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The World-Class Shamva Gold Deposit, NE Zimbabwe

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The >5Moz Shamva gold deposit is located within the Harare Greenstone Terrane in northeastern Zimbabwe. As the third greatest historical gold producer in Zimbabwe, the mine has operated for >100 years producing c.2.6Moz of gold from 19.4Mt @ 4.2g/t Au. Approximately 40.8Mt @ 1.96g/t Au (2.6Moz) remains, suggesting that Shamva may represent the largest gold deposit in Zimbabwe.

Shamva is hosted by a unique sequence of Lower Shamvaian Group (c.2.67 Ga) sedimentary rocks metamorphosed to upper greenschist facies. Ubiquitously pyritiferous and silicified clastic and volcaniclastic debrites and epiclastic conglomerates occur within a tightly folded <2 km wide stratigraphic unit which extends ENE-WSW over a strike length of 5.5 km. The intrusion of several syndepositional andesitic-dacitic feldspar porphyries (2,672±12Ma) in to an unconsolidated volcanosedimentary sequence and coincident generation of a sub-aqueous exhalative system may have caused an anomalous trace-element geochemistry.

The ore zones at Shamva are restricted to an ENE-WSW trending brittle-ductile transpressional duplex system. This system is c.250-300 m wide by c.2.5 km long, tapering at both eastern and western ends, forming an attenuated en échelon array of dominantly ENE to E trending shears that are, in places, dissected/wrenched apart in a sinistral sense by essentially synchronous but sequentially later NE-trending shears. Large orebodies occur at the intersections of the ENE- and major NE-trending shear zones, and primarily dip (N)NW at about 75 degrees, but also dip steeply to the (S)SE in places. Zetamoidal ore zones, developed along attenuated link shears within the thrust-duplex system are characteristic and form sigmoidal structures in cross-section.

Widespread carbonitisation, potassium metasomatism and sulphidisation occur within all ore zones. Sulphides constitute 1-12% (average 4.5%) by volume, with a late pyrite, arsenopyrite and gold0.6-silver0.4 assemblage corresponding with the majority of ore zones, the deposition of which occurred at 250-450°C at 1-3 kbar.