



Innovating Critical Metal Supply

INVESTOR WEBINAR

02 December 2024

ASX: MTM

MTM Critical Metals Ltd is an **Industrial Technology Company** focused on commercialising the **Flash Joule Heating (FJH)** metal recovery and processing technology.



**KNIGHTHAWK
ENGINEERING**



ENGINEERING DESIGN & SCALE-UP

Houston, Texas, USA



MTM
CRITICAL METALS

Flash Metals USA HQ (MTM)
Houston, Texas



RICE UNIVERSITY



FJH PIONEERS / R&D

Houston, Texas, USA

Perth Australia

MTM
CRITICAL METALS

MTM HQ
Perth Australia

MTM has a Global Licence Agreement for FJH with Rice University

KnightHawk was founded in 1991 and specializes in bespoke engineering design solutions

Coming Soon: U.S. listing of shares through OTC Market

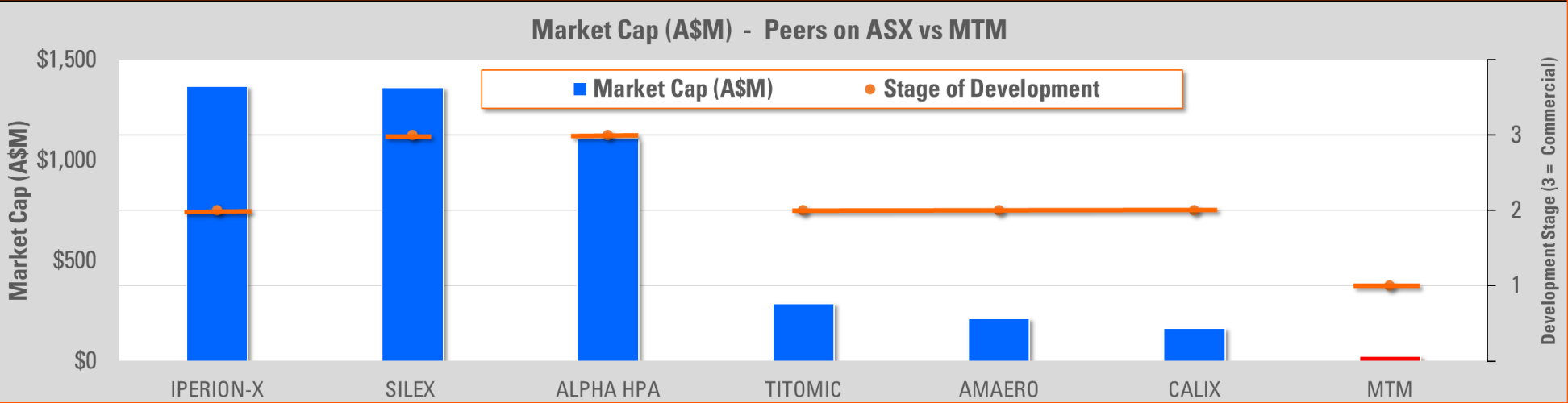
- MTM is listed on the Australian Stock Exchange (Ticker ASX: MTM)
- The Company is exploring options to undertake a U.S. listing via the over-the-counter (OTC) markets, operated by **OTC Markets Group (OTCQB)**. This is expected to be finalised in the coming weeks



Comparable Companies on the ASX?

Date Reference: 21/11/20/24

| PEERS | TYPE | Market Cap (A\$M) | Share Price (A\$) | Development Stage | STAGE (1-Early, 2-Development, 3-Commercial) |
|-----------|--|-------------------|-------------------|--|--|
| IPERION-X | Metal recovery tech (Hydromet) | \$1,369 | \$4.57 | Advanced pilot | 2 |
| SILEX | Metal processing tech (lazer) | \$1,361 | \$5.74 | Commercial scale production (Stage 1) | 3 |
| ALPHA HPA | Metal recovery tech (Titanium de-oxygenation) | \$1,106 | \$0.98 | Commercial scale production (Stage 1) | 3 |
| TITOMIC | Electric furnace tech | \$285 | \$0.24 | Advanced pilot | 2 |
| AMAERO | Alloy and titanium powders for additive manufacturing /powder metallurgy | \$212 | \$0.35 | Advanced pilot | 2 |
| CALIX | Additive manufacturing tech that coats surfaces with specialty metals | \$162 | \$0.89 | Advanced pilot for Li refining | 2 |
| MTM | Metal recovery tech (Rapid heating) | \$24 | \$0.068 | Prototype; Pilot plant design underway | 1 |



* NOTE: The peer comparison presented in this slide is subjective and based on MTM's internal assessment of industrial tech companies operating within similar sectors of mineral processing and extraction. This comparison does not necessarily adhere to any industry-recognised standards such as the Technology Readiness Level (TRL) scale and should not be interpreted as an exact like-for-like comparison in terms of stage of development, market cap, or technology maturity. The companies compared are in various stages of development (as noted in the table), and their progress is based on publicly available information as of the date of this presentation. The development stages referenced in this comparison are for indicative purposes only and are not meant to represent a formal independent analysis based on industry standard. Investors are advised to consult independent sources for a detailed assessment of each company's projects and their stage of development. MTM does not warrant the accuracy of third-party data used for this comparison.

