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# The world's next REO producer.

May 2020



ASX: VML



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This presentation provides an overview of prospective rare earth projects (“the Projects”) and development opportunities and contains “forward looking statements”. Forward looking statements are all statements other than statements of historical fact included in this presentation including and without limitation those regarding the Projects’ strategy, financial positions, plans and identification of additional resources and reserves. Such forward looking statements are subject to risk factors associated with exploration, development and the acquisitions of mining tenements and involve known and unknown risks, uncertainties and other factors. These risk factors could have a material effect on the operating, financial performance and achievements of the Projects and may cause the actual results to be materially different from any future operating, financial performance and achievements expressed or implied in the forward looking statements contained in this presentation. Although there are reasonable grounds for making the forward looking statements, such forward looking statements may be materially affected by changes in the underlying assumptions and changes to the environment which the Projects will operate in the future and such assumptions may or may not prove to be correct. Some of the underlying assumptions in this presentation are based on information which has not been independently verified.

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#### **ASX Listing Rule Information**

The report contains information relating to Minera Resource and Exploration Results extracted from ASX market announcements reported previously and published on the ASX platform on 13 December 2019, 19 February 2020 and 15 April 2020. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the original market announcements continue to apply and have not materially changed.

Investors should note that the Mineral Resource estimate for the Nechalacho Project Upper Zone and Wigu Hill Rare Earth Project are foreign estimates and are not reported in accordance with the JORC Code. A competent person has not done sufficient work to classify these foreign estimate as a mineral resource in accordance with the JORC Code and it is uncertain that following further exploration or evaluation work that the foreign estimates will be able to be reported as a mineral resource in accordance with the JORC Code. The Company has previously disclosed the foreign estimates in compliance with ASX Listing Rule 5.12 in the announcement dated 25 June 2019 titled “Vital to Transform into Rare Earth Oxide Developer” (“Announcement”). The Company is not in possession of any new information or data relating the foreign estimates that materially impacts on the reliability of the estimates or the Company’s ability to verify the foreign estimates in accordance with Appendix 5A (JORC Code). The Company confirms that the supporting information provided in the Announcement continues to apply and has not materially changed.

#### **References:**

1. ASX announcement dated 15 April 2020 titled “Substantial Increase in Resource Size and Grade at North-T Zone Nechalacho” (<https://www.asx.com.au/asxpdf/20200415/pdf/44gytlw5ckfbyr.pdf>); and ASX announcement dated 13 December 2019 titled “Vital Announces JORC 2012 Compliant Resources for the Nechalacho Rare Earth Deposit” (<https://www.asx.com.au/asxpdf/20191213/pdf/44ckqzdnqkmzpj.pdf>)
2. ASX announcement dated 25 June 2019 titled “Vital to Transform Into Rare Earth Oxide Developer” (<https://www.asx.com.au/asxpdf/20190625/pdf/446361nxqnn9w8.pdf>)
3. ASX announcement dated 19 February 2020 titled “Vital Intersects Ultra-High Grade, Near-Surface REO at Nechalacho” (<https://www.asx.com.au/asxpdf/20200219/pdf/44f74511z68r0.pdf>)
4. ASX announcement dated 5 December 2019 titled “Vital Demonstrates Ability to Produce Rare Earth Concentrate with Grades Above 35% REO” (<https://www.asx.com.au/asxpdf/20191205/pdf/44c9nq180qpl7h.pdf>)

# Highlights – The world's next REO producer



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## World Class REO Development Team – ex Lynas Corporation Ltd

- Lead by Vital Metals MD Geoff Atkins

## 2 World Class REO Projects

- Nechalacho REO Project (Canada) 95mt at 1.46% TREO
- Wigu Hill (Tanzania) 3.3mt at 2.6% TREO

## High Grade Resources

- North T Zone resource grade 9% TREO incl 2.2% NdPr
- Drill hits up to 38% TREO incl 8.1% NdPr from 13m

## Simple Metallurgy

- 35%+ initial concentration via conventional ore sorting
- 97% recovery into solution via hydrochloric acid with proven flow sheet

## Leverage of Sunk Capital - Rapid Development Timeline

- Over \$120m spent by Avalon on drilling permitting and development
- Fully permitted to commence mining and sorting operations at site
- Advanced negotiation for fully permitted site for cracking and leaching facility

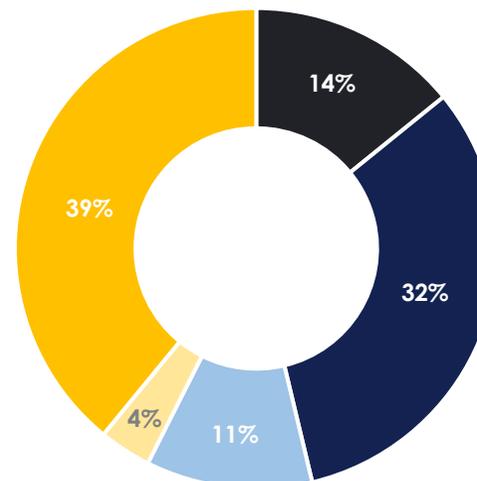
## Targeting to be the Largest Independent Supplier of Clean Mixed Rare Earth Feedstock outside of China



*Aerial view of Nechalacho's North-T Zone*

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### VML Share Price Performance



### Shareholder Breakdown

- Board and Related Parties
- High Net Worth's
- Cheetah Shareholders
- Nominees
- Retail Shareholders

## Board of Directors

Geoff Atkins	Managing Director
Frances Harper	Chairman
Zane Lewis	Non-Executive Director
Phil Coulson	Non-Executive Director
Evan Cranston	Non-Executive Director

## Capital Structure

ASX Code	VML
Shares on Issue	2.142m
Performance Rights*	800m
Options on Issue*	433.5m
Share Price (as 5th May 2020)	\$0.01
Market Capitalisation	\$21m
Cash (31 March 2020)	\$3.5m

# Vital's senior management are world experts in developing rare earth projects.



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## Senior Management

### **Geoff Atkins**

Managing Director

- 25 years of project and corporate development experience including four (4) years as Corporate Planning Manager at Lynas Corporation where he oversaw the development of and implementation of the strategic planning process and the development of the Mt Weld Concentration Plant and Lynas Advance Materials Plant in Malaysia.

### **Tony Hadley**

Chief Operating Officer

- Over 25 years metallurgical process experience including General Manager, Mt Weld where he successfully designed and commissioned the world's first rare earth phosphate flotation concentrator and General Manager, Browns Range where he successfully designed and commissioned the world's first heavy rare earth process plant for xenotime feedstock.

### **Matthew Edler**

General Manager

- Former General Manager for Lynas Corporation and was responsible for all in-country activities for the Kangankunde rare earth project – Malawi.

