



NORTHERN MINERALS

Powering Technology.

GARDINER-TANAMI PROJECT
GR569 PARTIAL SURRENDER REPORT
Exploration License EL26498

Author: K. Warburton

Date: 19-10-2022

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 State) 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 State, the tenure holder warrants that it has the full legal right and authority to grant, and does hereby grant, to the Territory, subject to any confidentiality obligation undertaken by the Territory, 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.

Declaration

To the best of our knowledge, this document conforms to the format outline for an annual report, as shown by the Northern Territory Geological Survey- Minerals and Energy Division website.



Project Name	Gardiner-Tanami Project
Combined Reporting Group:	GR526
Licence Operator:	Northern Minerals Limited
Licence Holder:	Northern Minerals Limited
Report Type:	Partial Surrender
Report Title:	Gardiner-Tanami Project, GR569 PARTIAL SURRENDER REPORT
Reporting Period:	21 August 2012 to 20 August 2022
Author:	Kurt Warburton
Date of Report:	19 October 2022
Geodetic Datum:	GDA 94 MGA Zone 52
1:100 000 Map Sheet	4860 "Ware", 4859 "Breaden"
1:250 000 Map Sheet:	SE5215 "Tanami", SE5211 "Birrindudu"
Keywords:	Tanami-Granites Block, Birrindudu Basin, Tanami Group, Heavy Rare Earth exploration, Xenotime.
Target Commodities:	Rare Earth Elements, Gold
Prospects Drilled:	Kookaburra East
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, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn, Zr
Distribution:	Department of Industry, Tourism and Trade Northern Minerals Limited M&M Walter Consulting

Contents

1. INTRODUCTION	1
2. LOCATION & ACCESS.....	1
3. TENURE.....	3
4. REGIONAL GEOLOGIC SETTING	3
5. EXPLORATION WORK COMPLETED	4
5.1. NORTHERN MINERALS – 2012 to 2016.....	4
5.1.1. Heritage Surveys.....	5
5.2. NORTHERN STAR – 2016 to 2020.....	5
5.2.1. Geological Reconnaissance and Surface Geochemical Sampling	5
5.2.2. Regional Targeting Assessment.....	5
5.2.3. Regional Geological Interpretation	5
5.3. NORTHERN MINERALS – 2020/2021 to 2022	6
5.3.1. Desktop Studies.....	6
6. PARTIAL RELINQUISHMENT DETAILS BY TENEMENT.....	6
7. CONCLUSION	8
Figure 1: Location Map - GR569 - Tanami Project	2
Figure 2: Tanami District Regional Geology and Stratigraphy	4
Figure 3: Surrendered Area, EL24177	7
Table 1: Tenement Summary for GR569. Bold text indicates partial surrenders.....	3
Table 2: Summary of previous Combined Reporting Groups.	3



1. INTRODUCTION

Northern Minerals Limited ('the Company', 'Northern Minerals') is an Australian Securities Exchange (ASX) listed company actively producing, developing, and exploring for heavy rare earth (HRE), xenotime hosted deposits in Western Australia (WA) and the Northern Territory (NT). The Company commenced production of Rare Earth Carbonate in 2018 from its Browns Range HRE Pilot Plant Project in WA following a six-month trial mining campaign in 2017 and completed pilot plant processing operations in February 2022.

This report is the partial surrender report for Exploration Licence, which form part of the Gardner-Tanami Project within the Tanami Region of the Northern Territory.

2. LOCATION & ACCESS

The Project is located near the border between Western Australian and the Northern Territory, in an area north of the Tanami Road (Figure 1). The nearest town is Halls Creek, Western Australia, which is located approximately 210km northwest of the project area. The tenement is covered by the 1:250,000 map sheet of Tanami (SE 52-15) and the 1:100,000 map sheet of Pargee (4758).

Access to the project area is along the Tanami Road from Halls Creek and then by historic exploration tracks and drill lines. Access to the project area is restricted after heavy rains during the wet season (from December to April). Alternatively, the Project can be accessed from Alice Springs via the Tanami Road for approximately 600km. The Tanami Road passes through the southern part of the Project area. From the Tanami Road, cleared lines, old exploration tracks, and the "old" Tanami Track pass through the project area.

