ASX Announcement 30 November 2023

Ngualla Rare Earths Project

Completion of FEED Study

- **FEED Study supports a technically and economically enhanced Ngualla Project**
- **Upfront capital cost estimate reduced by 10.6% from US$320.7m to US$286.9m**
- **Estimated average total annual operating costs have been lowered by 17.8% from US$93.3m to US$76.7m**
- **Updated costs support robust margins and cashflows at current NdPr Oxide prices**
- **Demonstrates strong shareholder value creation from Ngualla's development**
    - Post-tax $NPV_{(8\%, real)}$ of **US$724m (A$1,100m)** and an equity IRR of 28.8% based on Adamas Downside Case rare earth pricing forecasts
    - Post-tax $NPV_{(8\%, real)}$ of **US$384m (A$584m)** and an equity IRR of 24.7% based on a flat NdPr Oxide price of US$120/kg
- **Early works commencing in December 2023, followed by the order of long-lead items**
- **Final Investment Decision targeted by 30 June 2024 and supported by**
    - Project partnering process being managed by Macquarie Capital
    - Advanced project financing process being managed by WaterBorne Capital
- **Reinforces Ngualla's position as one of the world's most attractive and advanced undeveloped rare earth projects**

Peak Rare Earths Limited (ASX: **PEK**) (**"Peak"** or the **"Company"**) is pleased to announce the completion of its Front-End Engineering and Design Study ("**FEED Study**") on the Ngualla Rare Earths Project ("**Ngualla Project**" or the **"Project"**).

The Ngualla Project is located in the Songwe Region of Tanzania. It is one of the largest and highest grade undeveloped rare earths projects in the world. The Project is owned by Mamba Minerals Corporation Limited ("**Mamba Minerals**") which, in turn, is owned 84% by Peak and 16% by the Government of Tanzania.

The FEED Study supports a technically and economically enhanced Ngualla Project. It builds on the Bankable Feasibility Study Update ("**BFS Update**") completed in October 2022 and an initial Bankable Feasibility Study ("**BFS Study**") in April 2017.

Key elements of the FEED Study included:

- Optimisation of the process plant, airstrip, road and Tailings Storage Facility ("**TSF**");
- Adoption of contracting mining and a hybrid Build Own Operate ("**BOO**") power solution;

- Progressing geotechnical and hydrological drilling;
- Identification of capital cost savings including those attributable to roads, bulk earthworks, TSF, power, reagents and logistics; and
- A reduction in operating costs through lower power, logistics and reagent solutions.

Notwithstanding an allowance for global inflationary pressures in the updated cost estimates, the FEED Study supports lower capital and operating costs compared to the BFS Update. Estimated upfront capital costs have decreased from US$320.7m to US$286.9m and average annual operating costs have reduced from US$93.3m to US$76.7m.

Commenting on the completion of the FEED Study, the CEO of Peak, Bardin Davis, said:

"The completion of the FEED Study marks another important de-risking milestone for the world-class Ngualla Project. The Project has been further enhanced from both a technical and economic perspective. Given global inflationary pressure it was particularly pleasing to deliver material reductions in both capital and operating costs. The Ngualla Project benefits from a low break-even NdPr Oxide price and is well positioned to generate strong earnings and cash flows across the rare earth cycle. "

The Executive Chairman of Peak, Dr. Russell Scrimshaw, further commented:

"The FEED Study has reaffirmed the Ngualla Project's position as the world's premier undeveloped light rare earth project. Mamba Minerals, with the support of Peak and the Government of Tanzania, can now focus its efforts on progressing the Ngualla Project towards a Final Investment Decision and establishing itself as the next major global rare earths producer. "

Scope of FEED

The purpose of the FEED Study was to investigate optimisation opportunities and further de-risk the project ahead of a targeted Final Investment Decision in June 2024 and the commencement of development activities.

The FEED scope included the following:

- An assessment of contract mining;
- Process plant and flowsheet optimisation;
- Tailings optimisation;
- Scope refinement of key capital items including airstrip and roads;
- Budgetary updates of key cost centres including power, logistics, reagents and accommodation camp;

- Review of long-lead items;
- Water borefield development;
- Geotechnical drilling; and
- Other enabling and early works.

Key Contributors

To support the delivery of the FEED Study, a broad suite of experienced professional consultants were engaged, as set out in the table below.

