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Altona Rare Earths PLC
18 October 2023

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ALTONA RARE EARTHS PLC
("Altona" or "the Company")

Monte Muambe Scoping Study Results

Altona (LSE: REE), a resource exploration and development company focused on Rare Earths in Africa, is pleased to announce the positive outcome of its Scoping Study[(1)] for its Monte Muambe rare earths project in northwestern Mozambique (the "Project"), and the publication of an updated Competent Person Report.

Results of the Scoping Study provide an encouraging initial validation of the Project's potential, with highlights including:

- Post-tax NPV 8[(2)] of US$ 283.3 million
- Post-tax IRR[(3)] of 25%
- Payback from first production: 2.5 years
- Production of 15,000 tonnes per annum, on average, of Mixed Rare Earth Carbonate ("MREC"), at an average price of US$ 13,558.4 per tonne of MREC[(4)]
- 18 years Life of Mine ("LoM")
- Open pit mining operation, 750,000 tonnes of ore extracted and processed per annum
- Two stage recovery process, consisting of comminution and flotation, followed by hydrometallurgy
- LoM EBITDA[(5)] of US$ 1.67 billion
- Initial Capex of US$ 276.3 million

The new Competent Person Report containing the Scoping Study, prepared by international geological and mining consultant Snowden Optiro, is available on the Company's website under the investor section: https://www.altonare.com/investors/reports/.

The executive summary of the Scoping Study is attached as an appendix to this RNS.

Scoping Study Overview

The Monte Muambe Scoping Study takes into consideration open-pit mining of Target 1 and Target 4, at a LoM strip ratio of 1.6, over a period of 18 years. An anticipated 750,000 tonnes of ore per annum will be extracted and processed through a beneficiation plant to produce a Rare Earths concentrate. The beneficiation process will include crushing, milling and flotation. The concentrate will then be processed through a hydrometallurgical plant to produce an average of 15,000 tonnes of MREC per annum. The hydrometallurgical process will involve a weak acid gangue leach, followed by rare earths leaching and purification. The MREC product would be packaged and transported via existing road infrastructure to the port of Beira, in Mozambique, for export.

Base Case Technical and Economic parameters are summarised in the table below:

Parameter	Unit	Value
Ore processed	Mt	13.5
MREC produced	kt	270.7
Initial Capex	M US$	276.3
Sustaining Capex	M US$	63.0
Opex LoM	M US$	1,519.0
Opex per ton MREC	US$/t	5,612.6
Net Revenue LoM	M US$	3,193.1
EBITDA LoM	M US$	1,673.8
Gross revenue per ton MREC	US$/t	13,558.4
Payback from first MREC	years	2.5
Post tax NPV 8[(2)]	M US$	283.3
Post tax NPV 8[(6)] Upside Scenario	M US$	409.9
Post tax IRR	%	25%
Operating margin	%	42%

Sensitivity Analysis

Using an NPV of US$283.3 million with an applied real discount rate of 8%, the Project is most sensitive to revenue (price, recovery, grade and exchange rates), less sensitive to opex and least sensitive to capex.

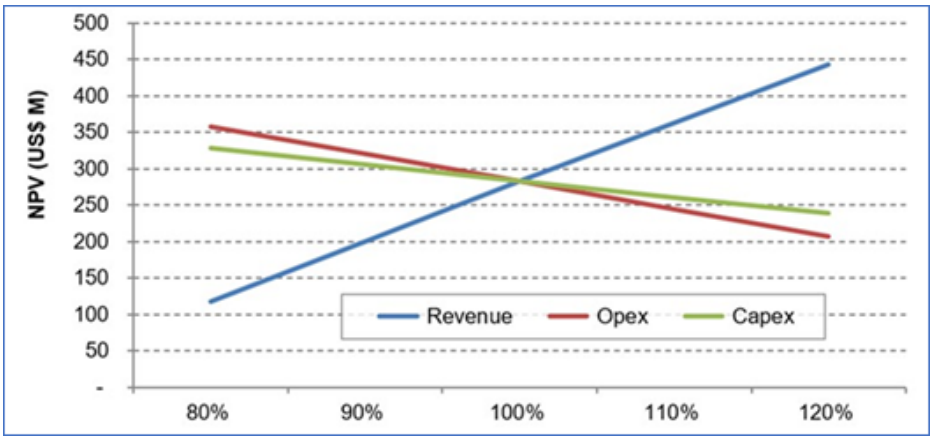


Figure 1 - Project sensitivity analysis

Upside Potential

The Scoping Study demonstrates the potential for Monte Muambe to become a viable mining operation.

Considerable upside potential has been identified in the Scoping Study and will be developed further in the Prefeasibility Study ("PFS"). This includes:

- Increase of the resource base, as well as of the LoM and/or ore extraction rate;
- Mining parameters optimisation;
- Processing and metallurgy, both for the beneficiation and hydrometallurgical plants;
- Energy sources mix and logistics options;
- Evaluation of the possibility of doing further onsite, in-country or regional separation and refining; and
- Setting up Responsible Sourcing systems.

Next Steps

The publication of the Scoping Study marks the end of Phase 2 of the Project Farm-Out Agreement and entitles Altona to an additional 31% ownership in Monte Muambe Mining Limitada, the Project's special purpose vehicle, taking its total current holding to 51%. Contractual and administrative processes have already been initiated to implement this change and a further announcement will be made when this has been completed.

The Project is now entering Phase 3, which upon completion will allow the Company to increase its holding to 70%, with the key deliverable being the PFS. Preliminary PFS activities started in July this year, in the form of in-fill drilling at Target 4 and these will ramp up over the course of the coming months, with additional exploration, planning and consultant services procurement activities, as well as a strong focus on additional metallurgical test work. The Company intends to also apply for a mining concession during Phase 3.

Cedric Simonet, CEO of Altona, commented: "*For Altona, the Monte Muambe Scoping Study is a significant milestone. This key deliverable serves as an affirmative initial validation of the Project's economic viability, enabling the Company to establish its presence amongst other prospective REE producers in Africa. It provides, together with the Mineral Resource Estimate ("MRE"), a solid foundation for the Project's subsequent progression.*

"As the Project moves into its PFS stage, the Company will continue to work towards de-risking Monte Muambe and, with its local partners, to optimise its technical, commercial and financial parameters. We believe the timing for this achievement is impeccable, at a time where the global rare earths supply chain is diversifying away from China's decades-long domination, and Western processing facilities are starting to come online.

"The magnet metals present at Monte Muambe (and representing 90% of the Project's future revenue) are critical components of the global green energy transition. The supply deficit for Neodymium and Praseodymium Oxide is forecast to grow to 90,000 tonnes per year by 2040[7] *and, to allow the*

decarbonisation of energy sources, more magnet metals mines must come on stream in the following years.

"Altona intends to play its part in supporting this crucial agenda, by working in a responsible manner to reduce the dependence on China for critical mineral supplies."

Notes

(1) Under the terms of the Farm-Out agreement of 21 June 2021, Altona will earn a 51% interest in the Monte Muambe Project by delivering the present Scoping Study (Project Phase 2), and a 70% interest by delivering a Prefeasibility Study (Project Phase 3). The results of the Scoping Study are presented on a 100% basis.
(2) Post-tax Net Present Value using an 8% discount rate for the base case scenario, using Adamas Intelligence low case scenario forecast for the period 2024-2040.
(3) Post-tax Internal Rate of Return.
(4) Price based on the average of Adamas Intelligence base-case forecast from 2024 to 2040 for Nd, Pr, Tb and Dy oxides with a payability factor in MREC of 90% for these 4 elements.
(5) Earnings Before Interest, Tax, Depreciation and Amortisation.
(6) Post-tax Net Present Value using an 8% discount rate for the upside scenario, using Adamas Intelligence base case scenario forecast for the period 2024-2040.
(7) Source: Adamas Intelligence, "Rare Earth Magnet Market Outlook to 2040", Q2 2023.