Due to the remoteness of EL 26498, helicopter assistance is often required to complete exploration on this licence.

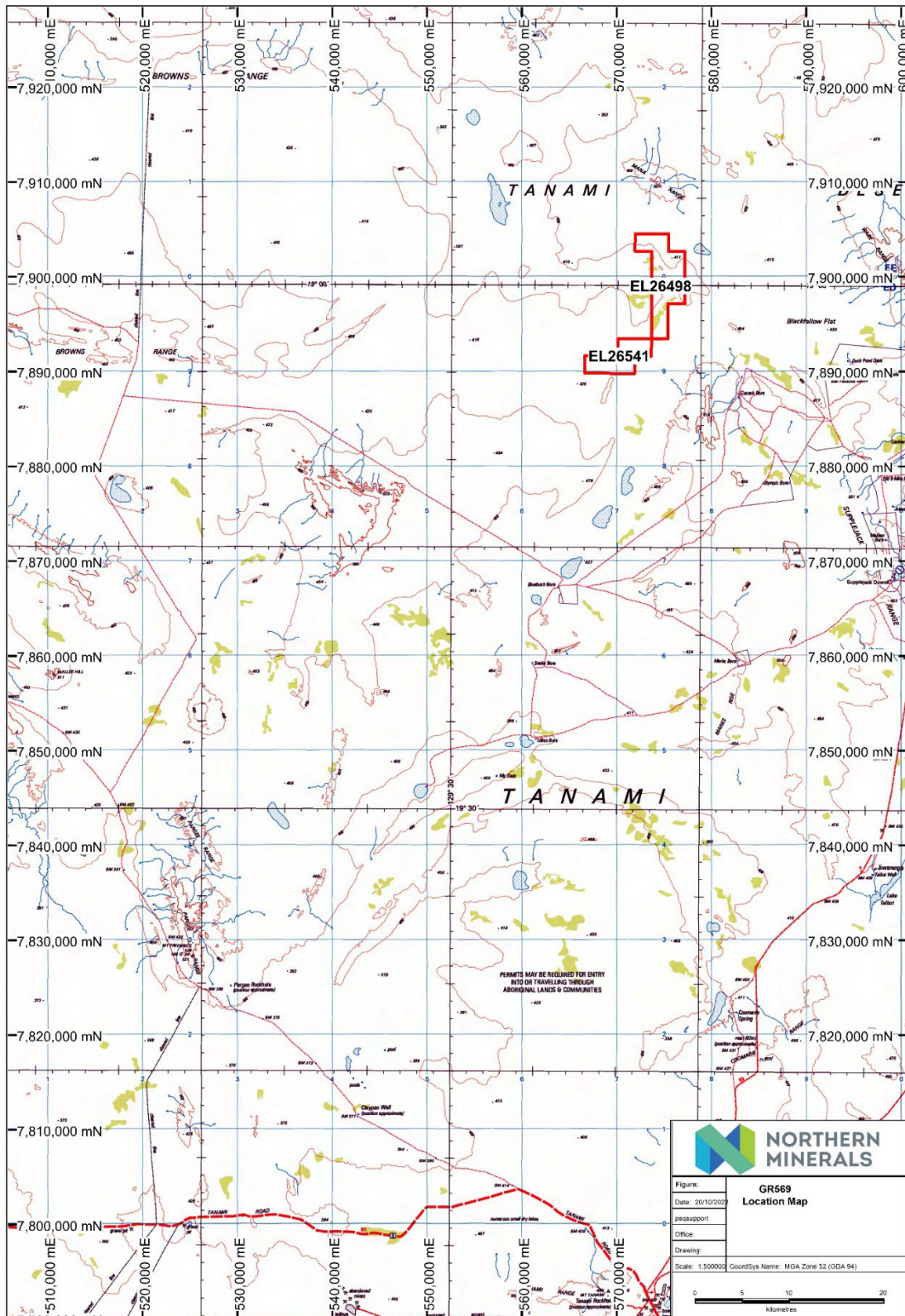


Figure 1: Location Map - GR569 - Tanami Project



3. TENURE

EL26498 was granted to Northern Minerals on 21 August 2012. Pursuant to a Tenement Sale Agreement and Mineral Rights Agreement (MRA) both executed 29 August 2016 with completion effective from 9 January 2017, Northern Star (Tanami) Pty Limited (Northern Star) became the 100% beneficial owner of the Title. Transfer of titles to Northern Star was lodged and registered by the DPIR on 8 March 2017.

