



Makuutu Project Area

# **ORO VERDE LIMITED (ASX: OVL) MARKET PRESENTATION MAKUUTU RARE EARTH PROJECT - UGANDA**

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## **JORC Statements & Qualifications**

Information in this report that relates to previous exploration targets and results has been cross-referenced in this report to the date that it was reported to the ASX. Oro Verde limited confirms that it is not aware of any new information or data that materially affects information included in the relevant market announcements.

# Oro Verde Capital Markets Snapshot (ASX:OVL)

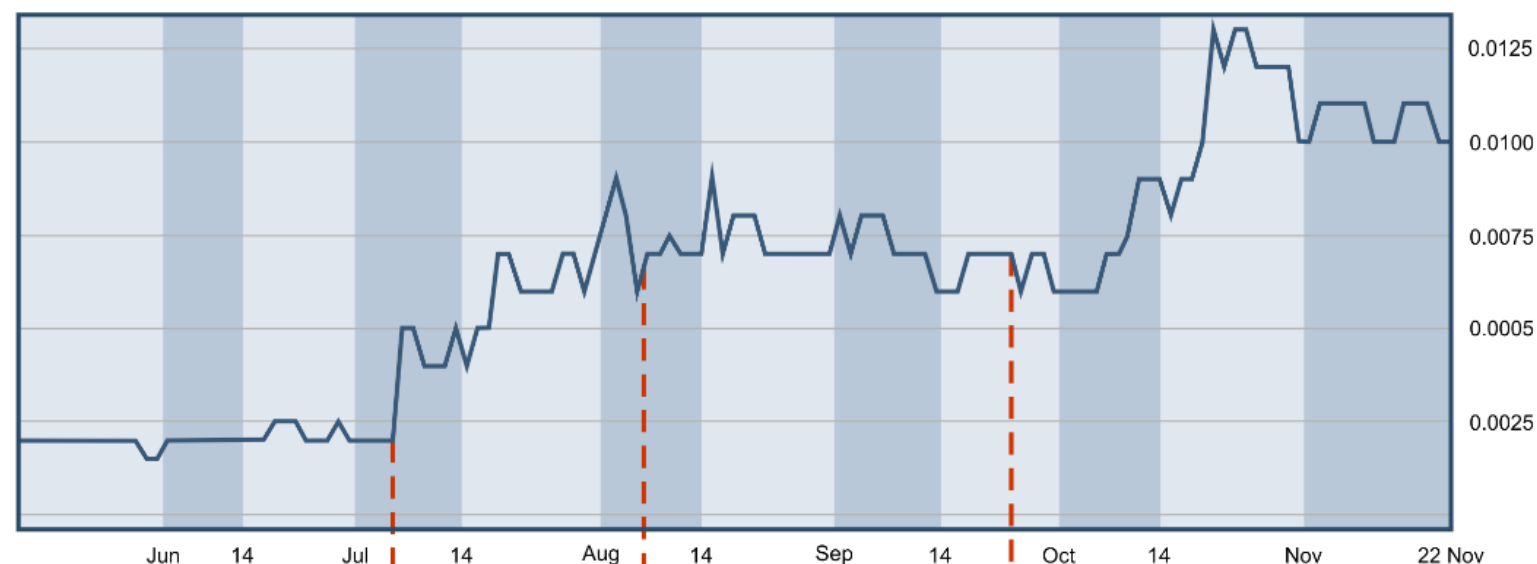
## CAPITAL STRUCTURE (As At 27/11/19)

Shares Outstanding	2,002,578,050
Total Options Outstanding	412,000,000
Share Rights	50,000,000
Share Price	A\$0.009
Market Capitalisation	A\$18 million
52 week share price range	A\$0.001 – A\$0.015

## OVL MAJOR SHAREHOLDERS

Major shareholders	20.6%
Executives, Directors & Key Advisors	23.4%

## SHARE PRICE (Last 6 months)



### Key Events:

Acquisition of Interest  
in Significant  
Rare Earths Project

Makuutu Due  
Diligence Completed

Drilling Commenced at Makuutu  
Rare Earths Elements Project

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# Oro Verde – Board & Consulting Team has the Expertise

## **M J Steffens** Executive Director

- Minerals engineer with a PhD in Metallurgy from the WA School of Mines, Member of the AusIMM
- 15 years' experience including areas of project management and process development covering a broad range of mineral commodities
- Rare earth experience covers project evaluation, process development and study management.

