



## **GROUND RUSH PROJECT**

### **ML22934 ANNUAL REPORT**

**FOR THE PERIOD 14 SEPTEMBER 2022 TO 13 SEPTEMBER 2023**

**Compiled by** Annie Pellatt, Land Administration Geologist  
Daniel Hawkins/Stephan Erasmus, Senior Geologist- Discovery; Kellee Anderson, Project Geologist- Discovery

**Date** November 2023

### **COPYRIGHT – AUTHORISATION OF PUBLICATION**

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. For the purposes of section 126 of the Mineral Titles Act 2010 (NT) and 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 authorise, and hereby does authorise, the Northern Territory Minister for Industry, Tourism and Trade, subject to any confidentiality obligation undertaken by the NT, the right to (including to authorise any other person to) publish the information contained in the report.
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.

## GROUNDROUSH PROJECT – ML22934 ANNUAL REPORT

<b>Project Name</b>	Groundrush
<b>Licence(s)/GR Number</b>	ML22934
<b>Licence Operator</b>	Northern Star (Tanami) Pty Ltd
<b>Licence Holder</b>	Northern Star (Tanami) Pty Ltd (50 %) and Tanami (NT) Pty Ltd (50 %)
<b>Report Type</b>	Annual
<b>Report Title</b>	Groundrush Project ML22934 Annual Report, for the period 14 September 2022 to 13 September 2023
<b>Reporting Period</b>	14 September 2022 to 13 September 2023
<b>Author</b>	Annie Pellatt, Land Administration Geologist
<b>Date of Report</b>	November 2023
<b>Geodetic Datum</b>	GDA 94
<b>1:250,000 Map Sheet</b>	SE52-15 Tanami
<b>1:100,000 Map Sheet</b>	Tanami 4858, Buck 4958
<b>Keywords</b>	Tanami region, Central Tanami Project, Groundrush, Ripcord, Western Dolerite, Groundrush Mine Sequence, Tanami Group, Killi Killi Formation, Dead Bullock Formation, RC drilling, diamond drilling, diamond tail, resource extension, reassaying
<b>Target Commodity</b>	Gold
<b>Prospects Drilled</b>	Groundrush, Groundrush-Ripcord Link, Ripcord, Tandem, Groundrush North
<b>MMP Number and Version</b>	0916-01
<b>Assays</b>	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
<b>Distribution</b>	Department of Industry, Tourism and Trade  Northern Star Resources Limited

## CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>2</b>
<b>2</b>	<b>LOCATION, PHYSIOGRAPHY AND ACCESS .....</b>	<b>2</b>
<b>3</b>	<b>TITLE HISTORY .....</b>	<b>4</b>
<b>4</b>	<b>GEOLOGICAL SETTING AND EXPLORATION RATIONALE .....</b>	<b>4</b>
<b>5</b>	<b>EXPLORATION/MINING HISTORY .....</b>	<b>10</b>
<b>6</b>	<b>CURRENT EXPLORATION .....</b>	<b>10</b>
6.1	CENTRAL TANAMI MINERAL RESOURCE UPDATES .....	12
6.2	CENTRAL TANAMI SCOPING STUDY .....	12
6.3	REVIEW OF 2022 RC WESTERN DOLERITE (RESOURCE INFILL) ASSAY RESULTS .....	12
6.4	DRILLING .....	13
6.4.1	Ripcord .....	14
6.4.2	Tandem .....	20
6.4.3	Groundrush North .....	23
6.4.4	Groundrush-Ripcord Link RC and diamond drilling .....	25
6.4.5	Groundrush RC and Diamond Drilling ('RCD') .....	28
<b>7</b>	<b>CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>30</b>
<b>8</b>	<b>REFERENCES .....</b>	<b>30</b>

## LIST OF TABLES

Table 1.	Groundrush Project licence details .....	4
Table 2.	EOH multielement results from WDRC00001-WDRC00014 .....	13
Table 3.	Drill summary of completed drilling .....	14
Table 4.	Ripcord RC drilling, significant results .....	19
Table 5.	Tandem RC drilling, significant results. ....	22
Table 6.	Drilling details for Groundrush-Ripcord Link drilling. ....	25
Table 7.	Groundrush, significant results. ....	28

## LIST OF FIGURES

Figure 1.	Groundrush Project (ML22934) location and access. ....	3
Figure 2.	1:2,500,000 interpreted geology .....	8
Figure 3.	Local geology with major structures .....	9
Figure 4.	ML22934 exploration index from 14/09/2022 to 13/09/2023. ....	11
Figure 5.	Ripcord drill hole plan .....	15
Figure 6.	Ripcord mineralisation model .....	16



Figure 7. Ripcord significant intercepts plan view. ....	17
Figure 8. Figure 8. Ripcord RC gram-metre intercepts, with \$2,500 optimised pit shell.....	18
Figure 9. Ripcord RC significant intercepts above 5 gram-metres with Ripcord \$2,500 optimised pit shell. ....	18
Figure 10. Tandem RC drill hole plan.....	21
Figure 11. Tandem RC drilling significant results adjacent to Groundrush pit. ....	22
Figure 12. Interpreted mineralised plunge direction at Tandem.....	22
Figure 13. Groundrush North RC drill hole plan. ....	24
Figure 14. Groundrush-Ripcord Link planned holes (oblique view showing holes, DEM, Groundrush pit shell, resource and preliminary pit outline for Ripcord).....	25
Figure 15. Groundrush deposit cross section with known geology and expected geology on proposed cross section for Groundrush-Ripcord Link drilling. ....	26
Figure 16. Groundrush-Ripcord Link drill hole plan.....	27
Figure 17. Groundrush RCD drill hole plan. ....	29

### ABSTRACT

This report describes exploration activities for gold completed by Northern Star (Tanami) Pty Ltd on ML22934, between 14 September 2022 and 13 September 2023. The project is located approximately 600 km northwest of Alice Springs along the Tanami Road. The Groundrush Project forms 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 of diamond and RC drilling at the Groundrush North, Groundrush, Groundrush-Ripcord Link, Ripcord and Tandem prospects and included the continuation and extension of some of the holes reported previously. 107 new holes were drilled but all up work involved 119 holes for 19,630.5 m. This included 105 RC holes for 14,480 m, 13 DD tails for 4,268 m and 1 DD from surface hole for 882 m. The RC holes included 4 precollar holes for 699 m. Preliminary results confirm the prospectivity at Groundrush and Ripcord, warranting follow up work including underground and surface drilling. Logging, sampling, assaying and data validation will continue facilitating interpretation and geological model updates. While results at Tandem indicate a trend and plunge, the dimensions and grade are minimal. Additional drilling could aid in defining the mineralisation trend and plunge more thoroughly. ML22934 will become the centre of production in the coming years once an underground drive can be established at Groundrush and underground exploration can commence.

## 1 INTRODUCTION

This report describes exploration activities primarily for gold undertaken by Northern Star (Tanami) Pty Ltd on ML22934 (Groundrush Project), between the 14 September 2022 and 13 September 2023. ML22934 was granted on 14 September 2001 for a period of 25 years and comprises 3,950 ha.

ML22934 forms part of a larger Joint Venture agreement between Tanami Gold (NT) Pty Ltd ('Tanami NT') and joint venture partner and manager Northern Star (Tanami) Pty Ltd ('Northern Star'), a wholly owned subsidiary of Northern Star Resources Limited, called the Central Tanami Project Joint venture ('CTPJV').

The Groundrush gold deposit was mined between 2001 and 2004 by Newmont Australia Ltd ('Newmont'), with ore processed at Tanami Central (Central Tanami Processing Plant ('CTP')), until its closure in 2005. More than 600,000 ozs of gold was recovered with an average grade of approximately 5,000 oz per vertical metre and a recovery grade of 4.3 g/t Au.

In 2010, Tanami NT acquired the Central Tanami Project as part of a divestment package from Newmont. Since 2015, Northern Star have managed ML22934 as part of their larger Tanami Project.

## 2 LOCATION, PHYSIOGRAPHY AND ACCESS

ML22934 is located approximately 600 km northwest of Alice Springs along the Tanami Road and 40 km northeast of the Central Tanami Processing Plant, which is currently under care and maintenance (Figure 1). Halls Creek is approximately 300 km to the northwest and the Lajamanu Community lies 165 km to the north-northeast. Main access to the licence is via the Tanami Road to the Central Tanami Processing Plant and then northeast by sealed haul road to the Groundrush pit.

The topography of the project area is relatively flat with sparse low lying escarpments/breakaways within several kilometres of the deposit. Transported sand covers a large extent of the area, ranging in thickness from 2 m to more than 30 m in places. Vegetation consists predominantly of low lying shrub, namely *Hakea*, *Acacia* and *Grevillea* species, overlying soft spinifex and hummocky grass. No farming or agricultural activities are carried out near the Central Tanami Project.

In accordance with the Aboriginal Land Rights Act (1976), the Central Tanami Project sits on land that is owned by the Warlpiri People for which the Central Land Council ('CLC'), acts as a representative body corporate. All personnel and vehicles entering Aboriginal Land are recorded through the CLC, who are a major stakeholder in the approvals process for exploration and mining activities/proposals.

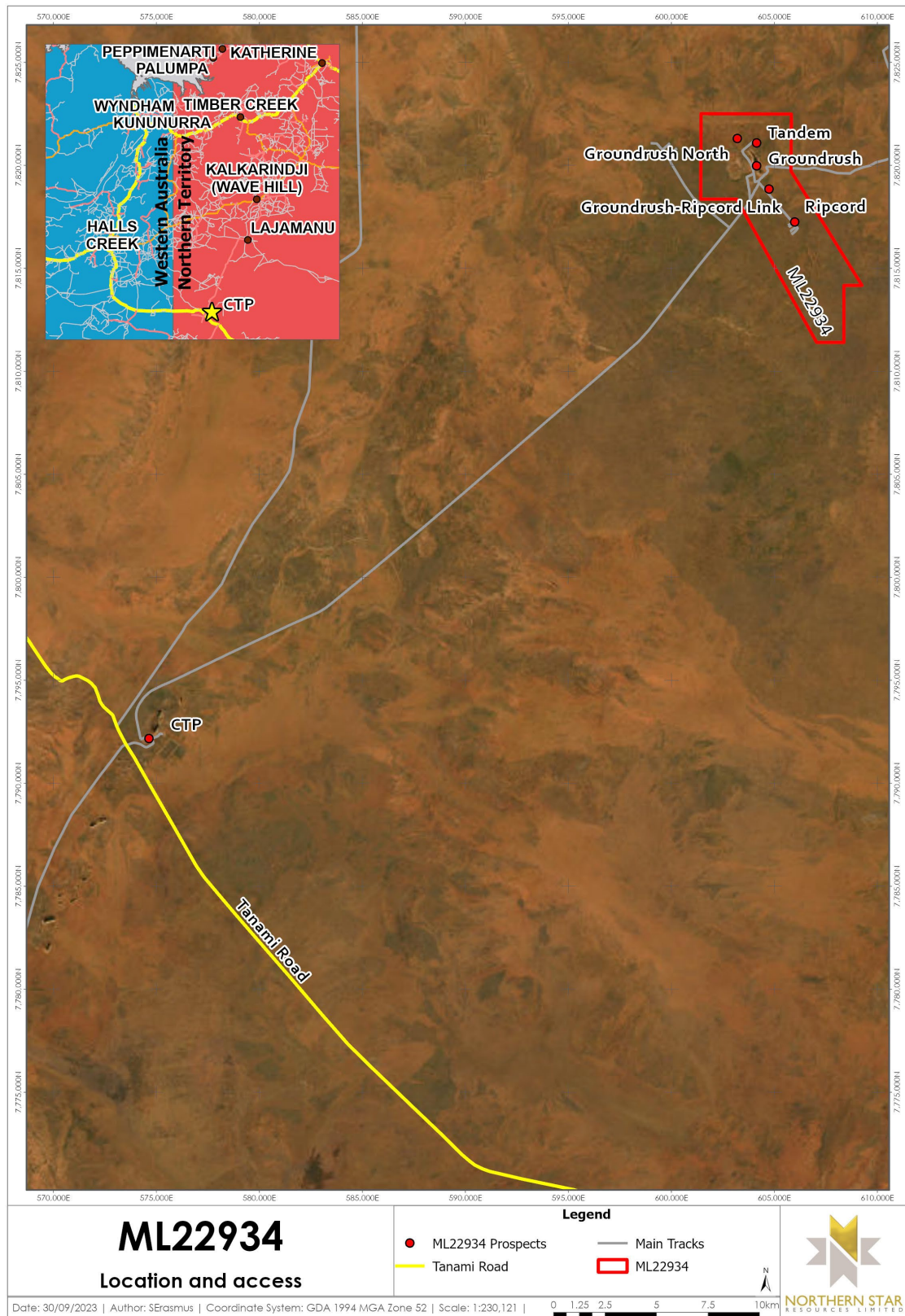


Figure 1. Groundrush Project (ML22934) location and access.

### 3 TITLE HISTORY

In February 2015, a Heads of Agreement was executed between Tanami NT and Northern Star whereby the latter agreed to progressively acquire a 60 % joint venture interest in the licences (including ML22934), by sole funding all expenditure required to bring the greater Tanami Project back into commercial production. This was to be achieved once the CTP has been refurbished and is operated for a 30 day period or has produced 5,000 oz of gold. The CTP is located approximately 40 km to the southwest of the Groundrush deposit, along a designated haul road, with Access Authority AA30908.

By 14 September 2018, as part of the consideration of the Heads of Agreement, Northern Star had acquired a 40 % registerable interest in the licence. On 15 September 2021, Northern Star acquired an additional 10 % and formed a new 50/50 Joint Venture with Tanami Gold.

