ALTILIUM TO TRANSFORM MINE TAILINGS INTO VALUABLE EV MATERIALS WITH SUPPORT OF UK GOVERNMENT

28th November, 2023 – Altilium, a UK-based clean technology group focused on supporting the transition to net zero, is proud to announce that it has secured over £700,000 in UK government innovation funding for two cutting edge collaborative research projects focused on the recovery of copper and Rare Earth Elements (REE) from mine waste.

Building on its pioneering work to recover lithium and other critical battery materials from end-of-life EV batteries, Altilium is partnering with CPI and Camborne School of Mines (CSM) for the two projects, which aim to develop new environmentally-friendly processes for the recycling of REE and other battery metals from mine tailings, transforming what was once considered waste into a valuable resource.

Both projects will focus on utilising mine tailings controlled by Altliium in Europe, supporting the shift to a circular economy, mitigating waste and reducing new mining. Instead of sourcing metals from mining of virgin mineral resources, which are increasingly carbon and resource intensive to extract and refine, Altilium is exploring new opportunities to recover these metals from existing mine waste, and provide these in a form that can be utilised by the UK battery supply chain.

Altilium COO Dr Christian Marston commented: "We are committed to pushing the boundaries and leading UK innovation in green technologies to enable a sustainable energy transition. By reprocessing mine waste, we are not only reducing the harmful environmental impact of traditional mining, but also providing a sustainable solution to meet the growing demands for copper and rare earth elements, as well as fostering economic growth. By efficiently recycling resources, we're contributing to job creation and economic development."

Altilium has exclusive rights to reprocess materials from the largest mine tailing site in Eastern Europe. Detailed analysis has already confirmed significant residues of copper, iron, aluminium and other metals in the mining waste.

Hydrometallurgical processing of the tailings will be carried out a new state-of-the-art solvent extraction pilot plant at Altilium's Technology Centre in Tavistock. This work will focus on developing innovative leaching techniques

and efficient separation methods, while minimising waste generation and environmental impact.

ReTail: Recovery of copper, aluminium and other battery metals

In partnership with CPI, Altilium has been selected for funding under round 6 of UKRI's Faraday Battery Change, which aims to accelerate the development and commercialisation of state-of-the-art battery technologies in the UK and support growth of the supply chain in the UK battery sector.

The 12-month project aims to establish the feasibility and environmental impact of processing tailings from Altilium's site in Europe to extract copper, aluminium and other battery materials for use in the UK EV battery supply chain (for example, to produce copper foils for use as current collectors). The aim is to develop clean and efficient methods that can be scaled for industrial application, reducing reliance on traditional mining practices.

Copper makes up around 11% of an NMC battery by weight, while aluminium typically makes up 19%. These metals are also used extensively in other EV components. While these metals are not conventionally considered rare, the growth of green transport and energy markets will greatly increase demand and require new supply options. 'The Future of Copper' report in 2022, warned: "*Unless massive new [copper] supply comes online in a timely way, the goal of Net-Zero Emissions by 2050 will remain out of reach*".

ReREE: Recovery of rare earth elements

Altilium is also working with the Camborne School of Mines on a Feasibility Study exploring the recovery of rare earth elements from mine tailings using innovative hydrometallurgical processes, thus supporting the development of a resilient and sustainable supply chain for REEs in the UK.

The project has secured funding from Innovate UK under the Critical Materials for Magnets Competition, part of the circular critical materials supply chains (CLIMATES) programme. Announced in February, The CLIMATES programme, has committed £15 million of government funding for cutting-edge research to strengthen the supply of critical materials.

As well as evaluating the technical and economic viability of the process, the study will also include an environmental impact assessment to ensure

sustainable practices and minimize ecological footprint. Geochemical and mineralogical characterisation of tailings will be carried out by CSM, while Pensana Plc will provide commercial feedback on the recovered materials. Pensana is establishing an independent, sustainable rare earth supply chain with midstream processing to produce magnet metal in the UK.

Identified in the UK Govt's Critical Mineral Strategy, REEs are vital to the UK's electrification ambitions, forming a critical part of the technology for EV motors and offshore wind turbines, as well as other technological applications. With the increasing adoption of EVs and growth of offshore wind, demand for REEs is forecast to grow seven fold by 2050.

This supply chain represents a huge opportunity for UK businesses; the global market for rare-earth elements (REE) is projected to grow from $2.5 billion to $5.5 billion by 2028 according to Fortune Business Insights. However, their extraction and production often have negative environmental impacts, while China currently dominates over 90% of the supply chain for permanent magnets.

About Altilium

Altilium is a UK-based clean tech group that will reshape the UK and European automotive supply chain by offering high volume, low carbon domestic sources of cathode and anode materials from recycling waste streams already in circulation, such as end-of-life batteries and mine tailings.

In 2022, the company opened its Battery Recycling Technology Centre in Devon, to deepen and strengthen its competitive edge in the recycling of lithium-ion batteries. The scale-up processing line will provide the company with data to make informed decisions on materials handling, scalability, and product quality at the UK's largest planned EV battery recycling facility, to be located in Teesside. The plant will have the capacity to process scrap from over 150,000 EVs per year, producing 30,000 MT of CAM, 20% of the expected demand in the UK and one of the largest projects in the UK and Europe.

To date, Altilium has secured over £6M in backing from UK government innovation awards, including grants from the Faraday Institutions Battery Challenge and the Automotive Transformation Fund. The company recently completed its Series A funding round with a multi-million pound investment from SQM Lithium Ventures, the corporate venture arm of the lithium business of Sociedad Quimica y Minera de Chile (SQM), one of the world's leading producers of battery-grade lithium.

For more information go to www.altilium.tech

For media inquiries contact:

Dominic Schreiber
Email: dominic@altilium.tech

About CPI

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We're a pioneering social enterprise that accelerates the development, scale-up and commercialisation of smart AgriFoodTech, energy storage, HealthTech, materials, and pharma innovations. Through our incredible innovation experts and infrastructure, we look beyond the obvious to transform healthcare and drive towards a sustainable future.

As a trusted partner of industry, academia, government, entrepreneurs and the investment community, we connect the dots within the innovation ecosystem to make great ideas and inventions a reality. We believe by working together we can build a better collective future, and as part of the High Value Manufacturing Catapult, we facilitate access to world-class organisations to deliver transformation across industries and landscapes.

Creating lasting global impact from the North of England and Scotland, we invest in people and disruptive technologies to invigorate economies, create circular supply chains and make our world a better place.

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