## **B D Dickson** Company Secretary & Finance Director

- Mr Dickson has a Bachelor's degree in Economics and Finance and is a Fellow of the Australian Society of Certified Practising Accountants.
- over 20 years' experience focusing on the start-up, restructuring, management, growth and financing of emerging publicly listed exploration & mining companies, including projects advancing from exploration through development to production
- This experience ranges through a spectrum of activities; from capital and debt raisings, corporate restructuring and stock exchange listings.
- He has been a Director of, and involved in the executive management of, a number of publicly listed resource companies with operations in Australia, Nicaragua, Chile, Mexico, Finland, Ukraine, Laos, Papua New Guinea & Africa.

## **A P Rovira** Non-Executive Director

- 30 years technical and management experience in the mining industry, as an exploration and mining geologist, and as a company executive at Board level.
- Experience in large and small companies including BHP, Barrack Mines, Pegasus Gold and Jubilee Mines.
- Was the General Manager of Exploration with Jubilee Mines, during which time he led the team that discovered and developed the world class Cosmos and Cosmos Deeps nickel sulphide deposits in Western Australia.
- In 2000, the Association of Mining and Exploration Companies awarded Tony the "Prospector of the Year Award" for those discoveries.

## **H M Buswell** Consulting Metallurgist

- Previously GM for Tantalus Ionic Clay Rare Earth Project in Ambanja, Madagascar, with technical expertise in ionically hosted REE deposits
- Seasoned expatriate mining professional with experience on 5 continents in over a dozen countries
- Broad range of management, engineering, project evaluation and production experience

## **G J Chapman** Consulting Geologist

- 30 years experience in the mining industry covering technical and senior management roles
- Experience in roles covering exploration, feasibility studies, project evaluation and mine planning
- Commodity experience with rare earths, gold, nickel, uranium and manganese

# Makuutu Project – A Strategically Important Ionic Clay Hosted Rare Earth Deposit

## OVL recently entered into earn-in agreement to acquire up to 60% of the project

- Advanced stage exploration project
- Strategically significant
- Confirmed ionic clay rare earth mineralisation, akin to Chinese ionic clay heavy rare earth element projects
- 3 licences/tenements covering ~132 km<sup>2</sup>

## Substantive work already undertaken by project partners

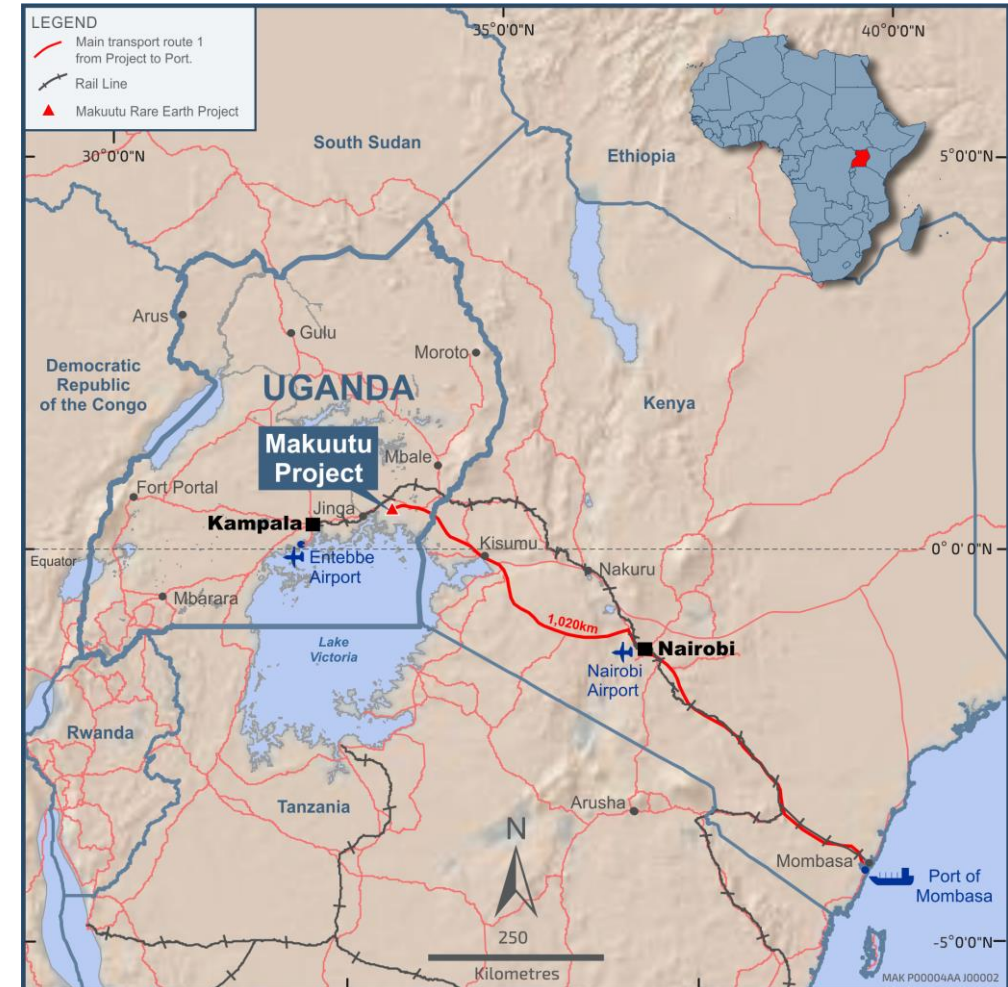
- ~2,040 metres / 109 holes of RAB drilling
- Ground gravity survey, radiometric survey
- Preliminary metallurgical work

