
RAINBOW RARE EARTHS



**A STRATEGIC SOURCE OF
NdPr FOR A GROWING MARKET**

MAY 2022



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RARE EARTHS:
THE CRITICAL
BUILDING BLOCKS
IN THE GREEN
REVOLUTION



Market Overview

**"THE MIDDLE EAST HAS OIL;
CHINA HAS RARE EARTHS."**

Deng Xiaoping, credited as
the father of modern-day China,
1992

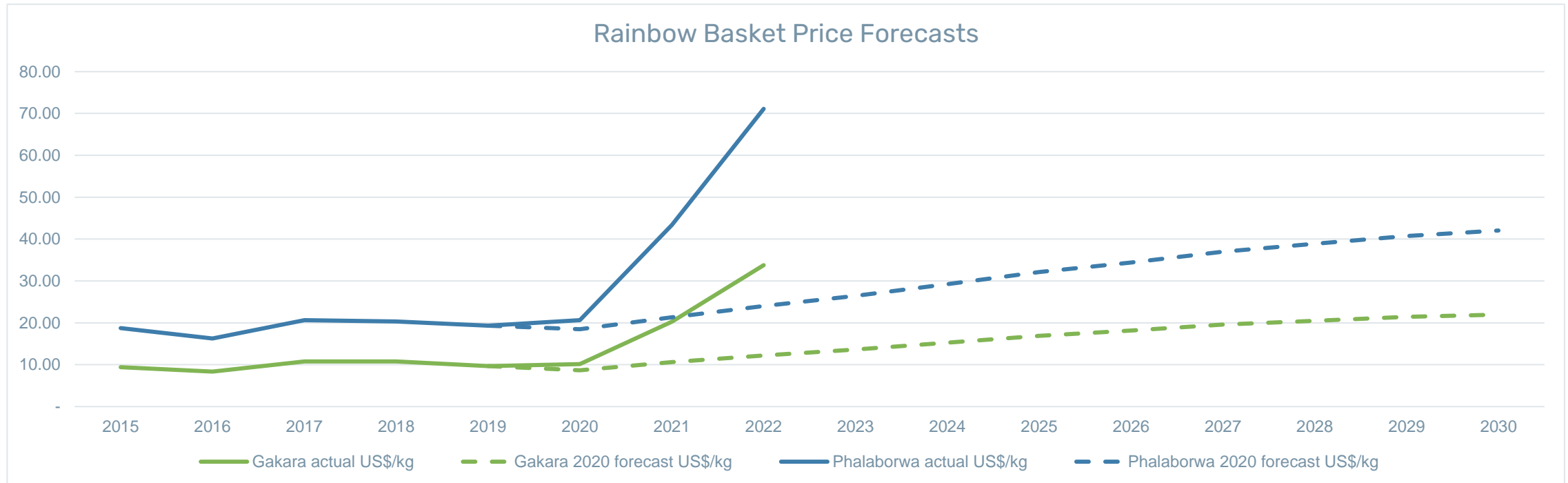
RAINBOW PROJECT ECONOMICS: WELL SUPPORTED AT CURRENT NdPr PRICES



ACTUAL RARE EARTH BASKET PRICES FOR PHALABORWA AND GAKARA HAVE SIGNIFICANTLY OUSTRIIPPED PRICE RISES FORECAST IN 2020

...although prices have fallen back in Q2 2022 from all time highs reached in Q1 2022 forecasters suggest the current price strength will be supported by ongoing demand growth in the medium term

With an NdPr content of 29.1%, enhanced by significant Dy and Tb credits, in the Phalaborwa resource rare earth basket, the project is highly geared to these in demand magnet metals



PHALABORWA PROJECT



Phalaborwa Project

SIGNIFICANT NDPR PRODUCTION TO POWER THE GREEN REVOLUTION

PHALABORWA – EXCITING, NEAR-TERM GROWTH OPPORTUNITY



38.3MT OF GYPSUM IN TWO STACKS FROM 50+ YEARS PHOSPHATE HARD ROCK MINING IN SOUTH AFRICA

- JORC Compliant Inferred Mineral Resource Estimate at 0.43% TREO announced 17 June 2021 of which 29.1% represents high value NdPr with economic Dysprosium and Terbium credits
- 5 – 10x higher grade than a typical ionic clay style rare earth deposit
- Phalaborwa has low levels of radioactive elements: typical rare earth development projects require complex processing to remove higher levels of radioactive elements
- Processing of Phalaborwa gypsum stacks will deliver a Green Rare Earth Project: removing existing environmental liability and redepositing clean, benign gypsum on a new stack
- Project is largely permitted and positioned in an established mining town, with
 - associated skilled labour availability
 - supporting industry (i.e. local production of sulphuric acid, an expected key reagent in the processing circuit)
- Rainbow is earning an initial 70% in the Phalaborwa project¹ via an agreement signed with Bosveld Phosphates in 2020 for total consideration of US\$750k

