Peak Rare Earths, PEK.AX

Orior Capital
HONG KONG

Deal with Shenghe and fully funded solution further de-risks Ngualla Rare Earth project

Non-binding term sheet with Shenghe to fully fund Ngualla

The deal with Shenghe, 24 July 2024, provides for an integrated investment, funding and development solution for the Ngualla Rare Earth Project. Shenghe is expected to invest A$96m for a 50% interest in NGUK, the 84% project vehicle, and to source the remaining debt financing. **Peak will not have to contribute further equity.** Funding projects into production is one of the biggest risks for project developers and shareholders. The deal removes this risk, further substantially de-risking the project.

Other terms include Shenghe providing a competitive and low-cost EPC/EPCM/EPS solution, and being incentivised to reduce capex costs and provide an expedited development schedule. Each party will appoint two directors to the board of NGUK with Peak having the casting vote. The deal must be approved by Chinese regulators and Peak and Shenghe shareholders.

Peak is targeting a final investment decision (FID) by year-end.

Offtake Agreement conditions satisfied

The Offtake Agreement provides for Shenghe to offtake 100% of Ngualla rare earth production over the first 7 years on a take-or-pay basis, as well as a minimum of 50% of any intermediate products (eg. mixed rare earth carbonates).

Cost and optimisation study underway

There are a number of opportunities to further optimise costs. This includes 1) reconfiguring the layout of the project now the Special Mining Licence area has been enlarged (from ~18km^2 to 51km^2) including potentially relocating buildings, plant, and storage facilities to flatter areas to reduce bulk earthworks and capex for access roads; 2) increasing plant availability from 80% to 88% based on a peer benchmarking exercise and as modelled herein, and 3) other costs saving measures.

Early enabling works already underway

Early works such as connecting the Ngualla Camp to the TANESCO power grid, upgrading IT, communications and safety systems, and commencing the extension of the existing airstrip are already underway.

Continued…

6 August 2024

Key financial data

Share price, A$/share	0.20
Shares on issue, millions	266.4
Performance rights, millions	12.7
Fully diluted shares, millions	279.1
Market cap., A$ m	53.3
Net cash (30 June 2024), A$ m	7.6
EV, A$ m	47.7

Valuation

Current, A$/share	0.42
Based on FEED Study US$100/kg pricing scenario, deal with Shenghe, and 50% of attrib. equity value	
Three years (mid-2027), A$/share	1.58 – 2.10
Ngualla in production and trading at 8-10x EV/EBITDA, strong rare earths demand, and market in deficit	

Website

www.peakrareearths.com

Company snapshot

Peak is developing the Ngualla rare earths project in Tanzania. Ngualla is one of the largest and highest-grade undeveloped rare earths projects globally. A BFS Update was completed in Oct 2022, a Framework Agreement in April 2023, and a FEED Study in Nov 2023.

Key catalysts and news

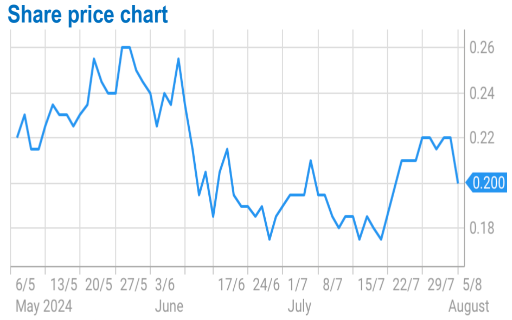
4Q24: Final Investment Decision, and award of EPC/EPCM/EPS contract

4Q24: Completion of Cost Optimisation Study

4Q24: Sales of Teesside

4Q24: Further developments in Ngualla critical minerals

Share price chart



Source: ASX

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Lessons from Mountain Pass

In 2017, Shenghe was part of the MP Materials consortium that acquired the Mountain Pass mine. The mine is an open-pit, bastnaesite-hosted rare earth mine in California. A comparison of the key operating parameters of the mine in 2020-2021, under the ownership of MP Materials and with Shenghe providing technical input, and the period 2012-2014, when it was owned by Molycorp, suggests **Shenghe had a materially positive impact on operations.** This includes improving recoveries at Mountain Pass from around 50% under Molycorp to approximately 70%, and improving the concentrate grades from around 50% to better than 60%. Given the similar bastnaesite host geology at Ngualla, there seems to excellent potential for similar operational improvements.

