

ASX Release

12 August 2026

Successful REE, Germanium & PGM Testing Advances Multiple Commercial Opportunities

- **Successful Flash Joule Heating (FJH) testing across multiple strategic feedstocks** demonstrates the versatility of the proprietary technology platform and expands potential commercial applications beyond electronic waste.
- **Rare Earth Elements (REEs):** Successfully converted **raw, unbeneficiated REE ore** containing ~12% TREO directly into a >83 wt% mixed REE chloride product, achieving >4x enrichment of NdPr in an initial unoptimised test.
- **Germanium:** Successfully **enriched germanium by up to 280x from zinc smelter waste, 240x from semiconductor manufacturing waste and 35x from defence-related industrial waste**, demonstrating applicability across multiple strategic secondary feedstocks.
- **Platinum Group Metals (PGMs):** Successfully produced a **>60% purity PGM-rich product** containing platinum, palladium and rhodium from spent automotive catalytic converters in a single, unoptimised treatment cycle, demonstrating the potential for a materially simplified recycling pathway vs conventional processing.
- **Red Mud / Gallium:** Testing **removed approximately 99% of iron and 94% of silicon while retaining ~95% of aluminium, with gallium concentrated into a separate product stream**, demonstrating the potential to recover critical metals while upgrading a major industrial waste stream.
- **Commercial Opportunities Advancing:** Testing was **initiated at the request of industry participants** across **defence, manufacturing and critical minerals**, with commercial discussions ongoing towards potential agreements.

Metallium Limited ("Metallium" or the "Company") (ASX: **MTM**; OTCQX: **MTMCF**; OTCQX ADR: **MTLMY**) is pleased to report results from a series of development campaigns demonstrating the application of its proprietary Flash Joule Heating (FJH) technology across multiple strategic critical metal feedstocks.

While electronic waste (e-Waste) remains Metallium's immediate commercial priority, the Company's broader testing program is demonstrating the potential application of the FJH platform across a substantially wider range of critical metal and industrial feedstocks. Recent campaigns have delivered significant results across rare earth ores, germanium-bearing industrial wastes, spent catalytic converters and red mud, demonstrating the ability of FJH-based processing to selectively recover, separate and/or concentrate valuable materials from complex feedstocks.

Collectively, the results broaden Metallium's potential addressable market and support a complementary commercialisation strategy whereby the Company's technology may ultimately be deployed through technology licensing and strategic partnerships, alongside Metallium's owned processing operations. Increasingly, Metallium's testing programs are being undertaken in response to approaches from industry participants seeking potential processing solutions for their own critical metal-bearing feedstocks. The Company is actively progressing a number of these opportunities through further technical evaluation and commercial discussions.

Separately, Metallium continues to work with Indium Corporation and other major semiconductor industry suppliers to progress strategic sourcing initiatives for gallium, germanium, indium and other technology metal-bearing secondary raw materials for future processing. These initiatives are complementary to the additional commercial opportunities arising from the testing programs outlined in this announcement.

Managing Director & CEO Michael Walshe commented: *"Electronic waste remains our immediate commercial priority and pathway to first commercial operations. However, one of the most important outcomes from our broader development program has been demonstrating that Flash Joule Heating is not limited to a single commodity or feedstock. The results across rare earths, germanium, platinum group metals and red mud demonstrate the versatility of the platform and, importantly, its potential to solve very different processing challenges across multiple critical metal supply chains."*

"We are particularly encouraged by the rare earth results. Producing a high-grade rare earth chloride intermediate directly from raw, unbeneficiated ore demonstrates the potential to materially simplify the front end of conventional rare earth

processing. Similarly, our germanium results demonstrate the potential to recover an increasingly strategic material from industrial waste streams that may otherwise be underutilised."

"These results significantly broaden the commercial opportunity for Metallium. Importantly, an increasing number of the feedstocks we are evaluating are being brought to us by industry participants seeking potential processing solutions. Our objective is not simply to demonstrate technical performance, but to convert successful testing into commercial agreements. Alongside our owned processing operations, we see significant potential for capital-light technology licensing and other commercial models where our technology can be deployed into existing industrial and mineral processing operations. This opportunity is becoming increasingly relevant as the United States accelerates investment into near-term domestic supply of critical and defence metals."

