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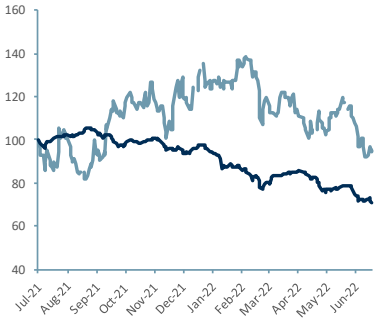
CIC

52 Wk. Lo/Hi

10.50 – 18.50



RBW (lighter line) AIM market vs price relative

Wednesday, 13 July 2022

Close Price	12.25
52 wk Range Low	10.50
52 wk Range High	18.50
MCAP (m)	£64.24
EV (m)	£67.39
Index: Public	XLON
Financial YE	30-Jun
Reporting Currency	USD
Listing Currency	GBP
Business Activity	
Mining / Rare Earths	

Key Metrics	
Gross debt (m)	-£0.70
Cash (m)	-£3.85
Net Debt (Cash) (m)	£3.15
Net Operating Cash	£5.89
Revenue (m)	£0.11
Net Income (loss) (m)	£0.00
Key Ratios	
(Net Cash) / Shareholder Equity %	4.90%

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Rainbow Rare Earths Ltd.

Core Investment Case

Rainbow Rare Earths Ltd (LSE: RBW; OTCPK: RBWRF) is a rare earths (REE) explorer with projects in South Africa and Burundi. The flagship project, Phalaborwa, in South Africa has an inferred resource of 38.3Mt at 0.43% TREO (total rare earths oxides). Phalaborwa is largely permitted and positioned in an established mining town with existing power, rail access and availability of skilled labour. Rainbow owns 90% of the Gakara asset in Burundi, which has produced high-grade TREO concentrate of 52-56%, weighted towards NdPr (Neodymium and Praseodymium), which account for 19.5% of contained TREO and 85% of the value of the concentrate. There is additional project de-risking via separated RE oxides production, a possible extraction patent and licensing of extraction technology.

- REE overall recovery >65% (vs. usual industry rate >40% to <55%);
- Phalaborwa: 5-10x grade higher than typical ionic clay REE deposits;
- Significant NdPr to leverage global transition to green technologies;
- Cash & CE £5.24m as of 1H22 (31 Dec 2021).

Note FX rate USD vs. GBP 0.8224 (Source. XE.com)

GBP (m)	MCAP	EV	RoA %	RoE %	NCO	Levered FCF
2022	64.24	59.82	-14.21%	-28.41%	-2.25	-3.70

Multiples	EV/ Revs	P/ S	Fwd PE	BV/ Share	P/ B	Current
2022	503.20	601.78	13.30	0.03	4.08	6.45

Investment Case

Rainbow Rare Earths: A low-cost rare earths explorer than could sell direct to western markets (avoiding Chinese beneficiation) is positioned to power the green revolution through significant NdPr production potential, exceptional overall recovery rates >65%, separated oxides delivery, leading to receipt of ~85% of published oxide prices, potential extraction technique licensing, possible patentable extraction technology and rising demand driven by growth in green technologies often requiring REEs.

World-class scalable projects – Phalaborwa in South Africa and Gakara in Burundi. The flagship project Phalaborwa (inferred resource 38.3Mt at 0.43% TREO, of which 29.1% comprises high value NdPr). Its PEA commenced in 2021 and its technical feasibility study in 2022. **Phalaborwa is 5-10x higher grade than the typical ionic clay** style RE deposit. Unoptimized leaching shows 65-70% recovery. RBW's Gakara large mining permit covers 39 km^2. Since 2017, trial operations suggest high value RE concentrate (52-56% TREO) heavily NdPr weighted (19.5% of contained TREO and 85% of concentrate value).

