

COMPANY	Parabellum Resources (PBL)	19 December 2022
MCAP	A\$25m	\$0.40 /share
RECOMMENDATION	Not Covered	
EVENT	DESK NOTE	
KEY POINTS	<p>We recently caught up with PBL management.</p> <p>PBL has the right to earn what we believe could be an 80% interest in the Khotgor Rare Earth project, Mongolia.</p> <p>Khotgor is one of the world's largest undeveloped rare earth projects with an historical non JORC compliant resource of 97mt @ 1.40% TREO.</p> <p>A Maiden JORC compliant resource is expected to be published January 2023. We believe a higher-grade resource in the order of 40-50mt @ 2% TREO will be released based on historically published resources at higher cut-off grades. 40-50mt would allow for a sufficiently long mine life to build a robust mining project around.</p> <p>This resource will compare well to peers with ARU hosting a resource of 56mt @ 2.60% TREO and HAS hosting a resource of 30mt @ 0.93% TREO.</p> <p>The NdPr enrichment of Khotgor is ~20%, below that of ARU (~26%) and HAS (~34%)</p> <p>Post the publication of the JORC resource, a scoping study is due for completion Q2 2023. Following the scoping study, the company will roll directly into a BFS.</p> <p>Prior to the release of the resource, the final set of drill results from infill drilling will be released to the market. These holes targeted the high-grade core of the resource, so we would expect these results to show thick intersections at grades +2.0% TREO.</p>	
INVESTMENT VIEW	<p>The Khotgor project looks to be a large-scale project with reasonably high TREO grades and NdPr enrichment. The project is located in southern Mongolia with relatively simple logistics to rare earth process plants some 500kms across the Chinese border. We see some short-term catalysts in the stock with the release of the JORC resource timed for mid-January, which may mean the update is overlooked by investors. We believe the resource could surprise on the upside and given the sentiment in the REE space, we see PBL at an EV of just \$19m as a stock to watch in the first half of 2023.</p>	
KEY DRIVERS	<p>Drilling assays – December 2022</p> <p>JORC Resource - January 2023</p> <p>Scoping study – 2Q 2023</p> <p>BFS– 1H 2024</p> <p>Increased ownership of Khotgor – 2023</p>	

KHOTGOR

Parabellum Resources (PBL) own 30% of Temarise Limited that exclusively hold the option to acquire up to 80% of the Khotgor rare earth project in the south Gobi region of Mongolia. Khotgor was first discovered in the 1960's by the Soviet Union prior to the understanding of the importance of the strategic elements of Neodymium (Nd) and Praseodymium (Pr). The project was subsequently acquired by a Canadian junior QGX Ltd exploring for copper, gold and molybdenum in 2007. Over six years QGX defined what would become of the one of the world's largest undeveloped rare earth projects with metallurgical test work and engineering studies demonstrating a technically and economically feasible project. Market conditions and low REE pricing led to project being abandoned by QGX in 2014 where it has since sat idle. A mining license was granted in 2010 which remains current until 2040.

