NORTHERN STAR
RESOURCES LIMITED

CAVE HILL PROJECT

GR160/10 GROUP REPORT

FOR THE PERIOD 24 JULY 2021 TO 23 JULY 2022

Compiled by Annie Pellatt, Land Administration Geologist

Date September 2022

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CAVE HILL PROJECT – GR160/10 ANNUAL REPORT

Project Name	Cave Hill
GR Number	GR160
Licence Operator	Northern Star Resources Ltd
Licence Holder	Tanami (NT) Pty Ltd and Northern Star (Tanami) Pty Ltd
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1:100,000 Map Sheet	Frankenia (4857)
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Prospects Drilled	
MMP Number and Version	0916-01
Assays	Ag, Al, As, Au, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, In, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, Re, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn and Zr
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ABSTRACT

This report describes exploration activities primarily for gold undertaken by Northern Star (Tanami) Pty Ltd over EL10411 and EL22378, as part of the Cave Hill Combined Reporting Group 160/10, between 24 July 2021 and 23 July 2022. The centre of the Project area is located approximately 650 km northwest of Alice Springs along the Tanami Road. The Cave Hill licences form part of a larger Joint Venture agreement between Tanami Gold (NT) Pty Ltd and joint venture partner and manager Northern Star (Tanami) Pty Ltd, a wholly owned subsidiary of Northern Star Resources Limited. Work completed during the reporting period comprised 15 aircore holes for 675 m targeting Dead Bullock Formation north of the Trans-Tanami Fault. Due to production issues with the drilling contractor, the planned program was not fully completed and was terminated. No significant results were returned from the completed drilling. It is planned to complete the remaining drill holes once an alternative drill contractor can be secured, now that COVID-19 pandemic associated restrictions have been eased.

1 INTRODUCTION

This report describes exploration activities primarily for gold undertaken by Northern Star (Tanami) Pty Ltd ('Northern Star') on the Cave Hill Project (EL10411 and EL22378), GR160/10, between 24 July 2021 and 23 July 2022.

The Cave Hill region has shown through geochemical analysis and field reconnaissance to be host to critical Tanami Group Stratigraphy. Its proximity to the Newmont's world class Callie gold deposit and exhibiting a similar structural architecture to Callie, indicates positive criteria for exploration by Northern Star.

2 LOCATION, PHYSIOGRAPHY AND ACCESS

The project is located approximately 650 km northwest of Alice Springs along the Tanami Road. The main access route is via the Tanami Road and the Tanami Downs Station Road. The licences are difficult to access with significant cross country bush driving required. Areas of dense vegetation and sand dunes form natural barriers impeding access to vehicles. Helicopter assisted access and exploration needs to be employed to reach certain areas.

