



**EL26635**

**5<sup>th</sup> ANNUAL REPORT**

**to the Department of Primary Industry and Resources**

**Period: 16 February 2016 to 15 February 2017**

**Holder:** Northern Star (Tanami) Pty Ltd

1:250,000 SHEET REFERENCE: TANAMI SF52-15

1:100,000 Sheet Reference: BUCK (4958)

**DISTRIBUTION:** ☐ NT DEPARTMENT OF PRIMARY INDUSTRY AND RESOURCES - digital  
☐ CENTRAL LAND COUNCIL - digital

**Due Date:** 16 April 2017

**Compiled by:** Dale Annison  
Senior Exploration Geologist  
Northern Star Resources Ltd

## **ACKNOWLEDGEMENT AND WARRANTY**

1. Subject to 2, the tenure holder acknowledges that this Report, including the material, information and data incorporated in it, has been made under the direction or control of the Northern Territory (the NT) within the meaning of section 176 of the Copyright Act 1968.
2. To the extent that copyright in any material included in this Report is not owned by the NT, the tenure holder warrants that it has the full legal right and authority to grant, and hereby does grant, to the NT, subject to any confidentiality obligation undertaken by the NT, the right to do (including to authorise any other person to do) any act in the copyright, including to:
  - use;
  - reproduce;
  - publish; and
  - communicate in electronic form to the public, such material, including any data and information included in the material.
3. Without limiting the scope of 1 and 2 above, the tenure holder warrants that all relevant authorisations and consents have been obtained for all acts referred to in 1 and 2 above, to ensure that the doing of any of the acts is not unauthorised within the meaning of section 29(6) of the Copyright Act.

## TITLE PAGE AND BIBLIOGRAPHIC DATA SHEET

**Tenement:** EL 26635

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

**Report type:** 5<sup>th</sup> Annual

**Report title:** EL26635 2016 Annual Report

**Report period:** 16/02/2016 to 15/02/2017

**Author:** Northern Star Resources Ltd

**Date of report:** 16 March 2017

**1:250 000 map sheet:** Tanami (SF52-15)

**1:100 000 map sheet:** Buck (4958)

**Target commodity:** Gold

**Tectonic Units:** Dead Bullock Fmn, Antrim Plateau Basalt, Birrindudu Fmn, Killi Killi Fmn

**Keywords:** Magnetism, Radiometrics, Geochemical

**Prospects drilled:** N/A

**List of assays:** N/A

## EXECUTIVE SUMMARY

Tenement EL 26635 was granted to Toro Energy Limited (“**Toro Energy**”) on the 16 February 2012. Toro Energy subsequently announced it was entering a joint venture agreement with Northern Minerals Pty Ltd (“**Northern Minerals**”) for a group of seven tenements, including EL26635, which together were named the Toro JV Project.

Northern Star (Tanami) Pty Ltd (“**NST**”) became the 100% legal and beneficial owner of a number of Titles in the Northern Territory, including EL26635, 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.

The tenement is largely underlain by Palaeoproterozoic Dead Bullock Formation, Killi Killi Formation and intrusive granite/granodiorite. In the north west of the tenement, these units are overlain by Mesoproterozoic sandstone of the Birrindudu Basin and Cambrian flood basalt of the Antrim Plateau Volcanics. Little to no outcrop occurs within the tenement, and the surface geology is dominated by unconsolidated Quaternary sediments.

## TABLE OF CONTENTS

1. INTRODUCTION.....	1
2. TENURE .....	2
3. GEOLOGY .....	3
4. PREVIOUS EXPLORATION OVER AREA .....	5
5. WORK COMPLETED IN THE REPORING PERIOD.....	6
6. CONCLUSIONS AND RECOMMENDATIONS .....	7
7. REFERENCES.....	7

## LIST OF FIGURES

Figure 1 Tenement Location Plan.....	1
Figure 2 EL26635 Interpreted Geology.....	4
Figure 3 EL26635 Gold prospects/targets.....	5
Figure 4 2017 Survey Area over EL26635.....	6