Figure 1: Khotgor Location

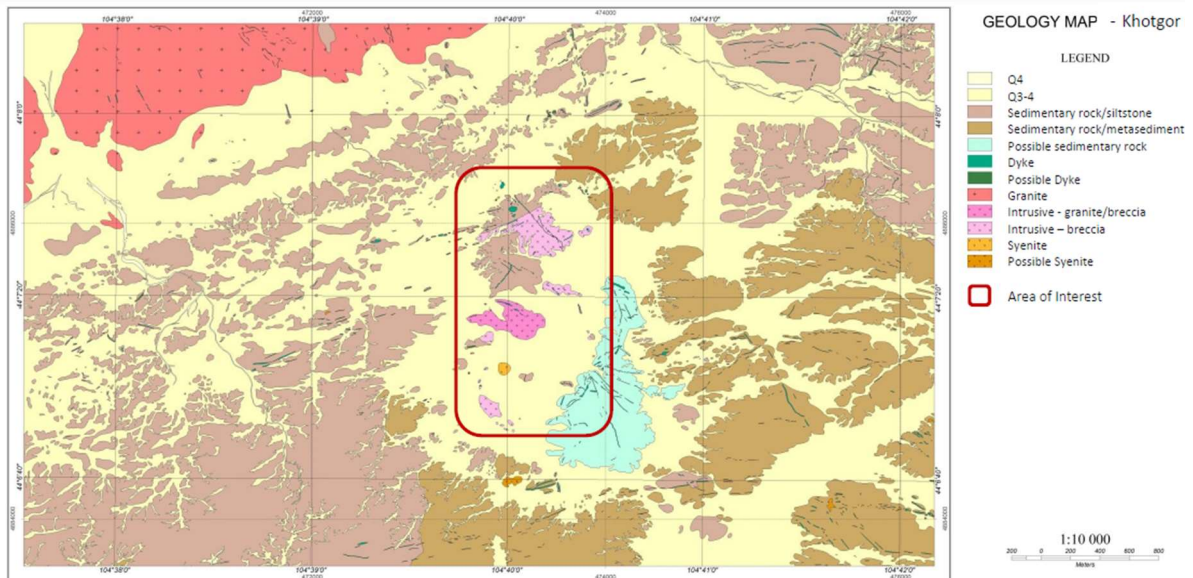


Source: PBL

GEOLOGY

Khotgor is hosted within nepheline syenites of upper to late Jurassic age. It is a relatively vertical, cylindrical intrusion which plunges to the north. Mineralisation is hosted within a breccia matrix with the majority of the REE hosted in minerals of the apatite group. Mineralisation is rich in LREE with Ce>La>Nd>Pr with low levels of HREE. The project is located in the same geological belt that hosts Oyu Tolgoi.

Figure 2: Local Geology Map of Khotgor



Source: PBL

MINERAL RESOURCE ESTIMATE

A non JORC compliant resource was published in 2013 by the previous owners of the project. Using a 1% cut-off, the project hosts a large 97.2mt resource at a TREO grade of 1.4%.

Figure 3: Mineral Resource Estimate (Non JORC Compliant)

Cut Off (%)	Classification	Resource (mt)	TREO Grade (%)	NdPr Enrichment	TREO (mt)
1.0	Measured	22.5	1.60		0.3
1.0	Indicated	29.6	1.43		0.4
1.0	Inferred	45.1	1.49		0.6
1.0	Total	97.2	1.40	20%	1.4
1.5	Measured	11.1	1.98		0.2
1.5	Indicated	9.2	1.94		0.2
1.5	Inferred	15.9	2.03		0.3
1.5	Total	36.2	1.99		0.7
0.5	Measured	29.7	1.42		0.4
0.5	Indicated	70.1	1.04		0.7
0.5	Inferred	250.5	0.88		2.2
0.5	Total	350.3	0.96		3.4

Source: PBL

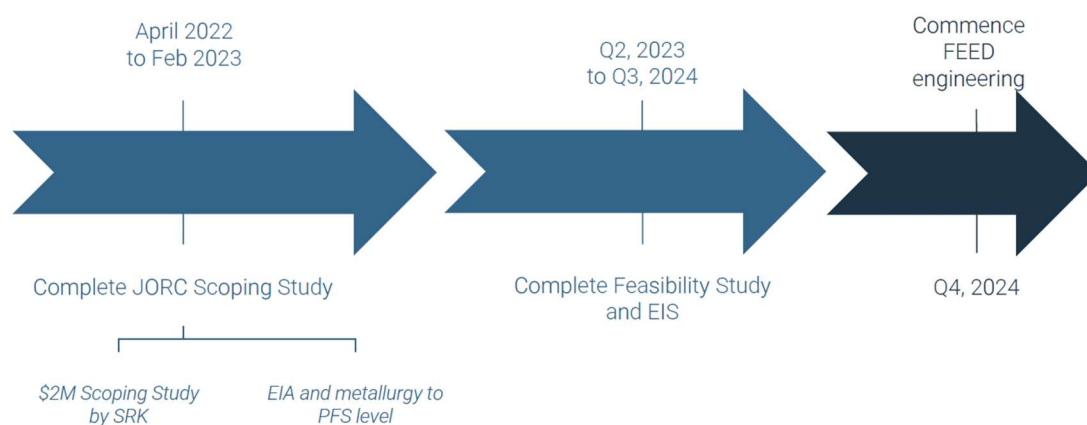
METALLURGY

Test work is ongoing with a 1.3 tonne bulk sample sent to ALS Perth. Initial floatation has indicated >85% recovery. Hydrometallurgical test work is also underway to produce an intermediate carbonate prior to NdPr separation. Initial work to date indicates that a recovery of >90% can be achieved. An initial flowsheet has been developed which will form the basis of the scoping study to be released in Q2 2023. A pilot plant is under construction in Ulaanbaatar which will optimise the flowsheet and provide product marketing samples.