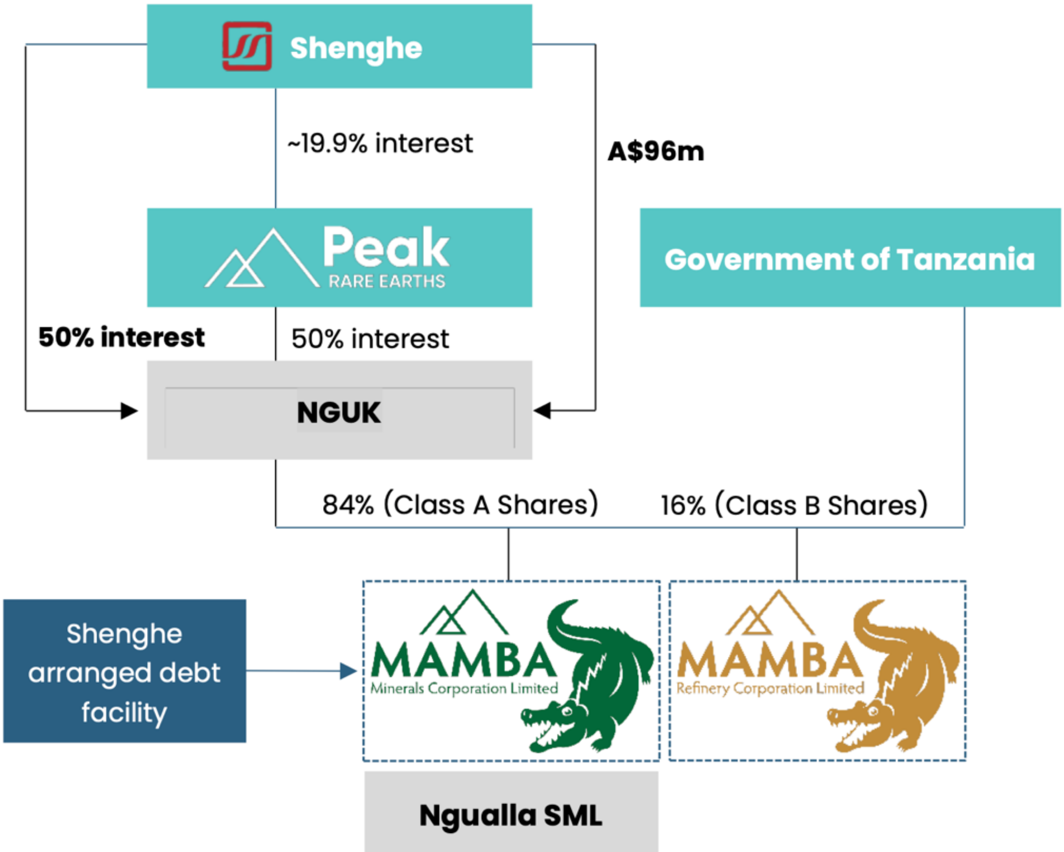
Peak looks incredibly undervalued

The **current valuation of A$0.42/share** (42 cents a share) is based on valuing Peak at 50% of its estimated attributable equity value in the project. This is based on the US$100/kg rare earths pricing scenario in the November 2023 FEED Study, the transaction with Shenghe, upfront capital expenditure and working capital of US$240m, and Peak having an effective 48% stake in Ngualla after accounting for Shenghe's 55% stake in the first five years of the project.

Once production commences Peak could be valued at A$1.58/share to A$2.10/share based on a valuation of 8x to 10x EV/EBITDA.

A blue-sky scenario factors in a 10% increase in plant availability and a 10% increase in plant recoveries. This is approximately half of the improvement in plant recoveries seen at MP Materials as Shenghe provided technical input. The **blue sky scenario is A$2.74/share to A$3.54/share.**

Figure 1: Investment and funding structure



Source: Peak Rare Earths

Peak looks incredibly undervalued

The valuation framework is updated to reflect the US$100/kg rare earths pricing scenario in the Front End Engineering and Design (FEED) Study, 30 November 2023 and the transaction with Shenghe. Peak is valued at a percentage of estimated attributable equity value prior to production, and at a multiple of earnings once production commences.

