Iluka Resources looks to join exclusive club of rare earths producers

Iluka Resources Limited, (ASX: ILU) an Australian mineral sands company, is poised to add rare earth elements to its portfolio of products. The company's main products are zircon, titanium, plus iron and carbon materials from its processing plants in Australia. It also has recently announced the de-merger of its Sierra Leone company, Sierra Rutile Holdings Limited, to end up with two ASX listed companies.

The plan announced by Iluka is to start concentrating monazite and xenotime in the second half of this year from its mineral sands operation in Western Australia. Cracking and leaching will begin next year followed by separation to produce rare earth oxides in 2024 at Eneabba, Western Australia, which is a 3 hour's drive north of Perth. According to public company information, the planned output is 17,500 tons per year of Total Rare Earth Oxides (TREO). They note the plant will have a full capacity of 23,000 TPY of TREO with all circuits fully utilized. It is reasonable to assume that they are looking for additional monazite to fill their plant as the capacity is more than they can produce themselves.

Based on the feed rate of 17,500 TPY TREO Iluka expects to produce 4,000 TPY of Nd/Pr plus 500 TPY of Dy/Tb. Typically, Dy:Tb ratio varies from 2:1 to 5:1. At today's pricing of $135/kg USD for Nd/Pr oxide, Dy oxide at $362/kg USD, and Tb4O7 at $2.056/kg USD, Iluka's annual revenue could be in the range of US$1 billion.

The projected capital costs are AU$170-200 million for the cracking and leaching, and AU$320-390 million for the separation and finishing. Additional costs include plant and

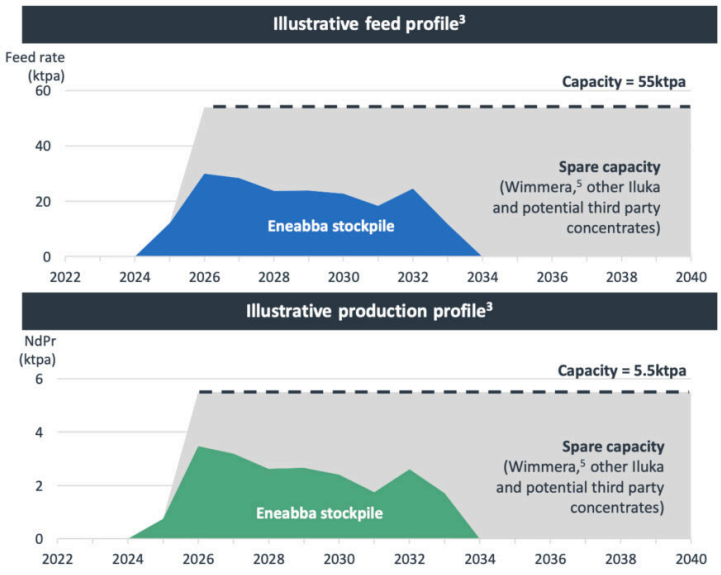
infrastructure AU$110-140 million plus indirect costs, contingency, commissioning and miscellaneous costs of AU$400-470 million for a total of AU$1-1.2 billion. According to the company, there will be support from the Australian government in the form of a loan from the government's Critical Minerals Facility fund and a risk-sharing agreement that would include non-recourse debt, royalty payments to Iluka, and flexibility in repayment schedules. This is what is necessary to get these projects off the ground – government support and vision to see that risk sharing is very important.

Raising this amount of capital in the markets today is a challenge and also very dilutive as their current market cap is AU$3.8 billion. An advantage Iluka has over many other planned entrants into the rare earth space is their existing cash flow from current operations, as it will take time to generate revenues from this operation after construction begins this year and until the first output is expected to be seen in 2025.

Utilising only the Eneabba stockpile as feedstock, the Eneabba refinery generates sufficient cash flow[1] to repay the EFA loan facility and provide a solid economic return to Iluka via equity distributions and royalty payments.

Illustrative refinery economics (Eneabba stockpile only)	
Production life	9 years (to 2033)
Average TREO production	12.4kpta
Average NdPr production	2.7ktpa
Price assumptions	Adamas Sept 2021[2]
LOM avg TREO basket price (2021, real)	US$36/kg
LOM avg NdPr price (2021, real)	US$106/kg
EFA loan repaid in full	By 2032
Project NPV[4]	$524m

Notes:
1. Subject to price forecasts
2. Adamas price forecasts set out on slide 22.
3. Illustrative Eneabba only production life only – flexibility to extend production life subject to securing additional feedstock sources.
4. Project NPV (8.25% post tax nominal WACC) assesses post tax free cash flows prior to financing charges and distributions. Excludes any terminal or option value for utilisation of the Eneabba refinery post production from Eneabba feedstock.
5. Wimmera is currently subject to a PFS, which is expected to be complete in late 2022. Additional feedstock sources are illustrative only.



Source: Iluka Company presentation, April 4, 2022

Based on using their existing stockpile at Eneabba, Iluka could produce 12,400 TPY TREO with an operating cost of AU$13/kg or about US$10/kg which is competitive with Chinese

costs. I am assuming they put no value on the feed material as it is in a stockpile. They have not included any transfer costs from other sources in their expanded production estimates with other sources of feed. The stockpile feed would produce 2,700 TPY of Nd/Pr or about half of the capacity of 5,500 TPY of Nd/Pr. This stockpile would be exhausted in 9 years, so they are actively looking for other sources to fill the plant.

One question that is not clear is whether they will take a Molycorp plant design approach or the Lynas approach. Molycorp originally designed a single train 20,000 TPY TREO capacity. Lynas built four 5,500 TPY TREO trains so that if supply or demand changed, or there was a problem in one train, they did not lose all their production. This came to light over the COVID era when demand dropped. This is a major consideration of any new plant design as economies of scale are limited or offset by potential operational problems.

Overall this may well be one of the players to cross the finish line in the race for more production of rare earths outside China.