PROJECT TIMELINE

PBL expect to publish an updated JORC compliant resource in January of 2023, followed by a scoping study in Q2 2023. The company will proceed directly to a BFS thereafter which is slated for completion early 2024.

Figure 4: Project Timeline



Source: PBL

PEER ANALYSIS

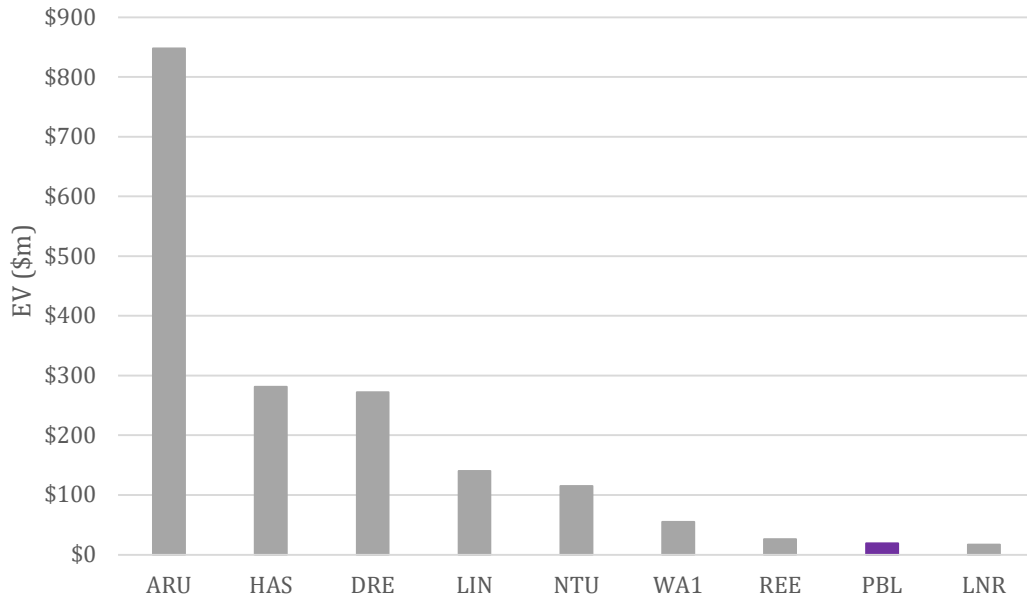
The Khotgar resource is significantly larger than its listed ASX peer group, with grades lower than that of ARU, perhaps its closest peer comparison.

Figure 5: ASX Listed Peers

Company	Parabellum	Arafura	Hastings	Northern Minerals	Rare X
Ticker	PBL	ARU	HAS	NTU	REE
Project	Khotgor	Nolans Bore	Yangibana	Browns Range	Cummins Range
Resource (mt)	97.2	56	29.9	10.8	18.8
TREO Grade (%)	1.40	2.60	0.93	0.76	1.15
TREO (mt)	1.36	1.46	0.28	0.08	0.22
NdPr Enrichment (%)	20	26	34		20
Market Cap (\$m)	25	968	457	193	32
Enterprise Value (\$m)	19	848	281	115	26
EV/TREO (\$/t)	58	582	1,010	1,400	118
EV/NdPr (\$/t)	291	2,206	2,934		592
Project Ownership (%)	24	100	100	100	100

