SOVEREIGN METALS LIMITED

16 December 2021

KASIYA SCOPING STUDY CONFIRMS GLOBALLY SIGNIFICANT NATURAL RUTILE PROJECT

Sovereign Metals Limited (**the Company** or **Sovereign**) is pleased to announce the results of the initial scoping study (**Scoping Study** or **Study**) for the Company's Kasiya Rutile Project (**Kasiya** or **the Project**) in Malawi.

Scoping Study Parameters - Cautionary Statements

The Scoping Study referred to in this announcement has been undertaken to determine the potential viability of an open pit mine, rutile and graphite processing plant constructed onsite at the Kasiya project in Malawi and to reach a decision to proceed with more definitive studies. The Scoping Study has been prepared to an accuracy level of ±30%. The results should not be considered a profit forecast or production forecast.

The Scoping Study is a preliminary technical and economic study of the potential viability of the Kasiya project. In accordance with the ASX Listing Rules, the Company advises it is based on low-level technical and economic assessments that are not sufficient to support the estimation of ore reserves. Further evaluation work including infill drilling and appropriate studies are required before Sovereign will be able to estimate any ore reserves or to provide any assurance of an economic development case.

Approximately 60% of the total production target is in the Indicated Mineral Resource category with 40% in the Inferred Mineral Resource category. Approximately 100% of the scheduled throughput over the first six years of production is in the Indicated Mineral Resource category, with 0% in the Inferred Mineral Resource category. The Company has concluded that it has reasonable grounds for disclosing a production target which includes a modest amount of Inferred material. However, there is a low level of geological confidence associated with Inferred mineral resources and there is no certainty that further exploration work (including infill drilling) on the Kasiya deposit will result in the determination of additional Indicated Mineral Resources or that the production target itself will be realised.

The Scoping Study is based on the material assumptions outlined elsewhere in this announcement. These include assumptions about the availability of funding. While Sovereign considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Scoping Study will be achieved.

To achieve the range outcomes indicated in the Scoping Study, additional funding will likely be required. Investors should note that there is no certainty that Sovereign will be able to raise funding when needed. It is also possible that such funding may only be available on terms that dilute or otherwise affect the value of the Sovereign's existing shares. It is also possible that Sovereign could pursue other 'value realisation' strategies such as sale, partial sale, or joint venture of the Project. If it does, this could materially reduce Sovereign's proportionate ownership of the Project.

The Company has concluded it has a reasonable basis for providing the forward looking statements included in this announcement and believes that it has a reasonable basis to expect it will be able to fund the development of the Project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study.

HIGHLIGHTS

The Scoping Study confirms Kasiya as a globally significant natural rutile project. Kasiya is the largest undeveloped rutile deposit in the world and therefore is highly strategic in a market characterised by extreme supply deficit.

This initial Scoping Study develops the concept for a multi-decade mine providing a stable supply of a highly sought-after rutile (TiO_2) and graphite whilst contributing significantly to the economy of Malawi.

Exceptional Economics

- Scoping Study demonstrates globally significant & strategic project with low capital costs & high returns
- Positioned as one of the world's best undeveloped titanium minerals projects

Positioned for growth

- The life-of-mine inventory covers just 38% of the drill defined mineralised footprint
- Substantial additional resource growth expected in early 2022 to enable the Study to be enhanced

Sustainable and ESG Driven

- Significant contribution to Malawi via fiscal returns, employment, training & social development
- Low carbon footprint operation – hydro & solar power supply

Critical raw materials reducing carbon emissions

- Low carbon – natural rutile can displace carbon, energy & waste intensive alternatives
- Graphite is a major mineral required for lithium-ion batteries for electric vehicles which are key components required for the clean energy transition

Rutile market in structural supply deficit

- Current supply declining with very limited additional production in the pipeline
- The current severe structural supply deficit in natural rutile is forecast to continue to widen in the medium & long term

Strong relationships

- Significant support from the government of Malawi for the development of Kasiya
- Highly supportive community to benefit from project development
- Establishing relationships with off-takers with significant interest already received

EXCEPTIONAL ECONOMICS

The Scoping Study demonstrates Kasiya as a globally significant natural rutile project with exceptional economics, including low capital and operating costs, resulting in a high margin operation.

NPV_8 (after-tax)	IRR (after-tax)	EBITDA (Annual average LoM)
US$861m	36%	US$161m
CAPITAL COST	**ANNUAL THROUGHPUT**	**OPERATING COST (per tonne mined)**
US$332m	12Mt	US$5.96/t
MINE LIFE	**NPV_8/CAPEX**	**OPERATING COST (per tonne product)**
25 years	2.6	US$352/t

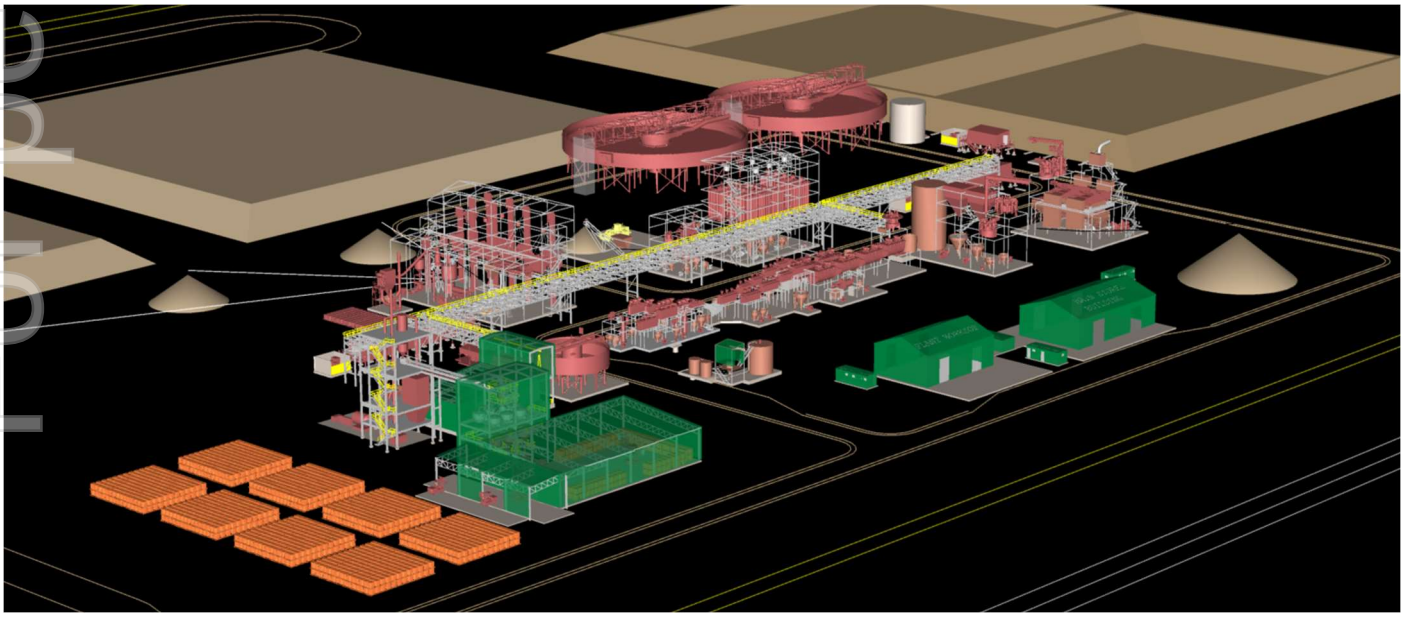

Figure 1: 3D schematic of the proposed Kasiya rutile and graphite processing plant.

Managing Director, Julian Stephens

"To have achieved this fantastic Scoping Study milestone for the Kasiya Rutile Project within just 20 months of the initial discovery is a huge result for Sovereign and a testament to the dedication and hard work of our Malawi and Australia-based team.

The Kasiya Rutile Project is the largest undeveloped natural rutile resource in the world and is therefore highly strategic in an environment of severe global supply deficit.

We believe that Kasiya is also just the beginning of the story in the new Central Malawi Rutile Province. We will expand our resource significantly early next year with the addition of the Nsaru Rutile Deposit and potentially other regional prospects.

The project benefits from world-class existing infrastructure and natural ESG advantages. Natural rutile has a far lower carbon footprint compared to other titanium feedstocks used in the pigment industry, and the vast majority of power will be supplied by renewable hydro and solar. Furthermore, natural graphite is a significant component in lithium-ion batteries and is an important mineral underpinning the energy transition.

The future development of the Kasiya Rutile Project will bring substantial benefits to Malawi in terms of GDP, royalties, taxes, employment and training, local business opportunities and community development."

ENQUIRIES

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OVERVIEW

Sovereign is aiming to develop an environmentally and socially sustainable operation to supply highly sought-after natural rutile and graphite to global markets.

The proposed large-scale operation will process soft, friable mineralisation mined from surface. The Project has excellent surrounding infrastructure including bitumen roads, a high-quality rail line connecting to the deep-water of Nacala on the Indian Ocean and hydro-sourced grid power.

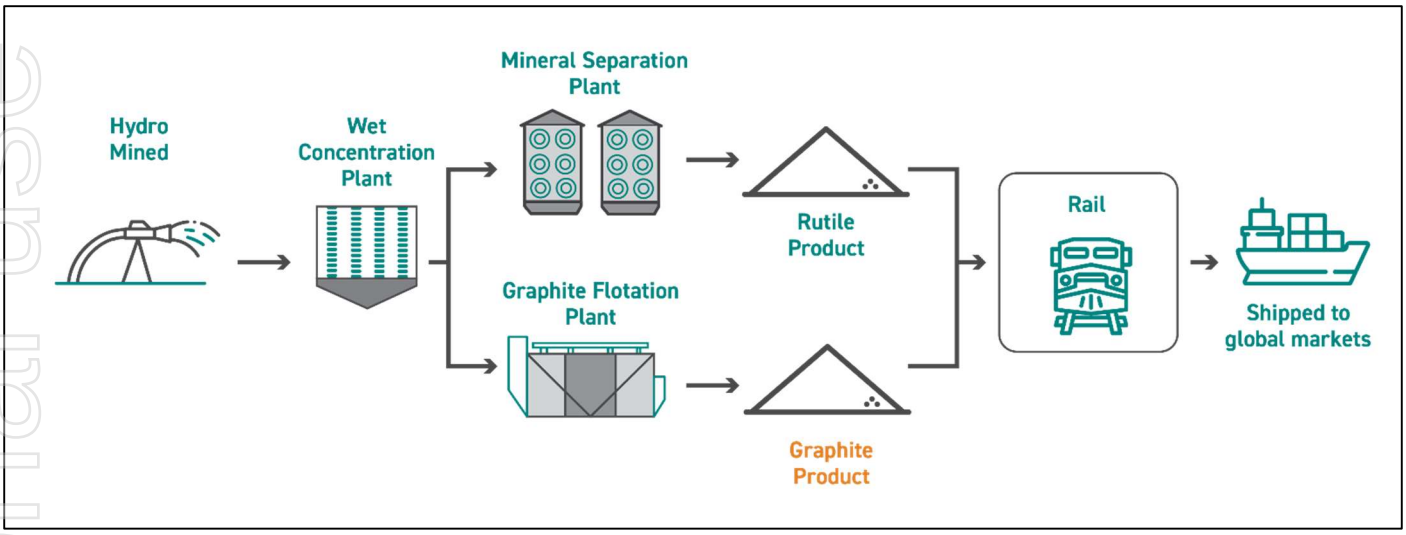


Figure 2: High-level schematic of the proposed Kasiya Rutile Project

The operation will primarily employ conventional hydro-mining to produce a slurry that is pumped to a Wet Concentration Plant (**WCP**) where the material is sized. A Heavy Mineral Concentrate (**HMC**) is produced via processing the sand fraction through a series of gravity spirals. The HMC is transferred to the dry Mineral Separation Plant (**MSP**) where premium quality rutile is produced via electrostatic and magnetic separation.

Graphite rich concentrate is collected from the gravity spirals and processed in a separate graphite flotation plant, producing a coarse-flake graphite product.

The rutile and graphite products will be trucked a short distance via existing bitumen roads to the Kanengo rail terminal from where they will be railed via the Nacala Logistics Corridor (**NLC**) to the deep-water port of Nacala on the eastern seaboard of Mozambique.

LOW-COST OPERATION

Kasiya's low costs are achieved through deposit size and grade, location and infrastructure. Central Malawi boasts excellent existing infrastructure including hydropower and an extensive sealed road network. The Kasiya Rutile Project is strategically located in close proximity to the capital city of Lilongwe, providing access to a skilled workforce and industrial services.

The existing quality logistics route to the Indian Ocean deep-water port of Nacala, via the NLC, for the export of products to global markets provides significant capital cost savings compared to many other undeveloped projects.

The soft, friable and high-grade mineralisation occurring from surface results in no waste stripping requirement and the amenability to hydro-mining means the mining cost component is kept relatively low.

The revenue-to-cash cost ratio of 2.8x and the average annual revenue to capital cost ratio positions Kasiya in the first quartile compared to other undeveloped mineral sands operations.

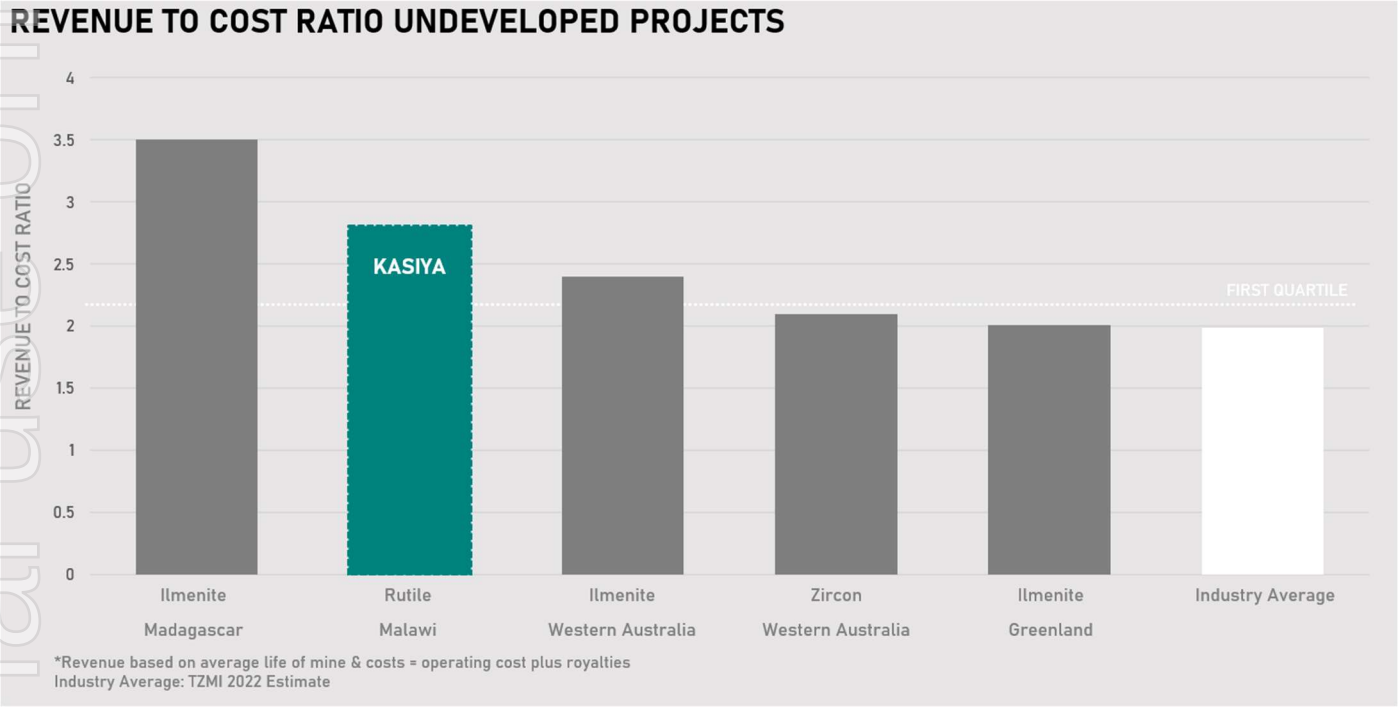


Figure 3: Revenue to cost ratio (source: Company Reports)

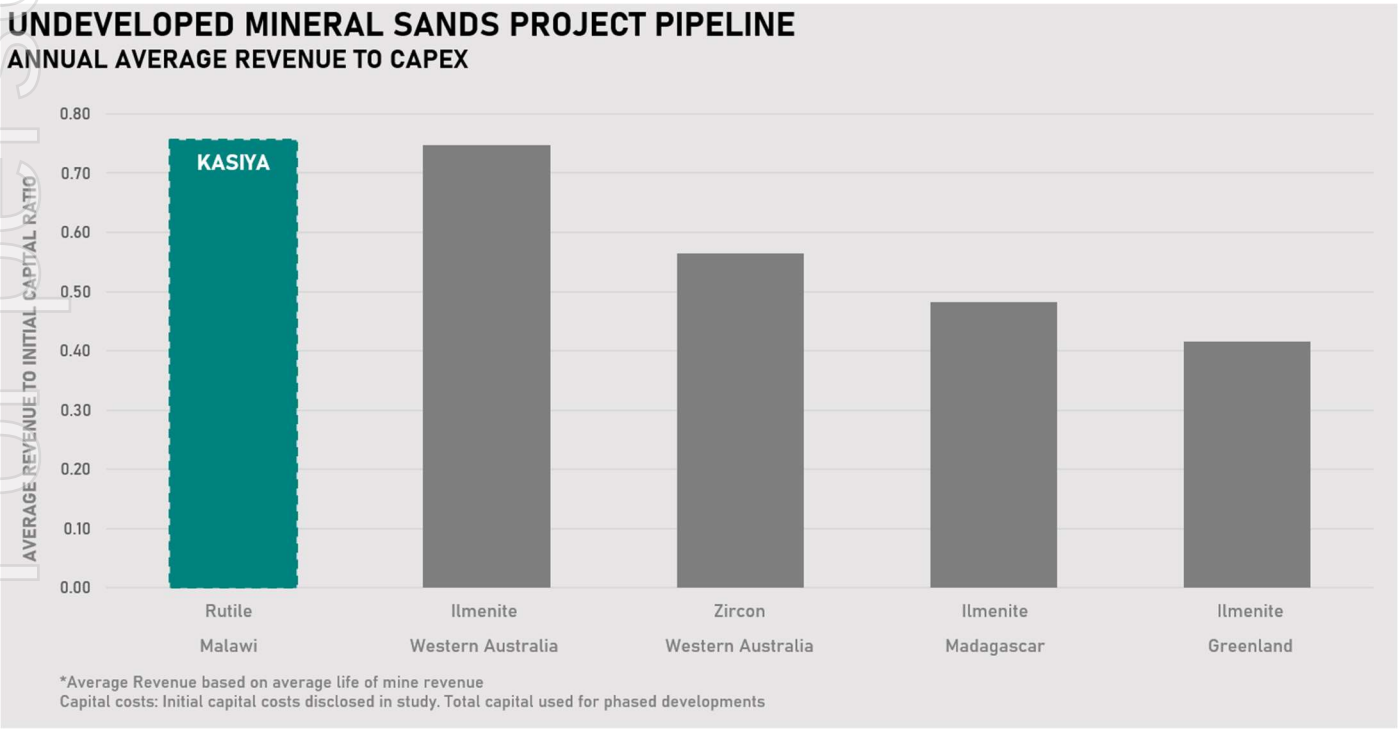


Figure 4: Annual average revenue to capital cost ratio (source: Company Reports)

POSITIONED FOR GROWTH

The current mining inventory for the Scoping Study covers only 49km² or 38% of the total drill-defined area of high-grade rutile mineralisation of 129km². The Company expects to be able to materially increase the overall Mineral Resource Estimate (**MRE**) tonnage in early 2022 which will enable the Study options to be reviewed in terms of potential for scale ups or mine life extensions beyond the current 25 years.

The objective of this Study was to provide an initial technically validated concept that will be scalable in future. Through the Study process, a number of opportunities and options were identified to enable potential increases in production rates via additional mining units, plant modifications or modular additions.

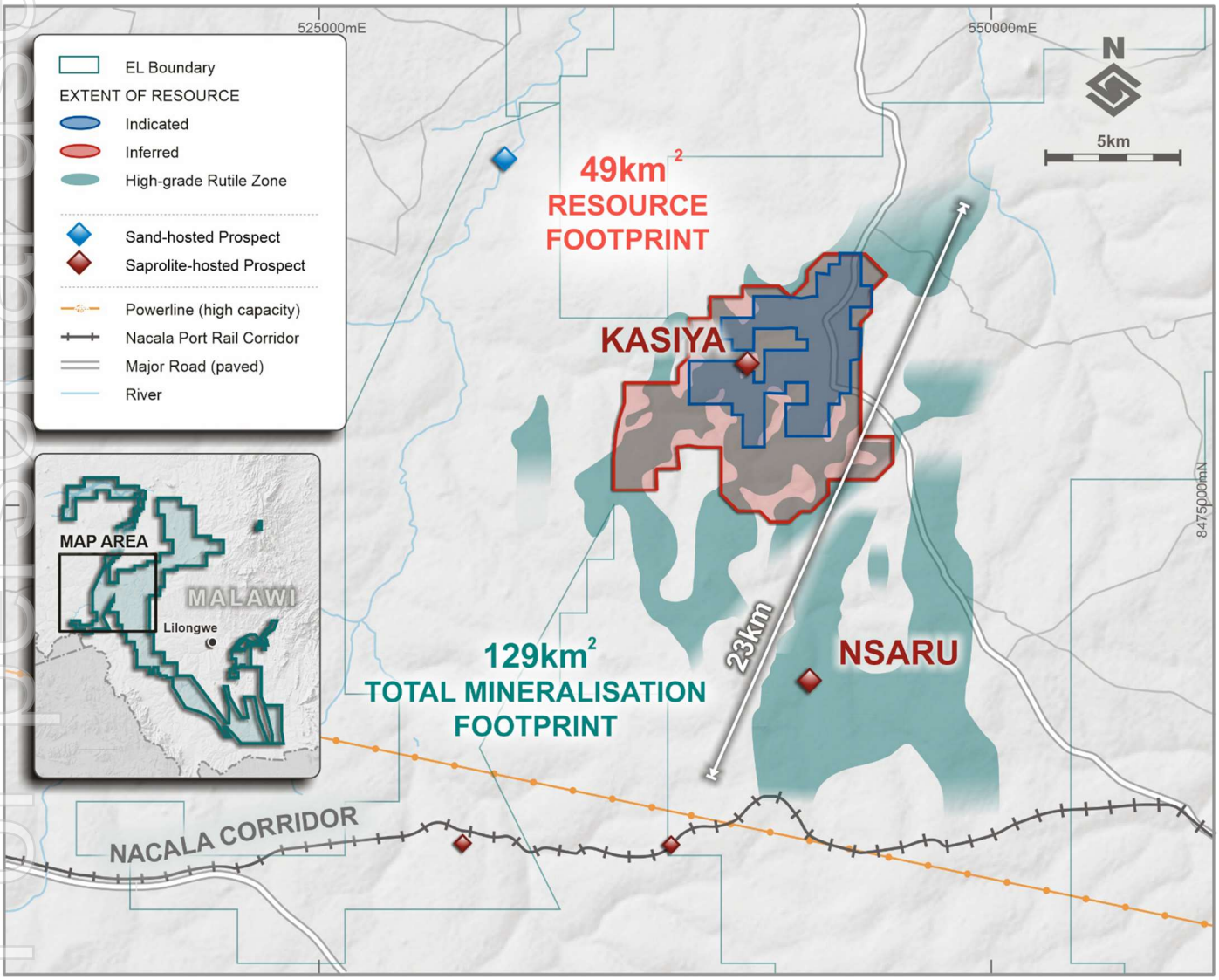


Figure 5: Kasiya MRE area of 49km² in relation to the 129km² total drilled, mineralised footprint.