Business Update

Strategic Partnership with Indium Corporation

Global leader in Gallium, Germanium & Indium Metals since 1934 with HQ in New York

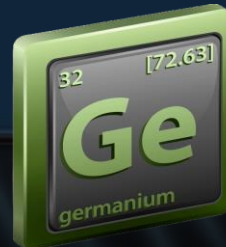
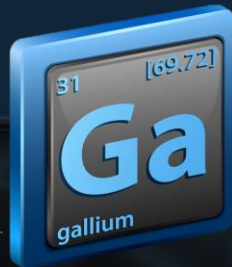
Est. 1934

Global leader in metal refining

3,000+ Employees

16 Facilities across 8 Countries

Serving Semiconductor, Military Defence & several other industrial markets



A Major Milestone In MTM's Journey

VALIDATION

- **External Validation:** Endorsement of FJH tech by major company .
- **Feedstock Security for MTM:** ultra-high-value Ga, Ge, In: crucial for semiconductors & defence tech.
- **US Market:** Pivotal step in raising MTM's profile in the U.S. ahead of OTC market listing.
- Aligns with U.S. push to localise critical material supply chains, supported by a DOE grant.
- Surging global demand with geopolitics affecting supply of Ga & Ge – **both of which China controls 100%**



SIGNIFICANCE

- Strengthens MTM's position as a pioneer in sustainable metal recovery with strong U.S. backing.
- Boosts investor confidence by showcasing scalable and strategic industry collaboration.
- Establishes framework for advancing towards formal supply/offtake agreements, **de-risking path to revenue.**

Strategic Partnership with Indium Corporation

Strong external validation of FJH technology

Indium's Global Business Unit Manager Markus Roas commented:

"This partnership with MTM aligns with our commitment to enhancing U.S.-based supply chains for critical metals essential to modern technologies. FJH technology offers a novel and sustainable solution to recover these vital elements from waste materials, ensuring reliable access without relying on external sources."

We are excited to support this collaboration in addressing the strategic needs of our country. At Indium, we believe that secondary raw materials and urban mining will become key pillars for the future, and we are excited to support this collaboration in addressing the strategic needs of our industry."



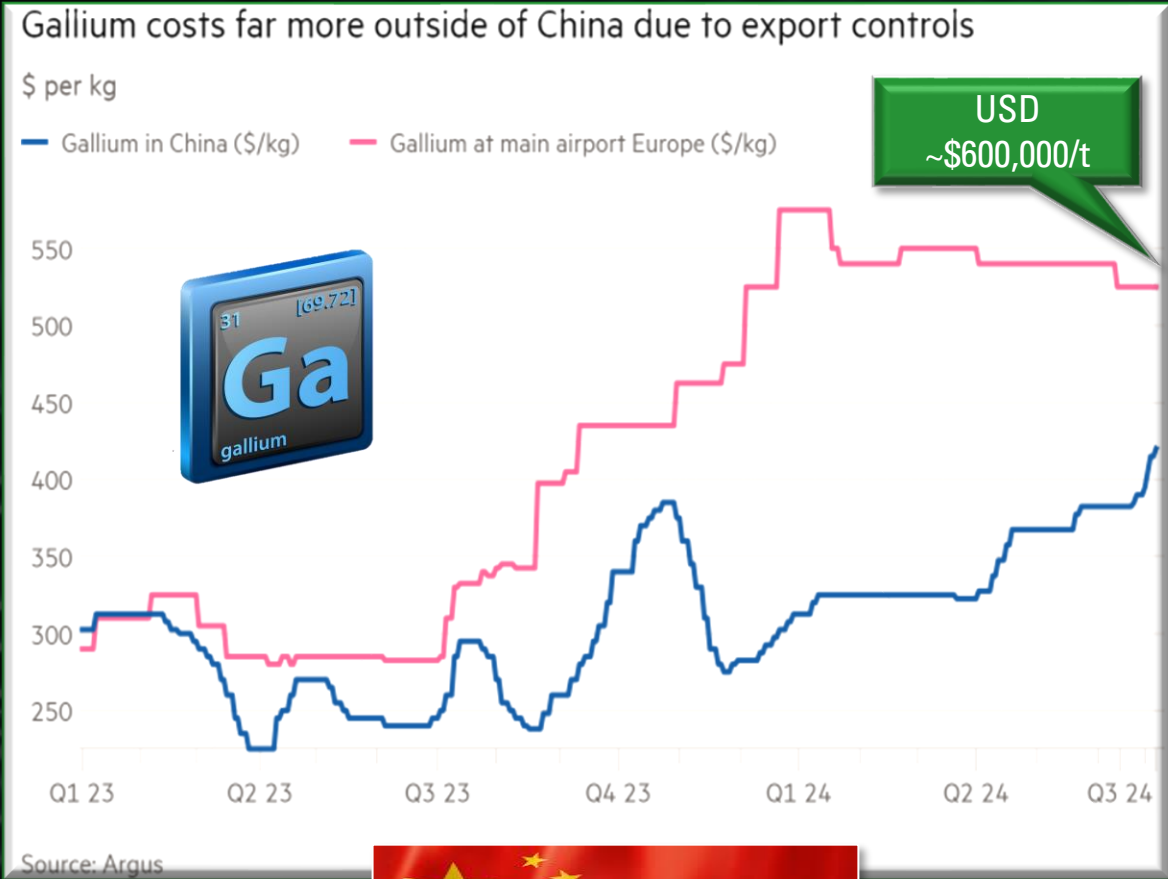
Access to ultra-high value scrap

Compare with typical primary sources of these metals, which are commonly recovered as secondary by-products from zinc or alumina ore mining

| | | | |
|----------------------------------|--|---|---|
| |  |  |  |
| Feedstock (Scrap) | 150,000 ppm (15%) | 180,000 ppm (18%) | 200,000 ppm (20%) |
| Primary Source of Metal Globally | Bauxite ore | Zinc Ores | Zinc Ores |
| Typical Ore Grades | 10 – 50 ppm | 30 – 150 ppm | 1 – 100 ppm |

