Rainbow Rare Earths (RBW) — Plain English Breakdown

Everything you need to know, explained simply. June 2026.

What Does This Company Actually Do?

Rainbow Rare Earths (stock ticker: RBW, listed on the London Stock Exchange) is a mining and processing company that is still in the **building phase** — meaning it hasn't sold a single product yet. Its goal is to extract a group of metals called **rare earth elements** from industrial waste piles, and sell those metals to manufacturers who need them to make electric motors, EV batteries, wind turbines, fighter jets, and robots.

Think of rare earth elements like the vitamins your body can't make on its own — modern technology can't function without them, but they're hard to get. The world gets roughly 70–90% of its supply from China, which means Western countries (especially the US) are dangerously dependent on a geopolitical rival for materials their entire defence and green energy industries rely on. Rainbow's job is to change that.[^1]

What Are Rare Earth Elements? Why Do They Matter?

Rare earth elements (often called REEs or REO — rare earth oxides — when in processed powder form) are a group of 17 metals. Despite their name, they're not particularly rare in the ground — they're just hard to find in concentrations worth mining, and very expensive to process.

The ones Rainbow focuses on are:

- **Neodymium (Nd) and Praseodymium (Pr)** — always written together as "NdPr" — are the key ingredients in the world's strongest permanent magnets. These magnets are used in electric vehicle motors, wind turbine generators, and the servo motors inside robots. Without NdPr, you cannot build a scalable EV industry or a wind farm.[^1]
- **Dysprosium (Dy) and Terbium (Tb)** — these are called "heavy rare earths" (HREE). They are added to NdPr magnets to make them perform at high temperatures without losing their magnetic power. Without Dy and Tb, EV motors and military equipment overheat and degrade. These are even more scarce and strategically sensitive than NdPr.[^1]
- **Yttrium (Y), Samarium (Sm), Europium (Eu), Gadolinium (Gd)** — other valuable rare earth metals Rainbow will produce as a bonus alongside the main products.[^1]

Global demand for these materials is growing fast — estimated to nearly double from around 211,000 tonnes in 2024 to around 368,000 tonnes by 2040, mostly driven by EVs, wind energy, and robotics.[^1]

Where Does Rainbow Get Its Raw Material?

Here's what makes Rainbow genuinely different from almost every other rare earth company in the world: **they don't mine rock.**

Most rare earth companies dig up hard rock ore, crush it, run it through multiple chemical processes, and eventually produce the rare earth elements — a very expensive, time-consuming, and environmentally messy process.

Rainbow uses **phosphogypsum** — a white powdery waste material that is literally sitting in giant stockpiles above ground, created decades ago as a by-product of making fertiliser from phosphate rock. These piles already contain rare earth elements, the rock has already been chemically broken down in the industrial process that created the waste, and Rainbow just has to leach the metals out with acid and then separate them.[^1]

It's like finding gold in already-crushed gravel rather than having to go find, blast, and crush the mountain yourself. This is why Rainbow's production costs are among the lowest of any rare earth project in the world outside China.[^1]

The Main Project: Phalaborwa, South Africa

Rainbow's most advanced project is in **Phalaborwa**, a mining town in Limpopo Province, South Africa — about 90km from the Kruger National Park. A company called Foskor spent decades mining phosphate rock there to make fertiliser, and in the process created enormous waste piles of phosphogypsum. Those piles contain rare earth elements.[^1]

Rainbow has the rights to process those piles and owns **85% of the project** (with an option to buy the remaining 15%).[^1]

How big is the Phalaborwa deposit?
The officially certified resource (audited by independent geologists to JORC international standards) is **35 million tonnes of phosphogypsum at 0.44% rare earth content**. To put that in perspective — the plan is to process 2.2 million tonnes per year, giving a project life of **16 years**.[^1]

What will Phalaborwa produce each year at full output?

- About **1,850 tonnes of NdPr oxide** — the key magnet material for EVs and wind turbines[^1]
- About **80 tonnes of Dysprosium and Terbium** — the heat-resistant additive used in military and EV applications[^1]
- About **140 tonnes of Yttrium** — used in electronics and LEDs[^1]

The Money: What Are the Financial Projections?

