ASX: VMM MARKET ANNOUNCEMENT

ANSTO Appointed to Commence Ionic Metallurgical Test Work at Colossus

ASX Release: 30 November 2023

Highlights

- **Viridis has engaged the Australian Nuclear Science and Technology Organisation ("ANSTO") to conduct comprehensive metallurgical test work for ionic desorption leaching.**

- **ANSTO has been appointed to follow up on previous surface samples by Viridis, which has confirmed Rare Earth ionic mineralisation and conduct a depth and spatial analysis of ionic desorption across the Colossus Project.**

- **ANSTO proposed scope of works to include:**
  - **Follow up on Viridis surface grab samples such as PC-10 containing 2,753ppm of TREO, with 27% MREO, recovering 48% of Nd and 45% of Pr. This was achieved using Ammonium Sulfate leaching, pH4 at room temperature[1].**
  - **Test optimised recoveries using the full spectrum of sample preparations before ionic desorption leaching across prospects.**
  - **Ionically test composite samples within intermediate layers of the Colossus Project from Viridis drill cores. In contrast to surface grab samples, the intermediate layer hosts the predominance of ionic mineralisation and presents significant scope for optimised recoveries.**
  - **Investigate the impurity removal stage in detail to minimise rare earth element ("REE") losses.**
  - **Investigate the product precipitation stage, including reagent choice and product wash requirements.**
  - **Flowsheet test works under laboratory plant conditions.**

- **Initial diamond assays from Fazenda have outlined an Ionic Adsorption Clay ("IAC") body 10-20m thick with a weighted average grade of 2,938ppm TREO, and from Cupim South an IAC body of 15-45m thick with a weighted average grade of 3,460ppm TREO[2]. Duplicate samples from these drill cores will be sent to ANSTO for in-depth metallurgical testing to confirm ionic mineralisation further.**

- **Viridis continues to move towards completion of its Phase I and II exploration programs, with over 260 holes completed to date. Only 71 holes were reported within its first batch of results, and over 170 holes are pending assay results to be received from the lab.**

- **Five diamond holes within the Northern Concessions have now intersected over 45 metres of saprolitic clay, which continues to exceed previous expectations, with the second batch of assays remaining on schedule, expected in December 2023.**

Viridis Mining and Minerals Limited | ACN: 121 969 819
Level 50, 108 St Georges Terrace, Perth, WA 6000
Telephone: + 61 3 9071 1847 Email: info@viridismining.com.au
www.viridismining.com.au.com.au

Executive Chairman Agha Shahzad Pervez commented:

"We are extremely pleased with the engagement of a world-leading organisation in Ionic Clay Metallurgy. This is an essential step for Viridis to confirm the homogenous presence of Ionic Adsorption Clays across the Colossus Project on numerous key prospects.

Our surface grab samples of saprolite have already confirmed impressive levels of Ionic mineralisation, especially given that they were taken from the leached layer. However, this partnership with ANSTO will provide the Company with a thorough understanding of the scale of ionic mineralisation and optimised recoveries at Colossus, which is critical to the underlying economics of the Project."

ANSTO Engagement

Viridis Mining and Minerals Limited ("Viridis" or "Company") is pleased to report that it has appointed ANSTO to conduct its Phase I metallurgical test work program.

ANSTO has extensive experience in rare earth process development over ~30 years, dating back to early work on the Mt Weld deposit. Over the last five years, ANSTO has become a global leader in IAC metallurgy and test work, currently involved in more than 15 potential IAC projects, including two other IAC projects in Brazil.

Proposed Scope of Works

ANSTO's scope of work will be designed to form an optimised and deeper understanding of ionic extraction mechanics at the Colossus Project.

A critical factor in the economic viability of IAC projects is gaining a complete understanding of desorption mechanics as a function of depth and location. ANSTO intends to complete an in-depth study that will test for the percentage of desorbable REEs across numerous samples, which will provide a deeper understanding of the economic potential of the Colossus Project.

