

ASX Release / 15 October 2026

Selectro™ Delivers 92% Aluminium Recovery from Bauxite in First Third-Party Test

First application of Selectro™ beyond Grass Patch produces silica-rich residue rather than conventional Bayer red mud

Highlights

- **Mount Ridley's** wholly owned and patent-pending **Selectro™ Process** has recovered **92% aluminium and 97% iron** from a composite bauxite sample supplied by Australian Silica Quartz Group Ltd (ASX: ASQ) from its Darling Range bauxite project in Western Australia.
- **First third-party test of the Selectro™ Process**, demonstrating its applicability well beyond the Company's Grass Patch Complex and the critical minerals sector.
- **Highly selective leaching**, with more than 90% of the silica remaining in a small, PH-neutral, silica-rich residue rather than conventional red mud
- The leach left a **small, pH-neutral, silica-rich residue in place of the caustic, iron-rich red mud** generated by the conventional Bayer refining process
- **Result achieved on a first pass basis**, with the underlying Selectro™ chemistry **yet to be optimised** for bauxite feed.
- Selectro™ offers a **potential alternative to the conventional Bayer refining process**, operating at materially lower temperature, recovery of iron as a saleable iron oxide product and avoiding the generation of red mud
- **Addressing the global red mud challenge**, with the conventional Bayer process generating an estimated 150–200 million tonnes of bauxite residue annually and global stockpiles estimated at approximately 4 billion tonnes.
- **Significant global market opportunity**, with primary aluminium production of approximately 73.8 million tonnes in 2025, equating to approximately US\$235 billion at current LME prices.
- **Accelerated commercialisation pathway**, with further third-party Selectro™ testing scheduled and this result reinforcing the Company's plans to design and construct a Selectro™ demonstration plant.

Mount Ridley Mines Limited (ASX: **MRD**, OTC: **MRDMF**) ("**Mount Ridley**" or "**the Company**") is pleased to report results from the first third-party test of its wholly owned and patent-pending Selectro™ Process. The results represent an important milestone in demonstrating the application of Selectro™ beyond the Company's existing Grass Patch mineral resources and into the broader metal processing industry.

The metallurgical testwork was conducted by Australian Laboratory Services ("ALS") on a composite bauxite sample supplied by Australian Silica Quartz Group Ltd (ASX: ASQ) ("ASQ") from its Darling Range bauxite project. The composite was leached using the underlying Selectro™ chemistry, returning aluminium recovery of 92% and iron recovery of 97%. The test produced a small, pH-neutral, silica-rich residue rather than the red mud generated by conventional refining.

This marks the first application of Selectro™ to a feedstock outside the Company's Grass Patch Complex and its first test on bauxite. With the underlying Selectro™ chemistry yet to be optimised for bauxite processing, the results highlight the potential for the technology to be applied across a broader range of mineral feedstocks.

Mount Ridley Managing Director & CEO, Mr Allister Caird commented:

"This is a remarkable result for Selectro™. Bauxite is a very different material to our Grass Patch feed, and achieving these recoveries on our first test demonstrates the potential for Selectro™ to be applied well beyond MRD's existing mineral resources.

Recovering 92% of the aluminium and 97% of the iron on a first pass basis, while producing a silica-rich residue rather than the conventional red mud, is an exceptional result. The underlying chemistry has not yet been optimised for bauxite and we expect further improvements through that work.

The Bayer process has been the industry standard for more than 130 years and red mud remains one of its key environmental challenges. A lower temperature process that avoids red mud altogether would represent a significant opportunity for Selectro™.

This result supports the progress we have made and strengthens our conviction to fast-track the design and construction of a Selectro™ demonstration plant, which will allow us to scale up testing of our own Grass Patch feed alongside a growing number of third-party feeds.

Selectro™ continues to exceed our expectations and we see considerable potential to advance its commercialisation through strategic partnerships and licensing opportunities as further third-party testwork progresses."

Test Work and Results

The test was carried out on a composite prepared from 16 vacuum drill samples taken from four drill holes across the Athena and Ceres prospects of ASQ's Darling Range bauxite project (Figure 1). The samples were collected by ASQ from vacuum drilling completed in 2013 and 2014 and supplied to the Company for testing. The Company has not independently verified ASQ's drilling, sampling or survey data.