In December 2024, Rainbow published an independent economic study of the Phalaborwa project. Here are the headline numbers in plain terms:[^1]

What the number means	The number
How much the project is worth today (if you discount all future profits back to now at 10% per year)	US$611 million
How much it costs to build	US$326 million
How much money it will make per year on average	~US$250 million
How much profit (before interest, tax, and depreciation) per year	~US$181 million
Profit margin	~70%
How long to pay back the construction cost	Less than 2 years after first production
The return on investment	38% per year

^1

A 70% profit margin is extraordinary by any standard. For comparison, Apple — one of the world's most profitable companies — runs a profit margin of about 25-30%. The reason Phalaborwa can achieve this is the low-cost feedstock (waste material that's already been processed) and the high prices that rare earth magnets command, especially in Western markets where China cannot sell due to geopolitical tensions.[^1]

Important caveat: These numbers were calculated at prices that were already out of date by early 2026. NdPr (the main product) was priced at US$110/kg in the study but was trading above US$150/kg in early 2026 after China imposed export restrictions. The actual project could be significantly *more* profitable than these already-strong numbers suggest.[^1]

Also note: The economics above don't include any revenue from yttrium, samarium, europium, gadolinium, or the clean gypsum by-product that will also come out of the process. Those are all bonus revenue streams not yet counted.[^1]

When Will They Start Making Money?

Rainbow is not yet making any money. Here is the road to production in plain terms:[^1]

Where they are right now (June 2026):
Rainbow has proven the chemistry works. They have a large pilot plant at the Mintek laboratory in Johannesburg producing about 1 kg per day of the rare earth product — above the commercial quality requirement. The next step is completing a "Definitive Feasibility Study" (DFS), which is basically the full engineering blueprint and final cost estimate that banks and investors need to see before they'll lend money to build the actual plant.[^1]

The step-by-step path:

Step	Plain English	When
DFS	Full engineering blueprint + final cost confirmation	2026
Permits	South African government approvals to build the plant	2026–2027
Project financing	Securing the US$326M to actually build it	2026–2027
Construction starts	Breaking ground on the plant	End of 2027
First product	First tonnes of rare earth oxide sold	2028
Full production	Running at full capacity	2029–2030

^1

The honest reality: The engineering blueprint (DFS) was supposed to be done by end of 2025. It slipped to 2026. This is common in mining development but it means the first production date of 2028 is tight, and a delay to 2029 is a real possibility. Rainbow management is deliberately taking more time on the technical work upfront in order to be confident the plant will work perfectly when built — which is the right call, but investors need to be aware the timeline is not locked in.[^1]

The Second Project: Uberaba, Brazil

While Phalaborwa is the main event, Rainbow also has a second phosphogypsum project in Brazil — called **Uberaba**, in the state of Minas Gerais. This one is in partnership with Mosaic Company, the world's largest phosphate and potash fertiliser producer. Mosaic created the phosphogypsum stacks and Rainbow will process them as a 51%/49% joint venture.[^1]

The March 2026 economic assessment for Uberaba actually shows *better* numbers than Phalaborwa:[^1]

Metric	Uberaba (Brazil)
Project worth today	US$916 million
Construction cost	US$279 million (cheaper than Phalaborwa)
Average revenue per year	US$319 million
Average profit per year	US$217 million
Project life	30+ years
Electricity cost	US$0.036/kWh (very cheap)

^1

Uberaba is earlier-stage and won't go into production until around 2030. But the fact that Rainbow has two world-class phosphogypsum projects — not just one — is a significant differentiator versus other rare earth developers.[^1]

The Gakara Project (Burundi) — The Forgotten Asset

Rainbow also has a third project in Burundi (East Africa) called **Gakara**. This one is a traditional hard-rock rare earth mine and was actually producing small quantities before the Burundian government suspended operations in June 2021 for political reasons. It has been mothballed ever since, with Rainbow spending a small amount to keep it maintained while trying to negotiate a resolution with the government. The asset has been written off the books (its value set to zero). It's a background issue — not adding value right now, but potentially recoverable if the political situation improves.[^1]

The US Government Connection — Why This Is a Big Deal

One of the most important things about Rainbow Rare Earths is that the **US Government is financially backing the project**.