Geopolitical Metals

Critical importance in high-tech industries and concentrated production in China



98% of supply



60% of supply

Strategic Metals

Critical importance in high-tech industries and concentrated production in China

- Semiconductors (e.g., NVIDIA chips).
- Military technology (e.g., radar systems, advanced communication).
- Renewable energy (e.g., solar panels).



Indicative Next Steps & Path to Revenue



Q4 2024

Ongoing Ga, Ge, In
testing &
Development

Q1-Q3 2025

1 ton/day plant
design finalisation

Plant procurement,
construction &
commissioning

Q4 2025

Optimisation

Formal / binding
supply & offtake
agreements

Commercial
operations



Flash Joule Heating: **A New Era of Sustainable Metal Extraction**

MTM
CRITICAL METALS

Introducing Flash Joule Heating (FJH)

- Originally developed by Dr James Tour at Rice University to produce graphene, FJH has evolved into a method for efficiently extracting metals from unconventional sources like e-waste & mine tailings.
- Potential to revolutionise metal recovery by reducing energy consumption, reagent use and waste, offering a more economical and environmentally friendly alternative.

Problems we are trying to solve: Traditional metal recovery methods are expensive, energy & reagent-intensive, and non-selective

Pyrometallurgy (high heat) ⇒ Ineffective, Non-Selective & Expensive

Hydrometallurgy (strong solvents) ⇒ Ineffective, Non-Selective & Expensive

Refractory Minerals – require significant energy & acids to process

The solution:
Breakthrough **Flash Joule Heating Platform**



Legacy Recovery Techniques are Not Sustainable

Fossil-fuel powered kilns and trainloads of chemicals are not clean solutions

PYROMETALLURGY

Energy intensive, fossil-fuel powered

- Furnaces incinerate & oxidize valuable materials
- Creates slag and alloys needing further refining
- Requires several additional steps to remove impurities
- Non-selective

HYDROMETALLURGY

Chemical intensive, embedded emissions

- Significant consumable chemicals required (i.e., H_2SO_4 , H_2O_2)
- Embedded emissions from chemicals production & transport
- Non-selective
- Significant waste and problematic tailings



Processing Technology Breakthroughs that Changed History

Bessemer Converter

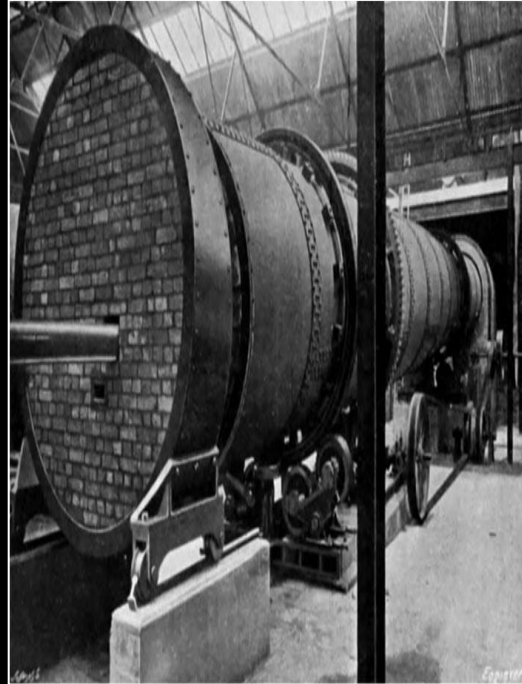
1856



1st Inexpensive method
to mass produce steel

Modern Rotary Kiln

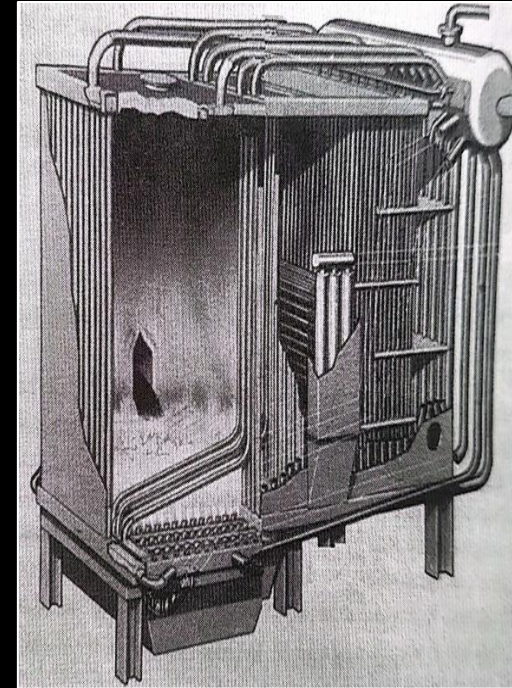
1885



Revolutionised
Continuous processing

Fluidized Bed

1921



Revolutionised
Petroleum cracking

ElecArc Furnace (MiniMill)

