

# New Discovery: High-Grade Tantalum Deposits

## EMRL Expands Critical Minerals Portfolio with Significant Tantalum Find

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### Executive Summary

Eminent Mines Resources Limited (EMRL) announces the discovery of significant tantalum concentrations in its northern licence areas, opening new opportunities in the critical minerals market and demonstrating the continued potential for major discoveries in Nigeria's underexplored terrain. This comprehensive report presents the technical details of the discovery, the significance of tantalum in global supply chains, and the strategic implications for EMRL's portfolio development.

Tantalum is classified as a critical mineral by numerous countries and regions due to its essential role in electronics manufacturing and the concentrated nature of global supply. The discovery of high-grade tantalum deposits positions EMRL to contribute to diversified critical minerals supply while expanding the company's resource base and revenue potential. This finding reinforces Nigeria's emerging role as a significant source of minerals required for the global energy transition and technology sector.

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## 1. Introduction: Tantalum in the Global Minerals Landscape

### 1.1 Strategic Importance of Tantalum

Tantalum is one of the most strategically significant minerals in the global economy despite its relatively obscure profile. This dense, corrosion-resistant metal is essential for the manufacture of electronic components, particularly tantalum capacitors, which are used in virtually all modern electronic devices. From smartphones and computers to medical devices and automotive electronics, tantalum capacitors provide the compact, reliable energy storage that enables modern technology.

The strategic importance of tantalum has been recognised by governments worldwide, with the mineral designated as critical or essential in numerous jurisdictions including the United States, European Union, Japan, and Australia. Critical mineral designations reflect concerns about supply concentration, with the majority of global tantalum production originating from a limited number of countries, creating vulnerability to supply disruptions.

## **1.2 Supply Chain Dynamics and Market Requirements**

Global tantalum supply has historically been concentrated in a small number of countries, with artisanal and small-scale mining in Africa historically accounting for a significant portion of production. This concentration creates both supply risks and opportunities for new producers who can demonstrate responsible, traceable supply chains. The tantalum industry has been working to improve supply chain transparency and eliminate contributions to conflict and human rights abuses.

EMRL's tantalum discovery comes at a time when electronics manufacturers are increasingly seeking diversified, responsibly-sourced tantalum supplies. The company's commitment to transparent, responsible operations positions it favourably to meet these requirements and to establish relationships with customers who value supply chain integrity.

## **1.3 Nigeria's Potential in Critical Minerals**

Nigeria possesses significant potential for critical minerals development, with geological formations favourable for the occurrence of tantalum and other strategically important minerals. However, large areas of the country remain underexplored by modern standards, leaving substantial potential for new discoveries. EMRL's systematic exploration approach is systematically evaluating this potential, with the tantalum discovery representing a significant early success.

The development of Nigeria's critical minerals sector aligns with national economic diversification objectives and global supply chain diversification imperatives. By identifying and developing responsible sources of critical minerals, EMRL contributes to both national development and global supply security.

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# **2. Exploration Methodology and Discovery Process**

## **2.1 Regional Geological Understanding**

The tantalum discovery resulted from systematic exploration programmes that began with regional geological mapping and analysis. EMRL's geological teams studied the geological formations in the northern licence areas, identifying geological settings favourable for tantalum mineralisation based on international analogues and published

research. This geological understanding provided the foundation for more detailed exploration activities.

Tantalum mineralisation is typically associated with certain types of granite and pegmatite formations, particularly those enriched in rare elements. The geological team identified favourable formations during regional mapping and targeted these areas for more detailed investigation. This systematic approach ensured efficient use of exploration resources while maximising the probability of discovering mineralisation.

## **2.2 Geochemical Surveys and Target Generation**

Following regional geological mapping, EMRL's teams conducted geochemical surveys to identify areas of anomalous tantalum and associated elements. Soil and stream sediment sampling programmes covered the licence areas systematically, with samples analysed for tantalum and pathfinder elements that indicate the presence of mineralisation.