Scoping Study Cautionary Statement

The Monte Muambe Scoping Study has been prepared to assess the potential viability of an open pit mining and MREC production operation, to assess development options, and to give sufficient confidence to the Company to advance to the Prefeasibility Study stage. The results of the Scoping Study should not be considered a profit forecast or a production forecast.

The Scoping Study is preliminary in nature and include material assumptions outlined in the CPR, including product price assumptions. Capex estimates qualify as Class 4 estimates as per the Association for the Advancement of Cost Engineering Recommended Practice 47R-11. The accuracy of the opex and of the initial capex estimate is assessed at +35% to −30%.

The base case includes an indicative life of mine extraction and production schedule, which is based on a Mineral Resource Estimate, 58% of which classified as Indicated and 42% as Inferred. The assessments contained in the Scoping Study are insufficient to support the estimation of Ore Reserves or, at this stage, to provide assurance of an economic development.

Further evaluation work including infill drilling, metallurgical test work, engineering and environmental studies will be required to support the estimation of Ore Reserves, and to provide assurance of an economic development case.

The Scoping Study must be read and considered as a whole. Selection of portions of the analysis or factors considered by it, without considering all factors and analyses together, could create a misleading view of the process underlying the opinions presented in the Scoping Study and CPR.

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About Altona Rare Earths Plc

Altona is a resource exploration and development company focused on Rare Earths in Africa. The Company is listed on the Main Market of the London Stock Exchange.

Rare Earths are a group of 17 chemical elements, many of which are critical to the World's on-going transition from carbon-based to renewable energies, and to the defence and communication sectors.

The Company currently focuses on the development of Monte Muambe, its flagship Magnet Rare Earths Project, located in Northwest Mozambique. The Project was acquired in June 2021, and the Company has so far drilled over 7,800m, and defined a maiden JORC Mineral Resource Estimate of 13.6 million tons at 2.42% TREO.

A Competent Person Report including the Scoping Study for Monte Muambe has been published on 18 October 2023.

Altona continues to take advantage of its position in Africa to assess other possible Rare Earths opportunities on the Continent.

Competent Person Statement

The information in this RNS that relates to the CPR has been prepared under the responsibility of Mr Julian Aldridge, MSc Mining Geology (MCSM), MESci (Oxon), CGeol FGS, MIMMM. Mr Aldrige is

an employee of Snowden Optiro, and the overall Competent Person and principal author of the CPR.

The information in this RNS that relates to the MRE has been compiled under the responsibility of Dr Andrew Scogings, PhD (Geology), MAIG, RPGeo (industrial minerals). Dr Scogings is the Competent Person for the Geology and Mineral Resources sections of the CPR.

Other authors have contributed to the redaction of the CPR. Their details are given in Section 2.7 of the CPR.

Dr Scogings is employed by Snowden Optiro and is independent of Altona. Dr Scogings is a Member of the Australian Institute of Geoscientists (Number 3013) and the South African Geological Society. Dr Scogings has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he and the co-authors are reporting to qualify as Competent Person as defined in the JORC Code (2012).

For more information visit: www.altonaRE.com

COMPETENT PERSON REPORT EXECUTIVE SUMMARY

1. Background

This Competent Person's Report (CPR) and Scoping Study document has been prepared by Snowden Optiro, a business unit of Datamine Australia Pty Ltd (Snowden Optiro) for Altona Rare Earths Plc (Altona, the Company or the Client). This CPR has been prepared to provide compliant disclosure on all material mining assets and liabilities of Altona's Monte Muambe Rare Earth Element (REE) project (Monte Muambe or the Project), located in western Mozambique, in accordance with relevant Financial Conduct Authority (FCA) guidelines (FCA Technical Note 619.1 of May 2022, Appendix II), and the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 edition (JORC Code, 2012).

The Company is a UK London Stock Exchange (LSE) listed mining company focused on the supply of rare earth metal oxides for the catalyst, laser, glass, polishing and magnetic materials industries for the anticipated growth in the wind turbine and electric vehicle sectors.

The Project is an advanced exploration and pre-development project. Altona's interest in the Prospecting Licence (Licença de Prospecção e Pesquisa) LPP7573L (the Licence) is through a Farm Out Agreement dated 23 June 2021 between Ussokoti Investimentos, Altona, Monte Muambe Mining Lda (MMML) and its original shareholders. The Farm Out Agreement gives Altona the right to earn up to 70% of MMML in a phased manner, subject to the completion of certain conditions and milestones.

In this CPR and Scoping Study all references to dollars ($) refer to American United States dollars.

2. Project description, location and ownership

The Project is located in Niculunga Locality, Cambulassisse Administrative Post, Moatize District, Tete Province, Mozambique (Figure 1.1). Access from the provincial capital Tete is through the tarred road leading to the Malawi border (Zobue), through Moatize town, and to the village of Cateme. The distance from the Zambezi bridge in Tete to the Cateme turn-off is about 40 km. From the Cateme turn-off, an ungraded 43 km track leads from to the Monte Muambe camp through the villages of Mualadzi and Djendje. Figure 1.2 shows the location of Target 1 and Target 4 in relation to the Monte Muambe geology and structure and the proposed open pit outline (black).