1955



Revolutionised scrap
metal recovery.
Initially ridiculed

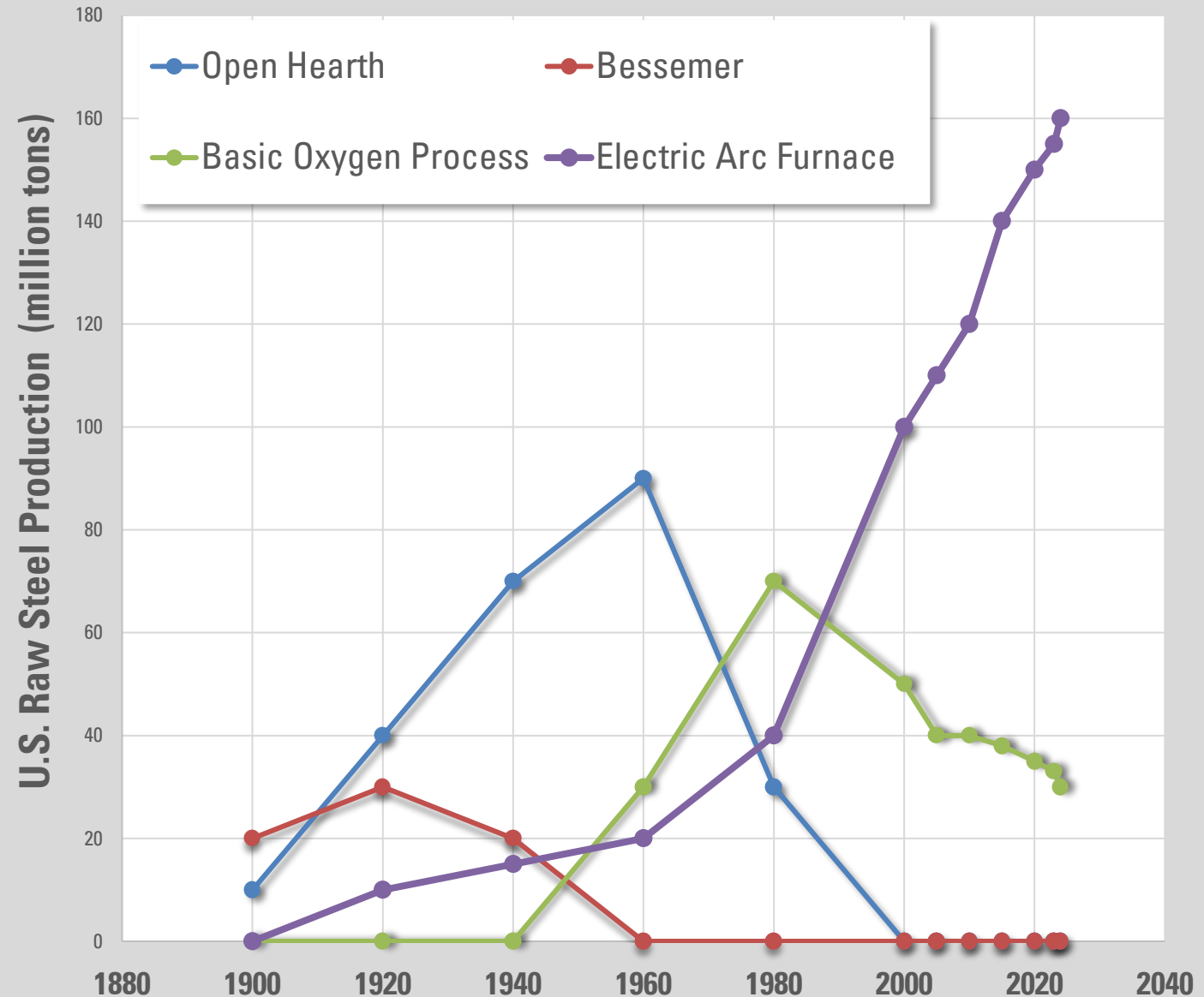
What's Next?.....

ElecArc Furnace (MiniMill)

- **Initial Skepticism:** Large steelmakers dismissed MiniMills, doubting their scalability.
- **Nucor's Vision:** adoption of MiniMill operations faced industry ridicule.
- **Breakthrough Success 1980s:** Nucor introduced thin-slab casting, disproving critics.
- **Industry Shift:** MiniMills scaled up challenging traditional steelmaking.
- **MiniMills now dominate U.S. steel production**



U.S. Raw Steel Production by Technology: 1900-2024



Review of H2 2024

Review of Last 6-Months

Over the past quarters, MTM has achieved significant milestones, reflecting its commitment to innovation and growth in critical metals processing and commercialisation:

Technological Breakthroughs

- Advanced the FJH technology with successful processing of REEs, e-waste, and lithium refining.
- Demonstrated high recovery rates for gold, silver, copper, palladium, and other critical metals.

Pilot Plant Development

- Progressed the design and planning of a 1-tonne-per-day FJH demonstration plant, showcasing readiness for industrial-scale operations.

Strategic Partnerships

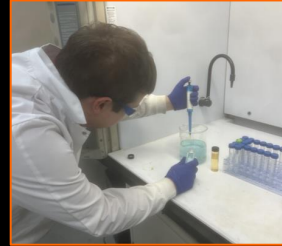
- Progressed several relationships with major industrial players.