In Year 6 (22 October 2018), Northern Star was granted a full waiver for a compulsory 50% surrender. Renewals for further two-year periods were granted in 2018 and 2020.

On the 12 July 2021, Northern Star notified Northern Minerals, pursuant to clause 5(b) of the MRA, that Northern Star proposed to relinquish a group of six tenements inclusive of EL26498. Under this clause, Northern Minerals agreed to the transfer of these tenements for no consideration. The transfer of EL26498 back to the Company took effect on the 17 February 2022.

Table 1: Tenement Summary for GR569. Bold text indicates partial surrenders

Tenement	Grant Date	Expiry Date	Current Area (Blk)	Relinquished Area (Blk)	Holder/Applicant
EL26498	21/08/2012	20/08/2024	20	10	Northern Minerals
EL26541	21/08/2012	20/08/2024	5	0	Northern Minerals

Table 2: Summary of previous Combined Reporting Groups.

Tenement	NTU (pre-2016)		NSR	
EL26498	GR318	Gardiner-Tanami	GR441	Browns Range

4. REGIONAL GEOLOGIC SETTING

The distribution of the major rock formations in the Tanami district (western Granites-Tanami), including their stratigraphic sequence, are presented in Figure 2.

The Tanami district is generally covered by younger rocks and outcrops are few and far in-between, hence the solid geology is primarily based upon geophysics and reconnaissance scale geological mapping by government geologists in the 1960s.

The basal unit of the Paleoproterozoic sequence in the Tanami region is dominated by the MacFarlane Peak Group (volcanic and volcanoclastic rocks, clastic rocks, and calc-silicate sedimentary rocks), which is overlain by siltstone, carbonaceous shale, calc silicates and BIF of the Dead Bullock and the Stubbins Formations; the sequence is in turn overlain by a thick sequence of turbidites known as the Killi Killi Formation, which formed in an extensional basin in the margins of the North Australian craton.

Altogether, the latter three rock units belong to the Tanami Group, which host most of the known gold endowment in the district.

The Pargee Sandstone and the Mount Charles Formation, occurring in extensional sub-basins, overlie the Tanami Group. At this time, felsic volcanism produced the Mount Winnecke Group and Nanny Goat Volcanics.



Deposition in the Birrindudu Basin began with sandstone transgressing over an unconformable metamorphic and crystalline basement rocks, accompanied by regionally extensive listric faults and volcanism in a rift environment.

Unconformably overlying the Birrindudu Basin are clastic sediments forming the Neoproterozoic Redcliff Pound Group. This includes the Lewis Range Sandstone, a medium to fine grained quartz sandstone with shale pellet layers in places and minor shale, siltstone, limestone, and chert with conglomerate and sub-lithic sandstone near the base.

Tertiary laterite, silcrete and calcrete, as well as Quaternary deposits cover a large proportion of the region. Flat topped rises and laterite caps form the upper part of the weathering profile, typically consisting of a 1-2 metre-thick pisolitic layer.

Quaternary deposits comprise residual clay and aeolian sand covering extensive plains separating laterite rises and outcrops of pre-Tertiary rocks and piedmont deposits. Sand, silt, and clay are deposited on the flood plains of major drainage channels and in clay pans.

Finally, five main granitic suites are documented in the Tanami Region, but the Coomarie and Frederick Suites are closest links to gold mineralisation and perhaps with HREE mineralisation as well.

