



## Northern Star Tanami Operations Fact Sheet

### Location and Climate

The Tanami project operations are located ~650kms northwest of Alice Springs and 850km southwest of Darwin. The Project is accessible from the public Tanami Road that passes within 2km of the camp and treatment plant. Access to other parts of the project area is via well formed, and in part sealed, private mine haul roads, pastoral station roads and exploration tracks. Access to the Groundrush pit is via a sealed haul road from the CTP mine site. All site supplies and plant are transported to site via the Tanami Road.

Northern Star acquired a 25% interest in the Central Tanami operations in July 2015 from ASX listed Tanami Gold NL (TGNL). In August of 2016 Northern Star acquired a further 6,710km<sup>2</sup> of exploration licences from Northern Minerals Ltd. In November 2017 the company acquired the Western Tanami Project from Tanami Gold NL.

The Tanami Desert is a semi-arid, tropical climatic region with approximately 90% of the 370 mm of annual average rainfall being received between November and April. Summers are hot with average maximum daily temperatures of about 38.8°C, while winters are generally mild with the coolest month being June where daily temperatures average about 25.6°C. The annual evaporation is approximately 3,000 mm. CTP has an average annual rainfall of 496.5mm.

### Current Landholding

The total tenement package in the Tanami area covers a total of 10,464km<sup>2</sup>. The tenement holdings consist of 36 granted and application exploration leases covering 1,686km<sup>2</sup> is held in joint venture (Northern Star 25%). The Western Tanami Project consists of a further 16 Exploration and Mining Leases covering 604km<sup>2</sup> and is held 100% by Northern Star.

### Historical Mining/Exploration

There is a long mining history at the Central Tanami site. Small scale mining commenced in the early 1900s and operations were sporadic until the late 1980s.

The Tanami Joint Venture commenced operations in late 1987 and Zapopan NL purchased a 50% interest in 1988 (ownership was then 50% Zapopan, 30% Kintaro Resources and 20% Kumagi-Gumi). Mining operations were discontinued in April 1994. In 1989 Otter commenced exploration and in 1990 the Central Desert Joint Venture was formed between Otter and Shell. In 1995, the Central Desert Joint Venture (Otter and Shell Australia) purchased the Tanami plant from Zapopan and the Tanami Mine Joint Venture (TMJV) was formed. The TMJV commenced operations in November 1995 and established a multi-pit operation processing 7.5 million tonnes producing 694,658 ounces of gold. Mining ceased in July 2001 and processing operations ceased in October 2001. Normandy NFM Pty Ltd (now Newmont Tanami Pty Ltd) discovered the Groundrush deposit in 1999 and mining was undertaken from 2001 to September 2005 with the ore being processed at the Central Tanami Processing Plant. Rehabilitation was completed at Groundrush and the site was placed into a post closure monitoring phase.

The Central Tanami Processing Plant was placed on care and maintenance in late 2005 while rehabilitation was undertaken on the mine site. Newmont Australia Ltd (Newmont) determined that the Central Tanami Project was a non-core asset to be divested on completion of the rehabilitation program. Following a tendering process, TGN acquired the Central Tanami Project in March 2010 with site handover occurring at the end of April 2010 – with the understanding that all rehabilitation in respect of Newmont's exploration and mining program was completed prior to the sale of the tenements.

TGNL conducted significant resource drilling between May 2010 and December 2012 to support the feasibility into recommissioning of the Central Tanami Processing Plant and re-establishment of the Central Tanami Mining Operation.