## Large exploration target defined

- Mineralisation close to surface
- Exploration upside

## Project area well supported with infrastructure

- Ready road access, nearby power infrastructure, rail





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# Oro Verde – Company Strategy

## Corporate Objective

- To systematically de-risk, develop and advance the Makuutu Rare Earth Project up the value curve by leveraging:
  - In-country expertise of project partner
  - REE expertise of technical team

## Strategy – For success a Rare Earth Project needs:

- High grades and high-value heavy rare earths (HREEs) to yield high value-per-ton mineralisation and a cost-competitive project
- Favorable metallurgical characteristics with sufficient REE recovery and development of low-OPEX process route
- Technical expertise to efficiently and effectively add project value

**We believe the Makuutu Project and Oro Verde have these attributes**

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# Makuutu Project - Opportunity

- **To define a resource with critical and heavy rare earths source outside of China**
  - Strategically and geopolitically significant
- **Convert large exploration target to JORC resource**
  - Near-surface mineralisation
  - Exploration target of 270 - 530 million tonnes grading 0.04 – 0.1% TREO\*.

\*This Exploration Target is conceptual in nature but is based on reasonable grounds and assumptions. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource. Announced to the ASX on 4 September 2019.
- **To produce high grade (+90% REO) concentrate**
  - Favourable product and offtake

# Makuutu Project – Advanced-Stage Exploration Project

- Rwenzori Rare Metals Ltd. (RRM, Ugandan) holds 100% of the Makuutu Rare Earth Project
  - Oro Verde – 20% currently (earning up to 60%)
  - Rare Earth Elements Africa (REEA) (68%)
  - Ugandan Partners (12%)
- Project development to proceed in a phased approach over 12 months
- Development and cash expenditure correspond to de-risking of the project
- Preliminary schedule:

Project Phase	2016-Jul 2019 Prior Work	Q3, 2019	Q4, 2019	Q1, 2020	Q2, 2020	Q3, 2020	Q4, 2020	Nov 2020 - 2021 Bankable Feasibility Study
Feasibility Assessment (Scoping / Preliminary Economic Assessment)								
Earn-in Cash		100,000	650,000	800,000	250,000			
Expenditure Milestones US\$								
OVL Equity Expenditure US\$		150,000						
Activities	Radiometric survey Ground Gravity survey Pitting ~2,000 m RAB drilling Preliminary metallurgical tests Bulk sample processing	Drilling	Core Assay Metallurgy	Maiden Mineral Resource Estimate	Drilling Core Assay Metallurgy Process Engineering	Mineral Resource Estimate Mining Tailings	Infrastructure Assessments Marketing and Offtake Environmental and Social Impact Assessment Environmental Baseline Monitoring	Study Completion
Key Deliverables		Earn-in agreement	Drilling Results Preliminary Metallurgy	Maiden MRE	Drilling Results Drilling Results Drilling Results	Mineral Resource Estimate Marketing Agreements	Study / PEA	Bankable Feasibility Study
OVL Equity in Project		20%	31%	45%	51%	60%		



# Makuutu Project – Infrastructure

## Logistics

- Approximately 10 km from Highway 109, connecting to Kampala and to Kenya (Port of Mombasa)
- Approximately 20 km from rail line connecting to Mombasa port

