

# **West Cobar Metals Limited**

## **EL33208 Hermit Hill Project Annual Report**

For the period 16/12/2022 to 15/12/2023

1:250 000 Map Sheet  
Cape Scott (SD52-07)  
Pine Creek (SD52-08)  
Port Keats (SD52-11)  
Fergusson River (SD52-12)

1:100 000 Map Sheet  
Moyle (4969)  
Greenwood (4970)  
Wingate Mountains (5069)  
Daly River (5070)

Commodities: Lithium, Gold, Base Metals

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REPORT DATE: 9/2/2024.

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# 1 Abstract

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West Cobar Metals Limited (West Cobar) Hermit Hill Project is located approximately 140km SSW of Darwin and 30km West of the Daly River settlement in the Northern Territory. It consists of a single exploration license EL33208, which covers an area of approximately 664.4km<sup>2</sup>. The project area is accessed by a good quality gravel road, (Port Keats Road) from Daly River and numerous station tracks and fence lines suitable for a four-wheel drive vehicle.

The Litchfield Province is defined as the western part of the Pine Creek Geosyncline, with large parts of the Litchfield Province interpreted as 'granitoid, garnetiferous, gneissic, with metasediments varying in metamorphic grade from greenschist to upper amphibolite / granulite grade (Berkman 1980). The lack of outcrop in much of the area has limited exploration.

The mapped lithology within EL33208 is largely obscured by Cainozoic eluvial soils. Floodplain alluvium masks the geology of the northern blocks. The regional 1:500k interpretation map from the NTGS shows much of the tenement underlain by the Allia Suite Granites (Litchfield and Murra-Kumangee Granodiorite) with areas of Hermit Creek Metamorphics sandwiched between the granites and with an isolated intrusion of Wangi Basics in the south. The Wangi Basics intrusive contains anomalous Cu and Ni along the southeastern margin of the tenement.

The Allia Suite is approximately 1840 Ma in age and is a S-type, containing minerals such as andalusite, cordierite and muscovite. Abundant pegmatites which occur within the granite and into the surrounding country rock are characteristics of the suite. Some Sn, Ta, with minor Au and W mineralisation are spatially associated with Allia Suite particularly the Two Sisters and Soldiers Creek granites. The Allia suite is highly fractionating, reduced, and peraluminous that has high potential for further discoveries of Sn (and Li) due to the associated number of late-stage pegmatites and hydrothermal alteration. (Wyborn 2002)

West Cobar engaged GeoRem Pty Ltd (GeoRem) to provide an independent review of the historical exploration on the Hermit Hill Project, particularly for LCT pegmatites. The review of public and open file data has identified gold, base metals and Li/Sn targets.

Neil Pendock of Dirt Exploration was engaged by West Cobar to identify potential Lithium targets utilising Sentinel-2 satellite remote sensing data. From this data provided Neil identified 30 targets. Results of the Sentinel-2 targeting were generally disappointing with no obvious targets for further exploration identified. This is mainly thought to be because of the nature of the landscape of black soils plains with standing water emitting gases that appear to be from a Li mineral decay sequence.

Two field trips were completed by West Cobar Metals or consultants and resulted in the collection of 33 rock chip samples with all samples were submitted for Li suite with selected samples for gold and base metals.

Pegmatites in the Hermit hill area appear to extend north and south on a NW-SE trend and even though difficult to follow due to thick grasses, can be traced for 300-400m along strike. No obvious Li bearing minerals were identified.

Reconnaissance was carried out over the Sandy Creek Complex area of base metals and PGE anomalies identified in historic soils. Apart from the contact zones with chloritic shears the bulk of the Complex within EL33208 consisted of fresh relatively massive metabasites. One thin discontinuous quartz vein with gossanous material was sampled by West Cobar and contained 2g/t gold.

CSA Global were engaged to provide a desktop review of the results of the initial field trip and to provide recommendations and potential exploration targets for further work. The summary of this report is below:

Overall while CSA Global is of the opinion that EL33208, based on the data and local geology, has low prospectivity for LCT pegmatites, it has identified several targets that WC1 may wish to follow up. These include: Re-sampling the Hermit Hill pegmatites to obtain good quality K/Rb fractionation data, Re-sampling or re-drilling the pegmatites intersected in previous drilling, Bedrock geochemical sampling within the target areas indicated.