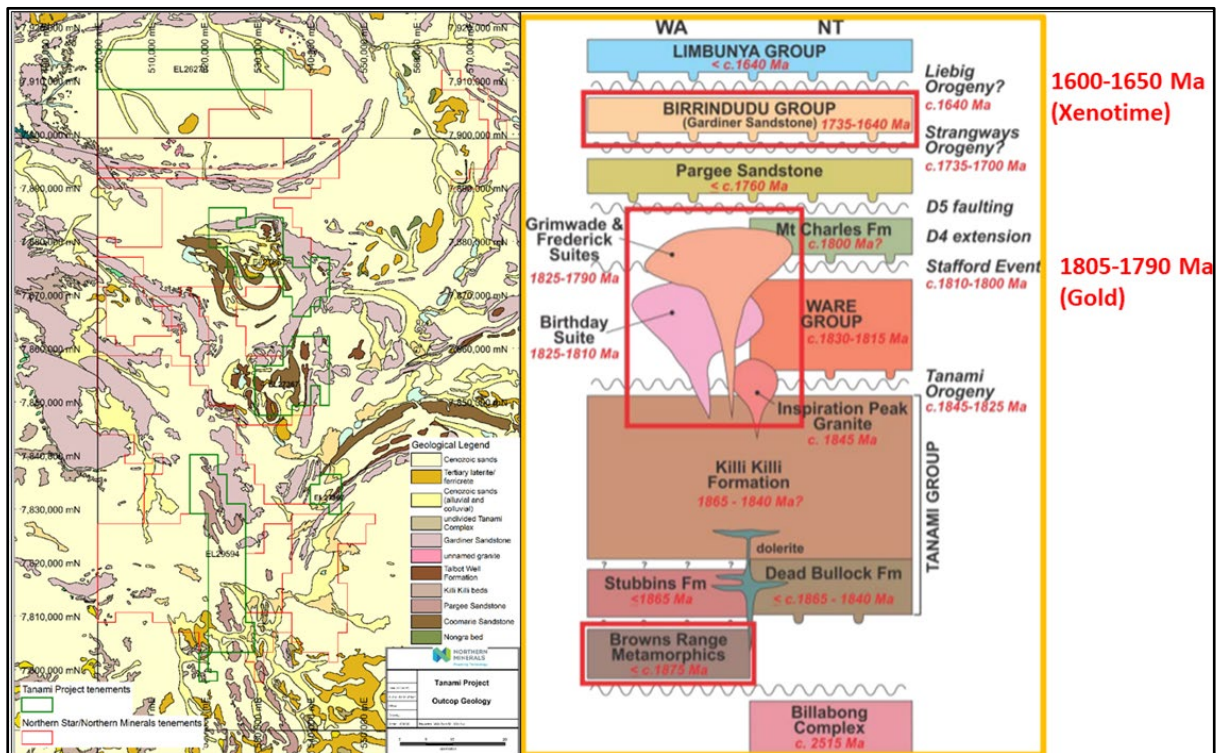


Figure 2: Tanami District Regional Geology and Stratigraphy

5. EXPLORATION WORK COMPLETED

5.1. NORTHERN MINERALS – 2012 to 2016

No on ground exploration was undertaken by Northern Minerals prior to the sale of the tenements to Norther Star in 2016. Work was limited to a review of publicly available datasets and a Heritage Clearance Survey.



5.1.1. Heritage Surveys

A Heritage Clearance Survey was completed by the Central Land Council (CLC and representatives of the Traditional Owners in August 2014. The heritage survey was part of a large survey covering most of Northern Minerals Gardiner-Tanami, Browns Range and Boulder Ridge projects.

5.2. NORTHERN STAR – 2016 to 2020

Work completed by Northern Stars includes:

- Field reconnaissance and rock chip sampling
- Regional Targeting Assessment
- Regional geological interpretation

5.2.1. Geological Reconnaissance and Surface Geochemical Sampling

As a part of a larger regional reconnaissance program, helicopter-assisted geological mapping was undertaken in this area to gain insight into the extent of surface outcrop, exposed stratigraphic sequences in the area, identify potential areas of interest and to assess access routes.