Figure 1.1 Project location in Mozambique

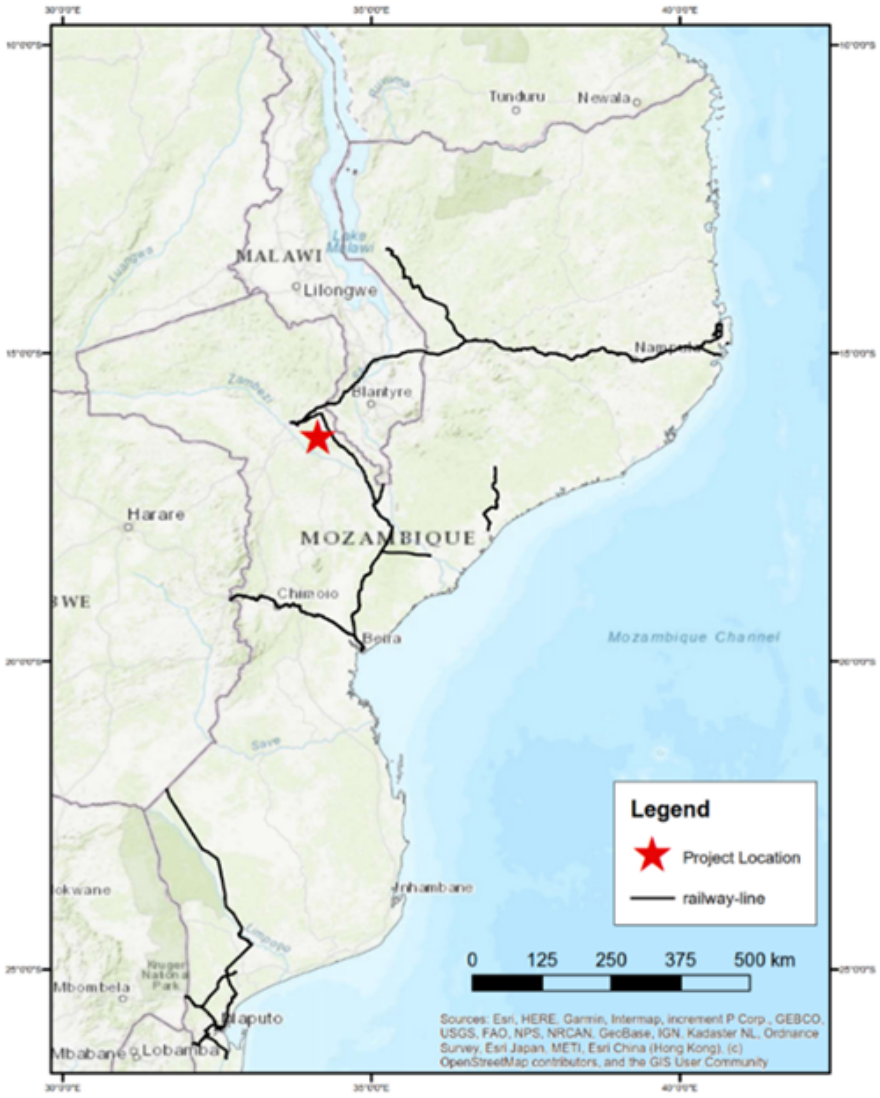
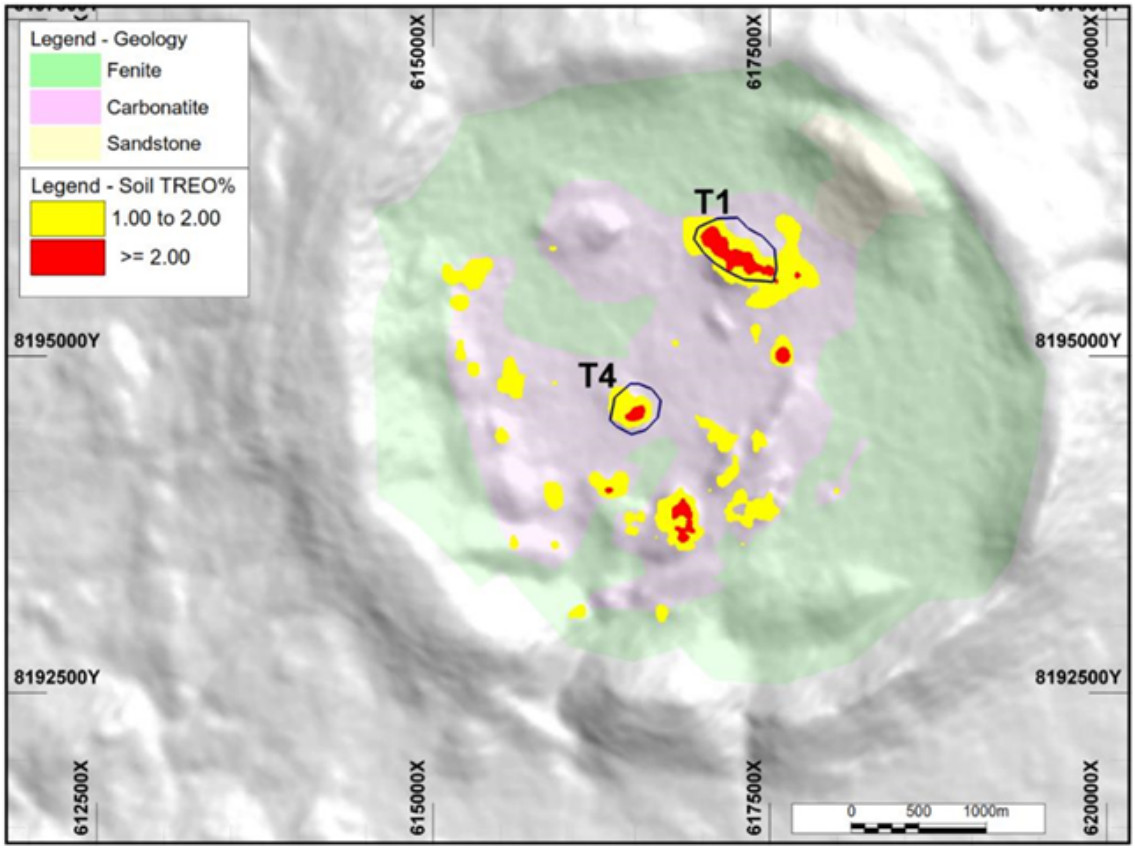


Figure 1.2 Location of Target 1 and Target 4 in relation to the Monte Muambe structure and geology



3. Geology and Mineral Resources

Monte Muambe is located in the central part of the Karoo Moatize-Minjova coal basin, which corresponds to the eastern part of the Zambezi Graben. The Monte Muambe carbonatite intrusion is hosted by Upper Karoo Sandstones of the Cádzi Formation. The age of the intrusion is presently unknown.

While the Monte Muambe structure resembles a ring-dyke, or a volcanic edifice, the outer ridge consists of sub-horizontal indurated Upper Karoo sandstones and is the product of differential erosion (Figure 1.2). The basin formed by the inner part of the structure consists chiefly of fenites, various types of carbonatites, breccias, as well as pyroclastics. The diameter of the carbonatite intrusion at surface level is about 3.3 km. Carbonatites tend to outcrop in the form of small hills rising above the floor of the basin. Fenites are often deeply weathered at near-surface levels and rarely outcrop, though float can be encountered on slopes.

Fenites form a circular zone lining the contact between carbonatites and host sandstones, but the detailed relationships between fenites and carbonatites are a lot more complex, involving faulting during and after the emplacement of the intrusion, as well as the incorporation of xenoliths of various size (centimetre to decimetre size). Drilling in various parts of the intrusion shows that fenite outcrops often cover carbonatites. This, as well as the presence of pyroclastics, suggests that the present erosion level may corresponds to the roof of the carbonatite intrusion, immediately under the base of the volcanic edifice.

The Mineral Resource outline is shown for Targets 1 and 4 (Figure 1.2). Mineral Resource Estimates for Targets 1 and 4 are provided in Table 1.1 and are reported in accordance with the JORC Code (2012).

Table 1.1 Monte Muambe Indicated and Inferred Mineral Resource September 2023 reported using a 1.5% TREO cut-off

Target	Classification	TREO Cut-off (%)	TONNES (Mt)	TREO%	CeO_2 ppm	Pr_6O_{11} ppm	Nd_2O_3 ppm	Tb_4O_7 ppm	Dy_2O_3 ppm	**NdPr Oxide (ppm)**	Contained TREO (t)
1	**Indicated**	**1.5**	**8.0**	**2.38**	**11,400**	**910**	**2,250**	**15**	**80**	**3,160**	**191,000**
	Inferred	**1.5**	**0.8**	**2.28**	**10,900**	**861**	**2,140**	**15**	**78**	**3,000**	**18,000**
	TOTAL	**1.5**	**8.8**	**2.38**	**11,400**	**905**	**2,240**	**15**	**80**	**3,150**	**209,000**
4	**Indicated**	**1.5**									
	Inferred	**1.5**	**4.8**	**2.50**	**11,300**	**872**	**2,190**	**26**	**143**	**3,060**	**119,000**
	TOTAL	**1.5**	**4.8**	**2.50**	**11,300**	**872**	**2,190**	**26**	**143**	**3,060**	**119,000**
OVERALL	**Indicated**	**1.5**	**8.0**	**2.38**	**11,400**	**910**	**2,250**	**15**	**80**	**3,160**	**191,000**
	Inferred	**1.5**	**5.6**	**2.47**	**11,200**	**871**	**2,190**	**24**	**134**	**3,060**	**137,000**
	TOTAL	**1.5**	**13.6**	**2.42**	**11,400**	**894**	**2,230**	**19**	**102**	**3,120**	**329,000**

Notes:

- *Million tonnes are rounded to one decimal place. Grades are rounded to two decimal places for % and whole numbers for ppm.*
- *The MRE has been reported in consideration of reasonable prospects for eventual economic extraction (RPEEE) using a pit shell based on a 1.5% Total Rare Earth Oxide (TREO) cut-off, revenue of 24.65 $/kg TREO in Mixed Rare Earth Carbonate (MREC) and average total recovery to MREC of 48%.*
- *Mineral Resources are reported as dry tonnes on an in-situ basis.*
- *Rare Earth Elements are inclusive of the TREO and not additional to it.*
- *"NdPr Oxide" is the sum of Nd_2O_3 and Pr_6O_{11}.*

4. Mining

The mining method is based on conventional open pit using truck and shovel, and drill and blast, coupled to a ROM stockpile. Although the rock is largely classified as weathered, ore and waste rock will require drilling and blasting.

Both ore and waste will be excavated in 5 m flitches following mark-out by grade control. Ore will be hauled to either the ROM pad and tipped onto a designated ore finger or a designated low-grade stockpile. All mine waste will be hauled directly from the pit and placed onto a designated location of the tailings storage facility (TSF) dam wall; there are no other external waste dumps.

