



## VHD TECHNOLOGY PILOT PLANT ON TRACK FOR 2025 COMMERCIALISATION

- **Pilot Plant Key Equipment Ordered and Deliveries Scheduled:** GCM has successfully placed orders for all critical pilot plant equipment, ensuring timely delivery. The equipment is scheduled to arrive in stages between November 2024 and January 2025, enabling a seamless transition to the installation phase and reducing potential delays in project timelines.
- The construction of the VHD Technology pilot plant located in NSW is set to commence in the first half of **December 2024**. This milestone marks the start of a pivotal phase in the project, as GCM moves closer to **realising its vision of delivering advanced graphite-based solutions to high-growth industries**.
- **The Pilot Plant Is Designed to Produce Two Distinct Product Lines:**
  - Smaller VHD blocks will be tailored for heat sinks used in **semiconductor devices for high-performance computing**, including gaming computers, supercomputers and data centers.
  - Larger VHD blocks will serve as critical components for **solar-thermal energy storage systems**, addressing the growing need for innovative solutions in renewable power generation and industrial processes.
- **Plans for Full-Scale Production Facility in North America:** Following the successful completion of the pilot plant, GCM plans to establish a full-scale production facility with a strategic focus on the **United States of America (USA)**. This region's strong demand for advanced thermal management solutions in electronics and renewable energy makes it a priority for expansion, enabling GCM to tap into a rapidly growing market.
- **VHD blocks offer a sustainable alternative to fossil fuels** by enabling decarbonised power generation and more efficient industrial processes. These blocks play a critical role in supporting the global transition to renewable energy and energy-efficient technologies, a market valued at over \$700 billion<sup>1</sup>, reinforcing GCM's commitment to environmental leadership.
- GCM remains on track to commission the pilot plant during the **second quarter of FY2025, marking the beginning of small-scale production**. Validation of laboratory-scale sample production and properties is expected in Q3 FY2025, with customer qualification testing and validation to follow.

<sup>1</sup> Lone Star Technical Minerals, 2024, Yahoo Finance October 2024.



**Green Critical Minerals Ltd ('GCM' or 'the Company')** is pleased to provide an update on progress of the VHD Technology pilot plant at its recently secured industrial facility in New South Wales (NSW). This facility represents a pivotal step in GCM's journey to commercialise the VHD Technology and unlock its transformative potential across renewable energy and high-performance electronics markets.

### A Major Milestone for the VHD Technology

Over recent weeks, GCM has achieved critical milestones at its industrial facility, which will serve as the base for its pilot plant operations:

- **All Pilot Plant Key Equipment Ordered:** All necessary key equipment has been ordered, with deliveries scheduled for November, December, and January.
- **Industrial Facility Fit-Out Advancing:** Preparations for the facility are well underway, ensuring readiness for pilot plant installation.
- **Construction Start Date:** Construction of the pilot plant is set to begin in the first half of December 2024.

This progress represents a significant leap forward in GCM's commitment to establishing a sustainable and high-value graphite production pipeline, creating opportunities to address market demands in advanced technology and renewable energy sectors.



*Figure 1 Green Critical Minerals VHD Technology Industrial Facility.*

### Pilot Plant Capabilities

The pilot plant has been designed to support the parallel development of heat sinks and solar-thermal blocks. Smaller VHD blocks will be produced, designed specifically for heat sinks in the high-performance computing sector – gaming computers, super computers, AI data centers.

With larger VHD blocks tailored for solar-thermal energy storage systems, a market with growing demand for innovative solutions to decarbonise power generation and industrial processes. These blocks are critical components for thermal energy storage (TES) in utility-scale renewable energy projects, providing a sustainable alternative to fossil fuels.



*Figure 2 Arrival of first goods to the Industrial Facility.*

### Broader Vision and Long-Term Goals

The VHD Technology pilot plant represents a critical step in GCM's broader strategy to drive innovation and deliver high-value solutions to global markets. Looking beyond the pilot plant phase, GCM's long-term goals include:

- **Scaling to Full Commercial Production:** Following the success of the pilot plant, GCM plans to establish a full-scale production facility, with a strategic focus on **North America**. This region's strong demand for advanced thermal management solutions in high-performance electronics and renewable energy applications makes it a key target for future expansion. Establishing a presence in North America aligns with GCM's goal to capture a significant share of this rapidly growing market.
- **Diversification into Additional Markets:** While the initial focus is on high-performance electronics and renewable energy, GCM aims to explore other industries such as aerospace, defence, and advanced manufacturing, where thermal management and energy storage solutions are critical.



- **Continuous R&D for Enhanced Capabilities:** GCM is committed to ongoing research and development to optimise the VHD Technology further, improve cost efficiencies, and expand the range of applications for VHD blocks. This includes innovations in material science to meet evolving market needs.
- **Strategic Partnerships:** GCM will actively seek collaborations with industry leaders, research institutions, and government organisations to accelerate the adoption of VHD Technology and unlock its full potential. These partnerships will also facilitate entry into high-demand regions such as **North America**.
- **Environmental Leadership:** As a provider of sustainable, high-value materials, GCM aims to contribute significantly to global decarbonisation efforts. VHD blocks will play a vital role in transitioning industries to energy-efficient, renewable solutions, further cementing GCM's leadership in environmentally conscious innovation.

By aligning its technical strengths with a forward-thinking vision, GCM is poised to create long-term value for its stakeholders while strategically expanding its footprint into key markets, including **North America**, to support the growing demand for sustainable and high-performance material solutions.

### Advancing Towards Commercialisation

The pilot plant is a critical component of GCM's broader strategy to commercialise the VHD Technology and unlock its transformative potential. Key milestones include:

- ✓ Engagement of Head of Research and Development – **Complete**
- ✓ **Pilot Plant Commissioning:** Set for the second quarter of financial year 2025, marking the beginning of small-scale production – **Industrial facility leased, pilot plant designed, equipment ordered, and deliveries received.**
- ✓ Validate Laboratory Scale Sample Production and Properties – **On track for third quarter financial year 2025.**
- ✓ **Customer Qualification:** Produce VHD Blocks, and provide samples to key customers in the electronics markets for testing and validation – **On track for third quarter financial year 2025.**
- ✓ **Commercialisation and Ramp-Up:** Subject to pilot plant success – **On track for first quarter financial year 2026.**

These milestones highlight GCM's commitment to delivering a commercially viable product that meets the demands of high-growth industries.



### Authorisation

The provision of this announcement to the ASX has been authorised by the Board of Directors of Green Critical Minerals Limited.

### Forward Looking Statements

This announcement contains general information about GCM's activities current as at the date of the announcement. The information is provided in summary form and does not purport to be complete.

This release contains estimates and information concerning our industry and our business, including estimated market size and projected growth rates of the markets for our products. Unless otherwise expressly stated, we obtained this industry, business, market, and other information from reports, research surveys, studies and similar data prepared by third parties, industry, and general publications, government data and similar sources. This announcement also includes certain information and data that is derived from internal research. While we believe that our internal research is reliable, such research has not been verified by any third party. Estimates and information concerning our industry and our business involve a number of assumptions and limitations. Although we are responsible for all of the disclosure contained in this announcement and we believe the third-party market position, market opportunity and market size data included in this announcement are reliable, we have not independently verified the accuracy or completeness of this third-party data. Information that is based on projections, assumptions and estimates of our future performance and the future performance of the industry in which we operate is necessarily subject to a high degree of uncertainty and risk due to a variety of factors, which could cause results to differ materially from those expressed in these publications and reports.

For personal use only