1. mechanism to allow Rainbow's JV ownership to vary from 60% to 85% depending on IRR of PFS at spot rare earth prices versus initial 25% benchmark

JORC COMPLIANT INFERRED MINERAL RESOURCE ESTIMATE

	Tonnes Mt	TREO %	Contribution of TREO by oxide					Grade	
			Nd %	Pr %	Dy %	Tb %	Other %	Th ppm	U ppm
Stack A	27.4	0.42	23.3	5.7	1.0	0.4	69.6	49.0	1.8
Stack B	10.9	0.46	23.6	5.7	1.0	0.3	69.4	44.1	2.0
TOTAL	38.3	0.43	23.4	5.7	1.0	0.3	69.6	47.6	1.8

1. The Inferred Mineral Resource Estimate is reported above a cut-off grade of 0.2% TREO.
2. No constraining pit shell is required for the Inferred Mineral Resource Estimate due to the gypsum stacks being entirely above ground level.
3. Mineral resources are not mineral reserves and do not have demonstrated economic viability.

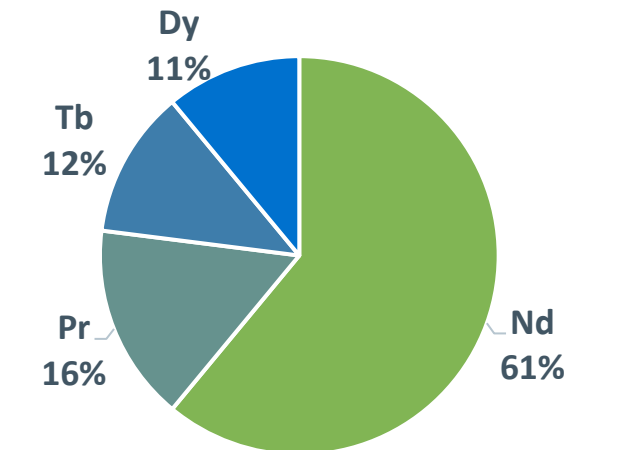


ASSAY RESULTS CONFIRM HIGH VALUE PROJECT

MUCH HIGHER GRADE THAN TYPICAL IONIC CLAY RARE EARTH PROJECTS



Project	Style	Owner	TREO ⁴ %	NdPr ⁵ ppm	Uranium ⁶ ppm	Thorium ⁷ ppm
Phalaborwa ¹	Gypsum stacks	Rainbow Rare Earths	0.431%	1,257	2	48
Round Top ²	Ionic Clay	US Rare Earths/TMRC	0.063%	39	45	179
La Paz ²	Ionic Clay	American rare Earths	0.04%	80	1	7
Makuutu ²	Ionic Clay	Ionic Rare Earths	0.08%	232	10	30
Mount Weld ²	Hard rock	Lynas Rare Earths	7.90%	18,833	30	750
Bear Lodge ²	Hard rock	Rare Element Resources	3.08%	7,059	113	472
Longonjo ²	Hard rock	Pensana plc	1.43%	3,170	29	967
Nolan's Bore ²	Hard rock	Arafura Resources	2.60%	6,859	191	2,700
Norra Karr ²	Hard rock	Leading Edge Materials	0.55%	758	15	8
Lofdal ²	Hard rock	Namibia Critical Metals	0.32%	181	18	350
Gakara ³	Hard rock	Rainbow Rare Earths	13.50%	26,706	97	151



Phalaborwa In-situ Metal Value: US\$/t Gypsum¹

**Total value:
US\$156/t of gypsum¹**

PHALABORWA BENEFITS FROM:

- Greater high-value NdPr grade than a typical low-cost ionic clay rare earth project – closer to grade of traditional hard rock style deposits, which typically have a much higher cost base for mining, crushing/grinding and metallurgical recovery
- Considerable high-value Dy and Tb credits
- Substantially lower levels of radioactive elements than most publicly disclosed rare earth projects

