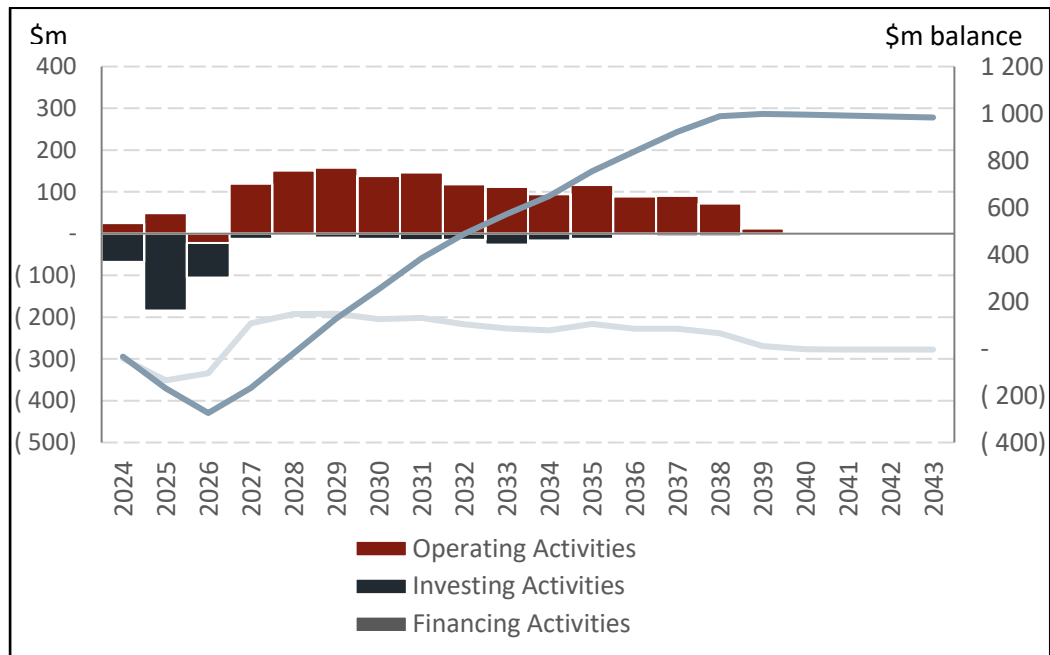
Measure	Unit	"Without Sembehun"	"With Sembehun"	Sembehun Incremental
		(A)	(B)	(B - A)
Cash Production Costs	\$m	431.2	2305.5	1874.3
Royalty	\$m	2.8	152	149.2
Corporate Costs	\$m	17.5	89.9	72.4
EBITDA	\$m	26.9	1732.3	1705.4
EBITDA / Revenue	%	5.2%	40.8%	N/A
EBIT	\$m	-25.6	1147.8	1173.4
Free Cash Flow	\$m	35.4	970.8	935.4
Area 1 Capex	\$m	15.7	15.7	0
Mogbwemo Capex	\$m	2.1	2.1	0
Area 5 Capex ²	\$m	1.1	308.6	307.5
Sustaining Capex ²	\$m	14.7	135.1	120.4
Closure	\$m	53.5	84.1	30.6
Cash Production Costs	\$/t Rutile	1304	916	-388
AISC	\$/t Rutile	1349	971	-378
Cash Cost Net of Credits ⁴	\$/t Rutile	1177	691	-486
Cash Cost Net of Credits ⁴ Sembehun Steady State	\$/t Rutile	0	600	600
NPV ₈ (Post-Tax, Real) ³	\$m	29	437	408
Payback	Date	N/A	N/A	2029/06/30
Payback	# months	N/A	N/A	55
IRR (Post-Tax, Real)	%	N/A	N/A	27.8%
NPV / Total Capex (Post-Tax, Real)	ratio	N/A	N/A	133%

Notes:

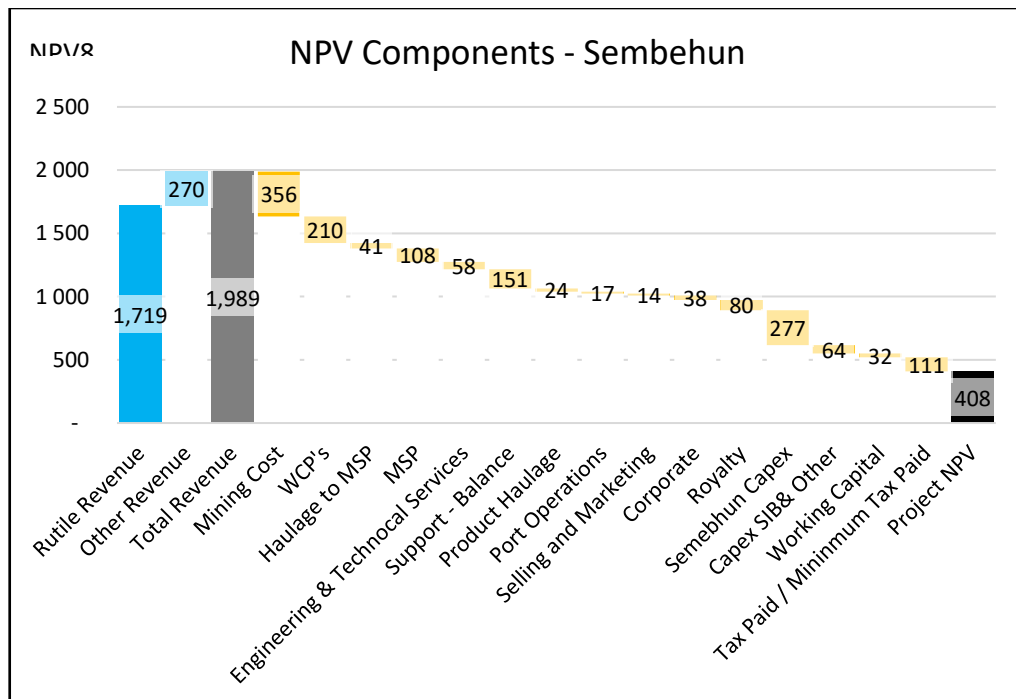
1. All figures are presented in \$ real 2024 terms.
2. Initial capex and the Sembehun WCP Opex have been escalated by 2% to bring it to mid-2024 \$ terms for financial modelling (8 months escalation).
3. Valuation date: 1 January 2024. All figures and financial results are calculated from 2024 onwards.
4. Excluding royalty, selling and marketing, and corporate costs.

The Sembehun project delivers incremental value to SRL of NPV8 \$408m (real 2024 \$ terms) with an IRR of 27.8% (real). The Profitability Index (NPV divided by the initial capex) is 133%. Execute capex for Sembehun is \$307.5m (adjusted to real mid 2024 in \$ terms) based on the 2024 DFS. A positive payback is achieved in 2029 within a 4.6-year period from the start of execution.

The graph below shows a summary of cash flow for Area 1 with Sembehun.



The chart below demonstrates the individual contribution of key drivers to the Sembehun project incremental NPV of \$408m. All figures in the below chart and following summary description are represented in NPV₈ \$m real terms.