Phase 1 is currently proposed for ANSTO to carry out desorption and assay tests on approximately 50 composites of 3m interval samples (~150kg total) across two key prospects of the Colossus Project. ALS Brazil will dry and then crush the samples to a size of <2 mm before sending the composites to ANSTO. The ionic desorption tests will be conducted under the following conditions:

- 0.5M $(NH_4)_2SO_4$ [Ammonium Sulfate] as lixiviant;
- pH4;
- 30 minutes leach cycle; and
- Ambient temperature (~22^oC) and pressure.

Furthermore, as part of an ongoing metallurgical work programme at Colossus, it is envisaged that Phase 2 from ANSTO will consist of:

- Further desorption diagnostic tests on the remaining prospects of Colossus upon receiving additional assay results.
- Slurry tests on one or more composite samples to optimise desorption conditions.
- Targeted REE recovery.
- Lixiviant consumption studies, impurity dissolution and product quality testing.
- Test the whole flowsheet at laboratory/mini-plant scale under continuous conditions to indicate process robustness, fit for purpose and the possible impact of recycling process solutions.

Ionic Adsorption Clay Metallurgy

Previous metallurgical work completed by Viridis involved randomised surface grab samples of saprolite taken from numerous prospects across the Colossus Project, which achieved an average of 46% recovery for Neodymium and 40% recovery for Praseodymium[1]. These samples were taken from the superficial layer that generally consists of the lowest levels of Ionic mineralisation due to oxidised clays and soils. Furthermore, no preparation was conducted prior to sending these samples to SGS GEOSOL before receiving successful ionic leach tests using Ammonium Sulfate[1].

In contrast, the ANSTO proposal will consist of systematic preparation and testing of the intermediate layer (where the majority of ions tend to migrate towards and adsorb onto clays) to provide a more comprehensive understanding of the desorption mechanics of the Colossus Project, which is expected to provide optimised recoveries.

In contrast to typical rare earth deposits, Ionic Adsorption Clays are formed from the weathering of parent granite or alkaline rock. In this weathering process, the fluorocarbon/aluminosilicate minerals containing rare earth in the parent rock liberate into their ion form (REE^{3+}). The clay minerals formed by weathering have strong adsorption and cation exchange capacity, which allow these liberated REE^{3+} ions to migrate with rainwater and ionically absorb onto the clay[3].

Although hard-rock REE deposits are commonly found, it is the economic extraction of the Rare Earths that remains the terminal challenge for many hard-rock projects due to the requirement of a multi-step hydrometallurgical plant, strong acid consumption and associated logistical challenges, high temperatures, high pressures, toxic fumes, rigidly bonded impurities, and radioactive waste streams. In contrast, Ionic Clays can be liberated directly into the REE Carbonate product by washing clays with a salt solution leveraging an ion exchange mechanism. This results in a straightforward and inexpensive extraction methodology to produce a high-quality product, bypassing the critical challenges faced by hard-rock projects[3]. Hence, IAC projects are sought after as a disruptive economic source to the rigidly supplied Rare Earths market.

The ANSTO test work will become a critical step for Viridis to exemplify the simple extraction mechanics and economic viability of the Colossus IAC Project, which will progress the Colossus Project to becoming a globally significant strategic resource for Rare Earths.