Current valuation of A$0.42/share (42 cents/share)

The post-tax NPV_8 of the project before upfront capital costs is approximately US$495m, being the post-tax NPV_8 of US$208m plus the upfront capex of US$287m. (This is a simplification that ignores the fact that capital costs will be expensed over two years). Accounting for the fact that Shenghe has a 55% stake in the project cashflows in the first 5 years of operations, Peak's stake in the project is estimated at 48%. On this basis, pre-capex NPV_8 attributable to Peak is estimated at A$360m.

Assuming capital costs of US$220m (Shenghe is incentivised to reduce capital costs to below this level) and US$20m in working capital requirements, the project could require A$268m in debt after accounting for Shenghe's equity contribution. Of this amount, A$134m (50%) would be attributable to Peak. On this basis, the equity value attributable to Peak would be A$226m. This represents A$0.85/share (85 cents/share), more than 4x Peak's current share price.

Importantly, Peak will not have to issue new equity to fund Ngualla into production; pending a final investment decision and the signing of definitive agreements later this year, the Ngualla project is funded into production. Shenghe is responsible for sourcing the debt.

Valuing Peak at 50% of attributable equity value suggests a valuation of A$0.42/share (42 cents per share).

Valuation of A$1.58/share to A$2.10/share as production commences

As Peak enters production the market is likely to value the company on its earnings. The project is expected to generate average annual EBITDA of US$99m (A$150m) in the FEED Study US$100/kg scenario. Of this amount, A$72m is estimated to be attributable to Peak. Accounting for the debt attributable to Peak, and applying an EV/EBITDA multiple range of 8x to10x, **Peak could be valued at A$1.58/share to A$2.10/share.** This is approximately 8x to 10x the current share price.

Figure 2: Valuation framework and potential outcomes insert lines for Blue Sky

Timeframe	Valuation A$/share	Methodology	Comments
Current	0.42	50% of attributable equity value	Based on the November 2023 FEED Study US$100/kg price scenario, estimates for capex and debt funding, and reflecting the advanced stage of the project, the upcoming FID, and Shenghe project financing
Three years (mid-2027)	1.58 to 2.10	8x to 10x EV/EBITDA	First year of full production 2027, after ramp-up through 2026 Market for NdPr products expected to be in deficit Rare earths magnet demand accelerating, driven by growth in EVs, offshore wind energy, and consumer electronics
Blue-sky	2.74 to 3.54	8x to 10x EV/EBITDA	Factors in higher plant availability (from 80% to 88%) and a 10% increase in plant recoveries, being approximately half the operational improvement seen at MP Materials under Shenghe's technical input

Source: Orior Capital

Figure 3: Peak valuation model

Shares on issue, current	millions	266.4	
Performance rights	millions	12.7	
Fully diluted shares	millions	279.1	
Attributable NPV			
NPV_8, post-tax	US$ m	208	FEED Study, Nov 2023, US$100/kg case
Capex	US$ m	287	FEED Study, Nov 2023
NPV_8, post-tax, pre-capital cost	US$ m	495	Shenghe is responsible for funding the project
NPV_8, post-tax	A$ m	750	
NPV_8, post-tax, attributable to Peak	A$ m	360	Peak stake estimated at 48% over project life as
A$:US$ fx rate		0.66	Shenghe has a 55% share in the first 5 years
Funding scenario			
Capex	US$ m	240	Capex of US$220m plus US$20m working capital
Capex	A$ m	364	
Equity	A$ m	96	A$96m from Shenghe to acquire stake in project
Debt	A$ m	268	To be arranged by Shenghe
Debt attributable to Peak	A$ m	134	Peak 50%
Equity attributable to Peak	**A$ m**	**226**	
1 year valuation based on % of NPV			
25%	A$/share	0.21	
50%	**A$/share**	**0.42**	
75%	A$/share	0.64	
100%	A$/share	0.85	
Production			
Annual average EBITDA	**US$ m**	**99**	FEED Study, Nov 2023, US$100/kg case
Annual average EBITDA	A$ m	150	
EBITDA attributable to Peak	A$ m	72	Peak stake estimated at 48%
EV/EBITDA valuations			
6x	A$/share	1.07	
8x	**A$/share**	**1.58**	
10x	**A$/share**	**2.10**	Implies a market cap. of A$586m
12x	A$/share	2.62	
14x	A$/share	3.13	
Blue sky scenario			
Annual average EBITDA	**US$ m**	**154**	Increase reflecting better plant availability
Annual average EBITDA	A$ m	234	and higher recoveries
EBITDA attributable to Peak	A$ m	112	
EV/EBITDA valuations			
6x	A$/share	1.93	
8x	**A$/share**	**2.74**	
10x	**A$/share**	**3.54**	Implies a market cap. of A$1.0bn
12x	A$/share	4.35	
14x	A$/share	5.15	