Samples were selected from the bauxite horizon in each hole and blended to form a single composite of approximately 1 kg. A split of the composite was assayed to establish head grade and the leach residue was assayed to determine recovery (Table 1). Recoveries are reported as metal extracted to solution, calculated from the residue and head assays.

Table 1: Selectro™ first pass bauxite test results

Element	Composite head grade	Selectro™ recovery
Aluminium (as Al ₂ O ₃)	41.9%	91.9%
Iron (as Fe ₂ O ₃)	13.6%	96.7%

The dried leach residue was approximately 25% of the original feed mass. It consists predominantly of silica (Figure 2). The leach was highly selective against silica, with more than 90% of the silica remaining in the residue. The underlying Selectro™ chemistry has not yet been optimised for bauxite feed.. The composite was prepared from selected samples supplied by ASQ for the purpose of testing Selectro™ and is not intended to represent the deposit as a whole.

Next Steps

The level of success achieved on this first third-party test gives the Company great confidence in the testwork ahead. Next steps include:

- Optimisation of the underlying Selectro™ chemistry for bauxite feed.
- Demonstration of the separation and purification steps to recover aluminium and iron products from the leach solution, either in-house or with the support of industry partners
- Flotation testwork on Grass Patch feed has been completed, with assays pending. The resulting flotation concentrates will then be treated using Selectro™.
- Further third-party Selectro™ testing, with this first result delivered ahead of the Q1 2027 timeframe previously indicated for third-party testwork.

- Continued progress on the accelerated design and construction of a Selectro™ demonstration plant, which will validate the Selectro™ flowsheet at scale and generate bulk product samples for prospective partners and offtakers. The Company remains funded to progress the demonstration plant.
- Engagement with strategic partners and government programs, with continued success in third-party testing expected to broaden the opportunities to participate in the commercialisation of Selectro™.

The Bayer Process

Almost all of the world's alumina is produced through the Bayer process, which was developed in the late 1880s.¹ Crushed bauxite is digested in hot concentrated caustic soda under pressure, dissolving the aluminium as sodium aluminate while the iron, titanium and silica bearing minerals remain as a fine insoluble residue. Digestion temperatures range from around 145°C for gibbsite rich bauxite, such as that of the Darling Range, to more than 250°C for the boehmite and diasporite rich bauxite mined in many other regions.² Aluminium hydroxide is then precipitated from the cooled liquor and calcined at temperatures above 1,000°C to produce alumina,³ which is achieved by molten salt electrowinning.

The Selectro™ test was conducted at below 100°C, well below the 145°C to more than 250°C used in Bayer digestion, with the potential to reduce the energy demand and associated emissions of alumina refining.