Table 1: Consultants engaged within FEED study

Party	Description
wood.	Project management & FEED lead
ORELOGY MINE CONSULTING	Contract mining evaluation
Knight Piésold CONSULTING	Tailings management and water hydrology
srk consulting	Geology (exploration drilling program)
AURALIA METALLURGY	Testwork (laboratory flotation)
Fremantle METALLURGY IT'S ALL ABOUT THE PROCESS	Testwork (thickening tests)
BUREAU VERITAS	Testwork (column flotation & WHIMS)
LONGi	Testwork (WHIMS)
MHANDISI	Civil engineering
SGS	Chemical analytical services (water analysis)
DIGBY WELLS ENVIRONMENTAL	Environmental consultant
DHAMANA consulting	Environmental management
Ai	Market analysis and pricing outlook
WATERBORNE CAPITAL	Project funding, financial modelling and analysis

ASX Announcement 30 November 2023

Contract Mining

The BFS Update incorporated an owner-operator mining model with a leased fleet but also identified that contract mining could be a viable alternative.

Contract mining was re-evaluated as part of FEED following positive engagement with several reputable mining contractors in Southern and Eastern Africa. It was concluded that a contract mining model be adopted at least for the initial operational phase of the Project.

The benefits of a shift to contract mining include:

- Removes upfront capital costs (lease deposit, reduction in light vehicles, removal of explosive magazine and heavy vehicle workshop);
- Offers improvements in operational efficiency;
- Avoids the complexity of an equipment leasing structure;
- Supports greater local / regional content;
- Avoids recruiting and training mining operators; and
- Shifts responsibility for fleet maintenance to the contractor.

Based on the budget enquiry responses from contract miners and using the proposal from the contractor determined to have delivered the most technically complete proposal, the adoption of a contract miner is estimated to reduce upfront capital costs by US$6.9m, while increasing mining costs by US$0.9m p.a. over the 4-year lease period assumed in the BFS Update and a further US$4.8m p.a. (50%) over the life-of-mine.

Process Plant Optimisation

The FEED Study evaluated several initiatives aimed at improving the overall performance and operability of the two-stage flotation plant which formed the basis of the process plant design in the BFS Update.

Process optimisation initiatives evaluated within FEED included:

- **Feed deslime** - the potential benefits of desliming milled feed to improve pre-flotation performance and to increase the overall grade of rare earth concentrate product were assessed as part of FEED. The completed testwork demonstrated that while there is potential for increasing the rare earth grade in the final concentrate, there is also a material increase in overall rare earth losses through the flotation circuit. An economic assessment indicated that there was no financial benefit associated with feed deslime and no further work is being planned.

ASX Announcement 30 November 2023

- **Flotation columns** – preliminary pilot plant testwork was completed on the potential to replace standard paddle trough cells in the process plant with flotation columns as a potential opportunity to reduce operating costs and improve overall plant layout. The testwork showed that while there is likely to be an operational saving, the upfront capital cost will be higher. Accordingly, paddle trough cells have been retained as the design basis for the plant, however, there remains an opportunity to consider alternative flotation column designs and configurations as part of future plant expansions.

Process plant layout and optimisation

The existing process plant layout was further optimised as part of the FEED Study to reduce bulk earthworks costs and improve overall operability of the process plant. Key changes within the revised process plant layout include:

- A dedicated delivery corridor on the east side of the process plant to divert transport activities away from operating and maintenance areas;
- Relocation of the water services area, fire water area and demineralised water treatment equipment resulting in a reduction of earthworks and pipe rack lengths;
- Relocation of the bulk diesel storage area to be closer to major usage points to reduce diesel pipe lengths and road crossing requirements; and
- The development of a second reagent storage shed on the delivery corridor to support management of traffic through the main process plant area.

Figure 1: Optimised plant layout

ASX Announcement 30 November 2023

Tailings Storage Facility

The TSF adopted as part of the BFS Update design allowed for separate storage of the two process waste streams (barite concentrate and rare earth tailings). It was concluded during FEED that the reprocessing of either stream for additional revenue would be uneconomic. Accordingly, the TSF design was updated to reflect combined stream deposition in a single cell.

Other initiatives undertaken as part of FEED include:

- Updating the TSF design to adopt a High-Density Polyethylene liner rather than a conventional compacted clay liner;
- Completing a preliminary dam breach hazard assessment, which resulted in a shift of the planned location of some plant infrastructure;
- Retaining an emergency spillway to protect the main embankment from overtopping in the event of an extreme weather event; and
- Increasing the embankment height of the TSF during the initial stages of operation to enable the deferral of a TSF decant water process.