## Power

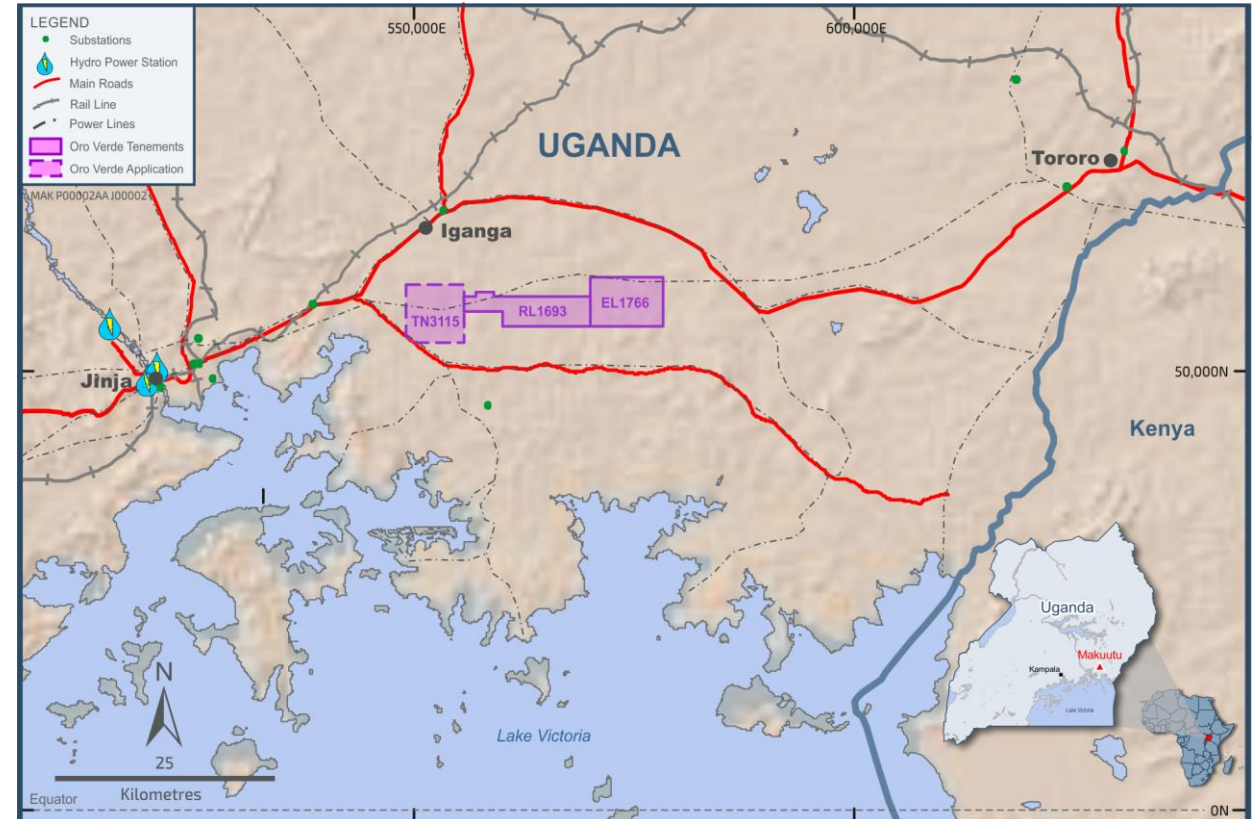
- ~800 MW of hydroelectric generation capacity within 80 km of Makuutu main area
- Nearby electrical grid infrastructure

## Water

- Plentiful fresh water within proximity

## Workforce

- Low-cost professional local workforce



# Makuutu Project - Geology

- **Geology similar to the southern China ionic clay-type deposits**
  - Confirmed ionic clay mineralisation
  - currently the cheapest and most readily accessible heavy REO source
- **Thick intersections of Rare Earth mineralisation near-surface**
- **Rare Earths contained within complete mineralisation profile**
  - Soil and laterite
  - Clays
  - Sediments/Shales
- **Exploration Target defined (ASX: 4 September 2019) \***

Exploration Target Ranges	Material Type			Totals (Mt)
	Laterite	Clay	Sediments	
Minimum Tonnes (Million Tonnes)	90	110	70	270
Maximum Tonnes (Million Tonnes)	170	220	140	530
Minimum Average TREO (ppm)	800	680	490	
Maximum Average TREO (ppm)	1000	930	790	
Minimum Average TREO – Ce <sub>2</sub> O <sub>3</sub> (ppm)	290	440	320	
Maximum Average TREO – Ce <sub>2</sub> O <sub>3</sub> (ppm)	330	610	550	

\* This Exploration Target is conceptual in nature but is based on reasonable grounds and assumptions. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.