SUSTAINABLE AND ESG DRIVEN

Sustainability is a vital element of Sovereign's strategy for Kasiya. The Company is committed to making informed choices that improve our corporate governance, financial strength, operational efficiency, environmental stewardship, community engagement and resource management.

The Project aims to meet the requirements of international guidelines and standards, including the IFC Performance Standards on Environmental and Social Sustainability (IFC, 2012), the World Bank Group Environmental, Health and Safety Guidelines (WBG, 2007), the Equator Principles (Equator Principles Association, 2020) and the International Council on Mining & Metals (**ICMM**) principles for future studies and development phases of the Kasiya project.

The Kasiya project will be designed considering both the Equator Principles and Scope 1, 2 and 3 emissions under the Green House Gas protocol so that the design meets high standards for ESG from the outset. Access to hydro-generated grid power and a solar power system to be installed on site will ensure low carbon power supply for the project and the use of predominantly rail rather than road transport for rutile and graphite products will further help give the mine a low carbon footprint.

The Scoping Study contemplates that the operation will use a closed circuit zero discharge process water circuit and a tailings storage facility designed to store chemically benign tailings during operations which will be rehabilitated and restored progressively.

CRITICAL MINERAL IN SUPPLY DEFICIT

Natural rutile is a genuinely scarce commodity with no other large rutile dominant deposits having been discovered in the last half century.

Current sources of natural rutile are in decline as several operations' reserves are depleting concurrently with declining ore grades. These include Iluka Resources' (**Iluka**) Sierra Rutile and Base Resources' Kwale operations in Kenya. Recent announcements by Iluka advising of the potential suspension of operations at Sierra Rutile may cause significant additional product to be removed from the market in the near to medium term. Additionally, there are limited new deposits forecast to come online, and hence supply of natural rutile is likely to remain in structural deficit.

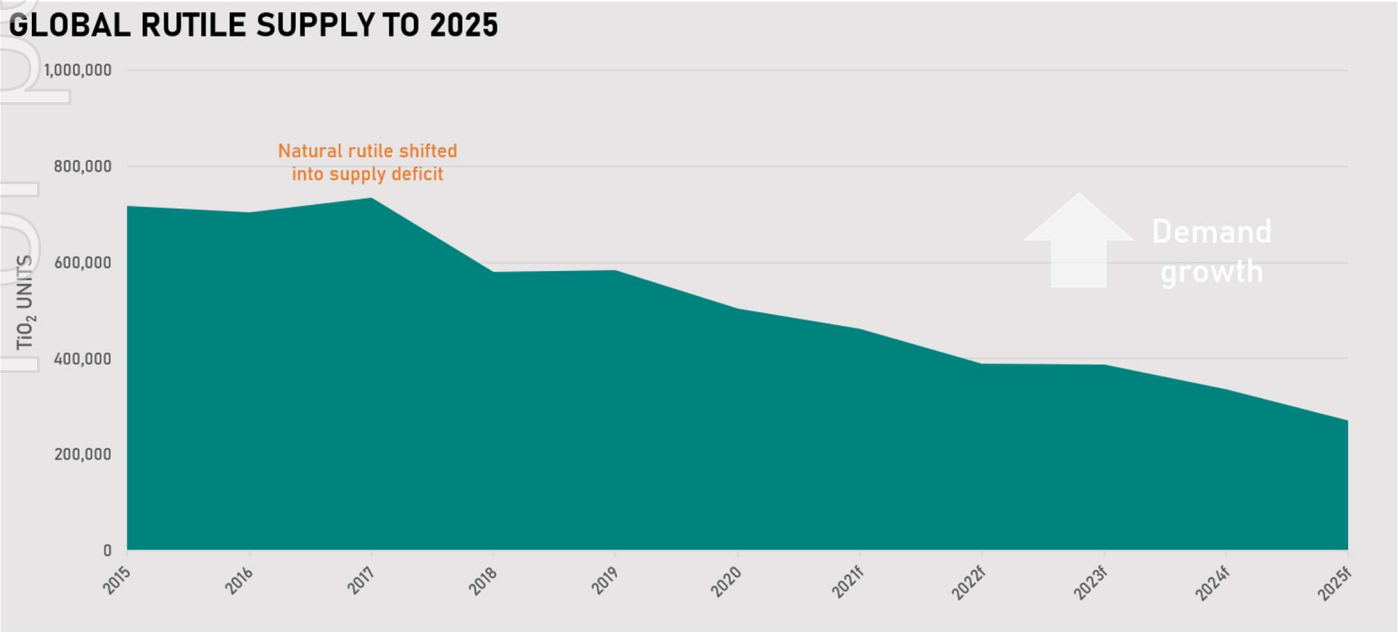


Figure 6: Previous and forecast global natural rutile supply 2015-2025 (source: TZMI)

LOW CARBON ADVANTAGE

Like many other industries globally, the titanium dioxide pigment industry is targeting reduced carbon emissions, reduced energy consumption and a move toward renewable energy and waste minimisation.

Natural rutile (+95% TiO_2) is the cleanest, purest natural form of titanium dioxide. However, due to natural rutile's scarcity, the principal source mineral for titanium has been ilmenite (~50% TiO_2). Ilmenite requires energy and carbon intensive upgrading for use as titanium pigment feedstock. Conversely, natural rutile requires no upgrading once mined and processed, resulting in zero additional CO_2 emissions. For each tonne of natural rutile utilised up to 2.8 tonnes CO_2 eq. could be saved compared to the upgrading/beneficiation of ilmenite, via smelting and chemical processes, to high-grade titanium feedstocks like titania slag and synthetic rutile.

A shift towards a greater percentage of natural rutile feedstock offers the titanium pigment industry a simple and short lead-time opportunity to significantly lower its carbon intensity and total environmental impact.

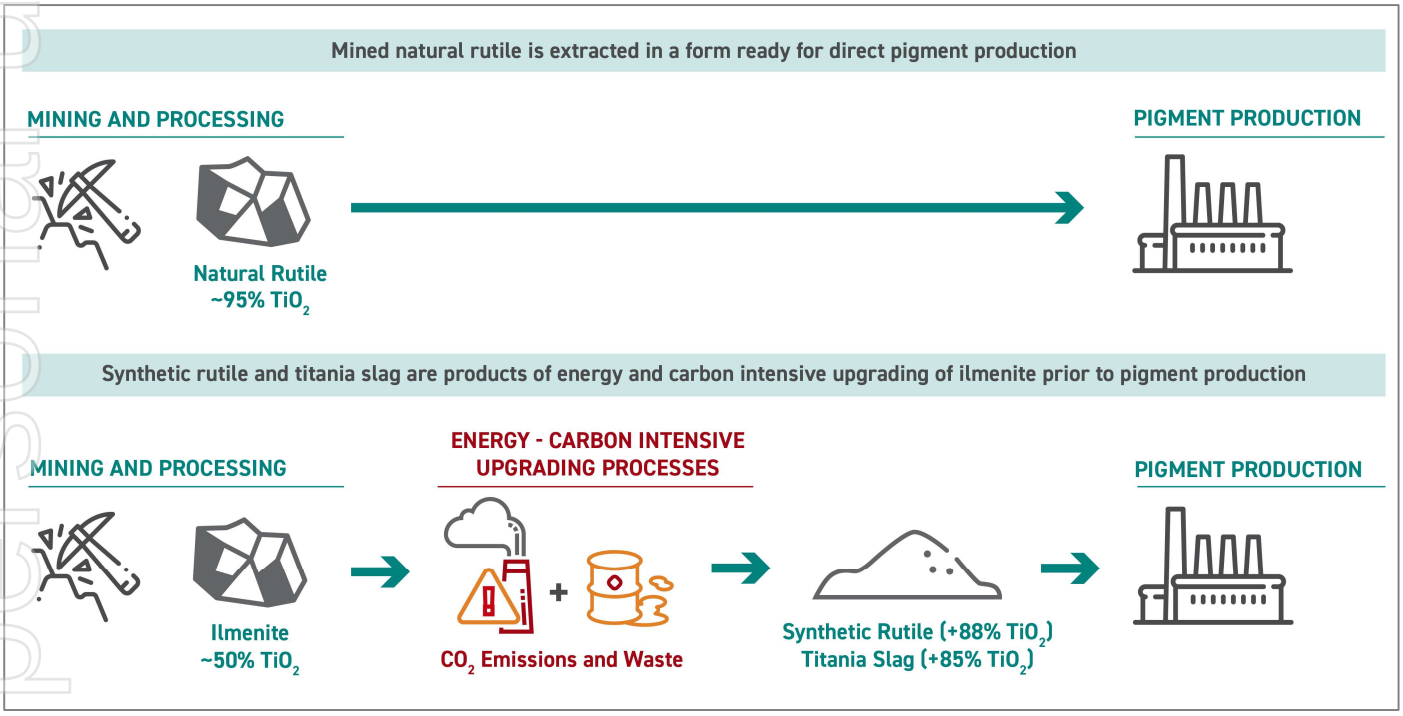


Figure 7: Carbon-intensive upgrading of ilmenite vs low-carbon direct use of natural rutile in pigment production

STRONG RELATIONSHIPS

A key to successful development of Kasiya will be the continuity of our 10+ year strong relationships with key stakeholders including the Government of Malawi and local communities.

Supportive Government

The Government of Malawi (**GoM**) actively encourages foreign investment into its mining industry and provides a stable climate for investors. The GoM, through The Honourable Minister of Mining Mr Rashid Gaffar, has stated its full support for the Company's efforts to develop the Kasiya Rutile Project.

Malawi has taken significant action to provide an attractive environment for investors in its mining industry, recently joining the Extractive Industries Transparency Initiative (**EITI**). The EITI is a global standard for the good governance of oil, gas and mineral resources and provides accountability and transparency around mining and petroleum revenues.

Figure 8: Senior Malawi Government delegation observing core drilling at Kasiya

(L to R: Commissioner of Mines, Mr Burnett Msika, The Honourable Minister of Mining, Mr Rashid Gaffar, Sovereign Metals' Managing Director, Dr Julian Stephens, Ministry of Mines Principal Secretary, Dr Joseph Mkandawire &Sovereign Metals' Senior Geologist, Mr Reidwel Nyirenda)

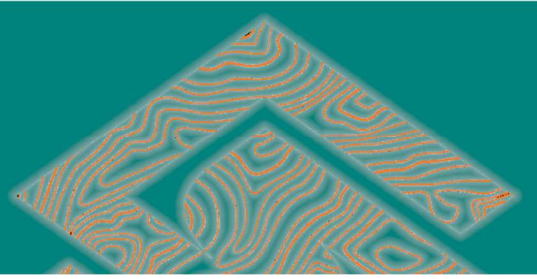
Communities & Employment

Sovereign conducts significant and regular community engagement activities with a number of initiatives completed and underway. Development of Kasiya will have a positive impact on local communities by providing approximately 480 jobs during operations, training, and support for locally-owned businesses.

The Company has successfully worked with communities in Malawi over the last decade and will work with the communities at Kasiya on infrastructure, local business support, water provision, healthcare, education and training.

Sovereign is an equal opportunity employer with a gender diverse workforce. Currently, 60% of Sovereign's professional Malawian staff and at least 50% of our regular interns are women.

Figure 9: Sovereign team members in action at the Company's Lilongwe laboratory facility



EXISTING EXCELLENT LOGISTICS INFRASTRUCTURE

Kasiya will directly benefit from the exceptional existing infrastructure in central Malawi. This offers the preferred logistics route to the Nacala deep water port via the NLC for the export of natural rutile and graphite. All infrastructure is in place to connect Kasiya to global markets:

- A Class-1 bitumen sealed road network runs through the project area
- The fully operational rail of the NLC located just 15km from Kasiya
- NLC connects to the under-utilised deep-water port of Nacala on the Indian Ocean
- Grid infrastructure to deliver hydro power to the operation from sub-station at the capital, Lilongwe

Access to this existing infrastructure and logistical solutions significantly reduces capital and operating costs for the Kasiya project. Total logistics cost from mine gate to FOB Nacala is estimated to be US$50.85/t.

NEXT STEPS

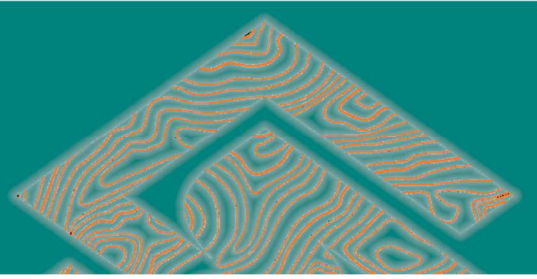
The Company is targeting a number of significant milestones over the next two quarters which include;

- Updated MRE with substantial growth of the Indicated and Inferred JORC MRE base expected including addition of the Nsaru deposit
- Revised Life Cycle Assessment (**LCA**) based on the Scoping Study results to quantify the environmental impacts with a specific focus on carbon footprint
- Scoping Study update based on the expected new resource base planned for mid-2022
- Continued product marketing and potential execution of Memorandum of Understandings (**MoU**(s)) with future rutile off-takers
- Commencement of ESIA field data collection and commencement of community engagement activities

Following the completion of the above, Sovereign will commence a pre-feasibility study (**PFS**) on Kasiya-Nsaru to realise the true potential of this very large rutile project.

In parallel to the technical study developments on the Company's projects, significant exploration will continue, with programs including;

- Infill drilling at Kasiya-Nsaru to increase MRE confidence and upgrade MRE categories
- Deeper air-core drilling at Kasiya-Nsaru targeting the NE-striking, higher-grade zones to depths of ~25m below surface
- Air-core drilling targeting an initial MRE for the Bua Channel – a traditional placer deposit just 10km north-east of Kasiya
- Regional reconnaissance drilling targeting additional Kasiya-like saprolite-hosted rutile mineralisation



KEY SCOPING STUDY OUTCOMES

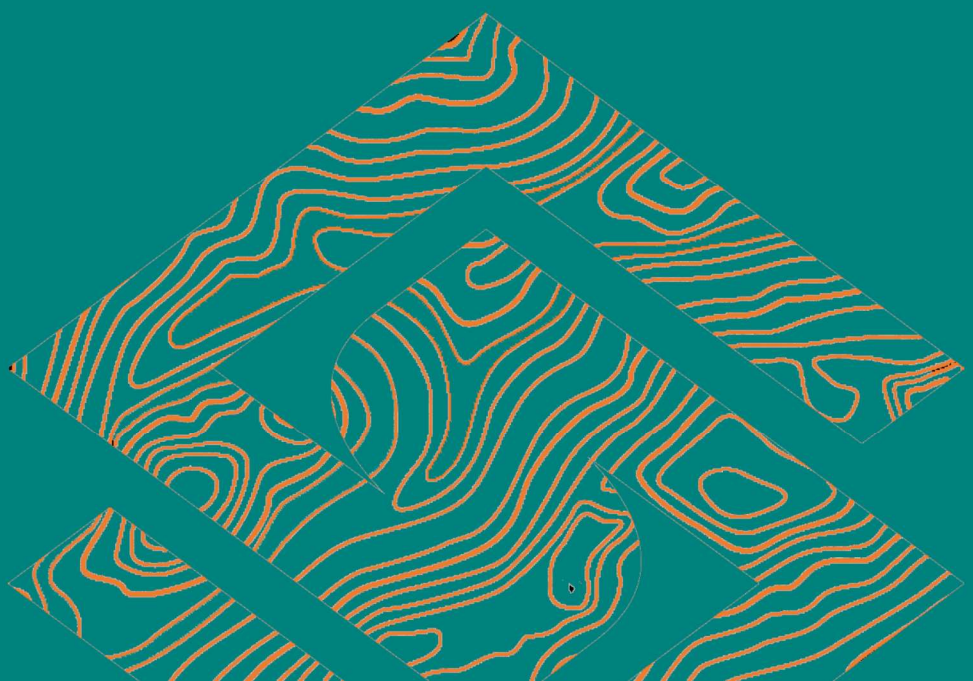
The Scoping Study demonstrates an economically robust natural rutile project with the following key metrics:

Table 1: Key Scoping Study Outcomes

Outcome	Unit	Kasiya Rutile Project
NPV_8 (real post-tax)	US$	**$861m**
NPV_{10} (real post-tax)	US$	$684m
IRR (post-tax)	%	**36%**
Capital Costs	US$	**$332m**
Operating Costs	US$ per tonne mined	$5.96
Operating Costs	US$ per product	$352
Revenue to Cost Ratio		2.8
NPV_8 / Capital Costs		2.6
Throughput	tpa	12,000,000
Life of Mine		**25 years**
Annual Production – rutile	Tonnes	122,000
Annual Production – graphite	Tonnes	80,000
Total Revenue (LoM)	US$	$6,266m
Revenue – annual (average LoM)	US$	$251m
EBITDA – annual	US$	$161m
EBITDA – annual (first 5 years)	US$	$192m
Payback		2.5 years
Government Royalties (LoM)	US$	$313m
Corporate Taxes (LoM)	US$	$1,074m

SOVEREIGN METALS LIMITED

KASIYA RUTILE PROJECT
SCOPING STUDY



OVERVIEW

Sovereign is aiming to develop an environmentally and socially sustainable operation to supply highly sought-after natural rutile and graphite to global markets.

The proposed large-scale operation will process soft, friable mineralisation from surface in an area of flat terrain with excellent access and water availability. The Project has excellent surrounding infrastructure including access to hydro-sourced grid power, bitumen roads and a high-quality rail line connected to the deep water of Nacala on the Indian Ocean.

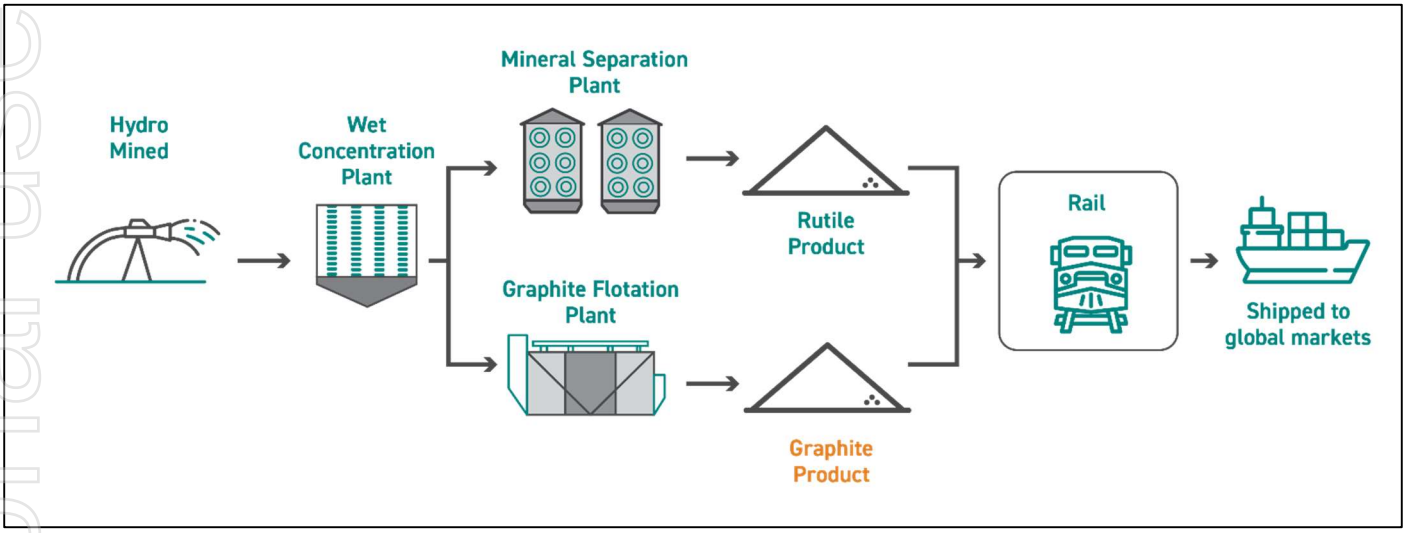


Figure 10: High-level schematic of the planned Kasiya operation

The simple operation will employ hydro-mining to produce a slurry that will be pumped to a Wet Concentration Plant (**WCP**). A Heavy Mineral Concentrate (**HMC**) is produced via processing the sand fraction through a series of gravity spirals. The HMC is then transferred to the dry Mineral Separation Plant (**MSP**) where premium quality rutile is produced via electro-static and magnetic separation.

Graphite rich mineral concentrate will be produced from the light fraction of the gravity spiral tails and processed in a separate graphite flotation plant, producing a coarse-flake graphite by-product.

The rutile and graphite products will be trucked a short distance via existing bitumen roads to the Kanengo rail terminal, where they are railed to via the Nacala Logistics Corridor (**NLC**) to the deep water port of Nacala on the eastern seaboard of Mozambique. Kasiya will be a simple and conventional operation utilising traditional and well-developed processes used across the globe on numerous mineral sands operations.

Study Objectives

Sustainability is a vital element of Sovereign's strategy for Kasiya. The Company is committed to making informed choices that improve our corporate governance, financial strength, operational efficiency, environmental stewardship, community engagement and resource management.

The Project aims to meet the requirements of international guidelines and standards, including the IFC Performance Standards on Environmental and Social Sustainability (IFC, 2012), the World Bank Group Environmental, Health and Safety Guidelines (WBG, 2007), the Equator Principles (Equator Principles Association, 2020) and the International Council on Mining & Metals (**ICMM**) principles for future studies and development phases of the Kasiya project.

The Kasiya project will be designed considering both the Equator Principles and Scope 1, 2 and 3 emissions under the Green House Gas protocol so that the design meets high standards for ESG from the outset. Access to hydro-generated grid power and solar system to be installed on site will ensure low carbon power supply for the project. The use of predominantly rail rather than road transport for rutile and graphite products will further help give the mine a low carbon footprint.

Minerals For a Sustainable World

Sovereign is focused on developing sustainable supplies of critical raw materials to contribute to a low carbon global economy:

- natural rutile is the cleanest, purest form of titanium dioxide with a far lower carbon footprint that other higher energy and carbon intensive "upgraded" titanium pigment feedstocks such as synthetic rutile or titania slag.
- natural graphite from soft saprolite can be mined, beneficiated, and purified with a considerably lower carbon footprint than hard-rock operations or synthetic graphite production, with the product being suitable feedstock for the rapidly expanding lithium-ion battery sector.

ESG Advisory Committee

The Board of Sovereign established an ESG Advisory Committee in early 2021 ensuring regular reporting on ESG in respect of the Kasiya Project.

Figure 11: Water bore installed by Sovereign

STUDY CONSULTANTS

The Scoping Study used information and assumptions provided by a range of independent, internationally recognised industry leading specialists and consultants, including the following who have contributed key components of the Study;

Lead study manager	DRA
Project management	Jem-Met
Mineral Resource Estimate (MRE)	PLACER CONSULTING PL
Mine scheduling and pit optimisation	ORELOGY MINE CONSULTING
Mining method and tailings management	FRASER ALEXANDER
Tailing disposal	epoch resources
Metallurgy – rutile	AML
Metallurgy – graphite	SGS
Environment and social	DHAMANA consulting
Power	JCMPOWER
Marketing – rutile	TZMI
Marketing - graphite	Fastmarkets
Logistics	MORGAN STERLING CONSULTANTS
Life Cycle Assessments	MINVIRO

GEOLOGY & RESOURCE

Rutile mineralisation lies in laterally extensive, near surface, flat "blanket" style bodies in areas where the weathering profile is preserved and not significantly eroded. The Kasiya deposit is expansive with high-grade mineralisation commonly grading 1.2% to 2.0% rutile in the top 3-5m from surface. Moderate grade mineralisation generally grading 0.5% to 1.2% rutile commonly extends from 5m to end of hole where it remains open at depths >10m in numerous drill-defined, NE-striking zones.

