



## **BROWNS RANGE PROJECT**

### **ANNUAL REPORT**

**to the Department of Primary Industry and Resource  
for the period 21/08/17 to 20/08/18 for  
EL26270, EL26286, EL26498, EL26541, EL29592, EL24174  
and EL24193**

**Combined Reporting Group No: GR-441**

**Date:** 16 October 2018  
**Compiled by:** C Turnbull  
Land Administration Geologist  
Northern Star Resources Ltd

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**Project Name:** Browns Range

**Combined Report number:** GR-441

**Tenement:** EL26270, EL26286, EL26498, EL26541, EL29592, EL24174, EL24193

**Tenement operator:** Northern Star (Tanami) Pty Ltd

**Tenement holder:** Northern Star (Tanami) Pty Ltd (100%)

**Report type:** Annual

**Report title:** Annual Report to the Department of Primary Industry and Resources for the period 21/08/2017 – 20/08/2018

**Report period:** 21/08/2017 – 20/08/2018

**Compiled by:** C. Turnbull, Land Administration Geologist, Northern Star Resources Ltd

**Due Date of report:** 20 October 2018

**1:250 000 map sheet:** SE52-11 Birrindudu and SE52-15 Tanami

**1:100 000 map sheet:** Phibbs 4760, Ware 4860, Mallee 4759 and Breaden 4859

**Target commodity:** Gold

**Keywords:** Proterozoic Granites-Tanami Inlier, Tanami Group, Mt Charles Formation, Birrindudu Group, Gold, Greenschist Facies, Aeolian Sand Blanket, Geological Reconnaissance Mapping, Rock Chip Sampling, Aeromagnetic and Radiometric Interpretation

**Prospects drilled:** N/A

**List of 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, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn, Zr

<b>Distribution:</b>	Department of Primary Industry and Resources	(NT) (1)
	Northern Star Resources Limited	(WA) (1)
	Central Land Council	(NT) (1)

## **SUMMARY**

This report describes the exploration activities undertaken by Northern Star Resources for Exploration Licences EL26270, EL26286, EL26498, EL26541, EL29592, EL24174 and EL24193 which form the Browns Range Project located within the Granites-Tanami region of the Northern Territory.

The tenements and associated project are reported under a Group Report Number GR-441 and covers exploration conducted on the project during the period 21<sup>st</sup> August 2017 to 20 August 2018.

Work completed in past 12 months:

- Geological reconnaissance mapping and rock chip sampling
- 1:50,000 scale geological interpretation of the previously acquired regional magnetics and radiometric data