The mining fleet will comprise 40 - 60 t capacity articulated dump trucks (such as a Caterpillar 745) loaded by a 90-t excavator (such as a Caterpillar 395). A 30-t front-end loader (Caterpillar 980M) capable of loading the 41-t dump trucks, will be used as back-up for the primary loading unit and to make up shortfalls in periods where additional material movement is required. Other ancillary support will be supplied by a Cat D9R dozer, Cat 14M grader, and Cat 745 watercart. Maintenance will be conducted on site. Contract-mining is selected as the operating strategy at the Project.

4.1. Pit optimisation

Optimization parameters used for the Scoping Study are summarised in Table 1.2 below. For Target 4 area the pit shell chosen was using the price increment of 102% which provided the highest undiscounted NPV as summarised in Figure 1.6. For Target 1 and 6, the chosen price increment was 98% which provided the highest undiscounted NPV (Figure 1.4).

The mine life is planned at 18 years. There is no pre-stripping period. Based on the selected pit shells a high-level pit design was produced.

Table 1.2 Parameters used in optimization

Item	Unit	Value
Total Rare Earth Oxide (TREO)	**$/t**	**24,651**
Royalty	**%**	**3.0**
Mining costs	**$/t**	**3.28**
Ore - free dig	**$/t**	**4.26**
Ore - drill and blast	**$/t**	**2.51**
Waste - free dig	**$/t**	**3.53**
Waste - drill and blast	**$/t**	**3.28**
Processing cost	**$/t ore**	**25.00**
Downstream processing cost	**$/t TREO**	**66.00**
Recovery from run of mine (ROM)	**%**	**60**
Recovery from refining	**%**	**80**
Throughput rate	**Tonnes per year**	**750,000**
Discount rate	**%**	**10**
Overall slope angle (OSA) T4	**°**	**47**
OSA T1 and 6	**°**	**43**

Figure 1.3 T4 optimisation result

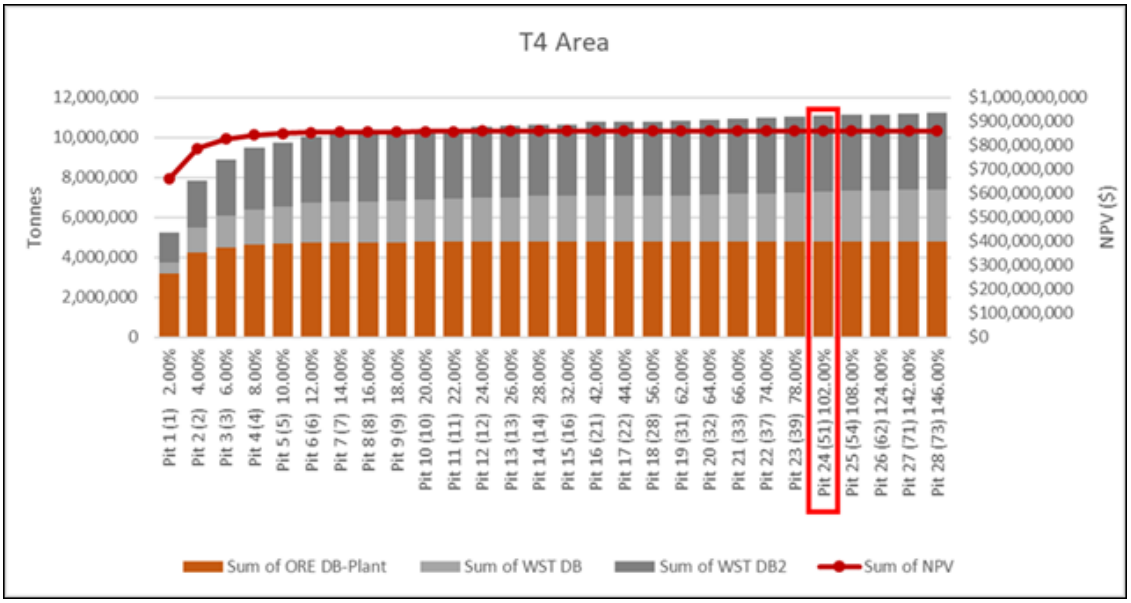
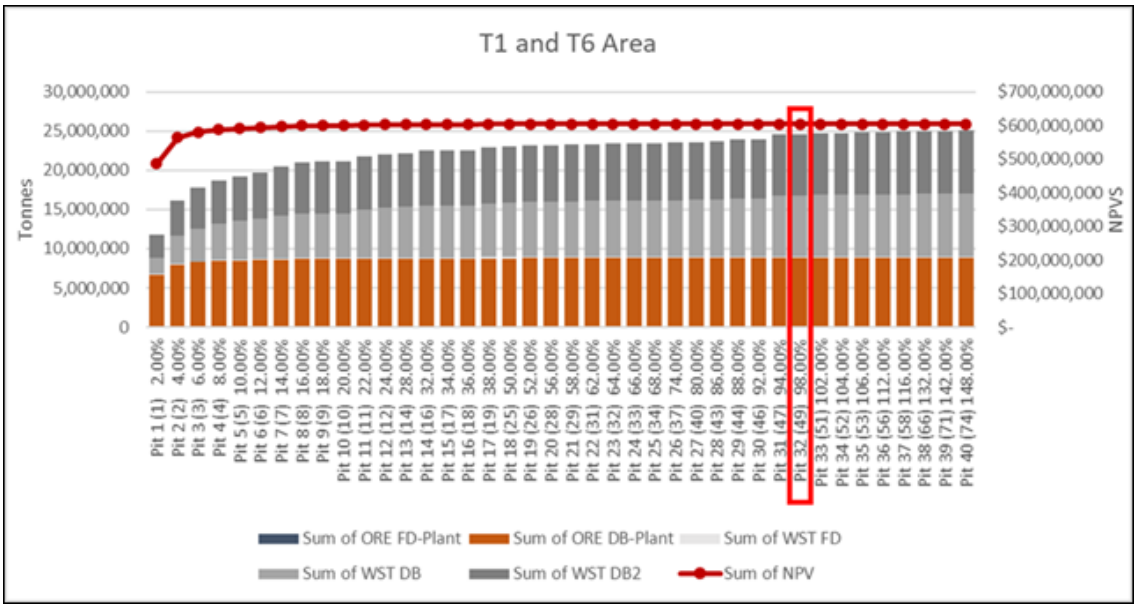


