Abstract

A geophysical survey was carried out at Lorna Doone farm, a dairy farm located 40 km from the Harare city centre. The study area lies within the Harare – Bindura – Shamva greenstone belt. Rocks in the area include meta-andesites, white quartz and greenstones.

The objective of the study was to find zones of possible gold mineralization associated with disseminated sulphides on Lorna Doone farm. Two geophysical methods were employed: the ground magnetic method and the induced polarisation method. The survey was carried out from the 15th of June to the 17th of July 2006.

Both the magnetic and the induced polarisation methods were successful in delineating subsurface structures and locating possible zones of gold mineralization. The ground magnetic method revealed two major anomalous zones, namely the Southern and Northern magnetic high anomalies. The Northern magnetic high anomaly has a NW-SE trend and an average width of 50 m. It has a strike of about 1 km. The Southern magnetic high is offset from the Northern anomaly by about 140 m. It has a similar trend and its strike length is 400 m.

The induced polarisation method revealed five anomalous zones. These are the Eastern IP1, Western IP1, Western IP2, Southern IP1 and the Northern IP1 anomalies. The Eastern IP1 and the Northern IP1 anomalies are coincident with the magnetic high anomalies. The Eastern IP1 anomaly is interpreted as being due to magnetite or massive sulphides, whilst the Southern IP1 anomaly could be due to both disseminated and massive sulphides and/or magnetite. The Western IP1, Western IP2 and the Northern IP1 anomalies are inferred to be due to disseminated sulphides.

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