Australian Rare Earths Targets a New Generation of Ionic Clay Rare Earths Production in Australia

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Australia has long been recognised for its world-class hard rock rare earth deposits, but Australian Rare Earths Limited (ASX: AR3) is pursuing something fundamentally different. The company's Koppamurra Project in southeastern South Australia is one of the very few ionic adsorption clay rare earth deposits identified outside Asia—a geological setting that could ultimately prove strategically significant for Western supply chains.

During a recent InvestorNews interview, internationally renowned critical minerals' expert Jack Lifton spoke with Australian Rare Earths Managing Director and CEO Travis Beinke about the company's recently released pre-feasibility study, its innovative processing approach, and why the project may represent one of the more interesting emerging rare earth developments outside China.

Unlike conventional hard rock deposits, ionic adsorption clay deposits contain rare earth elements weakly bound to clay minerals, allowing them to be extracted through relatively simple leaching processes rather than energy-intensive crushing and flotation. These deposits have historically supplied much of the world's heavy rare earth elements from southern China and, more recently, Myanmar.

Beinke explained that Koppamurra differs even from traditional

ionic clay deposits.

“The rare earths have moved in solution from a long way away from the source rock and come in contact with a limestone base, which has then caused the reaction for the rare earths to drop out into the clay that sits above this limestone base,” he said.

Although the geological formation is unusual, the commercial implications are straightforward. Ionic adsorption deposits generally require considerably less complex processing than conventional hard rock rare earth operations, potentially reducing both capital intensity and operating costs.

Australian Rare Earths intends to produce a mixed rare earth oxide concentrate rather than separated oxides. The deposit contains approximately 23% neodymium-praseodymium (NdPr) within its total rare earth oxide basket together with approximately 3% dysprosium and terbium—providing roughly 25% magnet rare earth content overall.

Equally noteworthy is the project’s enrichment in several lesser-discussed rare earth elements that have become increasingly important following China’s expanded export controls, including yttrium, samarium, gadolinium and lutetium.

“The West is beginning to appreciate the importance of these materials as China continues to tighten export controls,” Beinke noted.

Australian Rare Earths enters its next phase with several competitive advantages beyond the geology itself. The recently completed pre-feasibility study outlines first production in 2029, with planned annual output of approximately 1,860 tonnes of mixed rare earth oxide, including around 435 tonnes of NdPr, nearly 60 tonnes of dysprosium and terbium, approximately 240 tonnes of yttrium, and roughly 70 tonnes each of samarium and

gadolinium. Equally important is the project's estimated development capital of less than A$180 million, reflecting both its simplified heap leach flowsheet and its location just four hours south of Adelaide, where existing roads, nearby communities, water access and export infrastructure substantially reduce development risk.

Beinke also expressed confidence that South Australia's established regulatory framework and years of community engagement position the company well as it advances through permitting.

Commercially, the project has already attracted validation from downstream industry. Australian Rare Earths has a non-binding memorandum of understanding with Neo Performance Materials Inc. (TSX: NEO | OTCQX: NOPMF) covering approximately half of Stage One production, while the company continues discussions with potential customers across Australia, Europe, Asia and the United States. As pilot plant operations commence through the Australian Nuclear Science and Technology Organisation (ANSTO), Australian Rare Earths expects to begin customer qualification with commercial product samples. For Jack Lifton, the project represents more than another rare earth discovery. "I didn't think there would be an ionic clay deposit in Australia," he concluded. "This is a very welcome discovery because most of the world's ionic clay production today is either in China or Myanmar. Developing this type of project in Australia is strategically important." If Koppamurra advances as planned, it could become one of the first commercially significant ionic adsorption clay rare earth operations developed in a Tier One mining jurisdiction outside Asia.

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