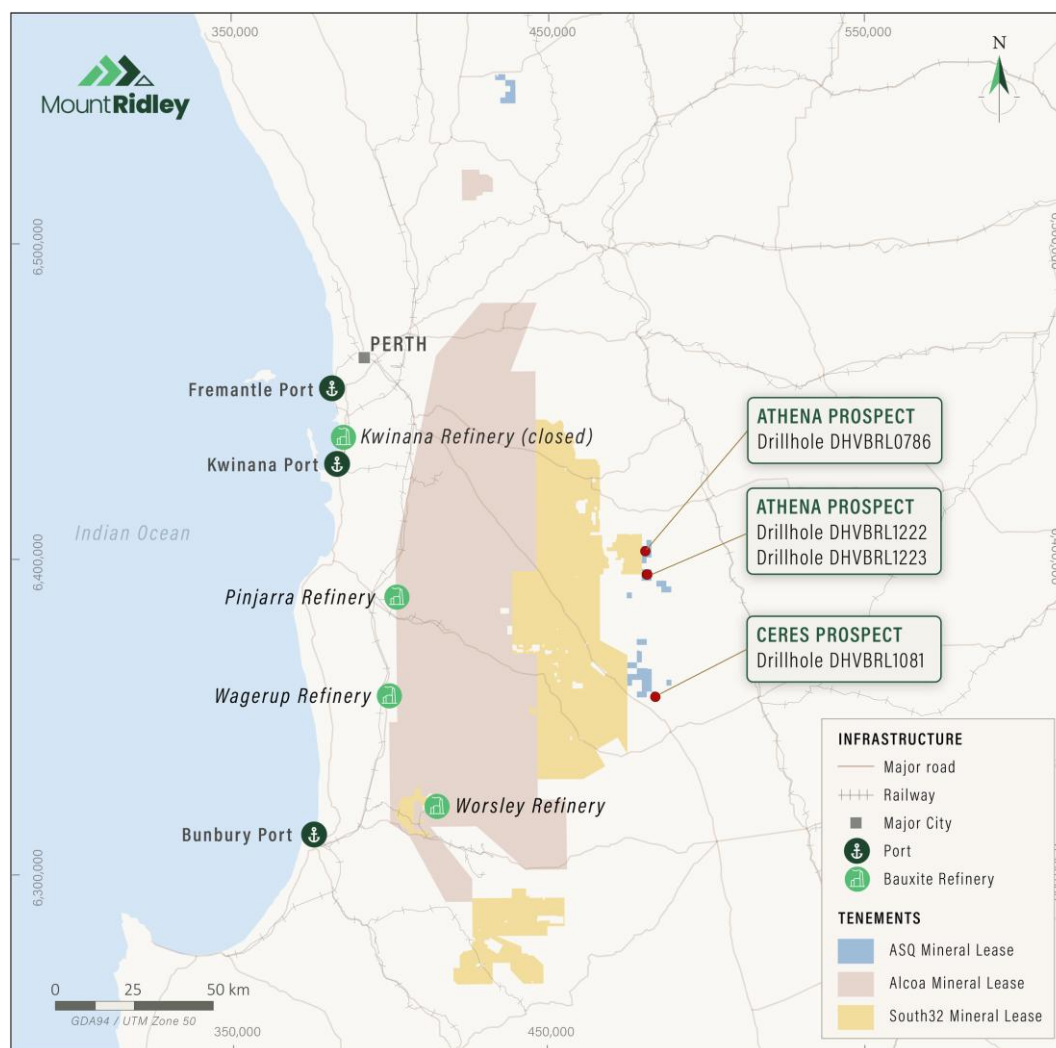


Figure 1: Location of the drill holes sampled for the Selectro™ bauxite composite, Darling Range, Western Australia

The Opportunity for Selectro™ in Bauxite

The Company's longer-term objective is to demonstrate Selectro™ at scale as a lower temperature alternative to the Bayer process that does not generate red mud. The Selectro™ demonstration plant will be central to this, testing the flowsheet and process economics at a larger scale. Given the size of the established alumina industry, the Company sees licensing of Selectro™ to refiners as the most direct pathway to adoption.

Bayer refining is also constrained by reactive silica, which reacts with the caustic liquor and locks up alumina in an insoluble residue. Bauxite with high reactive silica is often uneconomic to refine as a result. Selectro™ was developed on the Company's Grass Patch feed, which is dominated by kaolinite, the clay mineral responsible for reactive silica in bauxite. This positions Selectro™ as a potential processing route for high reactive silica bauxite deposits that are currently uneconomic under the Bayer process.

Many bauxite deposits are also too small to justify a conventional refinery, which relies on large-scale production to be economic. The Company sees potential for smaller, cost-effective Selectro™ plants to be deployed at these projects, producing aluminium, iron and other products closer to the resource.

The Company will assess opportunities to deploy Selectro™ across bauxite projects, including through strategic partnerships and licensing opportunities.