Note: NPV attributable to Peak is stated after all royalties, corporate taxes, withholding taxes and net of the Government of Tanzania's free carried interest.

Source: Orior Capital

Blue-sky Scenario

The blue-sky scenario is based on an examination of the apparent impact that technical cooperation with Shenghe had on the operating performance of the Mountain Pass mine in California after it was bought out of bankruptcy by the MP Materials consortium, which includes Shenghe. The scenario factors in:

- An increase in plant availability from 80% to 88% as indicated by management
- An increase in plant recoveries from 42.7% to 52.7%; this is about half of the improvement in plant recoveries achieved at Mountain Pass
- An increase in production volumes of 36% (88/80 x 52.7/42.7) which factors in the improvements in plant availability and plant recoveries, and hence;
- An increase in average annual revenues of US$69m from US$194m in the FEED Study US$100/kg pricing scenario to US$263m
- An increase in average annual EBITDA of US$55m to US$154m after accounting for the Government of Tanzania's 16% stake and royalties

Again assuming that Peak has an effective 48% stake in the project, and that annual average EBITDA attributable to Peak is A$112m, valuing the company at 8x to 10x EV/EBITDA suggests an upside valuation of A$2.74/share to A$3.54/share.

What's not included?

Further upside from Shenghe: Over and above providing equity capital and sourcing the debt financing, Shenghe may be expected to benefit the operating performance at Ngualla project in three key ways:

- Improvements in plant recoveries: The blue sky scenario above models a 10% improvement in plant recoveries. This is about half the improvement that was achieved at Mountain Pass between the period 2020-2012 (Molycorp) and 2020-2021 (MP Materials). Further improvements may be possible.
- Lower operating costs: Shenghe may be able to reduce unit operating costs through a combination of the use of Shenghe reagents, simplification of the processing flow sheet, and a reduction in power costs.
- Lower capex costs; Shenghe is motivated to reduce capital costs to below US$220m. This compares to US$287m in the FEED Study.

Other critical Minerals: *Peak Rare Earths, Opportunities in Critical Minerals, Orior Capital, 29 April 2024* examined the potential upside at Ngualla from a range of critical minerals including phosphates, fluorspar, niobium and monazite-hosted rare earths that have a higher proportion of heavy rare earth elements (REEs) than in the bastnaesite zone. Simple models were prepared for a phosphate business supplying the East Africa fertiliser market, and a fluorspar business targeting the acid-spar market. It was estimated that together these businesses could generate some US$41m in EBITDA (after the Government of Tanzania's 16% stake) with a combined post-tax NPV_8 of A$276m.

https://peakrareearths.com/wp-content/uploads/2024/04/Orior-Capital-Opportunities-in-Critical-Minerals-April-2024-1.pdf

Lessons from Mountain Pass

In 2017, Shenghe was part of the MP Materials consortium that acquired Mountain Pass out of bankruptcy. Shenghe funded MP Materials' restart of Mountain Pass in 2017 with prepaid offtake financing, and provided long-term offtake (Shenghe is the sole off-taker), and strategic cooperation. A comparison of key operating parameters of the mine in 2012-2014, when it was owned by Molycorp, and in 2020-2021 when Shenghe was a part owner and provided technical input, suggests **Shenghe had a significant and positive impact on operations at Mountain Pass.** This includes improvements in both process recoveries and grade. Given that both Mountain Pass and Ngualla host bastnaesite mineralisation, Shenghe's cooperation with MP Materials may offer something of a roadmap for future developments with Peak.