Here's the backstory: China controls around 70% of rare earth mining globally and more than 90% of all the processing (turning raw material into purified metals). In April 2025, China banned the export of Dysprosium, Terbium, and other heavy rare earth metals to Western countries — and Western manufacturers who depend on these materials for EV motors and military equipment immediately faced factory shutdowns.[^1]

The US Government has been scrambling to secure supply chains outside China, and Phalaborwa is on their shortlist. Specifically:

- The **US International Development Finance Corporation (DFC)** — think of it as the US Government's overseas investment arm — has committed **US$50 million** in equity (part-ownership) for the Phalaborwa project. This commitment was announced at the UN Climate Conference (COP28). It will be invested through a company called **TechMet**, which is Rainbow's second-largest institutional shareholder.[^1]
- In July 2025, the US Government signed a deal with MP Materials (a US rare earth miner) guaranteeing to pay a minimum of **US$110 per kg for NdPr** — establishing an effective government-backed floor price for rare earths in the US market. This sets a precedent that Phalaborwa's output would naturally benefit from.[^1]
- The **US Government's "Project Vault"** is a strategic stockpiling and procurement programme for critical minerals. The company **Traxys Group** — one of the world's largest rare earth traders and a key Project Vault partner — just invested in Rainbow's April 2026 fundraise. The fact that Traxys put money directly into Rainbow is a very strong signal that they plan to be a buyer of Phalaborwa's production when it comes online.[^1]
- A January 2025 **Executive Order** from President Trump explicitly directed the US to become the world's leading producer and processor of rare earth minerals.[^1]

Put together, this means Rainbow has the informal backing of the US Government as a strategic supplier — which significantly reduces the risk that Phalaborwa's product won't find buyers and strengthens the case for project financing.

Who Owns Rainbow Rare Earths?

Here are the significant shareholders (as of the most recent filings):[^1]

Shareholder	Who They Are	% Ownership
Adonis Pouroulis	Non-Executive Chairman. South African mining entrepreneur. His family helped build Petra Diamonds.	13.9%
TechMet Limited	Private company backed by the US Government's DFC. Strategic investor.	11.7%
George Bennett	CEO of Rainbow. Previously founded MDM Engineering, which built multiple African mineral processing plants.	6.3%
Caden Holdings	Private investment vehicle	5.7%
Free float (everyone else)	Institutional and retail investors via the stock market	~62%

^1

The management team's high personal ownership (the CEO and Chairman together own about 20%) is a strong positive signal — it means they are genuinely incentivised to succeed because their own money is on the line.[^1]

Traxys Group also became a shareholder in April 2026 — they led the latest fundraise alongside two US family offices. Since Traxys is one of the biggest rare earth trading companies in the Western world, their investment is a vote of confidence that they believe this project will produce material they can sell.[^1]

How Rainbow Raises Money — And the Dilution Problem

Because Rainbow has no revenue yet, it funds itself by either borrowing money or selling new shares. Every time it sells new shares, existing shareholders own a smaller percentage of the company — this is called **dilution**. It's normal for development-stage mining companies, but it's something investors need to watch carefully.

The history of share count growth:

Date	Number of Shares	What Happened
End of 2023	~560 million	After previous raises
End of 2024	~644 million	New equity raise + royalty deal with Ecora
April 2026	~699 million	Latest £11.1 million raise at 20p per share

^1

That's about a **25% increase in share count in 2.5 years**, which means an existing investor's slice of the company got about 20% smaller over that period even if the share price didn't move.

The royalty deal explained: In July 2024, Rainbow sold a "royalty" to a company called **Ecora Resources** for US$8.5 million cash. A royalty means Ecora will receive 1.10% of all future gross

revenue from Phalaborwa, forever, as payment for that upfront loan. This was a clever way to raise money without issuing as many shares — but it does mean 1.10% of revenue is permanently owed to Ecora once production starts.[^1]

The big dilution risk ahead: The biggest unknown for existing shareholders is how the US$326 million construction cost will be financed. Rainbow currently has enough cash to run operations until mid-2027, but building the actual plant requires an entirely different level of financing. The plan involves:[^1]

- US$50 million from the DFC (through TechMet) — committed in principle
- Debt (bank loans) — probably 60–70% of the cost
- Additional equity — meaning more shares sold, more dilution

Even in the best case, this means another large capital raise before construction starts. Existing shareholders should expect the share count to grow to 900 million to 1+ billion before the plant is built.