## LIST OF TABLES

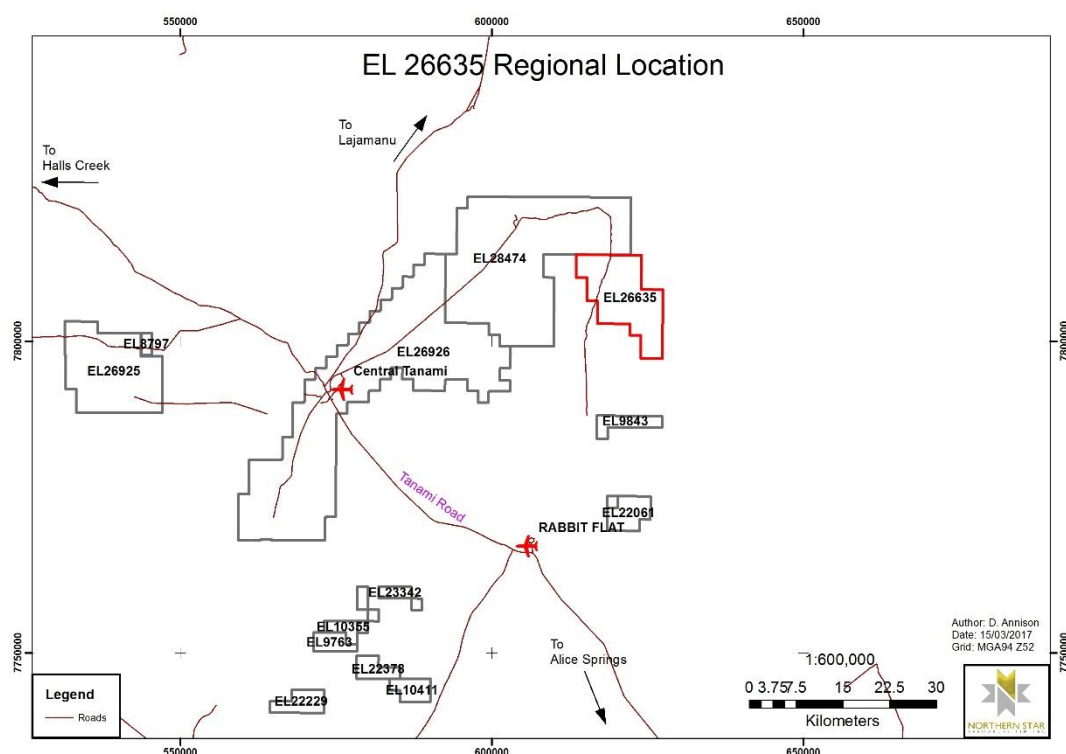
Table 1 Tenement Details.....	2
-------------------------------	---

## 1. INTRODUCTION

EL26635 was granted to Toro Energy on the 16 February 2012 for a term of 6 years. This is the 5<sup>th</sup> Annual Report for the Licence and covers the period 16 February 2016 to 15 February 2017.

Northern Star (Tanami) Pty Ltd ("**NST**") became the 100% legal and beneficial owner of a number of Titles in the Northern Territory, including EL26635, 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.

The tenement is located approximated 570km northwest of Alice Springs (Figure 1) within the Central Desert Aboriginal Land Trust. Access to the tenement is via the Tanami Track to the Tanami mine site, approximately 650km from Alice Springs or 400km from Halls Creek in Western Australia. From the Tanami Track, access is via a track heading northeast past the Groundrush mine site.



**Figure 1 Tenement Location Plan**

## 2. TENURE

The licence EL26635 was applied for on the 9 July 2007 and granted on the 16 February 2012 to Toro Energy Limited, consisting of 43 graticular blocks and covering an area of 139 square kilometres (**Table 1**).

On the 23 April 2012, Northern Minerals announced to the ASX that it had entered into a joint venture agreement with Toro Energy, where it could earn up to an 80% stake for the non-uranium rights in exploration, referred to as the Toro JV Project. The agreement was not however formally signed off until the 08 February 2013, after which Northern Minerals was appointed project manager of the tenements.

On the 10 January 2017, Northern Star Resources Ltd ("**NSR**") announced the completion of a Tenement Sale Agreement between Toro Energy and NSR to sell a package of exploration licences in the Tanami region including EL26635. Under the agreement Northern Star purchased 100% beneficial and legal ownership of the licence and in addition Northern Star granted the rights to rare earth elements in this licence to Northern Minerals.

Northern Star (Tanami) Pty Ltd ("**NST**"), a wholly owned subsidiary of Northern Star Resources Ltd, is the current registered holder of the licence with the transfer being registered in March 2017.