PHALABORWA

SIMPLE PROCESSING AND HIGH VALUE PRODUCT EXPECTED TO DRIVE STRONG PROJECT ECONOMICS WITH LOW CAPEX AND OPEX

- Historical processing, including initial flotation and concentration by Foskor followed by processing in Sasol’s PhosAcid plant, has deposited REEs in chemical form in gypsum stacks
- Rare Earth elements contained in a ‘cracked’ chemical form in the gypsum which will deliver a higher-value mixed rare earth carbonate with significantly lower operating costs than a typical rare earth project
- No need for hard rock mining, crushing and milling, which comprise a significant element of capex and opex for standard hard rock mining projects
- No need for 1st stage of usual complex processing requirements, which involves producing a rare earth mineral concentrate before high-cost chemical process to ‘crack’ the concentrate to deliver a higher value rare earth carbonate or oxide

Typical unit processes	Typical rare earths project	Phalaborwa
Hard rock mining and hauling	✓	
Hydraulic transport to plant		✓
ROM stockpile	✓	
Crushing and milling (energy)	✓	
Multi-stage flotation (energy and reagents)	✓	
Concentrate filtration	✓	
Gangue acid leaching at some projects (reagents)	✓	
Cracking (energy and reagents)	✓	
Rare earth dissolution (leaching)	✓	✓
Thorium and uranium removal	✓	
Impurity removal and intermediate products	✓	✓

PHALABORWA – AN ENVIRONMENTALLY FRIENDLY SOURCE OF NdPr

CLEANING UP EXISTING ENVIRONMENTAL LIABILITIES



EXISTING ENVIRONMENTAL ISSUES

- ☑ The 38Mt Phalaborwa gypsum stacks from >50 years of phosphoric acid production currently represent an environmental liability for the historic owners of the site
- ☑ The environmental issues are being properly managed through continuous environmental monitoring by Knight Piesold, with a full rehabilitation fund put in place by the historic owners

RAINBOW'S PROCESS WILL CLEAN UP THE PHALABORWA SITE

- ☑ Rainbow intend to retreat the gypsum in the current stacks, dealing with the environmental legacy of historical phosphoric acid production
- ☑ ~700,000m³ of acidic water currently contained within the stacks will be treated to lower its pH and used in a closed circuit in the RE process plant – this reduces a significant risk of release of this water into nearby Kruger National Park from the current unlined stacks
- ☑ Clean, benign gypsum will be redeposited on a new fully lined stack site, which will be built to IFC Standards / Equator Principles

RESPONSIBLE PROCESS DESIGN

- ☑ The rare earth processing development at Phalaborwa will be undertaken in accordance with IFC Standards, with consideration of environmental impacts at every stage of the process
- ☑ Waste streams from nearby operations will be reused at Phalaborwa, such as sulphuric acid produced as a by-product from a local copper producer
- ☑ The K-Tech IP uses fewer steps than a traditional SX process to separate rare earths, requiring fewer and less hazardous reagents



Phalaborwa Project

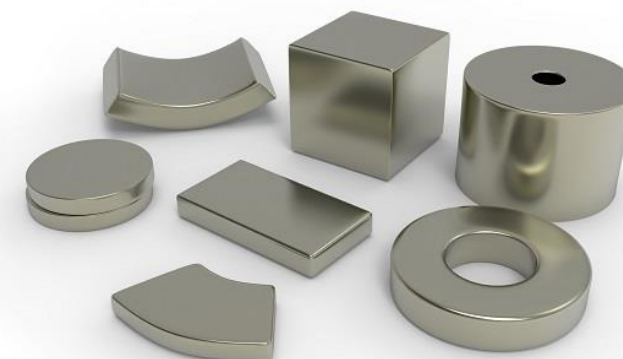
PHALABORWA

OPPORTUNITY TO DELIVER SEPARATED MAGNET RARE EARTH OXIDES THROUGH EXCLUSIVELY LICENCED TECHNOLOGY

- **RARE EARTHS SEPARATION TECHNOLOGY LICENCE:** Rainbow has exclusive rights to K-Tech rare earths separation technology across the SADC region of Africa for use in phosphogypsum projects such as Phalaborwa
- **SIGNIFICANT CAPEX AND OPEX SAVINGS COMPARED TO TRADITIONAL TECHNOLOGY:** K-Tech process achieves separation of rare earth oxides in fewer stages with more flexibility
- **ENVIRONMENTAL AND SAFETY ADVANTAGES:** The process eliminates the use of the toxic and highly flammable solvents and diluents required for SX
- **SUCCESSFUL TESTING:** The technology has undergone successful bench and pilot plant scale testing in rare earth separations from leach solutions and has been successfully applied in commercial applications in a number of different industries
- **HIGHER VALUE FROM THE SALE OF SEPARATED RARE EARTH PRODUCTS COMPARED TO A MIXED RARE EARTH CARBONATE:** It is anticipated that the K-Tech process will allow the high-value rare earths used in permanent magnets to be directly extracted from the Phalaborwa leach solution and delivered as separated RE oxides



Refined rare earth oxide powders, the essential elements for the permanent magnets driving the green revolution



PHALABORWA

ONGOING TESTWORK CONTINUES TO DE-RISK PROJECT AHEAD OF DELIVERY OF TECHNICAL STUDY



On signing the Phalaborwa earn-in agreement a number of risks were identified, typical for rare earth elements contained in PhosAcid production residue, that required test work and optimisation to deliver an economic flow sheet.

