# ASX Announcement

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# 100 Years of Mining Data Secured for Bleiberg Zinc – Germanium Project

***Data secured aims to provide further confirmation and exploration targets of Germanium and Gallium mineralisation hosted within the Bleiberg Mines rich history.***

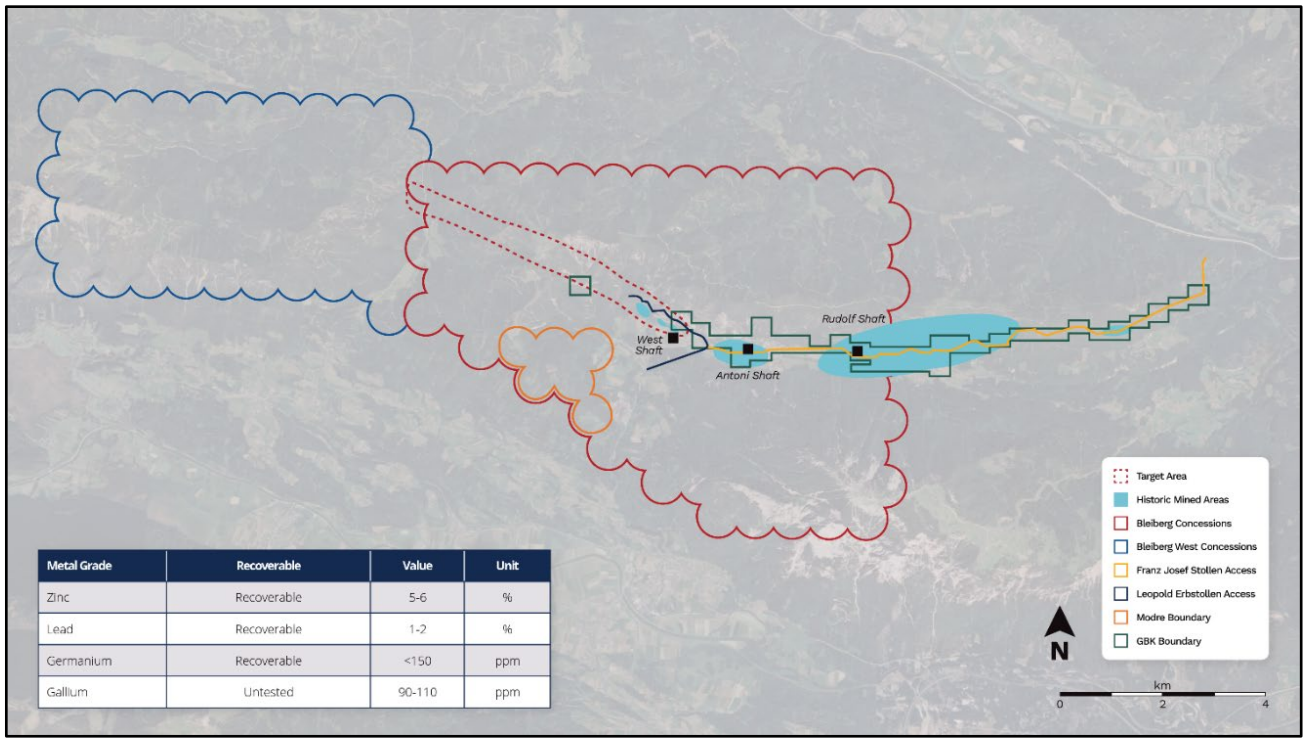
## HIGHLIGHTS

- Highly successful meetings with GKB-Bergbau GmbH result in an agreement to provide the Company with access to over 100 years of historic mining data from the Bleiberg Zinc-Lead-Germanium Mine in Austria.
- The data will help the Company to fast-track strategically targeted extensions of the known mineralisation on its tenements.
- Desktop studies have recorded over ~172 tonnes of Germanium production at only a portion of the Bleiberg mine and was ranked as the 6th largest Germanium mine in the world during its final years in production in 1993[1].
- Since Bleiberg's closure in 1993, Germanium and Gallium have both become essential materials to develop new generation 5nm and 3nm semiconductors and chips which are used within Electronic Vehicles, Artificial Intelligence and Quantum Computing.
- China's recent export policy on Germanium and Gallium places further strategic importance on this asset.
- This collaboration and access to data will allow the Company to generate a precise exploration plan and development strategy on its Bleiberg Project which will commence over the following months.