Licence details are shown in Table 1.

**Table 1. Groundrush Project licence details.**

Licence	Area (ha)	Grant date	Expiry date
ML22934	3,950	14/9/2001	13/9/2026

### 4 GEOLOGICAL SETTING AND EXPLORATION RATIONALE

The Tanami region is centered 600 km northwest of Alice Springs and straddles the Northern Territory-Western Australia border. Its relationship to the surrounding tectonic units is poorly known. The contacts with the Arunta Province to the south and the Tennant Inlier to the east are not exposed but appear to be major shear zones in the magnetic data (Hendrickx et al, 2000). The geology of the Tanami region comprises a sequence of folded Palaeoproterozoic metasediments and minor meta-mafic volcanic and intrusive rocks unconformably overlying Achaean basement (Figure 2). Much of this is hidden beneath thin unconsolidated cover.

The basal part of the Palaeoproterozoic stratigraphy is the Tanami Group, comprising the lower Dead Bullock Formation and the upper Killi Killi Formation. The Tanami Group is inferred to have been deposited in a transgressive passive marginal environment following the cessation of major extension and faulting associated with rifting (Hendrickx et al, 2000). The locally extensive mafic volcanic bearing Stubbins Formation and Mount Charles Formation are laterally correlated with the Dead Bullock Formation (Bagas et al, 2008).

Folding and low to middle greenschist facies regional metamorphism affected the Tanami Group at approximately 1,840 Ma. The metamorphic grade tends to increase from the northwest to the southeast and adjacent to the local granites that accompanied this event, which has been denoted as the Tanami Orogenic Event (Vandenberg et al, 2001a).

The Tanami Event (Vandenberg et al, 2001b), a period of tectonism dated at around 1,845-1,840 Ma, with multiple deformation and metamorphism, marked the end of deposition of the Tanami Group. Parguee Sandstone molasse type sediments are contemporaneous with this event. The Tanami Event was followed by a period of crustal extension with deposition of Mount Charles Formation basalts and turbiditic volcanoclastic, followed by widespread granite intrusion and felsic volcanism (Mount Winnecke Formation). A period of peneplanation followed prior to deposition of Birindudu Group siliciclastic sediments, including the Gardiner Sandstone.

Unconformably overlying the Tanami Group is the Ware Group, deposited in a series of small extensional basins. The Ware Group includes the Mount Winnecke Formation, the Nanny Goat Volcanics and the Wilson Formation (Crispe et al, 2002).



Granitic lithologies constitute approximately 60 % of the geology of the Tanami Region, and predominantly comprise 'I-type' biotite ± hornblende monzogranites and granodiorites (Dean, 2001). The granite suites are believed to represent overlapping igneous events between 1,840 and 1,790 Ma with the Winnecke Suite (1,820-1,830 Ma), the Coomarie Supersuite (1,810-1,820 Ma) and the Frederick Suite (1,790-1,810 Ma) defined by Dean (2001).

Palaeoproterozoic rocks around the Groundrush deposit and the broader Tanami region generally occur as small, discreet, discontinuous, deeply weathered, or silicified outcrops among the pervasive sand plains. A desert terrain that comprises transported and residual colluvial cover sediments and aeolian sand blanket a large portion of the Inlier.

Most geochronological data point to an age of 1,800 Ma for late (D5) gold in the Tanami region. The age of the earlier gold event (D1 or D3 at The Granites) is not constrained (Huston et al, 2006).

The post-gold mineralisation Neoproterozoic Birrindudu Group is interpreted as representing shallow marine platform sediments unconformably overlying the other components of the Tanami region. It comprises the Gardiner Sandstone, Talbot Well Sandstone and Coomarie Sandstone (Blake et al, 1979). Local exposures of the Cambrian Antrim Plateau Volcanics also occur through the Tanami region (Hodgson, 1975).

Gold mineralisation within the Tanami region is predominantly hosted by the Tanami Group and Mt Charles Formation, though mineralisation has been recorded in all Proterozoic units older than the Birrindudu Group cover sequences. Gold mineralisation at Groundrush is interpreted to occur within the lower Tanami Group formations (Figure 3). The Killi Killi Formation comprises a thick, monotonous, turbiditic siltstone and sandstone (commonly arkose and greywacke) sequence up to 4 km thick. It conformably overlies the Dead Bullock Formation, composed of variably carbonaceous siltstone with minor chert and iron rich horizons ('BIF'), which hosts the orebodies at Dead Bullock Soak and The Granites. Dolerite sills up to +200 m thick intrude the Tanami Group.

Gold production from the Groundrush deposit between 2001 and 2005 totaled 4.2 Mt @ 4.5 g/t for 611,000 oz, with estimated resources below the historical pit totaling 6.1 Mt @ 4.4 g/t Au for 860,000 oz.

The Groundrush mine sequence consists of three steeply west-dipping dolerite sills (west to east; the Western, Tombstone and Groundrush dolerites), which intrude turbiditic metasediments of the Killi Killi Formation. All three dolerite sills strike approximately north-northeast (020) and dip steeply to the west (70 °-80 °), subparallel to the metasediment sequence. Gold mineralisation is primarily hosted within the Groundrush dolerite. The Groundrush dolerite sill (150 m true width), has undergone fractional crystallisation from a mafic melt and consists of a core of more intermediate quartz dolerite within an outer more mafic dolerite. The two zones can be separated based on the presence of a spheroidal granophyric texture within the quartz dolerite, and by the higher proportion of felsic minerals (quartz and plagioclase).

The transition between the two dolerite phases is marked by a zone containing patchy quartz and feldspar clusters and blue coloured quartz crystals within the more mafic part of the dolerite. This transitional zone varies in width from one to ten metres. On the eastern side of the sill, the transition from quartz dolerite into a more mafic dolerite has been identified indicating that the crystallisation of the sill was not solely formed by gravity induced crystal settling, but by fractional crystallisation. Gold mineralisation within the Groundrush sill is found predominantly within the quartz dolerite and proximal to the zone of transition between the two phases.

The Tombstone dolerite (30-50 m true width) situated immediately to the west, pre-dates and is cross cut by the Groundrush dolerite. The point at which the Tombstone dolerite is truncated by the Groundrush dolerite occurs at approximately 200 m below surface; however, this intersection plunges slightly towards the south of the deposit. A narrow chill margin within the Groundrush dolerite marks the contact between these two dolerites. Mineralisation identified within the Tombstone dolerite is limited where it abuts the Groundrush dolerite. The combined width of the dolerite body is increased and has promoted brittle failure and mineralised shallow west dipping veins across the Tombstone/Groundrush dolerite contact.

A zone of metasediment (formerly the Groundrush Internal Sediments) separates the Groundrush and Tombstone dolerites below the point at which the two sills intersect. This sediment unit, the Lower Turbidites, ranges from several meters wide below where the dolerite sills intersect, to tens of meters wide at deeper levels as the two dolerite sills diverge. It's interpreted that some narrow sediment intersections with the dolerite sills outside of the Lower Turbidites represent independent clasts which have been entrained or surrounded during the emplacement of the Tombstone and Groundrush dolerite sills. The Lower Turbidites do not host gold mineralisation, although some mineralised zones have been found along the margins of these sediments. Foliated dolerite is commonly observed on the western margin of the Groundrush sill, near the contact with the metasediments. This foliation has been interpreted as a ductile shear which formed along a zone of structural weakness at the contact between these two units.

Up sequence, to the west of the Groundrush and Tombstone dolerites, lies the Western dolerite (50-80 m true width). This dolerite sill is separated from the units by a metasedimentary turbiditic sequence of sandstones and minor siltstones (150 m true width). The orientation of the Western dolerite cross cuts the hanging wall sediments towards the south of the deposit, reducing the separation between it and the Tombstone and Groundrush sills.

Two narrow zones of gold mineralisation have been intersected within the southern end of the Western dolerite. The central region of the dolerite sill within this zone is slightly more felsic than the surrounding dolerite, showing signs of weak crystal fractionation. It's interpreted that due to the narrower width of the Western dolerite, it cooled relatively quickly and therefore was not able to fractionate to the same degree as the Groundrush dolerite.

Three late dykes (a tonalite porphyry, quartz monzodiorite, and basaltic andesite), intrude the Groundrush sill and are proximal to shear zones and/or faults, cutting across mineralised lodes. Where these dykes cut through mineralisation, they are weakly to non-mineralised, suggesting they were emplaced prior to mineralisation, but were not favorable for gold precipitation. Where these intrusions contain mineralisation, they are crosscut by quartz veining. The Groundrush Quartz Monzodiorite dyke ('GQM') is the only dyke that is found over the length of the deposit.

Confusion surrounds the previously referred to Groundrush Andesite Intrusive ('GAI'), as it only appears where the GQM is interpreted to occur (i.e., surrounded on either side by the GQM). This dyke was originally separated from the GQM by petrological studies however, the dyke is a finer grained, more 'cooked' form of the GQM.

The Groundrush Tonalite Porphyry ('GTP') in the north of the deposit is truncated by the footwall fault and in many sections, multiple dykes of GTP have been intersected. The Groundrush Basaltic Andesite dyke ('GBA'), is often found in zones of foliated quartz dolerite and is sometimes replaced by a 5 cm wide fault.

In the south of the deposit, the GTP and GQM are found near one another, on the same orientation, suggesting that these intrusives may be located on the same structure. Both the GTP and GQM often contain 2-5 cm wide clasts of dolerite and quartz material and the GQM has been found to contain clasts of GTP indicating that the quartz monzodiorite intruded after the tonalite dyke. The orientation of the three intrusives is subparallel to the mineralised lodes.

A large, late stage regional fault (the Footwall Fault), occurs immediately to the east of Groundrush, dipping moderately to the west and striking obliquely to the mine sequence geology. It truncates the Groundrush dolerite and mineralisation towards the northern end of the deposit, but veers away from both towards the south.

Numerous other dolerite sills have been interpreted based on aeromagnetic imagery and scout RAB drilling. While the Groundrush dolerite remains, the principal unit hosting economic gold mineralisation, further promising gold discoveries have been delineated in the similar Ripcord Dolerite, 3 km to the south.

The Groundrush area has a low magnetic signature, thought to be the result of magnetite destruction, due to intense metasomatic alteration associated with mineralisation (Marjoribanks, 2011). The magnetic low terminates against the Footwall Fault to the north of the pit but can be traced south of the Groundrush dolerite 3-4 km in the Ripcord area (Marjoribanks, 2011).

Veining is focused within the central, quartz dolerite portion of the Groundrush dolerite and forms a network or mesh. Veining consists of quartz  $\pm$  carbonate  $\pm$  chlorite extension, shear, and shear extension veins. Gold mineralisation is found within both extension and shear veins although most mineralisation lies within the extensional veins. Mineralised veins comprise quartz, chlorite ( $\pm$  pyrite,  $\pm$  pyrrhotite  $\pm$  arsenopyrite,  $\pm$  gold) and quartz, carbonate ( $\pm$  chlorite,  $\pm$  pyrite,  $\pm$  arsenopyrite,  $\pm$  gold). Gold is typically found on vein margins or proximal to dolerite clasts within the veins. Visible gold is commonly observed in mineralised quartz chlorite veins and while fine gold is present, its generally associated with the more carbonate rich veins. Although very uncommon, gold mineralisation has been found within the sediments, but is restricted to narrow quartz veins.

Large zones of lensoidal extensional veins are commonly found within the main shear hosted mineralisation at Groundrush, making orientation measurements difficult in some areas due to irregular contacts with the host dolerite/quartz dolerite. As a result, most vein orientation measurements have been taken on narrower veins.

Veins are predominantly moderate to steeply west dipping, with minor shallowly west dipping veins. No apparent difference can be noted between the orientations of the mineralised and non-mineralised veins at Groundrush.

Mineralisation trends at 017 ° (north-northeast), dips at 80 ° to the west and plunges 015 ° towards the south. Mineralised lodes at Groundrush include the main shear hosted lodes, multiple flat lodes, the high grade vein, Groundrush deeps and the southwest lodes.

Most mineralisation at Groundrush is found within 1-30 m wide, steeply west dipping shear lodes and are mainly composed of lensoidal, extensional quartz veins. These shear lodes are stacked upon each another, separated by either intrusions or narrow shear/fault zones. Flat lodes are found predominantly in the north and central portions of the deposit. There is a small component of shallowly east dipping lodes. Both the west and east dipping flat lodes have been determined to undulate across the deposit, and pinch and swell displaying a boudinaged appearance. All flat lodes plunge moderately to the south, and in the south, the flat lodes have been either truncated by the Footwall Fault or have petered out.

The High-Grade Vein ('HGV') was identified near the end of mining operations by Newmont in 2004 and therefore was not fully explored. HGV mineralisation occurs as a high grade, quartz shear vein and displays a more northerly strike than the main mineralised zone. A zone of patchy, predominantly high grade (30 g/t Au) was outlined. Where intercepts were found to be only weakly or non-mineralised at the expected target zone, the lithology was found to be predominantly tonalite. This tonalite dyke runs up the same shear zone as the HGV, possibly 'blocking' or terminating mineralisation in parts where adequate host material was not available for mineral precipitation.