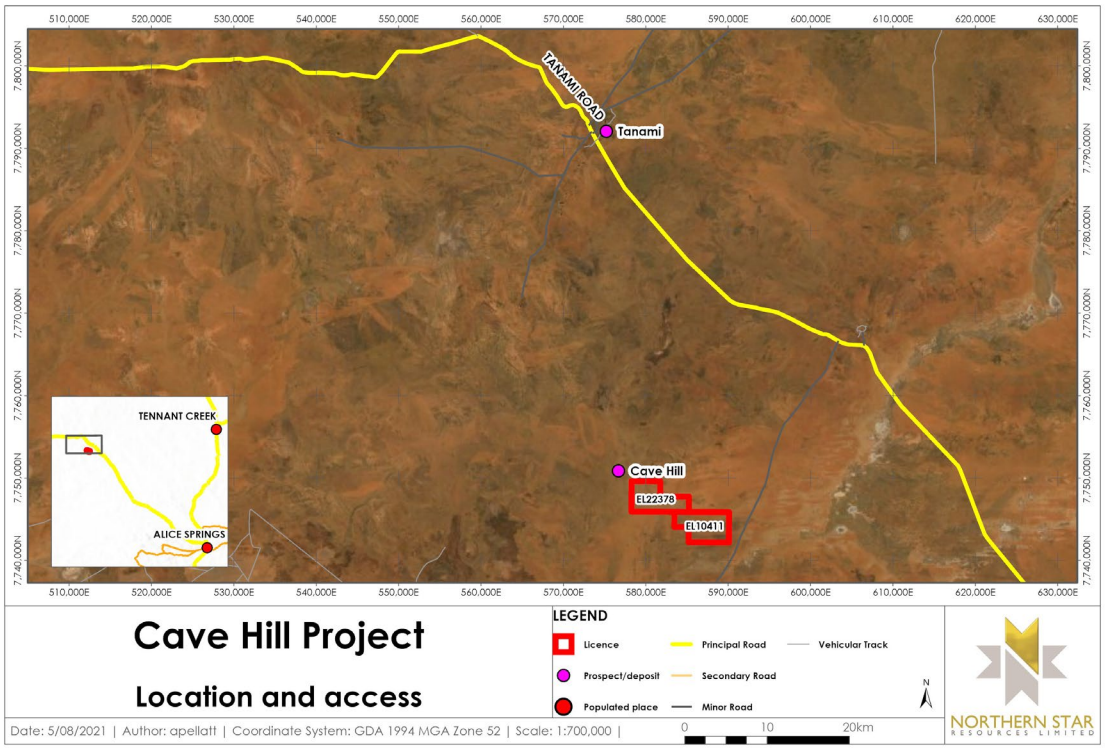

Figure 1. Cave Hill Project location and access.

3 TITLE HISTORY

The Cave Hill Project reporting group comprises exploration licences EL10411 and EL22378. Northern Star Pty Ltd ('Northern Star') manages the project under an agreement between its subsidiary company Northern Star (Tanami) Pty Ltd and Tanami (NT) Pty Ltd ('Tanami (NT)').

Application of EL10411 was completed in 1999 by the Central Desert Joint Venture ('CDJV') partners Otter Exploration NL 60 % ('Otter Gold') and Acacia Resources 40 % ('Acacia'). EL10411 originally comprised 14 blocks of which 50 % was relinquished in the fourth year. EL22378 was applied for in 2000 and granted in 2001. Otter Gold is a wholly owned subsidiary of Newmont Asia Pacific ('Newmont').

On 30 March 2010, the licences were acquired by Tanami (NT) Pty Ltd, ('Tanami (NT)'), a wholly owned subsidiary of Tanami Gold NL, from Otter Gold.

In February 2015, a Heads of Agreement was executed between Tanami (NT) and Northern Star, whereby Northern Star agreed to progressively acquire a 60 % joint venture interest in the licences, of which the Cave Hill Group is a part, by sole funding all expenditure required to bring the Tanami Project back into commercial production. This shall be achieved once the Central Tanami Project ('CTP') processing plant has been refurbished and is operated for a 30 day period or has produced 5,000 oz of gold. The CTP processing plant is located approximately 30 km to the north of the Cave Hill Project.

As part of the consideration of the Heads of Agreement, Northern Star acquired a registerable interest in the licences of 25 %. In 2018, Northern Star acquired a further 15 % interest in the project increasing its holding to 40 %.

On 15 September 2021, Northern Star acquired an additional 10 % interest taking it's holding to 50 %, taking both parties to an equal 50 % holding. Following this transaction, Northern Star and Tanami (NT) agreed to terminate the Heads of Agreement and have formed a new 50/50 joint venture.

Table 1. Cave Hill Project licence details.

Licence	Blocks	Grant date	End date
EL10411	7	04/06/2001	03/06/2023
EL22378	6	08/06/2001	07/06/2023

4 GEOLOGICAL SETTING AND EXPLORATION RATIONALE

In the Tanami region, one of the most important tectonic units is the North Australian Craton, the stratigraphic succession shows similarities with the Pine Creek and Halls Creek orogens and other Palaeoproterozoic successions in northern Australia.

Within the region, Archaean rocks of the Browns Range Metamorphics and Billabong Complex are theorised to underlie the later Proterozoic sequences. Browns Range Metamorphics comprise granitic gneiss and muscovite schist intruded by fine-grained granite, thin granitic sills, aplite and pegmatite. The Billabong Complex comprises banded granitic gneiss, which are generally elongated, and fault bound.

