

# Complex Orebodies Conference 2018

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## Can the concept of the circular economy help unlock complex orebodies?

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### ABSTRACT

The concept of the circular economy, which has been gaining traction both in Europe and China, can conceivably transform key elements of current mining industry practices. The Ellen MacArthur Foundation, based in Europe, is attempting to accelerate the transition from a conventional linear take-make-dispose economic model to a circular model, which is restorative and regenerative by design and aims to keep products, components and materials at their highest utility and value at all times. The circular economy concept has been further strengthened by the European Commission, which has adopted a Circular Economy Package, including revised legislative proposals on waste, to boost global competitiveness, foster sustainable economic growth and generate new jobs. In China, their circular economy initiative is effectively a sustainable consumption and production program, which is utilising approaches in cleaner production, industrial ecology and life cycle management in an attempt to meet national challenges of maintaining rapid economic growth while simultaneously enhancing environmental quality and maintaining social progress.

Broadly, the mining sector has been and still is represented by linear rather than circular activities through its supply of resources to society. While the mining industry to date has been entrenched in the linear style economy, there is, within the industry, a stronger drive towards ideals that are aligned with circular economy thinking, such as greater levels of innovation to improve productivity and new smarter approaches that have broader stakeholder appeal. Using this impetus, the mining industry can make sizeable contributions to the circular economy, particularly related to the large volumes of mining waste, namely waste rock and mine tailings. With decreasing ore grades and higher tonnage rates, mining waste, and its inherent risk, under the conventional linear economy will continue to increase. However, alternative methodologies that deliver better outcomes, such as paste and thickened tailings; tailings reuse, recycling and reprocessing; and proactive management are emerging in practice. To gain the maximum benefits of these methodologies an integrated approach that considers ore body characterization, mine planning, processing, disposal, re-processing, recycling and reuse is necessary. Such approaches are aimed at enhancing environmental, social and economic outcomes and helping unlock the value of complex orebodies.

This extended abstract will provide a brief overview of how the circular economy is being implemented in other industrial sectors, draw on parallels with the metals value chain and propose approaches borne from circular economy thinking that could progress the development of complex orebodies.