A MULTI-COMMODITY CRITICAL METALS PROCESSING PLATFORM

While development of Metallium's flagship e-waste processing platform remains the Company's primary commercial focus, successful test campaigns across germanium-bearing industrial wastes, rare earth ores, spent catalytic converters and other strategic feedstocks have demonstrated the versatility of Metallium's proprietary processing platform, significantly expanding future technology licensing opportunities across multiple high-value critical metal industries.

Table 1: Summary of Key Feedstock Testing Outcomes

Feedstock	Target Metals	Key Result	Commercial Opportunity
Rare Earth Ore	Rare Earth Elements (Nd, Pr and others)	Directly converted raw UNBENEFICIATED REE ore (12% TREO) into an >83 wt% mixed REE chloride product, achieving >4x enrichment of NdPr in initial unoptimised processing cycle.	Potential step-change processing route capable of bypassing conventional beneficiation while producing a high-value chloride intermediate compatible with conventional downstream rare earth separation technologies , unlocking future technology licensing opportunities across lower-grade and previously sub-economic rare earth resources.
Spent Catalytic Converters	Platinum, Palladium, Rhodium	Successfully recovered and concentrated Pd, Pt and Rh into a >60% purity PGM-rich brine product in a single, unoptimised treatment cycle	Demonstrates the potential for a materially simplified processing pathway, reducing processing time by ~75% compared with conventional multi-stage PGM recycling processes , with the potential to lower processing complexity
Zinc Smelter Waste	Germanium	Germanium enriched by up to 280x.	Expands future technology licensing opportunities by enabling recovery of strategic germanium from underutilised industrial waste streams.
Semiconductor Manufacturing Waste	Germanium	Germanium enriched by up to 240x.	Creates technology licensing opportunities supporting domestic semiconductor, AI and data centre supply chains.
Defence-Related Industrial Waste	Germanium	Germanium enriched by up to 35x.	Creates technology licensing opportunities supporting secure domestic defence and critical minerals supply chains.
Red Mud	Gallium, Aluminium	Removed ~99% iron while retaining ~95% aluminium and concentrating gallium into a separate stream.	Expands future technology licensing opportunities by transforming one of the world's largest mining waste streams into multiple value-added products while recovering strategic critical minerals / metals.

RARE EARTHS – DEMONSTRATING SIGNIFICANT UPGRADING CAPABILITY AND INCUMBENT FLOWSHEET ENHANCEMENT

Metallium has successfully demonstrated the direct upgrading of **raw, unbeneficiated rare earth ore** using FJH. The feed material contained approximately 12% total rare earth oxides (TREO). The feed sample comprised raw ore that had undergone only crushing and grinding, with no prior beneficiation or concentration.

In a single unoptimised processing cycle, Metallium produced a mixed rare earth chloride product containing **greater than 83 wt% REE chlorides**, while achieving **greater than 4x enrichment of the critical magnet rare earths neodymium and praseodymium (NdPr)**.

Conventional rare earth processing **commonly requires multiple stages of physical beneficiation followed by chemical treatment** before a suitable intermediate is produced for downstream separation. Metallium's results demonstrate the potential for FJH to **substantially simplify the front end of this processing pathway by converting raw ore directly into a concentrated chloride intermediate** suitable for subsequent conventional separation and refining.

If successfully optimised and scaled, this approach has the potential to:

- eliminate or reduce certain conventional beneficiation and chemical processing stages;
- reduce capital intensity, plant footprint and chemical consumption;
- produce a concentrated REE intermediate compatible with conventional downstream separation technologies; and
- create new development and technology licensing opportunities across rare earth projects where conventional processing complexity represents a significant economic constraint.

Further optimisation and testing are underway.