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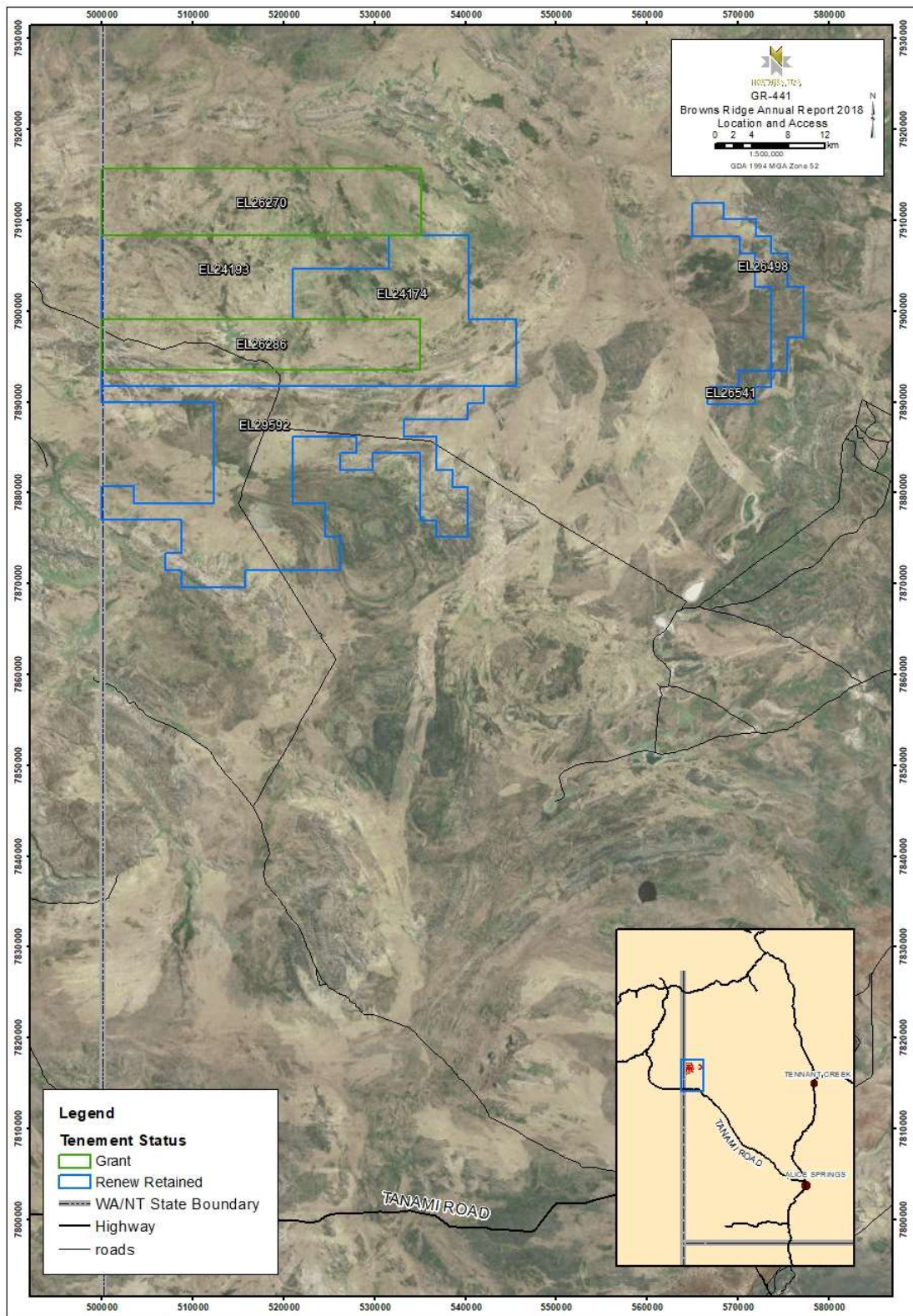
## **1. INTRODUCTION**

The Browns Range Project is located in the Granites-Tanami region approximately 750km north-west of Alice Springs, along the Western Australia and Northern Territory border. The project occupies land owned by the Purta, Mt Frederick 1 & 2 and Central Desert Land Trusts.

Access to the project from Alice Springs can be made via the Tanami Road for approximately 700km, then north along remote tracks for approximately 80km. The Tanami Road passes along the southern margin of the projects between the Tanami Mine and the Western Australia/Northern Territory border. From the Tanami Road, cleared lines, old exploration tracks and the 'old' Tanami Track pass through the project area.

Alternatively, the project can be reached travelling 300km along the Tanami Road eastwards from Halls Creek in WA. The northern portion of the Project is most easily accessed from Halls Creek eastwards along the Duncan and Gordon Downs Road to the Ringer Soak community and thence station and exploration tracks.

The 1:250,000 map sheets that covers the area are Birrindudu (SE 52-11) and Tanami (SE 52-15), and 1:100,000 map sheets are Phibbs (4760), Ware (4860), Mallee (4759) and Breaden (4859).



## **2. TENURE**

This report covers the Exploration Licences EL26270, EL26286, EL26498, EL26541, EL29592, EL24174 and EL24193 which form the Browns Range Project under the Group Report number GR-441. The tenements were due to expire on the 20th of August 2018 but a renewal was submitted for a further two years in August this year.