## 2 Exploration Index

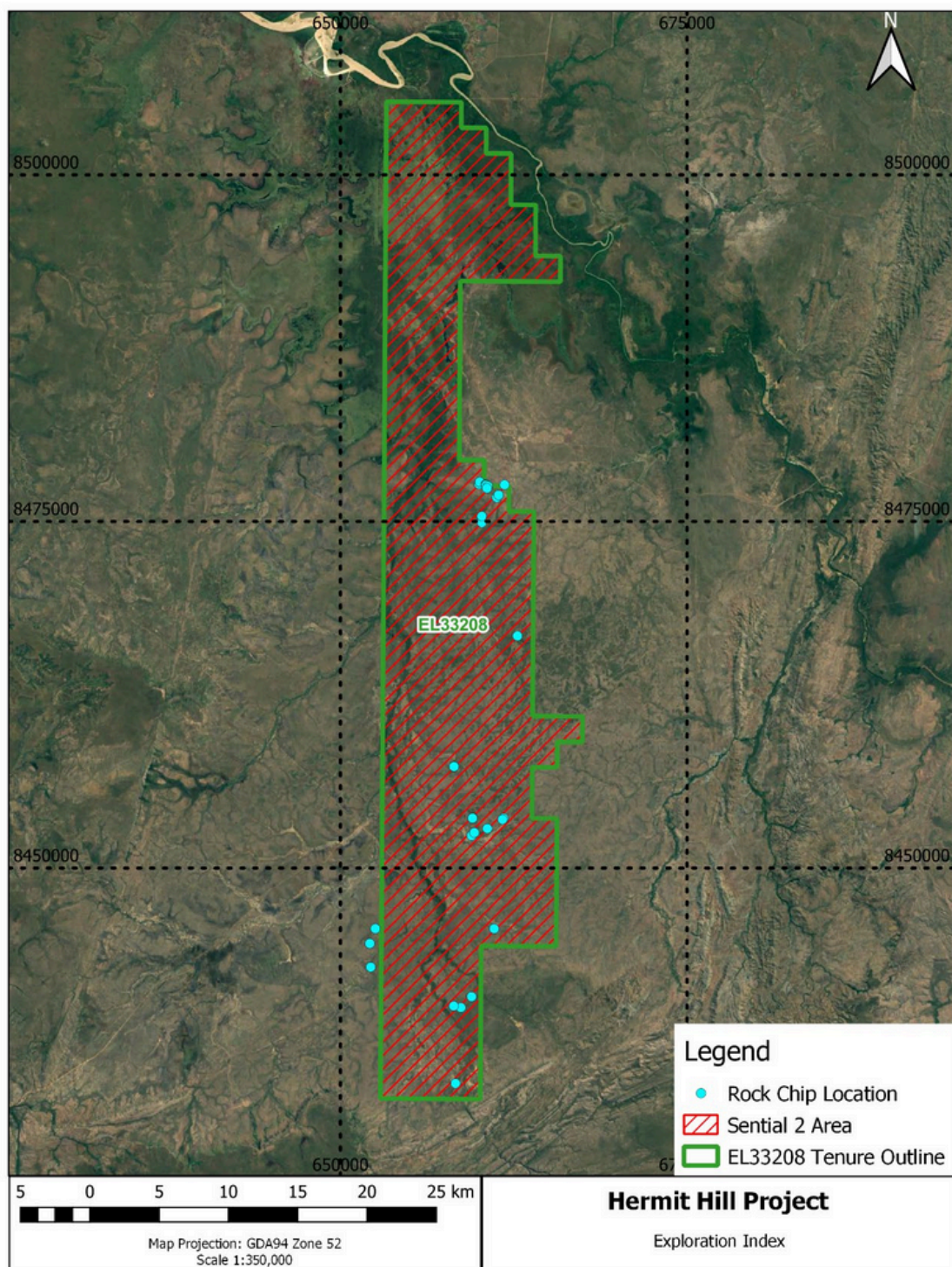


Figure 1: Hermit Hill Project Exploration Index



### 3 Introduction

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West Cobar Metals Limited (West Cobar) Hermit Hill Project is located approximately 140km SSW of Darwin and 30km West of the Daly River settlement in the Northern Territory. It consists of a single exploration licence EL33208, which covers an area of approximately 664.4km<sup>2</sup>. The project area is accessed by a good quality gravel road, (Port Keats Road) from Daly River and numerous station tracks and fence lines suitable for a four-wheel drive vehicle traverse (Figure 2).