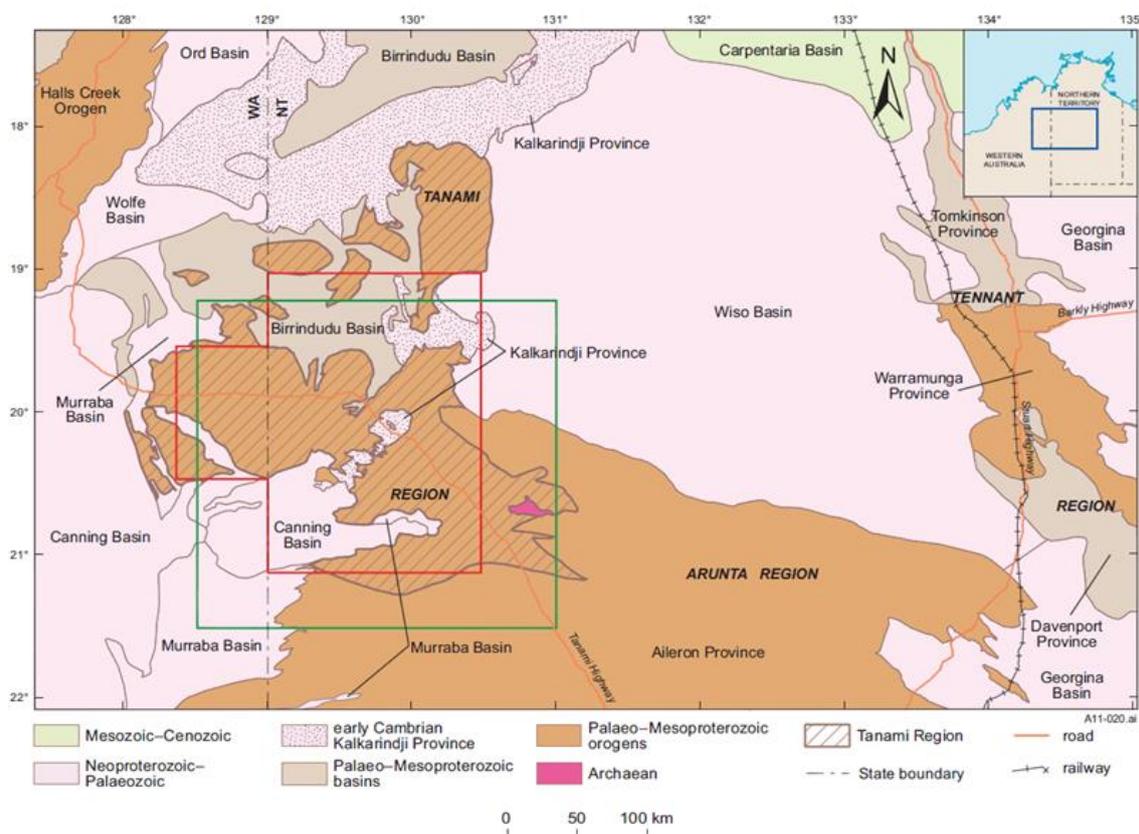


## Geology

### Regional Geology

The Groundrush deposit is in the Tanami Region within the Palaeo-Proterozoic stratigraphy of the Tanami Group, deposited 1838 Ma +/- 6 Ma (Huston, 2006). The region shows lower greenschist to amphibolite-facies metamorphism of sedimentary and volcanic rocks that overly Archaean basement (Billabong Complex) which are intruded by 1825-1791 Ma granites (2011. Ahmad, Vandenberg and Wygralak).

Figure 1 shows the Tanami and adjacent regions, notably the Birrindudu, Wiso and Canning Basins which unconformably overly the Tanami Region to the north, east and west respectively. To the south of the Tanami Region lies the Arunta Region, the margin between the two can be approximately defined by a series of east trending faults that separate greenschist-facies in the north from upper amphibolite-facies to the south.



**Figure 1 Regional Geological Setting for the Tanami Region** (Source: 2011. Ahmad, Vandenberg and Wygralak)

### Local Geology

The Groundrush deposit sits in an almost arcuate belt of sediments belonging to the Killi Killi Formation between two major granitoid intrusions: the Coomarie Dome to the north west and the Frankenia Dome to the south east. The sediments dip steeply to the south west and host three major dolerite intrusions of which, the Groundrush Dolerite, contains the bulk of gold mineralisation. Other intrusives at Groundrush include dolerite, tonalite porphyry, andesite and quartz monzodiorite. Overall the deposit is a reverse fault orogenic system with mineralisation typically hosted in stacked vein sets, with a variety of orientations, as well as sub-vertical quartz-filled shear zones. Along with the various vein orientations, there are also various vein types including shear, extensional and also shear-extensional hybrid.