Soil and Laterite  
0 to 2-5m

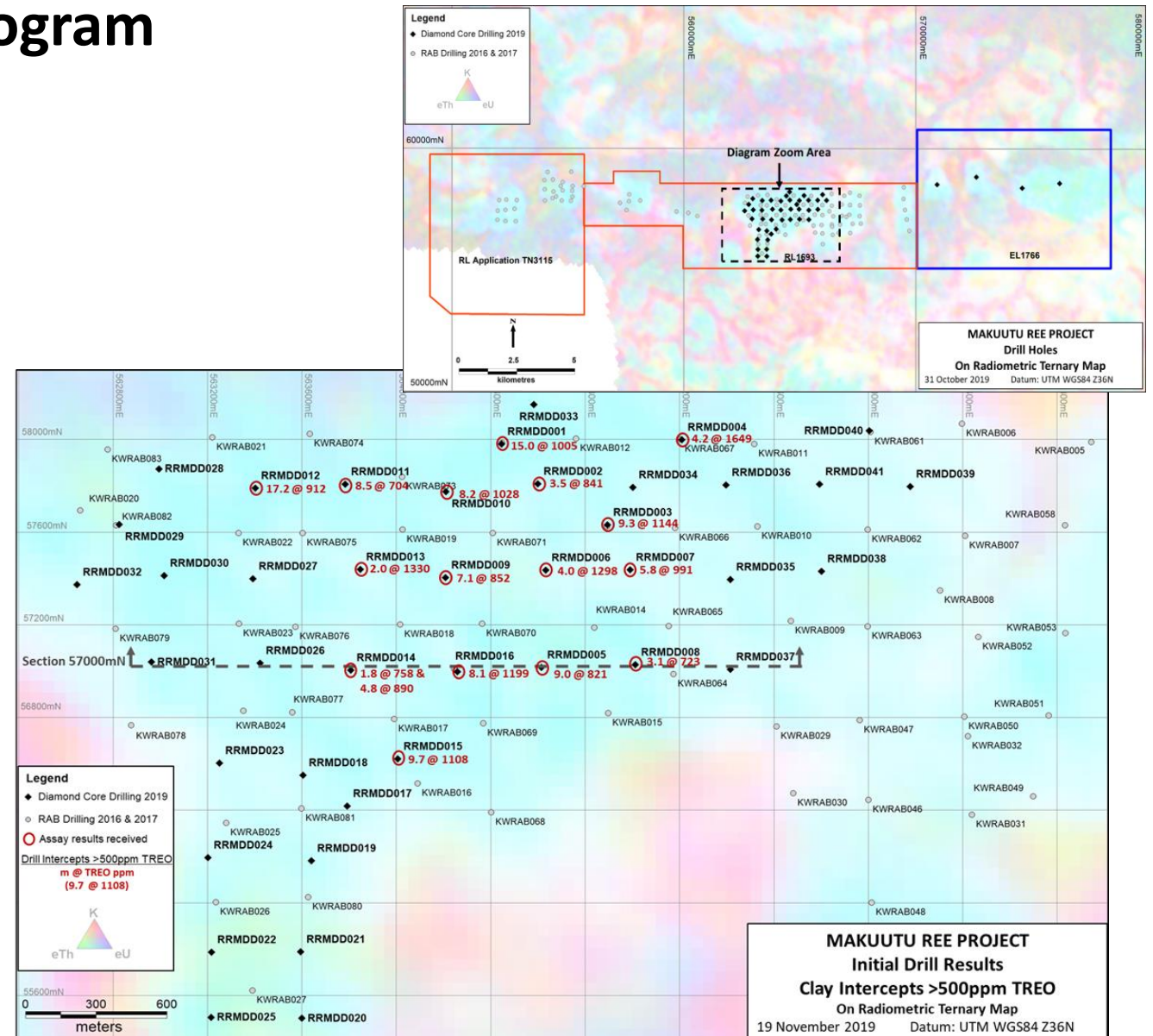
Clays  
~5 to 18m

Sediments / Shale  
~18m onward



# Makuutu Project – 2019 Drilling Program

- Initial 750 m core drilling program complete
- Program objectives
  - Provision of in-fill data (RL 1693)
  - Exploratory drilling (EL 1766)
  - Samples for metallurgical testing
  - Evaluation of widow sampler rig
- Results demonstrate thick intercepts of high rare earth grades