The geochemical survey results identified several areas with anomalous tantalum values, providing targets for more detailed investigation. These anomalies were prioritised based on their magnitude, spatial extent, and association with favourable geological settings. The highest priority targets were advanced to drill testing.

## **2.3 Drill Testing and Discovery Confirmation**

Reverse Circulation (RC) drilling was employed to test the highest priority geochemical targets. The drilling programme systematically tested the anomalies, with samples collected at regular intervals for chemical analysis. The results confirmed the presence of significant tantalum mineralisation in multiple drill holes across the target area.

The discovery was made in drill hole EMRL-TA-001, which intersected high-grade tantalum mineralisation at relatively shallow depths. Subsequent drilling has confirmed and extended the mineralised zone, building confidence in the extent and grade of the discovery. The systematic approach employed in the discovery process demonstrates the effectiveness of EMRL's exploration methodology.

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# **3. Technical Details of the Discovery**

## **3.1 Drill Results and Mineralisation Characteristics**

The discovery drill hole EMRL-TA-001 intersected 42 metres of high-grade tantalum mineralisation from 15 metres depth, with individual sample grades reaching 0.08% Ta<sub>2</sub>O<sub>5</sub>. The mineralisation occurs in a weathered zone near surface, with grades generally increasing with depth as the less altered fresh rock is approached. The true width of the mineralised zone is estimated at approximately 35 metres based on the current understanding of the mineralised geometry.

Subsequent drill holes have confirmed the continuity of mineralisation across the target area. Drill hole EMRL-TA-002, located 150 metres to the east, intersected 38 metres of mineralisation with similar grades. Drill hole EMRL-TA-003, located 200 metres to the north, intersected 45 metres of mineralisation with grades locally exceeding the discovery hole. These results confirm the significant lateral extent of the mineralised system.

#### **Drill Results Summary:**

Drill Hole	From (m)	To (m)	Intercept (m)	Grade (Ta <sub>2</sub> O <sub>5</sub> %)
EMRL-TA-001	15	57	42	0.052
EMRL-TA-002	12	50	38	0.048
EMRL-TA-003	18	63	45	0.061
EMRL-TA-004	22	58	36	0.055
EMRL-TA-005	15	52	37	0.049

Note: Grades reported as weighted averages. Intercepts calculated using 0.03% Ta<sub>2</sub>O<sub>5</sub> cut-off grade.

### **3.2 Mineralogical Characterisation**

Preliminary mineralogical studies indicate that tantalum occurs primarily in the mineral columbite-tantalite, a niobium-tantalum oxide that is the principal source of tantalum in most deposits. The columbite-tantalite occurs as fine-grained disseminations within the host rock, with some coarse-grained occurrences that may be amenable to visual identification.

The mineralogical character of the deposit has implications for potential processing routes. The coarse-grained nature of some mineralisation suggests that physical separation methods may be effective in concentrating the tantalum-bearing minerals. This could enable the production of a tantalum concentrate with relatively simple processing, reducing capital and operating costs.

### **3.3 Geological Model and Resource Potential**

Based on the drilling results to date, EMRL's geological team has developed a preliminary geological model for the tantalum deposit. The mineralisation is interpreted to occur in a zone of weathering and alteration that overlies fresh, unaltered host rocks. The zone of mineralisation appears to be controlled by structural and chemical factors that created favourable conditions for tantalum concentration.

The current understanding of the deposit suggests significant resource potential, with the mineralised zone extending over several hundred metres in multiple directions. The full extent of the deposit has not yet been defined, with additional drilling required to

establish the complete resource. Early indications suggest the potential for a significant tantalum resource that could support long-term mining operations.

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## **4. Comparison with Global Tantalum Deposits**

### **4.1 Grade Comparison**

The tantalum grades identified in EMRL's discovery compare favourably with many global tantalum deposits. The average grade of approximately 0.05% Ta<sub>2</sub>O<sub>5</sub> is higher than the average grade of many operating tantalum mines, where grades of 0.02-0.03% are common. This higher grade has implications for the potential economics of the deposit, as higher grades generally translate to lower operating costs per unit of metal produced.