Through structural analysis, airborne magnetics and seismic data, it has been shown that Groundrush sits on the western limb of a regional anticlinal thrust stack that plunges shallowly ( $20^{\circ}$ - $300^{\circ}$ ) to the south east. Closure of the anticline is interpreted to lie within hundreds of metres to the north east of the open pit. The Hurricane-Repulse deposit is within the Mt Charles Formation which is interpreted to be slightly younger than the Groundrush hosting Killi Killi Formation. As shown in **Error! Reference source not found.**, the Mt Charles Formation is confined to an elongate band between the Frankenia and Coomarie Domes. Mineralisation is structurally and



reologically controlled with dominant north-east trending faults and associated transfer faults commonly mineralised along with basalt-sediment contacts.

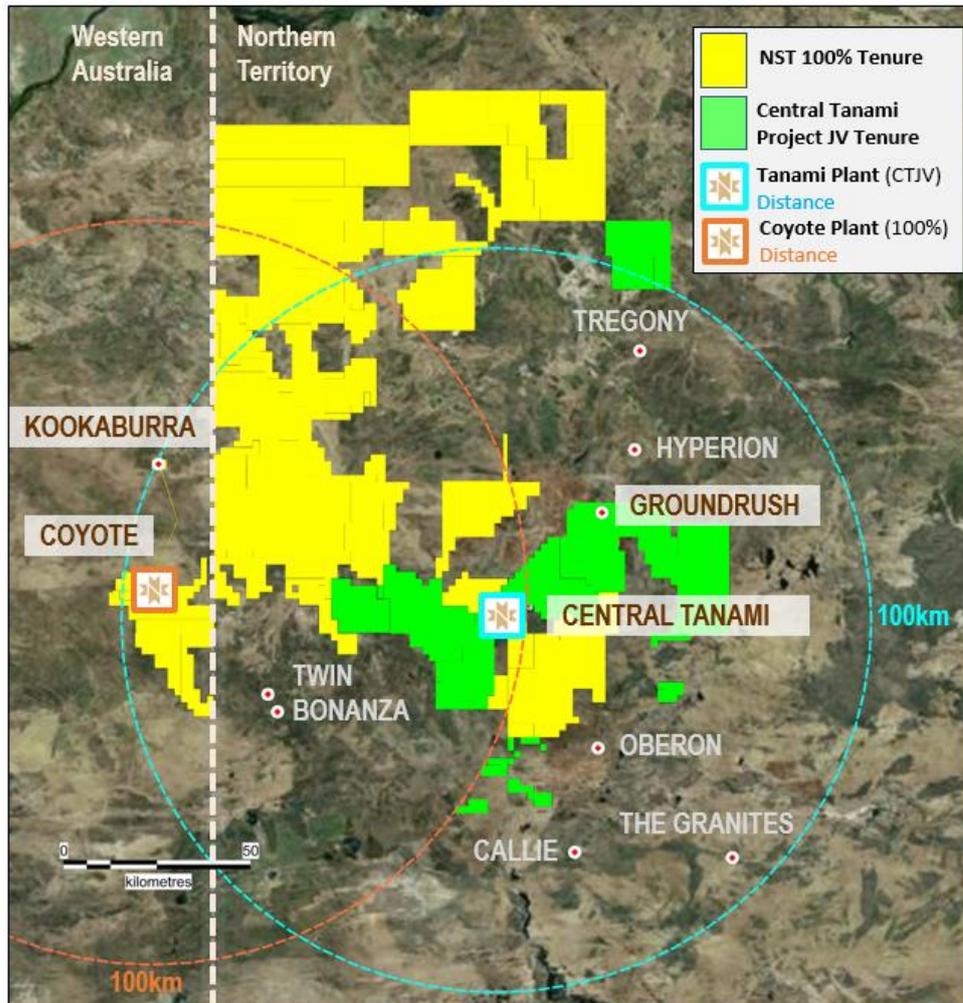


Figure 2: Northern Star's landholding in the Tanami district

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