Tenement No.	Area (Blks)	Grant Date	Expiry Date	Holder
EL 26635	43	16/02/2012	15/02/2018	Northern Star (Tanami) Pty Ltd 100%

**Table 1 Tenement Details**

### **3. GEOLOGY**

#### **3.1 Regional Geology**

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

Within the region, the Tanami Group is comprised of the Dead Bullock Formation, Mt Charles Formation and the Killi Killi Formation. These units are dominated by volcanic and volcanoclastic rocks, clastic and calc-silicate sediments with pillow and flow basalts, and late igneous intrusives. The Dead Bullock Formation is characterised by siltstone, carbonaceous shale, calc silicates and BIF. This in turn is overlain by a thick sequence of turbidites, the Killi Killi Formation.

The Mt Charles Formation, host to the Tanami Goldfield, is believed to have formed in an accretionary fore-arc setting. The stratigraphic position of the Mt Charles formation is not well understood, it is most likely in a thrust position overlying the Dead Bullock Formation. In relative proximity, felsic volcanism is present in the form of the Mount Winnecke Group and Nanny Goat Volcanics of the Ware Group. 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. Archaean rocks identified from drilling comprise of the Browns Range Metamorphics and the Billabong Complex.

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 locally. 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.

Cambrian flood basalts (Antrim Plateau Volcanics) overlie the Mesoproterozoic Gardiner Sandstones of the Birrindudu Basin.

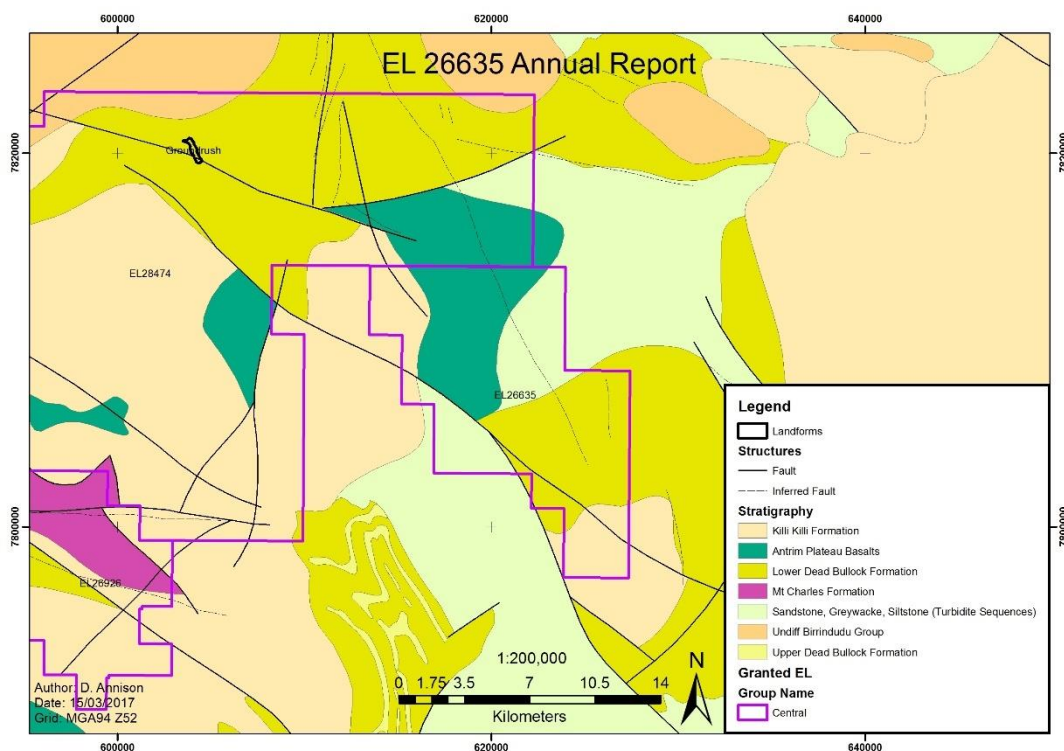


Several ESE, SE and N-trending structures have been identified within the region, which represent subsidiary structures to the major regional ESE-trending structures, such as the Trans-Tanami Fault and the Bluebush Fault.

Large portions of the region are covered by ferricrete as well as surficial deposits including alluvium, lateritic lag and windblown sand. The Gardiner Formation outcrops are frequently capped by a silcrete layer of variable thickness.