The Litchfield Province is defined as the western part of the Pine Creek Geosyncline, with large parts of the Litchfield Province interpreted as 'granitoid, garnetiferous, gneissic, with metasediments varying in metamorphic grade from greenschist to upper amphibolite / granulite grade (Berkman 1980). The lack of outcrop in much of the area has limited exploration.

The mapped lithology within EL33208 is largely obscured by Cainozoic eluvial soils. Floodplain alluvium masks the geology of the northern blocks. The regional 1:500k interpretation map from the NTGS shows much of the tenement underlain by the Allia Suite Granites (Litchfield and Murra-Kumangee Granodiorite) with areas of Hermit Creek Metamorphics sandwiched between the granites and with an isolated intrusion of Wangi Basics in the south. The Wangi Basics intrusive contains anomalous Cu and Ni along the southeastern margin of the tenement.

The Allia Suite comprises the Two sisters Granite (Bynoe), Mount Litchfield Granite, Murra-Kamangee Granodiorite, Allia Creek Granite and Soldiers Creek Granite. The Allia Suite is approximately 1840 Ma in age and is a S-type, containing minerals such as andalusite, cordierite and muscovite. Abundant pegmatites which occur within the granite and into the surrounding country rock are characteristics of the suite. Some Sn, Ta, with minor Au and W mineralisation are spatially associated with Allia Suite particularly the Two Sisters and Soldiers Creek granites. The Allia suite is highly fractionating, reduced, and peraluminous that has high potential for further discoveries of Sn (and Li) due to the associated number of late-stage pegmatites and hydrothermal alteration. (Wyborn 2002)