Corporate Growth

- Successfully raised \$8M in an oversubscribed funding round to accelerate growth initiatives.

Market and Stakeholder Engagement

- Delivered impactful presentations at key industry events like the COSM Technology Summit.
- Released multiple investor updates highlighting progress and strategic direction.



Review of Recent Price-Sensitive Announcements

- FJH Prototype Completion
- Board and Mgt Restructure
- FJH Tests Increase REE recovery
- License Agreement Rice
- Positive Metal Recovery TestWork

2024 Q2



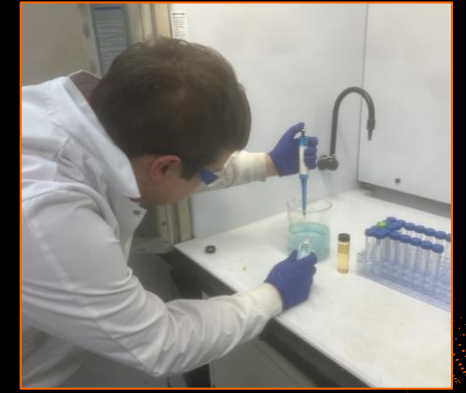
- New Corporate Presentation Deck
- Positive Lithium Extraction Results
- Addition of Chlorination to Licence
- FJH converts Spodumene to LiCl
- Gallium Recovered from Semiconductor Waste
- 1 TPD Demo Plant Update
- High Gold Recovery from E-Waste
- Further Advances in Li Refining
- High Silver & Copper - e-Waste

2024 Q3



- High Multi-Metal Recovery from E-Waste incl. Palladium & Tin
- 8M In Oversubscribed Raise to Accelerate Growth
- Progress update 1TPD Pilot Plant
- COSM 2024 Presentation
- Breakthrough in Rare Earth Element (REE) Processing
- Indium Inc collaboration
- More to come...

2024 Q4



Commercialisation Strategy

Outlook & Pathway to Revenue

We are preparing for
commercial scale-up with
our **FJH Demonstration
Plant (“FDP”)**

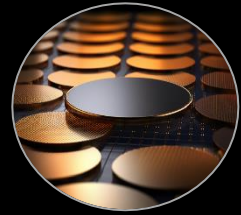
On track for design
completion by Feb
2025



Initial plant to be
located in Texas

MTM
CRITICAL METALS

The FDP is a major step towards scaling our business to **cashflow**, with capability to handle **multiple feedstocks**



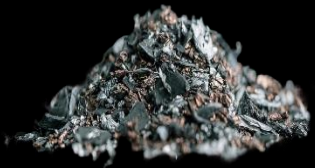
Gallium
(scrap)



E-Waste (PCBs)



Lithium
(Spodumene
concentrate)



Other
(Rare Earths, Niobium &
Antimony concentrate, Red Mud,
Li-Ion "black mass")



FJH
Demonstration
Plant
(1 ton / day)



Validation of
technology

Saleable
product



Strategic
Partnerships

Funded
Innovation

Commercial
Operations





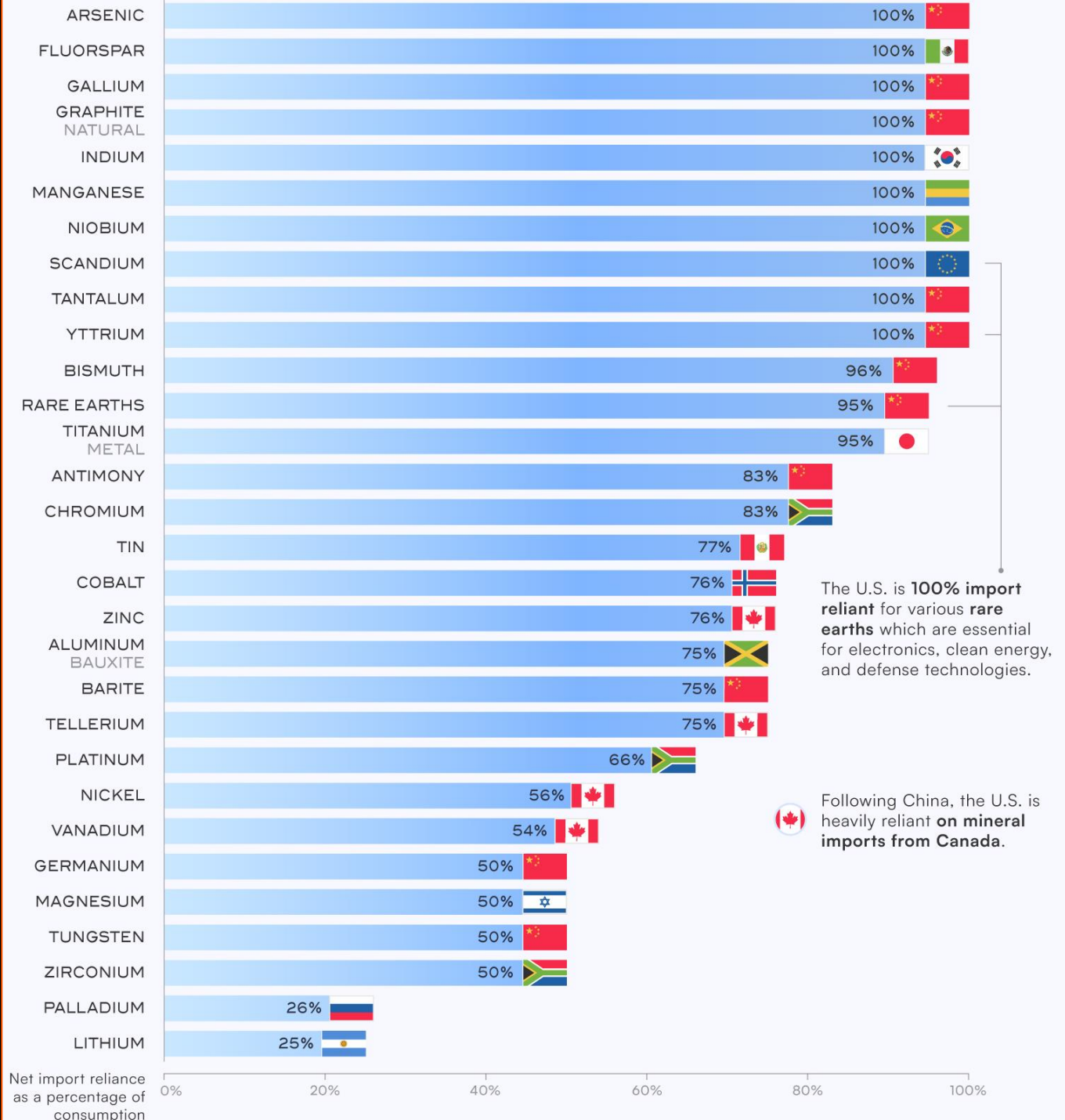
**How does the new U.S. Administration Potentially Affect
MTM?**