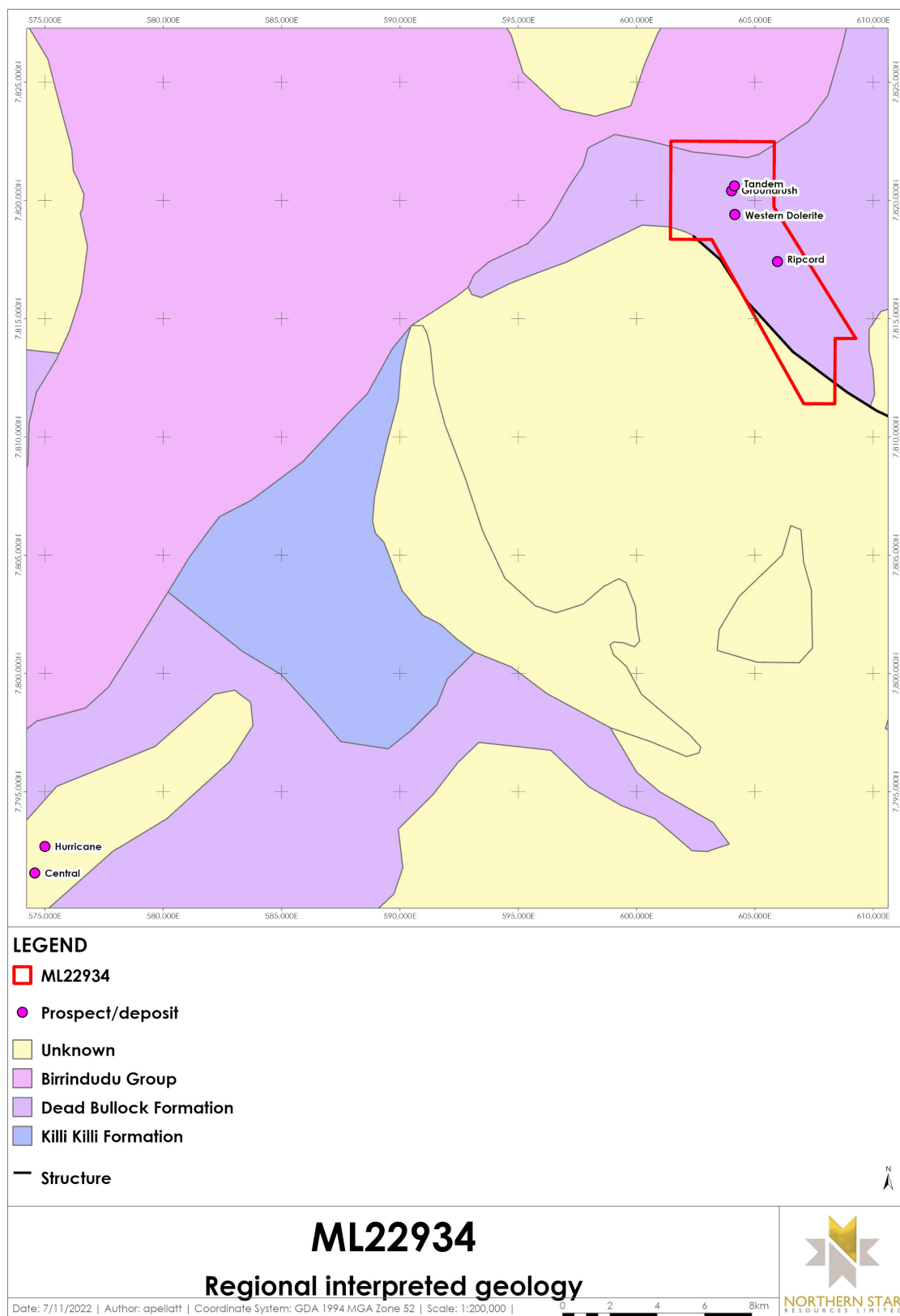


Figure 2. 1:2,500,000 interpreted geology.

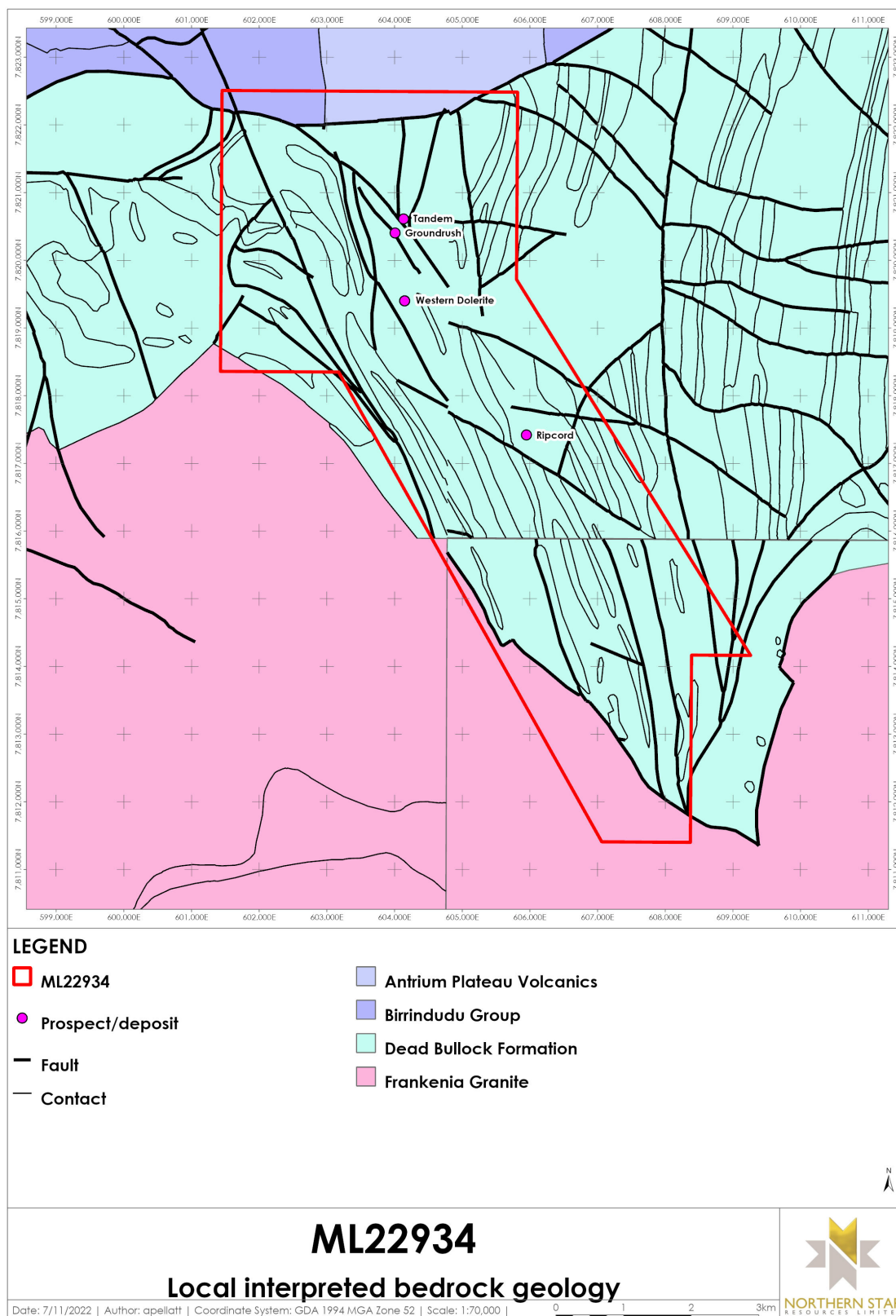


Figure 3. Local geology with major structures.

### 5 EXPLORATION/MINING HISTORY

Previous exploration completed by Northern Star within ML22934 has included:

- geological mapping
- sampling
- aeromagnetic/radiometric and ground gravity surveys
- spectral studies
- aircore drilling
- Reverse Circulation drilling
- resource modeling
- metallurgical testing
- stratigraphy and geochemistry project
- targeting and drill program design
- grab sampling
- geological interpretation
- aerial drone survey
- RC pre-collar/diamond tail ('RCD') drilling
- Diamond drilling ('DD')
- Reassaying of historical drill hole

These activities have aimed to better understand the geological setting of the Groundrush deposit, and to identify additional satellite mineralisation. Further details can be found in Northern Star company reports (Mukherji, 2016; Annison, 2017; Turnbull, 2018; 2019 and Pellatt, 2020; 2021, 2022).

### 6 CURRENT EXPLORATION

Exploration during the tenure period is shown in Figure 4 and comprised:

- review of assay results from previous period
- Reverse Circulation ('RC') drilling
- RC pre-collar and diamond tails ('RCD') drilling
- Diamond drilling ('DD')
- reassaying of 2022 drilled holes



Figure 4. ML22934 exploration index from 14/09/2022 to 13/09/2023.



### 6.1 Central Tanami Mineral Resource updates

A Mineral Resource Estimate update was completed by MoJoe Mining, Perth, for the Groundrush and Ripcord gold deposits. These updates are part of an ongoing transition of the Mineral Resource estimates for the Central Tanami Project to the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the '2012 JORC Code'), in readiness for inclusion in a scoping level mining study that is scheduled to be completed in the coming months. A Tanami Gold announcement titled *Mineral Resource Updates Completed for Five Gold Deposits on The Central Tanami Project Joint Venture Yields 1.5m Ounces* was released on 24 November 2022 [2022 - Tanami Gold NL](#)

The updated Mineral Resource estimate for Groundrush, returned a total of 7,700,000 t grading 4.3 g/t Au for 1,100,000 oz as of 1 November 2022, representing a 31 % increase in grade and a 28 % decrease in tonnes and 5 % decrease in ounces, with the resource model better reflecting the mineralised system through the removal of subgrade material.

The updated Mineral Resource estimate for Ripcord, returned a total of 750,000 t grading 2.1 g/t Au for 51,000 oz as of 1 November 2022, representing a 16 % decrease in grade and a 32 % decrease in tonnes and 43 % decrease in ounces, with the resource model better reflecting the mineralised system through the removal of subgrade material.

The FY2023 JORC Mineral Resource report for Groundrush and Ripcord was based on an updated resource estimations and economic parameters. However, the overall impact is not considered significant, as the total reported ounces within 10 % of previously reported numbers and therefore supporting data is not supplied.

### 6.2 Central Tanami Scoping Study

A Scoping Study was undertaken by mining consultants MoJoe Mining on behalf of the CTPJV. It is based on the development of an underground mining operation at Groundrush, an open pit operation at Ripcord and an open pit and underground operation at Jims for processing through a new carbon-in-leach ('CIL') facility located at the site of the current Central Tanami Mill.

The Scoping Study was underpinned by the Groundrush, Ripcord and Jims Mineral Resource estimates as of 1 November 2022, which were reported in accordance with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the 'JORC Code') on the 24 November 2022 [Latest Announcements - Tanami Gold NL](#), *Mineral Resource Updates Completed for Five Gold Deposits on the Central Tanami Project Joint Venture Yields 1.5m Ounces*.

The Scoping Study was completed to a +/-40 % level of accuracy using the parameters and assumptions as outlined in the Material Assumptions and the Scoping Study Summary. The scoping study was announced by Tanami Gold on 4 April 2023, [Latest Announcements - Tanami Gold NL](#) and a retraction was released on 11 April 2023 as the announcement was not consistent with ASX Listing Rule 5.16.

### 6.3 Review of 2022 RC Western Dolerite (resource infill) assay results

Pending multielement assay results from resource infill RC drilling at Western Dolerite (WDRC00001-WDRC00014), reported in the last reporting period were returned. Samples were subjected to four acid digest analyses with an ICP-AES or OES finish (As, Ba, Be, Bi, Cd, Ce, Co, Cr, Cs, Cu, Fe, La, Li, Mo, Ni, Pb, Rb, Re, Sb, Sc, Se, S, Sn, Sr, Ta, Te, Th, Ti, Zn, Zr, P, V, W) on 14 EOH samples to coincide with EOH lithological mapping.

Anomalous grades were reported for the pathfinder elements and are summarised in the Table 2. Further geochemical interpretation will commence on completion of this year's drilling activities.

## GROUND RUSH PROJECT – ML22934 ANNUAL REPORT

**Table 2. EOH multielement results from WDRC00001-WDRC00014.**

Hole ID	Sample ID	From	To	Ag_ppm	As_ppm	Bi_ppm	Cu_ppm	Mo_ppm	Ni_ppm	Pb_ppm	Sb_ppm	Sn_ppm	W_ppm	Zn_ppm
WDRC00001	NGRS033199	113	114	0.07	11.4	0.19	50.5	0.79	55.1	20.5	0.14	2.7	1.2	150
WDRC00002	NGRS033201	71	72	0.21	5.8	0.05	215	0.9	55.4	6.9	0.24	0.9	1.2	120
WDRC00003	NGRS033198	149	150	0.56	18.8	0.74	248	1.96	55.4	84.1	0.15	2	1.1	263
WDRC00004	NGRS033211	239	240	0.08	1.1	0.12	131	0.74	2.8	5	0.22	1.3	4.1	134
WDRC00005	NGRS033212	185	186	0.09	3.1	0.09	22.1	0.86	18.4	72.8	0.12	1.2	1	93
WDRC00006	NGRS033210	239	240	0.03	0.2	0.21	49.9	0.48	39.6	18	0.07	2.8	0.9	81
WDRC00007	NGRS033209	179	180	0.1	6	0.1	165	2.43	58.7	26.4	0.11	1.3	1.6	165
WDRC00008	NGRS033208	149	150	0.01	8.7	0.07	17.9	0.62	35.9	14.6	0.08	1.9	1.1	58
WDRC00009	NGRS033204	179	180	0.05	1.5	0.25	8.5	1.1	40.8	32.9	0.12	1.4	1.4	106
WDRC00010	NGRS033203	129	130	0.2	4.1	0.02	163	1.72	50.5	14.9	0.37	0.9	439	140
WDRC00011	NGRS033202	101	102	0.08	8.2	0.22	51.7	1.08	45.1	24.8	0.14	2.3	1.5	174
WDRC00012	NGRS033207	179	180	0.32	3.4	0.65	35.5	1.08	17.5	278	0.15	1.4	1.5	310
WDRC00013	NGRS033206	131	132	0.06	1.8	0.18	45.1	1.05	36.8	21.7	0.25	2.2	16.7	113
WDRC00014	NGRS033205	189	190	0.23	1.5	0.05	180	0.82	46.1	20.4	0.32	1.1	0.8	175

### 6.4 Drilling

Drilling was contracted to Topdrill Pty Ltd, Kalgoorlie, and Bullion Drilling Co Pty Ltd, Kalgoorlie, utilising:

- an 8 x 8 truck mounted SANDVIK DE880/840 drill rig with onboard compressor and hands free rod handler for PQ, HQ, and NQ diamond drilling
- an 8 x 8 truck mounted T685WS drill rig with onboard cyclone/splitters and hands free rod handler for RC precollaring and drilling

RC chip samples were run through a cyclone and a rotary splitter and collected at the drill rig. Two split samples and a bulk sample were collected for each metre drilled. One sample per metre was dispatched, an additional duplicate sample was inserted at a rate of 1 in 20 samples. Additionally, certified reference material ('CRM') and blanks were inserted at a rate of 1 in 20 samples. All duplicates, CRM's and blanks were used to complete QAQC analysis on returned assay result batches.