Carried out in June 2017, the reconnaissance program took 7 days to complete and inspected 10 localities over the Browns Range area. Eleven rock chip samples were collected during this program, including two from EL 26498. No significant anomalism was identified in these samples.

5.2.2. Regional Targeting Assessment

An assessment of current regional exploration programs and targeting was undertaken during 2018-2019 to ensure targeting is in line with corporate expectations and economic criteria.

A process of ranking the technical and logistical merits of current target areas was completed which assisted in developing a strategic approach to testing broad prospective regions of the Tanami region. A total of twelve areas identified as key target regions were investigated and flagged by multiple features including existing deposits, proximity to major structural breaks/corridors, historical gold anomalism and lack of prior/effective exploration.

The Browns Range Project was divided into three low-priority targets areas: Northern Browns Dome, Browns Range Shear and Browns Range East. EL 26498 lies within the Browns Range East target area. The targeting review indicated that while the Browns Range area is not a high-order priority, it is still an area of interest. The Browns Range East target area, showing EL 26498 is indicated on Figure 2.

Due to the low-order priority of the Browns Range East area, resources were predominantly allocated to understanding the stratigraphic and structural architecture of the main Browns Dome region, from which learnings could potentially be extrapolated eastwards to cover the region in which EL 26498 is located.

5.2.3. Regional Geological Interpretation



All available geological data was compiled during the term and utilised to inform a regional geological interpretation. This included surface geochemical and remote sensing datasets. Geological field mapping, reconnaissance and surface geochemistry was used to validate interpretations.

5.3. NORTHERN MINERALS – 2020/2021 to 2022

Due to travel restrictions imposed by the NT, WA and Federal governments in response to the COVID-19 global pandemic combined with a restricted field season due to weather conditions limiting access, work has been restricted to desktop studies.

5.3.1. Desktop Studies

A desktop study of the Licences was conducted, utilising inhouse geophysical data and publicly available regional datasets, where the potential for HRE mineralisation was appraised with the aim of generating targets for on-ground exploration.

The project area represents a structurally complex terrain, containing deformed sedimentary units, quartz vein arrays, mafic volcanics and granitic intrusions. The Unconformity between the Gardiner Sandstone and underlying units is of particular interest given the proven prospectivity of such structures in the region, namely the Killi Killi Hills prospect currently managed by by PVW Resources NL (PVW) and the Dazzler deposit discovered by the Company.

On a regional scale, the Gardiner Sandstone has been deformed as part of the Coomarie dome complex. This structural architecture may play a key role in the formation of rare earth element deposits, as is the case at the Company's flagship Browns Range Project. The licence covers the western margin of this dome complex, providing a favourable structural setting for possible intrusion related hydrothermal REE deposits.

6. PARTIAL RELINQUISHMENT DETAILS BY TENEMENT

Details of relinquished blocks for each lease are as follows:



EL26498 – 10 blocks surrendered.