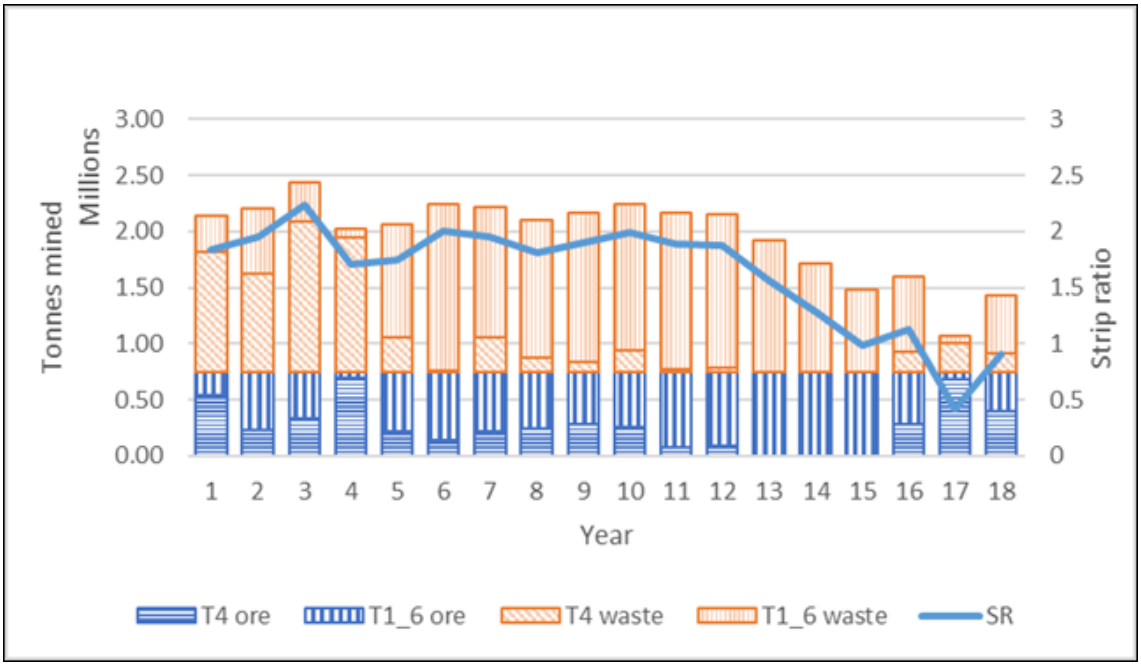
Figure 1.4 T1 and 6 optimisation result



4.2. Indicative schedule

An indicative life of mine (LOM) schedule was prepared for the mining of the two open pits as shown in Figure 1.5. Throughput rate is maintained at 750,000 t/a at a total mining rate of between 2.0 to 2.5 Mt/a. The average strip ratio is 1.67 (waste: ore). A pre-stripping period is not required but may be used to generate sufficient waste for the first TSF lift.

Figure 1.5 Monte Muambe annual LOM mining schedule



5. Metallurgy and processing

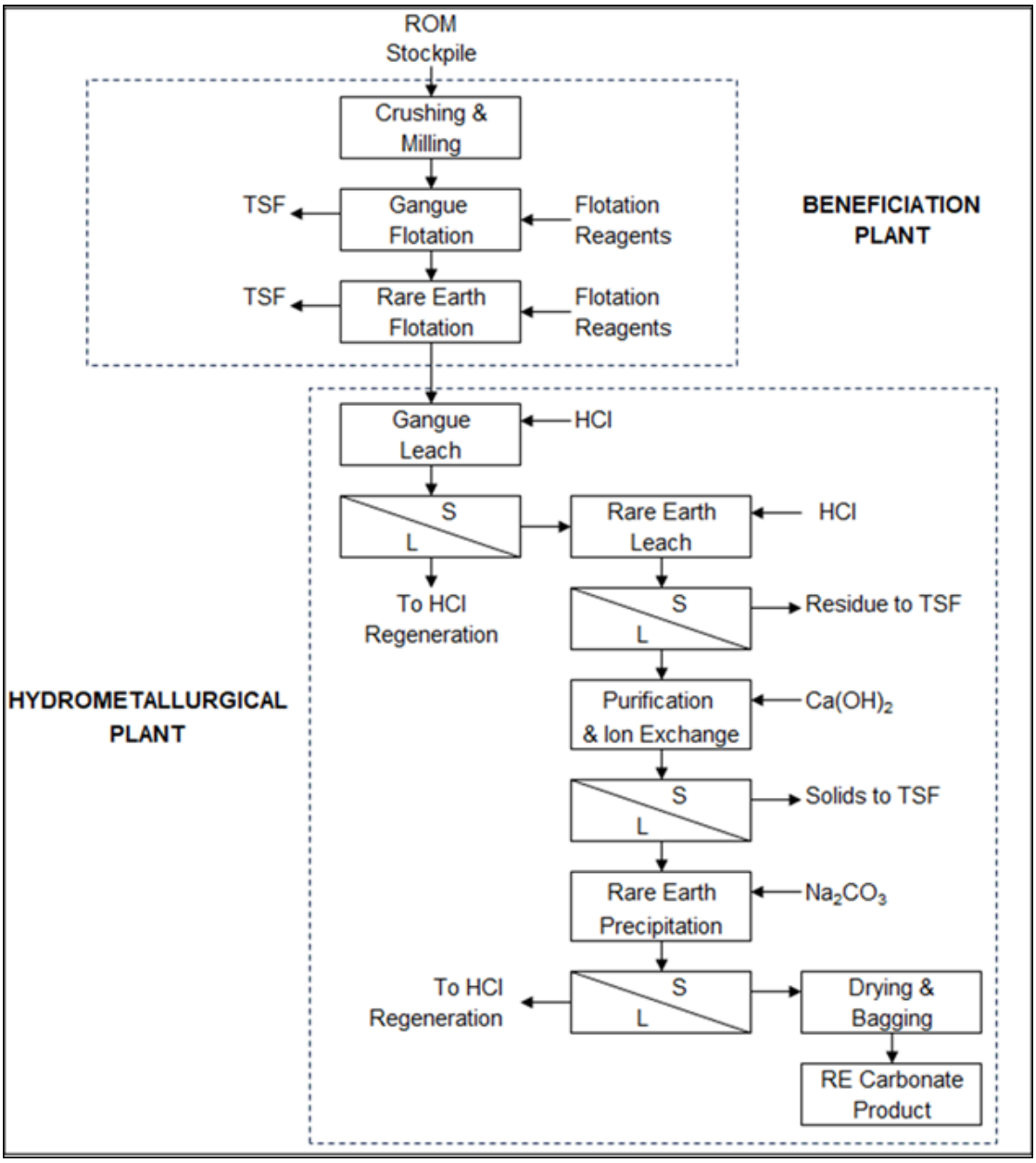
The proposed process flow sheet includes a beneficiation plant and a hydrometallurgical plant (Figure 1.6).

The beneficiation plant comprises of the comminution and flotation circuits. The purpose of the comminution circuit is to reduce the size of solid rock particles and thus increase the surface area of solids to enable the liberation of valuable materials that are locked within the gangue minerals. This is achieved by means of crushing and milling. Flotation is a method of separation, which uses the differing surface properties of the various minerals in the

carbonatite. It involves the selective attachment of mineral particles to air bubbles generated in the flotation cell which float to the surface of the slurry and then flow over the lip of the cells into the launders. A two-stage selective flotation reagent regime is used; the first stage being a gangue flotation to selectively target the calcium bearing gangue minerals (calcite, fluorite and ankerite) and the second stage being a rare earth flotation targeting the host mineral bastnaesite.

The recovery process flow sheet comprises a two-stage selective hydrochloric acid leach process. The first stage being a calcite gangue leach in a weak (pH 4) acid solution and the second stage being a strong acid leach (20% HCl) at ~80°C. The hydrochloric acid is recycled via calcium sulphate precipitation with sulphuric acid which is produced on site via a commercial sulphur burner plant. The process flow sheet also includes purification and Mixed Rare Earth Carbonate (MREC final product) precipitation. This approach offers advantages, including a significant reduction in acid costs as well as a further concentration of the rare earths thus providing a reduction in downstream capital and operating costs.

Figure 1.6 Proposed process flow sheet



6. Project infrastructure

All required infrastructure, the accommodation camp, process buildings, stockpiles, water resources, and tailings storage facility (TSF) are located within the current mineral tenement boundaries. Site infrastructure is required both inside the crater and outside to service these facilities.

A conceptual site block plan (SBP) locates the main accommodation camp outside of the crater to minimize dust, noise and radiation exposure, whereas the process plant, mining contractors' workshops, TSF and associated infrastructure are deployed inside the crater, arranged to minimize the physical footprint and in close proximity to the two main pits.

The mine infrastructure and process areas are, as far as practical, consolidated to reduce materials handling distances, including that of run of mine (ROM) mineralisation. The SBP arrangement has considered the topography as well as accommodating future expansion of selected process units and exploitation of new pits.

Diesel generators will be used during construction and commissioning, and as backup for infrequent events of grid failure. It is assumed that the appointed bulk diesel supplier will install its own diesel storage tank(s) at site. Process, mine and office diesel storage tanks will be connected to the primary diesel storage tank(s).

The 18 MW electrical power maximum demand of the Monte Muambe site will be provided at 11 kV, 50 Hz by a hybrid power generation plant. The plant will comprise a diesel-powered electrical generator station and solar photovoltaic (PV) power station supported by a battery energy storage system. Cables will link the power station substation to the process plant substation.