All samples were sent to ALS, Perth for gold analysis by 50 g fire assay with an ICP-AES or OES finish. Additionally, for some holes, an end of hole ('EOH') sample was analysed for a 48 element suite, with an ICP-AES or OES finish.

Samples from RSD diamond drilling were collected as half core considering lithological, mineralisation and alteration boundaries, ranging in interval length from 0.3 m to 1.2 m. CRM and blanks were inserted at a rate of 1 in 20 samples, additional blank flushes were inserted if visible gold was noted in a sample as a good hygiene practice to clean the crushing and pulverising circuits. CRMs and blanks were used to complete QAQC analysis on returned assay result batches. All samples were sent to ALS, Perth for gold analysis using ALS 50 g fire assay with an ICP-AES or OES finish.

The NT grant diamond samples were collected as quarter core with a minimum sample size of 0.60 cm and a maximum sample size of 2.40 m. One quarter was sent to ALS Perth, for 50 g fire assay, while the other quarter core was retained at CTP and half core will be sent to the Alice Springs core library.

Down hole surveys were captured using an axis gyro tool (DD) and a reflex gyro tool (RC), at 30 m intervals during drilling. A continuous in and out survey was run at either 5 m or 10 m increments at the end of hole.

## GROUNDROUSH PROJECT – ML22934 ANNUAL REPORT

All collar locations have been picked up with a handheld GPS (Garmin +/- 3 m accuracy) and will be surveyed using an RTKDGPS tool at a later date.

Table 3 shows a drilling summary of completed holes. Some assay results are still pending and will be reported in the next reporting period.

**Table 3. Drill summary of completed drilling.**

Hole type	Hole number range	Number of holes	Total metres
RC - Groundrush	GRRCD0005 – GRRCD0006	2	374
RC - Ripcord	RCRC0011 – RCRC0013	3	450
	RCRC0016 – RCRC0070	55	7,068
	RCRC0094 – RCRC0095	2	220
	RCRC0099 – RCRC0109	11	1,370
	RCRC0111 – RCRC0112	2	207
	RCRC0116 – RCRC0117	2	200
	RCRC0126 – RCRC0133	8	666
RC – Groundrush North	GRRCD0062 – GRRCD0067	6	1,440
RC- Tandem	TARC0001 – TARC00012	12	2,160
RC – Groundrush-Ripcord Link	GRRCL003 – GRRCL004	2	325
<b>RC TOTAL</b>		<b>105</b>	<b>14,480</b>
DD Tails (Groundrush)	GRRCD019A, 11A, 12	4	544.5
	GRRCD0003 – GRRCD0006	4	1,300.7
	GRRCD0008 – GRRCD0010	3	1,218.0
	GRRCD0017	1	297.5
DD Tails (Groundrush-Ripcord Link)	GRRCL003 – GRRCL004	2	907.8
DD Only (Groundrush-Ripcord Link)	GRRCL0002	1	882.0
<b>DD TOTAL</b>		<b>14</b>	<b>5,150.5</b>
<b>TOTAL DRILLING</b>		<b>119</b>	<b>19,630.5</b>

### 6.4.1 Ripcord

The Ripcord deposit consists of a mineralised dolerite sill within fine to coarse grained turbiditic sedimentary rocks of the Killi Killi Formation. Previous RC and diamond drilling identified broad supergene gold mineralisation and a narrow primary lode gold feeder zone. The ore shapes have a shallow westerly dip of approximately 10 ° to 40 °, and a northerly plunge becoming more steeply west dipping to the north. Alteration minerals include silica, haematite, sericite, and sulphides including pyrite, arsenopyrite, pyrrhotite and chalcopyrite.

A total of 83 holes were completed for 10,181 m on an infill spacing of 30 m x 50 m (Figure 5). RCRC0011-RCRC0013 were completed by Durock Drilling (Fig 4), in October 2022 while RCRC0016-RCRC0070; RCRC0094-RCRC0095; RCRC0099-RCRC0109; RCRC00111-RCRC0112, RCRC0116-RCRC0117; RCRC126-RCRC0133 were completed between May 2023 and August 2023 by Bullion (Fig 3). All holes were drilled at 60 ° towards an azimuth of 50 °.



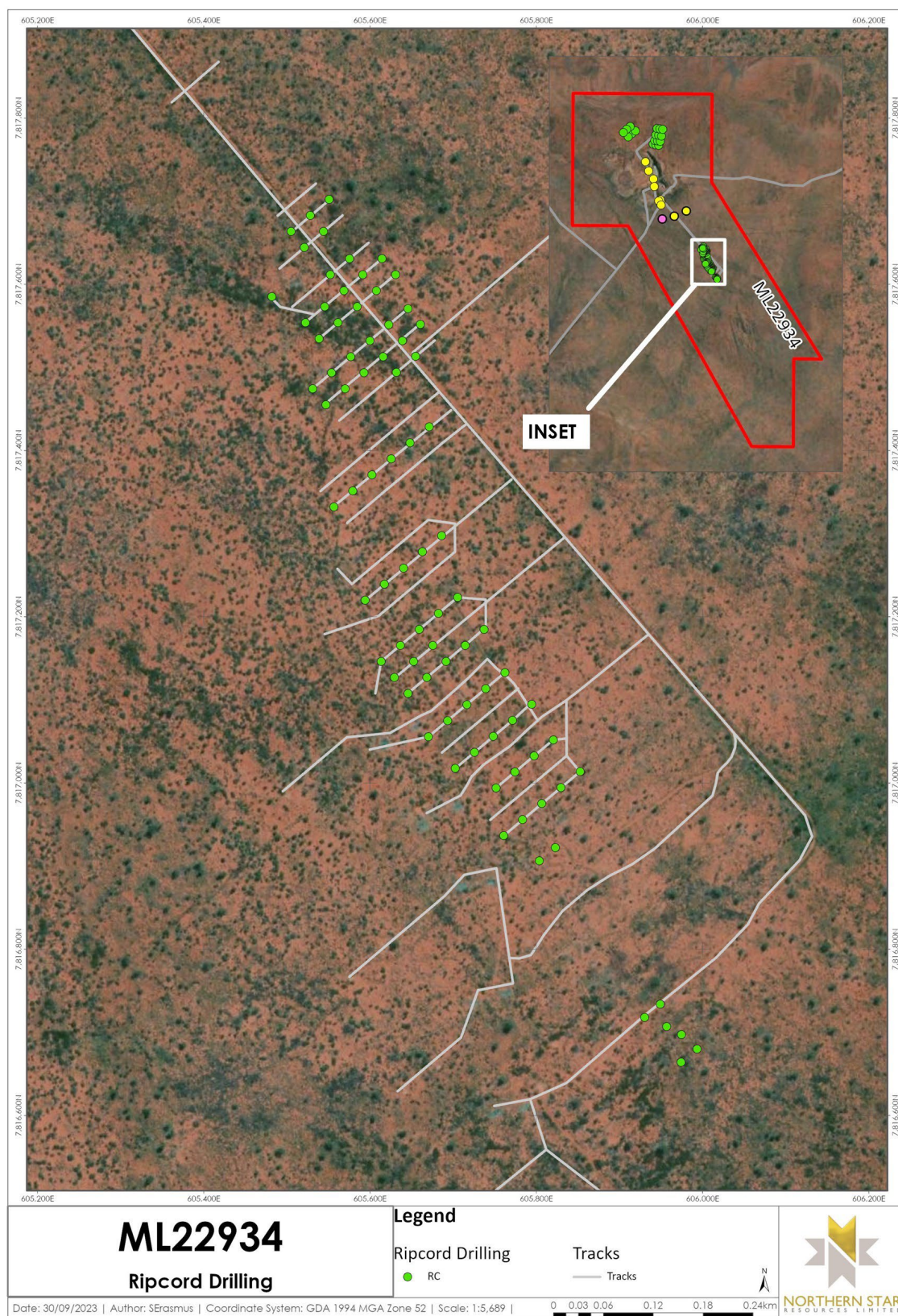


Figure 5. Ripcord drill hole plan.



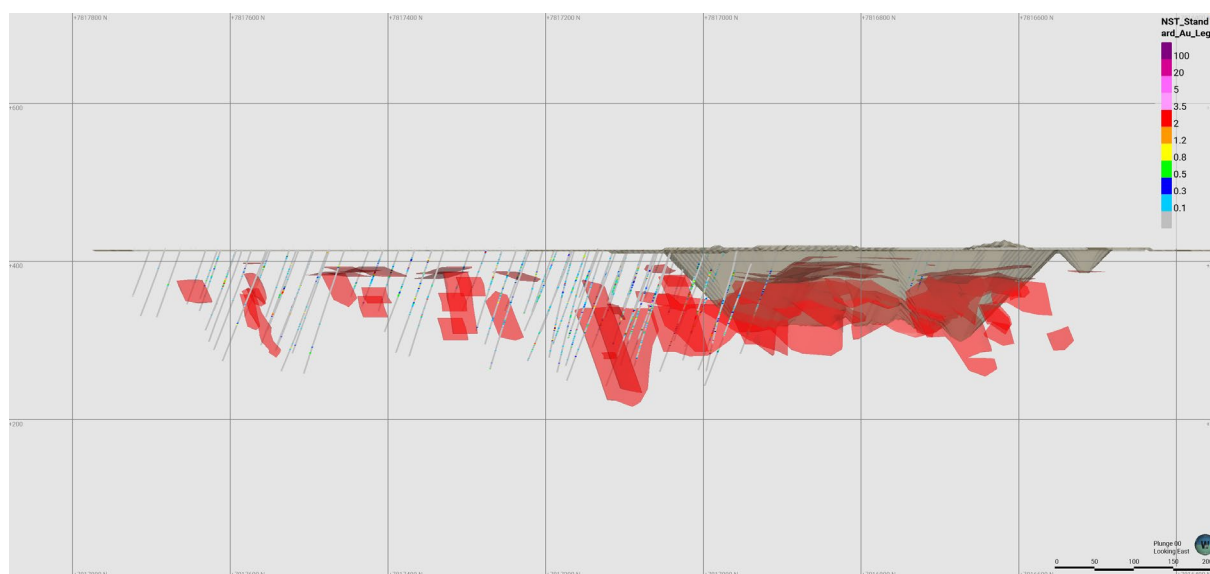
Drilling intersected the expected regolith profile comprising a shallow transported horizon, mottled zone, upper saprolite, lower saprolite and saprock, in addition to the fresh rock sedimentary-mafic sequence. Sediments varied from coarse grained units to interbedded fine to medium sands and siltstones. The mafic unit is a medium to fine grained dolerite with a quartz rich component, like that seen at the Groundrush deposit.

Alteration within the sedimentary package consists of a hematite +/- K-feldspar assemblage, while the dolerite was typically a chlorite+carbonate+/-sericite assemblage. Veining was common throughout all holes and sulphidation includes pyrite+pyrrhotite+chalcopryrite+arsenopyrite. Magnetic susceptibility measurements were recorded every one metre sample.

Supergene mineralisation is predominantly hosted within the lower saprolite horizon (sediments and dolerite protolith), with minor intercepts hosted in the upper saprolite. Fresh rock mineralisation occurred within the sediments and dolerite, associated with sulphide bearing quartz veins.

The current mineralisation model at Ripcord comprises several discrete, discontinuous, shallow to steep lodes, extending from near surface through to fresh rock. The program has provided further definition around grade distribution, and a new mineralisation model will be completed at the end of the drilling season.

Table 4 shows significant intercepts. Figures 6 shows a mineralisation model, Figure 7 significant intercepts and Figures 8-9, significant intercepts with optimised pit shells.