Mountain Pass

MP Materials' Mountain Pass mine is an open-pit rare earth mine situated in San Bernadino County, on the south flank of the Clark Mountain Range in California, approximately 85km southwest of Las Vegas, Nevada. The Mountain Pass deposit was first identified in 1949. Small scale production started in 1952. Production was ramped up through the 1960s and between 1965 and 1995, the mine supplied most of the world's rare earth demand, before closing in 2002.

Molycorp Minerals LLC acquired the mine in 2008, raised US$400m in an IPO on the New York Stock Exchange in 2010, and restarted production in 2012. Three years later, in June 2015, and with the processing plant in full production, Molycorp filed for Chapter 11 bankruptcy.

MP Materials, a consortium including Shenghe, acquired Mountain Pass out of bankruptcy in 2017 and resumed mining and processing operations in January 2018. Nowadays the mine supplies about 15% of world's rare-earth production.

Substantial improvement in process recoveries and grade

According to Molycorp's 2014 10-K Report, the new flotation plant achieved recovery rates of 47% in 2012 (start-up), 50.2% in 2013 and 48.8% in 2014. Concentrate grades were 49-50%.

Figure 4: Extracts from Molycorp's 10-K report, 2014

	2012	2013	2014
Flotation plant recovery rate	**47.0%**	**50.2%**	**48.8%**
Concentrate production grade	**50.3%**	**50.2%**	**48.9%**
Concentrate production, tonnes 000s	6	11	11
Total rare earth oxides production, tonnes 000s	2.2	3.5	4.8

Source: Molycorp, 10-K report, 2014

In February 2022, SRK Consulting completed a Pre-Feasibility Study for the Mountain Pass Mine for MP Materials. The PFS states that "**significant improvements in concentrator performance have occurred since inception of operations, which are attributed primarily to new reagent and ore blending schemes as well as the introduction of steam boiler to support process kinetics**".

In 2020, TREO recovery averaged 66.8%, containing an average of 60.6% TREO. In the first nine months of 2021, TREO recovery averaged 69.8% into concentrates that averaged 61.2% TREO, reflecting ongoing improvements in the concentrator.

Figure 5: Extracts from SRK Consulting February 2022 PFS, prepared for MP Materials

	2020	9M21
Plant recovery rate	**66.8%**	**69.8%**
Concentrate production grade	**60.6%**	**61.2%**
Concentrate production, tonnes 000s	69.4	57.2
TREO production as bastnaesite concentrate, tonnes 000s	38.6	32.2

Source: SRK Consulting

That is, recoveries at Mountain Pass improved from around 50% under Molycorp to 70% under MP Materials. Concentrate grades improved from 50% to better than 60%. These improvements suggest MP Materials has materially benefitted from Shenghe's technical input.

Upside potential for Peak

The Ngualla flotation plant is designed with an ore processing capacity of 800,000 tpa. Overall TREO recovery is designed at 42.7% (BFS Update and FEED Study), with neodymium recoveries at 44.0% and praseodymium recoveries at 46.4%. The targeted bastnaesite concentrate grade is 45.0% TREO.

At this stage it is impossible to tell what impact Shenghe's technical input could have on recoveries and grade at Ngualla. That said, the success at Mountain Pass suggests some improvement may be expected and this could have a significant impact on project economics, and share price outcomes.

Suppose that technical improvements derived from cooperation with Shenghe lead to a 10% improvement in recoveries from 42.7% to 52.7%, and that this increases the concentrate grade from 45% to 50%. This is about half of the improvement in recoveries and grade that occurred at Mountain Pass between 2012-2014 and 2020-2021.

Combined with an increase in plant availability from 80% to 88%, as indicated by management, this would suggest a 36% increase in the production of contained TREO (88/80 x 52.7/42.7) and a 36% increase in revenues. This ignores any increase in payability that might arise from higher grades. **Average life-of-mine concentrate production would be expected to rise from 16,200 tpa TREO, to approximately 22,000 tpa TREO.** As a result, revenues could increase from an annual average of US$194m in the FEED Study US$100/kg scenario to US$263m, an increase of US$69m pa.

