

The Dokwe Gold Discovery

GSZ Summer Symposium 1 November 2024



Dokwe Gold Project



Objectives



Introduction

History

- Exploration area was influenced by overlying cover, deterring ancient workings, leaving the area open for exploration.
- Tsholotsho greenstone belt defined by a distinct magnetic signature
- Detected by CIDA magnetics
- Overlain by Kalahari and Karoo sediments of up to 25-40m thick in the project area.
- Extensive geochemical sampling across EPO licence areas totalling 11,794 km².
- Processes for transport of trace gold to surface:
 - Organisms Bioturbation
 - Plants Phytoaccumulation
 - Sun Evaporation



Geochemistry

- Exploration began in 2000
- 4 generations of soil sampling across the total EPO licences:
 - 1. Regional: 17,334 samples
 - 1,000m x 500m
 - 2. Intermediate: 31,177 samples
 - 400m x 200m
 - 3. Follow-up: 26,526 samples
 - 200m x 100m
 - 4. Detailed: 25,513 samples
 - 50m x 25m
- Identified a 1.2ppb Au halo with a peak anomaly of 6ppb
- Intertek Terra Leach Partial Digest geochemical technique capable of detecting mineralization beneath cover.



Discovery



Discovery

- 132 diamond drilled holes have been completed so far at Dokwe.
- With a total of 41,245 meters.
- Underscoring the project's significant potential as the largest undeveloped gold resource in Zimbabwe.



Geological Setting

Regional Geophysics

- Extensive geophysical surveys, which include magnetic and induced polarization exhibit a dominant ENE structural trend.
- The magnetic surveys revealed a mag low feature interpreted as greenstone rocks extending away from the Bulawayo-Bubi greenstone belt under cover.
- Its also common to see clusters of gold deposits within greenstone belts in Zimbabwe, making the Dokwe deposit highly prospective.



Regional Geology

- Kalahari and Karoo sediments increasing in depth towards the north.
- Overlying complex geological structures displaying extensive folding and shearing.
- To the south lie gneiss units and the Matobo granite.
- Various greenstone belts can be found further S and SE including Vumba, Manowe, Tati, Antelope and Gwanda.
- The Bulawayo-Bubi greenstone belt is found towards the E.



Local Setting





Dokwe North Geology

- Lies within an interpreted fold hinge.
- Composed of felsic tuffs, agglomerates, dacites, and andesites.
- With quartz porphyry intrusion and dolerite dykes being prominent.
- Core logging combined with XRF geochemistry identified that the felsic tuff unit has elevated concentrations of Zircon.
- Which influenced structural interpretation as the unit appears to repeat around a fold hinge.



Ore Deposit Model & Mineralisation



- The ore deposit model for Dokwe is a back-arc-basin orogenic gold deposit.
- Much of the economic gold mineralization occurs in the felsic tuff and dacitic units, with lesser mineralization in the quartz porphyry and andesitic units.
- Primarily associated within silicified zones containing fragmental regions, deformed amygdales, and mafic inclusions.

Methods

Oriented Diamond Drill Core



- During due diligence drilling, four holes were drilled testing the deposit at opposing angles.
- Two at Dokwe North, with one being a twin having excellent corelation, and two at Dokwe Central.
- Oriented core was employed to facilitate structural logging to better understand the overall model and how the different rock units have been deformed over time.

Structural Logging

- A rocket launcher was used to orient core based on downhole dip and azimuth from the drill surveys.
- This approach was vital for collecting accurate structural measurements to better understand faults, folds, and mineralization patterns.
- The data was then cross checked by using Stereocore which is a core logging software that uses digital photogrammetry and data input to analyze structural orientations from core.
- This results were then plotted on stereonets which aligned with structural interpretations from both regional and local geophysical surveys.





pXRF Analysis

- pXRF readings, taken at a 1m intervals, have provided geochemical data showing correlations between gold and elements like arsenic, selenium, and iron.
- This data has supported exploration efforts and helped refine the geological model and offers immediate multi-element results compared to the longer wait times for lab assays.
- Two field technicians can process 200-250 meters of core daily, with total readings collected so far at Dokwe, representing over 28,000 meters of diamond drill core.
- The pXRF results are used to understand geology, weathering zones, and mineralization pathfinders, with the advantage of being non-destructive.

OLYMPUS



Recent Observations



> Deformation

> Chloritisation > Silicification > Pyritisation > Cold

Recent Petrology

Mineralised zone (<u>1m@14.32g/t</u>) in dacite, with abundant pyrite-cored amygdales. Subvertical orientation in the rocket launcher on the right. The enlargement below returned 46ppm Au on the pXRF





DPD129 139-140m









detectORE

- detectORE[™] is a portable X-ray fluorescence (pXRF) technology designed for low-level gold analysis.
- It delivers rapid assay results from soil and core swarf samples, with results available within 15 hours of sample collection, allowing for significant time and cost savings while providing near-daily gold assay results.
- It facilitates faster exploration and better insights into ore characteristics.



detectORE in use





















Exploration with detectORE

\$20

\$8

- Strong correlation with fire assay show anomalies at the same intervals.
- Rapid, cost-effective gold analysis.
 - Lab sample:
 - detectORE sample:
- Cost saving during exploration, however, lab assay required for resource reporting
- Dokwe has substantial upside potential.





Conclusion

Closing Remarks

- A transformative greenfield discovery in an underexplored Archaean Greenstone Belt, Zimbabwe.
- Highlights the critical role of Exclusive Prospecting Orders (EPOs) in securing exploration rights.
- Utilizing geochemical, geophysical, and structural analyses for effective exploration.
- Showcases opportunities in frontier regions for future discoveries.
- Strategic exploration area selection is crucial for success.
- Innovative geochemical methodologies to detect low-level gold anomalies beneath significant cover.
- Insights gained can inform and enhance future exploration efforts in similar geological contexts.





Examples of coarse-grained gold found at Dokwe North.

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