Table 2: Kasiya Mineral Resource Estimate at 0.7% Rutile Cut-off

Mineral Resource Category	Material Tonnes (millions)	Rutile (%)	Rutile Tonnes (millions)	TGC (%)	TGC Tonnes (millions)
Indicated	304	1.02	3.1	1.31	4.0
Inferred	301	0.93	2.8	1.16	3.5
Total	**605**	**0.98**	**5.9**	**1.24**	**7.5**

Cut-off: 0.7% rutile, TGC = total graphitic carbon

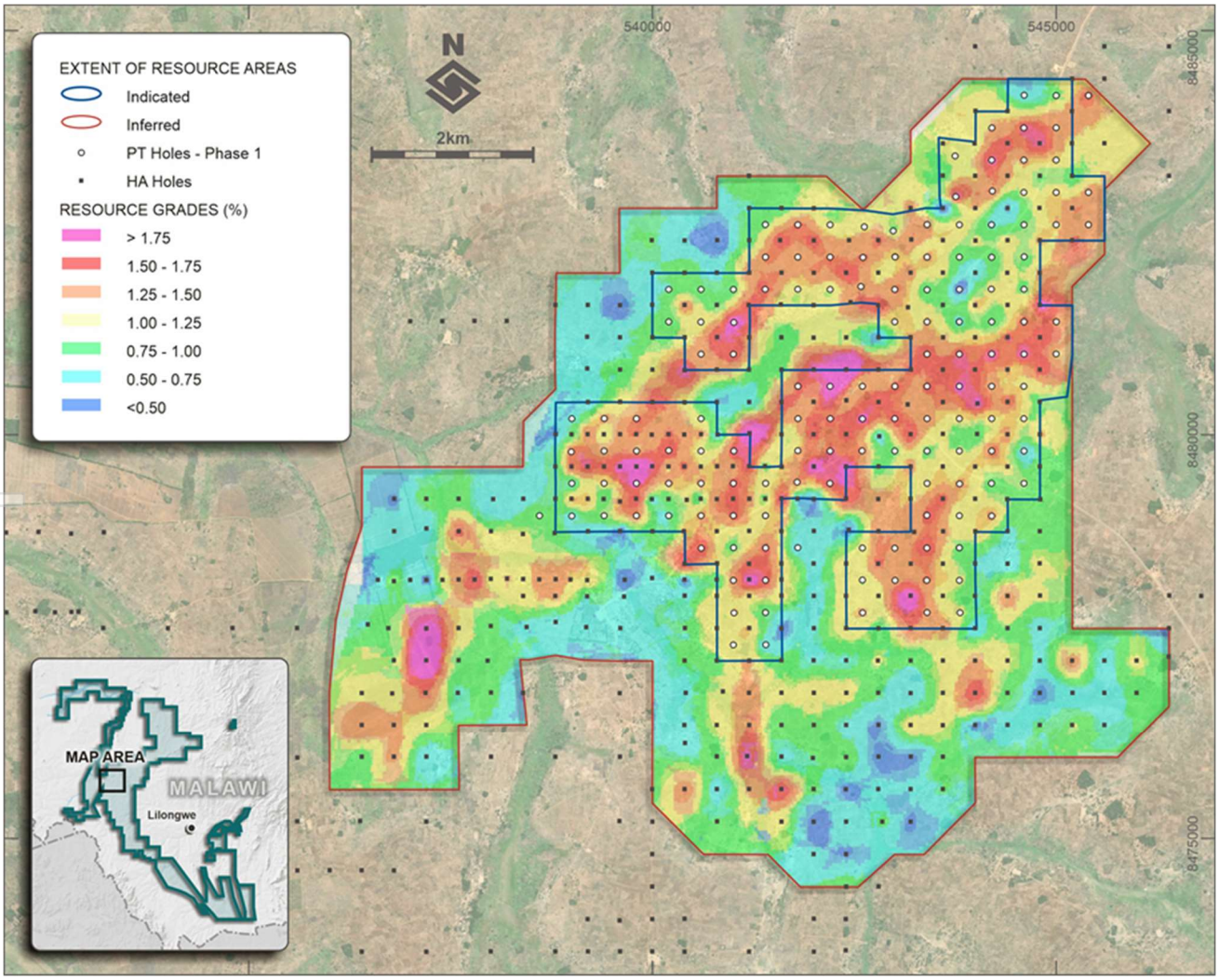


Figure 12: Drill density map over the Kasiya MRE showing rutile grades in the uppermost part of the MRE block model

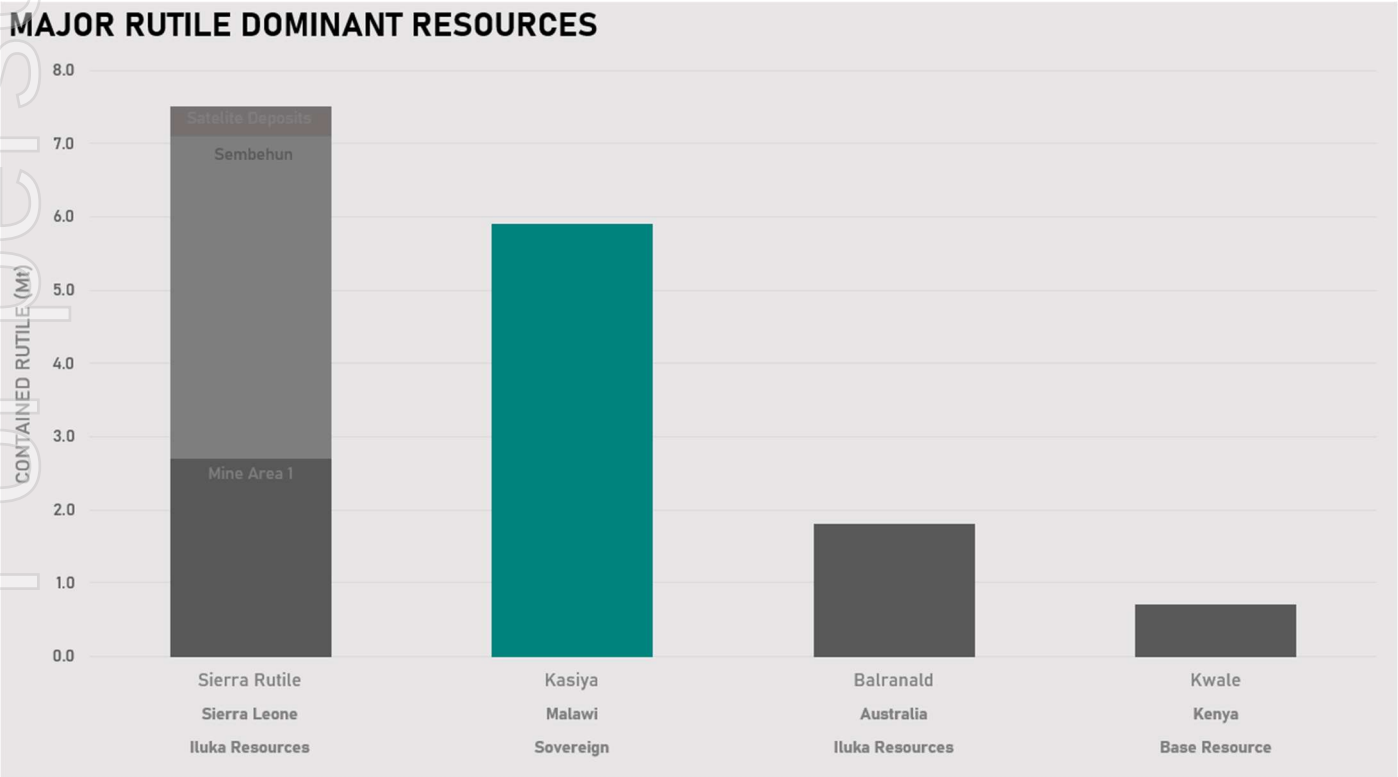
The Kasiya Rutile Deposit sits within the top two rutile resources in the world alongside Sierra Rutile. Further near-future resource growth could see Kasiya potentially become the largest and pre-eminent rutile deposit globally, with central Malawi potentially becoming the largest rutile province in the world.

Table 3: Summary of major rutile dominant resources.

Company[1]	Project	Resource (Mt)	In-situ Grade			Contained Rutile (Mt)
			Rutile (%)	Ilmenite (%)	Zircon (%)	
Iluka Resources	Sierra Rutile	715	1.10%	0.90%	0.10%	7.5
Sovereign Metals	**Kasiya**	**605**	**0.98%**	**-**	**-**	**5.9**
Iluka Resources	Balranald [2]	46	3.90%	19.9%	3.60%	1.8
Base Resources	Kwale	194	0.37%	1.31%	0.17%	0.7

Notes:
1. Projects selected with rutile contributing over 30% of the in-situ value
2. The Balranald Project is being investigated for underground mining by Iluka

Sources:
Base Resources – Kwale: Updated Kwale North Dune and maiden Bumamani Mineral Resource Estimate (released on ASX 19/02/2021)
Iluka Resources – Sierra Rutile: Iluka Resources Limited's 2020 Annual Report (released on ASX 25/02/2021)
Iluka Resources – Balranald: Iluka Resources Demerger Briefing Presentation (released on ASX 10/09/2020)



Sources: Refer to Table 3

Figure 13: Major rutile dominant resources

Kasiya Deposit Geology

Sovereign's tenure covers 2,682km^2 to the north, west and south of Malawi's capital over an area called the Lilongwe Plain. The topography is generally flat to gently undulating and the underlying geology is dominated by paragneiss with pelitic, psammitic and calcareous units.

A particular paragneiss unit rich in rutile and graphite is the primary source of both of these minerals in the area. The area was deeply weathered during the Tertiary and rutile concentrated in the upper part of the weathering profile forming residual placers, such as the Kasiya Deposit. In areas where this residual placer material is incised and eroded, it is transported and deposited into wide, regional braided river systems forming alluvial heavy mineral placers such as the Bua Channel.

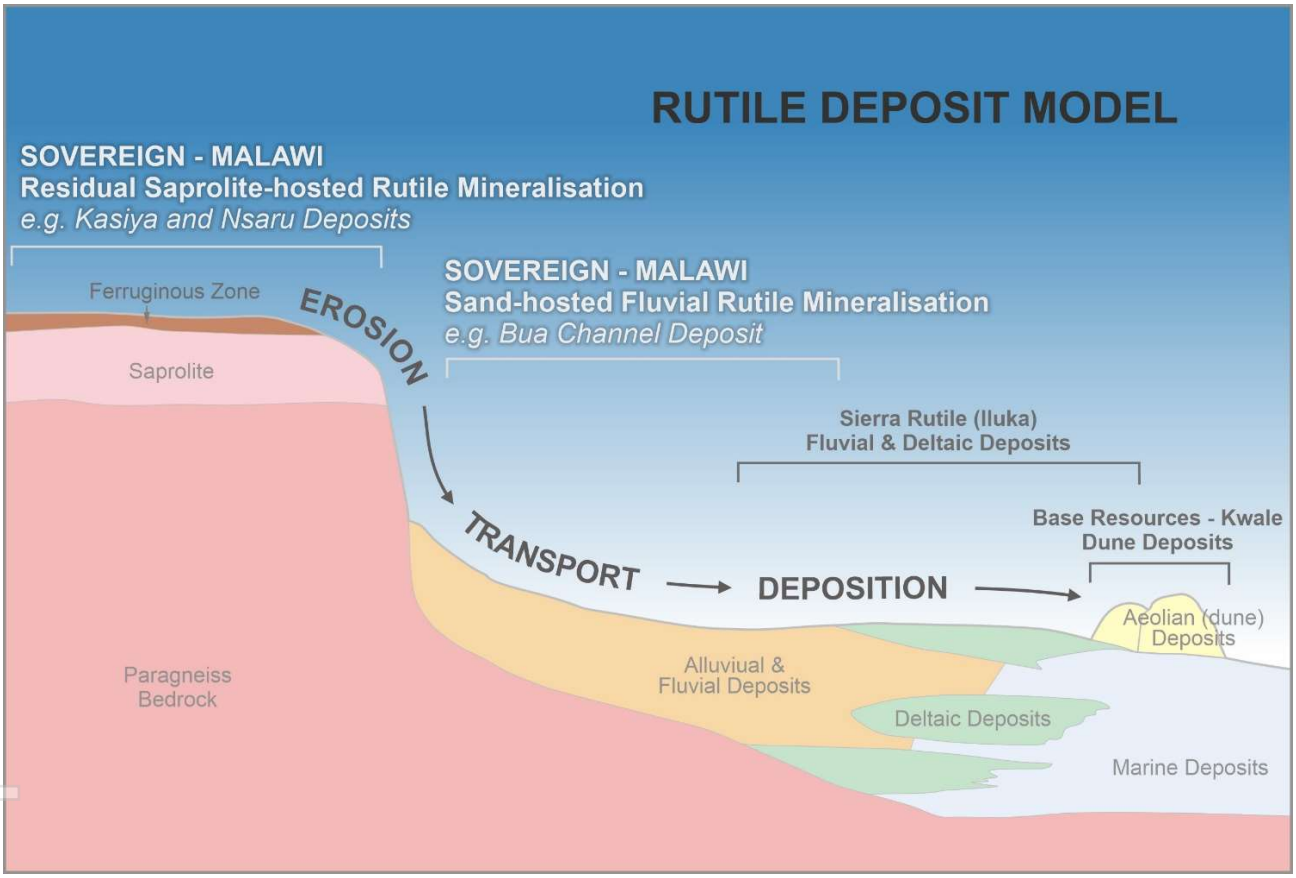


Figure 14: Rutile deposit model showing residual saprolite hosted mineralisation and the various traditional sand hosted deposit types

The high-grade rutile deposit at Kasiya is best described as a residual placer, otherwise known as an eluvial heavy mineral deposit. It is formed by weathering of the primary host rock and concentration in place of heavy minerals, as opposed to the high-energy transport and concentration of heavy minerals in a traditional placer.

The highly aluminous nature (kyanite) and the presence of carbon (graphite) in the host material suggest that the protolith was of sedimentary origin. The protolith likely started with a 0.5-1.5Ga basin that also experienced consistent influx of titanium minerals interspersed with periods of algal growth.

These sedimentary rocks were subject to granulite facies metamorphism under reduced conditions in the Pan-African Orogeny at circa 0.5-0.6Ga. The reduced environment, relatively high titanium content and low iron content resulted in rutile being the most stable titanium mineral under these conditions. Slow exhumation and cooling then resulted in in crystallisation of paragneisses containing coarse rutile and graphite.

The final and most important stage of enrichment came as tropical weathering during the Tertiary depleted the top ~10m of physically and chemically mobile minerals. This caused significant volume loss and concurrent concentration of heavy resistate minerals including rutile and kyanite.

The current mining inventory for the Scoping Study covers only 49km^2 or 38% of the total drill-defined area of high-grade rutile mineralisation of 129km^2. The Company expects to be able to materially increase the overall MRE tonnage in early 2022 which will enable the Study options to be reviewed in terms of a potential scale up or mine life extensions beyond the current 25 years.

The objective of this Study was to provide an initial technically validated concept that will be scalable in future. Through the Study process a number of opportunities and options were identified to enable potential increases in production rates via additional mining units, plant modifications or modular additions.

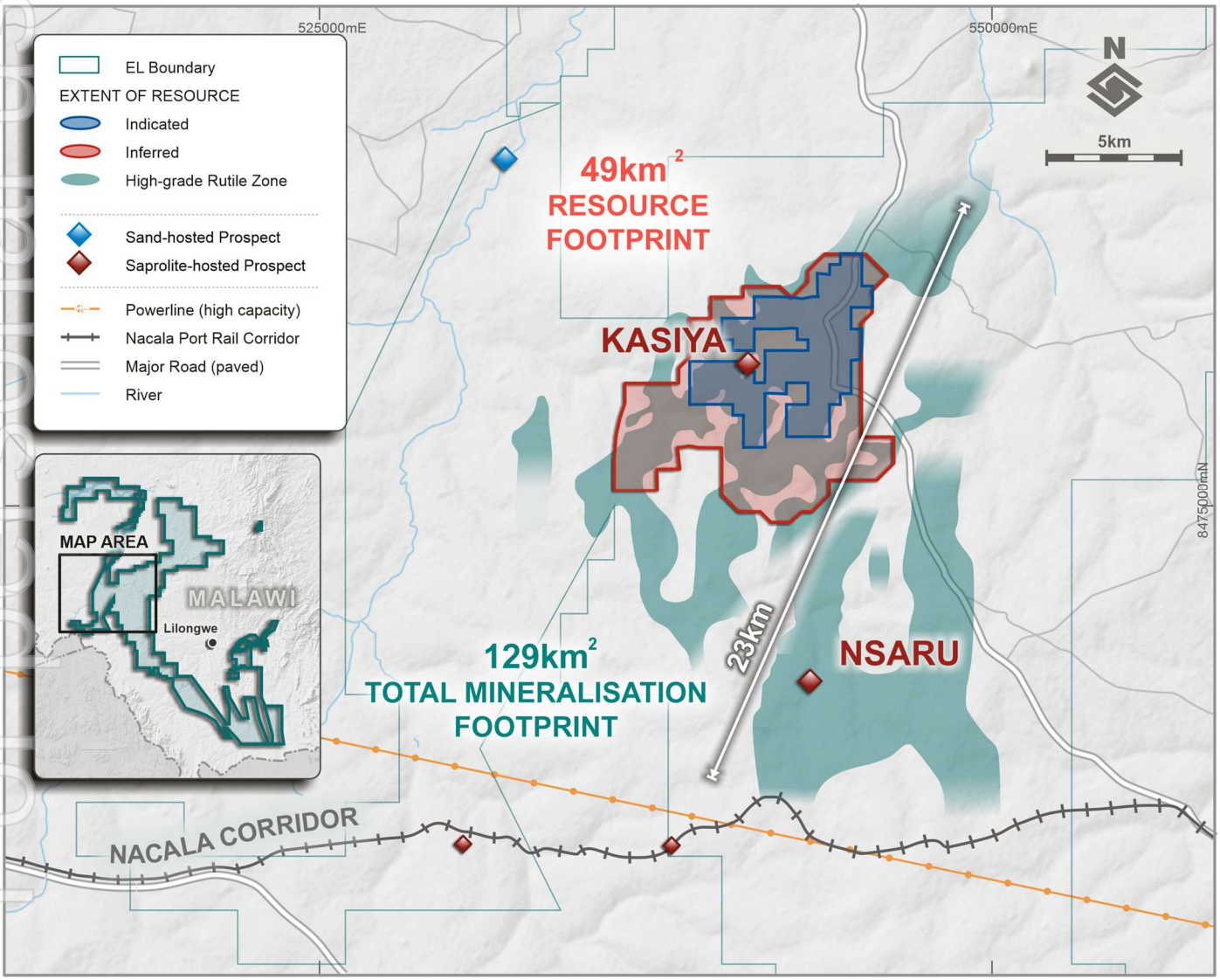


Figure 15: Kasiya MRE area of 49km^2 in relation to the 129km^2 total drilled, mineralised footprint.

MINING

Sovereign engaged Fraser Alexander, a well experienced mining contractor and consultancy specialising in hydro-mining to assess the technical viability of hydro-mining at Kasiya. The outcomes of the work performed resulted in hydro-mining being determined as the optimal method for mining soft, friable pedolith and saprolite of the Kasiya Rutile Deposit.

Hydro-mining is a proven technique on a wide range of loose, friable materials types and has been successfully applied on heavy mineral sands operations including Base Resources' Kwale project in Kenya and Tronox's Fairbreeze and Hillendale projects in South Africa.

Figure 16: Hydro mining in action at Base Resource's Kwale project (Source: Base Resources)

Kasiya's mineralisation is largely homogenous and has relatively consistent properties throughout the MRE area. The material competence is described as loose and friable, soft and well weathered with no cemented particles or dense clay layers. The particle size distribution (**PSD**) is favourable for hydro-mining due to its high content (~48%) of -45µm fines. The material is conducive to hydro-mining as the fines effectively increase the density of the slurry created, which enhances the slurry's ability to carry heavy minerals.

Design

The hydro-mining design criteria is based on the process design criteria (**PDC**), with a process plant feed rate of 12Mtpa. The system is designed to screen oversize in-pit and then pump slurry to the plant.

The hydro-mining system is designed with pumps and piping for six movable hydro mining units (**HMUs**), with scheduling based on a three-on-three-off basis. Each HMU consists of a high-pressure (**HP**) water pump station where the material is screened (+6mm) and fed to the processing plant.

The system is designed to mine faces between 5m to 23m from a top-down approach as single or double benches. Shallow areas to 5m depth will be mined from a bottom-up method. About 10% of the mine inventory will be required to be pushed short distances by dozer to the nearest HMU.

Figure 17: Kasiya saprolite hosted rutile and graphite mineralisation

Mine Scheduling

The Company engaged Orelogy to prepare a mine schedule based on the Indicated and Inferred Mineral Resource Estimate (Figure 18). Approximately 60% of the total production target is in the Indicated Mineral Resource category with 40% in the Inferred Mineral Resource category. Approximately 100% of the scheduled throughput over the first six years of production is in the Indicated Mineral Resource category, with 0% in the Inferred Mineral Resource category.