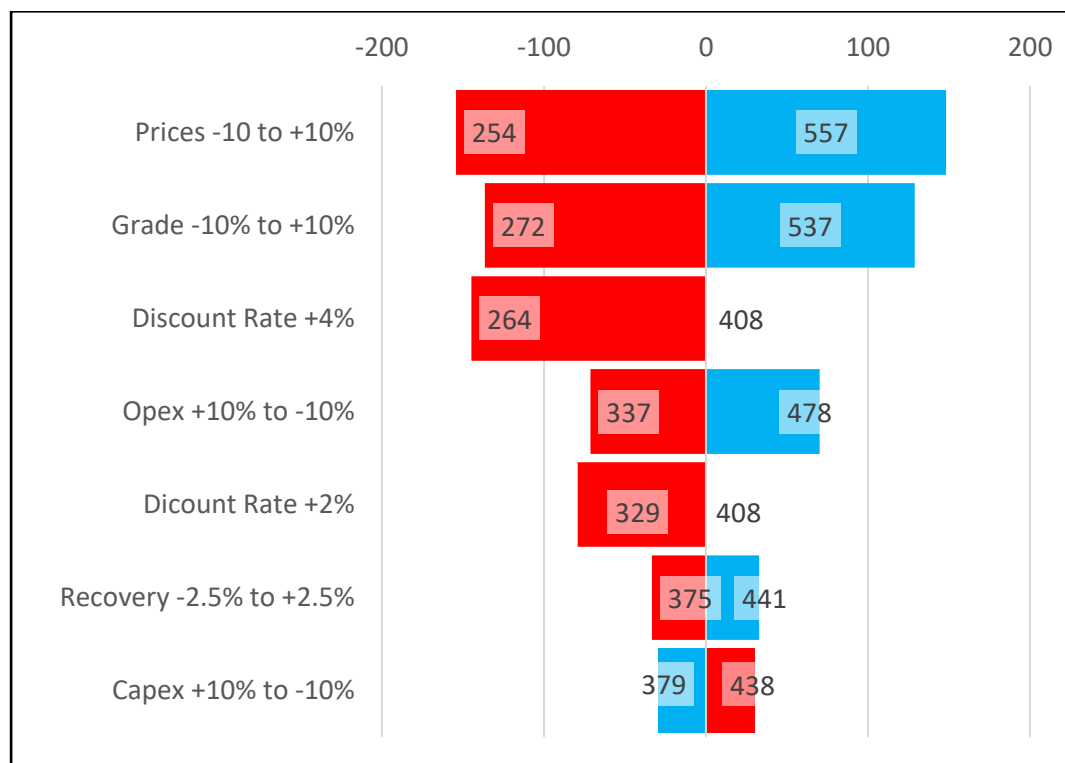
Key points:

- Rutile revenue accounts for \$1,719m out of a total of \$1,989m revenue contribution to NPV. Non-rutile co-products account for 13.6% of the total revenue NPV



- Total Initial Sembehun Capex (inclusive of SIB) amounts to \$341m of NPV
- Total operating costs (excluding rehab and selling costs) amounts to \$1003m in NPV terms. Contribution to costs ranked from highest to lowest include: Mining (36%), Support including Engineering & Technical Services (23%), Concentrating (21%), MSP (11%), Haulage/Port costs (6%) and Corporate (4%)
- and royalties and tax payments amount to \$191m NPV.

The chart below outlines the key sensitivities of the Sembehun project, followed by a detailed description.



Note: Bars sizes represent movement from base NPV (\$408m). Data labels represent NPV at sensitivity.

- **Prices (-10% / +10%):** Pricing is the largest risk to project economics. If commodity prices reduce by 10% the NPV of the Sembehun project would reduce from \$408m to \$254m. Should the commodity prices be increase by 10% the NPV would increase to \$557m. The financial model is based on the TZMI Titanium Feedstock Base Price Forecast (TZMI, Issue 4 December 2023). Rutile is based on the TZMI market study from 2028 to 2035 with long term TZMI rutile prices only applied from 2036 onwards.
- **Grade (-10% / +10%):** The project is sensitive to feed grades. If the feed grade reduces by 10% the NPV would reduce from \$408m to \$272m. Should the feed grade increase by 10% the NPV would increase to \$537m



- **Discount rate (+4% percentage points):** If the discount rate increases to 12% real the project NPV would reduce from \$408m to \$264m
- **Opex (+10% / -10%):** The opex sensitivity has been applied to all opex drivers in the financial model. If the opex is increases by 10% the NPV would reduce to \$337m, and if the opex reduces by 10% then the NPV of the project would increase to \$478m
- **Discount rate (+2% percentage points):** If the discount rate increases to 12% real the project NPV would reduce from \$408m to \$329m
- **WCP VHM recovery (-2.5% / +2.5% points):** The central case carries a WCP rutile recovery of 94% based on test work. SRL achieved up to 96% rutile recovery from HMC in Area 1. Should the recovery reduce by 2.5% then the NPV would reduce to \$375m, whilst the NPV would increase to \$441m if the recovery increases by 2.5%
- **Capex (+10% / -10%):** This sensitivity has been applied to all capex in the financial model. If the capex increases by 10% the NPV reduces to \$379m from \$408m, and if the capex is reduced by 10% then the NPV of the project would increase to \$438m.