Infrastructure Optimisation

The infrastructure requirements for the Ngualla Project were reviewed with the objective of reducing upfront capital costs while supporting operational requirements and a 24-month construction and commissioning schedule.

Major infrastructure scope changes were identified for:

- Access roads;
- Airstrip; and
- Construction and Operations Accommodation Camps.

Access Roads

The site of the Ngualla Construction Camp is connected to Kininga by a ~45km road, which is referred to as the Southern Access Road ("**SAR**"). In 2021, Peak upgraded the SAR with realignments, improved roadbed substructure material, road profile shaping to support rapid drainage, the addition of run-out and curtain drains, and seven new stream crossings.

Given the learnings from the 2021 roadworks, the FEED Study revealed an opportunity to reduce capital costs by changing the scope from a major reconstruction and upgrade to the SAR to a continuous care and maintenance model during the construction phase of the project.

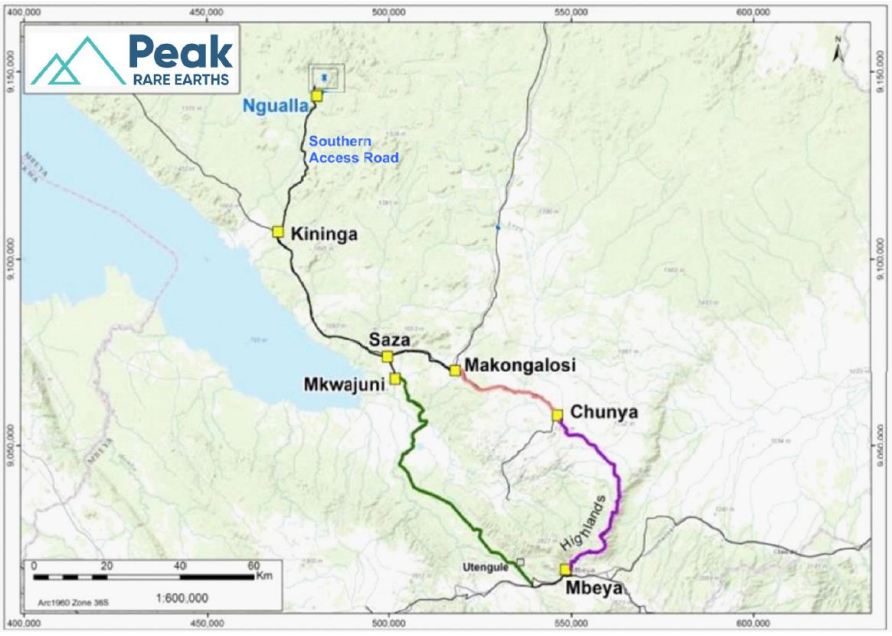
ASX Announcement 30 November 2023

A ~6km Plant Access Road ("**PAR**") connecting the Construction Camp with the Process Plant and Mine has also been optimised to reduce upfront capital costs.

Upfront capital costs have also been reduced following the Tanzanian Roads Authority ("**TanRoads**") recently:

- Improving ~75km of roadbeds between the Makangolosi and Kininga villages; and
- Replacing two of three bridge crossings identified in the BFS Update as being deficient (with the third being identified as a future priority).

Figure 2: Roads connecting the Ngualla Project and Mbeya



Airstrip

To support a Fly-in/Fly-out ("**FIFO**") schedule for some workers, the BFS Update entailed major improvements to the existing Ngwala Village Airstrip.

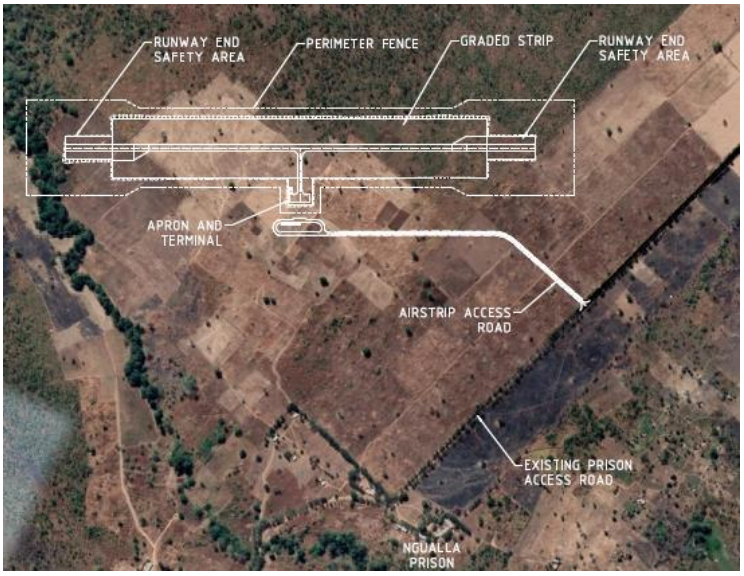
During FEED, the Tanzanian Prison Commission ("**TPC**") presented an opportunity to relocate the airstrip to a new location ~1.5km northwest of the existing airstrip and onto a portion of agricultural land owned by the TPC. Shifting to the new location offers capital cost savings as well as improved operability and safety.