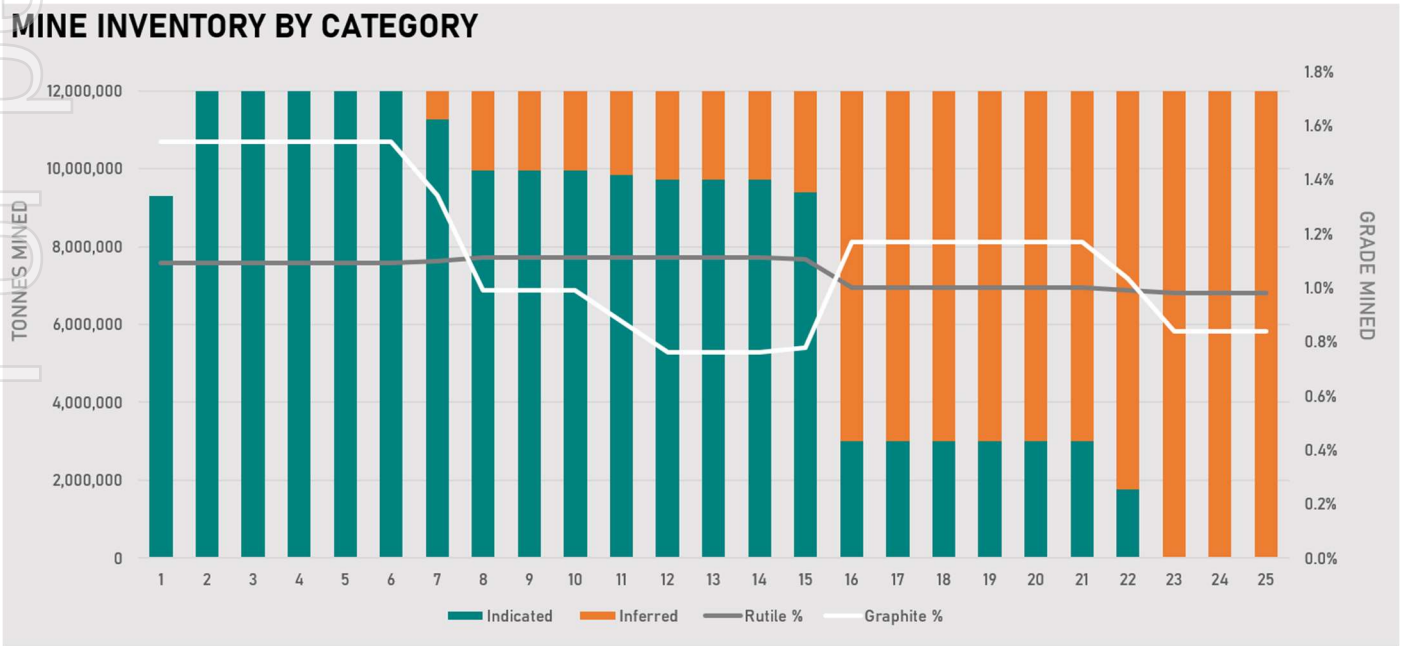


Figure 18: Mine inventory by MRE category type

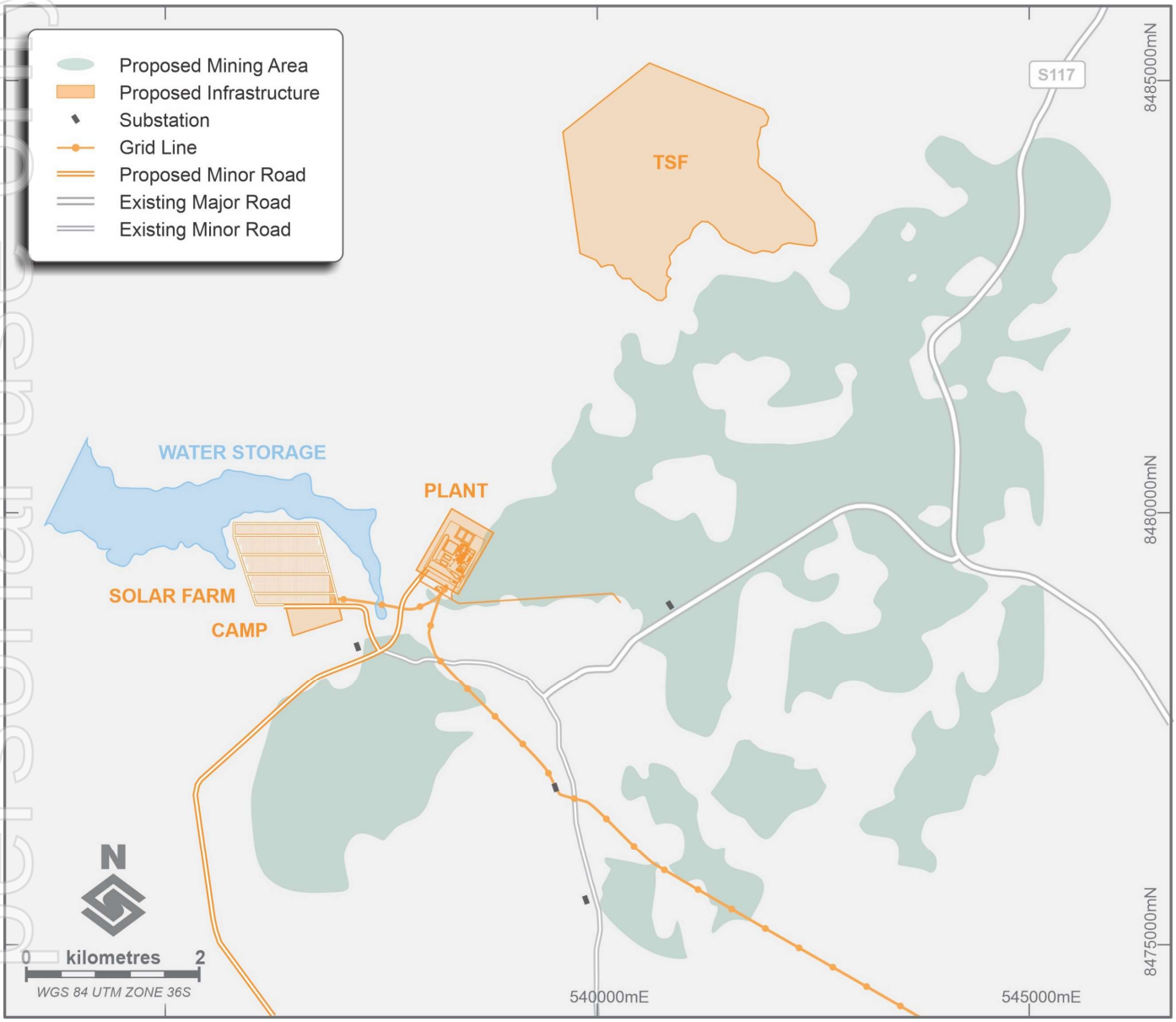
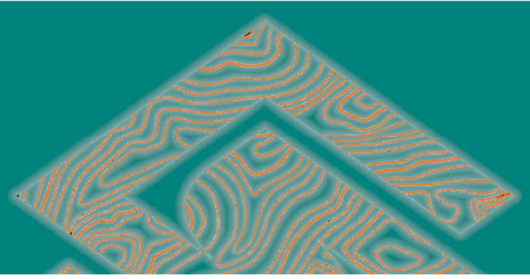


Figure 19: Kasiya site lay-out plan showing key infrastructure



METALLURGY AND PROCESS DESIGN

Metallurgical test work was performed at globally recognised laboratories, Allied Minerals Laboratories (**AML**) in Perth for rutile and SGS Lakefield in Canada for graphite. The test work programs were designed to produce a premium rutile product and coarse-flake graphite by-product. Test work has been very successful and has resulted in conventional flowsheets proving highly efficient for producing premium quality rutile and graphite products.

World-class rutile product chemical specifications are reported at 95.0% to 97.2% TiO_2 (Table 4) with low impurities and stand-out metallurgical recoveries ranging from 94% to 100%. For the purposes of this Study, a product grade of 96% TiO_2 and recovery of 97% are assumed for rutile.

A graphite gravity pre-concentrate taken from rutile spiral tails is upgraded into a coarse flake graphite by-product via a conventional flotation flowsheet. A very coarse-flake and high-grade graphite product at 96% TGC is produced. This product has over 60% in the large to super-jumbo fractions (+180µm) with overall graphite recovery from the raw sample to product of 62% (Table 5).

The process flowsheet developed is described as follows;

Wet Plant and Feed Preparation

- Oversize removal (~8% of mass)
- Isolate -45µm particles using cyclones and up current classifiers (UCC) (~48% of mass).
- Isolate a -2mm +45µm tail low in rutile and graphite (~42% of mass).
- Recover HMC to the Mineral Separation Plant (MSP) via UCC and spiral separation.
- Isolate light tailings streams to a graphite gravity pre-concentrate suitable as feed to the graphite flotation circuit.

Mineral Separation Plant (Dry Plant)

- Electrostatic separation of the heavy mineral concentrate (HMC) to isolate a conductive concentrate containing rutile
- Magnetic separation to remove minor ilmenite and other magnetic gangue minerals such as iron oxides
- Rutile product is bagged or placed in bulk containers, depending on its end-use, for sale

Graphite Flotation Plant

- Rougher flotation
- Cleaner flotation and polishing
- Thickening, filtering, drying, sizing and bagging graphite products for sale

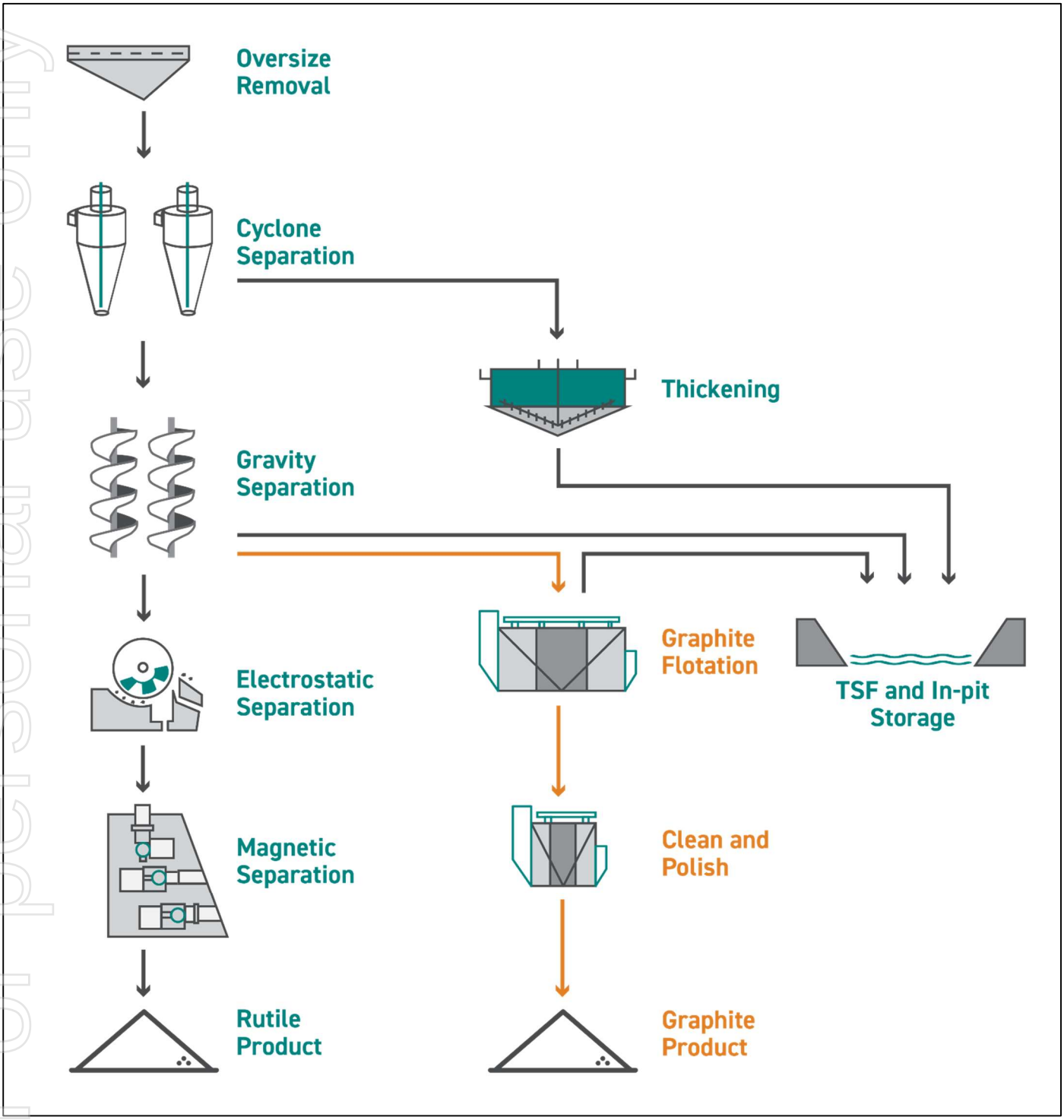


Figure 20: High-level process flowsheet for rutile and graphite production at Kasiya

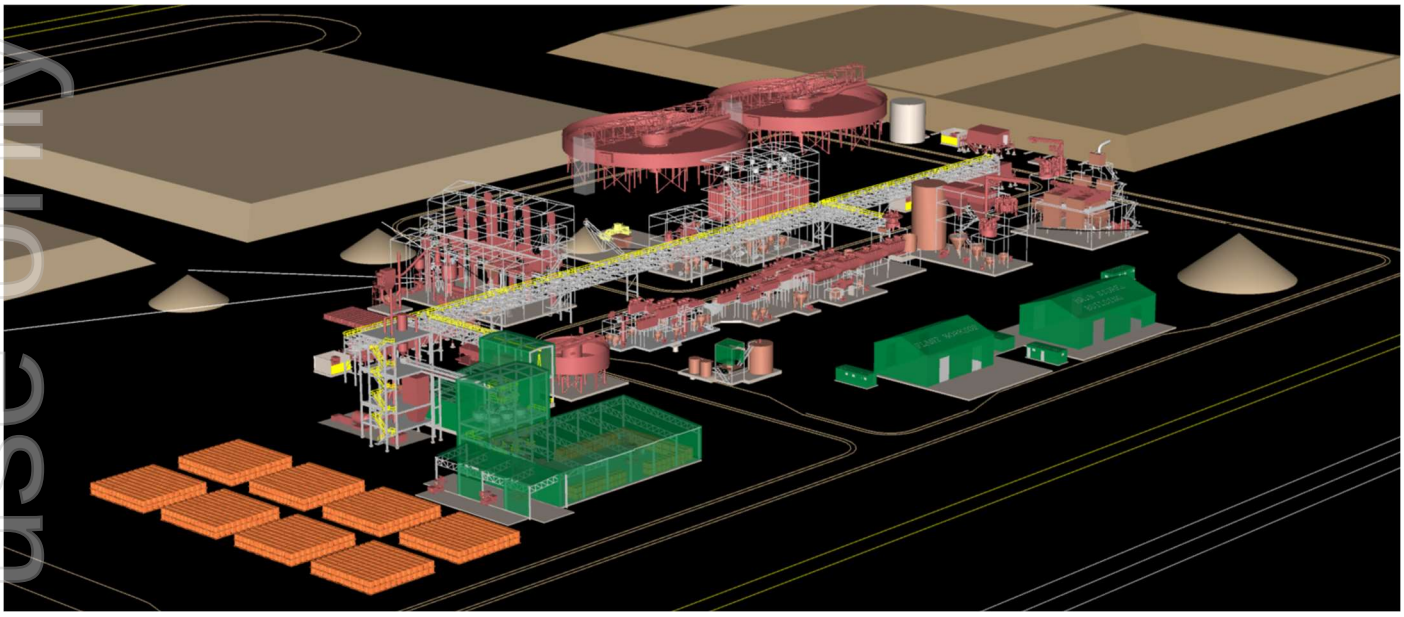


Figure 21: 3D schematic of a potential future Kasiya rutile and graphite processing plant.

The rutile and graphite mineralisation at Kasiya is amenable to processing via conventional metallurgical flowsheets using "off the shelf" processing equipment. Overall, the superior metallurgical performance at Kasiya is interpreted to be due to;

- Coarse, highly crystalline rutile grains that are naturally well-liberated and largely free of inclusions or attachments (Figure 22)
- Low chemical impurities in the rutile crystal lattices
- Simple HMC mineralogy with very little difficult to separate or near-density gangue minerals present
- Graphite is well liberated and pre-concentrates easily in the spiral gravity separation process

Figure 22: Photomicrograph of high purity rutile product 97.2% TiO_2

The premium chemical parameters and particle sizing (d_{50} 118µm, 8.3% <75µm for 97.2% TiO_2 product) of the rutile produced indicates the products should be suitable for all major natural end-use markets including TiO_2 pigment feedstock, titanium metal and welding sectors.

Table 4: Rutile Specifications

Constituent		Kasiya Products		Peer Comparisons	
		100% Recovery Product	94% Recovery Product	Sierra Rutile (Iluka)	Base Resources (Kwale)
TiO_2	%	95.0	97.2	96.3	96.2
ZrO_2+HfO_2	%	0.20	0.21	0.78	0.72
SiO_2	%	0.67	0.61	0.62	0.94
Fe_2O_3	%	0.99	0.42	0.38	1.25
Al_2O_3	%	0.45	0.38	0.31	0.23
Cr_2O_3	%	0.13	0.13	0.19	0.17
V_2O_5	%	0.67	0.70	0.58	0.52
Nb_2O_5	%	0.37	0.39	0.15	-
P_2O_5	%	0.01	0.001	0.01	0.00
MnO	%	0.02	0.01	0.01	0.03
MgO	%	0.003	b/d	0.01	0.10
CaO	%	0.003	0.001	0.01	0.04
S	%	0.01	0.01	<0.01	-
U+Th	ppm	31	23	26	53

"Iluka" is Iluka Resources Limited; "Base Resources" is Base Resources Limited. "b/d" is below the analytical level of detection,"-" is not disclosed. Sources: RBM data from World Titanium Resources Ltd TZMI Conference Presentation November 2011 (Updated January 2012); Sierra Rutile, Kwale and Namakwa Sands data from BGR Assessment Manual titled "Heavy Minerals of Economic Importance" 2010.

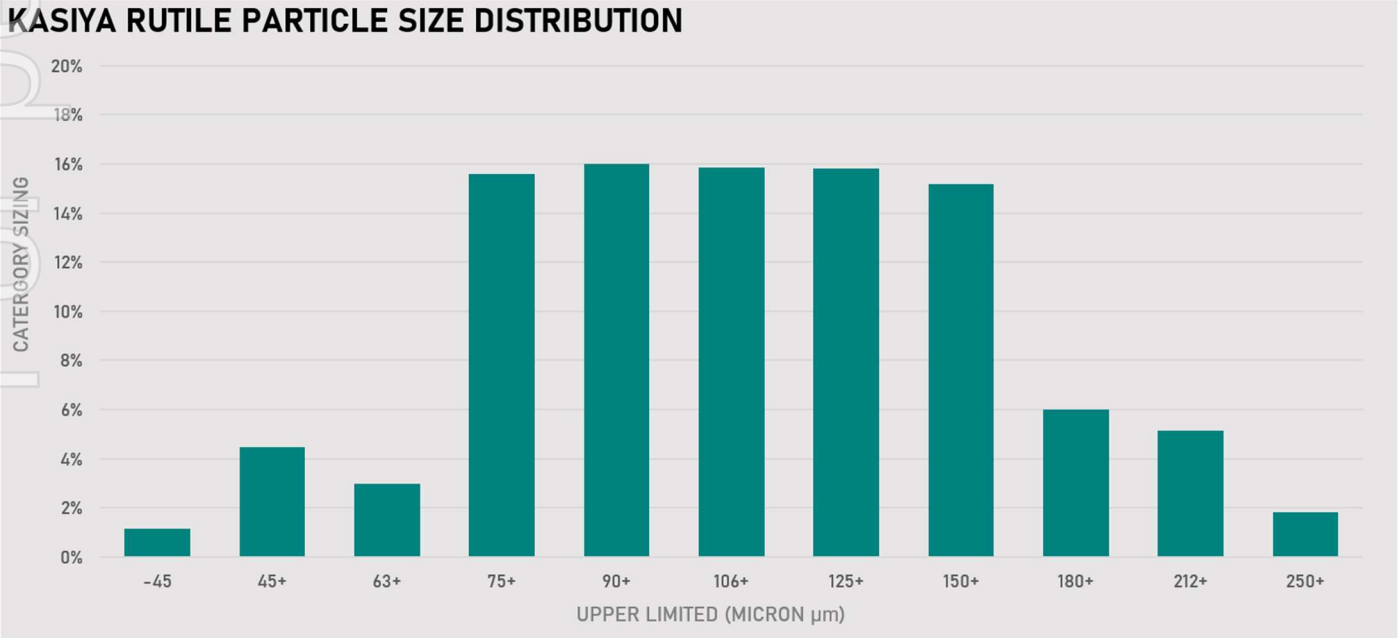
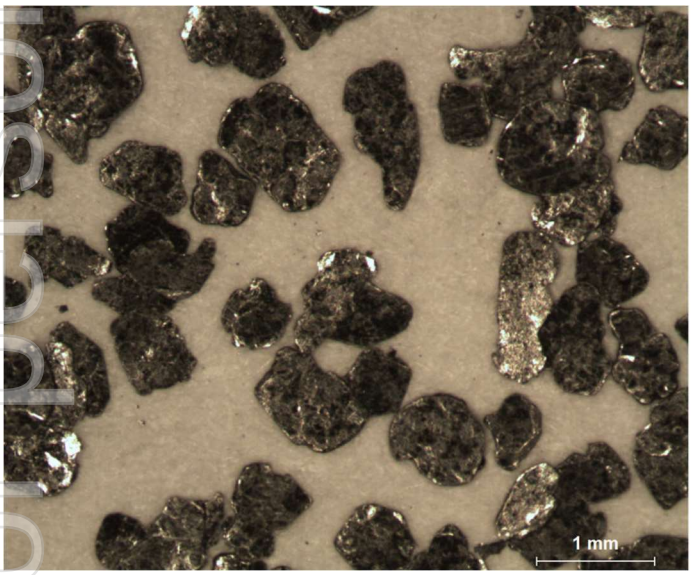


Figure 23: Particle size distribution of Kasiya rutile

The specifications for the graphite product produced during the test-work are also considered to be premium with the product naturally grading over 96% TGC and over 60% in the large to super-jumbo fractions (+150µm). The TGC and sizing distribution are shown in Table 5 below.

Table 5: Graphite Specifications

Particle Size		Carbon	Weight Distribution	Flake Category
Tyler Mesh	Micron (µ)	(%)	(% w/w)	
+32	+500	96.0	5.4	Super Jumbo
-32 +48	-500 +300	96.6	25.1	Jumbo
-48 +80	-300 +180	96.7	30.9	Large
-80 +100	-180 +150	96.8	10.9	Medium
-100 +150	-150 +106	96.11	14.4	Small/Medium
-150 +200	-106 +75	95.8	7.5	Small
-200	-75	93.8	5.8	Amorphous
Total		96.3	100	



Figures 24 & 25: Very coarse-flake graphite in +600µm sample fraction (L), graphite floating on soaking drill sample (R)

TAILINGS

Sovereign appointed Epoch Resources (**Epoch**) to complete an assessment on the tailings management and storage for the Project. The Study considered the following legislation, regulations and standards during the assessment process:

- International Financial Corporation Guidelines;
- Canadian Dam Association Guidelines; and
- Global Industry Standard on Tailings Management (**GISTM**).

The process included an assessment of various potential locations which were analysed against the population at risk, loss of life, environmental and cultural values and infrastructure and economics.

Tailings Management

- Fines (-45µm) material from the cyclones (desliming) is dewatered in a high-compression thickener
- Coarse (+45µm) fraction which flows from the gravity circuit is dewatered using cyclones with the overflow recycled to process water via the high compression thickener.
- Dewatering cyclone underflow is combined with thickener underflow for co-disposal and pumped to stacking cyclones at the tailings storage facility (TSF).

Thickening of tailings in the processing plant before disposal enables process water to be recycled directly back to the plant, reducing water losses and reducing plant raw water demand. High compression thickening recovers sufficient water whilst maintaining a pumpable slurry, optimising plant operability.

Tailings Storage

Tailing disposal will be a combination of in-pit disposal within the void created by mining, and ex-pit disposal in a standalone TSF. The ex-pit TSF will be used be exclusively used for the first two years of operation as mining void is opened up for in-pit deposition from the third year.

Whether depositing in the ex-pit or in-pit facility, the process tails will be cycloned on the perimeter of the TSF cells to isolate:

- Sands which are suitable for continuously building the dam walls, and thus increasing the capacity of the TSF
- Fines that will exclusively be deposited into the main body of the TSF void

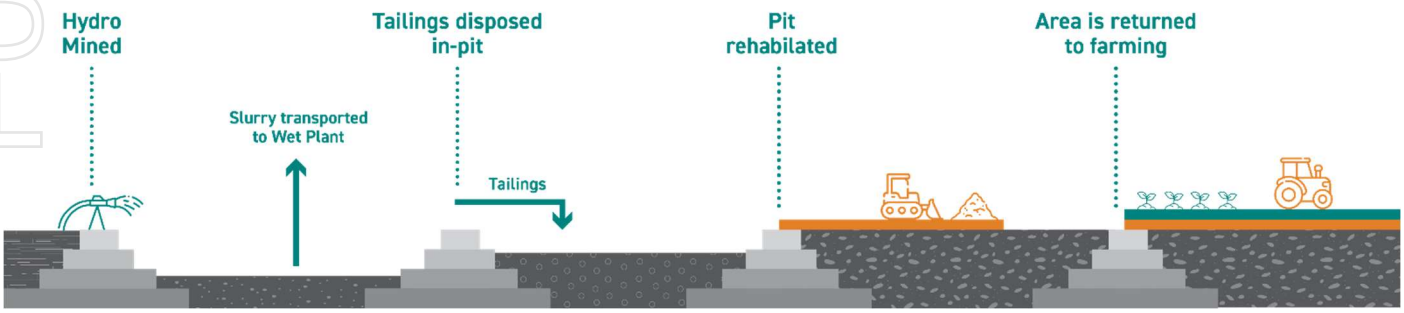


Figure 26: Mining and in-pit disposal schematic

Using in-pit disposal for the majority of the operation will minimise the overall disturbance of agricultural and bush land resources, as well as reducing the overall mining footprint over the life of mine. In-pit disposal and continual rehabilitation will allow the progressive return of land to communities and assist in a more efficient closure campaign at the end of the mine life.

