

# Northern Minerals' George Bauk on being the only producer of heavy rare earths outside of China

"We started back in 2010, a greenfield discovery, and in December of last year we put out our first product. Shipped mixed rare earth carbonate out of our Browns Range Project in Western Australia. So a long journey but a rewarding one..." States George Bauk, Managing Director and CEO of Northern Minerals Limited (ASX: NTU), in an interview with InvestorIntel's Tracy Weslosky.

**Tracy Weslosky:** Would you like to give a bit of an overview on what Northern Minerals is in this market place?

**George Bauk:** We started back in 2010, a greenfield discovery, and in December of last year we put out our first product. Shipped mixed rare earth carbonate out of our Browns Range Project in Western Australia. So a long journey but a rewarding one. Hopefully we will see some changes in process going forward.

**Tracy Weslosky:** Many of you might not be aware of the fact that there is no other heavy rare earth producers outside of China besides Lynas. Is that correct? And now its you.

**George Bauk:** Lynas being light and ours being heavy, so absolutely yes. If you think about it Western Australia is the only mining jurisdiction for rare earths at the present moment outside of China.....to access the complete interview, click [here](#).

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# **George Bauk addresses #CTMS2017 audience on “Revving up the Heavy Rare Earths Engine”**

In a recent presentation at InvestorIntel’s 6th Annual Technology Metals Summit, George Bauk, CEO and Managing Director of Northern Minerals Ltd. (ASX: NTU) delivered a presentation titled, “Revving up the Heavy Rare Earths Engine”. Addressing industry and investors alike, George outlines the production timeline and economics of the Browns Range Project in Western Australia. George highlights the dominance of dysprosium and terbium in their xenotime deposit, and notes the importance of dysprosium for the future of the electric vehicle market... to access the complete presentation, [click here](#)

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# **Northern Minerals ramping up to be the next heavy rare earth supplier outside of China**

Northern Minerals Limited (ASX: NTU) (“Northern Minerals”) is focused on the delivery of the heavy rare earth (HRE) element,

dysprosium. The company owns a significant landholding in Western Australia and the Northern Territory that is highly prospective for this commodity. Through the development of its flagship project, the Browns Range Project (the Project), Northern Minerals aims to be the world's first significant producer of dysprosium, or any heavy REEs for that matter, outside of China.

Per the Definitive Feasibility Study (DFS), the full scale operation will use a combination of open pit and underground mining methods to extract 585,000t @ 0.66% total rare earth oxides ("TREO") per annum, which will be treated through a beneficiation and hydrometallurgical plant. The project's current mineral resource supports an eleven-year mine life, and with significant scope to expand this through further exploration, the project's future is indeed promising.

A hydrometallurgical process will then further treat the 16,700tpa of mineral concentrate to produce 279,000kg of dysprosium per annum. The pilot plant is to feature a modular design where possible; a common solution chosen by smart companies who want to scale their operations with less risk than having a full and permanent processing facility anchored to their property. A modular plant has the ability to be scaled both up and down as needed, not to mention shipped off to other sites for additional benchmarking and such.

Stage one includes the construction of a three year, 60,000tpa pilot plant operation at the Browns Range site. It will consist of an open cut mining operation, with processing via a beneficiation and hydrometallurgical pilot plant to produce 49,000kg dysprosium per annum, this state is intended to fully de-risk the operation by testing the process over time; it is important to thoroughly understand and improve knowledge of grade control, and the project's specific geology, to ensure that full future production goes ahead as smoothly as possible.

Northern Minerals is already working alongside government regulators in relation to utilising current project approvals to execute stage one, and construction is expected to take around nine months once product offtake and funding is in place.

Stage two involves developing the project to Bankable Feasibility Study level based on the DFS completed in March 2015. The results of the studies, announced on 27 August 2015, are aimed at reducing mining costs, boosting production, producing a premium product and increasing the Ore Reserve. The final stage involves taking the project to full scale production based on the successful outcomes of stage one and two. Once at full scale, Browns Range will process 585,000tpa to produce 279,000kg of dysprosium, contained within 3,098,000kg TREO per annum, in a mixed RE carbonate, before going through a process of yttrium rejection.

The rejection of yttrium during the hydrometallurgical stage is intended to significantly reduce costs further downstream. Removing around 90% of the yttrium at this stage results in a less mixed carbonate. With current market signals indicating that sale of the yttrium oxide is likely to be limited for the foreseeable future, this step will increase the percentage of the dysprosium in the mixed RE carbonate product from 9% to around 20%, creating a premium product and gaining the company a decent edge.

Completion of initial test work at ANSTO Minerals has indicated that removal of yttrium, lanthanum and cerium can be achieved through a relatively simple addition to the hydrometallurgical process. Further developmental studies will be completed subject to additional funding.

The pilot plant will be supported by a fly-in rota, and the workforce will be accommodated through an expansion of the existing twenty-person exploration camp to forty-room capacity. The plan to progress stage one to development is

already well underway. Discussions are advancing nicely with several potential offtake partners and strategic investors, showing that it shouldn't be long at all before Australia adds another resource to its shipping roster. In addition to this, should Northern Minerals engagements with government regulators result in existing approvals for stage one being authorised, the Browns Range project will proceed very swiftly indeed.