Battery Age Minerals Ltd (ASX: **BM8**; **"Battery Age"** or **"the Company"**) is pleased to advise that it has met and agreed with the GKB-Bergbau GmbH to access and collate over 100 years of historic mining data from the Bleiberg Zinc-Lead-Germanium Mine in Austria. The data will be utilised in a detailed desktop analysis to form the development of a targeted exploration plan for the Company's Bleiberg project.

The Bleiberg mine, located in Austria, has a rich mining history, having been a significant producer of Zinc, Lead, Germanium, Molybdenum and Cadmium with operations running for over a remarkable 700-years until its eventual closure due to low metal prices[2]. Notably, The Bleiberg Mine was one of the largest germanium producers in the world, with over ~172 tonnes of Germanium recovered from the mine during its operational period[1]. The Bleiberg mine was renowned for its high-grade mineralisation and played a crucial role in the regional economy, being ranked in 2009 as the 12th largest MVT ("Mississippi Valley Type") deposit in the world[3] based on lead and zinc content. Although not historically produced at Bleiberg, Gallium mineralisation has also been identified in the historical workings and data within the mine.

*Figure 1 – BM8 CEO, Nigel Broomham (far right) with members of the GKB-Bergbau GmbH in Bärnbach, Austria.*




| Metal Grade | Recoverable | Value | Unit |
|---|---|---|---|
| Zinc | Recoverable | 5-6 | % |
| Lead | Recoverable | 1-2 | % |
| Germanium | Recoverable | <150 | ppm |
| Gallium | Untested | 90-110 | ppm |

*Figure 2 – Identified mineralised trend located along strike from historical workings. Inset table demonstrates historical data for the Bleiberg Mine from previous workings)[i].*

*"Germanium has the highest hole mobility among common elemental and compound semiconductors, and an electron mobility that is two times larger than that of silicon. Germanium is thus a promising channel material for future CMOS".*

- *TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY*[4]

Germanium, a key mineral of interest at the Bleiberg Project, has a wide range of uses across various industries. Some notable applications of germanium include:

**Micro Chips:** Germanium is a crucial component in the production of semi-conductors and optical fibres. It is used in the manufacturing of transistors, diodes, and other electronic devices. In particular, Germanium plays a critical role in High-Performance Logic Chips such as CPU's and GPU's which are used in Automotive, Artificial Intelligence ("AI"), Next-Generation Computing and Wireless Industries.

Taiwan Semiconductor Manufacturing Company Limited ("TSMC") has outlined the dependency on utilizing a higher level of Germanium within next generation Si-Ge (Silicon & Germanium) chips. This is due to the structural properties of Germanium allowing for far better electron mobility than Silicon leading to much greater processing efficiency, lower power consumption for higher performance while providing a smaller sized chip[4].

TSMC's flagship 5nm chip which is used amongst Apple devices were the first to use a Silicon-Germanium as the High-Mobility-Channel material reflecting a new paradigm of products which will be dependent on Germanium[4,5], furthermore new-generation 3nm chip requires a higher dependency on Germanium for efficiency and Artificial Intelligence Computing and Integration.