### **Darren Sutton**

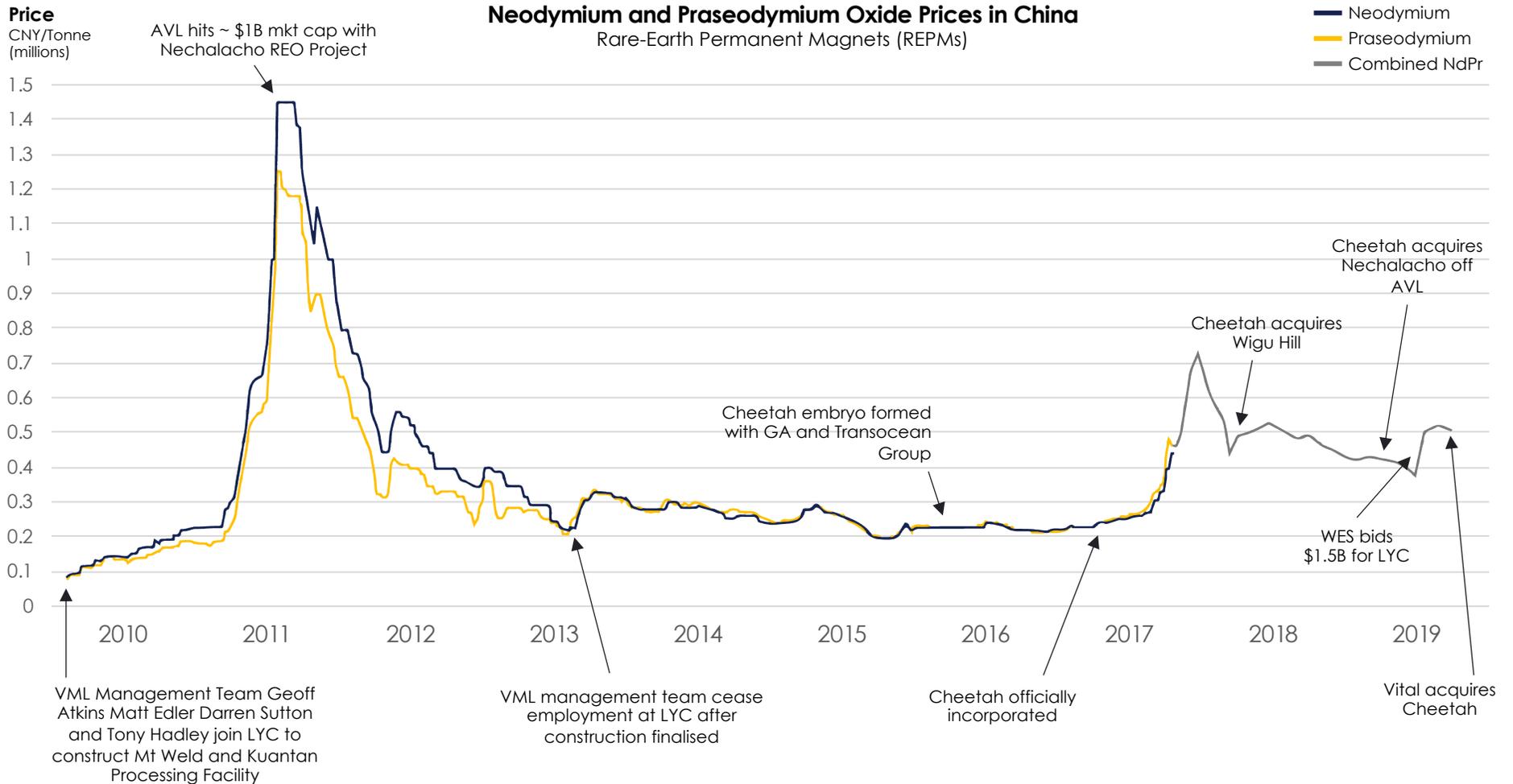
General Manager

- Former process engineer at Lynas Corporation and Hastings Technology Metals with responsibility for developing process flow sheets, plant commissioning and achieving customer acceptance rare earth precipitates.

# Cheetah has evolved from a concept in 2015 to today



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# Rare Earth Markets are driven by energy efficiency.

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## Military Strategic Resource

**Heavily used in:** Jet Turbines, submarines, advanced weapons systems (lasers, satellites), communication networks and computing.



## Green Energy

- A 3MW wind turbine uses 600+kg of NdPr Oxides.
- Projected to grow at a rate of over 7%.



## Electric Vehicles

- EVs expected to grow from 3 million to 125 million by 2030.
- Every Electric car will use 0.5 – 1.5Kg more NdPr than the internal combustion engine it replaces.



## Hydraulic Fracturing

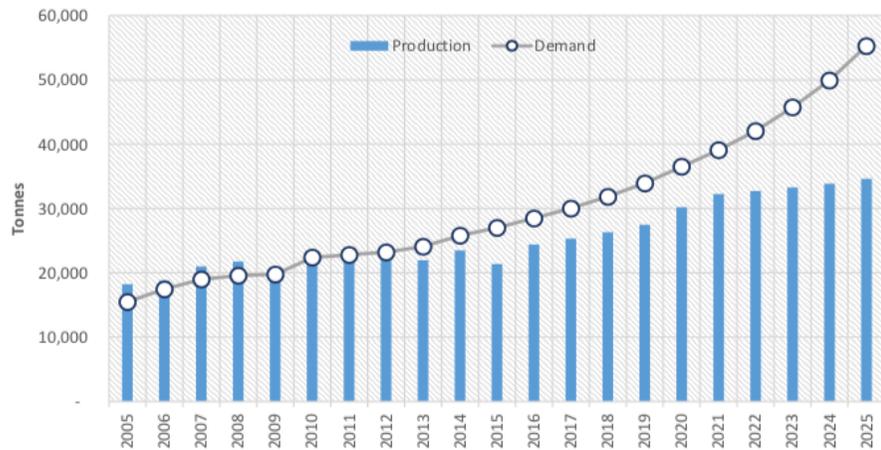
- Every barrel of crude fracked uses 3.8g of REO cracking catalysts.