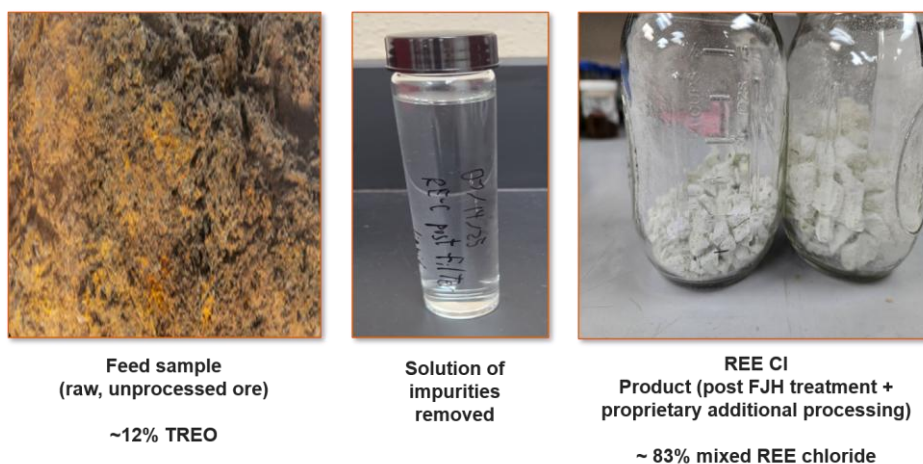


Figure 1: REE chloride product produced following testing. NOTE: The 83 wt% REE chloride concentration is reported on a compound mass basis (RECl_3) and therefore includes the molecular mass of Cl associated with each RE-chloride

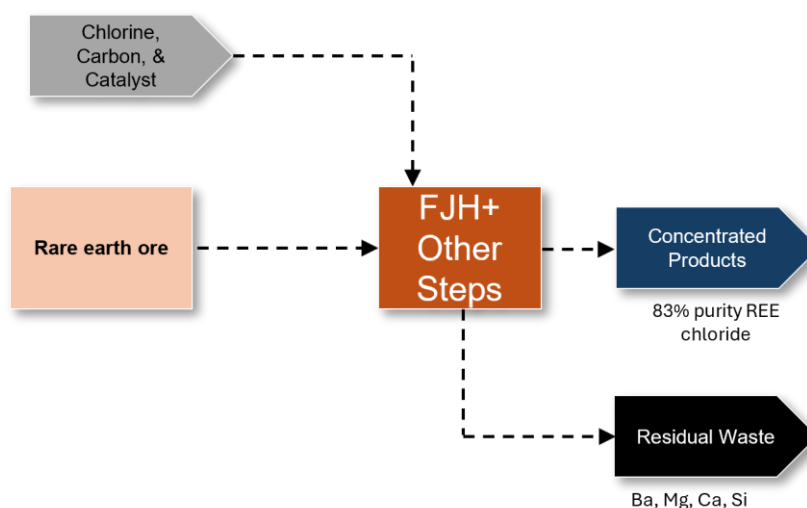


Figure 2: Upgrading of raw rare earth ore

In addition to the hard-rock rare earth ore processing results outlined above, Metallium continues to advance its collaboration with **Meteoric Resources**, evaluating FJH as an upgrading pathway for mixed rare earth carbonate (MREC) produced from ionic clay rare earth feedstocks. Previous testwork demonstrated selective separation and upgrading of the contained rare earths, including the potential to preferentially recover higher-value magnet rare earths such as neodymium, praseodymium, dysprosium and terbium while removing a significant proportion of lower-value lanthanum and cerium. Ongoing work is focused on further optimising this upgrading pathway and evaluating its potential integration with conventional downstream rare earth separation. Metallium is also engaging with other major rare earth industry participants regarding additional feedstocks and potential commercial applications of the technology, including with the previously announced collaboration with **Ucore Rare Metals Inc.**

GERMANIUM – RECOVERING VALUE FROM INDUSTRIAL WASTE

Germanium continues to represent a significant application for Metallium's technology. Testing has successfully demonstrated substantial germanium enrichment across **three distinctly different secondary feedstocks**:

- **Zinc smelter waste – up to 280x enrichment**
- **Semiconductor manufacturing waste – up to 240x enrichment**
- **Defence-related industrial waste – up to 35x enrichment**

These results demonstrate that the FJH platform is not dependent upon a single source of germanium and has the potential to recover and concentrate the metal from multiple industrial waste streams.

Germanium is used extensively in high-value applications including **semiconductors, fibre optics, infrared optics, defence systems, AI infrastructure and data centres**. Recovering germanium from existing industrial residues offers a potential pathway to create new domestic supply without relying solely on development of new primary mines.