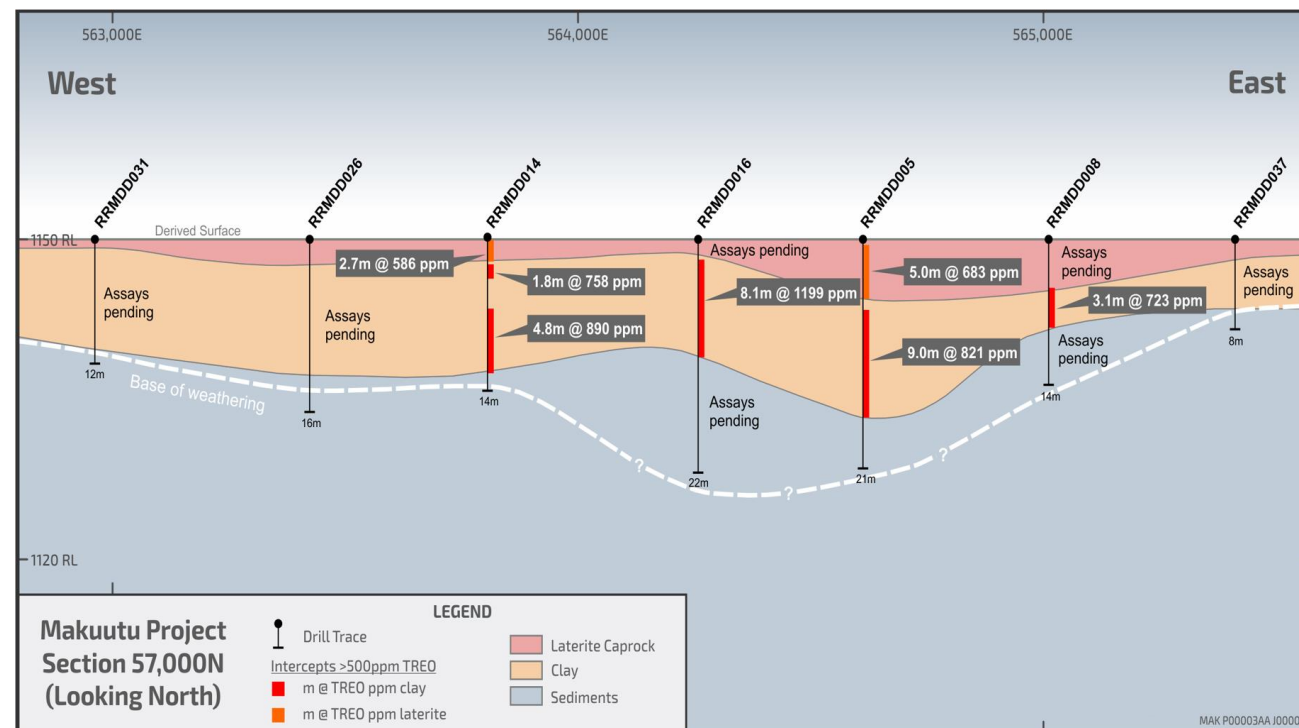


# Makuutu Project – 2019 Drilling Program Results (part)

## Drilling Highlights

- Selected high grade TREO intercepts:
  - RRMDD004: 4.2 metres @ 1,649 ppm TREO from 5.62 metres
  - RRMDD013: 2.0 metres @ 1,330 ppm TREO from 5.35 metres
  - RRMDD006: 4.0 metres @ 1,298 ppm TREO from 3.50 metres
- Selected thick, near-surface, TREO intersections:
  - RRMDD001: 15.0 metres @ 1,005 ppm TREO from 5.10 metres
  - RRMDD003: 9.3 metres @ 1,144 ppm TREO from 2.87 metres
  - RRMDD012: 17.2 metres @ 912 ppm TREO from 2.22 metres
  - RRMDD015: 9.7 metres @ 1,108 ppm TREO from 3.70 metres