EL26635 is located in the south east of the Tanami 1:250,000 Sheet. It is largely covered by unconsolidated surficial deposits with minimal to no outcrop. Much of the tenement is interpreted to be underlain by either Palaeoproterozoic Dead Bullock Formation or Killi Killi Formation. In the north-west, these units are intruded by Coomarie Suite Granodiorite, whilst in the south east of the tenement they are intruded by moderately magnetic, undifferentiated granite. The Palaeoproterozoic sequence is unconformably overlain by sandstone of the Birrindudu Basin in the north west of the tenement, which is in turn overlain by flood basalt of the Antrim Plateau Volcanics.

Figure 2 shows the interpreted geology of the EL26635 area at a 1:200,000 scale.

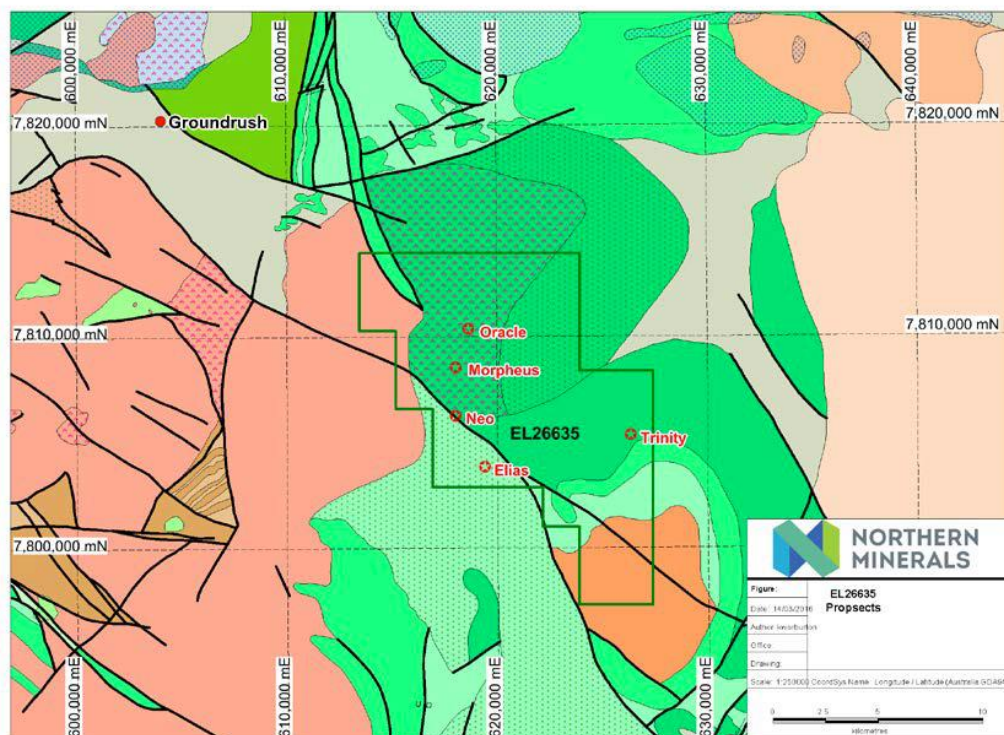


**Figure 2 EL26635 Interpreted Geology**

#### 4. PREVIOUS EXPLORATION OVER AREA

Previous exploration work carried out by AngloGold and Tanami Gold between 2001 and 2007 over the area had defined five prospects. Work completed by these two companies included rock chip and lag sampling, RAB, Aircore and RC drilling. Significant intercepts were returned from RC drilling at two of these prospects, Oracle and Trinity. Best results included:

- 5m @ 1.06 g/t Au from 105m at the Oracle prospect
- 3m @ 1.44 g/t Au from 121m at the Trinity prospect



**Figure 3 EL26635 – Gold prospects/targets**

Due to financial constraints no on ground exploration was undertaken on the tenement by the previous holder during 2015 / 2016. However, a review of historical data and a desktop targeting exercise was completed over the tenement which highlighted the gold prospectivity of the area, including several historical gold occurrences with the tenement area.

## 5. WORK COMPLETED IN THE REPORTING PERIOD

The mineral rights agreement that NST, Toro Energy and Northern Minerals entered, wasn't completed until early 2017. Due to this there was no on-ground work activities for the reporting period, and review of available datasets did not commence until January 2017.