Source: Company Reports

Figure 6: EV of Select ASX Listed REE Explorers and Developers

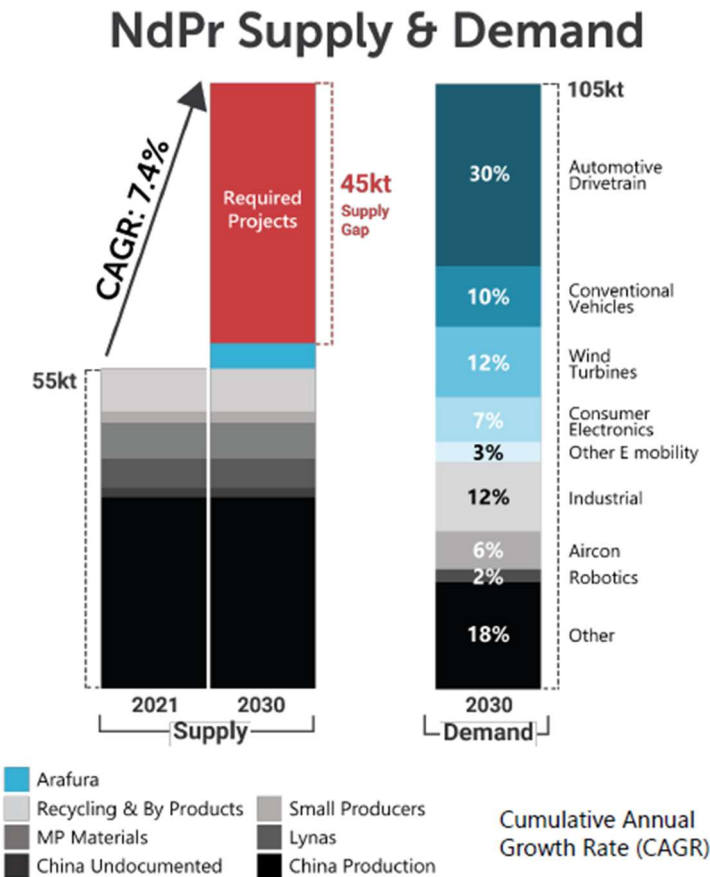


Source: Iress

NdPr MARKET

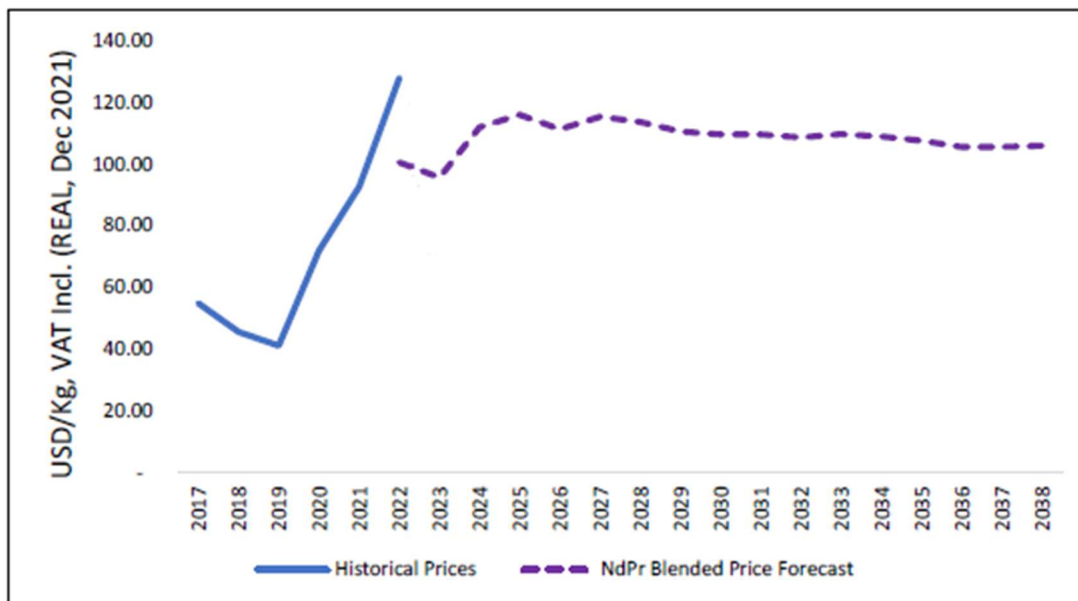
A supply gap is emerging in the NdPr market with demand expected to increase by a CAGR of 7.4% into 2030. The increase in demand is expected to come from wind turbines and the automotive industries as the world transitions to net zero by 2050. China dominates supply of NdPr with tighter regulatory controls and geopolitical risks only adding further uncertainty on where these critical minerals will be sourced from.

Figure 7: NdPr Supply and Demand



Source: ARU

Figure 8: NdPr Indicative Price Forecast



Source: HAS

KHOTGOR ACQUISITION TERMS

PBL has entered into an agreement with Temarise Limited, a UK based company that holds the exclusive option to acquire 80% of the Khotgor project. Under the agreement, PBL will earn a 30% share of Temarise by funding a \$3.9m work program including a JORC compliant MRE and scoping study with updated metallurgical testwork and engineering designs.