The comparison with global deposits is subject to significant uncertainty given the early stage of development, but the initial results are encouraging. If the current understanding of the deposit is confirmed through further exploration, EMRL's tantalum project could rank among the higher-grade tantalum deposits globally.

### **4.2 Scale and Development Potential**

The scale of EMRL's discovery is still being defined, with the current drilling providing only initial indications of the resource extent. However, the significant intercepts and the apparent continuity of mineralisation suggest the potential for a meaningful-scale deposit that could support long-term mining operations.

The development of the tantalum deposit would complement EMRL's lithium projects, enabling the company to offer multiple critical minerals to the market. This diversification provides resilience against commodity price volatility while creating operational synergies through shared infrastructure and processing facilities.

### **4.3 Processing Considerations**

The metallurgical characteristics of the tantalum deposit are still being evaluated, but preliminary indications suggest relatively straightforward processing requirements. The weathered nature of the mineralisation and the coarse-grained character of the tantalum-bearing minerals suggest that simple physical separation methods may be effective in producing a saleable concentrate.

The potential for simple processing has significant positive implications for project economics. Lower processing complexity reduces capital requirements, lowers operating costs, and reduces technical risk. These factors enhance the overall attractiveness of the project and support continued advancement through feasibility studies.

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## **5. Market Context and Commercial Implications**

### **5.1 Tantalum Market Dynamics**

The global tantalum market is characterised by relatively small volumes but high value and strategic importance. Annual tantalum consumption is measured in the thousands of tonnes of contained tantalum, with market values measured in billions of dollars. The market is dominated by a small number of large consumers, primarily electronics manufacturers and their supply chains.

Tantalum prices have experienced significant volatility over the past two decades, reflecting changes in supply-demand balance and periodic supply disruptions. Recent years have seen relatively stable prices at levels that support new development, with continued demand growth expected as electronic device production expands. The emergence of electric vehicles and renewable energy systems creates additional demand drivers that could support higher prices in coming years.

### **5.2 Strategic Value for EMRL**

The tantalum discovery adds significant strategic value to EMRL's asset portfolio. The critical minerals focus of the discovery aligns with global supply chain priorities, potentially attracting interest from customers and investors who are seeking diversified, responsibly-sourced supplies. The diversification across commodities reduces exposure to price volatility in any single market.

The discovery also demonstrates the effectiveness of EMRL's exploration approach and the potential for additional discoveries within the company's extensive licence areas. This exploration success builds confidence in the company's ability to create value through organic growth, reducing dependence on acquisition for future development.

### **5.3 Partnership and Development Opportunities**

The strategic significance of the tantalum discovery creates opportunities for strategic partnerships with companies seeking secure supplies of critical minerals. EMRL has received expressions of interest from potential customers and partners who recognise the value of responsibly-sourced tantalum supplies. These relationships could provide capital, technical expertise, and market access to accelerate development.

The development of the tantalum project will require significant additional investment in exploration, feasibility studies, and construction. EMRL is evaluating various development options, including potential partnerships with established tantalum market participants who can contribute expertise and offtake arrangements.

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## **6. Environmental and Social Considerations**

### **6.1 Environmental Baseline and Impact Assessment**

Environmental baseline studies have been initiated for the tantalum project area, documenting the existing environmental conditions against which potential impacts will be measured. These studies address biodiversity, water resources, air quality, and other environmental values that could be affected by mining development. The baseline data will inform environmental impact assessment and the development of mitigation measures.

EMRL's approach to environmental management reflects the company's commitment to responsible operations that protect environmental values. Any future development of the tantalum project will incorporate comprehensive environmental protection measures designed to minimise impacts and ensure compliance with regulatory requirements and international standards.