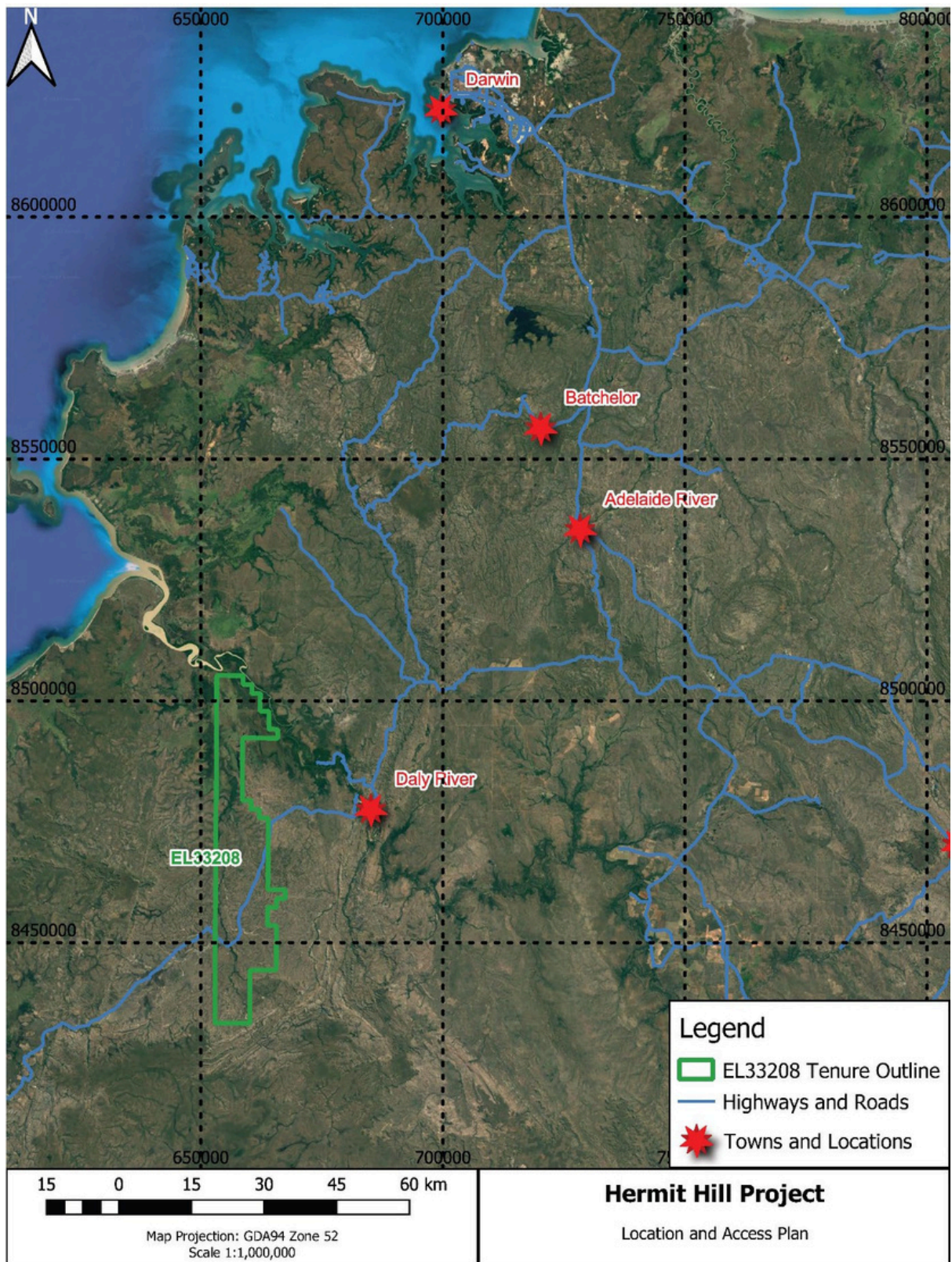


Figure 2: Hermit Hill Project Location Plan



## 4 Location and Access

EL 33208 is situated approximately 140km SSE of Darwin, NT, and 14km west of Daly River (Figure 3). Access to the Licence from Darwin is via the sealed Stuart Highway then the Dorat Rd (old Stuart Highway, out of Adelaide River) then via the Daly River Road, West of Daly River access is by the partially sealed Port Keats Road and numerous unsealed station tracks and fence lines suitable for a four-wheel drive vehicle. Access is limited outside of the dry season.

Most of the Licence is low-lying floodplains with little relief and characteristic grey to black clays with vegetation of open savannah grass and woodlands.