# Rare earth demand will be driven by high-strength magnets

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## Lanthanum and Neodymium Supply/Demand Imbalance

- Demand for both neodymium and lanthanum is forecast to grow significantly from 2021
- With new projects typically taking 2-4 years to reach production, there is a risk of significant supply/demand imbalance
- Note that production forecasts include the assumption of two new mines entering production by 2021



Global annual neodymium production-demand balance from 2005 through to 2025



Global annual lanthanum production-demand balance from 2005 through to 2025

Source: Adamus Intelligence

# Vital has the opportunity to fill the supply/demand imbalance.

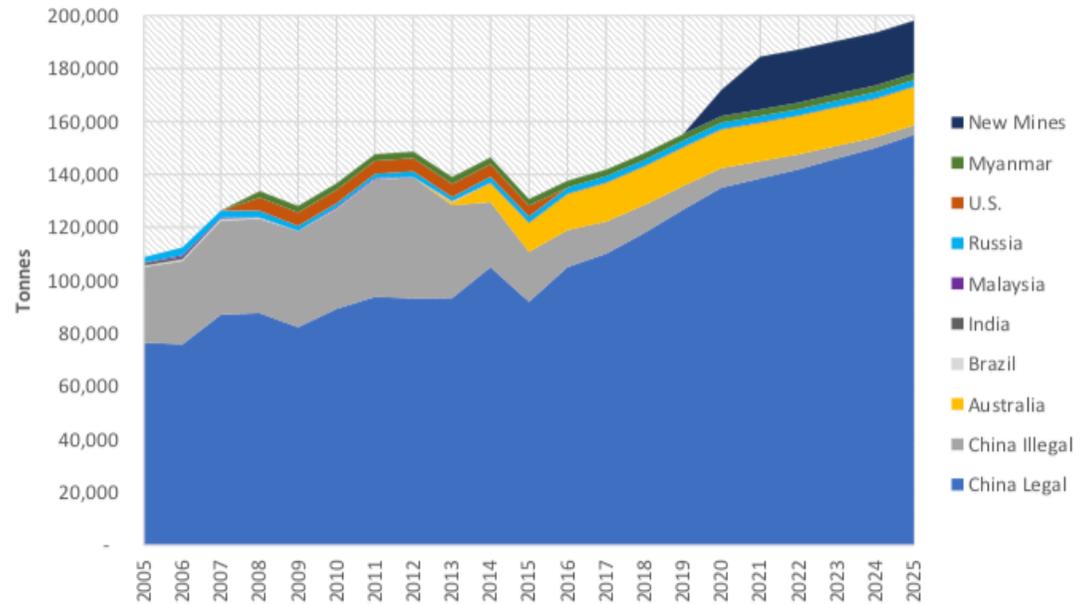


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## Rare Earths in supply/demand imbalance

### New mines are required now

- To meet strong global demand, a new mine with production of 20,000t REO/yr is required every year from 2020 to 2025
- China is forecast to be a net importer of rare earths by 2025 and is acquiring projects outside of China
- To meet demand, projects of this size would have to have immediate financing and immediate approval
- NO projects of this scale exist at this state of readiness
- Vital would be the only new producer for the foreseeable future



Source: Adamus Intelligence

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## Canada and U.S. Finalize Joint Action Plan on Critical Minerals Collaboration

January 9<sup>th</sup> 2020  
Ottawa, Canada

Canada and the United States share a mutual interest in improving critical mineral security and ensuring the future competitiveness of Canadian and U.S. minerals industries. Collaboration in this area could attract investment to Canadian exploration and mining projects, as well as spur job creation and economic growth in various downstream industries.

Today, Canada and the U.S. announced they have finalized the Canada–U.S. Joint Action Plan on Critical Minerals Collaboration, advancing our mutual interest in securing supply chains for the critical minerals needed for important manufacturing sectors, including communication technology, aerospace and defence, and clean technology.

This announcement delivers on the June 2019 commitment by the Prime

Minister of Canada and the President of the United States.

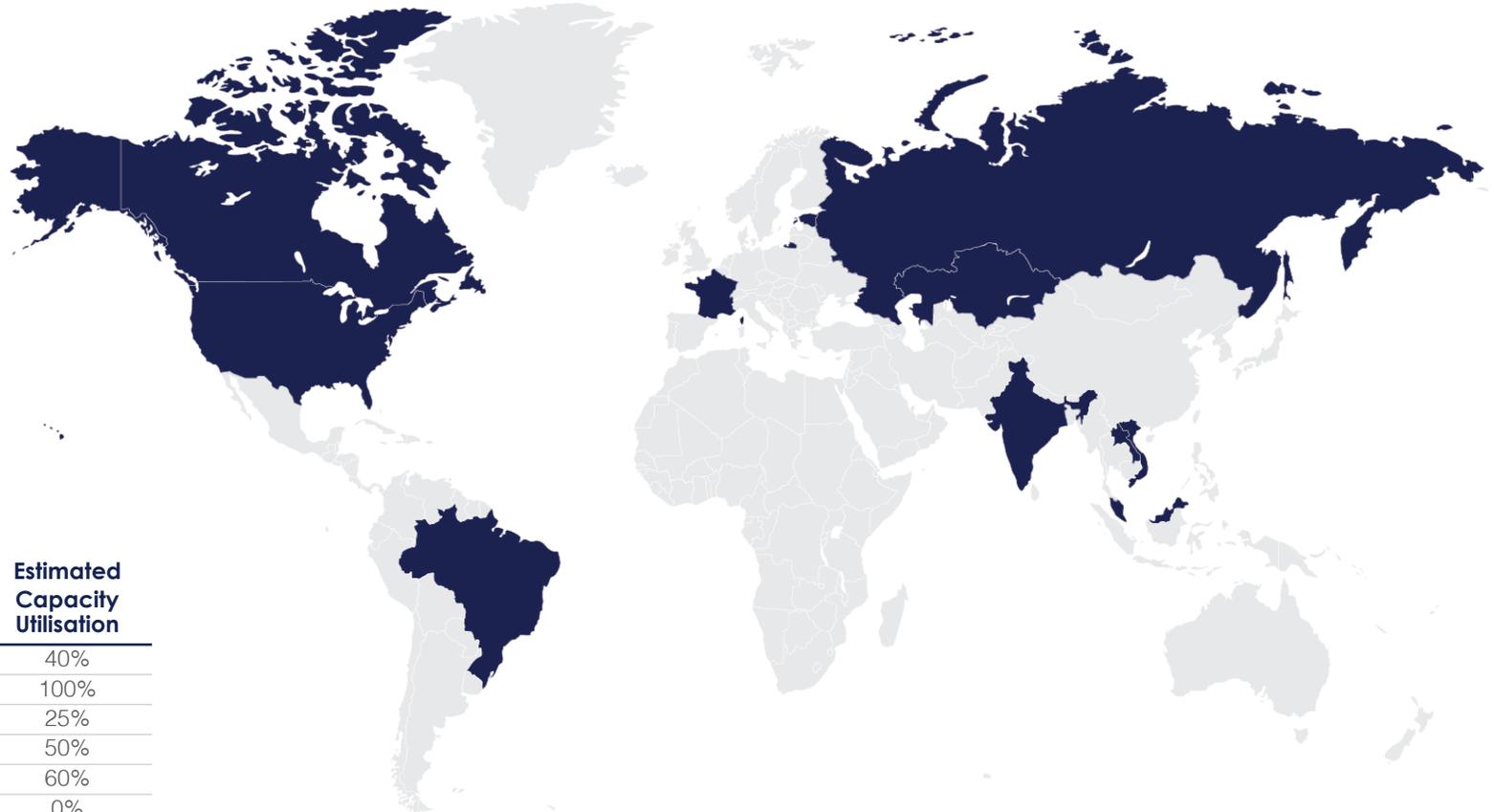
The Action Plan will guide cooperation in areas such as industry engagement; efforts to secure critical minerals supply chains for strategic industries and defence; improving information sharing on mineral resources and potential; and cooperation in multilateral fora and with other countries. This Action Plan will promote joint initiatives, including research and development cooperation, supply chain modelling and increased support for industry.

