

Grinding Circuit Design for the Carrapateena Concentrator

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ABSTRACT

The OZ Minerals Carrapateena mine and concentrator is located approximately 160 kilometres north of Port Augusta on the eastern margin of the Gawler Craton in South Australia.

Carrapateena is an Iron Oxide Copper Gold deposit (IOCG) and the concentrator is due to meet practical completion in late 2019 after which the site will move into commercial production with an anticipated twenty-year mine life.

Construction of the Concentrator commenced in April 2018 and is due to meet practical completion in the 4th quarter of 2019, from which the site will move into commissioning and ramp up.

The Carrapateena Concentrator is comprised of a conventional semi-autogenous-ball-mill-crusher (SABC) grinding circuit and flotation plant with 4 Mt/y design throughput capacity being fed from a Sub Level Cave (SLC) mining operation. The concentrator will produce approximately 65 kt/y of copper in concentrate along with gold and silver credits, with a relatively high-grade copper concentrate due to the bornite / chalcopyrite mineralisation in the ore body.

Samples selected for the comminution test work undertaken to design the grinding circuit were derived using a geometallurgical material type identification regime. Process modelling was performed via two different methodologies in order to size the mills for construction.

This paper discusses plant design development, including the comminution circuit design, the layout of the grinding area and the process control selection.