Tenements EL26498, EL25541, and EL27367 were applied for by Northern Uranium between 2007 and 2009. Northern Uranium would later undergo a name change to Northern Minerals Ltd in late 2010. Exploration Leases EL24174 and EL24193 were originally granted to Northern Minerals Ltd in August 2012.

Tenements EL29592 and EL29593 were originally part of a single tenement application EL24174. Following changes in the Mineral Titles Act in 2010, the original tenement application was found to exceed the maximum permissible area for an exploration licence and was split up into three separate tenement applications (EL24174, EL29592, and EL29593).

Pursuant to a Tenement Sale Agreement and Mineral Rights Agreement, both executed 29 August 2016, with completion effective from 9<sup>th</sup> January 2017, Northern Star (Tanami) Pty Ltd became the 100% beneficial owner of the Titles. Transfer of Titles to Northern Star (Tanami) Pty Ltd were lodged and registered by the Department on 8 March 2017.

Reporting Group GR-441 was approved on 23 February 2017 which incorporated EL26270 and EL26286 from former Reporting Group Browns Range-Toro-JV GR288/13 and EL26498, EL26541, EL29592 from former group Gardiner GR318/13. Group GR-441 was approved with a reporting period of 21 August to 20 August and submission on 20 October.



Tenement	Holder	Current Area (blocks)	Grant Date	Renewal Date
EL26270	Northern Star (Tanami) Pty Ltd	80	16/02/2012	15/02/2020
EL26286	Northern Star (Tanami) Pty Ltd	60	16/02/2012	15/02/2020
EL26498	Northern Star (Tanami) Pty Ltd	20	21/08/2012	20/08/2020
EL26541	Northern Star (Tanami) Pty Ltd	5	21/08/2012	20/08/2020
EL29592	Northern Star (Tanami) Pty Ltd	140	21/08/2012	20/08/2020
EL24174	Northern Star (Tanami) Pty Ltd	87	21/08/2012	20/08/2020
EL24193	Northern Star (Tanami) Pty Ltd	72	21/08/2012	20/08/2020

Table 1: Tenement Schedule Browns Range Project GR-441

### 3. REGIONAL AND LOCAL GEOLOGY

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. The overlying Palaeoproterozoic Tanami Group is dominated by volcanic and volcanoclastic rocks, along with clastic and calc-silicate sediments. These are overlain by siltstone, carbonaceous shale, calc-silicates and BIF of the Dead Bullock Formation. This in turn is overlain by a thick sequence of turbidites, 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 identified as having been formed in short-lived, small extensional basins. A period of wider extension is believed to have followed, this was accompanied by felsic volcanism in the Mount Winnecke Group and Nanny Goat Volcanics. Five main granitic suites are recognised in the Tanami Region, the most important being the Coomarie and Frederick Suites. The youngest granites in the area belong to The Granites Suite.

Deposition in the Birrindudu Basin began with sandstone transgressing over the metamorphic and crystalline basement probably at about 1.7 Ga. This was accompanied by regionally extensive north-trending growth faults and volcanism, possibly indicating rifting. The Birrindudu and Tolmer Groups represent the exposed basal section of this basin and may be as much as 6,000m 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 Neoproterozoic, Antrim Plateau Volcanics, Lucas Formation, Pedestal beds and Larranganni Beds.

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 Beds 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.

#### **4. PREVIOUS WORK**

Previous work completed within the reporting group area was carried out by Northern Star (Tanami) Pty Ltd and involved helicopter-assisted field reconnaissance program including rock chip sampling, purchase of “RapidEye” high-resolution satellite imagery, and a regional airborne magnetic and radiometric survey over EL29592. This newly acquired data was then merged with existing available and useable legacy datasets, into a single stitched grid.