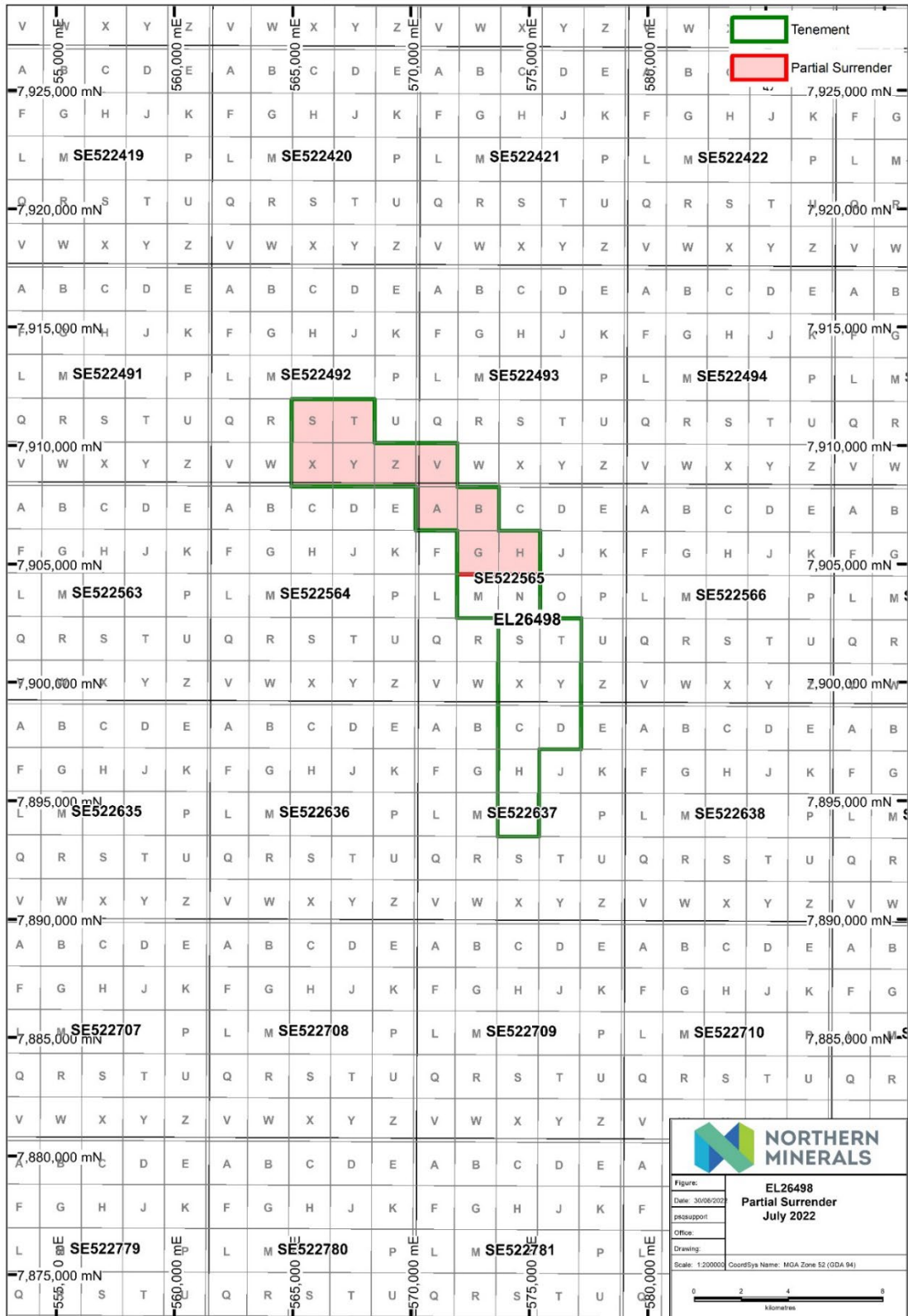


Figure 3: Surrendered Area, EL26498



7. CONCLUSION

Since 2010, Northern Mineral's exploration programs have focused on hydrothermally formed, unconformity-related xenotime deposits located at the western edge of the Browns Range Dome in Western Australia. The xenotime is enriched with heavy rare earths, in particular dysprosium. Considerable success has been attained with these programs, most significantly at the Wolverine deposit, and a current resource for the project currently stands at 10.81 million tonnes at 0.76% TREO comprising 81,450 tonnes TREO (using a cut-off grade of 0.15% TREO). Trial mining was completed at Browns Range at the Wolverine and Gambit West deposits in 2017 and a pilot plant was built between September 2017 and July 2018. Production of Rare Earth Carbonate commenced in late 2018 and ceased in early 2022.

Due to the focus at Browns Range and financial difficulties experienced in early 2016, the Company entered into a sale agreement with Northern Star (Tanami) for its tenement holdings in the Northern Territory including EL26498. Prior to the sale, there were no systematic exploration programs within the tenement for HRE mineralisation.

After acquiring the License 2016, Northern Star (Tanami) has assessed for their gold potential. No priority targets were identified and the License was transferred back to the Company in 2021.

Northern Minerals has subsequently appraised the License for its HRE potential after it was transferred back to the Company's ownership. The surrendered areas of EL6498 was considered to have minimal potential for hydrothermal xenotime hosted HRE deposits.