Map of Exploration Data on Colossus Project

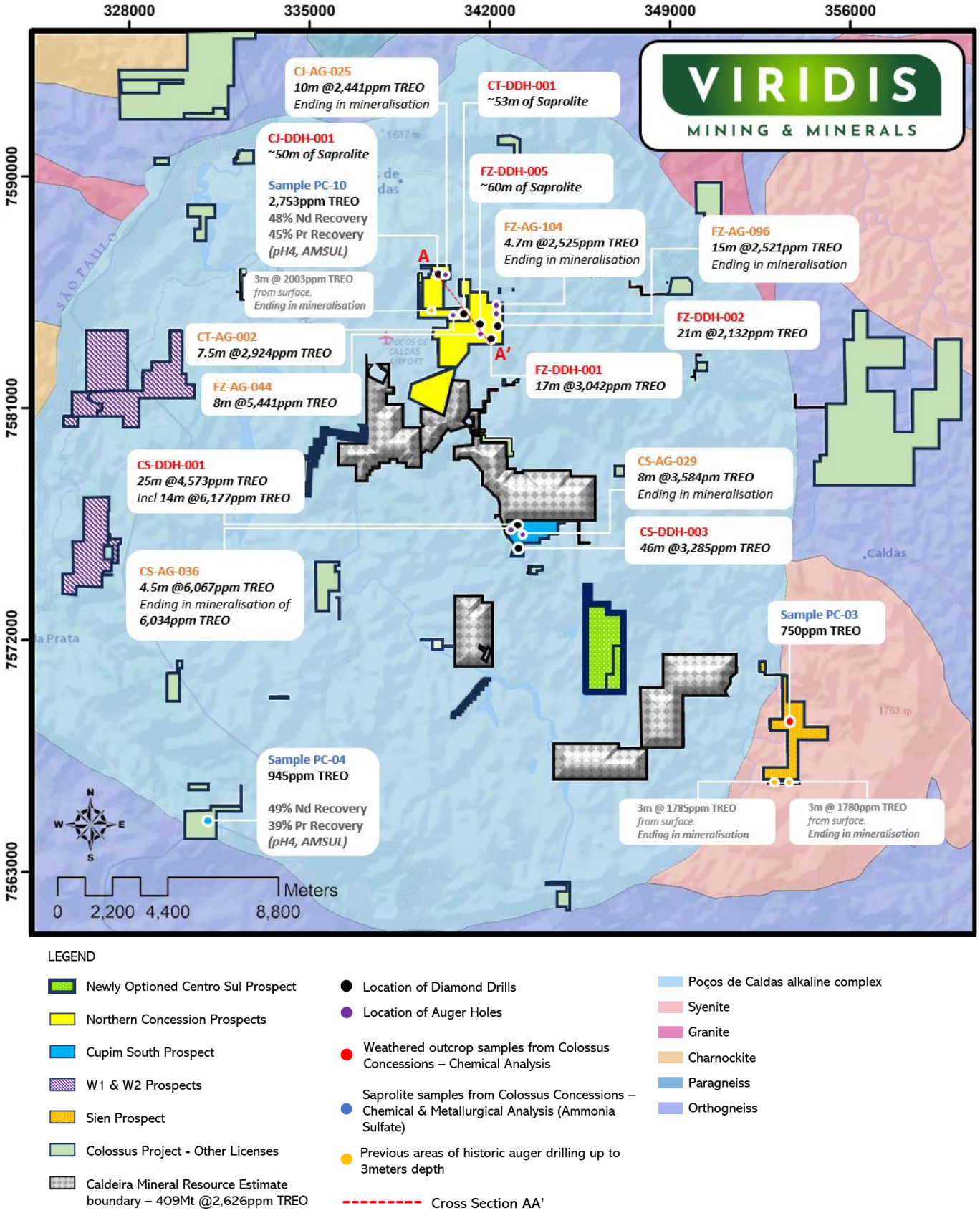

Figure 1: *Map of diamond and auger drill highlights, surface grab sample in 'leached layer' including recoveries of samples washed with ammonia sulfate and historic hand-held auger highlights on Colossus concessions. Image superimposes newly optioned Centro Sul Prospect and proximity of Caldeira Ionic Clay Resource[2]. Auger holes have all ended in mineralisation.*

Geology of Ionic Clays

In the Poços de Caldas Complex, we find the optimal conditions for an IAC type REE deposit. Its alkaline rocks, rich in feldspars, weather mainly into kaolinite. Simultaneously, these rocks contain bastnaesite, a rare earth fluocarbonate. Upon weathering, bastnaesite releases REEs, which ionically bond with the existing clay minerals, further upgrading the region's mineral profile[4].

The upper layer in this region consists of clayey soil and bauxite. Through lateralisation, some of the upper layer's rare earths are mobilised to the intermediate horizon, where kaolinite is the main clay mineral, retaining the REEs in ionic form adsorbed onto its structure[4,6,7].