After accounting for the Government of Tanzania's 16% stake in the project, and royalties, annual average EBITDA could increase by an estimated US$55m from US$99m in the FEED Study US$100/kg pricing scenario to US$154m. The blue-sky scenario above is based on this potential outcome.

Molycorp SEC Filing 10-K, 2014: https://last10k.com/sec-filings/mcpiq

SRK Consulting Mountain Pass PFS, February 2022
https://www.sec.gov/Archives/edgar/data/1801368/000180136822000010/d215279dex961.htm

Mountain Pass history: https://pubs.usgs.gov/pp/0261/report.pdf

If more optimistically, recoveries at Ngualla could be improved by 20% (as at Mountain Pass) and the concentrate grade by 10% from 45% to 55%, production could increase by as much as 62% (88/80 x 62.7/42.7) with average life-of-mine concentrate production rising from 16,200 tpa TREO, to 26,200 tpa TREO. On this basis annual average revenues could increase by US$119m to US$313m. Again ignoring other factors such as the potential for higher payability and any impact on costs, this could boost the average annual EBITDA by US$95m.

Shenghe expected to reduce operating costs

In addition to improved recoveries, it seems likely that Shenghe will be able to reduce unit operating costs through a combination of the use of Shenghe reagents, simplification of the processing flow sheet, and a reduction in power costs. Notably the expansion of the tenement area gives Peak and Shenghe the opportunity to better locate some plant items. At this stage there is insufficient information available to judge any impact and no upside from lower operating costs is modelled herein.

Key data from the FEED study

Figure 6: Ngualla production summary

	Units	Years 1-6	Life-of-mine
Tonnes milled, pa	ktpa	800.7	794.8
Average grade milled	%	5.4	4.8
Concentrate production	ktpa (dry)	40.5	36.0
Concentrate grade	%	45	45
Concentrate production	ktpa TREO	18.2	16.2
NdPr % (of concentrate basket)	% mass	22.6	22.3

Source: Peak Rare Earths

Figure 7: Key outcomes from the US$100/kg pricing scenario

		US$100/kg Scenario
NdPr oxide price (2026-2030)	US$	100
NdPr oxide price (LOM)	US$	100
Average net payability	%	49.8
Revenues, annual average	US$	194
Operating cash flow, annual average	US$	22
EBITDA, annual average	US$	99
NPV_8 real, post-tax, attributable to NGUK	US$	208
NPV_{10} real, post-tax, attributable to NGUK	US$	132
IRR, post-tax and royalties	%	18.8

Source: Peak Rare Earths

The net realisable price is after applying a payability factor to the gross basket price of the concentrate. At Ngualla, more than 92% of the basket price is attributable to NdPr oxide. The payability factor is based on the Binding Offtake Agreement signed with Shenghe Resources in August 2023. It reflects various factors including a product factor that represents the ease by which third-party refineries are able to sell the refined product, which is typically >95% for NdPr oxide, and lower for products such as cerium and lanthanum; a refinery charge which represents the cost of refining the concentrate into saleable oxides and the refiners' margin; factors for refining losses, and sales and distribution charges; and a deduction for Chinese VAT. The payability factor represents the ratio of the net price received for the concentrate to the basket value of the NdPr oxide and other rare earth elements.

Figure 8: Upfront capital cost estimates, FEED Study

Capital cost element	US$ m
Roads and infrastructure	22.2
Mine equipment	0.4
Plant	67.6
TSF	17.2
Services	58.9
Bulk earthworks	7.9
Airstrip	4.1
Escalation and FX adjustments	3.1
Total direct costs	**181.6**
EPCM	29.5
Accommodation camps	19.8
Preliminaries and other indirect costs	12.7
Owner's cost	13.6
Contingency	29.7
Total indirect costs	**105.3**
Total upfront capex	**286.9**

Source: Peak Rare Earths

Figure 9: Operating cost estimates, FEED Study

Life-of-mine, average pa	US$ m
Mining cost	12.8
Plant labour	3.4
Power	17.4
Maintenance	2.2
Reagents	12.2
Consumables	1.9
Miscellaneous	4.4
General and admin	9.7
Mine site costs	**64.0**
Concentrate transportation	12.7
Costs (delivered to China)	**76.7**

Source: Peak Rare Earths

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