Who Will Buy Rainbow's Products?

Rainbow hasn't signed final binding sales contracts yet, but has several advanced discussions underway. The likely buyers fall into a few categories:[^1]

For the NdPr oxide (main product — the EV/wind turbine magnet material):

- **Less Common Metals (LCM)** — a UK company that is one of the world's leading manufacturers of NdPr alloy for permanent magnets. Rainbow already has an agreement with LCM as a buyer of its separated rare earth products.[^1]
- **Western magnet manufacturers** — companies making permanent magnets for EV motors, wind turbines, and industrial machinery who need non-Chinese supply
- **US Government supply chain programmes** — Project Vault and similar US procurement initiatives

For the SEG+ product (the heavy rare earths Dy, Tb, Y, Sm, Eu, Gd):
This is actually the most important product from a strategic standpoint. After China banned exports of Dy and Tb in 2025, Western manufacturers who need them for military equipment, EV motors, and advanced electronics are desperately looking for alternative suppliers. Rainbow is one of the **only** projects in the world outside China that produces meaningful quantities of both Dy and Tb. This gives them significant pricing power and near-certain buyer interest from:[^1]

- Western defence contractors (F-35 manufacturers, missile guidance systems, submarine motors)
- European EV and industrial motor manufacturers
- US Government strategic stockpile purchases

How Does Rainbow Compare to Its Competitors?

Company	Country	Producing yet?	Makes NdPr?	Makes Dy/Tb (heavy REE)?	US Government backing?
MP Materials	USA	Yes (but only mining, not processing)	Yes	No	Yes — US$110/kg floor price deal
Lynas	Australia	Yes	Yes	No (small amounts)	Partial
Rainbow Rare Earths	South Africa/Brazil	No — targeting 2028	Yes	**Yes — unique**	**Yes — US$50M DFC commitment**
Pensana	Angola	No	Yes	No	No
Vital Metals	Canada	Small early production	Yes	No	No

^1

Rainbow's competitive advantage is its combination of: (1) lowest-cost production model; (2) being one of the only Western projects producing **both** light and heavy rare earths; and (3) having formal US Government financial backing. No other development-stage project has all three.

The Main Risks — What Could Go Wrong

1. Timeline slippage
The engineering blueprint (DFS) was supposed to be done in 2025. It's now targeting 2026. If it slips again, construction could be pushed from end-2027 to 2028, and first production from 2028 to 2029. This has already happened once — investors should build in extra time when thinking about when money will start flowing.[^1]

2. Financing the construction
US$326 million is a large sum for a company currently worth roughly US$175–200 million on the stock market. Getting banks to lend, the DFC to formally draw down, and possibly bringing in an additional strategic partner is a complex process. If rare earth prices fall or the macro environment turns hostile, securing this financing gets harder.[^1]

3. The separation process isn't fully proven at full scale yet
The chemistry and the pilot plant work well. But the final "separation" step — turning the mixed rare earth material into the ultra-pure individual products that buyers like LCM need — hasn't been fully demonstrated at commercial scale. The company is using a process called solvent extraction (SX), which is a well-known industrial technique, but the specific configuration for Phalaborwa's material needs to be validated. This is the biggest remaining technical risk.[^1]

4. Rare earth prices can be volatile
The whole project economics assumes certain prices for NdPr, Dy, and Tb. Rare earth prices historically swing dramatically — they crashed by over 80% between 2011 and 2016. If China reverses its export controls or new supply comes online, prices could fall and squeeze Rainbow's margins.[^1]

5. South Africa — load-shedding and power costs
South Africa has had severe electricity shortages from the state power company (Eskom), with rolling blackouts for years. A processing plant needs reliable power. Rainbow is investigating solar/renewable options but this is an ongoing operational risk.[^1]

6. More share dilution is coming
As explained above, financing the construction will require issuing more shares. Early investors will see their ownership percentage shrink further before the project generates any income.[^1]

The Really Important Context: Why the Rare Earth World Changed in 2025

In April 2025, China imposed **export controls** on Dysprosium, Terbium, and several other key rare earth elements. This was China's version of an economic weapon — essentially saying "if you want to put tariffs on our goods, we'll cut off the metals your defence and EV industries cannot function without."