Landform type mapping was also completed by Biota Environmental with a ground survey centred over EL24174, EL24193 and EL26286. This was conducted to provide an understanding of any significant flora/fauna in the area.

#### **5. WORK COMPLETED FOR THE PERIOD**

Geological mapping and reconnaissance field work in the Browns Range area was undertaken via helicopter-assisted field mapping. This activity focussed on the discovery of any potential outcrop that will assist in better constraining stratigraphic interpretations. A total of 20 rock

chips were submitted from this field work with no assays returning any favourable gold anomalism. However, several prospective lithological units were identified that require further investigation.

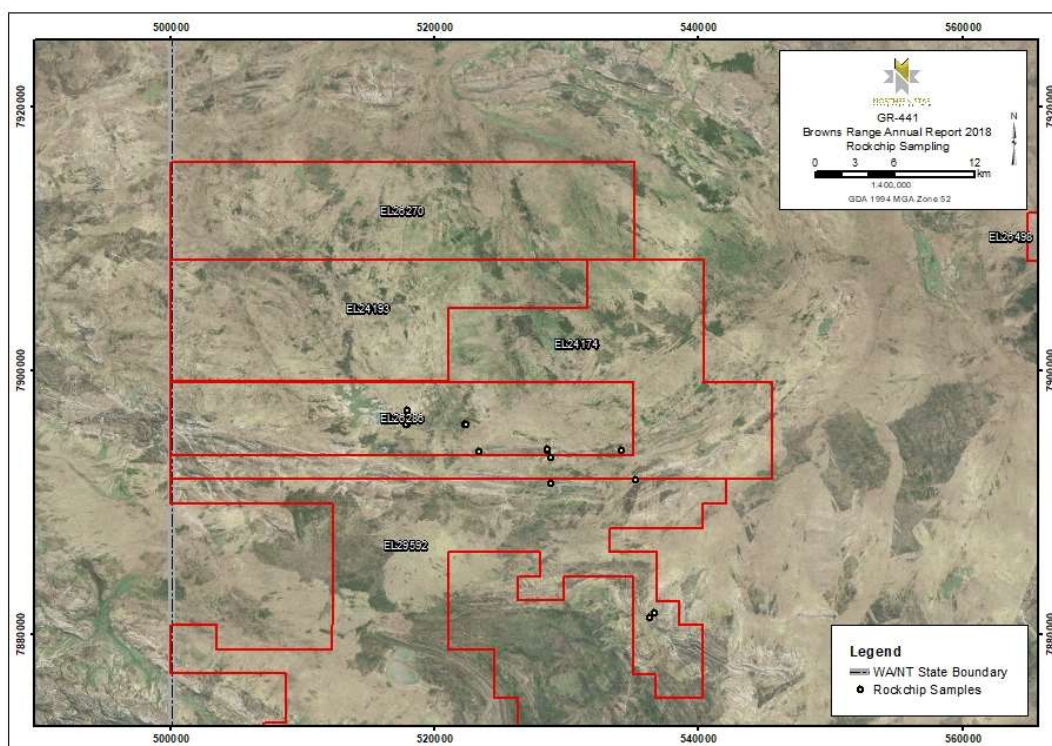


Figure 2: Rockchip sample locations

Northern Star (Tanami) Pty Ltd also undertook 1:50,000 scale geological interpretation of the previously acquired regional magnetics and radiometrics over EL26286, EL24174 and EL29592. A streamlined process with Exploration GIS personnel has meant continuous digitising of these maps and identification of three areas of interest.

These locations have been identified as having anomalous magnetic signatures that each lie on strong gravity gradients. All three areas of interest currently sit on EL24174. Further analysis and interpretation of recently acquired magnetics and merged historical datasets, will enable the company to further develop the understanding of the adjacent region.