**Figure 6. Ripcord mineralisation model.**

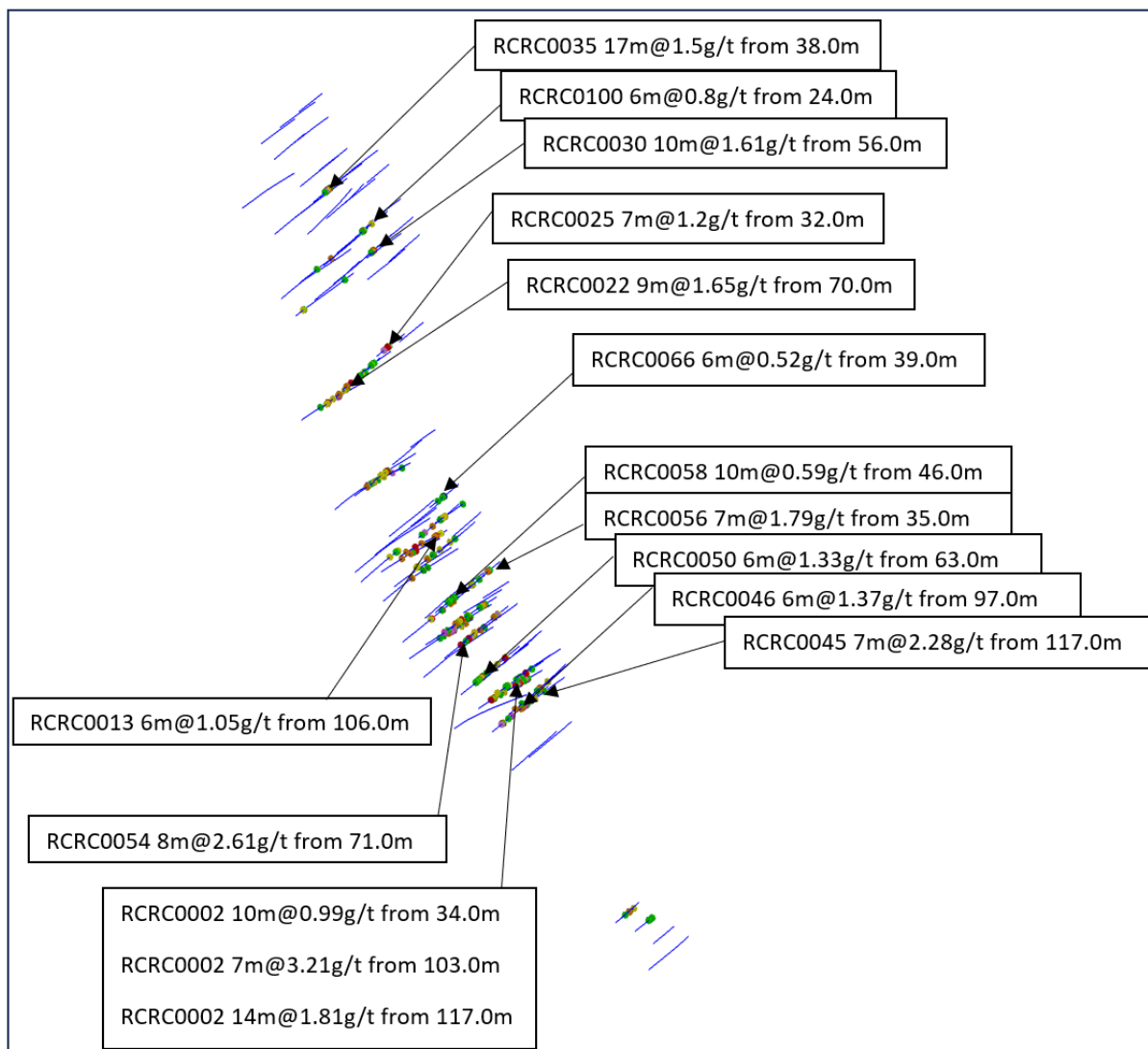


Figure 7. Ripcord significant intercepts plan view.

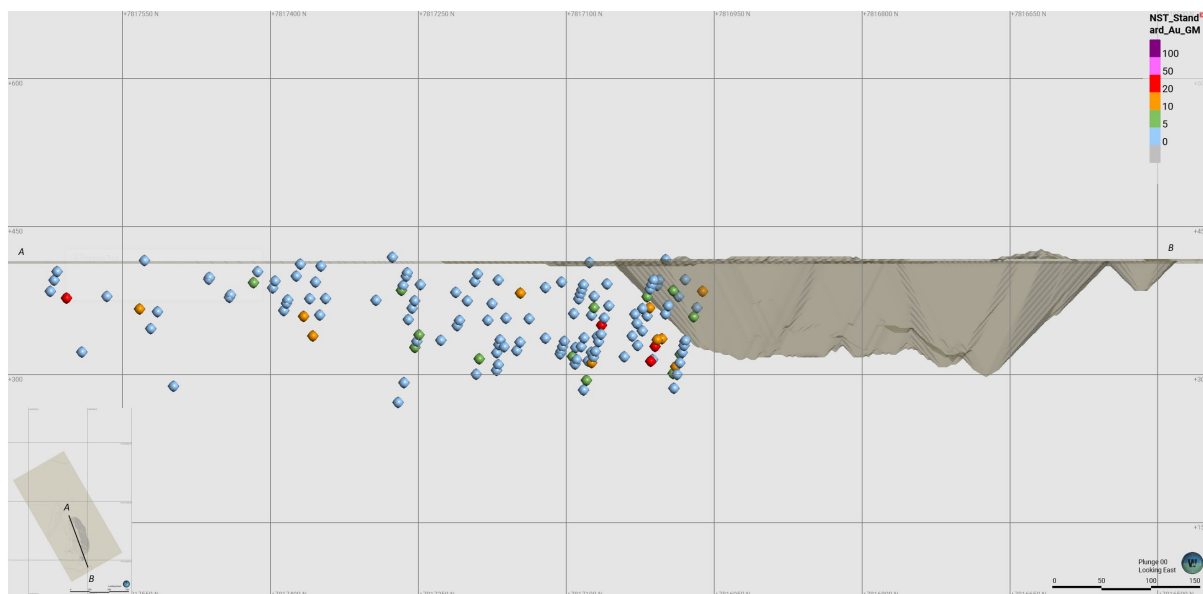


Figure 8. Figure 8. Ripcord RC gram-metre intercepts, with \$2,500 optimised pit shell.

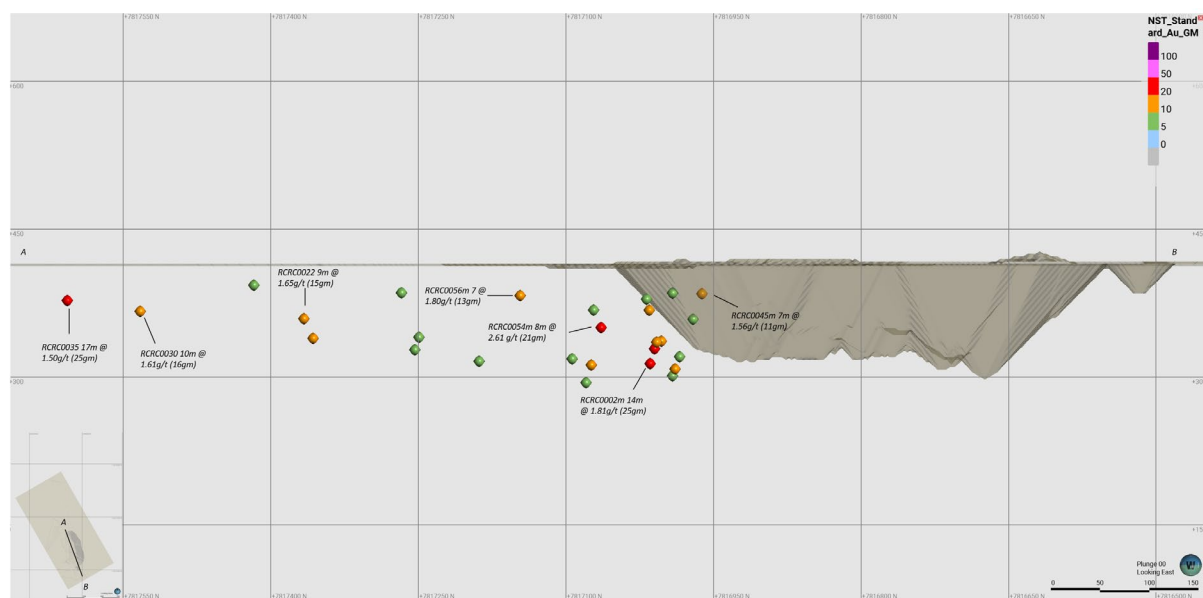


Figure 9. Ripcord RC significant intercepts above 5 gram-metres with Ripcord \$2,500 optimised pit shell.

## GROUNDROUSH PROJECT – ML22934 ANNUAL REPORT

**Table 4. Ripcord RC drilling, significant results.**

Hole	Intercept	Comment
RCRC0002	10 m @ 0.99 g/t from 34 m	Lower saprolite (dolerite)
	5 m @ 2.09 g/t from 96 m	Fresh dolerite with associated quartz veining and disseminated pyrite
	7 m @ 3.21 g/t from 103 m	Fresh dolerite with associated quartz veining and disseminated pyrite
	14 m @ 1.81 g/t from 117 m	Fresh dolerite with associated quartz veining and disseminated pyrite
RCRC0003	3 m @ 0.59 g/t from 29 m	Lower saprolite (dolerite)
	4 m @ 2.79 g/t from 55 m	Lower saprolite (dolerite)
	2 m @ 1.93 g/t from 83 m	Dolerite with associated quartz veining and pyrite
	2 m @ 0.67 g/t from 100 m	Dolerite with associated quartz veining and pyrite
RCRC0006	4 m @ 3.79 g/t from 120 m	Sediments with associated quartz veining and pyrite
	2 m @ 3.81 g/t from 142 m	Sediments with associated quartz veining and pyrite
RCRC0007	2 m @ 0.78 g/t from 100 m	Sediments with associated quartz veining and pyrite
	4 m @ 0.76 g/t from 115 m	Sediments with associated quartz veining
RCRC0008	3 m @ 1.47 g/t from 25 m	Lower saprolite (sediments)
	4 m @ 1.19 g/t from 41 m	Lower saprolite (sediments) with associated quartz veining
	3 m @ 0.66 g/t from 59 m	Lower saprock (sediments) with associated quartz veining
	4 m @ 0.99 g/t from 98 m	Quartz dolerite with associated quartz veining and pyrite
RCRC0011	2 m @ 0.62 g/t from 116 m	Sediments with associated quartz veining with associated chalcopyrite
RCRC0012	2 m @ 0.59 g/t from 93 m	Interbedded sediments
RCRC0013	6 m @ 1.05 g/t from 106 m	Fresh dolerite with associated pyrite
	2 m @ 1.35 g/t from 125 m	Fresh dolerite with associated chalcopyrite
RCRC0014	4 m @ 0.82 g/t from 66 m	Fresh dolerite with associated quartz veining
RCRC0015	4 m @ 0.90 g/t from 31 m	Upper saprolite clays (mafic protolith)
RCRC0016	4 m @ 1.28 g/t from 110 m	Sediments with associated quartz veining and pyrite
RCRC0017	2 m @ 1.01g/t from 36 m	Lower saprolite (sediments)
RCRC0018	4 m @ 1.33 g/t from 40 m	Upper saprolite (sediments)
RCRC0021	4 m @ 3.27 g/t from 97 m	Quartz dolerite with associated quartz veining and pyrite
RCRC0022	4 m @ 1.24 g/t from 14 m	Interpreted laterite unit
	2 m @ 1.17 g/t from 53 m	Lower saprolite unit
	9 m @ 1.65 g/t from 70 m	Fresh dolerite with associated quartz veining and pyrite
RCRC0023	4 m @ 0.6 g/t from 65 m	Fresh dolerite quartz veining and pyrite
RCRC0024	4 m @ 0.65 g/t from 29 m	Lower saprolite (dolerite)
	2 m @ 0.64 g/t from 38 m	Lower saprolite (dolerite)
RCRC0025	7 m @ 1.2 g/t from 32 m	Lower saprolite (dolerite)
RCRC0027	2 m @ 0.77 g/t from 149 m	Quartz dolerite with associated quartz veining and pyrite
RCRC0030	10 m @ 1.61 g/t from 56 m	Fresh dolerite with associated quartz veining and disseminated pyrite
RCRC0035	17 m @ 1.5 g/t from 38 m	Mineralisation hosted near upper saprolite-lower saprolite (dolerite)
RCRC0044	12 m @ 0.9 g/t from 84 m	Fresh dolerite with associated quartz veining and pyrite
RCRC0045	7 m @ 1.56 g/t from 29 m	Upper saprolite-lower saprolite (dolerite)
	2 m @ 3.59 g/t from 61m	Near upper saprolite-lower saprolite (dolerite)
	2 m @ 1.7 g/t from 90 m	Fresh dolerite with associated quartz veining and pyrite
	6m @ 1.16 g/t from 103 m	Fresh dolerite with associated quartz veining and chalcopyrite