The effect was immediate. European and American factories making EV motors, wind turbines, and military hardware suddenly couldn't get the materials they needed. Prices for ex-China heavy rare earths went up sharply. Western governments went into emergency mode.[^1]

This is the single most important event in Rainbow's story, because it turned their project from "a useful future supply source" into "an urgent strategic priority." It's also why Traxys invested in April 2026 — they are directly plugged into US Government procurement and know exactly what the demand picture looks like.[^1]

The Robotics Wild Card

Something most people aren't talking about yet: **robotics**.

Humanoid robots and industrial automation systems use electric motors — and those motors require rare earth permanent magnets, just like EV motors do. The global robotics market is growing from about US$53 billion in 2024 and is forecast to grow at 16%+ per year, potentially creating demand for up to 150,000 tonnes of rare earth permanent magnets per year by 2040 — which could actually exceed electric vehicles as the single biggest buyer of rare earth magnets.[^1]

This demand wasn't in anyone's models five years ago. It means the supply shortage for NdPr, Dy, and Tb could be even more severe than current forecasts suggest, which would push prices higher and make projects like Phalaborwa more valuable than their current economic studies show.

Open Questions Every Investor Should Ask

The research surfaced several important things that Rainbow hasn't fully disclosed publicly, and that matter to understanding the investment:

1. Is the US$50M from the US Government actually locked in, or conditional?
The DFC committed US$50 million in 2023 at COP28. But it hasn't been drawn yet. Is this a binding legal commitment that will definitely happen when construction starts, or is it still conditional on the DFS being completed and the project meeting certain criteria? This distinction is critical for understanding how solid the project financing really is.

2. What are the actual terms of the sales agreement with LCM?
Rainbow has an agreement for LCM to buy their products. But we don't know the price formula, the volume commitment, or whether LCM is legally obligated to buy (a "take or pay" contract) or simply has the option to buy. Banks lending money for construction typically require formal, binding sales contracts — without one, the financing process gets harder.

3. Could Rainbow build a simpler, cheaper version first?
There's a strategic option management has hinted at: instead of building the full plant all at once, start by selling a "semi-processed" mixed rare earth product (which needs less equipment to produce), generate early cash flow, and then add the full separation plant later. This would cut the initial building cost from US$326 million to perhaps US$200 million, reduce the financing risk, and get money flowing sooner. Has this been formally evaluated? It could be a smarter path to production.

4. Who owns the 15% of Phalaborwa that Rainbow doesn't control?
Rainbow has the option to buy it, but we don't know who owns it, what the option terms are, or whether Rainbow has exercised it yet. This matters for governance and for how profits are eventually split.

5. What's the plan for Burundi?
The Gakara mine in Burundi is sitting idle, costing money to maintain, and represents an unresolved political negotiation. What's the endgame — sell it, restart it, or write it off entirely?

The Bottom Line

Rainbow Rare Earths is a high-risk, high-reward development company that is building what could become one of the most profitable rare earth operations in the world outside China. The Phalaborwa project has genuinely exceptional economics — 70% margins, a fast payback, and significant US Government support. The Brazil project (Uberaba) is arguably even better on paper.

The company is not yet making any money, will need to raise US$300+ million to build its plant, and has a history of timeline slippage. Investors who buy today are betting that: (a) the engineering will be completed successfully; (b) the financing will come together; (c) rare earth prices stay elevated; and (d) first production happens around 2028-2029.

If it all works, the US$611 million project value (and counting) sits inside a company currently worth roughly US$175-200 million on the stock market — meaning there is substantial upside if execution delivers. But this is a development-stage junior miner, and the risks are real and documented above.[^1]

Note: Rainbow Rare Earths currently has no revenue. All financial projections are from company-prepared economic studies — they are informed estimates, not guaranteed outcomes. This report is for research and educational purposes only.

References

1. Rare earth oxide production globally excluding China 2015-2025 - Rare earth oxide production globally excluding China 2015-2025 Total rare earth oxide production wor...