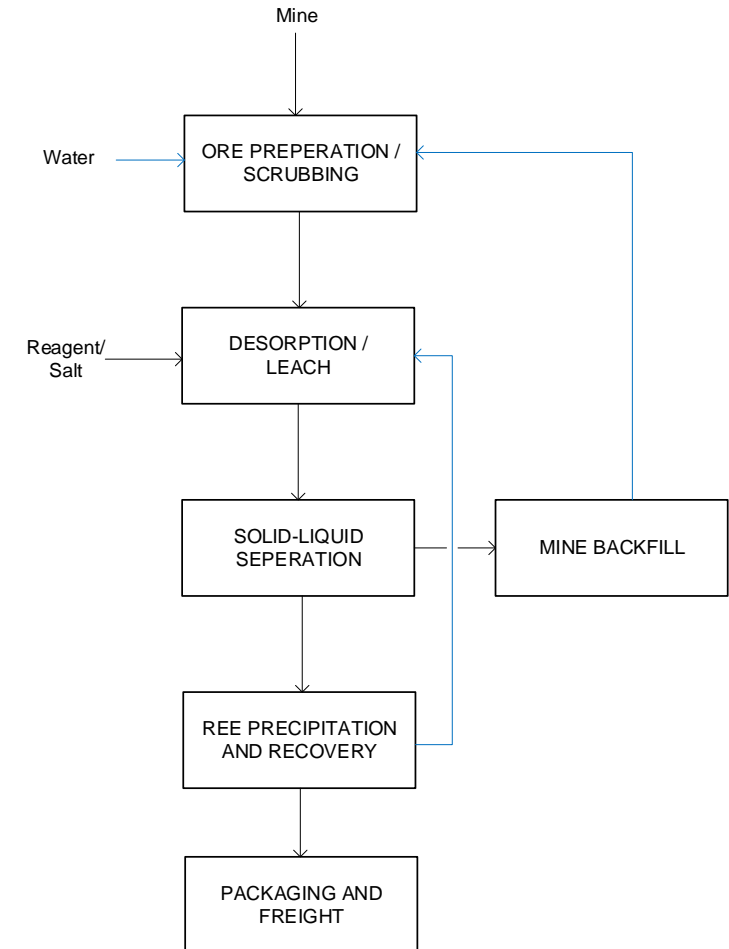
**Thick intercepts near surface means simple low-cost open pit mining**



*\*Drilling results announced to ASX on 21 November 2019*

# Makuutu Project - Metallurgy

- **Rare earth recovery by simple mining and processing methods**
- **Simple processing route for ionic clay mineralisation**
  - Mining – scrubbing – leaching – precipitation
  - Leaching is a desorption process using salt solutions
    - Ammonium sulphate (fertilizer)
    - Sodium chloride (table salt)
    - Others
  - Reviewing viability of other technologies
- **Production of a high grade product (+90% REO)**
  - Attracts favorable off-take terms



*Provisional Process Scheme*

# Makuutu Project – Ionic Clay REE vs. Hard Rock REE Projects

- Sale of rare earth concentrate mine product to processing refinery – avoid high CAPEX plant
- Practical project advantages associated with ionic clay projects, which are summarized in the following table:

MINING/PROCESSING STAGES	CLAY-HOSTED REE	HARD ROCK-HOSTED REE
MINERALISATION	✓ Soft material, negligible (if any) blasting	✗ Hard rock
MINING	Low operating costs: ✓ Surface mining (0-20 m) ✓ Minimal stripping of waste material ✓ Progressive rehabilitation of mined areas	✗ High operating costs: ✗ Blasting required ✗ Could have high strip ratios
PROCESSING – MINING SITE	✓ No crushing or milling ✓ Potential for static or in-situ leaching ✓ Ambient temperature ✓ Simple process plant	✗ Comminution, followed by beneficiation that often requires expensive (flotation) reagents
MINE PRODUCT	✓ Mixed high-grade rare earth precipitate (~50-95% depending on precipitant) for feedstock into rare earth separation plant	✗ Mixed REE mineral concentrate (typically 20 – 40% TREO)
PROCESSING - ENVIRONMENTAL	✓ Non-radioactive tailings ✗ Solution treatment and reagent recovery requirements (somewhat off-set by advantageous supporting infrastructure)	✗ Tailings often radioactive (complex and costly disposal)
PROCESSING – REFINERY (TYPICALLY NOT ON MINING SITE)	✓ Simple acid solubilisation followed by conventional REE separation ✗ Complex recycling of reagents and water	✗ High temperature mineral “cracking” using strong reagents ✗ Complex plant (to withstand strong reagents and high temperatures)