## GROUND RUSH PROJECT – ML22934 ANNUAL REPORT

	7 m @ 2.28 g/t from 117 m	Fresh dolerite with associated quartz veining and pyrite
RCRC0046	4 m @ 0.88 g/t from 87 m	Lower saprolite (sediments) with associated quartz veining
	6 m @ 1.37 g/t from 97 m	Massive quartz vein in coarse dolerite with silica and hematite alteration
	2 m @ 0.76 g/t from 150 m	Quartz dolerite with associated pyrite
RCRC0050	3 m @ 0.68 g/t from 45 m	Lower saprolite (dolerite)
	2 m @ 0.88 g/t from 51 m	Lower saprolite (dolerite)
	2 m @ 0.91 g/t from 56 m	Lower saprolite (dolerite)
	6 m @ 1.33 g/t from 63 m	Mineralisation near saprock dolerite-fresh rock contact
	2 m @ 0.63 g/t from 79 m	Fresh dolerite
	4 m @ 0.86 g/t from 135 m	Weak chlorite+sericite altered quartz dolerite with associated pyrite
RCRC0053	2 m @ 1.97 g/t from 40 m	Lower saprolite (sediments)
	4 m @ 1.04 g/t from 99 m	Quartz vein with associated pyrite
	3 m @ 2.18 g/t from 110 m	Quartz dolerite with associated pyrite+pyrrhotite
RCRC0054	2 m @ 1.51 g/t from 51 m	Saprolite (sediments)
	8 m @ 2.61 g/t from 71 m	Mineralisation hosted near saprock dolerite-fresh rock contact
	3 m @ 0.61 g/t from 87 m	Sediments with associated quartz veining
	2 m @ 1.77 g/t from 117 m	Dolerite with associated quartz veining and pyrite
RCRC0056	7 m @ 1.79 g/t from 35 m	Mineralisation hosted in lower saprolite (dolerite)
RCRC0057	2 m @ 0.98 g/t from 70 m	Quartz dolerite with associated quartz carbonate veining and pyrite
RCRC0058	4 m @ 0.52 g/t from 39 m	Upper saprolite (mafic protolith)
	10 m @ 0.59g/t from 46 m	Highly weathered and foliated dolerite
	5 m @ 0.6 g/t from 105 m	Quartz dolerite with associated quartz veining and pyrite
RCRC0060	4 m @ 1.65 g/t from 87 m	Dolerite with associated quartz veining
	3 m @ 2 g/t from 121 m	Quartz dolerite with associated quartz veining and pyrite
RCRC0063	4 m @ 1.03 g/t from 8 m	Interpreted mottled zone-upper saprolite horizon
	3 m @ 1.12 g/t from 41 m	Lower saprolite (sedimentary protolith)
	2 m @ 0.7 g/t from 57 m	Saprock (sedimentary protolith)
RCRC0065	2 m @ 1.15g/t from 84 m	Sediments with associated quartz veining and pyrite
	2 m @ 1.14 g/t from 113 m	Quartz dolerite with associated quartz veining and pyrite
RCRC0066	6 m @ 0.52 g/t from 39 m	Highly weathered dolerite with stringer quartz veins
RCRC0100	6 m @ 0.8 g/t from 24 m	Highly weathered dolerite with moderate amount of stringer quartz veins
RCRC0103	2 m @ 0.78 g/t from 52 m	Lower saprolite (dolerite)
RCRC0129	3 m @ 1.86 g/t from 41 m	Mottled zone-upper saprolite contact
RCRC0130	3m @ 1.43 g/t from 41 m	Lower saprolite (dolerite)
	2 m @ 0.57 g/t from 51 m	Lower saprolite (dolerite)

### 6.4.2 Tandem

The Tandem RC program was drilled to assess the potential of a northern outlier and possible mineralised extension of the Groundrush ore body to the north of the pit. A total of 12 holes (TARC0001-TARC0012), were drilled for 2,160 m (Figure 10). All holes were drilled with a dip of 60 °, towards an azimuth of 100 °.

Drilling intercepted a shallow transported horizon sitting unconformably above an oxide clay zone (mottled and upper saprolite), transitional zone (lower saprolite and saprock), and a fresh rock sedimentary-mafic sequence comprising coarse to interbedded sandstones and dolerite. Hematite



alteration dominated the sedimentary sequence, with a chlorite+carbonate assemblage. Table 5 and Figure 10 shows significant results.

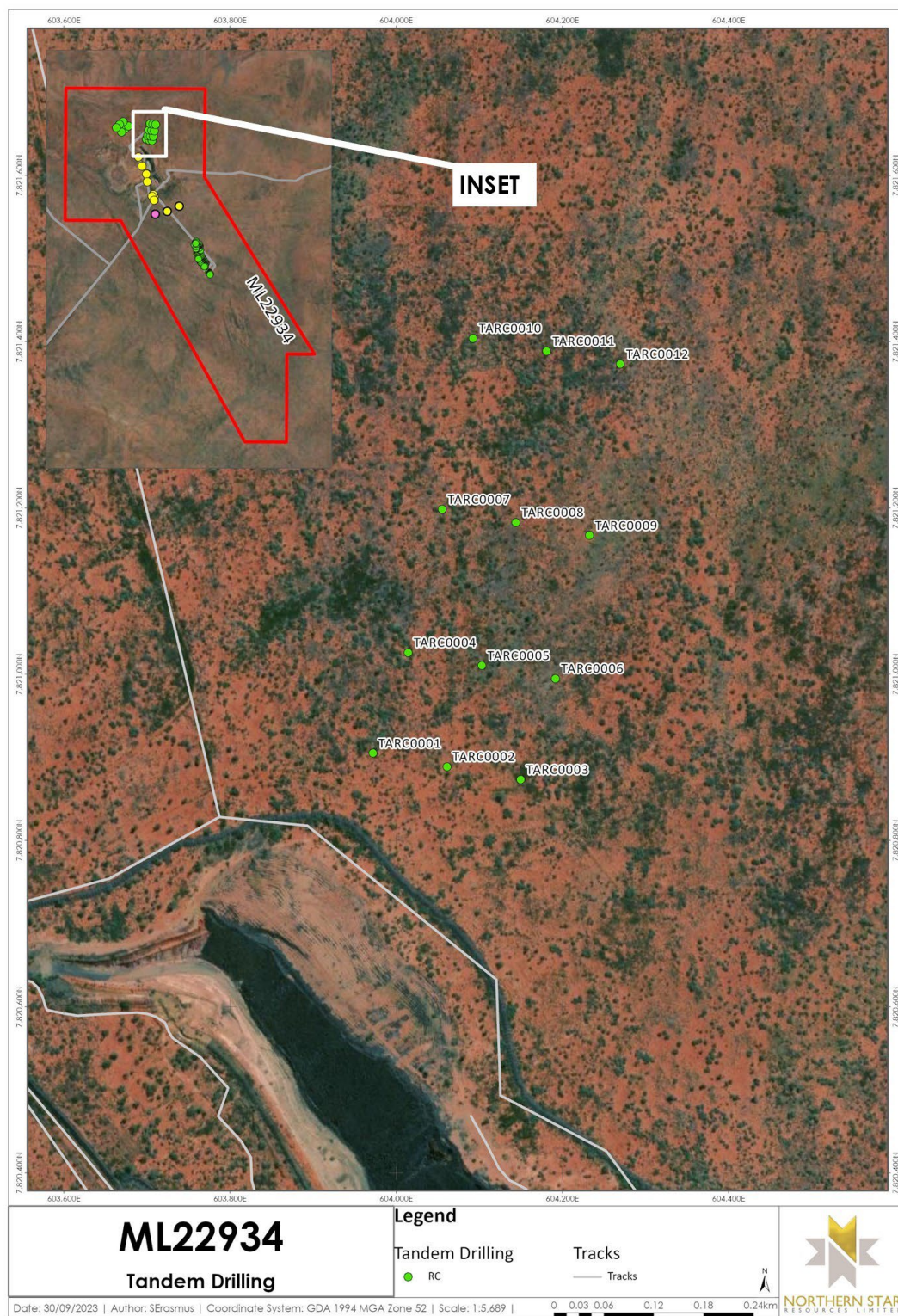


Figure 10. Tandem RC drill hole plan.

Table 5. Tandem RC drilling, significant results.

Hole	Intercept	Comment
TARC0001	2 m @ 1.80 g/t from 151 m	Fresh dolerite
TARC0005	3 m @ 2.34 g/t from 38 m	Sediment
TARC0008	3 m @ 0.93 g/t from 34 m	Near sediment-dolerite contact

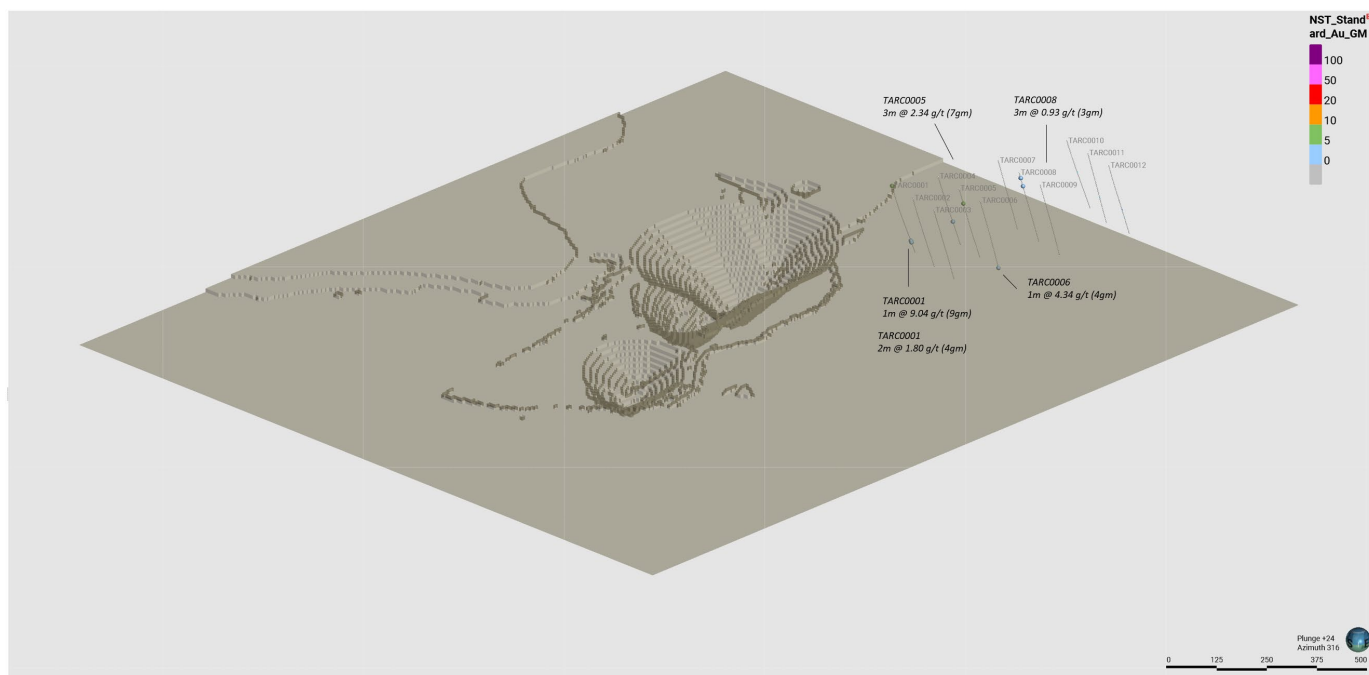


Figure 11. Tandem RC drilling significant results adjacent to Groundrush pit.

Considering results above and including 0.5 g/t Au, there appears to be a trend between mineralised intercepts that have a dip and dip direction of  $80^{\circ}/280^{\circ}$  (Figure 12). When previous drilling results are added and filtered to only include results above and including 0.5 g/t Au, some of those results fall on that same plane and seems to indicate a potential plunge back toward Groundrush ( $32^{\circ}$  towards  $210^{\circ}$ ). Any follow up drilling should target this trend and plunge.

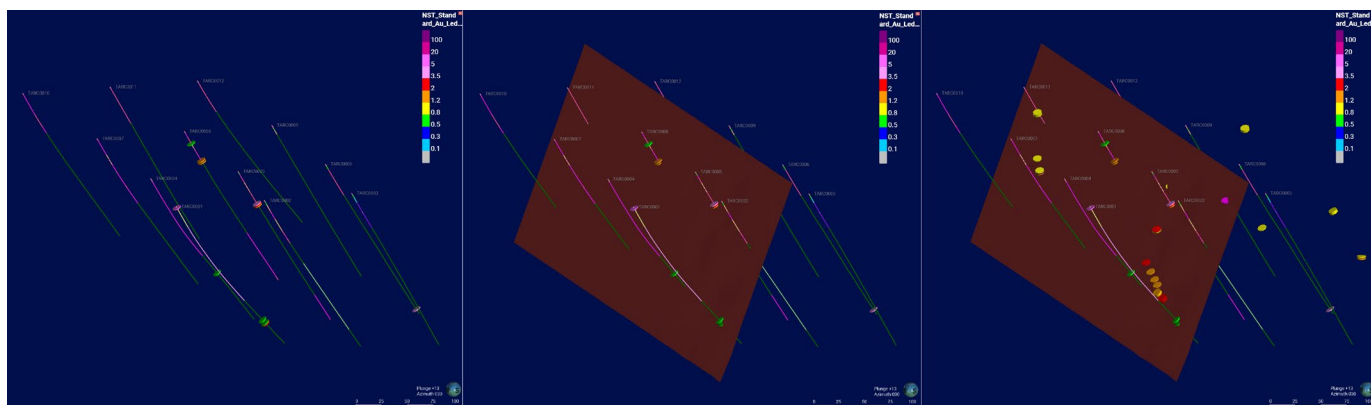


Figure 12. Interpreted mineralised plunge direction at Tandem.

### **6.4.3 Groundrush North**

The Groundrush North RC program focused on an underexplored strike extension of the Groundrush shear zone near interpreted dilational zones. A total of six holes (GRR0062-GRR0067), were drilled for 1,440 m on a spacing of 145 m x 220 m with the aim of testing the possibility of a northern strike extension of the Groundrush shear zone near interpreted dilational zones. All holes were drilled at -55 ° towards an azimuth of 60 °. A drill hole plan is shown in Figure 13.

Drilling intersected a shallow regolith profile and fresh units of coarse sandstone, with minor interbedded siltstones. Dolerites have previously been mapped in the area, however, were not recorded during logging, therefore requiring further validation work. Quartz-carbonate veining was prevalent and often associated with a weak-moderate hematite alteration signature, however the presence of sulphides was minimal, with only pyrite observed.