Figure 3: Various Ge-rich brine products

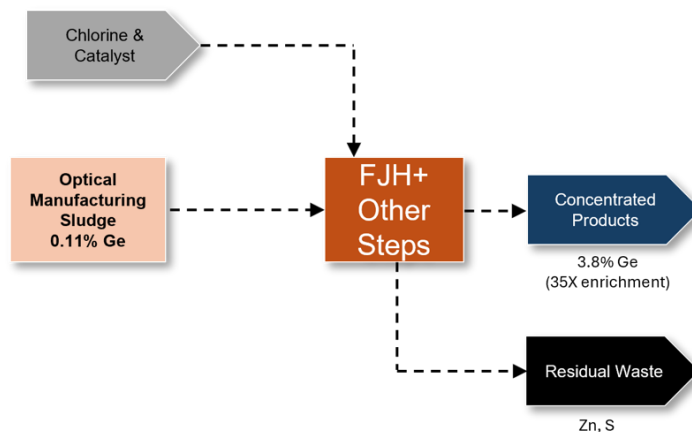


Figure 4: Germanium recovery from optical manufacturing sludge

These results provide the basis for further technical and commercial evaluation with industry participants generating or controlling germanium-bearing secondary materials. Separately, Metallium continues to work with **Indium Corporation** and other major semiconductor industry suppliers on strategic sourcing initiatives for gallium, germanium, indium and other technology metal-bearing secondary raw materials. The Company is also progressing discussions with **U.S. defence industry participants** regarding potential commercial pathways for strategic metal-bearing industrial waste.

PLATINUM GROUP METALS – SIMPLIFYING HIGH-VALUE RECYCLING

Metallium has also successfully demonstrated the recovery and concentration of platinum group metals (PGMs) from spent automotive catalytic converters. Initial testing produced a >60% purity PGM-rich product containing platinum, palladium and rhodium in a single, unoptimised treatment cycle.

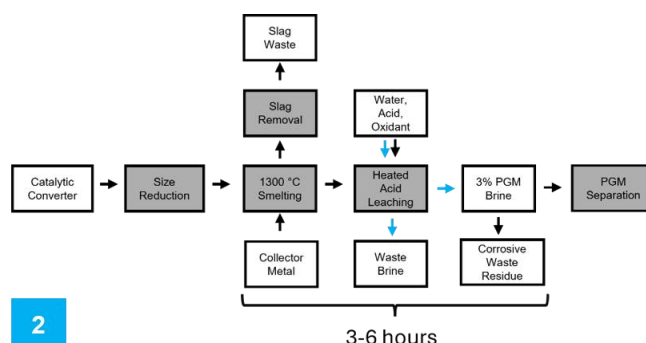
Spent catalytic converters contain high concentrations of valuable PGMs but typically require multi-stage processing to recover the contained metals. Metallium's initial results demonstrate the potential for a materially simplified processing pathway, with significant scope remaining to further optimise product purity, recovery and operating conditions.

Importantly, the Company's initial work indicates the potential to reduce processing time by approximately 75% compared with conventional multi-stage PGM recycling processes, potentially reducing processing complexity and creating another commercial and technology licensing opportunity for the FJH platform³. The PGM testing program was undertaken following engagement with an industry participant, with Metallium now progressing discussions regarding potential commercial application of the technology to PGM-bearing materials.

The global **catalytic converter recycling market was estimated at approximately US\$3.2 billion in 2025** and is projected to grow to approximately US\$6.5 billion by 2035¹. Strong PGM prices and persistent supply constraints continue to support increased recovery from automotive scrap, reinforcing the commercial potential of faster and more efficient recycling technologies¹.



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Figure 5: 1. Pulverised spent catalytic converter; 2. Conventional flowsheet for catalytic converter processing (Yakoumis, I., et al. 2021)

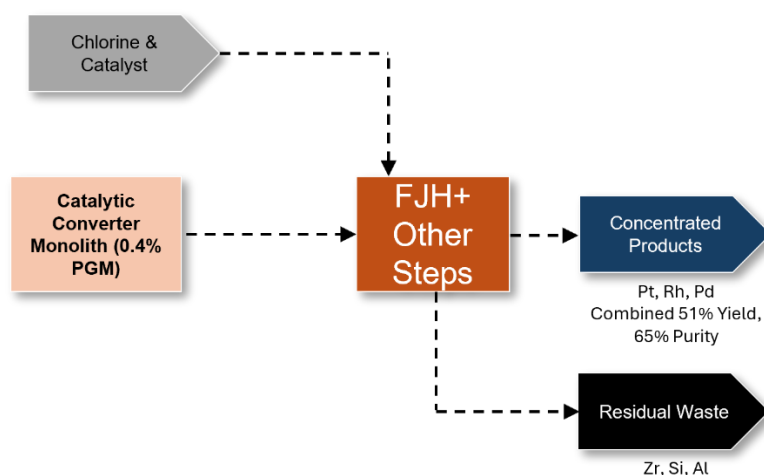


Figure 6: Platinum, Palladium and Rhodium recovered from highly valuable waste stream via simpler FJH process

RED MUD – RECOVERING VALUE FROM A MAJOR INDUSTRIAL WASTE STREAM

Metallium has also completed successful testing on **red mud**, the large-volume residue generated during alumina production.