LEGEND: ✓ Lower operating and capital cost ✗ Higher operating and capital cost

# Peer Comparison – Ore Value vs Basket Price

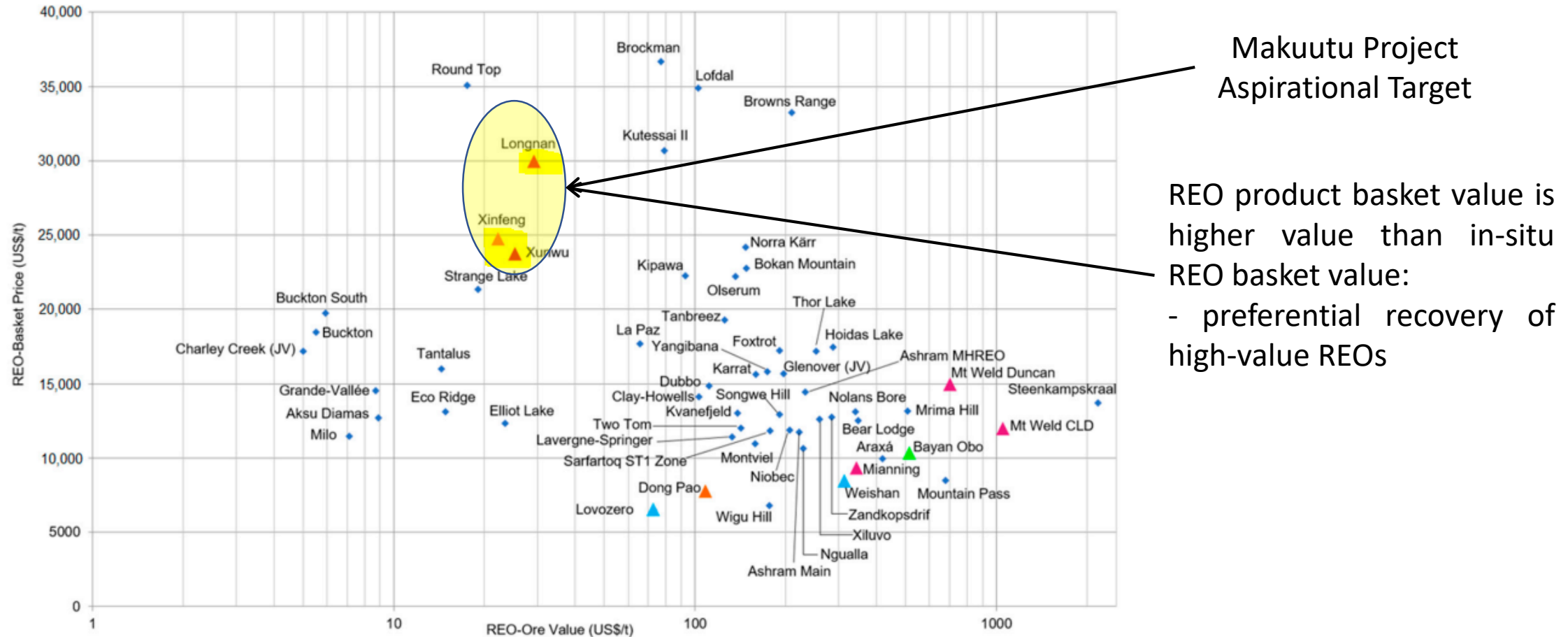


Figure 8. The ore value and basket price for advanced stage REE deposits.



# Target Pathway to Development

	COMPLETED	COMPLETE BY
Re-assay of selected historical samples confirms presence of Rare Earths	✓	
Rudimentary metallurgy confirms presence of ionic-clay hosted REEs	✓	
Initial Core Drilling Program	✓	
Phase 1 Metallurgical Testing	underway	Q4, 2019
Phase 2 Core Drilling Program		Q1-2, 2020
Environmental Baseline Monitoring		Q1-3, 2020
Environmental and Social Impact Assessment (ESIA)		Q1-2, 2020
Phase 2 metallurgy and Process Engineering		Q2, 2020
JORC-compliant Mineral Resource Estimate		Q2, 2020
Mining, Tailings and Infrastructure Assessments and Studies		Q3, 2020
Scoping Study (SS) to obtain 51% Project Interest		Q3, 2020
Bankable Feasibility Study	Commence Q4, 2020	

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## Summary

- Ionic clay hosted Rare Earth Element project, with large exploration target
- Strategically and geopolitically significant critical metals
- Simple mining and processing
- Potential to produce high value basket REE product
- Potential to be player in critical metals sphere
- Team in place to take the project forward



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