ISSUE	TYPICAL PROBLEMS	PHALABORWA OUTCOME	FURTHER OPTIMISATION
TREO grade	Typically low: 0.035-0.050% TREO	Drilling has confirmed 0.43% TREO of which 29% represents NdPr	N/A
Leach recovery	Erratic leach profiles with low overall recovery	Unoptimised leach results consistently show 65-70% recovery	Investigating mild heating of leach solution to improve recoveries and reduce leach time
High acid usage	A highly acidic environment with 100-150 grams per litre of acid required to leach rare earths from Phospho gypsum	Leaching consumes relatively little acid, with nano-filtration used to recover 60%-70%	Investigating recirculation of pregnant leach solution to further reduce acid use and downstream flowrates
Gypsum blocking filtration systems	Low filtration rates can create problems in recovery and increase downstream flow rates	Test work to date shows high filtration rates via commercially proven vacuum filtration process	Further test work on application of nano filtration ahead of finalisation of process flow sheet
High levels of capex and opex for post-leach processes	High flow rates of pregnant leach solution to downstream processes create high capex and opex due to scale of equipment required	The success of the nano filtration work to date should allow Phalaborwa to be developed with a low capital and operating cost intensity	Ongoing test work being performed to minimise flow rates for down stream processes
Low sale value of final product	Mineral concentrates and mixed rare earth carbonates need further extensive processing, reducing realisable value of final products	K-Tech technology expected to allow separated rare earth oxides to be produced, with much higher value than a mixed rare earth carbonate	Ongoing test work being undertaken to confirm the ability to produce separated rare earth oxides

PROJECT OVERVIEW



GAKARA PROJECT



Gakara Project

HIGH-GRADE RARE EARTH MINERAL CONCENTRATE PRODUCTION FROM LARGE MINERALISED SYSTEM IN BURUNDI

TRIAL OPERATIONS HAVE DEMONSTRATED AMENABILITY TO SIMPLE MINING AND PROCESSING TO PRODUCE HIGH GRADE MINERAL CONCENTRATE

- 39km² mining permit located just south of Bujumbura, Burundi (East Africa) hosting large scale mineralised system
- Trial mining and processing since 2017 has demonstrated amenability for simple, low-cost gravity separation from ore sourced from across the licence area to produce a high value rare earth concentrate (52-56% TREO) with low levels of radioactive elements weighted towards magnet Rare Earths: NdPr represent ~88% of value¹ (19.5% of mass)
- Exploration target announced October 2020 set out opportunity for 262,000 - 375,000t of high-grade vein hosted mineralisation grading 7.0% - 12.0% TREO plus 252,000 - 342,000t of breccia hosted mineralisation grading 1.0% - 1.5% TREO
- Operation placed on care and maintenance in June 2021 at request of Burundi Government, with the majority of staff placed on suspension and short-term cash requirements in Burundi minimised; Rainbow continues to engage constructively with stakeholders to resolve the issue and allow trial mining to recommence as soon as possible
- Primary concerns of Burundi Government are understood to relate to pricing of mineral concentrate currently sold under a long-term off-take agreement with ThyssenKrupp, which was independently adjudged to represent a fair, arms length price by an independent report commissioned by the World Bank and compiled by SRK Consulting, which was signed off by the Burundi Government in June 2020