Solar PV generation is expected to contribute approximately 25% to the overall generation. The solar PV power station will be contained in a separate area, 800 m upwind from the process plant.

Management consider that a bore well-field will be the most optimal solution for the Project's water supply. The water demand for the Monte Muambe site will be supplied by on-ground overland pipelines from the bore field. Various sites for bore water have been identified and well tested. The bore field selected will provide water to the accommodation camp, process plant and camp. Dewatering from the open pits is also expected to increasingly contribute to the plant's water supply during the life of the mine. A water demand forecast will be designed as part of the PFS.

Wastewater and overall water management will be achieved by suitably planned drainage channels and site layout. Waste will be collected in a landfill.

The Project is primarily accessed from the northern side. A tarred, single carriageway (N7) extends from Tete, passed Moatize coal mine in a north easterly direction, a total distance of 70 km. There is a right turn onto a tarred single carriageway extending in a southeasterly direction for 10 km to Cateme. From Cateme, a 35 km gravel road is used to access the Project site; this road passes through the villages of Mwaladzi and Dezemge (Figure 1.7).

The road from Dezemge to the Project site will require upgrading, including by-passes around villages. The road climbing from the foot of the mountain to the existing camp and into the basin will need to be redesigned to ensure a maximum slope of 10 percent. Inside the basin, where the planned mining infrastructure and plant facilities will be located, the topography is gentle. Existing dirt tracks will require widening and upgrading using locally sourced road metal.

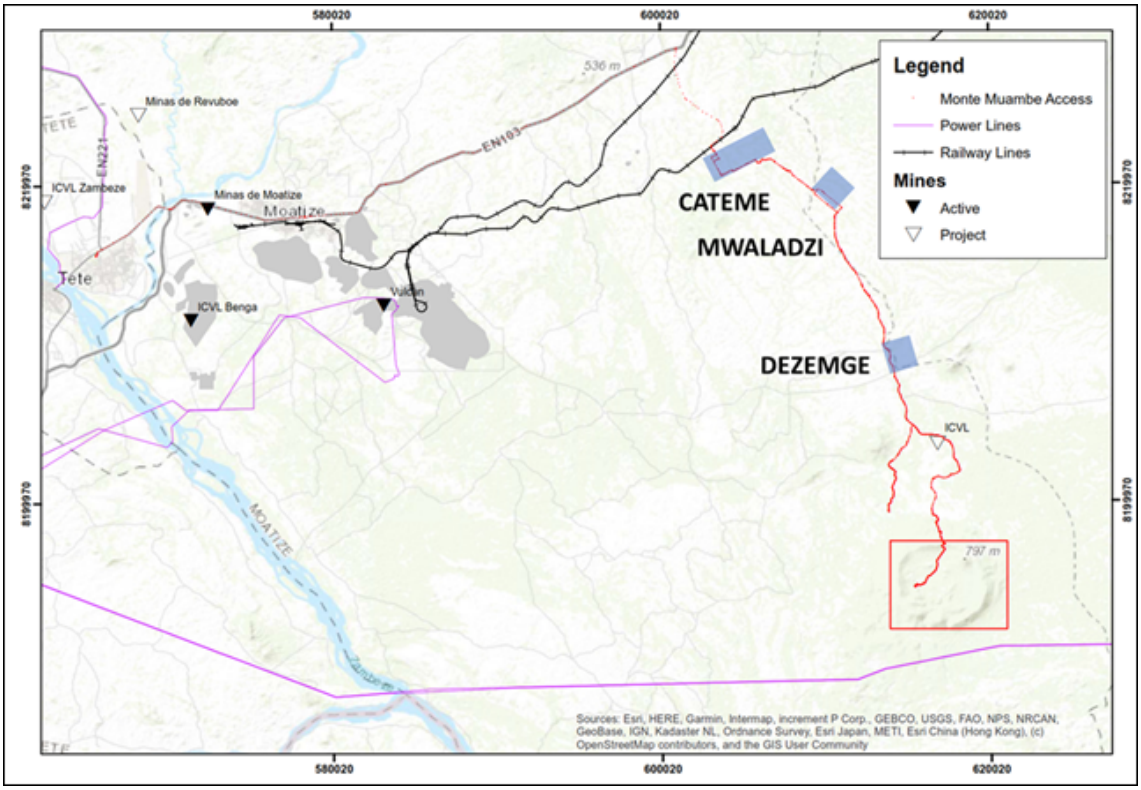
The Tete International Airport (Chingozi) or TET, is 110 km by road to the Project, along the N7. Beira is the closest port to the Project site, approximately 730 km by road. A detailed

cost-benefit of the various logistical options both for inbound and outbound freight cargo will need to be done as part of the PFS.

An integrated information system will be provided by the Company, including the latest operating systems enabling effective telephonic and digital communications.

For product transport, it is proposed that stockpiled MREC will be placed in 1 t polypropylene, double-lined woven bulk bags at Project site, and then placed on pallets or loaded directly into containers. Containers will be trucked to Beira port and warehoused, prior to shipment. These transport arrangements are expected to result in approximately 745 truck journeys per annum (equivalent to 62 trips per month) of bagged concentrate product to Beira. The containerised bags will be offloaded at Beira and then re-containerised at Beira or report straight to ocean going vessels.

Figure 1.7 Location of the Project, licence LPP7573L in Tete Province, Mozambique



Source: Altona, 2023

The approximate infrastructure size and costs for the Project have been estimated. Primary infrastructure costs include:

- Power ($7.5 million)
- Access road ($7.0 million)
- Accommodation ($4.0 million)
- Sewage treatment ($2.0 million)
- Raw water dam ($2.0 million)
- Wellfield ($2.0 million)
- Stormwater ($1.0 million)
- Water treatment ($1.0 million)

- Other surface infrastructure (including gatehouse, changehouse, laundry, clinic, canteen, office buildings), of $2.8 million.

The approximate footprint of the ten primary surface infrastructure/ buildings is 10,915 m^2. As the Project advances, greater accuracy and footprint size will be estimated.

Design details will be required as the project advances to PFS stage; this will include as a priority:

- Power demand
- Water demand
- Detailed plans for site location
- Detailed access road plans.

7. Tailings and waste

7.1. Tailings storage facility

All process plant waste products will likely be disposed of onto a single fully contained tailings storage facility. Pre-stripping over the mining area will provide the initial waste rock required for the containment embankment walls. As more waste is stripped over the mining areas, these waste rock embankments will be raised always above the tailings level to provide solid rock embankment walls. The intention is to, where possible, use the existing topography and outcropping areas to buttress the final TSF walls.

The tailings will be placed on a 2 mm high density polyethylene (HDPE) lined facility with suitably constructed underdrainage systems. Despite the low acid generating potential and also the presence of carbonate rock, there will be a component of plant waste containing residual thorium and radio-active elements, which will require safe disposal in the TSF.

A preliminary site was chosen for a storage capacity of 13.3 Mt, with a full-containment facility in line with the Global Industry Standards for Tailings Management (GISTM). The design also took cognisance of the potential seismic nature of the area with the full waste containment and has 1V:3H outer perimeter waste rock side-slopes.

The capital expenditure estimate (capex) was factorised from a database of costs into 2023 prices. The overall TSF has an estimated capex of $54 million over the 18-year mine life. It may be possible to divide the capex over various design phases with further design work, to reduce the initial capital and to increase the sustaining capital over the subsequent tailings dam lifts.

7.2. Waste rock disposal

The waste rock excavated from the Monte Mumbe open pit mining activities will be loaded and hauled to a permanent disposal site or waste rock dump (WRD). The waste rock will partly be used in the construction of the TSF containment embankments. The balance of the waste will be deposited in designated waste rock dumping between the Target 1 and Target 4 pits. The TSF embankment will require approximately 3.6 Mm^3 or 6.5 Mt of waste rock, with the WRDs requiring a collective capacity of 8.7 Mm^3 or 15.7 Mt.