Excess water will be recovered from the TSF and returned to the process water storage pond.

Figure 27: Gecko Mine where in-pit disposal was undertaken and land successfully rehabilitated (source: Tronox)

ENVIRONMENTAL & SOCIAL IMPACT

Environmental and Social Setting

A high-level desktop review was undertaken of the environmental and social characteristics of the Kasiya project area. Site reconnaissance surveys by specialist environmental and social consultants were conducted in August 2021 focussing on the following aspects:

- Terrestrial fauna and flora.
- Aquatic fauna and flora.
- Soil and land capability and land utilisation.
- Water resources, including potential surface water and groundwater impact, and the availability of raw water supply for the project.
- Communities and potential resettlement.

The site visit allowed the group to assess the project area which will assist in the creation of a work plan for the detailed studies to be undertaken as part of the environmental and social impact assessment (**ESIA**) set to commence in early 2022.

Surveys will commence to inform the development of a resettlement action plan (**RAP**) which will comply with best practice as advocated by the International Finance Corporation (**IFC**) Performance Standards. These processes will culminate in the development of detailed reports that describe the various anticipated impacts, management measures, and strategies for rehabilitation and mine closure.

The ESIA for the project will be undertaken in compliance with relevant Malawian legislation, regulations and standards, in particular, the Environmental Management Act (No. 19 of 2017) and Guidelines of Environmental Impact Assessment (DEA, 1997).

Environmental, Social and Governance

The Project aims to meet the requirements of international guidelines and standards, including the IFC Performance Standards on Environmental and Social Sustainability (IFC, 2012), the World Bank Group Environmental, Health and Safety Guidelines (WBG, 2007) and the Equator Principles (Equator Principles Association, 2020).

Decarbonising the global economy and realising the UN Sustainable Development Goals (SDGs) requires a sustained demand for metals and minerals over the coming decades. Accordingly, the Company intends to adopt the International Council on Mining & Metals (ICMM) principles for future studies and development phases of the Kasiya project. The ICMM Principles align with the United Nations Sustainable Development goals and define good practice environmental, social and governance requirements for the mining and metals industry. The Company also intends to adhere to the Task Force on Climate-Related Financial Disclosures (TCFD).

The Kasiya Project will be designed considering both the Equator Principles and Scope 1, 2 and 3 emissions under the Green House Gas protocol so that the design meets high standards for ESG from the outset. Access to power from the dominantly hydro-electric and solar Malawi power grid, plus a purpose built Kasiya solar IPP system, will ensure low carbon power supply for the project. The use of rail rather than road transport for rutile and graphite product transport will further assist with a low carbon footprint.

The Study contemplates that the operation will use a closed circuit zero discharge process water circuit and a tailings storage facility designed to store benign tailings during operations which will be rehabilitated progressively.

The current MRE has a very large spatial footprint and therefore it is expected to impact on households and land users. However, the very large MRE has allowed the Company to produce a mine-plan that largely avoids towns, villages, graveyards and important infrastructure in order to minimise impacts.

Acquisition of land for the Project may physically and economically displace households and land users. The Company will mitigate and offset these impacts by providing the affected parties with the necessary resettlement assistance under the appropriate Malawian and international laws and guidelines.

The proposed operation will have a positive impact on the local community by providing approximately 480 long term jobs and significant training and upskilling opportunities under an equal opportunity system. Malawian-owned businesses will benefit from the opportunity to provide services to the mine.

Similar projects in Africa typically witness a flow on effect for employment in local communities. For every person employed directly in the project an additional four people will be employed in indirect jobs. These jobs would be supported by the companies supply chain and additional consumer spending generated by the new direct and indirect employment.

The Company intends to develop a comprehensive Community Development Agreement (CDA) with the affected communities covering investment in local infrastructure, local business support, water provision, healthcare and education.

INFRASTRUCTURE

Power

Sovereign's objective is to develop a sustainable, low carbon and reliable power solution for Kasiya. Access to hydro-generated grid power and favourable conditions for a solar power system allows for a hybrid, low-carbon solution. JCM Power (**JCM**) were appointed to design a preliminary Independent Power Producer (**IPP**) solution for Kasiya.

JCM is a Canada-headquartered IPP which develops, constructs, owns and operates renewable energy and storage projects in emerging markets across the globe. JCM is funded by reputable development finance institutes including FMO, IFU, STOA, FinDev Canada and Swedfund. JCM is currently in the final stages of commissioning the Salima project, a 60MW solar project and is mid-construction of the Golomoti 20MW solar PV and Energy Storage project, both in Malawi. JCM was involved in the development, management, engineering, procurement and construction for these projects.

Figure 28: 60MW Salima project in Malawi constructed by JCM (source: JCM)

JCM designed a solar PV array for 25MWp with a supporting 30MWh Battery Energy Storage Solution (**BESS**) that is capable of supplying ~41% of the Project's power requirements, based on an estimated 14MW steady state power requirement. The remaining power requirement is planned to be provided from the grid through the Electricity Supply Company of Malawi (**ESCOM**).

As back-up, a 2.5MW diesel facility will be rented to enable the continued operation of critical drives including thickeners and agitators, lighting etc during grid-outages when the solar / battery supply is depleted.

To facilitate the grid connection, a new high voltage (HV) 132kV power line will need to be constructed to the facility from Lilongwe. The cost of $US12m for this line has been included in the capital estimations. A Build-Own-Operate (**BOOT**) as a Power Purchase Agreement (**PPA**) results in an estimated total power tariff of $US0.125/kWh.

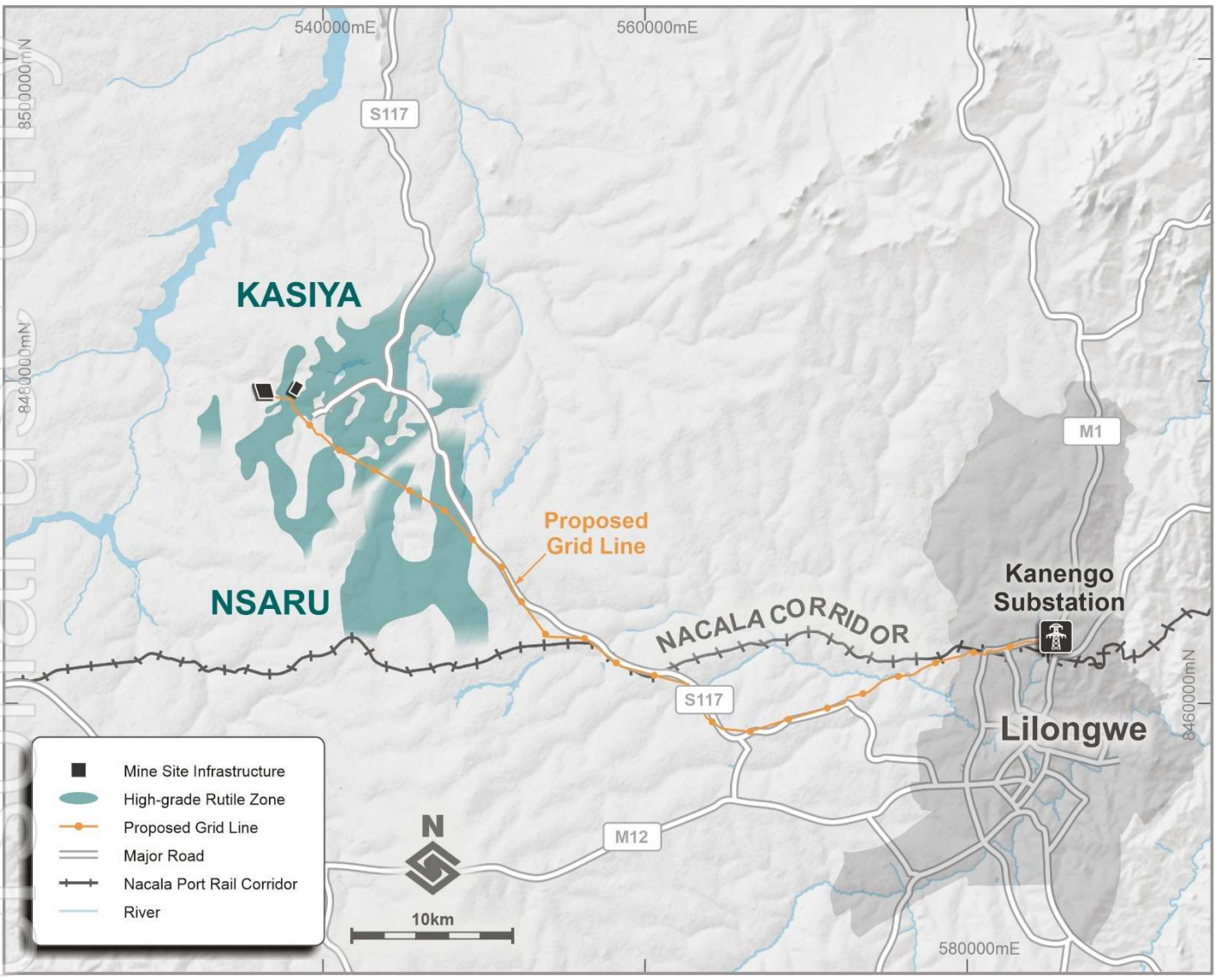


Figure 29: Proposed HV power line connecting to ESCOM grid

Water

Water availability for the project is considered to be good. Malawi features a humid sub-tropical climate, with generally dry and mild winters and the majority of rainfall occurring during the summer months of December to March.

Temperatures are moderated by elevation and average 20.3°C with annual precipitation averaging 860mm. Average monthly rainfall peaks in January at 225mm with the minimum rainfall generally being encountered in June to September.

Process water to sustain the operation will be supplied from a purpose-built water dam. The dam will be built in a low-lying contour close to the processing facilities (Figure 19). The dam will capture and store run-off during the wet season, storing sufficient water to sustain the operation for the duration of the dry season.

The dam will be filled in an average rainfall year using only the surrounding catchment. In the case of low rainfall events water can be supplemented by pumping from the Bua River just 11km to the west.

The estimated area of the dam is ~2.4km^2, and the total dam capacity is estimated at 11.3GL. The annual water demand for the Kasiya operation is 9.1GL.

Figure 30: Drone image looking north-west over Kasiya showing the generally flat terrain

Human Resources

The proximity to Lilongwe gives the project a number of benefits, including access to a large pool of professionals and skilled tradespeople. Malawian national employees will be employed dominantly from the Kasiya area and the capital city of Lilongwe.

Expatriate and senior out of town employees will be accommodated in an 80-person accommodation village proximate to the processing operation but separate from the township of Kasiya.

During operations, Kasiya will employ over 480 staff with the majority working in the plant operations.

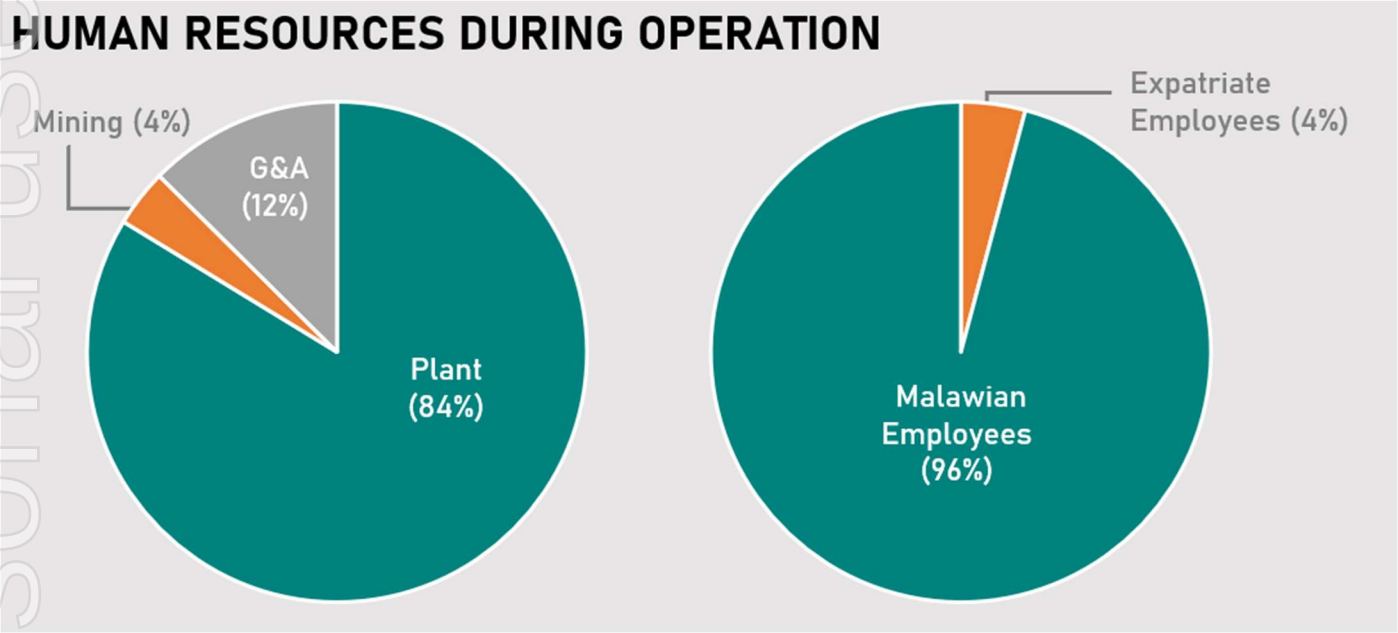


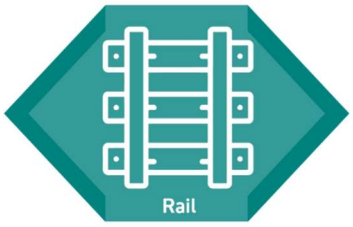
Figure 31: Staff split across operation over the LOM

Figure 32: Some of Sovereign's current team at the Company's Lilongwe Facility

LOGISTICS

Sovereign directly benefits from the exceptional existing infrastructure in central Malawi. This offers the preferred logistics route to the Indian Ocean-located Nacala deep water port via the Nacala Logistics Corridor for the export of mineral products to global markets.

Class-1 bitumen sealed road network



Access to the fully operational Nacala Rail Corridor

Linking to the deep water international port of Nacala

This established operation-ready logistics infrastructure will provide significant capital and operating cost saving to the project.

Sovereign appointed independent African logistic consultants, Morgan Sterling Consultants (**MSC**) to assess the options for exporting Kasiya's rutile and graphite products. MSC confirmed the preferred logistics route to global markets is via the Nacala Logistics Corridor (**NLC**) via the deep water port of Nacala. The logistics network is significantly underutilised with only 15% of the rail freight capacity currently in use with the deep water port only 41% utilised.

The logistics cost for transporting product rutile and graphite products from Kasiya to free-on-board (**FOB**) Nacala was estimated by MSC to be US$50.85 per tonne.

Figure 33: Preferred logistics route via the Nacala Logistics Corridor

By adopting the Nacala Rail Corridor as its preferred logistics solution with almost all overland distance on rail, Sovereign has the potential to reduce environmental impact and carbon footprint of Kasiya significantly compared to all-road alternatives.

Sealed Road Network

The Kasiya deposit is located just 40km WNW of Lilongwe, Malawi's capital. This provides the Company with excellent access to sealed roads and short road haulage distances to the railway.

Kasiya is perfectly located to utilise this Class-1 bitumen road network which directly accesses the deposit area. In 2015, The Roads Authority of Malawi completed an upgrade of the 95km long, Lilongwe Old Airport-Kwanyanda-Santhe (S117) and Kasiya spur (T342) road projects. These upgrades resulted in Class-1 bitumen standard roads to 6.8m carriageway with 1.5m single sealed shoulders. Sovereign will be able to take advantage of this underutilised road network for inbound and outbound logistics.

Figure 34: Example of the road network available to Sovereign

The Nacala Corridor

The NLC is a 912km rail line for the purpose of transporting coal from mines in western Mozambique to the port of Nacala via Malawi. For Malawi, the NLC provides the shortest and most direct access to the sea and global commodity markets. The Corridor stretches from Moatize, Mozambique and Chipata, Zambia and passes through Lilongwe in Malawi to the Port of Nacala on the Indian Ocean.

Figure 35: Nacala Logistics Corridor passing through Sovereign's project area

International Deep Water Ports

The landlocked country of Malawi has traditionally been served by two deep water ocean ports on the Eastern seaboard of Africa – Nacala and Beira. Both harbours have been connected by direct road and rail routes for over a century as trade has developed into the main urban centres of Blantyre and Lilongwe in Malawi.

Sovereign's preferred logistics route for exporting mineral products to global markets is through the Nacala deep water port via the Nacala Corridor. Export of the port of Beira may become an increasingly viable logistics option given recent announcements of upgrades of the Sena rail line which connects Beira and the Tete province (Moatize Coal Mine).

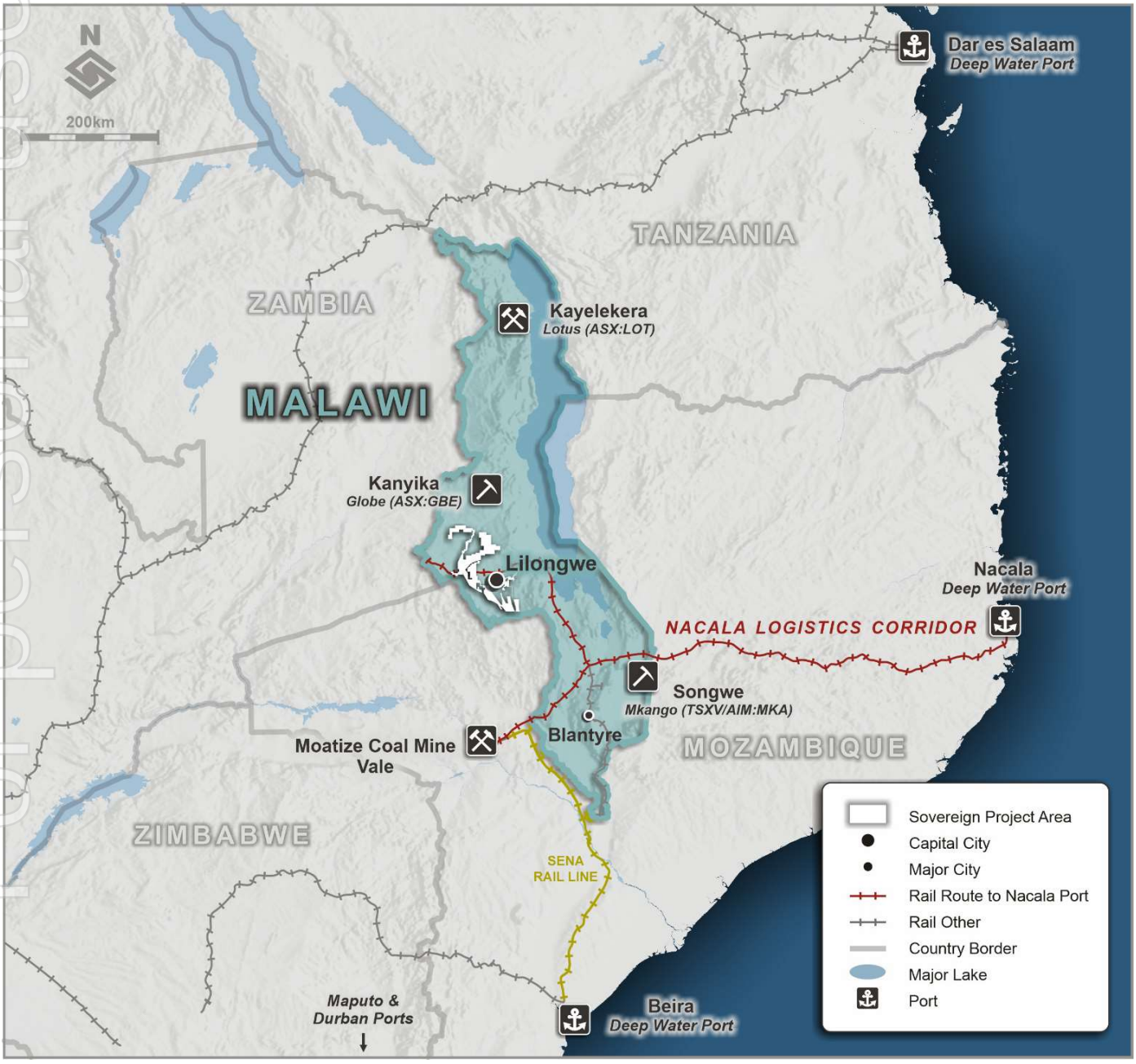


Figure 36: Sovereign's project area showing its position in South-East Africa

RUTILE MARKET

Natural rutile is the purest, highest-grade natural form of titanium dioxide (TiO_2) mineral and is the preferred feedstock in manufacturing titanium pigment and producing titanium metal. Titanium pigments are used in paints, coatings and plastics. Titanium minerals are also used in specialty applications including welding, aerospace and military.

The global titanium feedstock market is over 7.7Mt of titanium dioxide with the majority of this been consumed by the pigment industry. Natural rutile's high purity classifies it as a high-grade titanium feedstock. The high-grade titanium feedstock market consumes approximately 2.8Mt of contained titanium dioxide with strong demand driven from the pigment, welding and metal industries.