To limit capital costs the initial length of the airstrip will be restricted to 1,200m, which will still enable the landing of CESSNA Caravan aircraft (carrying a pilot and 13 passengers).

An additional airstrip trade-off study will be completed in coming months to further assess the potential of reducing capital costs for both the existing and new airstrip options.

ASX Announcement 30 November 2023

Figure 3: New airstrip layout



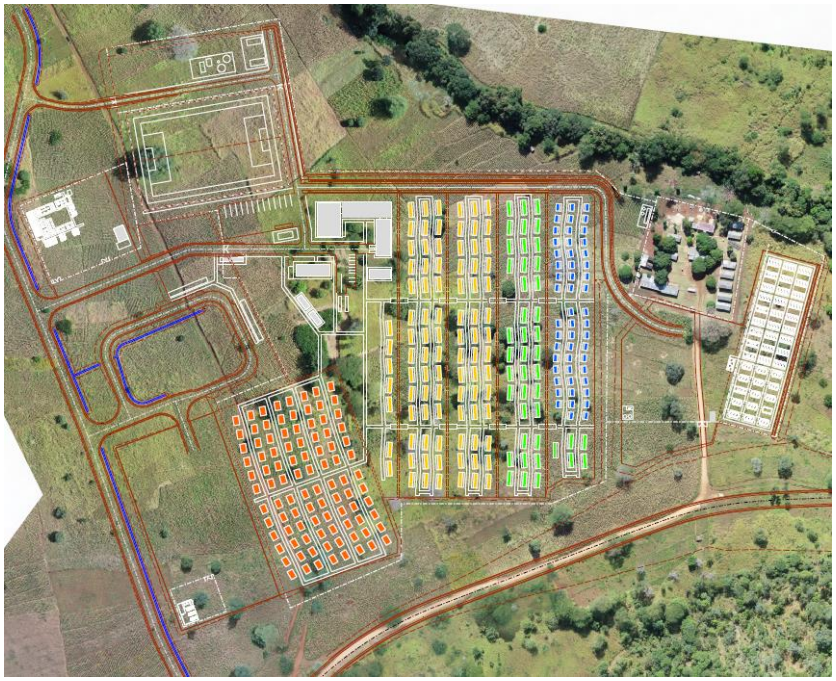
Accommodation Camps

As part of FEED the Construction Camp and Operations Camp were designed with maximum flexibility to service construction workforce requirements that peak at ~800 workers.

Key aspects of camp design and planning include:

- **Fly Camp** - a tented camp with 200 beds that enables construction to start in June 2024 with bulk earthworks and other critical contract works;
- **Construction Camp** – a further 600 bed camp to be constructed after the Fly Camp (800 bed capacity across Fly and Construction camps) and comprising of hard-side accommodations, additional tented accommodations and all the other camp support service buildings; and
- **Operations Camp** – post completion of construction and commissioning, the camp will be downsized to support a long-term operations workforce of ~260 (with the removal of soft-sided accommodations and the retention of hard-sided facilities).

Figure 4: Accommodation camp layout



Cost Updates

Capital Cost

The upfront capital cost estimate for the Ngualla Project has been revised to US$286.9m, reflecting a US$33.9m (10.6%) reduction from the BFS Update estimate of US$320.7m. Capital costs have been estimated at an ACE Class III accuracy level (+15% / -10% with a 90% probability of achievement).

Factors supporting a reduction in capital costs include:

- Adoption of a contract mining model;
- A reduction in the upfront TSF cost following a move to a single TSF cell;
- Scope rationalisation for the SAR, PAR and bulk earthworks;
- A shift to a new and more cost-effective airstrip location;
- Reductions in storage tank sizes; and
- Revised estimates for EPCM, owner's costs and contingencies.