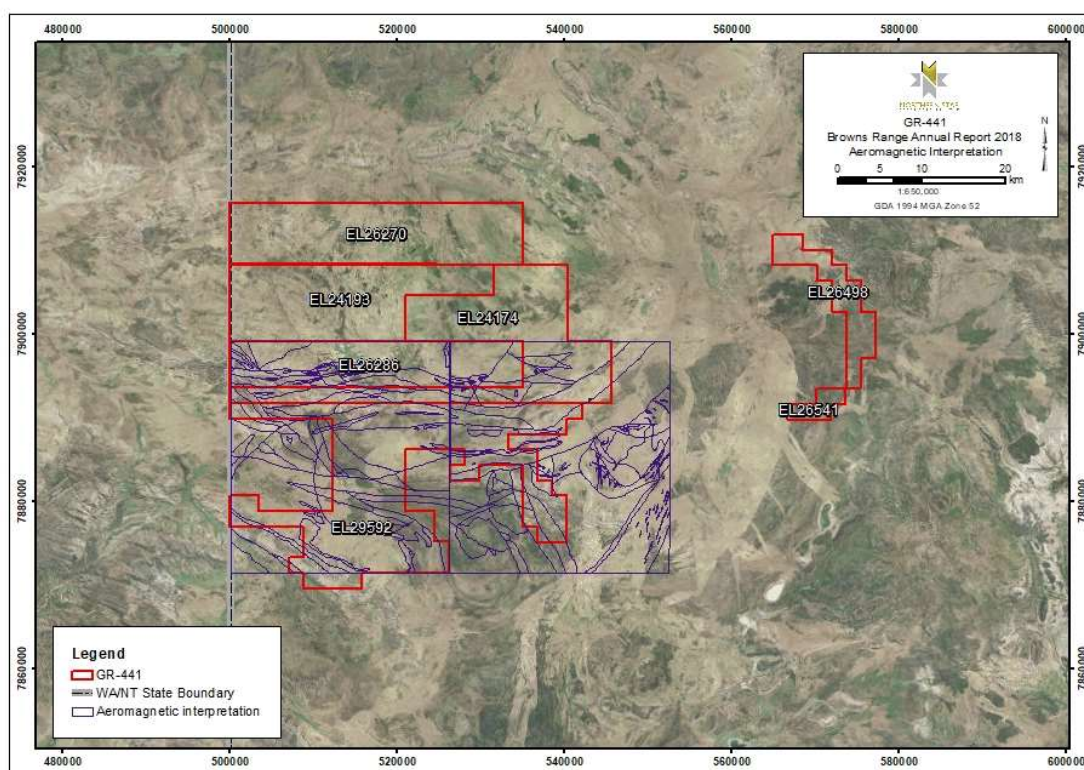


Figure 3: 50,000 scale aeromagnetic interpretation

## 6. CONCLUSIONS AND RECOMMENDATIONS

Northern Star (Tanami) Pty Ltd wish to continue advancing the Browns Range region through detailed analysis and interpretation of the recently acquired airborne magnetic and radiometric data. It is hoped Northern Star (Tanami) Pty Ltd are provided disturbance approvals to establish additional access into Browns Range early in the next reporting period, prior to the 2018-2019 wet season.

The next reporting period will see the following work undertaken:

- Undertake a regional ground gravity survey to compliment geophysical and geological datasets
- Complete a detailed geological interpretation of magnetic and radiometric data
- Complete a depth to basement (DTB) analysis of the recently acquired magnetic data to better assist with targeting
- Undertake regional track reparations, maintenance and establishment (following SSCC approval)
- Ongoing geological reconnaissance/mapping

## **7. REFERENCES**

Annison D, 2017. BROWNS RANGE PROJECT ANNUAL REPORT to the Department of Primary Industry and Resource for the period 21/08/16 to 20/08/17 for EL26270, EL26286, EL26498, EL26541, EL29592, EL24174 and EL24193, Combined Reporting Group No: GR441, Company Report.

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