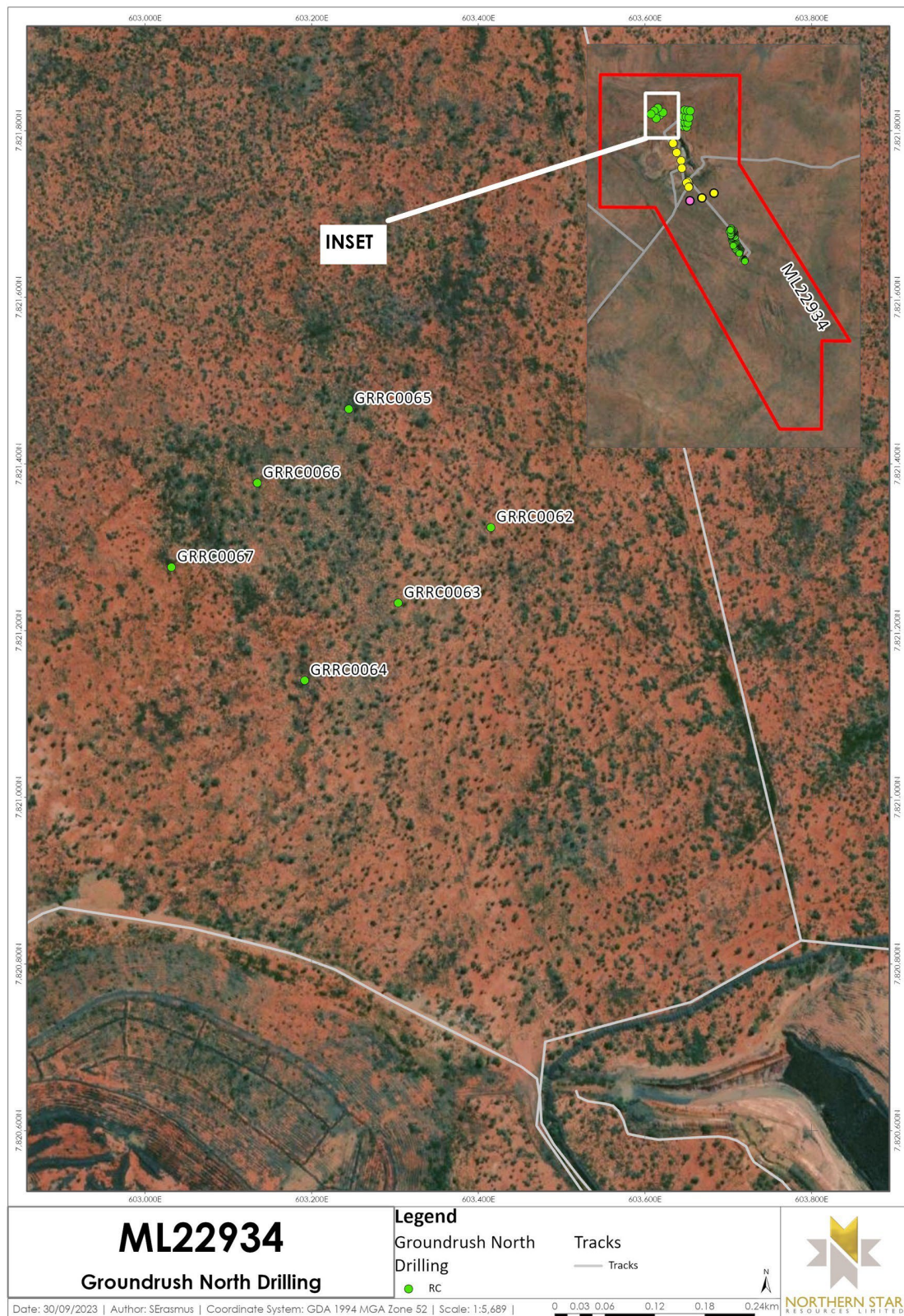


Figure 13. Groundrush North RC drill hole plan.

## 6.4.4 Groundrush-Ripcord Link RC and diamond drilling

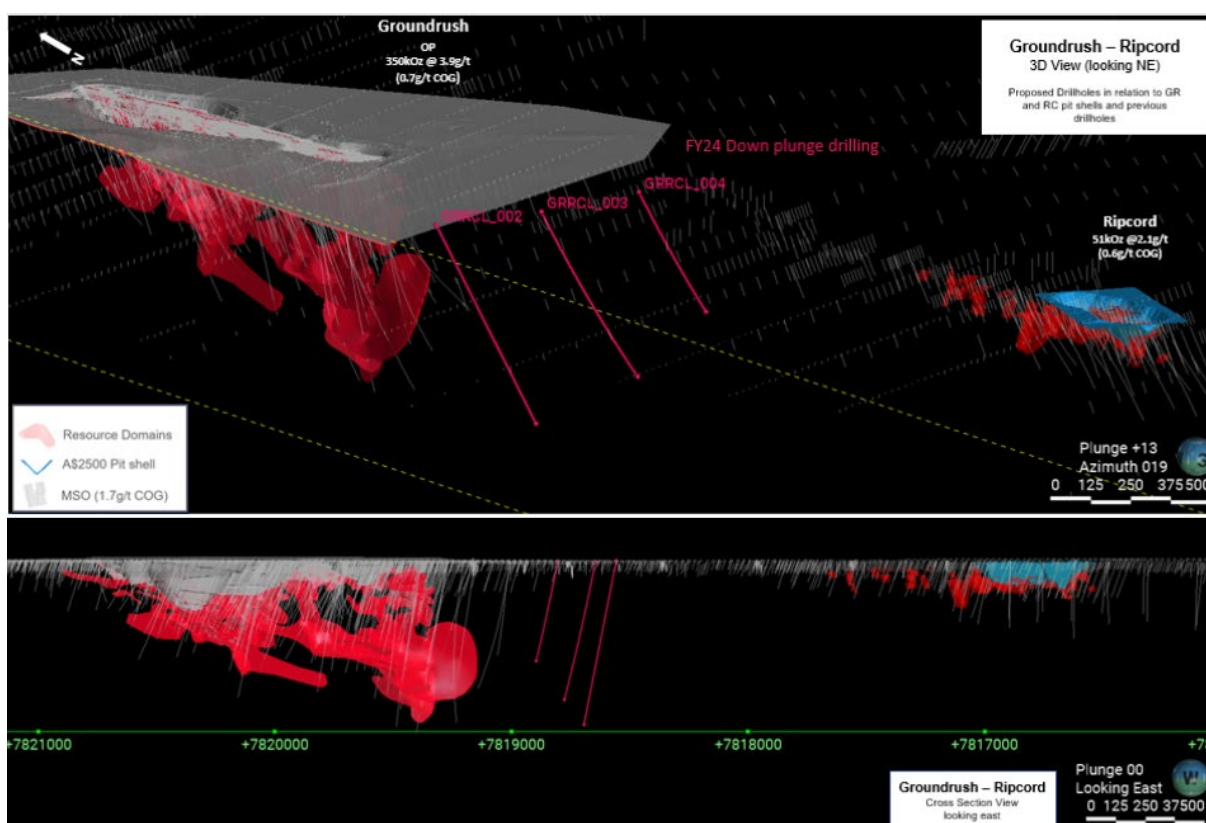
An application was submitted on 28 April 2023 for funding from the NT Government, as part of the Geophysics and Drilling Collaborations Program Round 16, 2023-2024. The application was for brownfields diamond drilling, but more specifically, for 2000 m of diamond drilling between Groundrush and Ripcord to:

- test a potential faulted offset of the Groundrush shoot position
- test a down plunge target 600 m away from the existing resource
- check stratigraphy to assist interpretations and rock models
- test if mineralisation from gold bearing dolerite extends south and links up with Ripcord

Three holes (GRRCL002-GRRCL004) were designed with two incorporating RC precollars to make it more affordable. The holes were spaced to allow for the drawing up of a section across the stratigraphy, with the intention of identifying and changes and offsets due to the footwall fault. Drilling details are shown in Table 6, 3D and a cross sections are shown in Figure 14 and Figure 15 and a drill hole plan in Figure 16.

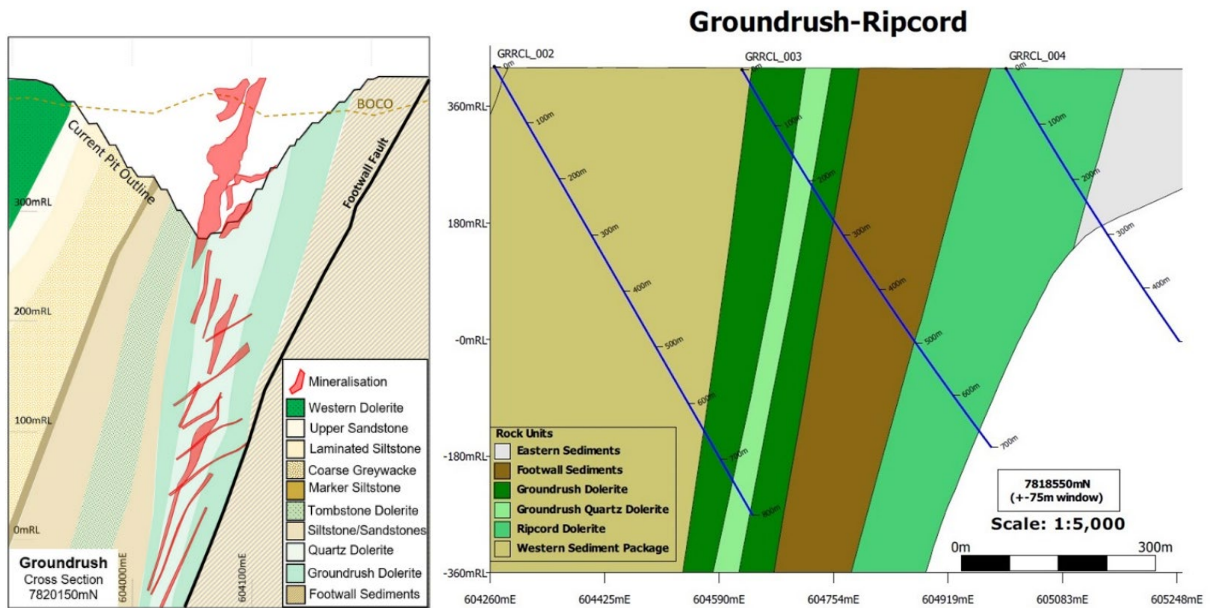
**Table 6. Drilling details for Groundrush-Ripcord Link drilling.**

Proposed Hole ID	Northing	Easting	Datum	Zone	Dip	Azimuth	EOH	Target	Pre-collar (From)	Pre-collar (To)	Diamond (From)	Diamond (To)	Core Diameter
GRRCL004	7818802	605013	GDA	52	-60	070	600	400	0	200	200	500	HQ-NQ
GRRCL003	7818638	604635	GDA	52	-60	070	700	500	0	300	300	700	HQ-NQ
GRRCL002	7818559	604254	GDA	52	-60	070	800	600	-	-	0	800	HQ-NQ



**Figure 14. Groundrush-Ripcord Link planned holes (oblique view showing holes, DEM, Groundrush pit shell, resource and preliminary pit outline for Ripcord).**





**Figure 15. Groundrush deposit cross section with known geology and expected geology on proposed cross section for Groundrush-Ripcord Link drilling.**

All three holes were drilled and reached the designed depths. GRRCL002 is yet to be logged and will be reported in the next reporting period. Samples have been sent to ALS, Perth for analysis, and results will be lodged in the next reporting period.

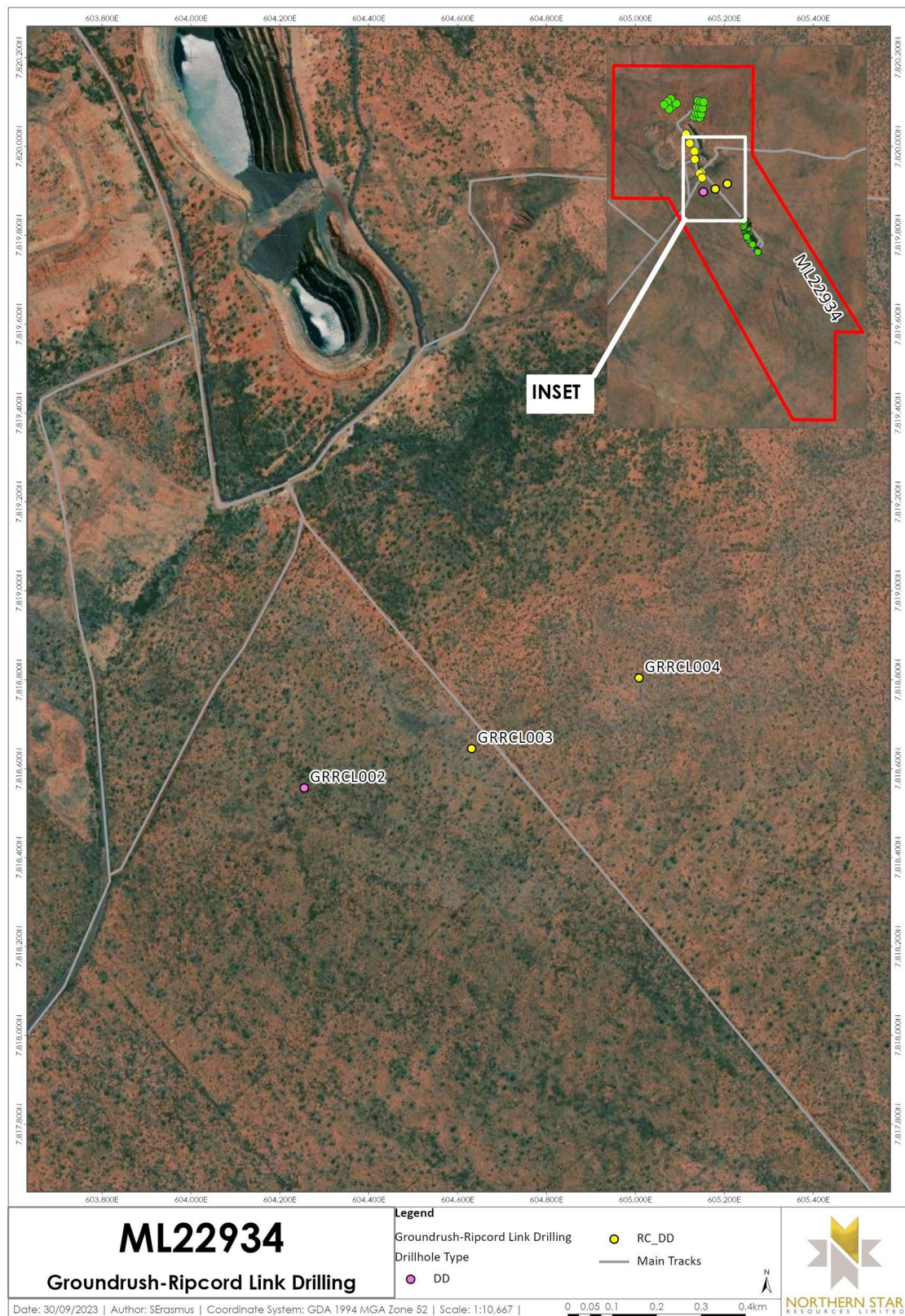


Figure 16. Groundrush-Ripcord Link drill hole plan.