ASX Announcement 30 November 2023

As part of the FEED Study, and in recognition of cost inflation and foreign exchange movements, Wood has undertaken an escalation cost trend analysis on capital cost items. The revised capital estimate incorporates a net escalation adjustment of US$3.1m which includes:

- An escalation adjustment allowance of US$10.5m, based on observed escalations of 5% - 10% on major capital cost items;
- An FX saving of US$5m based on weakening of key native currencies including the Australian Dollar, South African Rand and Chinese Renminbi relative to the US dollar; and
- A logistics adjustment (saving) of US$2.4m based on decreases in ocean freight costs and associated delivery costs of major capital items.

Table 2: Upfront capital cost estimates

Capital cost element (US$m)	BFS Update	FEED Study	Delta
Roads & infrastructure	29.6	22.2	(7.3)
Mine equipment	6.6	0.4	(6.3)
Plant	69.2	67.6	(1.5)
TSF	18.2	17.2	(1.0)
Services	66.9	58.9	(7.9)
Bulk earthworks	9.3	7.9	(1.4)
Airstrip	5.7	4.1	(1.6)
Escalation and FX adjustment	-	3.1	+3.1
Total direct costs	**205.5**	**181.6**	**(24.0)**
EPCM	32.6	29.5	(3.1)
Accommodation camps	22.3	19.8	(2.5)
Preliminaries and other indirect costs	12.6	12.7	+0.0
Owner's cost	14.3	13.6	(0.6)
Contingency	33.4	29.7	(3.7)
Total indirect costs	**115.2**	**105.3**	**(9.9)**
Total upfront capex	**320.7**	**286.9**	**(33.9)**

Operating Costs

The updated average annual operating cost estimate over Life-of-Mine ("**LOM**") is US$76.7m, representing a US$16.6m (17.8%) reduction from the previous BFS Update estimate of US$93.3m. Operating costs have been estimated at an ACE Class III accuracy level (+15% / -10% with a 90% probability of achievement).

Factors supporting a net reduction in operating costs include:

- Lower power costs attributable to an extension of the BOO power plant contract period from 10 years to 20 years;

- Lower logistics and reagents costs supported by updated budgetary proposals;
- Adoption of a lower long-term Tanzanian diesel price of US$1.17/L (representing a 16% reduction in the price reflected in the BFS Update and supported by a detailed analysis of future oil prices and historical diesel price premiums);
- Higher mining costs attributable to the adoption of contract mining; and
- Higher labour costs attributable to moving from 3 to 4 shift panels for operations labour.

Table 3: Operating cost estimate

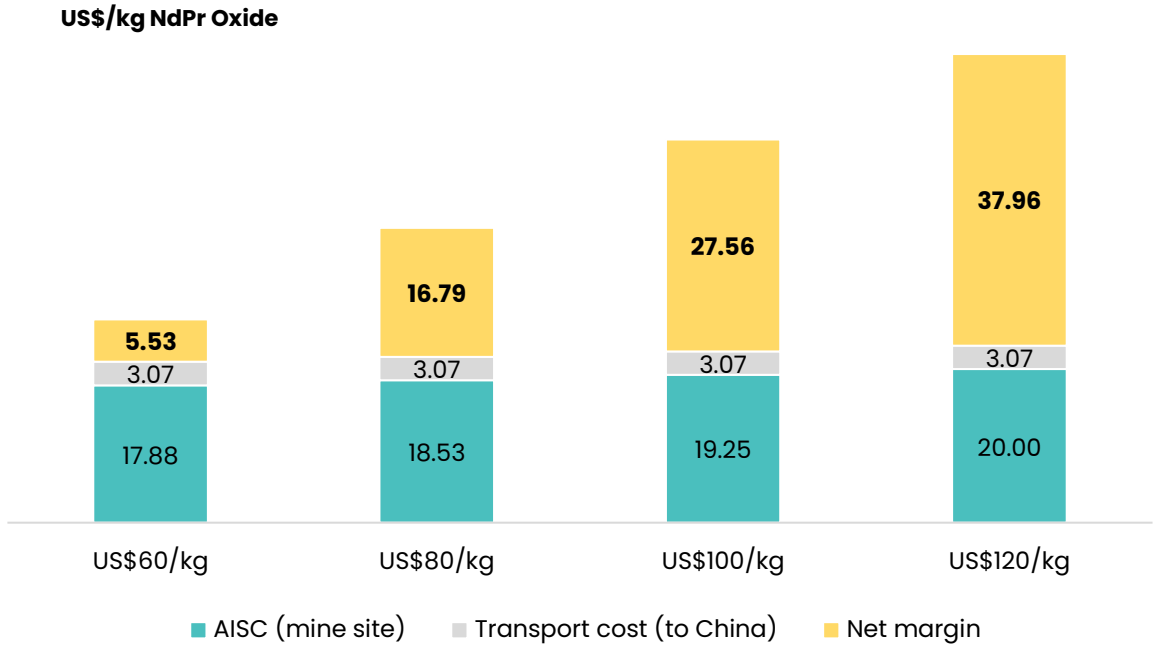
Operating cost - LOM (US$m p.a.)	BFS Update	FEED Study	Delta
Mining cost	8.5	12.8	4.3
Plant Labour	3.1	3.4	0.3
Power	21.9	17.4	(4.5)
Maintenance	2.2	2.2	0.0
Reagents	17.6	12.2	(5.4)
Consumables	1.9	1.9	0.0
Miscellaneous	4.5	4.4	(0.1)
General and administration	9.3	9.7	0.4
Cost (mine site)	**69.0**	**64.0**	**(5.0)**
Concentrate transport	24.3	12.7	(11.6)
Cost (delivered to China)	**93.3**	**76.7**	**(16.6)**