Onshoring & Localising Critical Metal Supply Chains

U.S. Dependency on Critical Metals

>95% reliant on imports for the 13 most "critical" metals, with China being the primary import source for > 50% of these.



EXAMPLE: Datacentres— The Silent Giants of Metal Consumption

| Metal | Estimated Tonnes per MW |
|----------------|-------------------------|
| Copper (Cu) | 27 |
| Aluminium (Al) | 10 |
| Steel | 40 |
| Lead (Pb) | 4 |
| Lithium (Li) | 0.1 |
| Nickel (Ni) | 0.5 |
| Cobalt (Co) | 0.2 |
| Gallium (Ga) | 0.05 |
| Rare Earths | 0.05 |

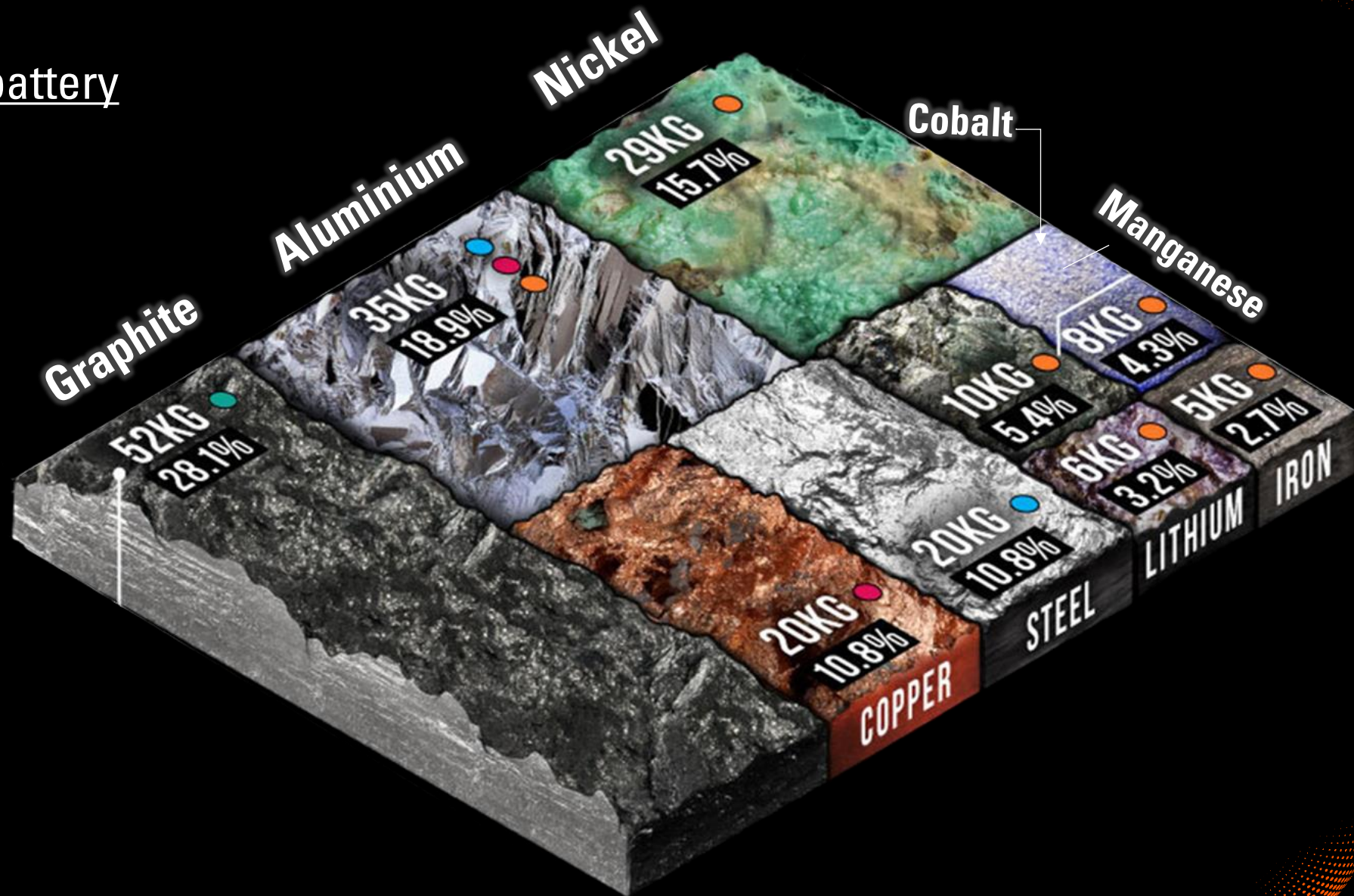
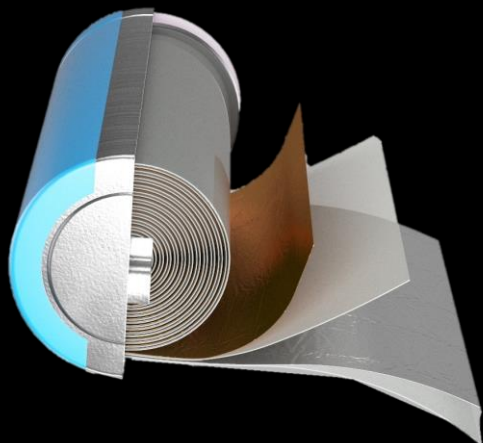


