The mineralogy and processing potential of some ores from the Commonwealth prospect in the Molong Volcanic Belt, central western New South Wales, Australia

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ABSTRACT

The Commonwealth Mine project area comprises the historical base metal-gold Commonwealth Mine, Commonwealth South gold deposit and more recently the Silica Hill deposit. They are located 100 km north of Orange in New South Wales, Australia. Impact Minerals Limited has discovered high grade mineralization of gold, silver, zinc, lead and copper which occurs in massive sulphides with extensive pyrite, veins of sulphide and quartz and disseminated sulphide in a variety of sedimentary and volcanic host rocks. The Inferred Resource has been defined comprising of 720,000 tonnes at 2.8 g/t gold, 48 g/t silver, 1.5% zinc, 0.6% lead and 0.1% copper. The overall aim is to establish the metallurgical characteristics of these ores and development an appropriate flow sheet to allow future mining operations at this prospect.

The mineralogy of a suite of representative samples of the various ore types were characterised using advanced analytical and mass spectrometry techniques available at the John de Laeter Centre at Curtin University to identify metal deportment, mineral associations and liberation characteristics of both ore-bearing and gangue minerals. Diagnostic leaching tests were carried out to determine the reactivity of minerals and the availability of metals to extraction processes by both conventional cyanide leaching and Curtin University's patented glycine leach technologies. The benign nature of glycine and atmospheric leaching conditions make it a potential favourable leaching option in treating such ores, particular in sensitive areas where cyanide usage is discouraged. This paper describes the findings of this study.