The WRD is expected to be non-acid forming with limited release of contaminants over the long term. The waste rock contact water is however expected to be high alkalinity (due to the carbonatites) with minor concentrations of REEs. The WRD footprints are not expected to be

lined, but an engineered (compacted) basal area is proposed to rescue seepage and protect ground- and surface water resources.

The WRDs will be located adjacent to each respective pit, and adjacent to the TSF. The development of the waste rock dumps will be in 10 m vertical lifts, with 15 m wide benches and 1V:1.5H intermediate side slopes. The overall outer side slope profile will be 1V:3H for rehabilitation. The WRDs will cover a total footprint (natural ground) of approximately 40 ha, with a final downstream height of approximately 50 m.

The capex for the WRDs has been determined through the factorisation of database costs into Y2023 terms and has been estimated at $2.72 million, inclusive of 30% preliminary and general costs. The capex is primarily comprised site clearance and earthworks with selected concrete works and drainage material.

Future recommended work includes a geotechnical investigation and geochemical characterisation of the waste rock.

8. Social and environmental matters

Exploration activities on LPP7573L are carried out under an environmental management plan (EMP) prepared by local environmental consultancy GeoAmbiente Lda. The Company's activities were subjected to an independent Environmental Audit which was validated by the National Agency for Environmental Quality Control (AQUA) of Tete Province on 24 October 2022.

The Licence is not located in any environmentally protected area.

As part of its Mining Concession application, the Company will prepare an EMP covering the proposed mining operations, and subsequently a Level A environmental impact assessment (EIA).

A Level A EIA covers mining activities carried out on a Mining Concession. These activities require a full EIA, which must be prepared by an environmental specialist licensed by the Ministry of Land and Environment (MITA). The EIA process aims at producing a project-specific environmental licence.

The EIA licensing process involves:

- The preparation and submission to MITA of a set of Terms of Reference (ToR), which must include the timing and procedures for public consultation, a risk and emergency management plan, and an EMP.
- The review of the ToR by MITA and the Minister, Ministry of Mineral Resources and Energy (MIREME).
- If the EIA is approved, MITA issues an Environmental Licence within 10 days from the date of approval. The Environmental Licence is valid for the duration of the Mining Concession but must be reviewed every 5 years.

The holder of a Level A Environmental Licence must also submit an annual environmental management report, with the monitoring process carried out either by the concessionaire or by an independent consultant.

Level A activities also require the provision of an environmental bond to cover rehabilitation activities during the closure of the mine. The bond may take the form of an insurance policy, a bank guarantee, or a deposit in cash in a bank account provided by MIREME. The value of the bond is based on an estimate of the costs of such restoration, which will be calculated

during or after the active life of the project. The value of the bond is set by MIREME and reviewed every two years.

8.1. Radiation management

The Project ore contains low levels of thorium (Th) and uranium (U). The LOM average concentrations for the bastnaesite ore are 200 ppm Th and 20 ppm U at Target 1 and 330 ppm Th and 7 ppm U at Target 4, which is favourably low compared with other rare earth deposits. The Project's flotation tailings will contain lower levels of radioactivity because thorium and uranium are mostly associated with the rare earth minerals (and hence removed from the tailings).

The mineral concentrate produced from the Project, whilst having an upgraded Th and U content, is expected to have a specific activity well below the trigger point of 10 Bq/g and will therefore not be deemed as Class 7 Dangerous Goods for transportation purposes. Note that this concentrate does not leave the site; it is fed directly to the hydrometallurgical plant.

Radionuclides (Th, U and the decay nuclides) will be removed during the hydrometallurgy refining stage to produce a radionuclides-free MREC.

Altona will develop a comprehensive radiation management plan and undertake regular monitoring and regulatory compliance of radioactivity levels of all activities including exploration, mining, processing and tailings disposal.

8.2. Closure and remediation

The intent for closure planning at the Project is that disturbed areas will be rehabilitated and closed in a manner to make them physically safe to humans and animals, geotechnically stable, and geochemically non-polluting/ non-contaminating. It is the Company's intent that a sustainable solution is agreed upon for post-mining land use, without unacceptable liability to stakeholders.

In addition, environmental rehabilitation will be ongoing throughout the LOM. Decommissioning activities are likely to include the following:

- Dismantling of buildings and infrastructures.
- Rehabilitating haul roads and hard stand areas.
- Ensuring access to the void left from open pit mining is restricted.
- Reprofiling slopes and top surfaces of waste rock dumps, stockpiles and TSF to ensure stable landforms.
- Revegetation of previously disturbed areas with indigenous vegetation.

9. Project costs and economic analysis

Snowden Optiro has undertaken a real financial model for the Project. The base date for all financial inputs is 1 September 2023. All values reported in this section are real; and all diagrams and tables have been generated from the financial model. ROM material and mineralisation are used interchangeably in this section.

A basis of estimate and exclusions are referenced in Section 11.2 and 11.3 respectively, for capex and opex.

A mine schedule has been undertaken by Datamine and reviewed by Snowden Optiro. Proposed ROM steady state production of 0.75 Mt/a is reported for a mine life of about 20

years. A tail-cut has reduced the Project mine life to 18 years and is referenced accordingly as the LOM in this report. Planned steady-state is reached in Year 1 of mining production.

Long-term CIF (China) metal prices calculated as the average of Adamas Intelligence forecast (Adamas Intelligence, 2023) for the period 2024-2040 low case scenario have been applied as follows:

- Praseodymium oxide price of $148,000/ t
- Neodymium oxide price of $156,000/ t
- Terbium oxide price of $1,937,000/ t
- Dysprosium oxide price of $440,000/ t.

Gross revenues total $3,670 million over LOM. Neodymium and praseodymium comprise the bulk of planned gross revenues (86%) along with dysprosium and terbium (14%); no value has been ascribed to the other 13 REOs, primarily cerium and lanthanum. A payability of 90% on the four primary elements in the sold MREC has been applied.

Net revenues include a State royalty of 3% on gross revenues; and payabilities of 90% on MREC product sold. Total MREC produced is 270.7 kt over LOM or 15.0 kt p/a, with an equivalent contained TREO volume of 148.9 kt over LOM or 8.3 t p/a. Net revenues total $3,193 million over LOM.

The planned LOM opex and unit opex is shown in Table 1.3. Process opex accounts for 74% of total opex over LOM.

Table 1.3 Planned LOM opex for the Project

Opex item	Value ($ M)	Unit cost ($/t ROM)	Unit cost ($/t MREC)
Mining	**152**	**11.3**	**563.0**
Process	**1,127**	**83.7**	**4,164.3**
Overheads/ shared services	**160**	**11.9**	**591.0**
Off-mine	**80**	**5.9**	**294.3**
Total	**1,519**	**112.8**	**5,612.6**

Note: MREC - Final Mixed Rare Earth Carbonate product

The total initial and sustaining capital for the Project was estimated to be $339.3 million, which includes project execution;, engineering, procurement construction management (EPCM), contingency and sustaining capital costs. Initial capital is estimated to be $276.3 million and includes all capex over the period October 2023 to December 2028. The initial capital is summarised in Table 1.4.

Table 1.4 Initial capital summary

Initial capital item	Value ($ M)
Project mobilisation and camp construction	**4.0**
Bulk and other infrastructure	**31.3**
Direct plant costs	**150.0**
Indirect plant and EPCM costs	**35.0**
Tailings dam	**18.0**
Waste rock dump	**2.0**
Mining infrastructure, pre-production and mobilisation	**14.0**
Exploration, evaluation, Owners Team and sterilisation drilling	**22.0**

Initial capital item	Value ($ M)
Total initial capital	**276.3**

Note: EPCM - Engineering, procurement, construction management; rounding has been applied to select initial capital items.

For the LOM, debtors days of 30 days has been applied, creditors of 30 days (mining and process opex) and 15 days on inventories (select mining and process opex).