The overlying Palaeoproterozoic Tanami Group is dominated by volcanic and volcaniclastic rocks, along with clastic and calc-silicate sedimentary rocks. These are overlain by siltstone, carbonaceous shale, calcsilicates and banded iron formation of the Dead Bullock Formation. This in turn is overlain by a thick sequence of turbidite, the Killi Killi Formation. Interbedded siltstone, greywacke and chert west of Tanami are included in the Twigg Formation.

The Pargee Sandstone and Mount Charles Formation have historically been described as having formed in short-lived, small extensional basins. A period of wider extension followed; this was accompanied by felsic volcanism in the Mount Winnecke Formation and Nanny Goat Volcanics.

Five main granitic suites are recognised in the Tanami region, but the most important are the Coomarie Suite and Frederick Suite, which are the youngest granites in the area.

Deposition in the Birrindudu Basin began with sandstone transgressing over the metamorphic and crystalline basement around 1.7 Ga. This was accompanied by regionally extensive north-striking growth faults and volcanism, indicating rifting. The Birrindudu and Tolmer Groups represent the exposed basal section of this basin and is as much as 6,000 m thick. Apart from minor felsic volcanic rocks (tentatively assigned to undifferentiated Birrindudu Group) and carbonate rocks and shale in the upper Tolmer Group, these units are dominated by coarse clastic sedimentary rocks. Neoproterozoic and younger sequences include the Redcliff Pound Group, Antrim Plateau Volcanics, Lucas Formation, Pedestal beds and Larranganni Formation.

The extensive flows of Neoproterozoic-Cambrian Antrim Plateau Volcanics consist primarily of tholeiitic basalt lava flows with minor sedimentary rocks. Flat lying sedimentary rocks of the Devonian Lucas Formation and Pedestal beds and Cretaceous Larranganni Formation overlie Antrim Plateau Volcanics and older rocks.

Large areas of the Tanami region are covered by Cainozoic deposits of laterite and calcrete, and more recent, unconsolidated fluvial and aeolian sand and gravel.

Proximal to the project, the geology is dominated by the Dead Bullock Formation and Killi Killi Formation. The licences are flanked in the north by the east-southeast striking Trans-Tanami Fault, and in the south by similarly major, southeast striking structures. The Trans-Tanami Fault is an approximately 100 km long curvilinear structure with approximately 6 km right lateral displacement. Tanami Group stratigraphy is partially overlain by Cambrian basalt of the Antrim Plateau Volcanics. Extensive transported cover in this area makes surface mapping difficult, steeply incised palaeochannels up to 80 m in depth are also present.

Figure 2 showed interpreted bedrock geology.