All-in Sustaining Costs

A summary of the All-In Sustaining Cost ("**AISC**") profile for the Ngualla Project at different NdPr Oxide prices is set out in the chart below. The AISC estimates are inclusive of operating costs, by-product credits, royalties, rehabilitation provisions, sustaining capital expenditure and shipping costs to China.

The chart highlights the financial robustness of the Ngualla Project and its capacity to generate strong margins even at lower rare earth prices.

Figure 5: AISC analysis



Project Economics

It is anticipated that Chinese manufacturing and Electric Vehicle ("EV") production will accelerate in coming months, which will support stronger demand for NdPr Oxide and higher prices in the near-term. The medium-to-longer term outlook for NdPr Oxide is for rising market deficits and prices, which is supported by:

- Accelerated growth in EV and green energy sectors, with the majority of global automotive brands committing to complete phase-out of internal combustion engine vehicles;
- Rapid growth in offshore direct drive wind turbines;
- Growing global commitments to decarbonise and to increase funding and subsidies for the green transition;
- Ongoing consolidation of the Chinese rare earth sector;
- Rising sector capital and operating costs;
- Ongoing depletion of global rare earth feedstock; and
- Increasingly stringent EHS standards and growing crackdown on illegal mining within China.

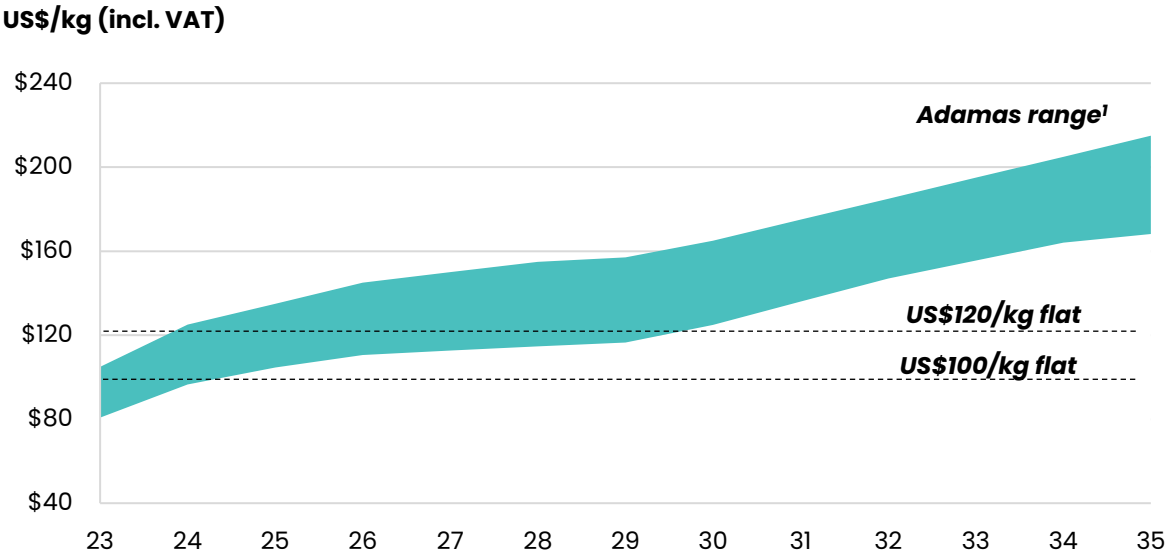
ASX Announcement 30 November 2023

For the purposes of the FEED Study, Peak has considered the latest market forecast from Adamas Intelligence ("**Adamas**") to support pricing assumptions for NdPr Oxide. Adamas has developed three pricing scenarios that have been derived from a supply-demand analysis based on differing global growth and EV uptake rates.