Within IAC deposits, the top layer presents the lowest levels of REE mineralisation, as illustrated in the deposition model of both Malaysian and South China Ionic Clay Projects (see Figure 2 and Figure 3).

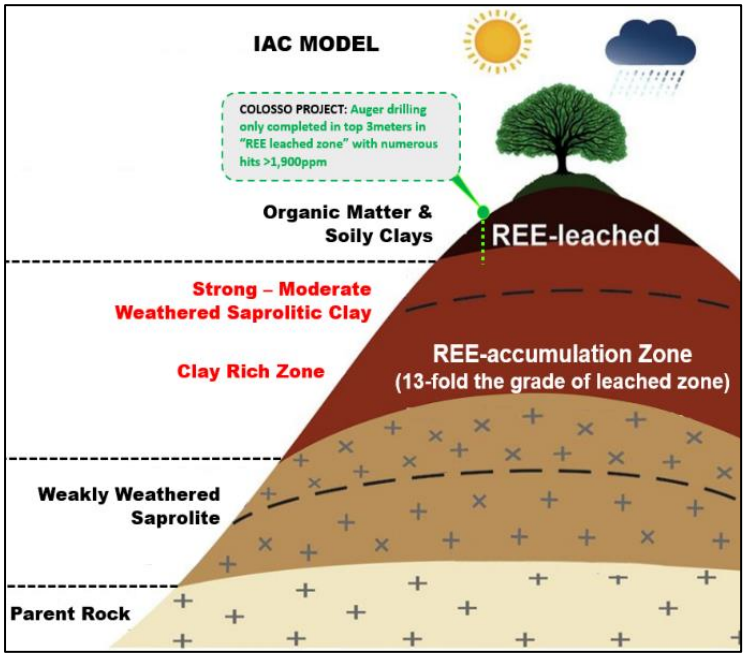

Figure 2: *Deposition Model of Malaysian Ionic Clay Project superposition of Colossus Project Auger Drill depths[5].*

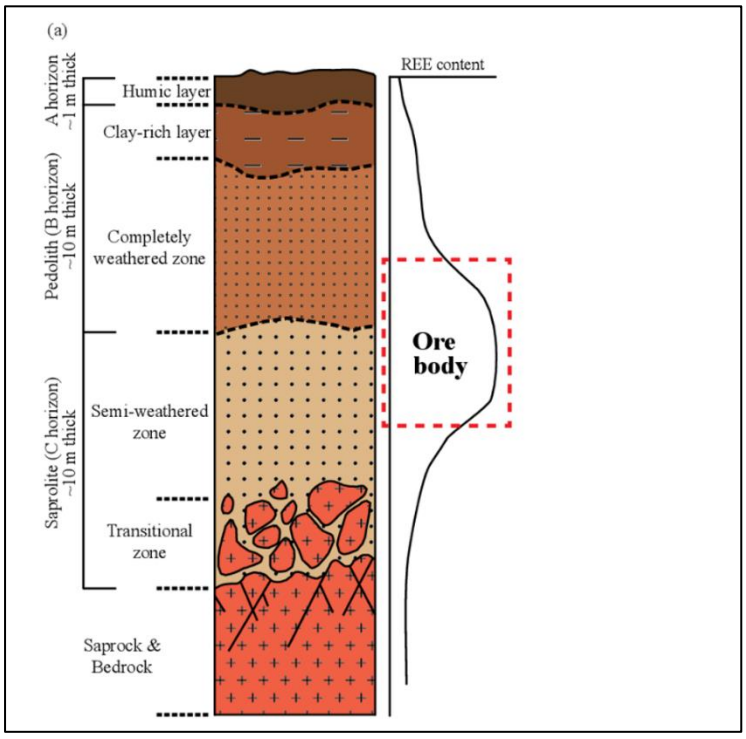

Figure 3: *General IAC Deposition Model (Li & Zhou, 2020) with an estimated placement of the Colossus Project samples based on their visual and chemical characteristics[7].*

This announcement has been authorised for release by the Board.