Testing demonstrated the ability to selectively remove approximately **99% of iron and 94% of silicon while retaining approximately 95% of the aluminium value**. Importantly, **gallium was concentrated into a separate product stream**, creating an enriched intermediate suitable for further recovery.

The results demonstrate the potential for Metallium's technology to simultaneously recover strategic metals and upgrade the remaining material, creating potential value from a material traditionally treated as an industrial waste liability.

This work forms part of Metallium's ongoing collaboration with ElementUSA evaluating the recovery of gallium, scandium and other critical metals from red mud, including potential pathways towards demonstration and commercial deployment.

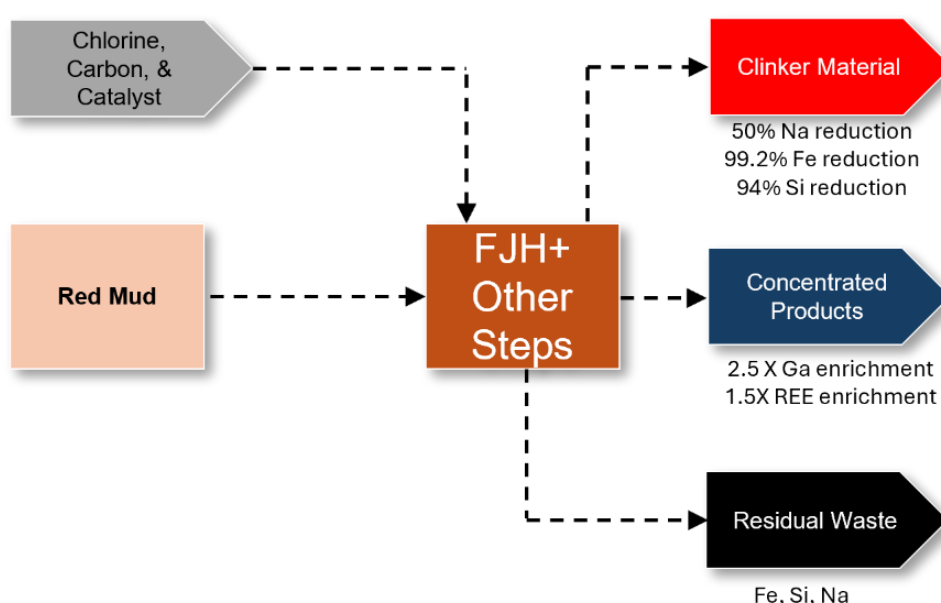


Figure 7: Red mud processing results demonstrating significant iron, silica and sodium removal, with concentration of gallium and REEs into potential value-added product streams.

CONVERTING TECHNICAL RESULTS INTO COMMERCIAL OPPORTUNITIES

The successful results across these distinctly different feedstocks are supporting active technical and commercial discussions with industry participants across multiple critical metal markets. Metallium's commercialisation strategy therefore comprises two complementary pathways:

1. Owned processing operations – beginning with the Company's flagship electronic waste processing business; and
2. Technology licensing and strategic partnerships – enabling third parties to potentially deploy Metallium's proprietary technology into existing or new mineral processing, refining and recycling operations. This capital-light pathway has the potential to extend Metallium's technology into substantially larger-volume markets without requiring the Company to own and fund each processing operation, while creating potential licensing and other technology-based revenue streams.

The Company continues to evaluate potential commercial applications arising from its testing programs and will update shareholders as opportunities progress to material commercial agreements.

STRONG U.S. STRATEGIC BACKDROP

The strategic importance of developing new domestic critical mineral processing technologies continues to increase as the United States accelerates investment across critical material supply chains.

On 7 August 2026, the White House announced more than **US\$2 billion of new critical mining and mining-related projects** and specifically identified sufficient domestic **mining, processing, refining, manufacturing and recycling** capacity as important to reducing U.S. reliance on foreign supply chains².

These initiatives reinforce the strategic relevance of technologies capable of recovering critical materials from **domestic ores, industrial residues and waste streams**. Metallium believes its U.S.-based FJH technology platform is well aligned with these objectives, particularly across rare earths, gallium, germanium and other materials important to U.S. defence and advanced manufacturing supply chains.