### 6.4.5 Groundrush RC and Diamond Drilling ('RCD')

RCD drilling of a 20 hole resource targeting program was still in progress at the end of the last reporting period, with 14 out of the 20 holes either completed or partially completed.

In this reporting period, a further two RC precollars were drilled (GRRCD0005 and GRRCD0006), and 11 DD tails were completed, bringing the total holes drilled to completion to 19 out of the 20 holes. Planned hole GRRCD0020 was cancelled. Holes were drilled west and southwest of the Groundrush pit parallel and along strike. Holes were drilled at an azimuth of 050 ° and dip from -60 ° to -70 °. A total of 374 m of RC and 3,360.7 m of DD tails were drilled, for a total of 3,734.7 m. Figure 17 shows a drill hole plan.

Some assays are still pending (GRRCD0006 and GRRCD0017). Drilling intersected several significant intercepts (Table 7) and were mostly encountered in dolerite, specifically the quartz-dolerite unit with variable amounts of quartz carbonate veining, brecciation and sulphidisation including pyrite, pyrrhotite and arsenopyrite.

**Table 7. Groundrush, significant results.**

Hole	Intercept	Comment
GRRCD0003	5.6 m @ 0.69 g/t from 451.0 m	Quartz dolerite with intermittent veining
GRRCD0003	2.7 m @ 0.73 g/t from 457.3 m	Quartz dolerite with intermittent veining
GRRCD0005	3.9 m @ 1.59 g/t from 496.1 m	Massive dolerite with stringer quartz veins
GRRCD0005	2.6 m @ 0.58 g/t from 508.1m	Massive dolerite with stringer quartz veins
GRRCD0005	3.5 m @ 0.75 g/t from 535.0m	Footwall contact on shear in dolerite
GRRCD0009	3.7 m @ 1.48 g/t from 381.1 m	Massive coarse grained dolerite with minor quartz carbonate veining and minor sulphides
GRRCD0009	4.4 m @ 2.27 g/t from 395.8 m	Quartz dolerite with intermittent veining
GRRCD0009	17.5 m @ 2.13 g/t from 412.2 m	Massive dolerite with stringer quartz veins
GRRCD0010	5.1 m @ 0.7 g/t from 454.5 m	Quartz dolerite with intermittent veining and sulphides
GRRCD0010	6.1 m @ 1.72 g/t from 463.0 m	Foliated quartz dolerite with disseminated sulphides
GRRCD0010	2.4 m @ 2.51 g/t from 472.4 m	Coarse quartz dolerite with quartz veining and sulphides
GRRCD0010	2 m @ 4.04 g/t from 476.0 m	Foliated coarse quartz dolerite with quartz veining and sulphides
GRRCD0010	2.4 m @ 1.05 g/t from 502.6 m	Sheared quartz dolerite with veining and sulphides
GRRCD0010	3.8 m @ 1.63 g/t from 508.0 m	Sheared quartz dolerite with veining and sulphides
GRRCD0013	3 m @ 1.34 g/t from 265.0 m	Brecciated quartz vein with sulphide veinlets
GRRCD0013	3.8 m @ 2.63 g/t from 277.2 m	Weakly foliated dolerite with minor sulphide veinlets
GRRCD0013	3.4 m @ 0.66 g/t from 291.3 m	Sericite altered and faulted dolerite
GRRCD0015	8.2 m @ 2.12 g/t from 253.8 m	Foliated quartz dolerite with hematite+quartz+carbonate brecciated veins with sulphides
GRRCD0019A	3.4m @ 1.6 g/t from 449.1 m	Massive dolerite with disseminated pyrite
GRRCD0019A	6.6 m @ 1.8 g/t from 458.0 m	Hematite altered brecciated dolerite with quartz carbonate veinlets

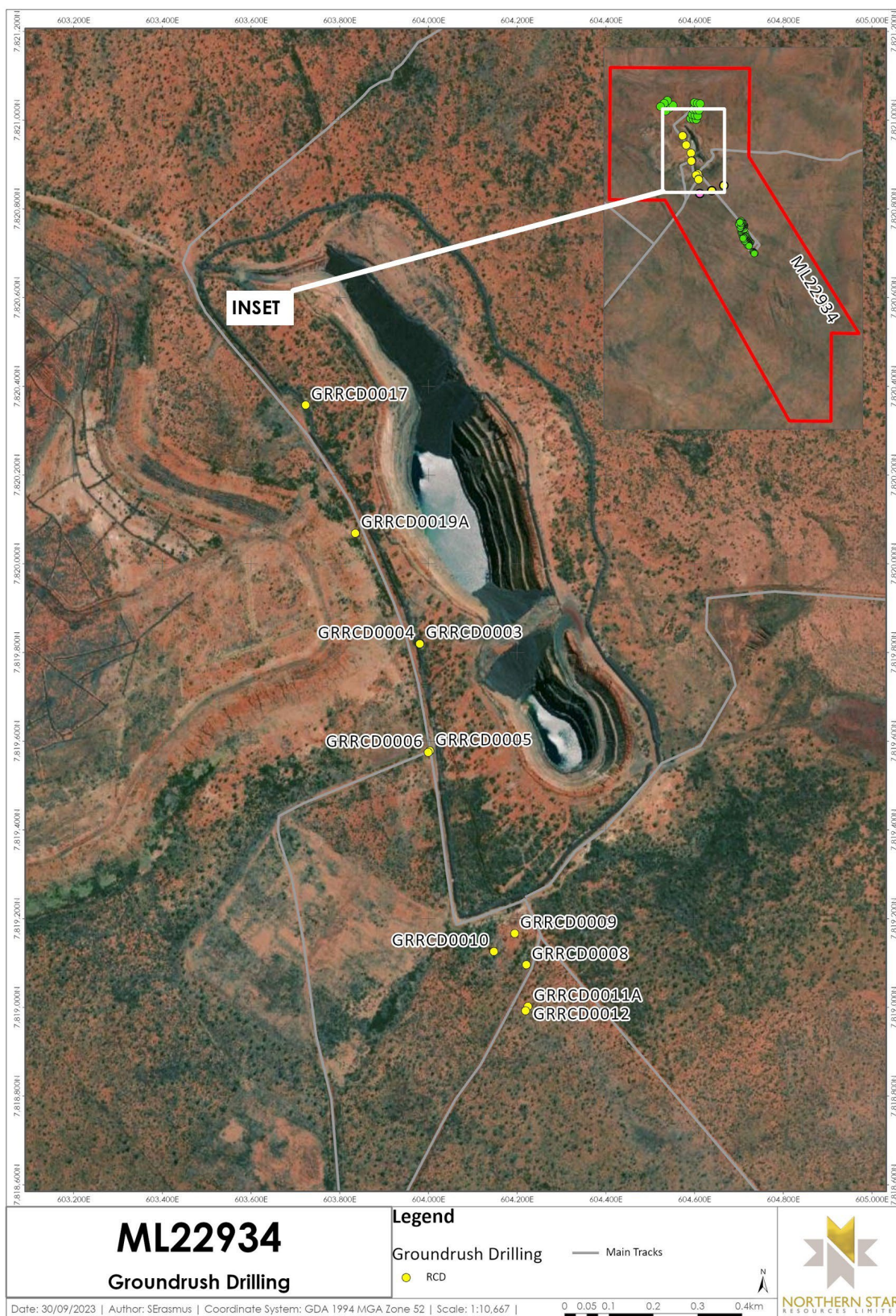


Figure 17. Groundrush RCD drill hole plan.

## 7 CONCLUSIONS AND RECOMMENDATIONS

Significant exploration was completed at Ripcord, Groundrush North, Groundrush, and Groundrush-Ripcord Link drilling programs. Preliminary results confirm the prospectivity at Groundrush and Ripcord, warranting follow up work including underground and surface drilling. Logging, sampling, assaying and data validation will continue facilitating interpretation and geological model updates.

While results at Tandem indicate a trend and plunge, the dimensions and grade are minimal. Additional drilling could aid in defining the mineralisation trend and plunge more thoroughly.

ML22934 will become the centre of production in the coming years once an underground drive can be established at Groundrush and underground exploration can commence. Northern Star will continue to assess the surrounding tenure for additional gold mineralisation.

## 8 REFERENCES

Annison, D., 2017. Groundrush Project, Annual Report to the Department of Primary Industry and Resources for the period 14/09/2016 to 13/09/2017 for ML22934. Northern Star Resources Ltd.

Bagas, L., Bierlein, F.P., English, L., Anderson, J., Maidment, D. & Huston, D.L., 2008. An example of a Palaeoproterozoic back-arc basin: petrology and geochemistry of the ca. 1864Ma Stubbins Formation as an aid towards an improved understanding of the Tanami Orogen, Western Australia. *Precambrian Research* 166.

Blake, D.H., Hodgson, I.M. & Muhling, P.C., 1979. *Geology of the Granites-Tanami Region*. Bureau of Mineral Resources, Bulletin 197.

Crispe, A.J., Vandenberg, L.C. & Cross, A.J. 2002. *Geology of the Tanami Region*. Annual Geoscience Exploration Seminar, Record of Abstracts. NTGS Record 2002-003.

Dean, A.A. 2001. *Igneous rocks of the Tanami Region*. NTGS Record 2001-003.

Hendrickx, M., Vandenberg, L., Crispe, A., Slater, K., Dean, A., Wygrelak, A. and Smith, J., 2000. Palaeoproterozoic Stratigraphy and Correlations of the Tanami Region, Northern Territory-Preliminary Results. Annual Geoscience Exploration Seminar, 2000, Record of Abstracts.

Hodgson, I.M. 1975. *Explanatory Notes on the Tanami 1: 250,000 Geological Sheet*. Bureau of Mineral Resources 1: 250 000 geological series sheet SE/52-15.

Huston, D.L., Wygrelak, A., Mernagh, T., Vandenberg, L., Crispe, A., Lambeck, L., Cross, A., Fraser, G., Williams, N., Worden, K. & Meixner, T. 2006. Lode gold mineral systems(s) of the Tanami region, northern Australia. *Mineralium Deposita* 42.

Marjoribanks, R., 2011. *The Geology and mineralisation of the Groundrush gold deposit Central Tanami, Northern Territory*. A report prepared for Tanami Gold NL.

Mukherji, A., 2016. Groundrush Project, Annual Report to the Department of Mines and Energy for the period 14/09/2015 to 13/09/2016 for ML22934. Northern Star Resources Ltd.



Pellatt, A. 2020. Groundrush ML22934 Annual Report to the Department of Primary Industry and Resources, period ending 13/09/2020. Northern Star Resources Ltd.

Pellatt, A. 2021. Groundrush ML22934 Annual Report to the Department of Primary Industry and Resources, for the period 14 September 2021 to 13 September 2022. Northern Star Resources Ltd.

Pellatt, A. 2022. Groundrush ML22934 Annual Report to the Department of Primary Industry and Resources, for the period 14 September 2022 to 13 September 2023. Northern Star Resources Ltd.

Turnbull, C., 2018. Groundrush Project, Annual Report to the Department of Primary Industry and Resources for the period 14/09/2015 to 13/09/2016 for ML22934. Northern Star Resources Ltd.

Turnbull, C., 2019. Groundrush Project, ML22934, Annual Report to the Department of Primary Industry and Resources, period ending 13/09/2019. Northern Star Resources Ltd.

Vandenberg, L.C., Crispe, A.J., Hendrickx, M.A., Dean, A.A. & Slater, K.R., 2001a. Geology and Mineralisation of the Tanami Region. Annual Geoscience Exploration Seminar, 2001, Record of Abstracts.

Vandenberg, L.C., Hendrickx, M.A. and Crispe, A.J. 2001b. Structural geology of the Tanami region. NT Geological Survey Record 2001/4.