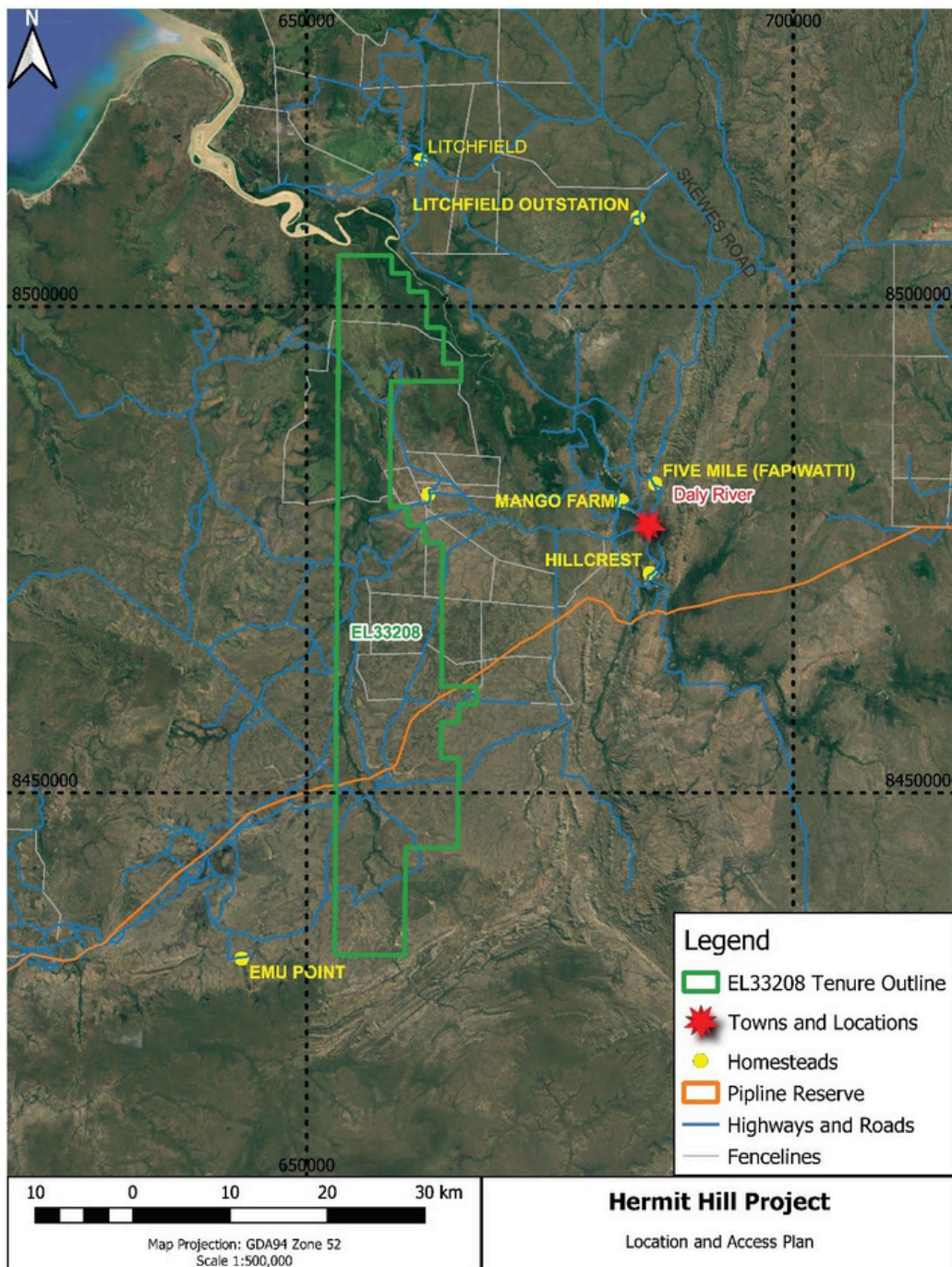


Figure 3: Hermit Hill Project Location and Access Plan

## 5 Tenure

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Tenement EL33208 was granted to West Cobar on 16th December 2022 for a term of 6 years. It comprises 200 graticular blocks (664.4 km<sup>2</sup>) and there are no other mining or mineral claims within the license boundary. The annual expenditure commitment on the tenement is \$40,000.

The tenement is wholly within the Elizabeth Downs pastoral lease owned by Yiang Xiang Assets Pty Ltd. There is a small title registered to the Australian Telecommunications commission in the North of the tenement. The Bonaparte Gas Pipeline traverses the central portion of the tenement and any exploration activities within close proximity to the pipeline are required to comply with section 66 of the *Energy Pipeline Act 1981*.

## 6 Geology

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EL33208 is situated within on the western side of the Pine Creek Orogen, in the area known as Litchfield Province. The regional geology is outlined in several texts, most notably including Ahmad et al., 1993; Ahmad, 1998; Berkman, 1980; Mendum 1972, Fahey et al., 1986, Pietsch 1989 and Carson et. al., 2006. The Giants Reef Fault is to the east of EL33208, which is interpreted as the boundary between the 'central' Pine Creek Orogen to the east and the Litchfield Province to the west (Berkman 1980).

The Litchfield Province was defined as the western part of the Pine Creek Geosyncline, with large parts of the Litchfield Province interpreted as 'granitoid, garnetiferous, gneissic, with metasediments varying in metamorphic grade from greenschist to upper amphibolite / granulite grade (Berkman 1980). The lack of outcrop in much of the area has limited exploration. Work by the NTGS has reviewed the Litchfield Province, with geochronology tentatively correlating the Litchfield Province with the Halls Creek Orogen to the southwest but notes that field evidence indicates a complex tectonic relationship (Carson et al., 2006; Glass, 2007).

The mapped lithology within EL33208 is largely obscured by Cainozoic eluvial soils. Floodplain alluvium masks the geology of the northern blocks. The central portion has small outcrops of granites from the Allia Suite. Further south, metabasite rocks of the Hermit Creek Metamorphics are mapped in areas adjacent to Murra-Kamangee Granodiorite. The central and southern portion of the tenement is underlain by the Allia Suite Granites (Litchfield and Murra-Kumangee Granodiorite) with areas of Hermit Creek Metamorphics sandwiched between the granites. The isolated Wangi Basics intrusive contains anomalous Cu and Ni along the southeastern margin of the tenement (figure 4).