EXAMPLE: Metals in Electric Vehicle Battery

Typical 60 kWh 'NCMA' battery

185 kg metals

- 6 kg lithium
- 29 kg nickel
- 20 kg copper
- 8 kg cobalt



EXAMPLE: Rare Earth Elements

Crucial in Defence Applications

F-35



~420 kg REO

Arleigh
Burke-class
destroyer



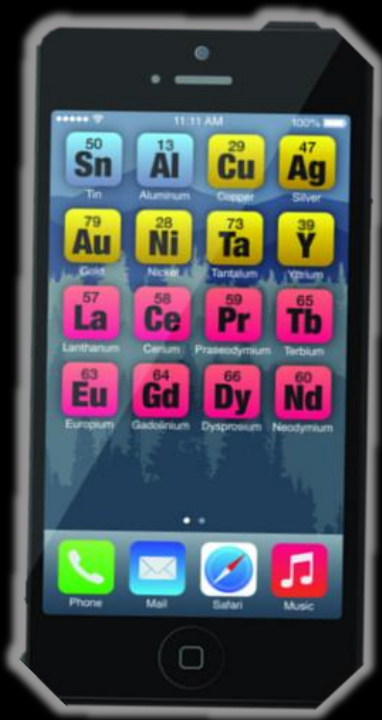
~2,400 kg REO

USS
Virginia



~4,200 kg REO

Smartphone
(iPhone)



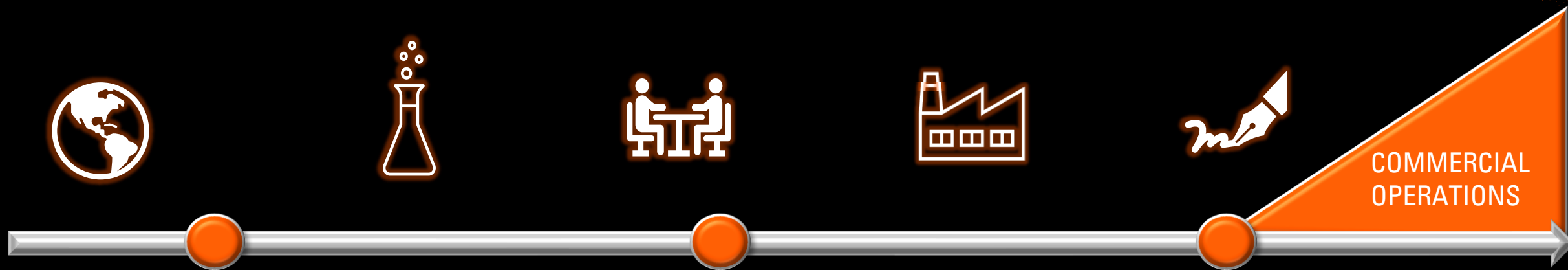
16 REE Elements
0.05 kg REO

Wind Turbine
(3 MWh)



4 REE Elements
2,000 kg REO

Indicative Targets to Drive Value in Next 12 Months



Q4 2024

- OTC U.S. listing to access broader investment markets
- Testwork Updates
- Strategic Partnerships updates

Q1 – Q3 2025

- Finalising FJH demonstration plant design
- Plant procurement / construction
- Commissioning
- Testwork Updates
- Strategic Partnerships updates
- Non-Dilutive Funding: update on grant opportunities USA & AU

Q4 2025

- Binding offtake & supply agreements
- Commercialisation of recovered Gallium and other metals
- Pathway to revenue
- Ongoing testwork updates

Conclusion – FJH = New Era in Sustainable Metal Extraction



- External validation from a major player received
- The next generation of metal recovery technology
- Enhances national security by reducing reliance on imports.
- Sustainable solution for by converting waste into value
- Empowers industries with local access to critical metals for tech
- Scalable solution for growing demand

ASX: MTM

U.S. Listing Coming Soon



CONTACT

Michael Walshe
MD & CEO, MTM Critical Metals Ltd

Steven Ragiel
President, Flash Metals USA, Inc.