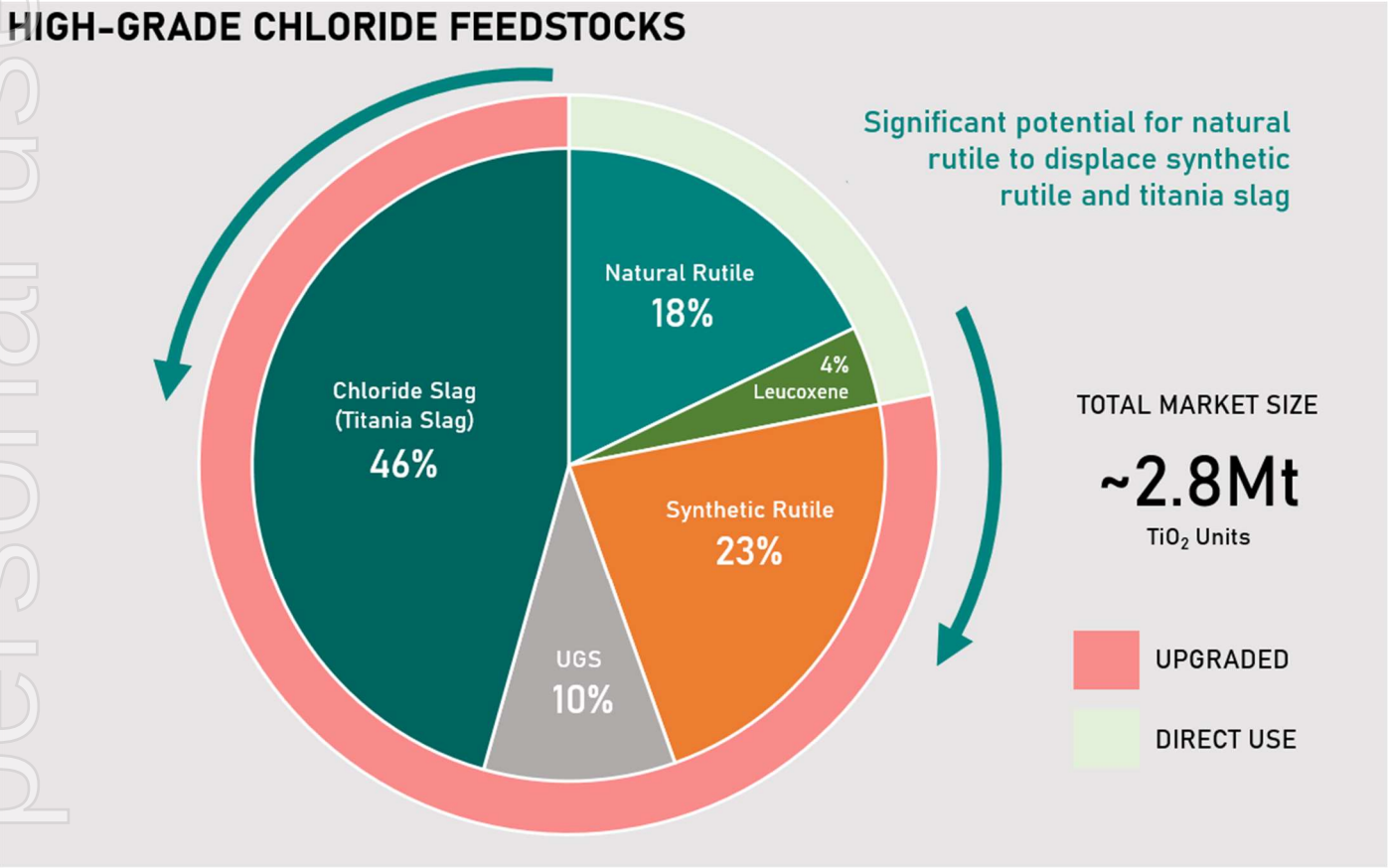


Figure 37: High-grade titanium feedstocks (+80% TiO2) by supply type (Source: TZMI/Iluka, based on 2020 data)

Natural rutile is a genuinely scarce commodity with no other large rutile dominant deposits having been discovered in the last half century.

Supply of natural rutile from current sources is in decline as several operations' reserves are depleting concurrently with declining ore grades. These include Iluka Resources' (Iluka) Sierra Rutile and Base Resources' Kwale operations in Kenya. Recent announcements by Iluka advising of the potential suspension of operations at Sierra Rutile may cause significant additional product to be removed from the market in the near to medium term. Additionally, there are limited new deposits forecast to come online, and hence supply of natural rutile is likely to remain in structural deficit.

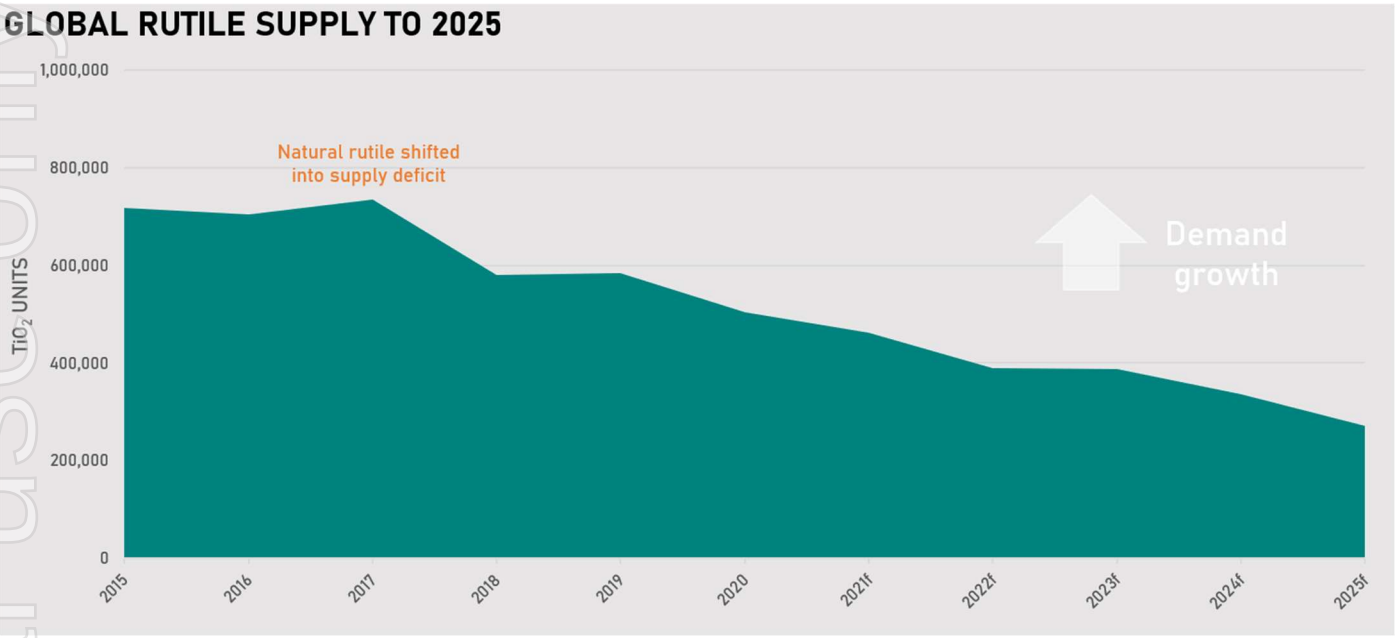


Figure 38: Previous and forecast global natural rutile supply 2015-2025 (source: TZMI)

The rutile market fundamentals continue to be robust with current and forecast pricing remaining very strong. In 2021, the market has rebounded strongly with pigment plant utilisation rates returning to pre-pandemic levels. Major producers have noted that very strong demand in the welding market is outstripping supply.

The natural rutile market can be divided is two discrete sectors;

- Bulk rutile mostly sold on contract to chloride pigment producers
- Bagged rutile sold to welding and other sectors

Titanium market experts TZMI expect new bulk rutile contracts for 2022 to be priced at US$1,350-1,450 per tonne FOB with bulk rutile spot sales priced at US$1,500-1,600 per tonne FOB.

Bagged rutile sales into the welding and other sectors achieve better pricing outcomes, often with 25%+ premiums to bulk rutile pricing. Consequently, TZMI expects bagged rutile sales to fetch US$500-600 per tonne price premiums over the bulk market in 2022. TZMI understands that some bagged rutile sales for Q1 of 2022 have been agreed at close to US$2,100-2,200 per tonne CIF. TZMI also expects bagged rutile sales to lead pricing growth because the welding end-use sector has limited alternatives to rutile feedstock input.

Current rutile pricing scheme for the Kasiya Scoping Study is based on 60% of volume allocated to bulk rutile sales with pricing based on TZMI's long term inducement price, and the remaining 40% as bagged rutile sales with pricing based on the long-term inducement price plus 25%. Refer to Table 6 below for the price used across the mine life.

Table 6: Rutile Prices (Source: TZMI)

	Sales Mix	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Long term
TZMI Forecast Price – Base (real)		$1,336	$1,334	$1,314	$1,336	$1,328	$1,311	$1,287	$1,255	$1,221	$1,180	$1,180
Bulk sales (pigment inducement price)	60%	$1,336	$1,334	$1,314	$1,336	$1,328	$1,311	$1,287	$1,255	$1,221	$1,180	$1,180
Bagged sales (25% premium)	40%	$1,670	$1,667	$1,642	$1,670	$1,660	$1,639	$1,609	$1,569	$1,526	$1,475	$1,475
Weighted Price		$1,470	$1,467	$1,445	$1,470	$1,461	$1,442	$1,416	$1,381	$1,343	$1,298	1,298
LoM Average												$1,346

Marketing Strategy

The Company engaged market leading TZ Minerals International (**TZMI**) to provide a bespoke marketing report to support the Scoping Study. TZMI is a global, independent consulting and publishing company which specialises in technical, strategic and commercial analyses of the opaque (non-terminal market) mineral, chemical and metal sectors.

TZMI's assessment has confirmed that, based upon their high-level view on global demand and supply forecasts for natural rutile, and with reference to the specific attributes of Kasiya, there is a reasonable expectation that the product will be able to be sold into existing and future rutile markets.

Given the premium specifications of Kasiya, the product should be suitable for all major natural end-use markets including TiO_2 pigment feedstock, titanium metal and welding sectors.

The Company has engaged with numerous potential off-takers, end-users and customers across the various sectors (pigment, welding and titanium metal). The Company plans to advance these discussions with these parties and others with a view of securing sales and off-take agreements for the future sale of its product and establishing long-term project partners.

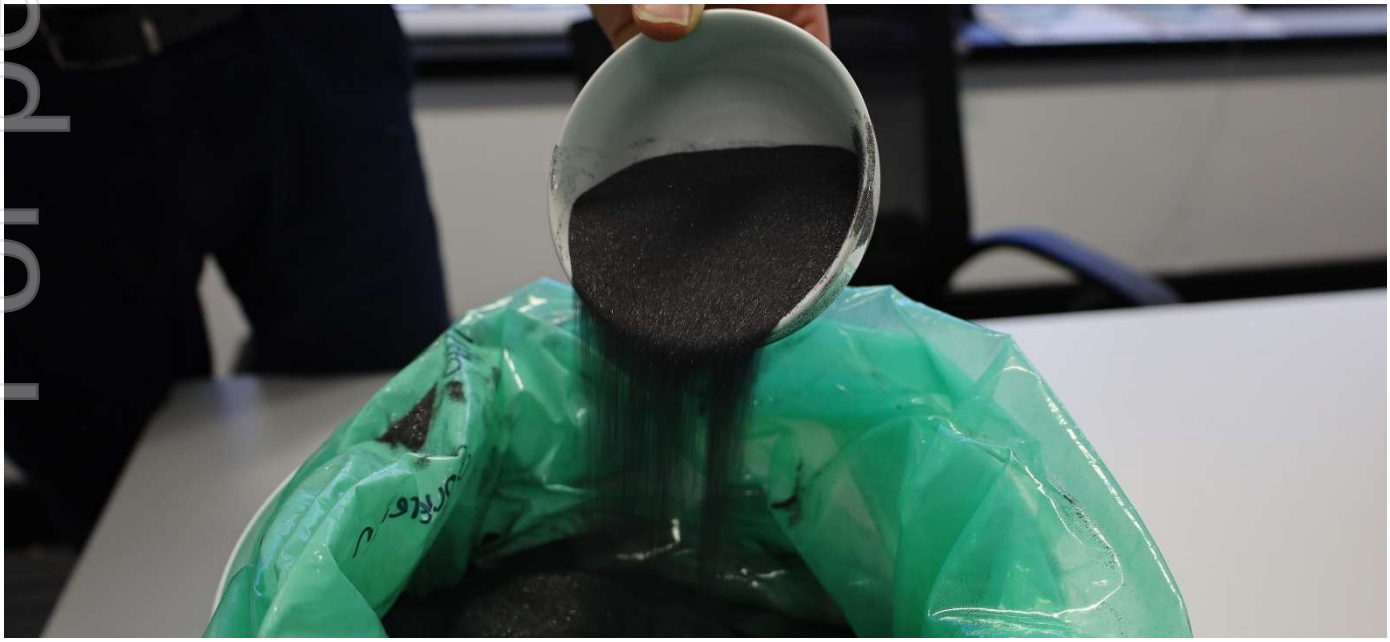


Figure 39: Final rutile product from the test-work ready for despatch to potential off-takers

LOW CARBON ADVANTAGE

Like many other industries globally, the titanium pigment industry is targeting reduced carbon emissions, reduced energy consumption and a move toward renewable energy and waste minimisation.

Natural rutile (~95% TiO_2) is the cleanest, purest natural mineral form of titanium dioxide with the other major source being ilmenite (~50% TiO_2). The genuine scarcity of natural rutile prompted the titanium industry to develop upgraded titanium feedstock products from ilmenite that can be used as substitutes for natural rutile (i.e. synthetic rutile and titania slag).

Two energy and carbon intensive processes are used by major market participants to produce the upgraded synthetic rutile and titania slag. Both methods use ilmenite (~$FeTiO_3$) as the raw source material and are essentially processes for the removal of iron oxide. The downstream pigment production process relies heavily on the use of these upgraded titanium feedstocks, each having an associated substantial environmental impact.

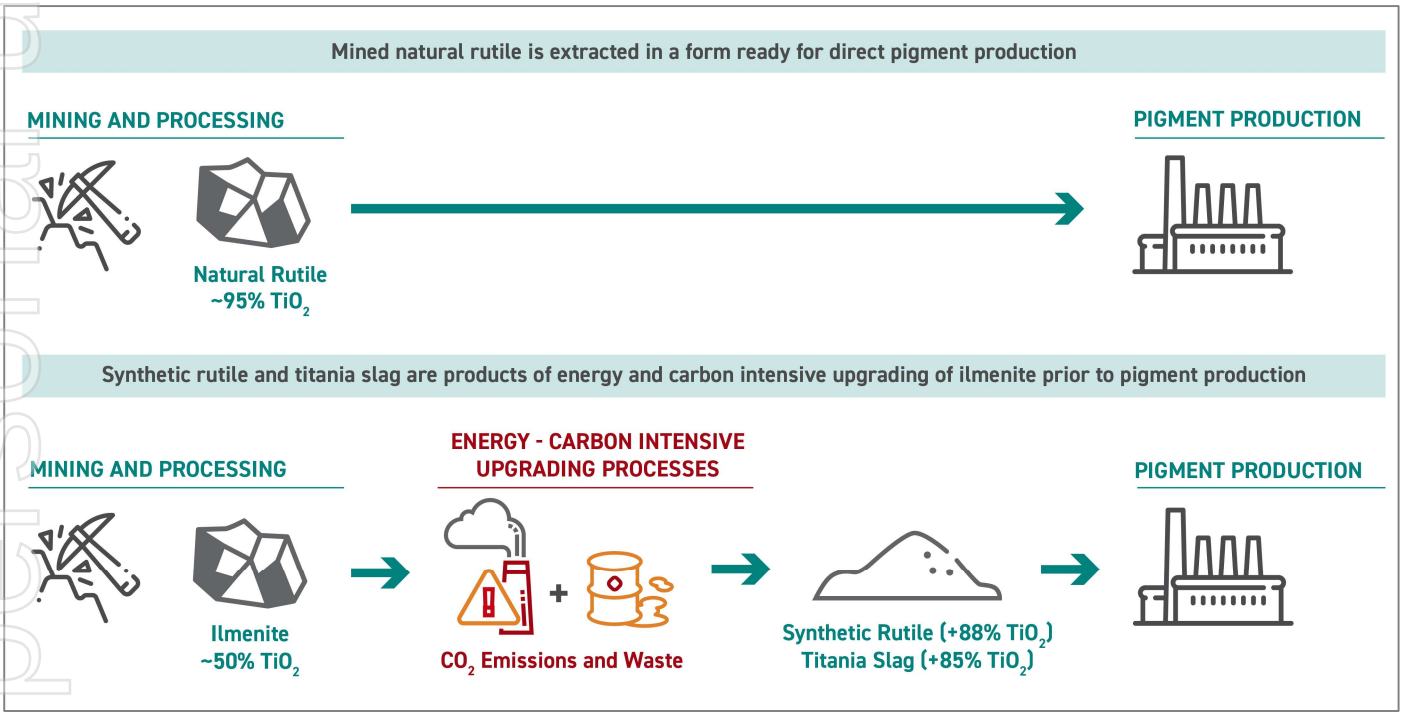


Figure 40: Carbon-intensive upgrading of ilmenite versus direct use of natural rutile in pigment production

For downstream pigment producers focused on lowering their carbon footprint, natural rutile presents a technically preferred feedstock over higher energy and carbon-intensive upgraded titanium feedstocks synthetic rutile and titania slag.

In line with its Environmental, Social and Governance (ESG) Strategy, Sovereign appointed UK-based consultancy, Minviro Ltd. to carry out gate-to-gate Life Cycle Assessments (**LCAs**) for the production of upgraded titanium feedstocks, namely:

- Synthetic rutile (+88% TiO_2) – produced from ilmenite via the Becher Process in Australia; and
- Titania slag (+85% TiO_2) – produced from ilmenite via smelting in electric furnaces in South Africa.

The purpose of the LCAs was to quantify the Global Warming Potential (**GWP**) for the production of one kilogram of each upgraded feedstock. The Studies were conducted by Minviro according to the requirements of the ISO-104040:2006 and ISO-14044:2006 standards.

The studies performed by Minviro, show substantial environmental benefits are possible by utilising natural rutile (TiO2) versus beneficiated high-grade titanium feedstocks made from lower quality mineral ilmenite (~$FeTiO_3$). Up to 2.8 tonnes CO_2 eq. for each tonne of natural rutile utilised could be saved compared to the upgrading/beneficiation of ilmenite, via smelting and chemical processes, to high-grade titanium feedstocks like titania slag and synthetic rutile.

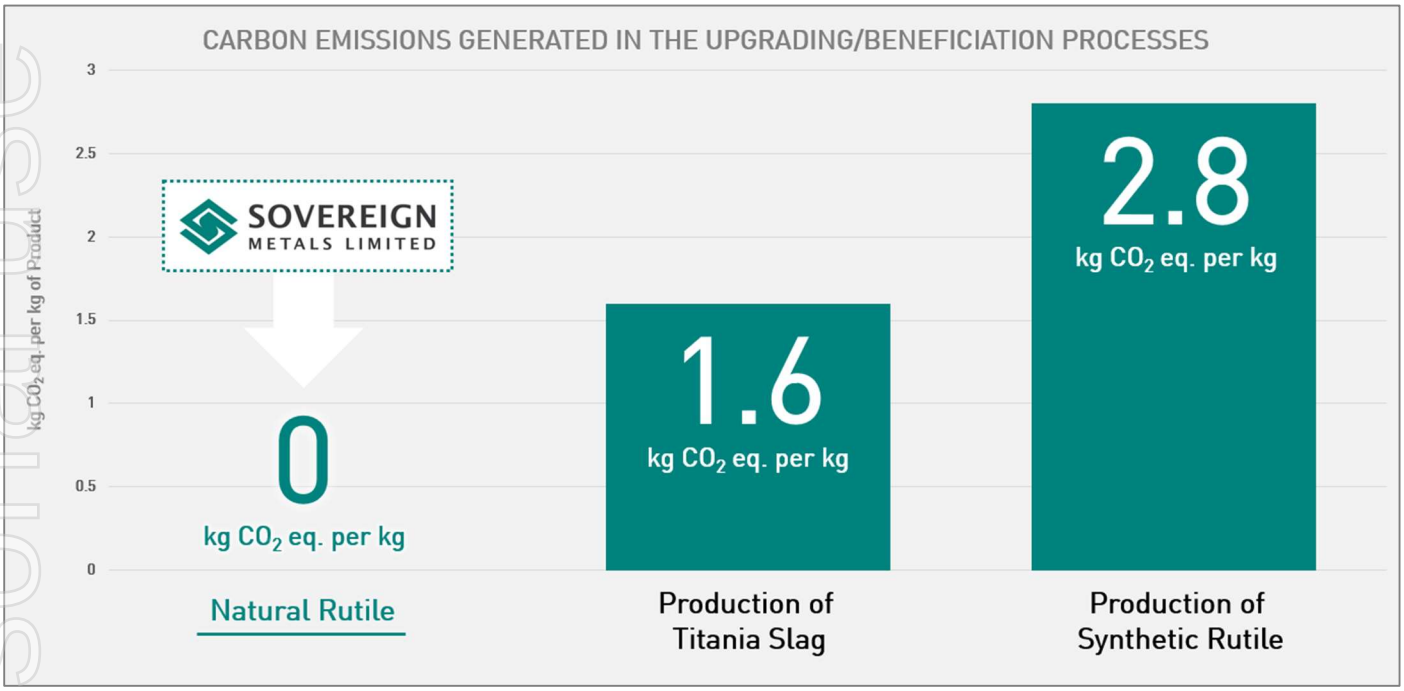


Figure 41: Summary of the LCA outcomes with overall Global Warming Potential of upgrading ilmenite to titania slag and synthetic rutile (Source: Minviro)

Natural rutile requires no upgrading for direct use as titanium pigment feedstock, eliminating the upgrading step required for ilmenite, resulting in zero additional CO_2 emissions. Sovereign is well-positioned not only to fill the supply gap but also displace the CO_2 and waste-intensive upgraded alternatives.

GRAPHITE MARKET

The primary end-market for natural flake graphite is the refractory, foundries and crucible sectors which consumed approximately 77% (900,000 tonnes) of flake graphite production in 2020. The refractory industry is the volume driver for flake graphite, with foundries and crucibles offering smaller markets for higher purity graphite products. The major product flake graphite is consumed in is magnesia-carbon bricks, a mainstream, global refractory brick which is used in the steel industry.

The lithium-ion battery sector is the main emerging market for flake graphite. Greater capacity batteries, such as those required for electric vehicles, are expected to drive significant demand for graphite over the coming years. It is forecast the battery sector will become the largest segment by 2028.

Electric Vehicles will Drive new demand for graphite

The next two decades years will bring significant changes as electrification of vehicles reshapes the automotive and freight markets globally. To power this energy transition, it is estimated that the world will need 20-25 TWh of annual growth in capacity for the next 15 years.[1]

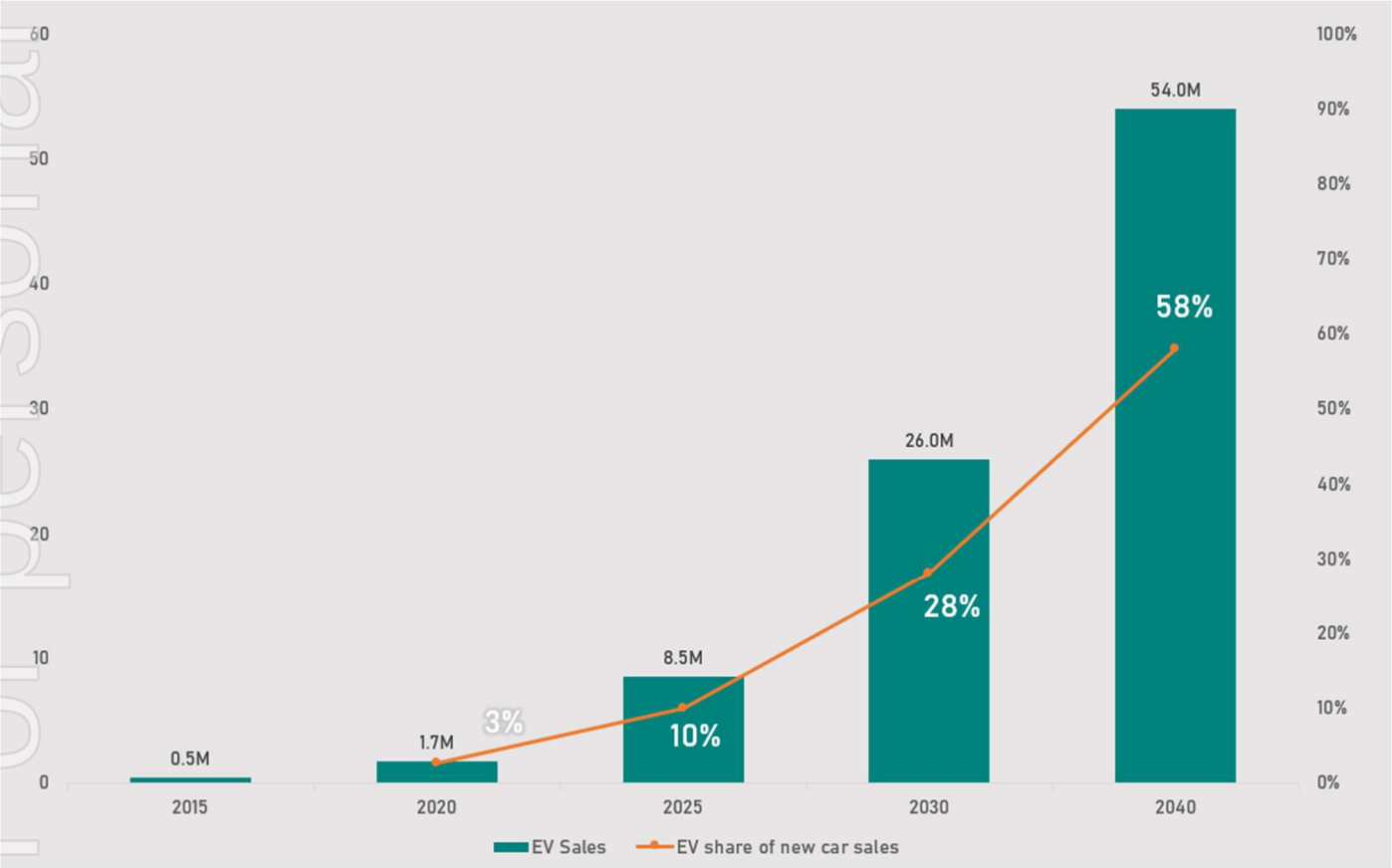


Figure 42: Global EV Sales (Source: Bloomberg NEF Electric Vehicle Outlook 2020)

Sources: 1. Nouveau Monde Graphite (TSXV:NOU) – Corporate Presentation (January 2021)

There are now over 7 million passenger EVs on the road and electrification is spreading to other segments of road transport. Automakers are accelerating their EV launch plans, partly to comply with increasingly stringent regulations in Europe and China.

