

Mapping under cover with geochemistry

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The Tanami Region on the border between the Northern Territory and Western Australia is an orogenic gold province with several operating and past producing gold mines. The Capstan Prospect within the Bluebush Project is located 700 km northwest of Alice Springs.

Although the general tectono-stratigraphic evolution of the Tanami Region is reasonably well established through the efforts of recent multi-disciplinary studies (Lambeck *et al* 2008, Joly *et al* 2012, Bagas *et al* 2008, Bagas *et al* 2014), there is still considerable debate as the accuracy of stratigraphic correlations across the Tanami Region. The contacts between adjacent formations in field exposures are few and far between, making the correlation of stratigraphy across the Tanami Region difficult. This has resulted in several complete reversals of the stratigraphic successions, the most recent in 2014 (Bagas *et al* 2014).

Understanding of the geology, and specifically the stratigraphic succession, is key to unlocking the Tanami Region due to the strong stratigraphic control on mineralisation. Of the significant deposits known in the Tanami Region, 13 out of 15 are exposed at surface. Mapping (and understanding stratigraphy and alteration footprints related to mineralisation) is critical for effective exploration under the cover sequences for the next generation of discoveries.

Regional targeting by Prodigy Gold NL utilises magnetic and gravity survey data in combination with the mapping of the limited outcrop. Just 2% of the interpreted favourable stratigraphy is exposed within the project area. An extensive

veneer of Quaternary cover, along with very minor outcrop, limits the ability to reliably correlate geology across the Tanami Region. Historic bedrock lithology mapped from drilling in the regolith has commonly been misclassified due to partial or complete weathering, or due to silcrete intervals being misidentified.

Prodigy Gold has been updating regional- and prospect-scale geology maps using end of hole geochemistry, and building on previous stratigraphic correlations (Lambeck 2010) in collaboration with the CSIRO (Schmid 2018, Schmid in prep). A large magnetic anomaly at the Capstan Prospect has long been flagged as possibly analogous to the 'Dead Bullock' stratigraphic succession of the Callie deposit. The magnetic anomaly at Capstan has a potentially analogous geological and structural setting to the Callie deposit. There is very limited, if any, outcrop. The target area is for the most part covered by a veneer of sandy, alluvial cover and a hard silica cap that has limited previous exploration attempts in the area.

Up until 2018, there was no previous diamond drilling in the Capstan area. Little information on the Dead Bullock Formation exists in the public domain, with virtually no other core drilling into the Dead Bullock Formation outside of Dead Bullock Soak and The Granites Mine. The lack of drill core intersecting the Dead Bullock Formation outside of these mines makes the ability to correlate stratigraphy with the recognised mine sequence uncertain.

Prodigy Gold has completed three reconnaissance aircore/RAB programs and two stratigraphic core holes over the Capstan Prospect. Drilling successfully intersected the Dead Bullock Formation as indicated by chlorite-altered sedimentary rocks, calcite nodules, mafic sills/flows and tuffaceous units (**Figures 1,2**). Litho-geochemistry

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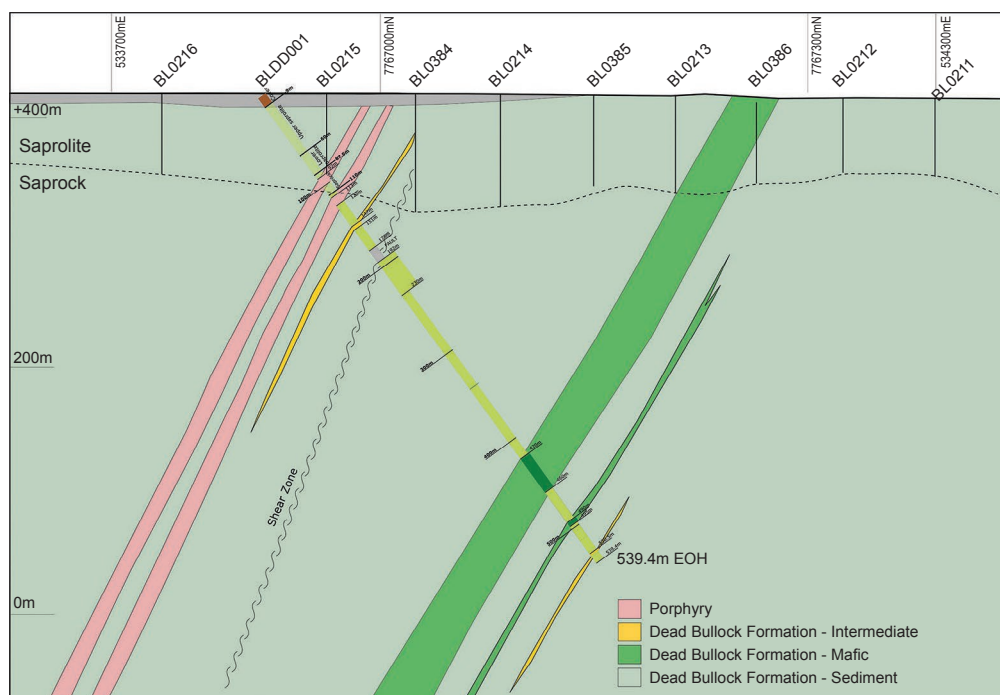


Figure 1. Cross section through Capstan Prospect drillhole BLDD001.