Figure 2: Composite bauxite feed (left) and Selectro™ leach residue (right) from the first pass test

The Red Mud Challenge

The residue left after digestion, known as bauxite residue or red mud, is the largest waste stream of the aluminium industry. Typically one to 1.5 tonnes of red mud is generated for every tonne of alumina produced, equating to an estimated 150 to 200 million tonnes each year, with global stockpiles estimated at around 4 billion tonnes.^{4,5} Red mud is highly alkaline and is held in large engineered storage facilities, with only a few percent of annual production put to productive use.⁴ Its long term storage and the risk of containment failure remain significant environmental and social challenges for the industry, as shown by the 2010 failure of a red mud storage facility at Ajka in Hungary, the largest documented environmental release of bauxite residue.⁶

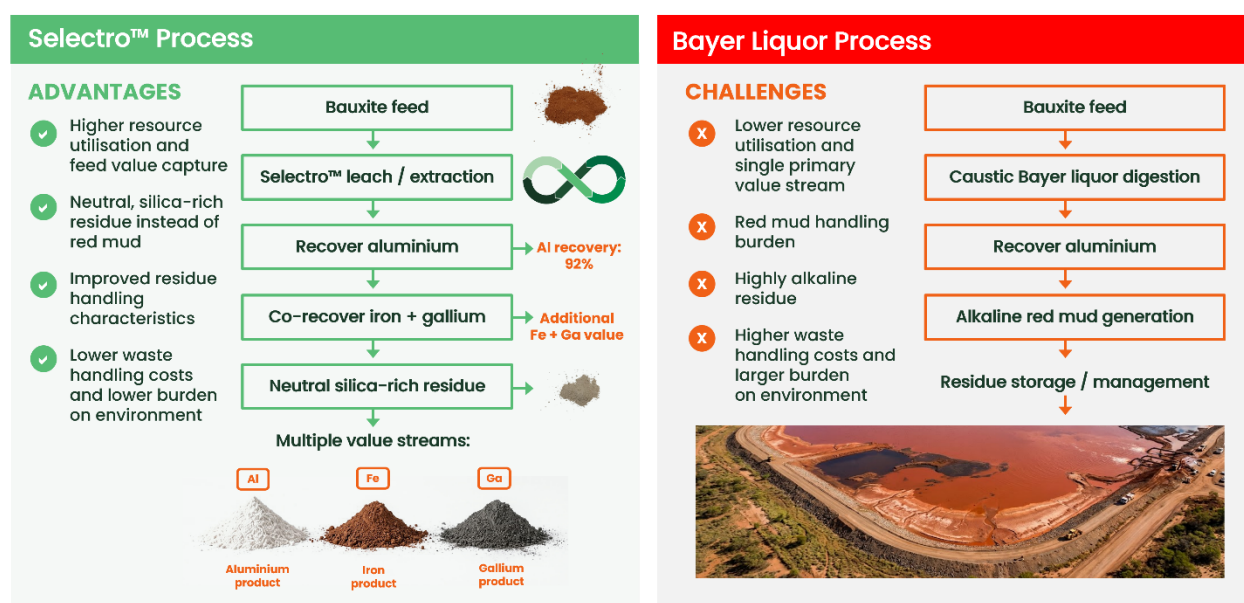
Red mud typically contains 30% to 50% iron oxide.⁷ In the Bayer process this iron is discarded with the residue. In the Selectro™ test the aluminium and iron were both leached into solution, leaving a small,

pH-neutral, silica-rich residue. With the aluminium remaining in solution, the iron can then be precipitated through a simple pH adjustment as an iron oxide product with the potential to be sold.

The Aluminium Market

Global primary aluminium production reached approximately 73.8 million tonnes in 2025, with China accounting for around 60% of output.¹⁰ At an LME aluminium price of approximately US\$3,200 per tonne in late September 2026, annual primary production is worth in the order of US\$235 billion.¹¹ Producing this volume of aluminium requires more than 140 million tonnes of alumina each year, almost all of it refined through the Bayer process. Western Australia's Darling Range is one of the world's major bauxite mining and alumina refining regions.