NEXT STEPS

Following the successful initial campaigns, Metallium's development activities across these feedstocks will focus on:

- optimisation of recovery, selectivity and product purity;
- further testing of customer and strategic-partner feedstocks;
- development of feedstock-specific processing flowsheets;
- evaluation of scale-up and commercial deployment requirements; and
- progression of current industry discussions towards commercial agreements, including processing, strategic partnership and potential technology licensing opportunities.

These programs will continue in parallel with the Company's primary commercial focus on electronic waste processing

REFERENCES:

1. Johnson Matthey (2026), PGM Market Report 2026.
2. The White House (2026); <https://www.whitehouse.gov/fact-sheets/2026/08/fact-sheet-president-donald-j-trump-announces-billions-in-new-deals-and-investments-to-power-american-mining/>
3. Yakoumis, I., et al. (2021), "Recovery of platinum group metals from spent automotive catalysts: A review," *Cleaner Engineering and Technology*, Vol. 3, 100112; <https://www.sciencedirect.com/science/article/pii/S2666790821000720>
4. Related ASX:MTM announcements
 - a. 31/03/2026 Offtake Agreement with Indium Corp for Gallium & Germanium
 - b. 12/12/2025 Strategic U.S. Gallium & Scandium Red-Mud Collaboration with Element USA
 - c. 16/09/2025 Binding Deal with Ucore for U.S. REE Refining Independence
 - d. 17/06/2025 MTM & Meteoric Sign MOU After Successful REE Testwork

This announcement has been authorised for release by the Board of Directors of Metallium Limited.

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ABOUT METALLIUM LIMITED

Metallium Ltd (ABN 27 645 885 463), is pioneering a low-carbon, high-efficiency approach to recovering critical and precious metals from mineral concentrates and high-grade waste streams. The company's patented **Flash Joule Heating (FJH)** technology enables the extraction of high-value materials, including **gallium, germanium, antimony, rare earth elements, and gold** — from feedstocks such as refinery scrap, e-waste, and monazite.

Aligned with U.S. strategic supply chain objectives, Metallium has recently secured its first commercial site in Texas via its wholly owned subsidiary, **Flash Metals USA Inc.**, marking a major step toward near-term production and revenue generation.

To learn more, visit:

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FORWARD-LOOKING STATEMENTS

This announcement contains forward-looking statements concerning Metallium Limited (Metallium or the Company), including statements regarding the further development, optimisation and scale-up of the Company's FJH technology across multiple feedstocks, the potential commercial application and deployment of the technology, prospective technology licensing and strategic partnership opportunities, and the Company's future commercialisation plans, strategy and objectives.

Forward-looking statements can generally be identified by the use of words such as "may", "will", "expect", "intend", "plan", "estimate", "anticipate", "believe", "target", "forecast", "project", "potential", "continue", "should", "seek", and similar expressions.

These statements are based on information available to Metallium as at the date of this announcement and on assumptions and expectations that the Company considers to be reasonable as at that date, including assumptions regarding: continued successful development and optimisation of the FJH technology; the availability and characteristics of suitable feedstocks; the reproducibility and scalability of test results; the ability to achieve further improvements in recovery, selectivity and product purity; the availability of capital, equipment, personnel and services required for continued technology development; the absence of material adverse changes in commodity prices, input costs and general economic and market conditions; and continued progress of customer, strategic partner and technology licensing discussions.

Forward-looking statements are not guarantees or predictions of future performance and involve known and unknown risks, uncertainties and other factors, many of which are beyond the Company's control. Actual results, performance or achievements may differ materially from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, but are not limited to: technology scale-up and commissioning risk; feedstock supply, grade and recovery variability; processing throughput and yield variability; capital and operating cost variability; financing risk; regulatory, permitting and environmental risk; intellectual property risk; reliance on key personnel, contractors and partners; competition; and broader macroeconomic, market and geopolitical conditions.

Production targets, processing capacity targets, throughput indications and timelines, if referred to in this announcement, are targets only. They are not production forecasts and are subject to the assumptions, risks and uncertainties described above. There is no guarantee that these targets will be achieved, in the timeframes indicated or at all.

Investors should not place undue reliance on forward-looking statements. Except as required by the ASX Listing Rules, the Corporations Act 2001 (Cth) and applicable law, Metallium does not undertake any obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.