Experts from both countries will convene in the coming weeks to advance joint initiatives to address shared mineral security concerns — helping ensure the continued economic growth and national security of both Canada and the U.S.



# There is significant existing and potential rare earth separation capacity, which will require feedstock

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Country	Estimated TREO T/yr	Estimated Capacity Utilisation
China	300,000	40%
Malaysia	20,000	100%
France	9,000	25%
Vietnam	7,000	50%
Russia	4,000	60%
Kazakhstan	3,500	0%
Estonia	3,000	33%
Laos	3,000	0%
India	2,500	0%
Brazil	2,000	0%

# A new strategy is needed if shareholder returns are to be maximised



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## Rare Earths – A New Strategy Needed

### Time Taken to Develop Projects

- Financing, contracting, construction and commissioning 4+ years
- Projects are complex and require 2-3 years to achieve design capacity

### CAPEX to Develop Project (ARU PEK ALK HAS)

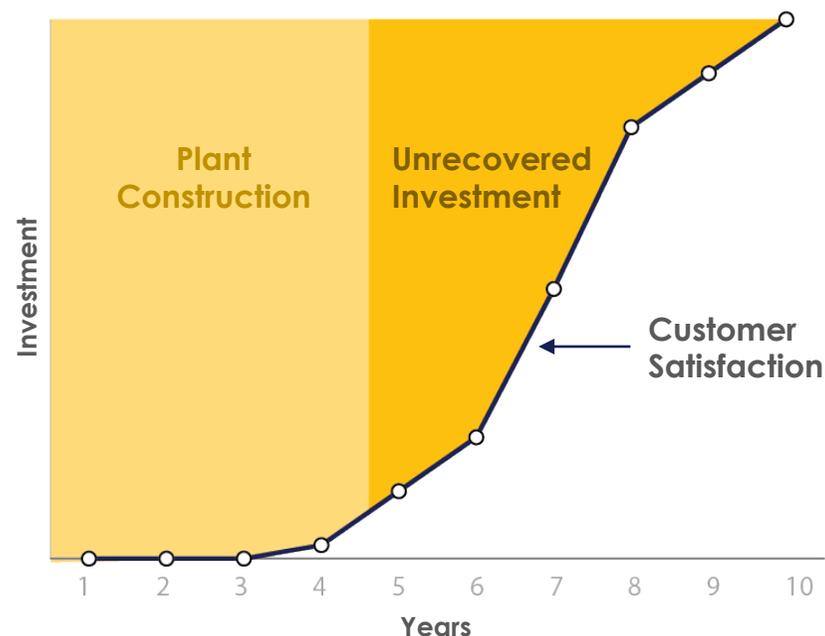
- Average CAPEX of aspiring ASX developers is \$823M
- Average ASX Market capitalization is \$150M (Alkane \$417m mkt cap incl)

### Customer Acceptance of Product

- Due to very high specification levels, If replacing existing supply, customers will slowly ramp up acceptance of product over 3-4 years

**Building large REO Projects are both extremely dilutive to shareholders who will not see a return for many years.**

Company	Estimated CAPEX	Market Cap (5 May 2020)
Arafura Resources	US\$726M	A\$74M
Peak Resources	US\$365M	A\$25M
Hastings Technology Metals	A\$593M	A\$59M
Alkane Resources	A1.3B	A\$417M



# Vital is focusing on reduced capex and time to market to maximise shareholder returns



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## Rare Earths – The VML Difference

### Time Taken to Develop Projects

- Reducing the scale and complexity of the project reduces the time to market
- Project can then be expanded out of cashflow to match customer demand

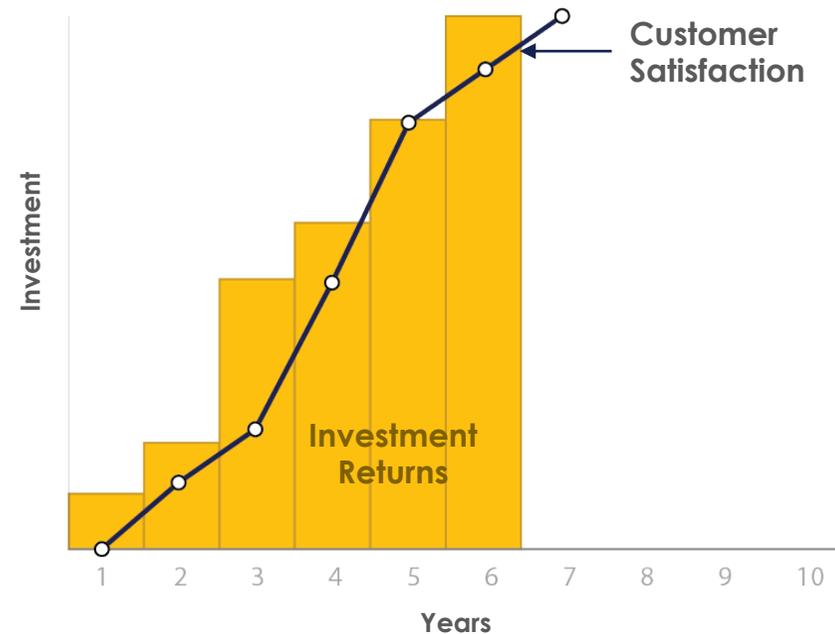
### CAPEX to Develop Project

- By scaling the project to utilise 'off-the shelf' plant and equipment and simplifying the project, CAPEX is reduced

### Customer Acceptance of Product

- By focusing on 'filling the gap' and initially only supplying a small fraction of total feedstock, the customer acceptance process is simplified

**By focusing on time to market with reduced capex and dilution, shareholder returns can be maximised.**



# As a critical product in 'green-tech', environmental impact throughout the rare earth supply chain must be minimised

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## Vital Waste Management Principles

### Provide Consistent Quality of Supply

- Supply rare earth separation facilities with a guaranteed supply of feedstock with impurities and waste products removed

### Take Responsibility for Waste

- Waste products produced from VML's projects are our responsibility to manage.
- The days of exporting waste are numbered

### Minimise Environmental Impact

- Seek to minimize quantities of reagents and process water in our operations

**By taking responsibility for waste and minimizing the environmental impact of our projects, we can help consign to history the pictures of environmental damage caused by rare earth operations**



*Historical photographs of rare earth processing waste in Southern China.*

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# Nachalacho, Canada

# The Nechalacho project is a world-class rare earth project.



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## Nechalacho is located on Great Slave Lake near Yellowknife, NWT Canada