Concept Comparison Selectro™ vs Bayer Liquor Process



Selectro™ offers economic and environmental advantages compared to existing market processing

Figure 3: Conceptual comparison of the Selectro™ Process and the Bayer process (illustrative only)

Gallium and the Value Locked in Bauxite

Gallium is a critical mineral essential to semiconductors, defence systems and telecommunications. Primary gallium is recovered almost entirely as a by-product of alumina refining, with China accounting for approximately 99% of global primary low-purity gallium production.⁸ The strategic value placed on the gallium contained in bauxite is reflected in the final investment decision announced in July 2026 for a gallium production plant at Alcoa's Wagerup alumina refinery in the Darling Range, backed by the Australian, Japanese and United States governments and expected to supply up to 10% of global gallium.⁹

Gallium is present in bauxite at low concentrations and its measurement in the Selectro™ leach liquor requires a separate, more sensitive assay method. Gallium results from the bauxite test are expected within a week and will be reported once received. Selectro™ has previously demonstrated gallium recovery from the Company's Grass Patch feed. The Company's objective is to use Selectro™ to recover all of the valuable metals contained in bauxite, including aluminium, iron, gallium and titanium, leaving no value behind in residue.

Aluminium and Scandium

Aluminium and scandium are closely linked. One of the principal uses of scandium is as an alloying addition to aluminium, where small additions significantly increase strength, weldability and heat resistance in aerospace, defence and advanced manufacturing applications. Mount Ridley is advancing scandium alloy development through its Kick-Start collaboration with CSIRO's Lab22 additive manufacturing group. A single processing technology capable of recovering scandium from Grass Patch and aluminium from bauxite positions the Company across both sides of the aluminium scandium alloy supply chain.

The first pass, non-optimised Selectro™ result on bauxite shows significant potential to disrupt a large and well established processing pathway that has seen little fundamental change in more than a century.

About the Selectro™ Process

The Selectro™ Process is Mount Ridley's wholly owned and patent-pending leach technology. It was initially designed to recover multiple critical minerals simultaneously from a single leach circuit, operating as a closed loop system with reagent recycling and a materially lower reagent cost profile than conventional hydrochloric acid leaching. On the Company's Grass Patch feed, Selectro™ has demonstrated high recoveries of scandium, heavy rare earth elements and gallium. Selectro™ has now also demonstrated its ability to recover other metals, including aluminium and iron, from a third-party bauxite feed, with further third-party testwork scheduled on a range of different feedstocks.

This ASX announcement has been authorised for release by the Board of Mount Ridley Mines Ltd.

For further information, please contact:

Allister Caird, Managing Director & CEO

Mount Ridley Mines Ltd

info@mtridleymines.com.au

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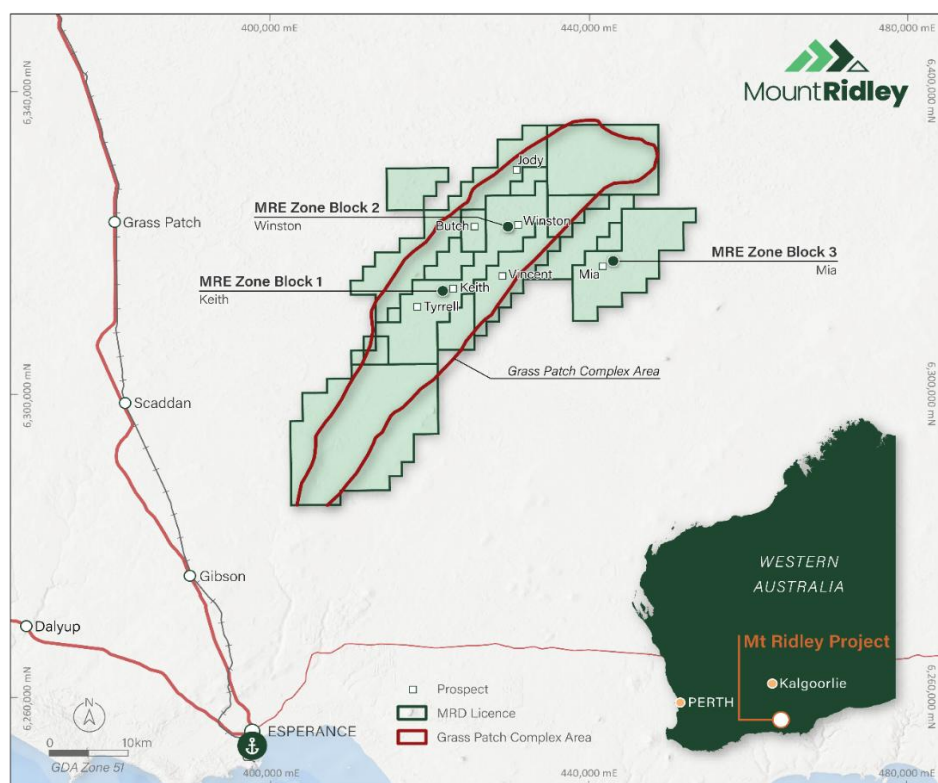
Forward Statement