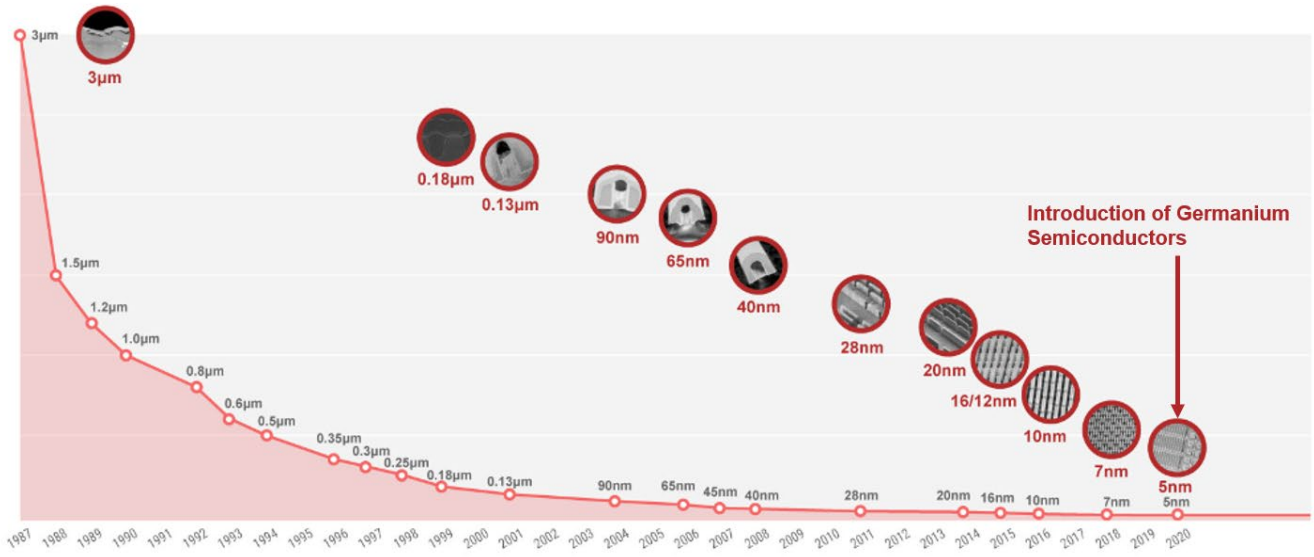



*Figure 3 – Evolution of TSMC's Chip Size and processing capabilities*[6]

Other significant applications for Germanium include:

- **Fiber Optics:** Germanium is utilized in the production of high-quality optical fibres, which are widely used in telecommunications for data transmission.

- **Infrared Optics:** Germanium has excellent optical properties in the infrared range, making it valuable for thermal imaging systems, night vision devices and other infrared optics applications.
- **Solar Cells:** Germanium is used as a substrate material in certain types of solar cells, particularly in high efficiency multijunction photovoltaic cells.

The Company recognises the strategic potential of the Bleiberg Project, particularly in light of recent developments with the Chinese Government announcing new restrictions and controls on Germanium and Gallium exports which are the critical raw materials within semiconductors and processing chips[6]. This policy change from the Chinese Government is reported to be taken in response to Western export controls on Semiconductor and AI Chip technologies, which highlights the geopolitical rift arising in a quest to control the Semiconductor and Microchip industry. Furthermore, these policy changes outline the strategic importance over securing supply of raw materials which will play an imperative role to forge the next generation of processing chips by major manufacturers such as TSMC, NVDIA and INTEL for uses in electric vehicles, artificial intelligence, and quantum computing. China currently has near full control over both Germanium and Gallium production, accounting for 92% and 97% of global supply respectively for these minerals[8,9]. This provides Bleiberg with a unique proposition to become a disruptor to the rigid supply chain of these future facing semiconductor commodities.

Given its rich mining heritage, large dataset of geological models, drills and metallurgic work outlining an extensive mineralisation, the Bleiberg Earn-In[10] was secured by Battery Age as part of its relisting process last year and represents a potentially strategically critical minerals opportunity. The Company intends to accelerate exploration activities in the coming months alongside ongoing work at its Falcon Lake Lithium Project in Canada.

**Battery Age CEO Nigel Broomham commented**:

*"We are pleased to have secured the historic dataset for the Bleiberg Mine which will provide us with invaluable insight into the historic production areas, grades, geological models, metallurgical recovery work, drill and sampling assays to form a targeted exploration plan and understand the underlying resource potential that remains within this historically prominent region.*

*Furthermore, according to historic records, Bleiberg has produced over 172 tonnes of Germanium and hosts Gallium mineralisation, which both have new founded strategic importance in the emerging 'chip race' for uses in Electronic Vehicles and AI computing.*

*Given China controls over 92% and 97% of Germanium and Gallium production respectively, Bleiberg represents a unique opportunity to potentially disrupt this supply chain and provide critical raw materials for next-gen microchips and semiconductors which bypass China's recent export policy.*

*We now look forward to progressing exploration activities over the coming months to evaluate the potential of our Bleiberg Project for our shareholders."*

*Release authorised by the Chairman of Battery Age Minerals Ltd.*

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## Compliance Statement

This announcement contains information on the Bleiberg Project extracted from an ASX market announcements dated 8 December 2022, 2 February 2023 and 13 July 2023, released by the Company and reported in accordance with the 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (JORC Code). The original market announcement is available to view on www.batteryage. au and www.asx.com.au. Battery Age is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources (as that term is defined in the JORC Code) that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

References:


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6. Refer Thomson Reuters "China's rare earths dominance in focus after it limits germanium and gallium exports", 5 July 2023, refer CNN "China hits back in chip war, imposing export curbs on crucial raw materials" 3 July 2023.
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8. Minerals Commodity Summary (2022), USGS, Germanium
9. Minerals Commodity Summary (2023), USGS, Gallium
10. Refer to earn-in terms and structure set out in the Company's Prospectus dated 7 December 2022.