1. Based on typical concentrate exported with reference to rare earth prices published by Argus Media on 14 May 2021



PROGRESSING MINING AT GAKARA TO MECHANICAL METHODS

**TRIAL MINING HAS PROGRESSED FROM SMALL-SCALE MANUAL
FOCUSSED OPERATION...**

**...TO BULK MECHANICAL WASTE MINING AND SELECTIVE MECHANICAL
MINING METHOD**

- A second new mining fleet has been operating at site improving efficiency

PRE-2020



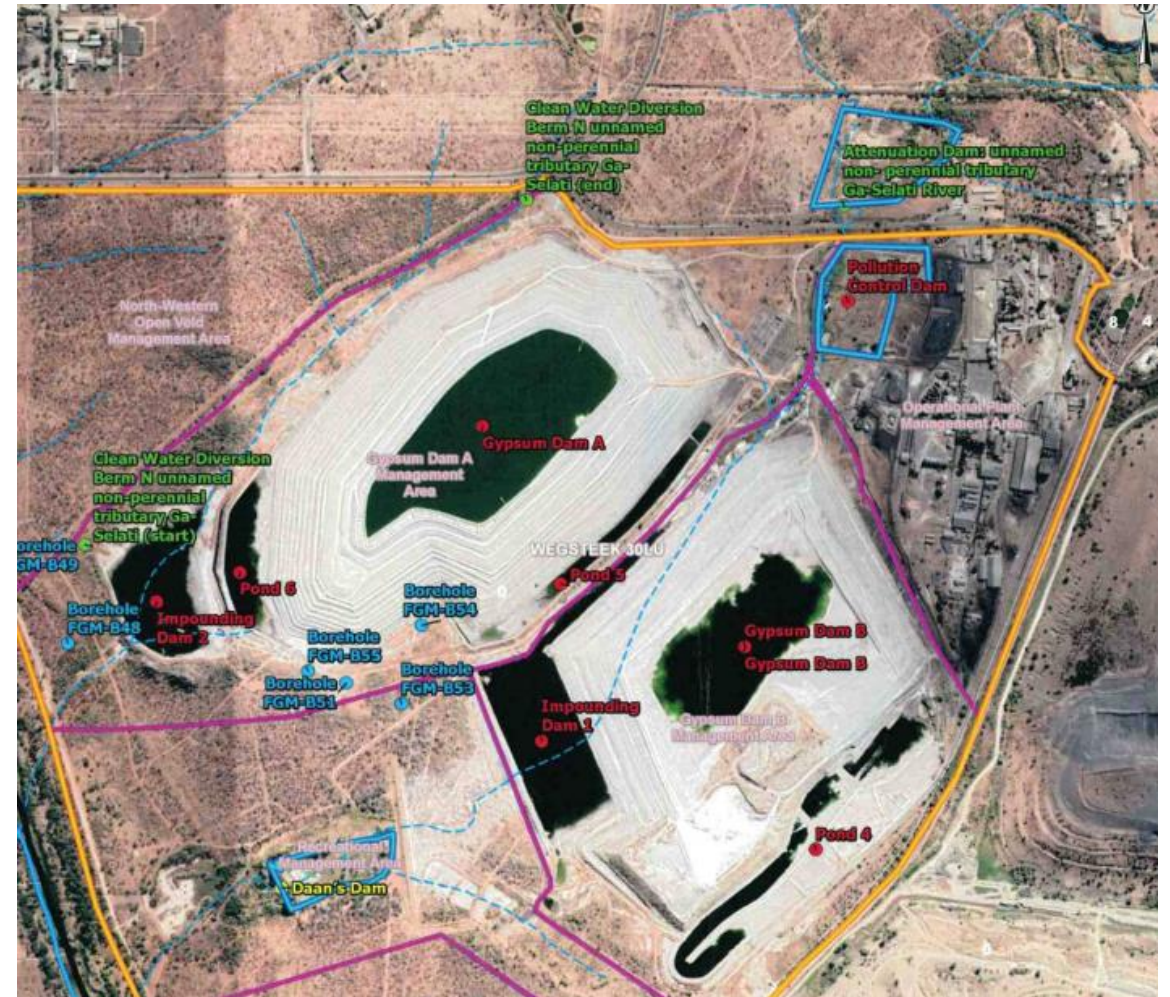
LATEST OPERATIONS





Uniquely positioned to benefit from expected demand growth for rare earths to power the green revolution

- Two potentially world-class, scalable projects in South Africa and Burundi
- Project and country risk diversification
- Strong weightings to high-value NdPr
- Exclusive rights to rare earths separation technology
- Simple mining and processing with low levels of radioactivity for expected low capital intensity development opportunities
- Strong institutional investor support



RAINBOW RARE EARTHS



THANK YOU

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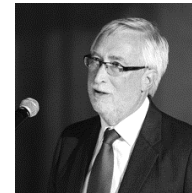