Work that was completed during the 2016 / 2017 reporting period included the following:

- Purchase of Field Camp Supplies in preparation for regional reconnaissance.
- Geophysical Consultants assisted with the review of existing geophysical datasets and designed a regional Airborne Magnetic-Radiometric survey; to be commence in April 2017. This survey will cover the north-western area of EL 26635 (See Figure 4), additional existing geophysical datasets over the tenement will be included in the final processing stage.
- Desktop studies including geochemical data review, review and interpretation of existing geological mapping and conceptual targeting.

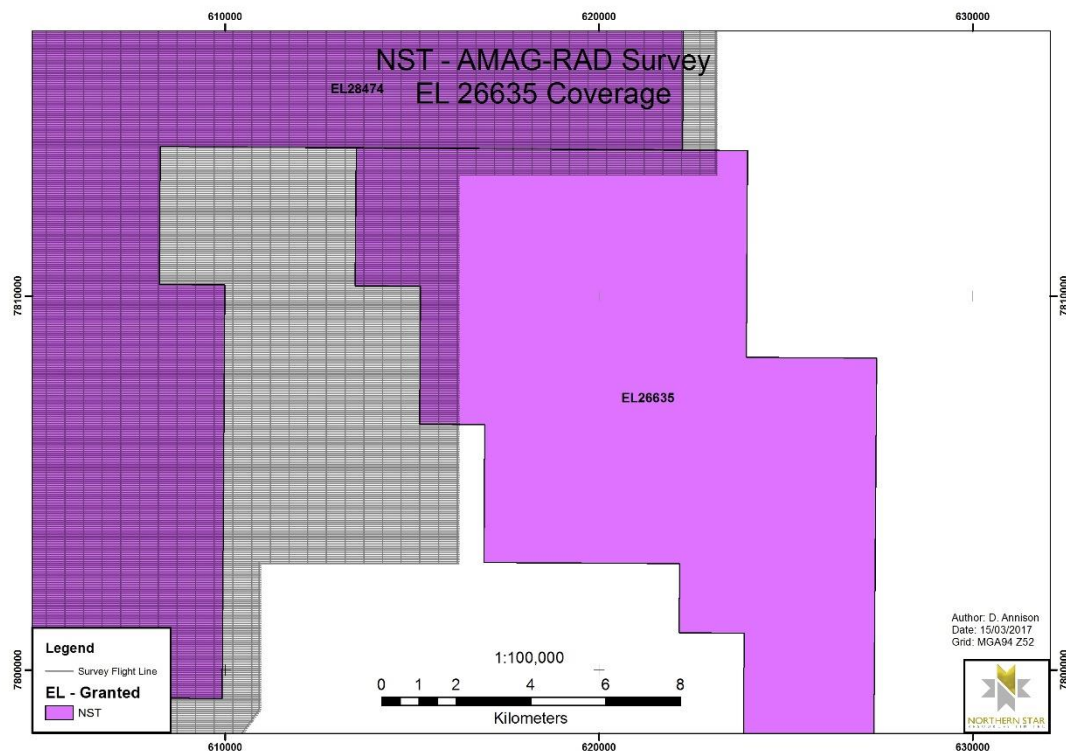


Figure 4 2017 Survey Area over EL26635

## **6. CONCLUSIONS AND RECOMMENDATIONS**

EL 26635 lies in an area considered very prospective by NST. This tenure will be combined into the regional strategic exploration program NST are currently implementing. Further review of existing geological, geochemical and geophysical datasets will be required before EL26635 can be analysed for targeting purposes. The 2017-18 reporting period will see this data analysed, leading into the following work activities:

- Acquisition of regional, 100m line spaced airborne magnetic and radiometric data.
  - Processing and integration of this newly acquired data with existing datasets over EL26635.
- Regional reconnaissance over EL26635 to tie in the existing geological interpretation from adjacent tenement EL28474.
- Rock chip sampling and sampling of remnant bottom-of-hole drill chips from legacy drilling. Analysis is to provide detailed litho-geochemical data to assist in the characterisation of stratigraphy in the area, feeding into the regional exploration tectono-stratigraphic mapping project.
- Compilation of reconnaissance and geophysical results, targeting based on preliminary interpretations.

## **7. REFERENCES**

Tanami, NTGS 1:250,000 Geological Series Explanatory Notes, Sheet SE/52-15