A production tax or royalty is payable based on the value of the mineral extracted, with an applicable royalty of 3% for other minerals. Total State royalties over LOM is $110.1 million and have been included under net revenues.

A corporate tax of 32% on cashflows (after the applied WPT) has been applied in the financial model. Total corporate tax over LOM is $372.5 million.

Provision has been made under Owners costs, for customs and duties; although there is a strong likelihood that no customs will be payable during the initial years of construction, ramp-up and first two years of steady-state production.

No government free carry has been applied to the financial model.

No capital gains, withholding or transaction tax has been applied.

Snowden Optiro is not aware of any municipal fees or rates that are to be applied.

9.1. Net present value (NPV) and internal rate of return (IRR)

The NPV of the Project is $283.3 million, based on a real discount rate of 8%. An NPV of $149.6 million is reported using a real discount rate of 12%. A post-tax IRR of 25% and a payback from the construction start date of 4.5 years, and a payback from first TREO production of 2.5 years is reported. An operating cashflow margin of 42% is noted. Project earnings before interest, tax, depreciation and amortisation (EBITDA) would effectively be operating cash flows (no capital expenditure, tax, interest, depreciation nor amortisation expenses have been included). Operating cashflows would include all realisation costs, on- and off-mine expenses and royalties. The planned LOM EBITDA will be $1,674 million; and planned annual EBITDA is $93 million.

9.2. Sensitivity analysis

Using an NPV of $283.3 million with an applied real discount rate of 8%, the Project is most sensitive to revenue (price, recovery, grade and exchange rates), less sensitive to opex and least sensitive to capex (Figure 11.6). The sensitivity analysis shows that the Project is more sensitivity to capital than other benchmarked projects.

9.3. Summary of key Project parameters

A summary of key Project parameters is shown in Table 1.6.

Table 1.5 Forecast key Project parameters

Parameter	Unit	Value
Ore processed	**Mt**	**13.5**
TREO ROM grade (after dilution)	**%**	**2.30%**
MREC produced	**Kt**	**270.7**
Initial capex	**$ M**	**276.3**

Sustaining capex	**$ M**	**63.0**
Opex LOM	**$ M**	**1,519.3**
Opex per sold MREC	**$/t MREC**	**5,612.6**
Gross revenue LOM	**$ M**	**3,670.2**
Net revenue LOM	**$ M**	**3,193.1**
EBITDA LOM	**$ M**	**1,673.8**
Gross revenue per tonne MREC	**$/t**	**13,558.4**
Net revenue per tonne MREC	**$/t**	**11,795.8**
Payback from first MREC	**Years**	**2.5**
Post-tax NPV_8	**$ M**	**283.3**
Post-tax NPV_{10}	**$ M**	**207.0**
Post-tax IRR	**%**	**25%**
Operating margin	**%**	**42%**

Note: TREO - Total Rare Earth Oxide; ROM - Run of mine; MREC - Mixed Rare Earth Carbonate; EBITDA - Earnings before interest tax, depreciation and amortisation; opex - operating expenditure.

9.4. Upside scenario

An upside scenario with higher long-term metal prices has been undertaken. No changes in production, opex, capex or discount rates were made to the financial model. The long-term metal prices applied are as follows:

- Praseodymium oxide price of $174,000/ t.
- Neodymium oxide price of $183,000/ t.
- Terbium oxide price of $2,083,000/ t.
- Dysprosium oxide price of $474,000/ t.

Total gross revenues of $4,258 million are reported over LOM for the upside scenario; with planned net revenues of $3,704 million.

The NPV of the upside scenario is $409.9 million, based on a real discount rate of 8%. An NPV of $231.3 million is reported using a real discount rate of 12%. A post-tax IRR of 32% and a payback from the construction start date of 4.0 years, and a payback from first TREO production of 2.0 years is reported. An operating cashflow margin of 50% is noted.

10. Project execution

A high-level planned schedule has been undertaken for the overall Project. Key milestones are highlighted in the Level 1 schedule (Table 1.6). The schedule was based on industry benchmarking, scope of work and a general deliverables list. Snowden Optiro assumes a seamless advancement between the various phases, as the Project advances. The overall schedule is five years to first TREO being produced, which includes 18 months for a PFS, one year for a FS, two years construction and a six-month production ramp-up. Project financing will be applied for, for pre-production funding and Project construction.

An engineering, procurement, construction management (EPCM) execution strategy has been recommended for the Project.

Table 1.6 Planned milestones for the Project

Milestone	Milestone date/ duration
Prefeasibility study	**18 months to March 2025**
Submission of mining concession application	**Q4 2023**
Feasibility study	**12 months to March 2026**
Value engineering, FEED and financing	**Nine months to December 2026**
EPCM tendering	**November 2026**
Early works commencement	**December 2026**
EPCM award	**January 2027**
Construction commences	**Two years to December 2028**
First TREO to be produced	**December 2028**
Production ramp-up	**Six months to June 2029**
Steady state of 187.5 kt per quarter (750 kt/a)	**Q3 2029**

Note: FEED - Front end engineering design; EPCM - Engineering, procurement, construction management; TREO - Total Rare Earth Oxide

Source: Snowden Optiro, 2023

11. Recommendations

It is expected that Altona will undertake a prefeasibility study (PFS) as the next stage of project development, based on the positive outcome of this CPR and Scoping Study.

11.1. Exploration

Snowden Optiro's recommendations for continued exploration include:

- Use the improved mineralisation model to attempt identifying new targets, including blind targets.
- Continue improving mineralisation model through mapping as well as academic research.
- Exploration drilling at T3, T9, T11, and any other potential high-grade target
- MRE update
- Data centralisation

The resource update should cover tonnage increase, as well as improve the level of confidence within the pits to Measured and Indicated.

11.2. Geometallurgy / processing

Geometallurgy and process flowsheet design will be a priority activity during the PFS. The Scoping Study sighter testwork forming part of this Scoping Study provides a preliminary assessment based on a possible flowsheet. Ongoing work includes:

- Mineralogical and geo-metallurgical assessment.
- Beneficiation flowsheet development.
- Hydrometallurgical flowsheet development.

It is anticipated that the ongoing testwork will extend over a nine to 12-month period.

11.3. Mining

Snowden Optiro's recommendations include:

- Geotechnical studies:
  - Drilling program
  - Geotechnical logging of core
  - Off-site testing of core
  - Structural interpretation
  - Slope stability assessment
- Mine planning and ore reserve:
  - Pit optimisation and schedule
  - Scenario analyses
  - Cost assessments
  - Ore reserve development

Once adequate testwork has been completed to reliably inform geotechnical models, recovery and process cost parameters, more detailed work can be carried out.

11.4. Environmental studies

This will involve starting baseline studies as soon as possible and planning to reach environmental compliance as part of the Mining Concession application (EMP, ESIA). This will include environmental, social and governance (ESG) planning to a World Bank level. Minimisation of the carbon footprint of the proposed product can be minimised through locally available sourcing.

11.5. Infrastructure studies

This will involve multiple trade-off studies; including logistics optimisation (road vs different rail options), and power sources mix optimisation (based on capex, opex and carbon footprint).

11.6. Tailings / waste management

The PFS study will require a detailed site selection and associated surface geotechnical investigations. A key requirement will be to conduct geochemical static and kinetic leach testing on the types of ore / tailings / waste to determine the future design / lining of the TSF. The planned PFS will identify several options and determine the best site or sites for tailings disposal.

For waste rock disposal, the prefeasibility scope will include hydrogeological testing, site selection, geotechnical and chemical testwork. Both tailings and waste rock will require detailed design criteria and opex / capex costings.

11.7. Marketing

As part of the PFS, Altona will join a Responsible Sourcing organisation and integrate Responsible Sourcing processes. The Company plans to develop marketing side of business as part of PFS, which may include offtakes and integration with rest of world supply chains (existing and projects).

11.8. Project economics

Relevant studies need to be undertaken to improve granularity and accuracy of the opex and capex estimates, production, payabilities and planned recoveries.

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