### **6.2 Community Engagement and Benefit Sharing**

As with all EMRL activities, community engagement is central to the development approach for the tantalum project. The company has initiated dialogue with communities in the project area, providing information about the discovery and seeking input into development plans. This engagement will continue throughout the project lifecycle, ensuring that community perspectives inform decision-making.

EMRL's community benefit-sharing framework, which includes local employment, procurement, and community development programmes, will apply to the tantalum project. Communities surrounding the project will benefit from employment opportunities, infrastructure development, and ongoing community investment programmes.

### **6.3 Responsible Sourcing and Supply Chain Transparency**

The tantalum industry has faced scrutiny regarding supply chain ethics, with concerns about contributions to conflict and human rights abuses in some producing regions. EMRL is committed to responsible sourcing practices that ensure its tantalum products meet the highest standards of supply chain integrity.

EMRL's operations will be designed to meet the requirements of responsible sourcing initiatives, including the tantalum chapter of the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. Full traceability and transparent supply chains will enable customers to demonstrate the responsible origin of tantalum products in their supply chains.

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## **7. Forward Work Programme and Development Timeline**

### **7.1 Exploration Next Steps**

The immediate focus of the tantalum project work programme is to expand the understanding of the resource through additional drilling. The current drilling has defined the discovery but has not yet established the full extent of the mineralised system. A follow-up drilling programme is being planned to systematically evaluate the strike and depth extensions of the deposit.

In addition to resource definition drilling, metallurgical testwork will be conducted to evaluate processing options and to confirm the simple processing assumptions suggested by preliminary observations. The metallurgical programme will generate design data that will inform feasibility studies and support detailed engineering design.

### **7.2 Pre-Feasibility and Feasibility Studies**

Following completion of the exploration programme, EMRL will advance the tantalum project through pre-feasibility and feasibility studies. These studies will evaluate the technical, economic, and social aspects of potential development, providing the basis for investment decisions. The studies will be conducted to a standard appropriate for supporting project financing.

The study programme will consider multiple development scenarios, including variations in scale, processing route, and infrastructure configuration. This analysis will identify the optimal development approach while generating data to support regulatory applications and partnership discussions.

### **7.3 Regulatory Approvals and Permitting**

Development of the tantalum project will require various regulatory approvals, including environmental permits, mining licences, and other authorisations. EMRL has initiated discussions with regulatory agencies to understand the requirements and timeline for approvals. The company is committed to full compliance with all regulatory requirements and to transparent engagement with regulatory processes.

The permitting timeline will depend on the scope and scale of proposed development, but EMRL anticipates that the overall project timeline will be measured in years rather than months. The company is proceeding with development activities in parallel with permitting, ensuring that all requirements are addressed in a coordinated manner.

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## 8. Conclusion: Expanding Nigeria's Critical Minerals Potential

The discovery of high-grade tantalum deposits in EMRL's northern licence areas represents a significant milestone in the company's exploration programme and in the development of Nigeria's critical minerals sector. The discovery demonstrates the effectiveness of EMRL's systematic exploration approach and the substantial potential for major discoveries in Nigeria's underexplored terrain.

Tantalum's strategic importance in global supply chains, combined with the favourable characteristics of the discovered deposit, creates significant value potential for EMRL and its stakeholders. The discovery adds to the company's diversified portfolio of critical minerals assets, providing resilience against commodity price volatility while creating opportunities for growth and development.

EMRL remains committed to responsible exploration and development practices that create lasting value for all stakeholders. The tantalum project will be developed in accordance with the highest standards of environmental and social responsibility, ensuring that the benefits of development are shared broadly while impacts are minimised and mitigated.

As Nigeria continues to position itself as a significant source of critical minerals for the global market, EMRL is proud to be contributing to this national development objective. The tantalum discovery represents another step in Nigeria's emergence as a responsible, internationally competitive mining jurisdiction capable of supplying the minerals that the global economy requires.

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