The long-term outlook for EVs remains bright, as fundamental cost and technology improvements outweigh the short-term impacts of the Covid-19 pandemic. Some near-term EV model launches will be delayed, but manufacturers are committed to long-term electrification and by 2022 there will be over 500 different EV models available globally.

Bloomberg estimates that by 2025, EVs hit 10% of global passenger vehicle sales, rising to 28% in 2030 and 58% in 2040.

Exceptional European Demand Growth Expected Driven by Regulation

Europe is the fastest growing market in the world for Li-ion batteries and currently sources all its anode materials from Asia. According to Deloitte, Europe will represent 27% of the global EV market by 2030 as policies adopted by the UK and European Union to regulate vehicle emissions and restrict new internal combustion vehicle sales come into force. By 2030, 42% of all new car sales in Europe are forecast to be EV sales.

To meet this demand, European mega-factory capacity is expected to grow by 228%, representing close to 20% of the world's mega-factory capacity by 2029[2].

Figure 43: European Battery Makers (Source: After Roland Zenn)

Sources:
2. Benchmark Mineral Intelligence (September 2020)

Graphite is the Major Active Material in Li-ion Batteries

Strategic mineral supplies from sustainable sources are vital to OEMs' capacity to produce batteries, cars and energy storage systems[1]. With up to ten times more graphite by volume than lithium in a Li-ion battery, to meet demand for batteries, approximately 3.5 million tonnes graphite anode is required by 2029, up from 600,000 tonnes today[3].

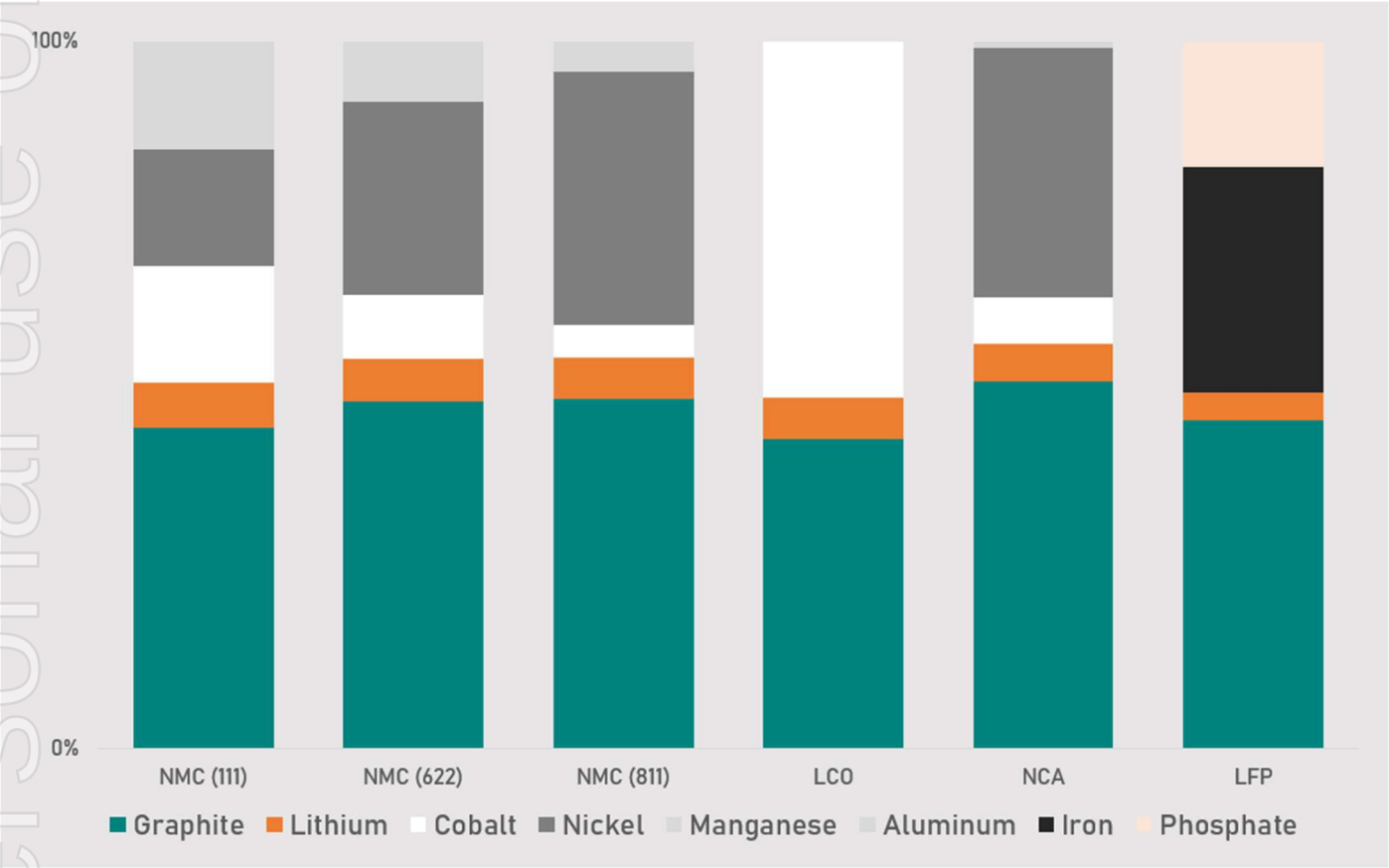


Figure 44: Composition of Major Li-ion Cathode Types (Source: MRS Energy & Sustainability: A Review Journal)

Supply

China continues to be the world's leading producer of natural flake graphite, supplying approximately 62% of the market in 2020. Brazil, India, Canada, Mozambique, Madagascar and North Korea were major contributors of the remaining 38% of global production.

The supply-demand balance in the graphite market is forecast to remain in balance for an extended period. However, a significant supply deficit is anticipated by 2024 as demand is forecast to strengthen putting the market into deficit. Demand is expected to exceed global supply by 400,000 tonnes as early as 2026. New production is needed to come online to meet the strong growth market.

Sources:
1. Nouveau Monde Graphite (TSXV:NOU) – Corporate Presentation (January 2021)
2. Benchmark Mineral Intelligence (September 2020)
3. Talga Group Limited (ASX:TLG) – Investor Presentation (15 December 2020)

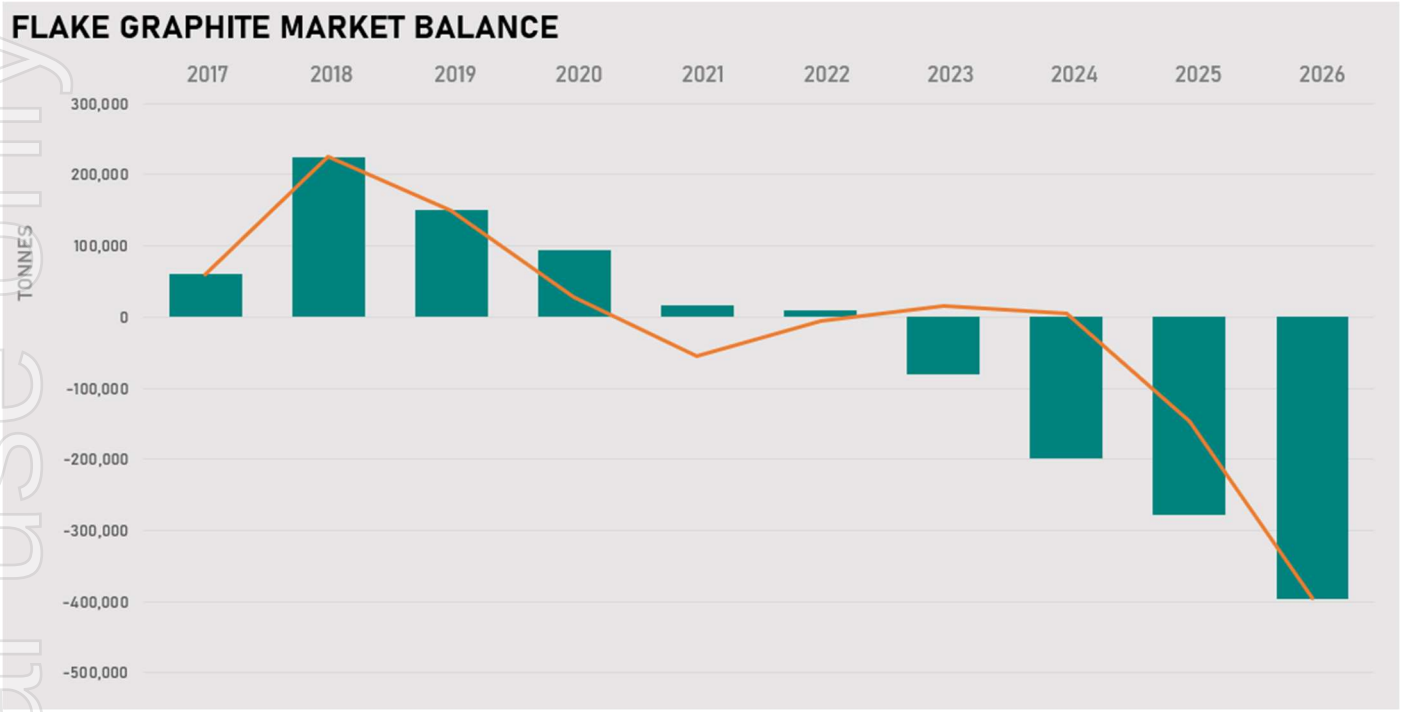


Figure 45: Flake Graphite Market Balance
(Source: Benchmark Mineral Intelligence Flake Graphite Forecasts; April 2020)

Marketing Strategy

Sovereign's market strategy is focused on initial entry into existing primary end-markets, including the refractory, foundry and expandable graphite sectors. The very low graphite production costs should allow Sovereign to compete on price point with China, the world's largest supplier of natural flake graphite.

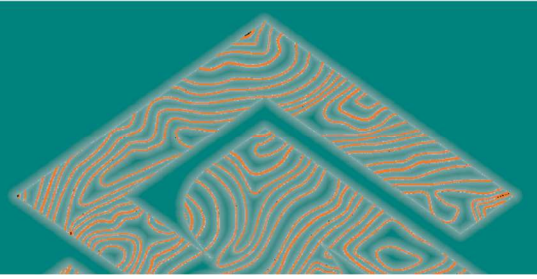
The Company through its Pre-Feasibility Study (**PFS**) level Malingunde graphite project has built a strong understanding of the graphite market and developed a number of well-established relationships with off-takers and customers.

Industry participants confirm that the highest value graphite concentrates remain the large, jumbo and super-jumbo flake fractions, primarily used in industrial applications such as refractories, foundries and expandable products. These sectors currently make up the significant majority of total global natural flake graphite market by value.

Sovereign engaged Fastmarkets, a specialist international publisher and information provider for the global steel, non-ferrous and industrial minerals markets, to assess the marketability of Sovereign's graphite product.

Fastmarket's assessment has confirmed that, based upon their high-level view on global demand and supply forecasts for natural flake graphite, and with reference to the specific attributes of Sovereign's graphite, there is a reasonable expectation that the product will be able to be sold into existing and future graphite markets. Given the extremely low-cost profile and high-quality product, it is expected that output from Kasiya and Malingunde will be able to fill new demand or displace existing lower quality / higher cost supply.

Industry's interaction with supply chain participants indicates the progression towards higher proportions of natural graphite used in battery anodes will be supported by its lower cost and superior environmental credentials. Environmental footprint of EVs will become increasingly important as EV penetration accelerates, noting that synthetic graphite is made from the by-product of energy intensive coking and oil refinery processes.



Price Forecast

The Company has taken a deliberately conservative view for its base-case Scoping Study scenario on graphite pricing.

The basket price used for the Study was based on current pricing sourced from independent consultant, Fastmarkets, and verified against published off-take agreement information in the market. The prices reported are in line with reported prices being received by other graphite producers with prices discounted by Sovereign to incorporate market establishment and agent fees.

Based on other guidance and market reports basket prices of over US$1,800 have been forecast for similar product flake baskets. Sovereign adopts a conservative average basket price of US$1,085 for this Study.

Table 7: Graphite Price Assumption

Flake Category	Micron (µm)	Distribution (% w/w)	Forecast Price US$/t	Contribution US$/t
Super Jumbo	+500	5.4	$2,100	$114
Jumbo	-500 +300	25.1	$1,600	$402
Large	-300 +180	30.9	$1,085	$335
Medium	-180 +150	10.9	$775	$86
Medium/Small	-150 +106	14.4	$605	$87
Small	-106 +75	7.5	$515	$38
Amorphous	-75	5.8	$425	$24
Total		**100**	**-**	**$1,085**

Totals that do not sum exactly are due to rounding

COST ESTIMATIONS

Kasiya's low-cost profile is achieved through size, grade, location and infrastructure. Central Malawi boasts excellent existing infrastructure including hydropower and an extensive sealed road network. The Kasiya Rutile Project is strategically located in close proximity to the capital city of Lilongwe, providing access to a skilled workforce and industrial services.

The existing quality logistics route to the Indian Ocean deep water port of Nacala, via the Nacala Logistics Corridor, for the export of products to global markets provides significant capital cost savings compared to other undeveloped projects.

The high-grade mineralisation occurring from surface results in no waste stripping and the amenability to hydro-mining means the mining cost component is relatively low.

Capital Costs

Capital estimates for the process plant have been prepared by DRA Global Ltd, together with input from the Company, using a combination of cost estimates from suppliers, historical data, benchmarks and other independent sources. The intended accuracy of the capital cost estimate for the Project is ±30%. A summary of the capital cost breakdown is presented in Table 8 below.

Table 8: Capital Cost Estimate

Description	US$m
Direct	
Mining	$2.4
Plant – Rutile	$93.5
Plant - Graphite	$34.1
Infrastructure	$88.5
Total Directs	**$218.4**
Indirects	
EPCM	$26.7
Owners Cost	$16.1
Miscellaneous	$12.9
Contingency	$57.6
Total Indirects	**$113.3**
Total Start-up Capital	**$331.7**

Mining is expected to be conducted on a contractor basis. The capital costs estimated for mining in Table 8 above are the costs to establish the Company's own infrastructure.

The estimates for the two plants are based on the flowsheets and mass balanced established during test work programs and outlined in the Metallurgy section.

Infrastructure costs cover the operational infrastructure to support the project, these include the grid power line to connect to the hydropower, access road, water storage dam, supporting pumping and pipeline, the construction costs for the initial TSF and the mobile fleet to service the operation.

EPCM is an applied factor to the estimated plant and infrastructure direct costs. These costs include provisions for expatriate flight and travel costs during the construction period.

Social responsibility costs of US$20m have been included in this Study, with US$10m accounted for as capital under Owner's Costs with the remainder in sustaining capital.

Working capital requirements of US$34m (including contingency) for plant commissioning and full ramp-up are not included in the development capital estimate but are included in the financial model and reflected in the DCF.

Operating Costs

The operating costs for the production of rutile and graphite at Kasiya over the life-of-mine is presented in Table 9 below.

Table 9: Operating Estimate

Description	US$ Mined Tonne	US$ Product
Mining	$1.77	$104
Processing – Rutile	$2.00	$119
Processing - Graphite	$0.69	$40
General & Administration	$0.64	$38
Total Mine Gate	**$5.10**	**$301**
Logistics	$0.86	$51
Total Operating Costs	**$5.96**	**$352**

Mining costs have been estimated by Fraser Alexander, a regional leader in hydro-mining and materials handling. Mining costs have been built up from first principles based on equipment, vendor, and contractor quotations, local unit cost rates, and benchmarked costs. It has been assumed mining will be on an all-in contractor basis for the life of mine.

Processing costs include all the processing and tailings management operating costs for each of the two plants. All consumables and regents (including floccuant) are included in these costs.

Labor costs have been developed based on a first-principles build-up of staffing requirements with labor rates from benchmarks for Malawi and expatriates from South Africa and other countries. Staffing costs for each domain have been allocated accordingly. Logistics costs were estimated by independent consultancy, Morgan Sterling.

It is estimated the operation will have US$108m sustaining capital over the life of mine. Key items include US$15m for the transition from above ground tailings disposal to in-pit disposal in year 3 of the operation.

FINANCIAL & ECOMONIC ANALYSIS

Modelling Assumptions

A detailed project economic model was prepared by the Company as part of the Study. The economics include the following key assumptions

- Capital and operating costs are in accordance with the technical study outcomes
- Construction is 24-months
- Ramp-up is based on a 9-month time frame to nameplate production
- Financial modelling has been completed on an annual basis
- Pricing information is as detailed in this announcement
- Corporate tax rate of 30%
- 5% royalty
- A 0.45% royalty for the community development fund.
- 2% vendor profit share

Table 10: Key Scoping Study Outcomes

Outcome	Unit	Kasiya Rutile Project
NPV_8 (real post-tax)	US$	$861m
NPV_{10} (real post-tax)	US$	$684m
IRR (post-tax)	%	36%
Total Revenue	US$	$6,266m
EBITDA – annual	US$	$161m
EBITDA – annual (first 5 years)	US$	$192m
Payback		2.5 years
Government Royalties	US$	$313m
Corporate Taxes	US$	$1,074m

Sensitivity Analysis

The Study has been designed to a Scoping Study level with capital and operating cost accuracy of +/- 30%. Key inputs into the Study have been tested by capital cost, operating costs and price sensitivities.

Table 11: Post Tax NPV Sensitivity

NPV – Post tax			
6%	8%	10%	12%
$1,095m	$861m	$684m	$547m

Table 12: Sensitivity of Key Inputs

	-30%	-20%	-10%	Base	+10%	+20%	+30%
Rutile Price	$538m	$646m	$753m	$861m	$969m	$1,076m	$,1184m
Graphite Price	$687m	$745m	$803m	$861m	$919m	$977m	$1,036m
Operating Cost	$713m	$762m	$812m	$861m	$910m	$960	$1,009m
Capital Cost	$787m	$812m	$837m	$861m	$886m	$910m	$935m

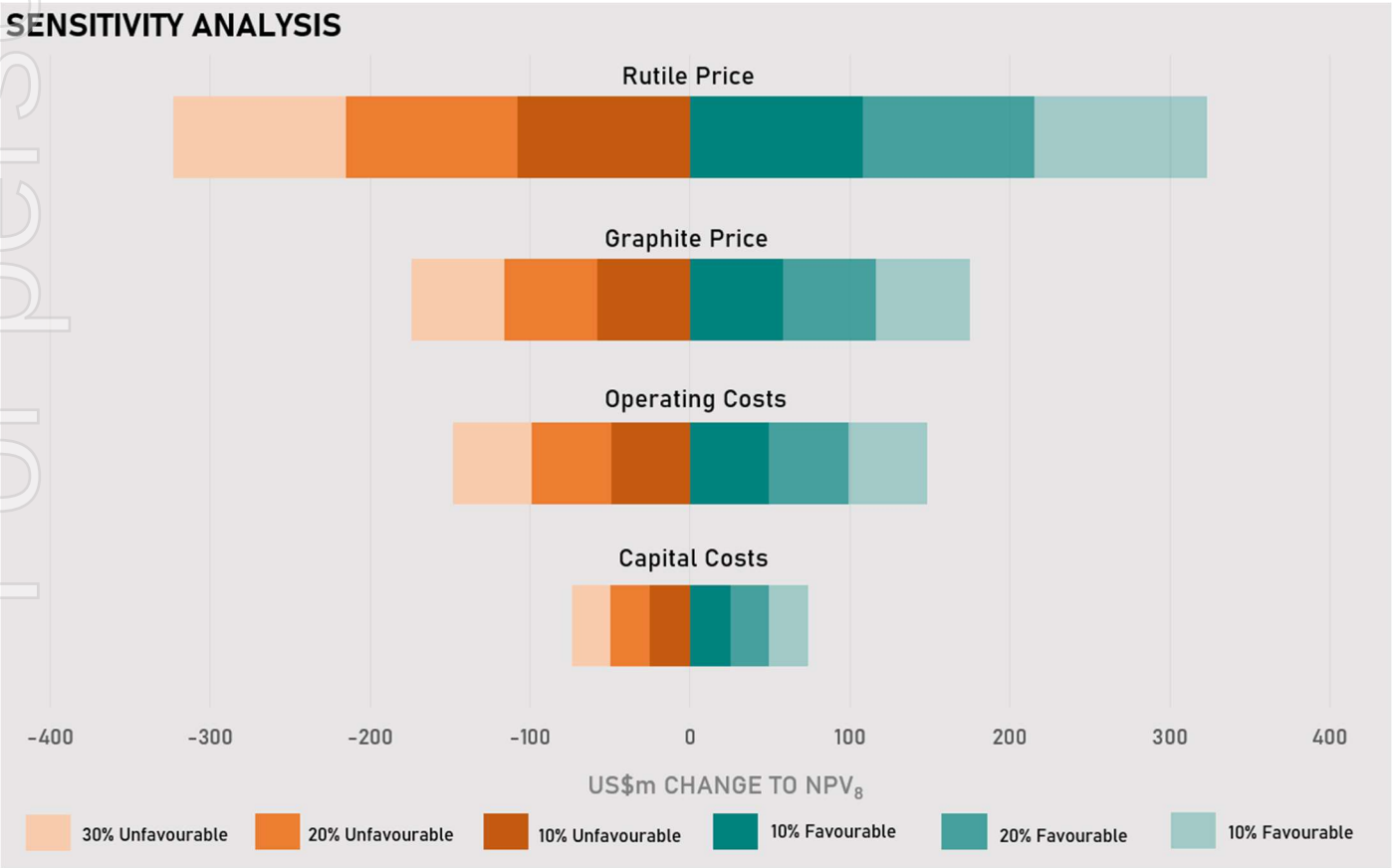
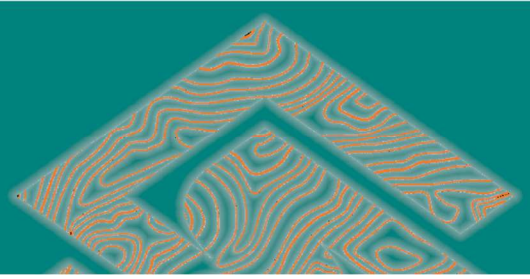


Figure 46: Sensitivity analysis of key inputs



PERMITTING

Sovereign is conducting exploration across its large ground package of over 2,682km^2. Sovereign's ground package is made up of eight Exploration Licences (ELs) and one Retention Licence (RL) as summarised in Table 13. The ELs and RLs are held through SVM's wholly owned Malawian subsidiaries, Sovereign Services Limited and McCourt Mining Limited. The Kasiya Rutile Project is situated on EL0609.