### Large World Class REO Resource

- 94.7MT at 1.46% REO (measured, indicated and inferred)

### Tier 1 Mining Jurisdiction

### CAPEX to Develop Project

- Located 100km from Yellowknife
- 40 person camp with air strip
- Great Slave Lake – access highway
- Barge access in summer
- Ice Road winter

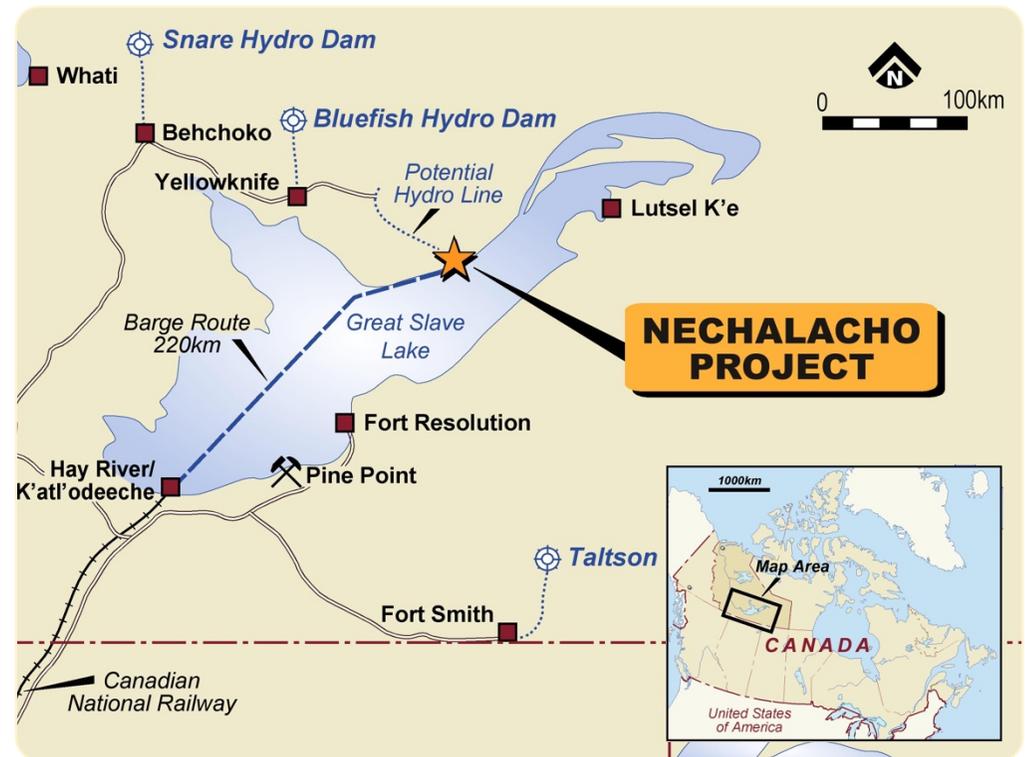
### Customer Acceptance of Product

- Targeting heavy rare earth basal zone
- Completed DFS 2013 - CAD\$1.6B CAPEX
- Upper Zone acquired for CAD\$5m in 2018

### Fully permitted to commence operations

### Vital to target LREO Upper Zone

- Potential for lowest quartile CAPEX and OPEX



# The Nechalacho project has received support from local communities.



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## Letters of support received from local communities, including:

- Yellowknife Dene First Nation (YKDFN)
- North Slave Metis Alliance (NSMA)
- Deninu K'ue First Nation (DKN)
- City of Yellowknife
- Town of Hay River

# The Nechalacho project has world-class infrastructure



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*40 Person Camp on Thor Lake*



*Access to Canadian National Railway at Hay River*



*Drill rig being de-mobilised on the Nechalacho Ice Road*



*Drill rig being mobilised via barge*

# The initial focus will be the North-T Zone before attention is shifted to the Tardiff Zones

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**Nechalacho contains a Global JORC Resource of 94Mt@1.46% REO  
Over 1,372,000t of contained REO incl 330kt of NdPr**

## Initial Focus on Bastaneseite Mineralisation Only

- Ultra high grade (9% TREO) North T Zone starter pit ~ 9,000t of contained REO
- Followed by Tardiff Zones ~ 76,000t of contained TREO
- Over 20,800t of contained NdPr

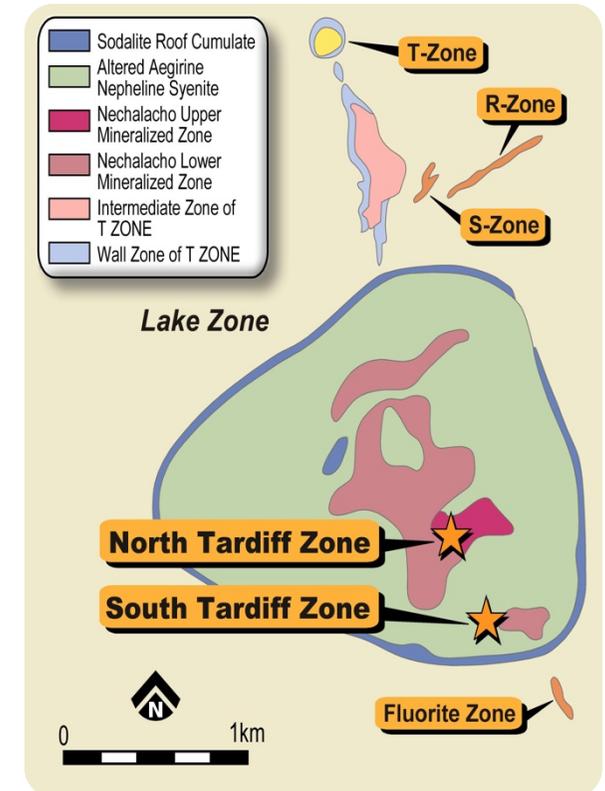


## Tardiff Zone (0.3% Nd<sub>2</sub>O<sub>3</sub> Cut-off)

Resource Type	Mt	TREO (%)	HREO/TREO (%)	NdPr/TREO
Measured	0.287	2.729%	7.7%	24.1%
Indicated	1.611	2.429%	7.2%	24.1%
Inferred	1.297	2.237%	6.8%	24.2%
<b>Total</b>	<b>3.195</b>	<b>2.378%</b>	<b>7.1%</b>	<b>24.2%</b>

## North T Zone (0.3% Nd<sub>2</sub>O<sub>3</sub> Cut-off)

Resource Type	Kt	LREO (%)	Pr <sub>6</sub> O <sub>11</sub> (%)	Nd <sub>2</sub> O <sub>3</sub> (%)
Measured	68	9.6%	0.5%	1.8%
Indicated	33	7.8%	0.4%	1.5%
Inferred	4	5.8%	0.3%	1.1%
<b>Total</b>	<b>105</b>	<b>8.9%</b>	<b>0.5%</b>	<b>1.6%</b>