Shift towards green technology supports demand prospects: Demand growth drivers - accelerated electric vehicle sales (increases demand for NdPr oxide and NdFeB magnets); green power generation (direct drive wind turbines); strategic defence use; other industrial uses. RBW's Phalaborwa project has NdPr content of 29.1%, enhanced by Dysprosium (Dy) & Terbium (Tb).

Viable supply alternative to China: China currently accounts for 85% of the refined RE global supply. (InvestmentMonitor, 2021). Phalaborwa represents a key diversification opportunity for western users and its low capital and operating expenditure will accelerate production. In addition, its low levels of radioactive elements support RBW's sustainable agenda to deliver an environmentally responsible high-grade rare earth oxide.

Proven management team: CEO George Bennett founded MDM Engineering (listed on LSE and sold to Amec Foster Wheeler for US$ 120m in 2014). At MDM, he was responsible for building 22 process plants and 80 feasibility studies. As an NED he successfully raised seed capital for OreCorp Ltd (ASX:ORR) in 2021.

Catalysts

Completion of PEA and technical feasibility study for the Phalaborwa; Higher NdPr prices; Success of pilot study to extract REEs from phosphoric acid production; Green tech magnet demand growth.

Operational Strategy

Rainbow's strategy is to become a leader and significant low-cost global producer of rare earth metals powering the green revolution. REEs are a highly sought-after resource given their use in green technology and low carbon applications. Rainbow will leverage strong demand for NdPr, Dy and Tb, by advancing its two key assets – Phalaborwa and Gakara, most likely to supply western markets rather than the Chinese market. We assess that RBW should turn out to be a relatively low-cost producer compared to its peers.

Exhibit 1: **Prices and end markets achievable vs. typical peers**

Peers	Product	Approx. % of published oxide price achievable	End-market possible due to processing supply chain constraints
Rainbow Rare Earths	RE separated oxides	85%	West/China
Peers	RE mixed carbonate/oxides	55%	China
Peers	RE concentrate	30%	China

Source: Company reports, Management discussion

RBW's operational strategy (to supply western markets) is achievable because it has an asset and a processing technology (possibly patentable) jointly developed with K-tech that beneficiates rare earths to separated oxides, a process normally conducted in China. Because China dominates the purification process globally RBW's peers can, generally, only sell into the Chinese market.

It is possible that for a period of time RBW may be insulated against REE price volatility. RBW's competitive advantage allows it to deliver separated oxides to the West rather than mixed carbonate/oxides and concentrates that generally only have a Chinese end market. RBW may enjoy a neo-monopolistic supply position for a period of time.

According to management, RBW is unlike a typical extractives/basic resources project, because it is not mining, crushing or milling, there is no flotation process, no necessity for Uranium and Thorium removal, no re-agents and no cracking step required to take the mineral concentrate to a separated oxides state. RBW already has a resource of cracked chemical residue (Phosphogypsum stacks) to exploit.

Because RBW already has a cracked chemical resource, its opex and capex profiles are also de-risked compared to many other miners and particularly compared to other REE explorers and producers.

RBW has already secured an off-take agreement with the West's Thyssenkrupp for Gakara (Burundi). RBW is aiming to establish an off-take agreement for Phalaborwa (South Africa), there are various opportunities available, according to management.

Phalaborwa: The Phalaborwa project has an inferred mineral resource estimate of 38.3Mt at 0.43% TREO. High value NdPr oxide represents 29.1% of the total contained RE oxides, with Dy and Tb oxide enhancing the overall value of the RE basket. The ongoing test work at the Phalaborwa project has yielded positive results and has indicated strong recoveries and optimisation opportunities with potential for capex and opex cost savings. RBW's PEA study is in progress.

Leaching results are often erratic with low recovery rates for REEs – Phalabrowa shows unoptimized recovery of 65-70% and RBW has examined some low-level heating of leaching solution to cut time and raise recovery rates.

High acid usage is also often an REE challenge – RBW has also successfully explored pregnant leach recirculation to reduce acid use in combination with nano-filtration. Typically, mixed rare earth carbonates have a relatively low resale value because further processing is required by the buyer (for peers this buyer is China).