The following pricing scenarios have been adopted for the purposes of valuation and financial sensitivity analysis:

- 'Base' and 'Downside' scenarios from the latest Adamas market study;
- A US$120/kg flat NdPr Oxide price (real), which reflects a consensus price from a range of 16 brokers covering the rare earth sector; and
- A downside scenario at US$100/kg flat NdPr Oxide price (real).

Figure 6: NdPr Oxide projections



Source: Adamas Intelligence – Rare Earth Pricing Quarterly Outlook – Q4 2023
Note: 1. Shaded area represents the range covering Adamas 'downside', 'base' and 'upside' scenarios

To derive a net realisable price for Ngualla concentrate a payability factor is applied to the gross basket value of the concentrate; with over 92% of this value attributable to NdPr Oxide. The payability factor is based on the Binding Offtake Agreement signed with Peak's strategic partner, Shenghe Resources (Singapore), in August 2023 [1] and reflects a combination of the following price adjustments:

[1] See 9 August 2023 ASX Announcement – Executed Offtake Agreement and Strategic MOU with Shenghe.

- A market / product factor representing the ease by which third-party refineries are able to sell the refined product – which is typically >95% for highly saleable products such as NdPr Oxide and a lower percentage for products such as cerium and lanthanum;
- A refinery charge representing the cost to refine a mineral concentrate into a saleable refined oxide(s) – which also includes an embedded refinery margin;
- A recovery factor representing the natural loss of rare earth material through the refining process;
- A sales / distribution fee payable to the offtaker of the concentrate; and
- A deduction for Chinese VAT (of 13%).

The payability factor represents the ratio of the price received for concentrate relative to the basket value of contained NdPr Oxide as well as other rare earth elements.

A summary of the financial outputs for the Ngualla Project is shown in Figure 7 and Table 4. Financial outputs shown are net of distributions to the Government of Tanzania ("**GOT**") which include corporate taxes, royalties and other fees, and dividends attributable the GOT's 16% free-carried interest ("**FCI**"). Net Present Value ("**NPV**") estimations have used real discount rates.

The estimated $NPV_{8\%,\ real}$ of Peak's attributable interest in the Ngualla Project under the Adamas Base and Downside scenarios is ~US$982m (~A$1,493m) and ~US$724m (~A$1,100m), respectively.