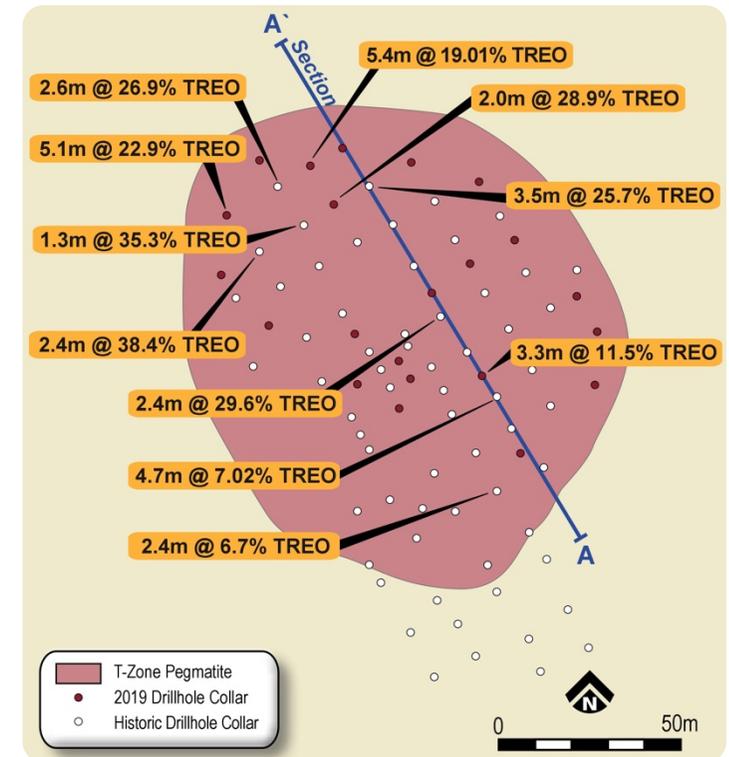
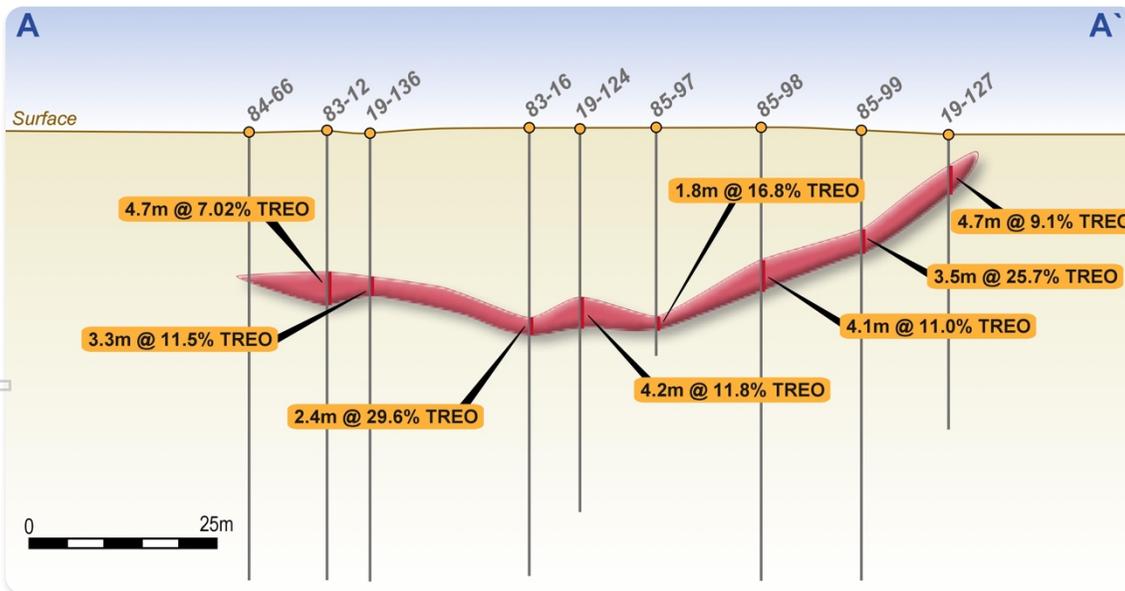
# The North-T deposit contains intercepts of ultra-high grade making it an ideal start-up operation



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## The North T Zone contains over 9,000t REO which is ideal for a near term start-up operation

- Ultra high grade (9% TREO) North T Zone starter pit ~ 9,000t of contained REO
- Shallow simple open pit operation



# Process testwork has been successful in producing high-grade concentrate and leaching

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## Ore Sorting via X-Ray Transmission (single pass)

- 36% REO concentrate produced from 10.5% REO
- Grades up to 41% REO achieved
- REO recoveries up to 87% achieved

## Gravity Concentration on Fines

- 40% REO concentrate via shaking tables at 80% recovery

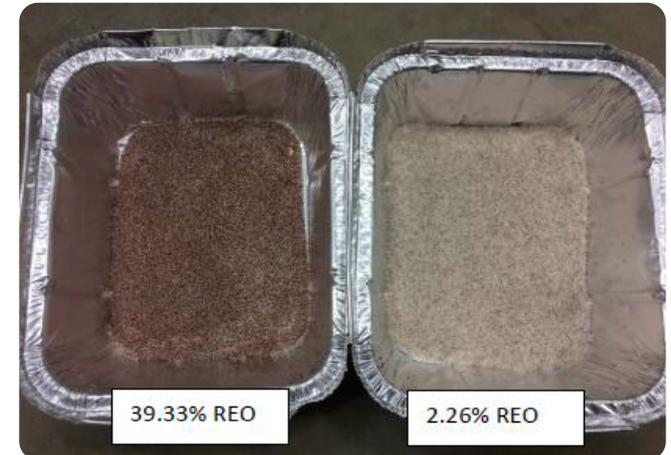
## Leaching of Concentrate

- 97% recoveries into solution via sulphuric acid
- 93% recoveries into solution via hydrochloric acid