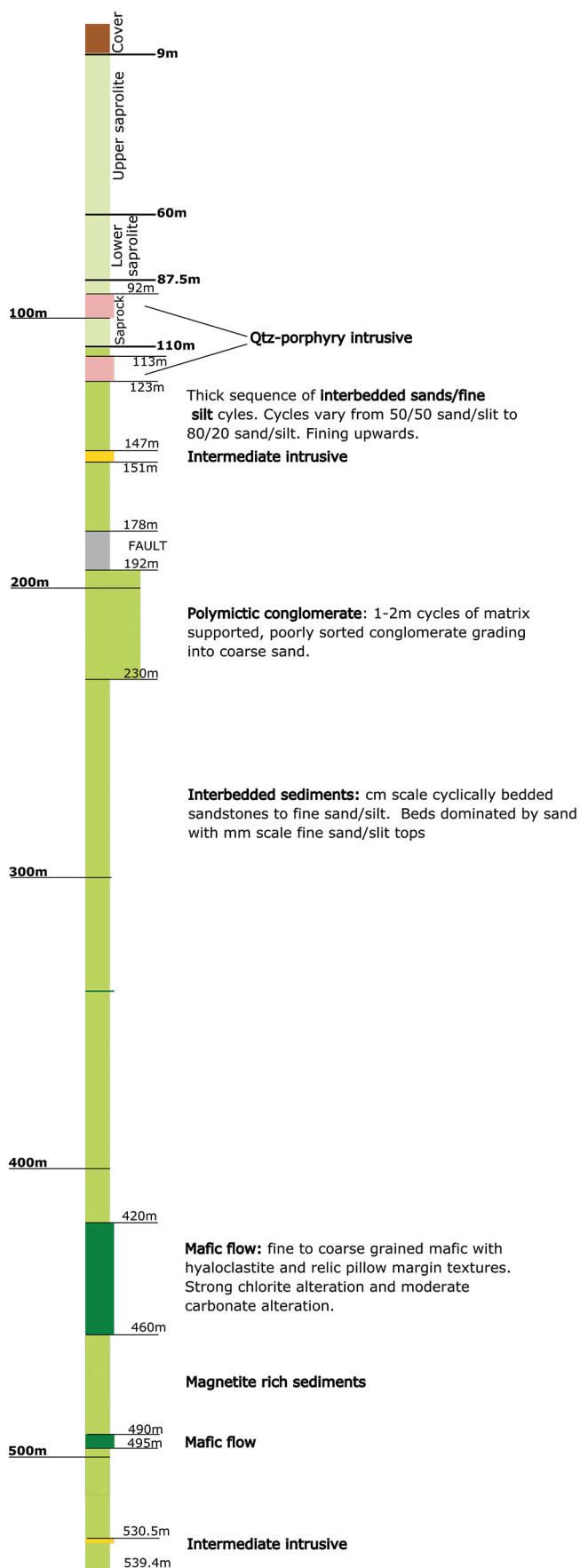


Figure 2. Downhole log for Capstan Prospect drillhole BLDD001.

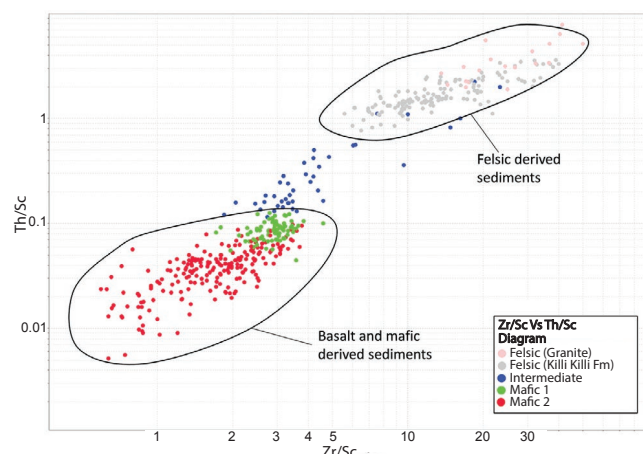


Figure 3. Geochemical classification after Lambeck *et al* (2008) from 'end of hole' samples from Capstan aircore drilling.

samples/data collected indicates the hole intersected 'Lower Dead Bullock' as first described by Lambeck (2004); the results correlate with the data collected by Radzik (1998) and Lambeck *et al* (2004, 2008; **Figure 3**). Further sampling of core from the stratigraphic diamond holes suggests the drilling at Capstan has intersected the lateral equivalent of the Lower Blake beds. The prospect-scale bedrock geology has been interpreted and seven new multi-km scale gold targets have been defined.

Acknowledgements

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