This news release contains "forward-looking information" within the meaning of applicable securities laws. Generally, any statements that are not historical facts may contain forward-looking information, and forward looking information can be identified by the use of forward-looking terminology such as "plans", "expects" or "does not expect", "is expected", "budget" "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases or indicates that certain actions, events or results "may", "could", "would", "might" or "will be" taken, "occur" or "be achieved."

Forward-looking information is based on certain factors and assumptions management believes to be reasonable at the time such statements are made, including but not limited to, continued exploration activities, commodity prices, the estimation of initial and sustaining capital requirements, the estimation of labour costs, the estimation of mineral reserves and resources, assumptions with respect to currency fluctuations, the timing and amount of future exploration and development expenditures, receipt of required regulatory approvals, the availability of necessary financing for the project, permitting and such other assumptions and factors as set out herein.

Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed or implied by such forward-looking information, including but not limited to: risks related to changes in commodity prices; sources and cost of power and water for the Project; the estimation of initial capital requirements; the lack of historical operations; the estimation of labour costs; general global markets and economic conditions; risks associated with exploration of mineral deposits; the estimation of initial targeted mineral resource tonnage and grade for the project; risks associated with uninsurable risks arising during the course of exploration; risks associated with currency fluctuations; environmental risks; competition faced in securing experienced personnel; access to adequate infrastructure to support exploration activities; risks associated with changes in the mining regulatory regime governing the Company and the Project; completion of the environmental assessment process; risks related to regulatory and permitting delays; risks related to potential conflicts of interest; the reliance on key personnel; financing, capitalisation and liquidity risks including the risk that the financing necessary to fund continued exploration and development activities at the project may not be available on satisfactory terms, or at all; the risk of potential dilution through the issuance of additional common shares of the Company; the risk of litigation.

Although the Company has attempted to identify important factors that cause results not to be as anticipated, estimated or intended, there can be no assurance that such forward-looking information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Accordingly, readers should not place undue reliance on forward-looking information. Forward looking information is made as of the date of this announcement and the Company does not undertake to update or revise any forward-looking information this is included herein, except in accordance with applicable securities laws.



Location of the Grass Patch Project in 25km north of Esperance, Western Australia

About Mount Ridley Mines Ltd

Mount Ridley Mines Ltd is an Australian critical minerals explorer focused on the discovery and development of heavy rare earth elements, gallium and scandium across its wholly owned Mount Ridley and Weld Range projects in Western Australia. Complimentary to its upstream business, the Company is actively pursuing longer term downstream pathways aimed at enhancing value through processing and separation of critical minerals for supply into allied markets.

Grass Patch Project

The flagship Grass Patch Project is located approximately 25 kilometres north of the deep water port of Esperance and hosts defined heavy rare earth element, scandium and gallium resourced identified through 70 000 metres of historical drilling. A majority of the project tenure is centred on the Grass Patch Complex, which is widely interpreted to be the primary source of the heavy rare earth enrichment identified across the project area.

The Grass Patch Project remains significantly underexplored relative to its scale and geological endowment. Multiple high priority walk up drill targets have been identified through historical drilling, geophysics and recent technical reviews. These targets are currently being assessed and prioritised with the intention of supporting future drilling programs planned for 2026.

Weld Range Project

The Company also holds the Weld Range Project in Western Australia, which provides additional exposure to large scale mineral systems within a well-established mining region. Together, the Mount Ridley and Weld Range projects position the Company as an emerging participant in the supply of critical minerals into allied markets.