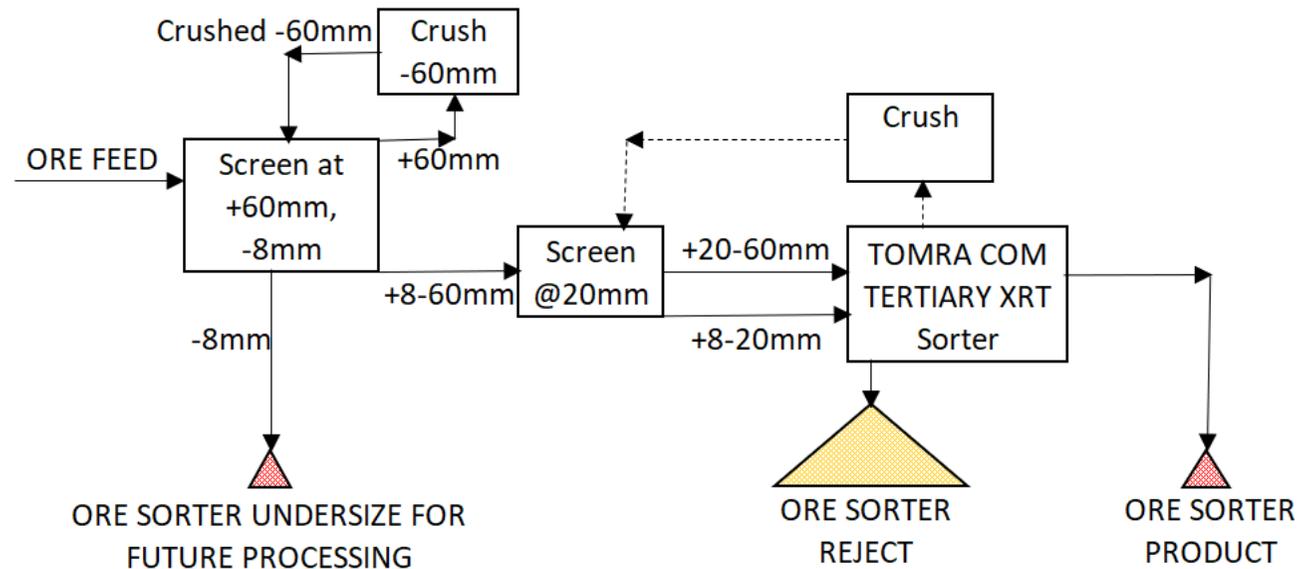
*Concentrate sample via sorting*



*Concentrate sample via gravity*



# The metallurgy required to process bastnaesite has been successfully demonstrated in operations for many years



Cracking and Leaching flowsheets for bastnaesite ore bodies are well understood with bastnaesite operations successfully operated for over 50 years.

Conventional leaching flow sheet 97% recoveries into solution with sulphuric acid

# The ability to concentrate by ore sorter helps minimize environmental impacts and costs



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*Similar Ore Sorter Structure*