OUR EXECUTIVE MANAGEMENT



GEORGE BENNETT
CEO

- 25 years in finance and management, including as partner in stockbroking/advisory firms in SA
- Former CEO of Shanta Gold Ltd, successfully listed on LSE in 2005
- CEO and Founder of MDM Engineering, listed on LSE in 2008; responsible for building 22 process plants and completing over 80 feasibility studies – sold after 8 years to Foster Wheeler for US\$120 million
- Seed-funded and raised initial capital for OreCorp Ltd as non-executive director, now ASX listed



DAVE DODD
TECHNICAL DIRECTOR

- 45 years of extractive metallurgy experience
- Metallurgical Project Consultant
- BSc (Hons) Chemical Engineering (1974)
- Fellow of Southern Africa Institute of Mining & Metallurgy



PETER GARDNER
CHIEF FINANCIAL OFFICER

- Qualified Chartered Accountant
- 15 years' experience in mining industry leading finance teams across Africa and developing nations
- Former CFO of Amara Mining plc (up to acquisition by Perseus Mining Ltd), Chaarat Gold, Piran Resources and Alexander Mining



CHRISTOPHER ATWOOD
PROJECT MANAGER - GAKARA

- 25 years' experience in mining and extractive industries.
- Track record of driving expansion and minimising costs
- Associated with startup ventures in remote locations.
- Led operations up to 35Mtpa successfully



CHARLES GRAHAM
PROJECT MANAGER - PHALABORWA

- Mechanical Engineer
- 20 years' experience in project management delivering multidisciplinary mining and infrastructure projects in remote and logistically challenging geographical regions
- Successful completion of multiple feasibility studies across Africa
- Proven track record of increasing project value by reducing capital and operating costs during project life cycle from study to execution

OUR BOARD – NON-EXECUTIVE DIRECTORS



ADONIS POUROULIS
NON-EXECUTIVE CHAIRMAN

- Mining engineer: an entrepreneur whose expertise lies in the discovery, exploration and development of natural resources across Africa including diamonds, precious/base metals, coal and oil and gas.
- Founder of Rainbow and Petra Diamonds (LSE:PDL); Founder and Director of Chariot Oil & Gas (AIM:CHAR) and Founder of Pella Resources Limited



J PETER PHAM
NON-EXECUTIVE DIRECTOR

- Scholar and practitioner of International Affairs with more than 20 years of experience in Africa
- Served until January 2021 as first-ever United States Special Envoy for the Sahel Region with the personal rank of Ambassador and previously as US Special Envoy for the Great Lakes Region of Africa
- Distinguished Fellow at the Atlantic Council, a preeminent American foreign policy think tank, where he was Vice President for Research and Regional Initiatives and Director of the Council's Africa Center before his service in government
- Member of the Board of the Smithsonian National Museum of African Art in Washington, DC, as well as Non-Executive Director of Africell Global Holdings



SHAWN MCCORMICK
NON-EXECUTIVE DIRECTOR

- International affairs specialist
- Over 25 years of political and extractive industries sector experience having served in The White House as Director for African Affairs on the National Security Council (Washington)
- Previously Political Affairs Director of BP (London) and VP of TNK-BP (Moscow)



ATUL BALI
NON-EXECUTIVE DIRECTOR

- Corporate CEO and board member with extensive experience in tech, government contracting and regulated industries
- Currently advisor to several high-growth technology companies, Chairman of the Football Pools and non-executive director of Everi Holdings Inc (NYSE:EVRI)
- Previously held divisional CEO or President positions with IGT (NYSE), Aristocrat (ASX), and Real Networks (NASDAQ), as well as a venture capital firm
- Chartered Accountant



ALEXANDER LOWRIE
NON-EXECUTIVE DIRECTOR

- Investment banker with 13 years' experience and previous director roles at Deutsche Bank and RBS
- Co-founder of Telemark Capital LLP
- Significant market experience: IPOs and primary and secondary equity offerings

KEY SHAREHOLDER INFORMATION



BOARD SHAREHOLDINGS

Shareholder	Holding
Adonis Pouroulis*	14.6%
George Bennett*	6.6%
Shawn McCormick*	1.8%
Alexander Lowrie	1.2%
Atul Bali	0.7%
J Peter Pham	0.05%
Total	25.0%

Ticker	Market	Market cap	Share price	Shares in issue	Brokers
RBW.L	LSE	£78.7m	14.17p	524m	SP ANGEL