Figure 7: NPV$_{(8\%, real)}$, attributable to Peak

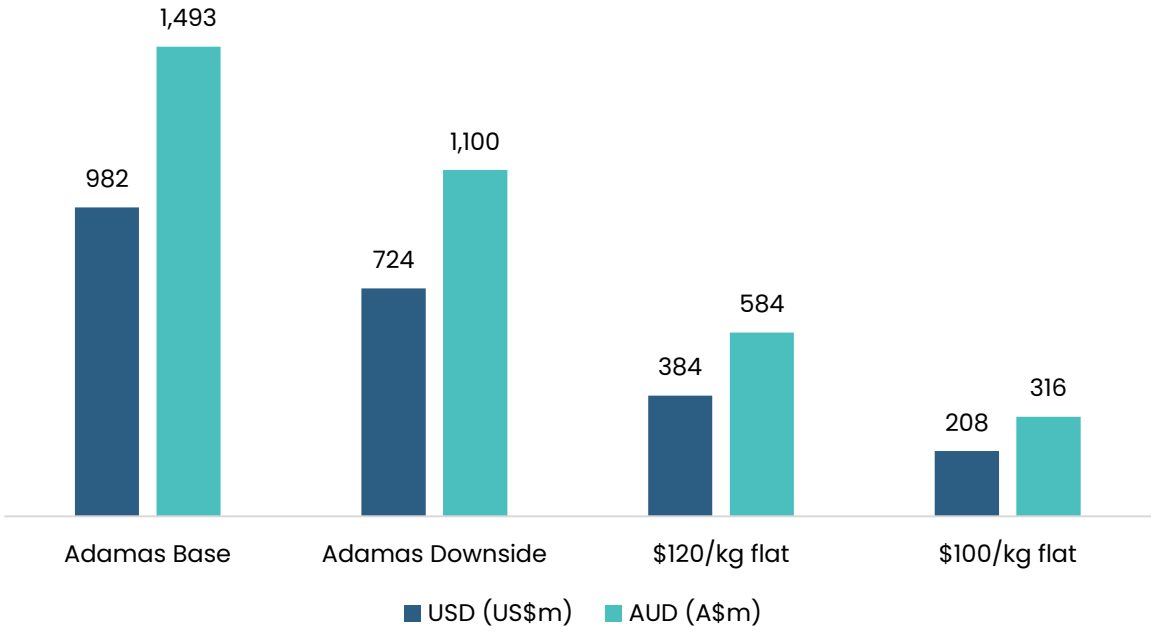


Table 4: Project economics

Financial Metrics	Unit	Pricing scenarios			
		Adamas Base	Adamas Downside	US$120/kg (flat)	US$100/kg (flat)
NdPr price (2026 – 2030)	US$/kg	**153**	**130**	120	100
NdPr price (LOM)	US$/kg	**201**	**171**	120	100
Net payability (LOM)	%	**53.7%**	**52.6%**	50.8%	49.9%
Average annual revenue	US$m pa	**404**	**339**	235	194
Net operating cash flow	US$m	**4,725**	**3,782**	2,243	1,654
Annual operating cash flow	US$m pa	**38**	**33**	25	22
Average annual EBITDA	US$m pa	**281**	**225**	134	99
Peak NPV$_{8\%, real}$	US$m	**982**	**724**	384	208
Peak NPV$_{10\%, real}$	US$m	**747**	**537**	278	132
IRR	%	**33.8%**	**28.8%**	24.7%	18.8%

ASX Announcement 30 November 2023

Schedule and Next Steps

With the completion of the FEED study, Peak is now focused on progressing the Ngualla Project towards a Final Investment Decision by the end of June 2024.

An updated project schedule was confirmed as part of the FEED Study with the first commercial concentrate scheduled following a 24-month construction and commissioning period.

The FEED Study has been completed based on an EPCM execution strategy. Peak will continue to assess the merits of an alternative EPC execution strategy having regard to the funding and EPC MOU executed with its major shareholder, Shenghe Resources (Singapore), in August 2023. A final decision on an execution strategy is expected to be made in early 2024.

Other key workstreams supporting a Final Investment Decision include:

- **Project and export financing** – with the assistance of debt financial adviser, WaterBorne Capital, finalising a project financing facility; and
- **Funding and potential partnering** – with the assistance of Macquarie Capital, progress negotiations with Shenghe Resources (Singapore) around purchasing a significant non-controlling interest in the Ngualla Project as well as evaluating other strategic interest and options.

Peak also intends to further assess optimisation opportunities that have been identified in the FEED Study that have the potential of delivering material cost savings to the project including:

- Waste heat recovery;
- Further logistics enhancements including the potential use of rail;
- Vertical packaging of contracts to reduce indirect costs; and
- An integrated EPCM and Owner's team project development team.

This announcement is authorised for release by the Company's Board of Directors.

Bardin Davis

Chief Executive Officer

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ASX Announcement 30 November 2023

Disclaimer

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This announcement contains forward-looking information and prospective financial material, which is predictive in nature and may be affected by inaccurate assumptions or by known or unknown risks and uncertainties and may differ materially from results ultimately achieved.

These forward-looking statements are based on an assessment of present economic and operating conditions, and on a number of assumptions regarding future events and actions that, as at the date of this announcement. Such forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of the Company, the directors and management. These factors include, but are not limited to, the inherent risks involved in the exploration, development and mining of mineral properties, geological, mining and processing technical problems, the inability to obtain permits and other regulatory approvals required in connection with mining and processing operations, competition for among other things, capital, acquisitions of reserves, undeveloped lands and skilled personnel, various events that could disrupt operations, the possibility of project cost overruns or unanticipated costs and expenses and the ability of contracted parties to provide services as contracted.

There can be no assurance that such information or statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such information. Important factors could cause actual results to differ materially from the Company's expectations. The Company does not intend to update or revise forward-looking statements, or publish prospective financial information in the future, regardless of whether new information, future events or any other factors affect the information contained in this announcement, except where required by law.

There is no certainty that the Company will be able to raise the amount of funding indicated by this announcement when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of the Company's existing shares. It is also possible that the Company could pursue other "value realisation" strategies.

All persons should consider seeking appropriate professional legal, financial and taxation advice in reviewing this announcement and all other information with respect to the Company and evaluating the business, financial performance and operations of the Company. Neither the provision of this announcement nor any information contained in this announcement or subsequently communicated to any person in connection with this announcement is, or should be taken as, constituting the giving of investment or financial advice to any person.