

Bulyanhulu: A World Class Gold-rich VMS Deposit

Sharon Athumani¹, Nadia Stjean¹, Matthew James¹, Erzuah Ackah¹

¹Barrick, Dar es Salaam, Tanzania

The 20Moz Bulyanhulu deposit is hosted by the Archean Sukumaland greenstone belt within the prospective Lake Victoria goldfields of Tanzania. The ore deposit consists of two main 'reefs' (up to 5 km in strike length) spatially associated with an argillite unit at the contact between felsic and mafic volcanic stratigraphy. Bulyanhulu hosts exceptionally high-grade gold mineralization (up to 100g/t; average grade of 7 -10 g/t) within a narrow, less than 2 m thick ore horizon characterized by chalcopyrite – pyrrhotite - pyrite and associated sericite alteration. The Deposit was historically recognized as an orogenic gold deposit with mineralization controlled by a shear zone parallel to the main argillite unit, evidence suggests Bulyanhulu is primarily a syngenetic VMS deposit with potential orogenic overprint. The key VMS manifestations at Bulyanhulu are the presence of massive sulphide clasts in volcanic breccias proximal to the ore horizon, volcanic units stratigraphically overlying massive sulphides and exhalative units (dominantly Barite and amorphous silica) overtop of massive sulphide. Due to later deformation at Bulyanhulu, partial melting or mechanical remobilization of the massive sulphide horizons likely played a key role in upgrading or refining precious and base metals.

Massive sulphide mounds typically occur along predictable horizons with distinct metal zonation patterns and alteration footprints; these are in the process of being defined for the Bulyanhulu deposit and will be critical for future targeting. Lithogeochemical analysis and stratigraphic reconstruction are underway to define the volcanic stratigraphy and facies architecture. Additionally, multi-element analysis will guide the characterization of the alteration and metal signatures.

Results from the study will build vectors that will assist in resource expansion within the deposit and exploration of similar types of deposit regionally within the Bulyanhulu Inlier.