

## Scats- What are they good for?

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### **ABSTRACT**

Waste in the form of ore stockpiles or plants tailings in mining operations is a function of economics, recovered value versus treatment cost. The definition of “waste” is therefore entirely contingent on the treatment options considered and prevailing market conditions at any given time. As mine grades decline there is an imperative to improve treatment efficiency as the contained value decreases while waste generation increases. This is part of the drive toward a circular economy which focuses on reducing primary extraction through re-using or re-purposing of existing material. At the Forrestania Nickel Production (FNP), the Cosmic Boy Concentrator (CBC) stockpiled ball mill scats at the tailing storage facility over the course of 12 years. This resulted in the accumulation of >310,000 t of acid forming waste material with an average grade of 1.5% nickel. This represented a significant resource which was previously untreated due to potential grade displacement in the flotation plant, material hardness, and contamination with residual grinding media. A semi-mobile magnetic sorting circuit was designed and operated to treat this material by removing residual grinding media while upgrading the nickel grade. The circuit successfully upgraded the nickel grade by 1.4 times with recoveries exceeding 85% while additionally reducing material hardness. This provided a relatively low-cost feed source for the flotation plant (CBC). The magnetic sorting circuit effectively reduced the waste stockpile mass by 65% with the remaining waste material being earmarked for usage in mine closure plans. This has resulted in the complete utilisation of a previously considered waste stockpile. This process has served two purposes in that it generated significant economic value while reducing the waste burden. It is a reminder to operating sites to revisit potential waste stream to explore value recovery.