Contacts

For more information, please visit our website, www.viridismining.com.au or contact:

Carly Terzanidis
Company Secretary
Tel: + 61 3 9071 1847
Email: cosec@viridismining.com.au

Agha Shahzad Pervez
Executive Chairman
Tel: + 61 3 9071 1847
Email: agha@viridismining.com.au

Media Enquiries
Fadi Diab
Phoenix Global Investments
info@phoenixglobalinvestments.com.au

About Viridis Mining and Minerals

Viridis Mining and Minerals Limited is a resource exploration and development company with assets in Brazil, Canada and Australia. The Company's Projects comprise:

- The Colossus Project, which the Company considers to be prospective for Rare Earth Elements;
- The South Kitikmeot Project, which the Company considers to be prospective for gold;
- The Boddington West Project, which the Company considers to be prospective for gold;
- The Bindoon Project, which the Company considers to be prospective for nickel, copper and platinum group elements and
- The Poochera and Smoky Projects, which the Company considers to be prospective for kaolin-halloysite; and
- The Ytterby and Star Lake Projects, which the Company considers prospective for Rare Earth Elements.

Competent Person Statement

Dr. José Marques Braga Júnior, the in-country Executive Director of Viridis' Brazilian subsidiary (Viridis Mining and Minerals Brazil Ltda), compiled and evaluated the technical information in this release and is a member of the Australian Institute of Geoscientists (AIG) (MAusIMM, 2023, 336416), accepted to report in accordance with ASX listing rules. Dr Braga has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australian Code for Reporting of Regulation, Exploration Results, Mineral Resources, and Ore Reserves. Dr Braga consents to including matters in the report based on information in the form and context in which it appears.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the market announcements referred to in this release, and that all material assumptions and technical information referenced in the market announcement continue to apply and have not materially changed.

All announcements referred to throughout can be found on the Company's website – viridismining.com.au.

Forward-Looking Statements

This announcement contains 'forward-looking information' based on the Company's expectations, estimates and projections as of the date the statements were made. This forward-looking information includes, among other things, statements concerning the Company's business strategy, plans, development, objectives, performance, outlook, growth, cash flow, projections, targets and expectations, mineral reserves and resources, results of exploration and related expenses. Generally, this forward-looking information can be identified by the use of forward-looking terminology such as 'outlook', 'anticipate', 'project', 'target', 'potential', 'likely', 'believe', 'estimate', 'expect', 'intend', 'may', 'would', 'could', 'should', 'scheduled', 'will', 'plan', 'forecast', 'evolve' and similar expressions. Persons reading this announcement are cautioned that such statements are only predictions and that the Company's results or performance may differ materially. Forward-looking information is subject to known and unknown risks, uncertainties, and other factors that may cause the Company's actual results, level of activity, performance or achievements to materially differ from those expressed or implied by such forward-looking information.

References

1. *VMM ASX announcement dated 29 August 2023 'Initial Metallurgical Work Confirm Colossus True IAC Project'.*
2. *VMM ASX announcement dated 20 November 2023 'Major Ionic Clay Rare Earth Discoveries at Colossus'.*
3. *Review on the Development and Utilization of Ionic Rare Earth Ore, X. Luo, Y. Zhang, H. Zhou, K. He, C. Luo, Z. Liu, X. Tang, Special Issue Recovery of Rare Earth Elements Minerals, 2022*
4. *Polygenetic processes in the genesis of clay deposit of Poços de Caldas alkaline massif in southeastern Brazil, C. Montes, A. Melfi, A. Carvalho, A. Viera-Coelho, Journal of Applied Clay Science, 2016*
5. *Comparison of characteristics and geochemical behaviours of REEs in two weathered granitic profiles generated from metamictized bedrocks in Western Peninsular Malaysia, A. Yaraghi, K. Ariffin, N. Baharun, Journal of Asian Earth Sciences, 2020*
6. *Adsorption of rare earth elements in regolith-hosted clay deposits, A. Borst, M. Smith et al., 2020*
7. *The role of clay minerals in the formation of the regolith-hosted heavy rare earth element deposits, M. Li, M. Zhou, Journal of American Mineralogist, 2020*