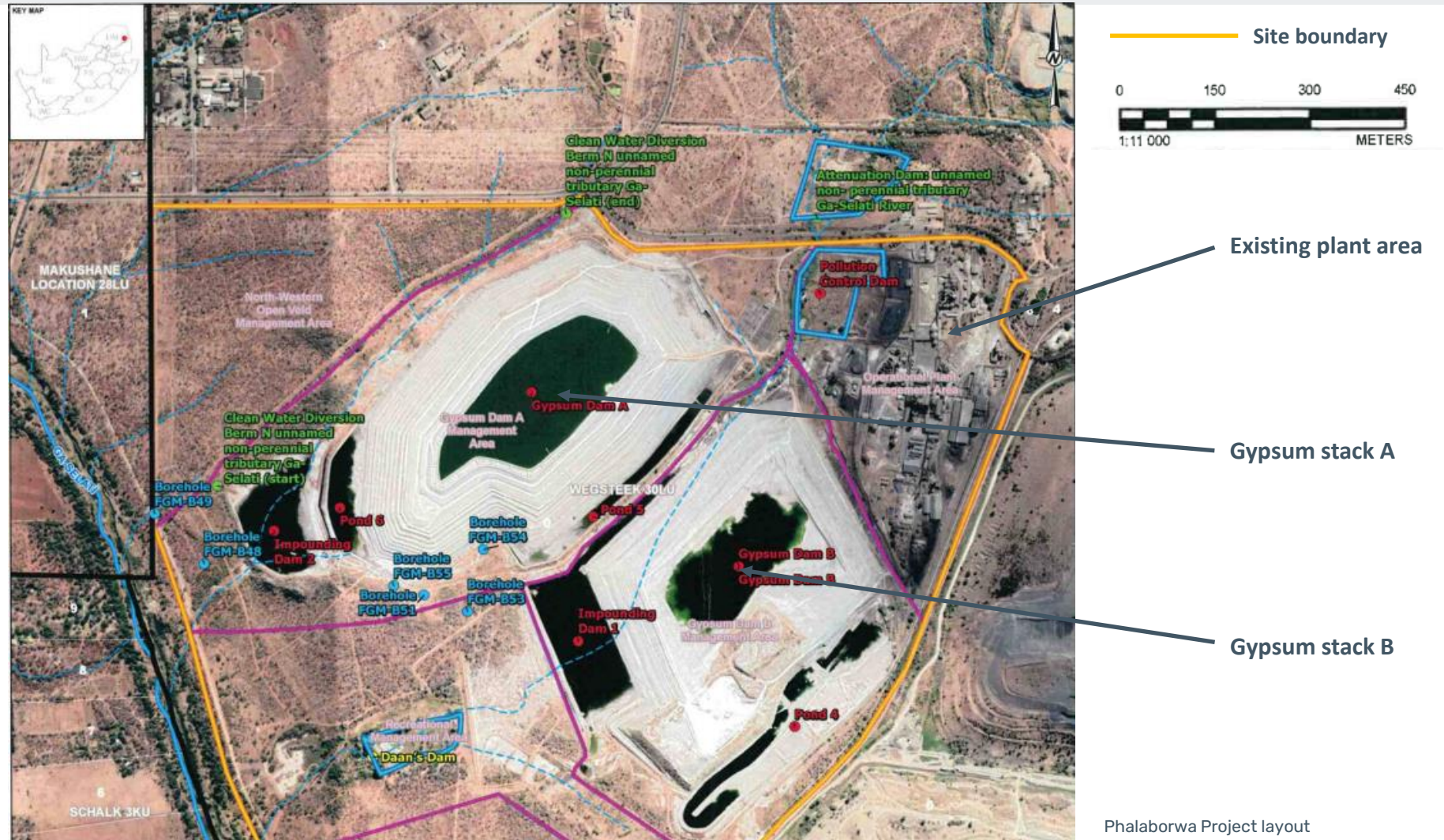
SHARE PRICE (GBP)



PHALABORWA

AN IDEAL LOCATION FOR A NEW OPERATION

- Brownfield site near established mining town
- Agreed location for new deposition of clean treated gypsum in a 'green' stack
- Space for new processing infrastructure within existing project footprint
- Local availability of key reagents and equipment
- Local availability of skilled labour
- Strong rail transport links for import of any specialist reagents and export of final product to market
- Local airport within 5 minutes drive of project site



Phalaborwa Project

PHALABORWA

EXCELLENT LOCAL INFRASTRUCTURE

SASOL'S PILOT PLANT REMAINS ON SITE WITH ASSOCIATED INFRASTRUCTURE OF PHOSPHORIC ACID PLANT, INCLUDING:

- High voltage switchyard (providing access to Eskom grid power)
- Equipped machine shops
- Workshops
- Laboratory buildings
- Administration offices
- Acid storage and ammonia tanks
- Boilers and rail sidings