MTM Critical Metals Limited
Suite 2, 38 Colin Street, West Perth, WA 6005 Australia
Phone 08 6391 0112 | Email info@mtmmetals.com.au

ASX:MTM

mtmmetals.com.au

Disclaimers

This presentation has been prepared by MTM Critical Metals Limited (ACN 645 885 463) ("MTM Critical Metals", "MTM" or "Company") for the exclusive use of the party to whom MTM Critical Metals delivers this document (the "Recipient"). The information contained in this document has been prepared in good faith by MTM Critical Metals. However, to the maximum extent permitted by law, no representation or warranty, either express or implied, is made as to the accuracy, completeness, adequacy or reliability of the information contained in this document. This document contains only a synopsis of more detailed information in relation to the matters described herein and accordingly no reliance may be placed for any purpose whatsoever on the sufficiency or completeness of such information as presented herein. This document should not be regarded by the Recipient as a substitute for the exercise of its own judgment and the Recipient should conduct its own due diligence in respect of the contents of this document. To the maximum extent permitted by law, MTM Critical Metals, its directors, officers, employees, advisers, and agents disclaim any or all liability for any loss or damage which may be suffered by any person as a result of the use of, or reliance upon, anything contained within or omitted from this document.

This document has been prepared solely for informational purposes. This document does not constitute a prospectus or other form of disclosure document and is not to be construed as a solicitation, invitation or an offer to buy or sell any securities, or related financial instruments, in any jurisdiction. This document is not subject to the disclosure requirements affecting disclosure documents under Chapter 6D of the Corporations Act 2001 (Cth) and has not been approved by any regulatory authority such as the Australian Securities and Investments Commission or the Australian Securities Exchange.

The Recipient should not construe the contents of this document as legal, tax, accounting or financial or investment advice or a recommendation. The Recipient should consult its own legal counsel, tax and financial advisors concerning any matter described herein. This document does not purport to be all-inclusive or to contain all of the information that the Recipient may require. No investment, divestment or other financial decisions or actions should be based solely on the information in this document. The distribution of this document may be restricted by law in certain jurisdictions. The Recipient and any other persons who come into possession of the document must inform themselves about, and observe, any such restrictions.

Cautionary Statement Regarding Exploration & Development, Values & Forward-Looking Information

The tenements comprising the Company's projects ("Projects") are at various stages of exploration and development and potential investors should understand that mineral exploration and development are high-risk undertakings. There can be no assurance that exploration and development of the Projects, or any other tenements that MTM Critical Metals may acquire in the future, will result in the discovery of an economic deposit. Even if an apparently viable deposit is identified, there is no guarantee that it can be economically exploited. Specifically, investors are cautioned that the Projects have no reported mineral resources or ore reserves and that the proximity of the Projects to any deposit and any geological similarities with that deposit are no guarantee that the Project will be prospective for an economic reserve.

It is a requirement of the ASX Listing Rules that the reporting of exploration results in Australia comply with the Joint Ore Reserves Committee's Australasian Code for Reporting of Mineral Resources and Ore Reserves ("JORC Code"). Investors outside Australia should note that while exploration results pertaining to the Projects comply with the JORC Code, they may not comply with the relevant guidelines in other countries and, in particular, do not comply with National Instrument 43-101 (Standards of Disclosure for Mineral Projects) of the Canadian Securities Administrators (the "Canadian NI 43-101 Standards").

The figures, valuations, forecasts, estimates, opinions and projections contained herein involve elements of subjective judgment and analysis and assumption. MTM Critical Metals does not accept any liability in relation to any such matters, or to inform the Recipient of any matter arising or coming to the company's notice after the date of this document which may affect any matter referred to herein. Any opinions expressed in this material are subject to change without notice, including as a result of using different assumptions and criteria. This document may contain forward-looking statements. Forward-looking statements are often, but not always, identified by the use of words such as "seek", "anticipate", "believe", "plan", "expect", and "intend" and statements than an event or result "may", "will", "should", "could", or "might" occur or be achieved and other similar expressions. Forward-looking information is subject to business, legal and economic risks and uncertainties and other factors that could cause actual results to differ materially from those contained in forward-looking statements. Such factors include, among other things, risks relating to property interests, the global economic climate, commodity prices, sovereign and legal risks, and environmental risks. Forward-looking statements are based upon estimates and opinions at the date the statements are made. To the maximum extent permitted by law, MTM Critical Metals undertakes no obligation to update these forward-looking statements for events or circumstances that occur subsequent to such dates or to update or keep current any of the information contained herein. The Recipient should not place undue reliance upon forward-looking statements. Any estimates or projections as to events that may occur in the future (including projections of revenue, expense, net income and performance) are based upon the best judgment of MTM Critical Metals from information available as of the date of this document. There is no guarantee that any of these estimates or projections will be achieved. Actual results will vary from the projections and such variations may be material. Nothing contained herein is, or shall be relied upon as, a promise or representation as to the past or future. MTM Critical Metals, its affiliates, directors, employees and/or agents expressly disclaim any and all liability relating or resulting from the use of all or any part of this document or any of the information contained herein.

By accessing or reviewing this document, the Recipient acknowledges and agrees to the "Disclaimer" as detailed above.