School of Mining Engineering

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GEOMETALLURGICAL INFLUENCE OF CLAYS ON THE JWANENG KIMBERLITE VALUE CHAIN

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ABSTRACT

Geometallurgy is a cross- disciplinary function that provides a better understanding of the ore characteristics impacting the treatability of the material. Optimal treatment of the material is enabled by understanding variability in the ore body. Having this understanding leads to flexibility when planning mining mixes.

The present investigation of the Jwaneng DK2 deposit's geometallurgical responses demonstrate that various rock lithologies impact the treatability of the Jwaneng kimberlites. The plan t is therefore hindered from achieving design capacity as a result of its treatability constraints. The volcaniclastic kimberlite, which is a majority-treated lithology at Jwaneng Mine, contains the highest volumes of smectite clays. These clays cause settling challenges resulting in higher consumption of processing materials.

To allow for informed strategic planning, all vital treatability information on the clay- rich kimberlites needs to be collected. The clay occurrence can then be incorporated into the creation of the geometallurgy model. Then the completed geometallurgical model can be utilised as a predictive tool for planning.