Stores



High voltage switchyard



Laboratory building



Sasol pilot plant

RAINBOW ADOPTS A SUSTAINABLE APPROACH ENGAGING WITH LOCAL COMMUNITY AT GAKARA TO ENSURE BENEFITS FOR ALL STAKEHOLDERS

ZERO HARM POLICY: Committed to ensuring that staff, contractors and visitors remain healthy and safe from harm:

- ☑ 1 million+ hours achieved without an LTI
- ☑ Covid-19 protocols in place
- ☑ Potable water is made available at all sites; support with local clean drinking initiatives

ENVIRONMENTAL RESPONSIBILITY: Focused on producing metals to power the green revolution in an environmentally responsible manner:

- ☑ Environmental rehabilitation will be undertaken at Gakara on a continual basis once commercial scale production achieved
- ☑ At Gakara the rare earth mineral concentrate is produced from a simple gravity separation process, without the need for hazardous reagents
- ☑ Low levels of radioactive substances in the Gakara mineralisation

COMMUNITY SUPPORT: Ensuring that the local community shares in the benefits of its projects; Gakara has:

- ☑ Provided support to the local church
- ☑ Donated US\$400k to a CSR fund
- ☑ Supported local suppliers and businesses
- ☑ Compensated local community for the land disturbed by exploration and trial mining activities



JORC EXPLORATION TARGET FROM ACROSS THE LICENCE

Gasagwe

Trial mined by Rainbow between 2017–2019 producing 1,200t high grade concentrate. Production data and vein mapping data delivered updated target tonnage: **27kt-39kt @ 7-12% TREO**

Kiyenzi

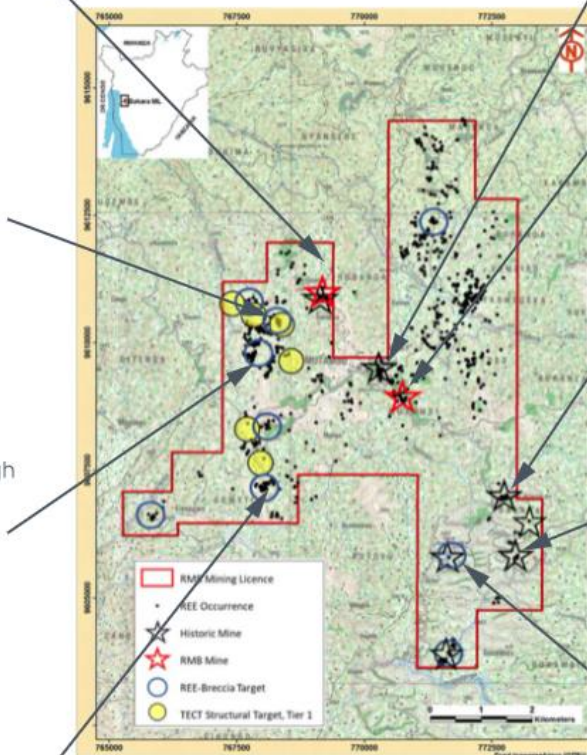
Breccia style mineralization Drilling data re-evaluated alongside trenching, vein mapping and channel sampling delivered updated target tonnage: **252kt-342kt @ 1-1.5% TREO**

Gashirwe West & East

Breccia and vein style mineralization in high priority TECT target corridor. Trenching & mapping of large veins and channel sampling data delivered updated target tonnage: **45kt-64kt @ 7-12% TREO**

Gomyvi Central

Breccia and vein style mineralization in high priority TECT target corridor. Trenching & mapping of large veins and channel sampling data delivered updated target tonnage: **15kt-22kt @ 7-12% TREO**



Gasenyi

Currently being trial mined by Rainbow. Production data and vein mapping data delivered updated target tonnage: **27kt-39kt @ 7-12% TREO**

Murambi South

Historic Belgian mine which produced c.500t of high-grade concentrate. Mapped veins, trenching of large veins and historical records delivered updated target tonnage: **47kt-67kt @ 7-12% TREO**

Rusutama

Historic Belgian mine which produced c. 500t of high-grade concentrate. Mapped veins and historical records delivered updated target tonnage: **23kt-33kt @ 7-12% TREO**

Bigugo

Historic Belgian mine with three large veins mined briefly before Belgian operations ceased entirely. Mapped veins and historical records delivered updated target tonnage: **8kt-11kt @ 7-12% TREO**

Gakara

Largest historic Belgian mine which produced c.3,500t of high-grade concentrate between 1947 – 1978. Mapped veins and historical delivered updated target tonnage: **61kt-87kt @ 7-12% TREO**