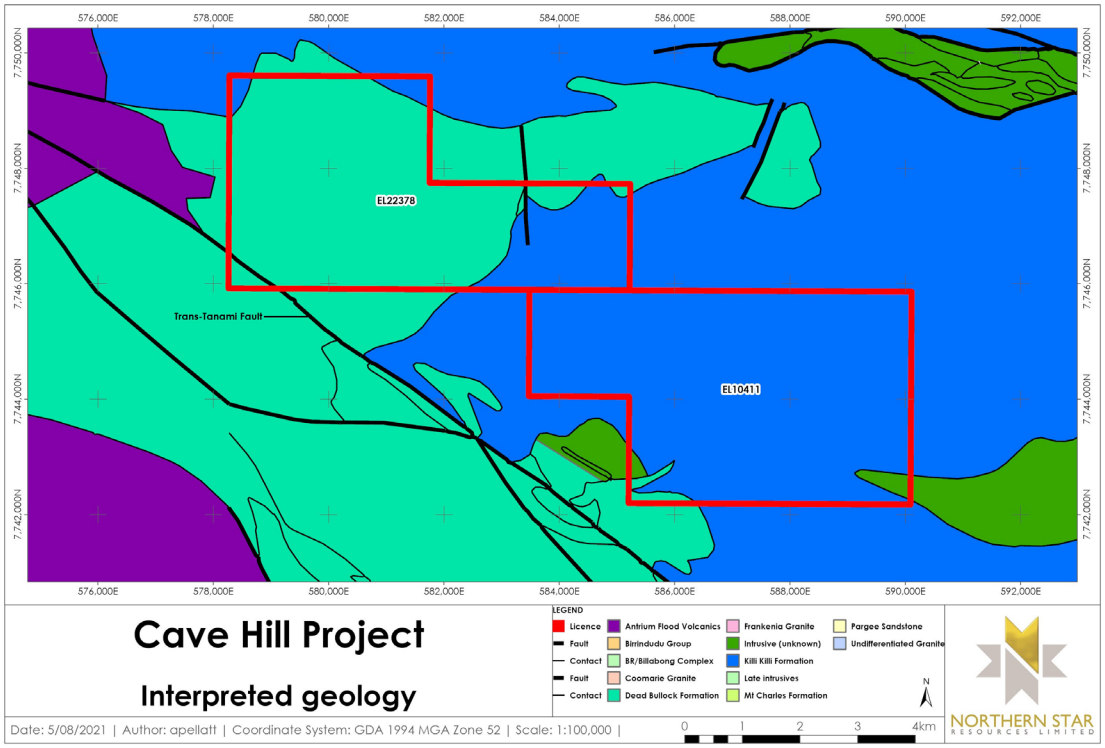

Figure 2. Interpreted bedrock geology.

5 EXPLORATION/MINING HISTORY

A summary of work completed by Northern Star is detailed below and more information can be found in previously submitted Northern Star reports (Abello 2018; Annison 2017; Mukherji 2016; Pellatt and Abello 2020 and Pellatt 2021).

2015-2016

- compilation, validation and assessment of data
- targeting

2016-2017

- targeting
- geological review of historic drill hole chips
- review of historic aeromagnetic data
- aeromagnetic survey
- environmental survey

2017-2018

Aircore drilling program (27 holes for 1,016 m)

2018-2019

- regional targeting assessment
- ground gravity survey on part of EL22378
- sacred site clearance approval

2019-2020

- commencement of CSIRO stratigraphy and geochemistry project
- spectral orientation survey
- regional targeting assessment
- regional mapping compilation and validation
- aircore drilling on EL22378 (73 holes for 4,827 m)
- extension of 2018-2019 gravity survey
- heritage survey

2020-2021

- track and pad preparation
- heritage survey
- surface sampling
- CSIRO stratigraphy and geochemistry project completion
- rehabilitation checks

6 CURRENT EXPLORATION

Exploration during the tenure period is shown in Figure 3 and comprised:

- aircore drilling

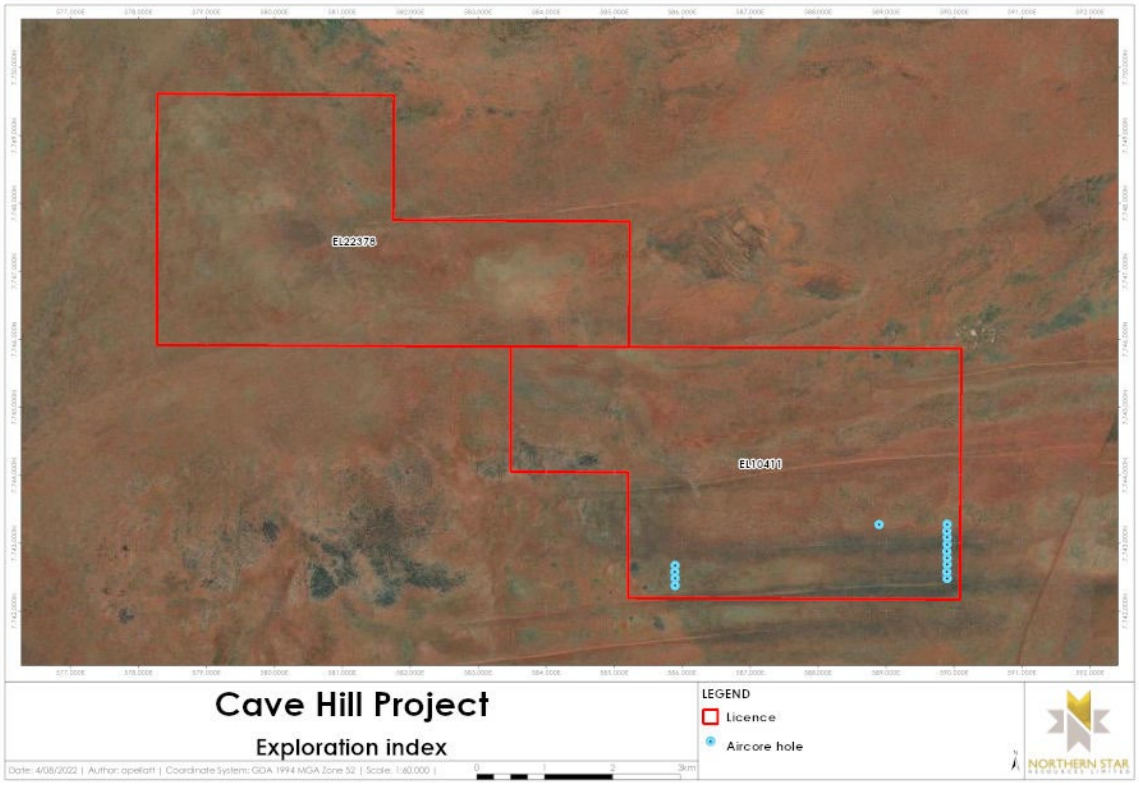

Figure 3. Cave Hill Project exploration index.

6.1 Drilling

Aircore ('AC') drilling

An aircore ('AC') drilling program comprising 15 holes for 675 m was completed on the southern part of EL10411 to test a northwest-trending belt of Dead Bullock Formation, immediately north of the Trans-Tanami Fault. Drilling was designed to test the top of fresh rock at depth for gold mineralisation or pathfinder minerals. The original drill design was for 50 m spaced vertical dill holes, on five, one kilometre spaced lines for a total of 4000 m.

Drilling was completed by Stark Drilling, Perth, using a multipurpose RC/AC 450 Schramm rig with 350 psi/900 cfm compressor. Drilling commenced on 9 September, but was cancelled on 20 September due to poor production. A total of 53 pads were cleared along access tracks, and seven holes were canceled due to access issues due to dunes.

Only 15 of the holes were drilled before the program was prematurely terminated, and only one hole (CHAC0095) penetrated the 40-50 m thick sequence of transported material to reach bedrock. The program was deemed insufficient to advance exploration and Northern Star still plan to complete the final 39 drill holes. Plans to obtain another drill contractor to complete the program have so far failed due to COVID-19 pandemic associated issues such as border closures, lockdowns and outbreaks. Contractors are also reluctant to mobilise to the Tanami region for such a small program and attempts to obtain a

contractor from another operator in the area have so far gone unfounded. Additional aircore drilling on several other licences has been planned (approvals pending), and this should help entice contractors to the region.

Four metre composite samples and one metre rig split samples (at geologists' discretion) were taken by spear or scoop and dispatched to ALS, Perth, for gold (Au-ICP22; fire assay digest, ICP-AES finish). Additionally, a one metre sample was taken at the end of hole (for holes that hit target depth) and fire assayed for gold (Au-ICP21; ICP-AES finish), with a 48 analyte multielement suite using multi-acid digest and ICP-AES-MS finish (ME-MS61). A total of 167 assays were collected and sent for analysis, with 163 samples assayed for gold only 10 samples were assayed for a multielement suite. No significant gold assay results were returned, and the multielement samples was too small of a dataset to make any conclusive remarks.

7 CONCLUSIONS AND RECOMMENDATIONS

Northern Star is committed to exploring the Cave Hill project and strategic decisions hinge on the successful completion of exploration programs. A small AC drilling program was completed on EL10411 but failed to advance exploration due to poor production rates from the contractor. The program was terminated prematurely and plans to complete it are still in place.

Northern Star has had a difficult year in the Tanami region due to COVID-19 pandemic associated lockdowns and outbreaks in NT and WA, as well as associated border closures. Travel to and from the region has been difficult for personnel and contractors have been reluctant to mobilise, especially for a small AC drilling program. Northern Star's Tanami team is gradually growing and will soon be in a better position to actively explore their tenure.

8 REFERENCES

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