RBW's technical feasibility study is also underway. On 29 June RBW confirmed development of a RE extraction flowsheet in partnership with K-Technologies Inc., USA (K-Tech). The process will extract REEs from phosphogypsum stacks (a by-product of fertilizer manufacture from phosphate rock) at Phalaborwa to deliver a Green Rare Earth Project.

Gakara: This project is a high-grade deposit. Since 2017, trial mining and processing have demonstrated amenability of the project to simple open pit mining and low-cost gravity separation. As of June 2021, the Government of Burundi has placed the project under care and maintenance. The primary concern is the price of the rare earth mineral concentrate sold by Rainbow to Thyssenkrupp, under **a long-term off-take agreement**. RBW continues to engage with the Government to resolve the issue and allow trial mining to recommence as soon as possible.

Potential licensing of RBW/K-Tech process – RBW signed an MoU, June 2022, with a major South African chemical company to complete a test to extract REE from a live phosphoric acid stream. Stream samples indicated a grade of ~0.81% TREO, suggesting grades 2x greater than those available from Phalaborwa, according to management.

Management Team

- **CEO, George Bennet.**

George has ~25 years of experience in leading mining and energy companies including Shanta Gold (LSE: SHG), and Karo Power Ltd (private). George founded MDM Engineering Ltd in 2006, which he successfully IPO'd on the LSE in 2008 (after a $10m raise) and later sold to Amec Foster Wheeler for $120m. He also supported OreCorp Ltd. (ASX:ORR) by raising seed capital in 2021.

- **CFO, Peter Gardner.**

Peter is the CFO of Rainbow. Previously, he has held senior executive positions in various mining companies including Finance Director of Amara Mining plc, Chief Finance Officer for Piran Resources, Chaarat Gold Holdings and Alexander Mining plc. He is a qualified Chartered Accountant with experience in financial management and corporate finance in the natural resources sector.

- **Technical Director, Dave Dodd.**

Dave is Technical Director of Rainbow Rare Earths and has built over 100 process plants and mines across Africa and in Mexico and completed over 100 feasibility studies including two bankable feasibility studies (BFS) in Rare Earth Oxides (Namibian Rare Earths and Peak Rare Earths). Dave was a founder of the original MDM Ferroman, which was the predecessor to MDM Engineering founded by George Bennet, later sold to Amec for US$ 120m. He Has worked with many mineral deposit types including zinc, copper, cobalt and phosphates.

Risks

Funding risk – In its FYE21 filing, Rainbow states that additional funding is required for the continued development of its projects and capital requirements, this is typically expected of smaller E&P companies. Funding is needed for on-site test work at Phalaborwa, amongst other requirements. As a result, RBW may seek to raise additional equity financing. If the company is unable to raise capital for its development activities, it will adversely impact the timelines for its projects. Too much new equity issuance at unfavourable valuations can lead to unacceptable levels of dilution for investors.

Commodity price risk – Rainbow's operations are dependent on the market price of NdPr. Commodity prices are extremely volatile and a potential fall in prices could lead to its projects becoming economically unviable. However, RBW may a have a neo-monopolistic position for a period of time if it becomes the only significant REE direct supplier to western markets.

Exploration risk - The current resource is 100% inferred with no defined mineral resource estimate. It is uncertain that any further exploration will result in the determination of any mineral resource. While the recent drilling results suggest strong potential for resources, there is no guarantee.

Political risk – Rainbow Rare Earths is exposed to political risk, particularly in Burundi. On 12 April 2021, the Government of Burundi suspended the export of concentrate produced at Gakara. On 29 June 2021, the Government issued a mandated suspension of all trial mining and exploration activity and the project remains on care and maintenance to date.

Personnel risk - Small and mid-sized companies are more dependent on their C-suite/executive management teams than large and mega-cap global companies. The loss of key personnel can have a disproportionate impact on valuation and investor perception compared to similar events at larger more mature (often ex-growth) companies.

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