Table 13: Summary of Sovereign's Licences

Licence	Holding Entity	Interest	Status	Expiry	Licence Area (km^2)	Comments
EL0372	SSL	100%	Exploration	13/03/2022	729.2	Granted
EL0492	SSL	100%	Exploration	29/01/2023	935.4	Granted
EL0528	SSL	100%	Exploration	27/11/2021	16.2	Granted*
EL0545	SSL	100%	Exploration	12/05/2022	53.2	Granted
EL0561	SSL	100%	Exploration	15/09/2023	124.0	Granted
EL0574	SSL	100%	Exploration	15/09/2023	292.0	Granted
EL0582	SSL	100%	Exploration	15/09/2023	285.0	Granted
EL0609	MML	100%	Exploration	25/09/2024	440.5	Granted
RL0012	SSL	100%	Exploration	26/07/2026	6.0	Granted

SSL: Sovereign Services Limited & MML: McCourt Mining Limited
*EL0528 currently under application for renewal

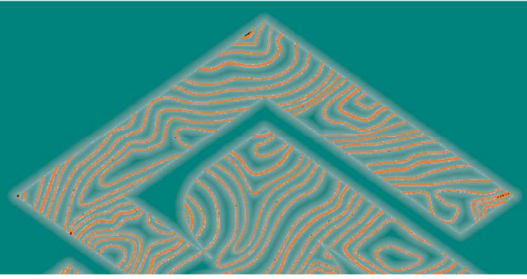
ELs are generally granted for up to three years, with the licence renewable for two additional periods of two years each upon expiry. Mineral deposits contained within exploration licences that have come to the end of their term can be converted to a retention licence for a term of up to five years, subject to certain criteria.

Subject to further successful exploration and achieving positive technical studies, Sovereign proposes to apply for a Mining Licence (ML) to secure mineral deposits for mining. Under the Mines and Minerals Act 2019 (**Mines Act**) there are certain requirements, milestones and approvals required in order to submit a ML application. At this point of Kasiya's development, the Company notes no known or material issues in this respect.

Under the Mines Act, The Government of Malawi shall have the right, but not the obligation, to acquire, directly or through a Government nominee, without cost, a free equity ownership interest of up to ten percent (**10%**) in any mining project that will be subject to a large-scale mining licence (>5Mt mined per annum or >US$250m Capex).

SOVEREIGN METALS LIMITED

DISCLOSURES, DISCLAIMERS & MODIFYING FACTORS



DISCLOSURES & DISCLAIMERS

Competent Person Statements

The information in this announcement that relates to Production Targets is based on and fairly represents information provided by Mr Ryan Locke, a Competent Person, who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Locke is employed by Orelogy Group Pty Ltd, an independent consulting company. Mr Locke has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Locke consents to the inclusion in the Announcement of the matters based on his information in the form and context in which it appears.

The information in this announcement that relates to Processing, Infrastructure and Capital and Operating Costs is based on and fairly represents information compiled or reviewed by Mr Matthew Langridge, a Competent Person, who is a Fellow Member of The Australasian Institute of Mining and Metallurgy. Mr Langridge is employed by DRA Global Ltd, an independent consulting company. Mr Langridge has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activities undertaken. Mr Langridge, consents to the inclusion in the Announcement of the matters based on his information in the form and context in which it appears.

The information in this announcement that relates to Metallurgy - rutile is based on and fairly represents information compiled or reviewed by Mr Paul Marcos, a Competent Person, who is a Fellow Member of The Australasian Institute of Mining and Metallurgy. Mr Marcos is an employee of Sovereign and a holder of performance rights in Sovereign. Mr Marcos has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Marcos consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this announcement that relates to Metallurgy - graphite is based on and fairly represents information compiled or reviewed by Mr Russell Bradford, a Competent Person, who is a Fellow Member of The Australasian Institute of Mining and Metallurgy. Mr Bradford is employed by Jem-Met Pty Ltd, an independent consulting company. Mr Bradford has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activities undertaken. Mr Bradford consents to the inclusion in the Announcement of the matters based on his information in the form and context in which it appears.

The information in this announcement that relates to Exploration Results is extracted from the announcements dated 26 May 2020 to 22 November 2021. The announcements are available to view on www.sovereignmetals.com.au. Sovereign confirms that a) it is not aware of any new information or data that materially affects the information included in the announcements; b) all material assumptions included in the announcement continue to apply and have not materially changed; and c) the form and context in which the relevant Competent Persons' findings are presented in this report have not been materially changed from the announcements.

The information in this announcement that relates to the Mineral Resource Estimate is extracted from the announcement dated 16 December 2021. The announcement is available to view on www.sovereignmetals.com.au. Sovereign confirms that a) it is not aware of any new information or data that materially affects the information included in the announcement; b) all material assumptions included in the announcement continue to apply and have not materially changed; and c) the form and context in which the relevant Competent Persons' findings are presented in this report have not been materially changed from the announcement.

Forward Looking Statement

This release may include forward-looking statements, which may be identified by words such as "expects", "anticipates", "believes", "projects", "plans", and similar expressions. These forward-looking statements are based on Sovereign's expectations and beliefs concerning future events. Forward looking statements are necessarily subject to risks, uncertainties and other factors, many of which are outside the control of Sovereign, which could cause actual results to differ materially from such statements. There can be no assurance that forward-looking statements will prove to be correct. Sovereign makes no undertaking to subsequently update or revise the forward-looking statements made in this release, to reflect the circumstances or events after the date of that release.

This ASX Announcement has been approved and authorised for release by the Board of Directors.

Further Important Information for this Announcement

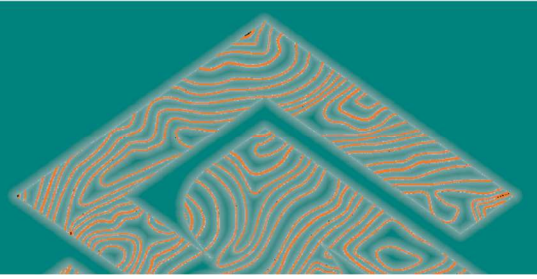
This Study has been prepared and reported in accordance with the requirements of the JORC Code (2012) and relevant ASX Listing Rules.

The Study has been prepared to an accuracy level of ±30%. The primary purpose of the Study is to establish whether or not to proceed to the next stage of feasibility studies. The Study results should not be considered a profit forecast or production forecast. As defined by the JORC Code, a "Scoping Study is an order of magnitude technical and economic study of the potential viability of Mineral Resources. It includes appropriate assessments of realistic assumed Modifying Factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that progress to a Pre-Feasibility Study can be justified."

The Modifying Factors included in the JORC Code have been assessed as part of the Study, including mining, processing, infrastructure, economic, marketing, legal, environmental, social and government factors. The Company has received advice from appropriate experts when assessing each Modifying Factor.

Following an assessment of the results of the Study, the Company has formed the view that the next stage of feasibility studies is justified for Kasiya. Feasibility Studies will provide the Company with far more comprehensive assessment of a range of options for the technical and economic viability of Kasiya which by international standards should be sufficient detail for project development financers to base an investment decision.

The Company has concluded it has a reasonable basis for providing any of the forward-looking statements included in this announcement and believes that it has a reasonable basis to expect that the Company will be able to fund its stated objective of completing feasibility studies for Kasiya. All material assumptions on which the forecast financial information is based are set out in this announcement.



SUMMARY OF MATERIAL ASSUMPTIONS

Material assumptions used in the estimation of the production target and associated financial information are set out in the following table.

Table 11: Assumptions	
Maximum accuracy variation - Capital costs	+30%/-30%
Maximum accuracy variation - Operating costs	±30%
Minimum LoM	25 years
Annual throughput (tonnes)	12,000,000
Head grade – rutile	1.06%
Recovery – rutile	97%
Product grade (TiO_2) - rutile	95%
Head grade – graphite	1.12%
Recovery – graphite	62%
Product grade (TGC) - graphite	96%
Annual production (tonnes) – rutile	122,000
Annual production (tonnes) - graphite	80,000
USD:AUD	0.73
USD:MWK	0.0012
USD:ZAR	0.0690
Sales Price – rutile (average LoM)	US$1,346/t
Sales Price – graphite (average LoM)	US$1,085/t
Government Royalty	5% of net sales revenue
Vendor Royalty	2% of gross profit
Community Development Fund	0.45% of net sales revenue
Development Capital	US$332m
Working Capital	US$34m
Sustaining Capital	US$100m
Operating Costs including royalties (LoM) – FOB Nacala	US$446/t
Corporate Tax Rate	30%
Discount Rate	8%

MODIFYING FACTORS

The Modifying Factors included in the JORC Code (2012) have been assessed as part of the Scoping Study, including mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and government factors. The Company has received advice from appropriate experts when assessing each Modifying Factor.

A summary assessment of each relevant Modifying Factor is provided below.

***Mining** – refer to section entitled 'Mining' in the Announcement.*

The Company engaged independent consultants Orelogy Mining Consultants Pty Ltd and Fraser Alexander to carry out the pit optimisations, mine design, scheduling and mining cost estimation for the Kasiya Scoping Study. The proposed mining method is hydro mining with minor dozer assistance. This is considered appropriate for this style of shallow, saprolite-hosted rutile and graphite mineralisation. This methodology is used across numerous mineral sands operations, particularly in Africa, and is well suited for this style of mineralisation.

Approximately 60% of the total production target is in the Indicated resource category with 40% in the Inferred resource category. 100% of the scheduled throughput over the first six years of production is in the Indicated category, with 0% in the Inferred category – the payback period for the Project is 2.5 years from the start of operations. The Company has concluded that it has reasonable grounds for disclosing a production target which includes a modest amount of Inferred material. However, there is a low level of geological confidence associated with Inferred mineral resources and there is no certainty that further exploration work (including infill drilling) on the Kasiya deposit will result in the determination of additional Indicated mineral resources or that the production target itself will be realised.

In the unlikely event that the remaining Inferred resources are not able to be upgraded, a stand-alone discounted cash flow (DCF) analysis using only Indicated resources in the mine plan does not affect the economic viability of the Project.

***Metallurgy and Processing** – refer to section entitled 'Metallurgy and Process Design' in the Announcement.*

Rutile

The Company completed bulk rutile test-work programs at the globally recognised Allied Mineral Laboratories (**AML**) in Perth, Australia. The latest program was supervised by Sovereign's Head of Development, Paul Marcos. Mr Marcos is a metallurgist and mineral sands veteran. Bulk test-work programs have confirmed premium grade rutile can be produced via a simple and conventional process flow sheet.

Processing engineering was completed by DRA Global who developed the process plant design and associated cost estimate for the Scoping Study. An average product grade of 96% TiO_2 and average recovery of 97% for rutile has been applied in the Scoping Study.

Graphite

The Company engaged veteran graphite metallurgist Oliver Peters, MSc, P.Eng., MBA (Consulting Metallurgist for SGS and Principal Metallurgist of Metpro Management Inc.) to complete initial test-work for graphite recovery. Mr Peters has over 25 years' experience in metallurgy on graphite and other commodities. He has operated numerous graphite pilot plants and commissioned a number of full-scale processing facilities. Mr Peters has developed the process flowsheet employed for the Malingunde PFS which has been largely adopted for this Study. DRA's Senior Engineer, Stewart Calder considers this appropriate based on the similarities of the material and the early stage of the project.

Processing engineering was completed by DRA Global who developed the process plant design and associated cost estimates for the Scoping Study. Overall average graphite recovery applied was 62% with gravity tails recovery being 74% and flotation plant recovery being 84%. Overall concentrate grades average 96% C(t) with 60% of graphite flakes larger than 180µm.

Rutile & Graphite

It is acknowledged that laboratory scale test-work will not always represent actual results achieved from a production plant in terms of grade, chemistry, sizing and recovery. Further test-work will be required to gain additional confidence of specifications and recoveries that will be achieved at full-scale production.

Overall, the process is conventional for both rutile and graphite with no novel features or equipment incorporated.

***Infrastructure** – refer to section entitled 'Infrastructure' in the Announcement.*

Kasiya is located approximately 40km north west of Lilongwe, Malawi's capital, and boasts excellent access to services and infrastructure. The site is serviced by a dual lane, sealed bitumen road that links to Lilongwe and the underutilised operational intermodal rail siding at Kanengo.

The proximity to Lilongwe gives the project a number of benefits, including access to a large pool of professionals and skilled tradespeople. This removes the requirement for site accommodation during the mining phase.

The Company appointed JCM Power (**JCM**) to design a preliminary Independent Power Producer **(IPP**) solution for Kasiya. JCM is a Canada-headquartered Independent Power Producer (**IPP**) which develops, constructs, owns and operates renewable energy and storage projects in emerging markets across the globe. JCM provided an estimated, levelized cost of energy (**LOCE**) on a Power Purchase Agreement (**PPA**).

Transport cost estimates were provided by Morgan Sterling Consultants (**MSC**) based on market data, suppliers' quotations, industry databases, industry contacts and MSC's existing knowledge of southern African transport infrastructure and freight markets. MSC is an independent consultant with substantial experience in the management of transport logistics studies in southern Africa.

***Marketing** – refer to sections entitled 'Marketing Strategy' in the Announcement.*

Rutile

The Company engaged market leading TZMI to provide a bespoke marketing report to support the Scoping Study. TZMI is a global, independent consulting and publishing company which specialises in technical, strategic and commercial analyses of the opaque (non-terminal market) mineral, chemical and metal sectors.

TZMI's assessment has confirmed that, based upon their high-level view on global demand and supply forecasts for natural rutile, and with reference to the specific attributes of Kasiya, there is a reasonable expectation that the product will be able to be sold into existing and future rutile markets.

Given the premium specifications of Kasiya, the product should be suitable for all major natural end-use markets including TiO_2 pigment feedstock, titanium metal and welding sectors.

Graphite

The Company engaged Fastmarkets, a specialist international publisher and information provider for the global steel, non-ferrous and industrial minerals markets, to prepare a marketing report for graphite.

Fastmarkets' assessment has confirmed that based upon their high-level view on global demand and supply forecasts for natural flake graphite, and with reference to the specific attributes of Sovereign's projects, there is a reasonable expectation that the product from Sovereign's projects will be able to be sold into existing and future graphite markets. Given the extremely low-cost profile and high-quality product, it is expected that output from Kasiya will be able to fill new demand or substitute existing lower quality / higher cost supply.

Project considerations taken by Fastmarkets in forming an opinion about the marketability of product include:

- Modest production target
- Low capital costs
- Low operating costs
- High quality concentrate specifications

Industry participants confirm that the highest value graphite concentrates remain the large, jumbo and super-jumbo flake fractions, primarily used in industrial applications such as refractories, foundries and expandable products. These sectors currently make up the significant majority of total global natural flake graphite market by value.

Fastmarkets have formed their opinion based solely upon project information provided by Sovereign Metals to Fastmarkets and have not conducted any independent analysis or due diligence on the information provided.

***Economic** – also refer to sections entitled 'Cost Estimations' and 'Financial & Economic Analysis' in the Announcement.*

Capital estimates for the procress plant have been prepared by DRA, together with input from the Company and other contributing consultants using combinations of cost estimates from suppliers, historical data, benchmarks and other independent sources. The intended accuracy of the capital cost estimate for the Project is ±30%.

Capital costs include the cost of all services, direct costs, contractor indirects, EPCM expenses, non-process infrastructure, sustaining capital and other facilities used for the mine. Capital costs make provision for mitigation expenses and mine closure and environmental costs.

Working capital requirements of US$34m (including contingency) for plant commissioning and full ramp-up have been excluded in the headline capital estimate but included in the financial modelling.

Mining costs have been estimated by Fraser Alexander, a regional leader in hydro-mining and materials handling. Mining costs have been built up from first principles based on equipment, vendor, and contractor quotations, local unit cost rates, and benchmarked costs.

Labor costs have been developed based on a first-principles build-up of staffing requirements with labor rates benchmarked in Malawi and expatriate rates benchmarked for professionals from South African other jurisdictions.

A Government royalty of 5% (applied to revenue) and a vendor profit share of 2% (applied to gross profit) has been included in all project economics. A 0.45% royalty (applied to revenue) has been applied for the community development fund.

Rehabilitation and mine closure costs are included within the reported operating cost and sustaining capital figures.

A detailed financial model and discounted cash flow (**DCF**) analysis has been prepared by the Company in order to demonstrate the economic viability of the Project. The financial model and DCF were modelled with conservative inputs to provide management with a baseline valuation of the Project.

The DCF analysis demonstrated compelling economics of the prospective Project, with an NPV (ungeared, after-tax, at an 10% discount rate) of US$684 million, and an (ungeared) IRR of 36%.

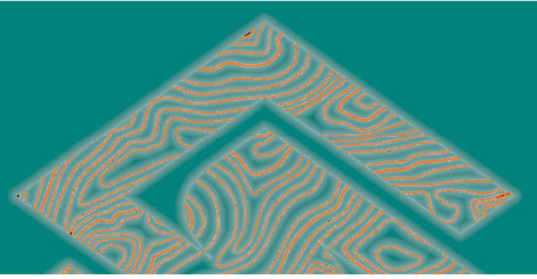
Sensitivity analysis was performed on all key assumptions used. The robust project economics insulate the Kasiya Project from variation in market pricing, capital expense, or operating expenses. With a rutile and graphite concentrate price 30% lower than the Scoping Study prices the Project still displays a positive NPV (ungeared, after-tax, at an 10% discount rate) of US$213 million and IRR of 18%.

Payback period for the Project is 2.5 years from the start of operations. The payback period is based on free-cash flow, after taxes.

Sovereign estimates the total capital cost to construct the mine to be US$332m (which includes a of 21% contingency).

Key parameters are disclosed in the body of the announcement, and include:

- Life of Mine: 25 years
- Discount rate: 10%
- Tax rate: 30%



- Resource Rent Tax (RRT) of 15% after tax profit is currently legislated in the Taxation Act. It is understood that it is not currently being applied to mining projects in Malawi and it is uncertain if it would apply to Sovereign's projects in the future. The Company has not applied RRT in any of its financial analysis.
- Royalty rate: 5% royalty (Government), 2% of gross profit (Original Project Vendor) and 0.45% Community Development Fund.
- Pricing: Rutile average price of US$1,346 per tonne and Graphite average basket price of US$1,085 per tonne

The financial model has been prepared internally by the Company using inputs from the various expert consultants and has been reviewed by an independent party to validate the functionality and accuracy of the model.

The Company engaged the services of advisory firm, Argonaut, with regards to project economics. Argonaut is a financial advisory firm which specialises in multiple sectors, including metals and oil & gas. Argonaut is well regarded as a specialist capital markets service provider and has raised project development funding for companies across a range of commodities including the industrial and speciality minerals sector. Following the assessment of a number of key criteria, Argonaut has confirmed that, on the basis that a DFS arrives at a result that is not materially negatively different than the Scoping Study as noted above, all in-country government and regulatory approvals are received, commercial offtake agreements are in place for the majority of Rutile and Graphite production for at least the first five years of mine life, and that there has not been any material adverse change in financial condition, results of operations, business or prospects of the Company/or political and business environment in Malawi and/or financial or capital markets in general, Sovereign should be able to raise sufficient funding to develop the Project.

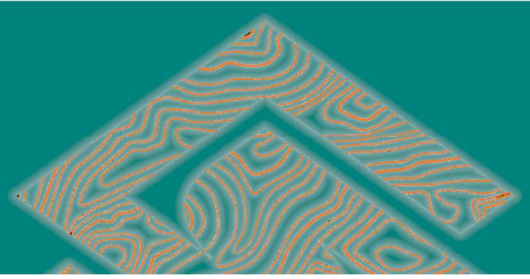
An assessment of various funding alternatives available to Sovereign has been made based on precedent transactions that have occurred in the mining industry, including an assessment of alternatives available to companies that operate in industrial and specialty minerals sector. The assessment and advice from Argonaut Capital (referred to above) indicates that financing for industrial mineral companies often involves a broader mix of funding sources than just traditional debt and equity. Argonaut Capital considers that given the nature of the Project, funding is likely to involve specialist funds, with potential funding sources including, but not limited to, traditional equity and debt, royalty financing and off-take agreements, at either the corporate or project level. It is important to note that no funding arrangements have yet been put in place as these discussions continue to take place. The composition of the funding arrangements ultimately put in place may also vary, so it is not possible at this stage to provide any further information about the composition of potential funding arrangement.

Since initial exploration of the Kasiya Project in November 2019, the Company has completed extensive drilling, sampling, metallurgical test-work, geological modelling and defined an Indicated and Inferred Mineral Resource Estimate. Over this period, with these key milestones being attained and the Project de-risked, the Company's market capitalisation has increased from approximately A$18m to over A$250m. As the Project continues to achieve key milestones, which can also be significant de-risking events, the Company's share price could be anticipated to increase.

The Company is debt free and is in a strong financial position, with approximately A$4.3m cash on hand (30 November 2021). The current financial position means the Company is soundly funded to continue into a PFS phase to further develop the Project.

The Company's shares are listed on the ASX and AIM which are premier markets for growth companies and provides increased access to capital from institutional and retailed investors in Australia and the UK.

Sovereign has an experienced and high-quality Board and management team comprising highly respected resource executives with extensive technical, financial, commercial and capital markets experience. The directors have previously raised more than A$1.75bn from capital markets for a number of exploration and development companies.



As a result, the Board has a high level of confidence that the Project will be able to secure funding in due course, having particular regard to:

1. Required capital expenditure;
2. Sovereign's market capitalisation;
3. Recent funding activities by directors in respect of other resource projects;
4. Recently completed funding arrangements for similar or larger scale development projects;
5. The range of potential funding options available;
6. The favourable key metrics generated by the Kasiya Project;
7. Ongoing discussions for potential offtake agreements; and
8. Investor interest to date.

Environmental, Social, Legal and Governmental *– refer to section entitled 'Environmental & Social Impact' in the Announcement.*

Sovereign is committed to conduct its activities in full compliance to the requirements of national regulations, its obligations under international conventions and treaties and giving due consideration to international best practices and policies. The Company has appointed an experienced environmental consultant to manage the ESIA process, and environmental and social baseline studies have commenced with appropriately qualified independent experts. The Company has also completed a high-level risk assessment to identify major environmental and social risks which could affect the development of the Project, along with mitigating strategies to allow identified risks to be addressed early in the project design phase.

The Company has embarked on several community engagement exercises in the area and there is a general positive acceptance of the Project. Social responsibility costs of US$20m have been included in this Study, as well as a 0.45% revenue royalty for the community development fund. This figure will be further assessed as part of the overall ESIA for the Project as it advances to PFS and DFS.

Based on the current assessments and commenced ESIA, the Company believes there are no environmental issues currently identified that cannot be appropriately mitigated in accordance with standard practices adopted for the development of mining projects.

Subject to further successful exploration and achieving positive technical studies, Sovereign endeavours to apply for a Mining Licence (**ML**) to secure mineral deposits for mining. Under the Mines and Minerals Act 2019 (**Mines Act**) there are certain requirements, milestones and approvals needed to submit a ML application. At this point of Kasiya's development, the Company notes no known issues.

Under the Mines Act, The Government of Malawi shall have the right, but not the obligation, to acquire, directly or through a Government nominee, without cost, a free equity ownership interest of up to ten percent (**10%**) in any mining project that will be subject to a large-scale mining licence (>5Mt mined per annum or >US$250m Capex).