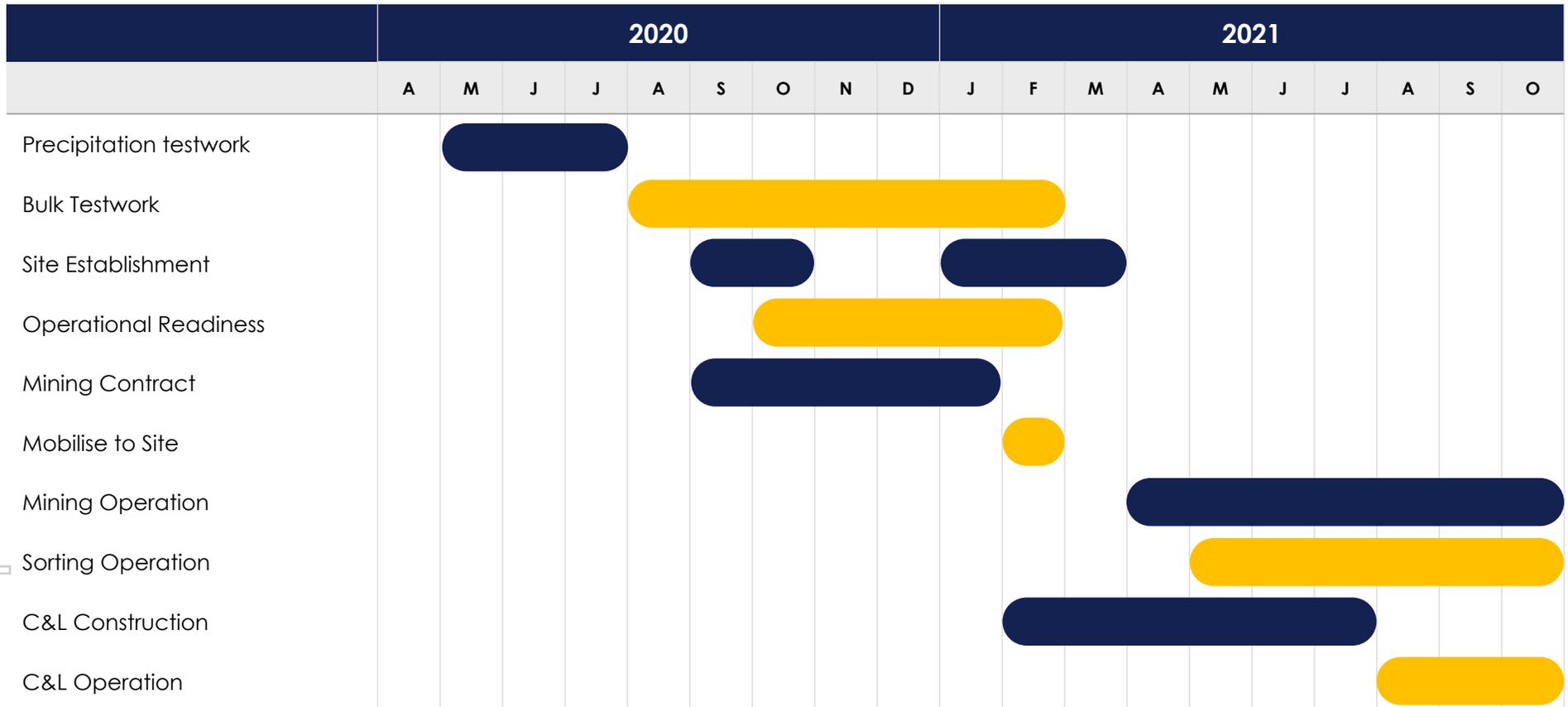


*Ore sorting plant at a gold project in Alaska*

# Vital is targeting production commencing from Nechalacho in 2021



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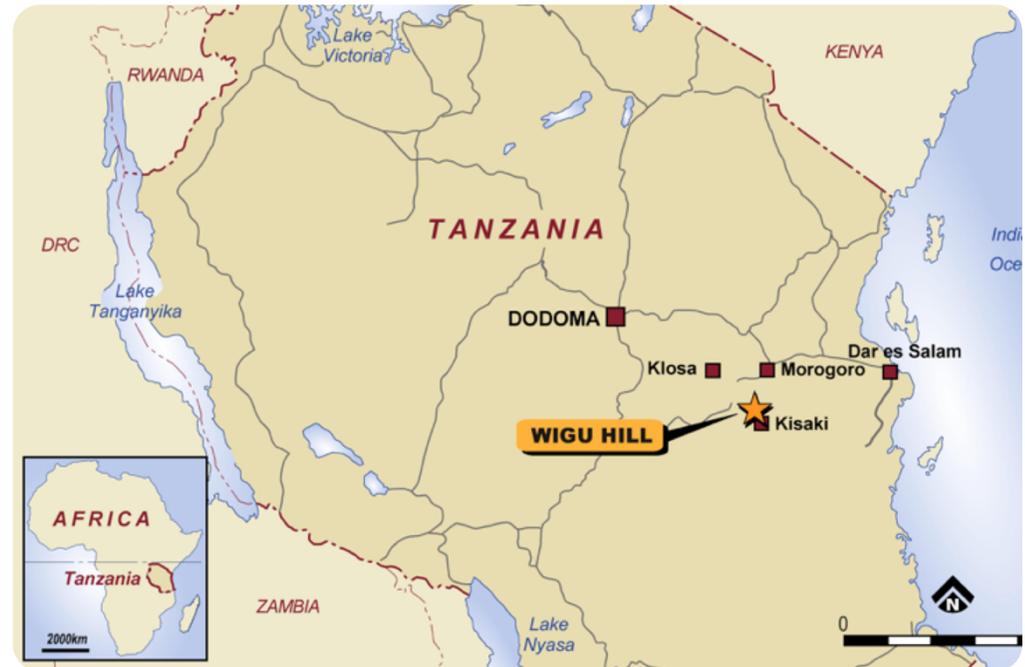
Wigu Hill

# Wigu Hill Project (90%) is targeted as VML's second rare earth project to enter production



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- Located near the town of Kisaki in the Morogoro region of Tanzania
- Mineralisation is widespread over the entire hill with only 2 out of 10 known targets drilled
- Barrack and Tanzania Government have recently resolved their dispute
- Vital to target Wigu Hill – as second development project
- Discussions well advanced with TZ Government on the issuance of a Mining License



# The initial focus for Wigu Hill Project will be the Twiga deposit



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## Wigu Hill contains a historical NI43-101 Resource of 3.3Mt @ 2.6% REO

Zone	Mt	TREO (%)	La <sub>2</sub> O <sub>3</sub> %	CeO <sub>2</sub> %	Pr <sub>6</sub> O <sub>11</sub> (%)	Nd <sub>2</sub> O <sub>3</sub> (%)
Twiga NE	1.6	2.6%	0.98%	1.26%	0.1%	0.23%
Twiga SW	0.5	3.6%	1.33%	1.71%	0.13%	0.3%
Tembo NW	0.9	2.2%	0.78%	1.09%	0.09%	0.23%
Tembo SE	0.2	2.2%	0.69%	1.1%	0.1%	0.27%
<b>Total Inferred Resource</b>	<b>3.3</b>	<b>2.6%</b>	<b>0.96%</b>	<b>1.27%</b>	<b>0.1%</b>	<b>0.24%</b>

1. The effective date for this Inferred Mineral Resource Statement is 25 August 2011 and reported on SEDAR (contained in a Canadian National Instrument NI 43-101 Technical Report by AMEC Earth and Environmental UK Ltd.).
2. A selective mining unit (SMU) size of 3m by 3m by 3m was assumed when creating the block model.
3. Reported grades are based on consideration of the grades of mineralised material and weakly to non-mineralised wallrock material estimated to fall within each SMU
4. The reported Mineral Resource is based on a grade cut-off of 1.0% LREO5 (sum of estimated grades of La<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, Pr<sub>6</sub>O<sub>11</sub>, Nd<sub>2</sub>O<sub>3</sub> and Sm<sub>2</sub>O<sub>3</sub>).
5. The Mineral Resources for the Twiga and Tembo deposits have been constrained by an optimised pit shell defined by the following assumptions, slope angles of 50°; a mining dilution of 0% (already incorporated in the SMUs); a mining cost of USD2.85/t; process operating costs of USD12.0/t; G&A costs of USD3.0/t of resource, with a 90% recovery of REOs to a 45% LREO5 bastnaesite concentrate; and a concentrate price of USD10/kg

Similarly to Nechalacho's North-T Zone, the Twiga deposit contains large, discrete bastnaesite crystals



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**Bastnaesite mineralisation – similar to Nechalacho**

- Amenable to concentration via ore sorting
- Ability to leverage off Nechalacho

**Excellent Infrastructure**

- Located close to Tazara railway, power and water

# Conclusion – Vital on track to be the World's next REO Producer



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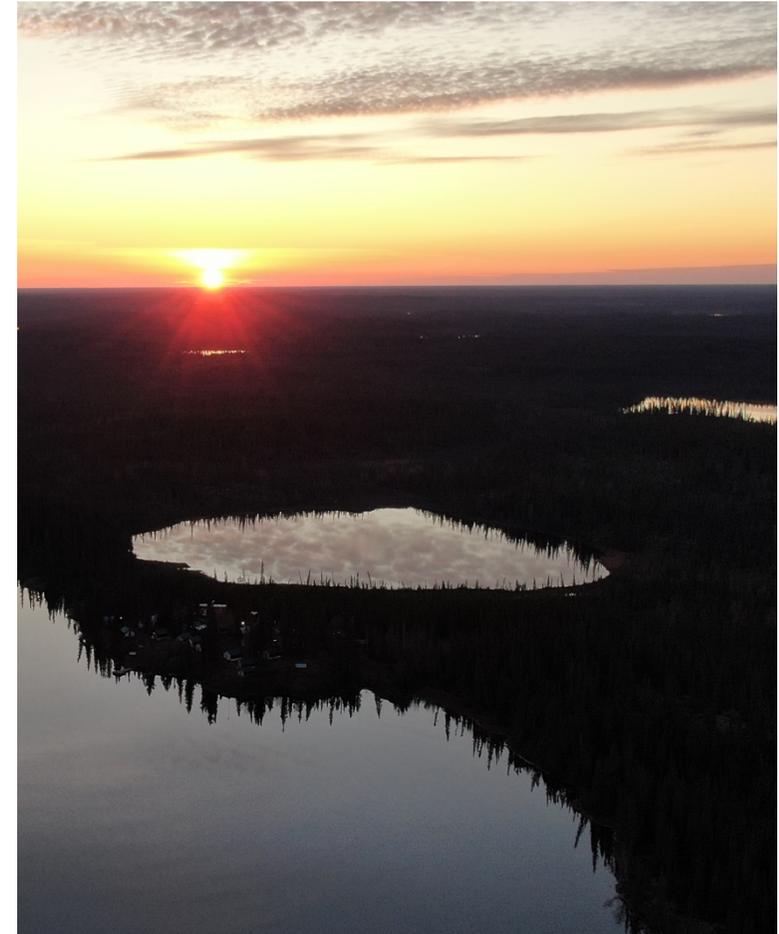
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## \$18M enterprise value – vastly below peer group

## Targeting to be the Largest Independent Supplier of Clean Mixed Rare Earth Feedstock outside of China



*Nechalacho camp at sunset*

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