It is not clear if PBL will increase its ownership of Temarise, however, we believe it is likely that PBL will eventually solely own Temarise and therefore 80% of Khotgor.

CORPORATE STRUCTURE

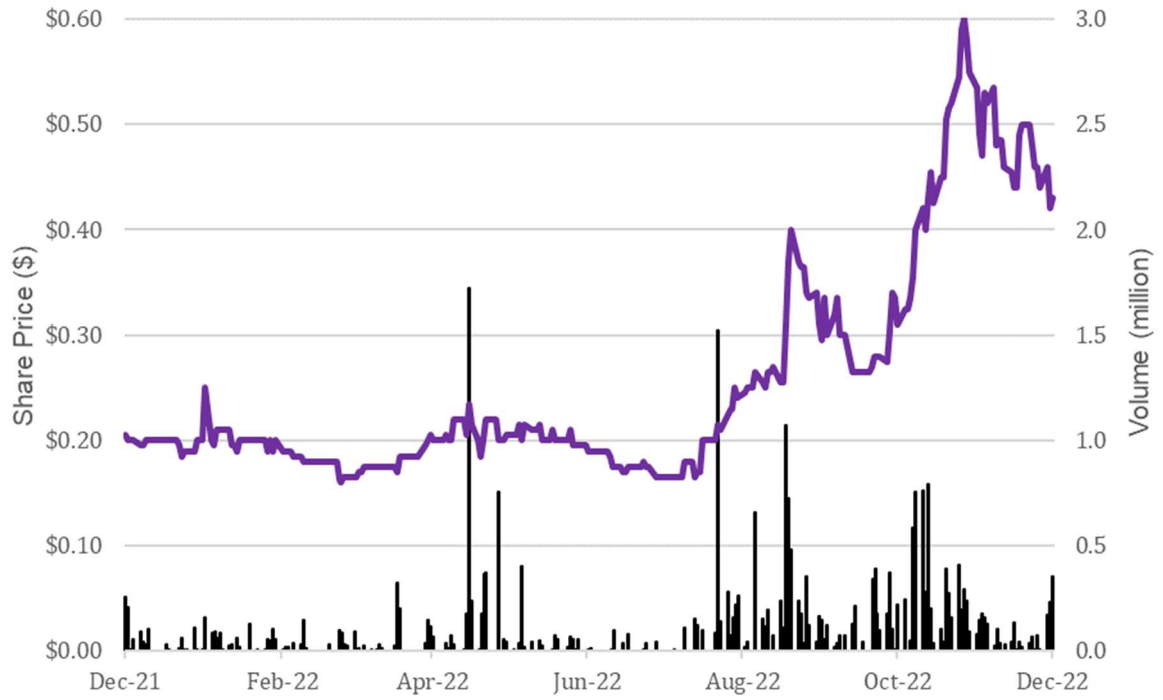
There are 62.3m shares on issue in PBL including 7.6m escrowed stock. A further 13.8m options have been issued including 5.9m @ \$0.25, 2.9m @ \$0.30 and 5m @ \$0.50.

BOARD AND MANAGEMENT

- Mark Hohen – Non-Executive Chairman
- Peter Secker – Executive Director
- Peter Ruse – Non-Executive Director
- Shaun Menzies – Non-Executive Director
- Battuya Gankhuyag – Mongolia Manager

12 MONTH SHARE PRICE PERFORMANCE

Figure 9: 12 Month Share Price Performance



Source: Iress

Recommendation Criteria

Investment View

PAC Partners Investment View is based on an absolute 1-year total return equal to capital appreciation plus yield.

A Speculative recommendation is when a company has limited experience from which to derive a fundamental investment view.

Buy	Hold	Sell
>20%	20% – 5%	<5%

Risk Rating

PAC Partners has a four tier Risk Rating System consisting of: Very High, High, Medium and Low. The Risk Rating is a subjective rating based on: Management Track Record, Forecasting Risk, Industry Risk and Financial Risk including cash flow analysis.

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The views expressed in this research report accurately reflect the personal views of Stephen Scott about the subject issuer and its securities.

Entities associated with Phil Carter do not hold an economic interest in the securities covered in this report or other securities issued by the subject issuer which may influence this report.

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