The Allia Suite comprises the Two sisters Granite (Bynoe), Mount Litchfield Granite, Murra-Kamangee Granodiorite, Allia Creek Granite and Soldiers Creek Granite. The Allia Suite is approximately 1840 Ma in age and is a S-type, containing minerals such as andalusite, cordierite and muscovite. Abundant pegmatites which occur within the granite and into the surrounding country rock are characteristics of the suite. Some Sn, Ta, with minor Au and W mineralisation are spatially associated with Allia Suite particularly the Two Sisters and Soldiers Creek granites. The Allia suite is highly fractioning, reduced, and peraluminous that has high potential for further discoveries of Sn (and Li) due to the number of associated late-stage pegmatites and hydrothermal alteration. (Wyborn 2002)



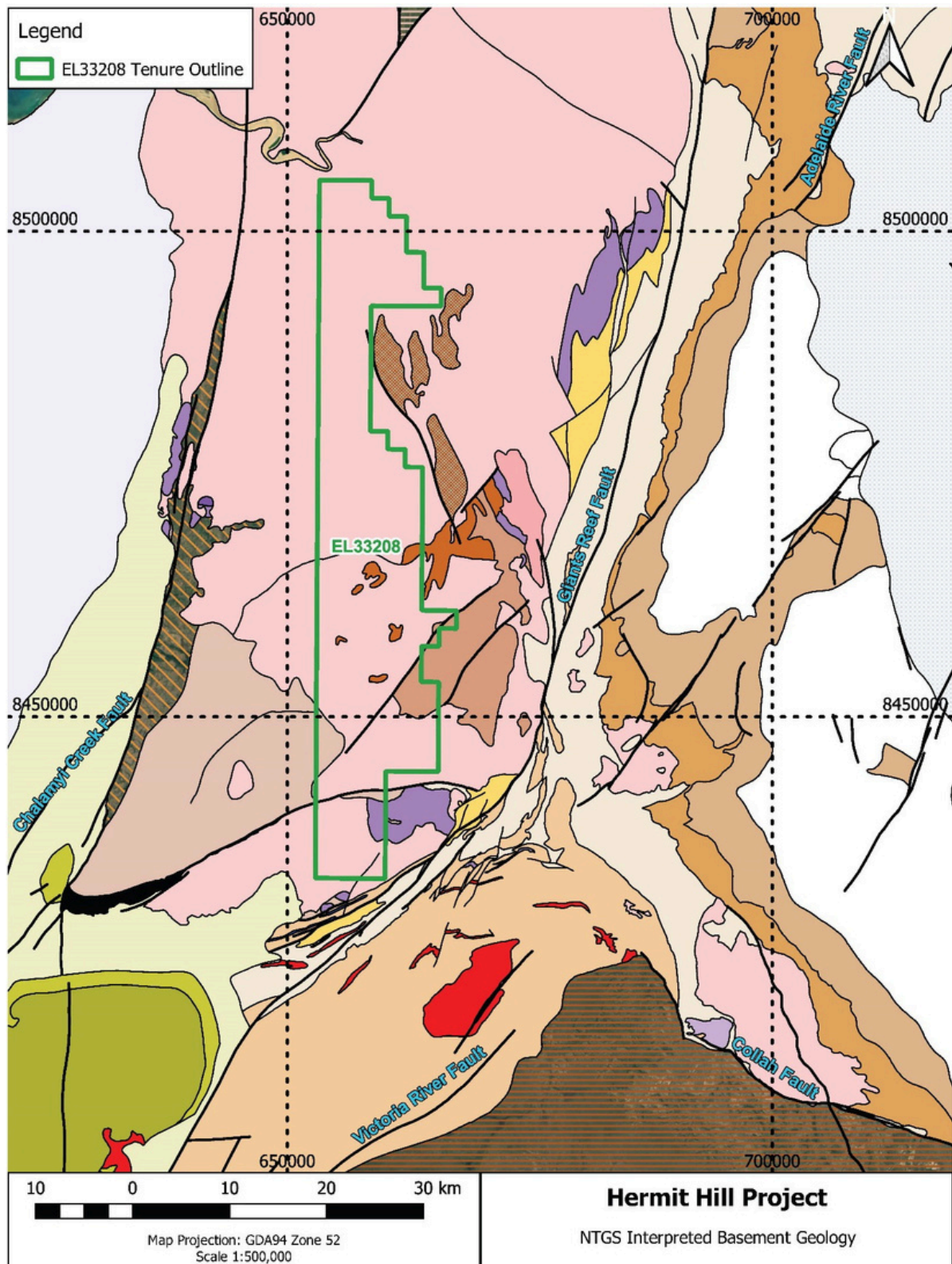
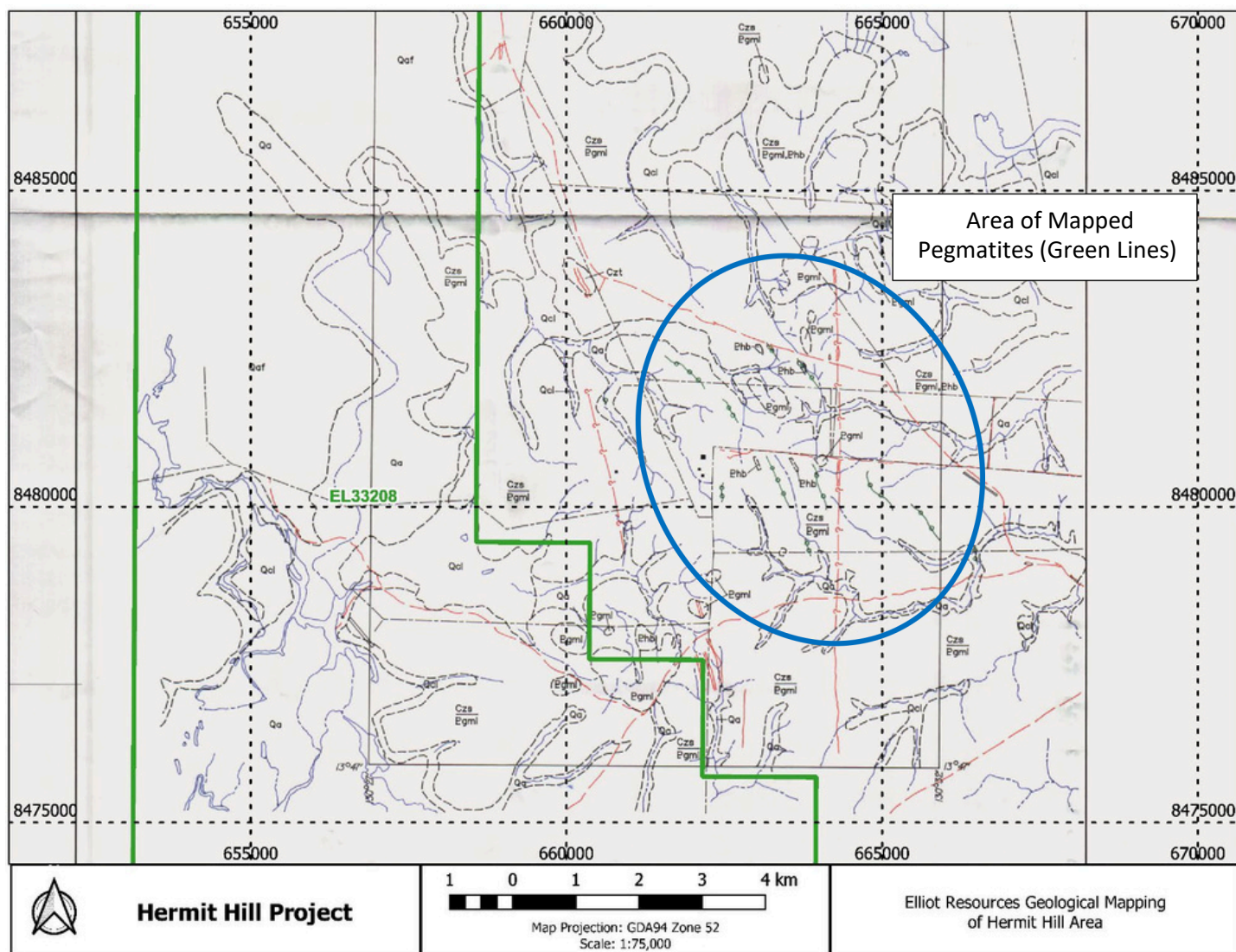


Figure 4: Hermit Hill Project Interpreted Basement Geology.

## 7 Relevant Exploration History

Historic exploration was reviewed to identify the LCT pegmatite, gold and base metal potential of the project area.

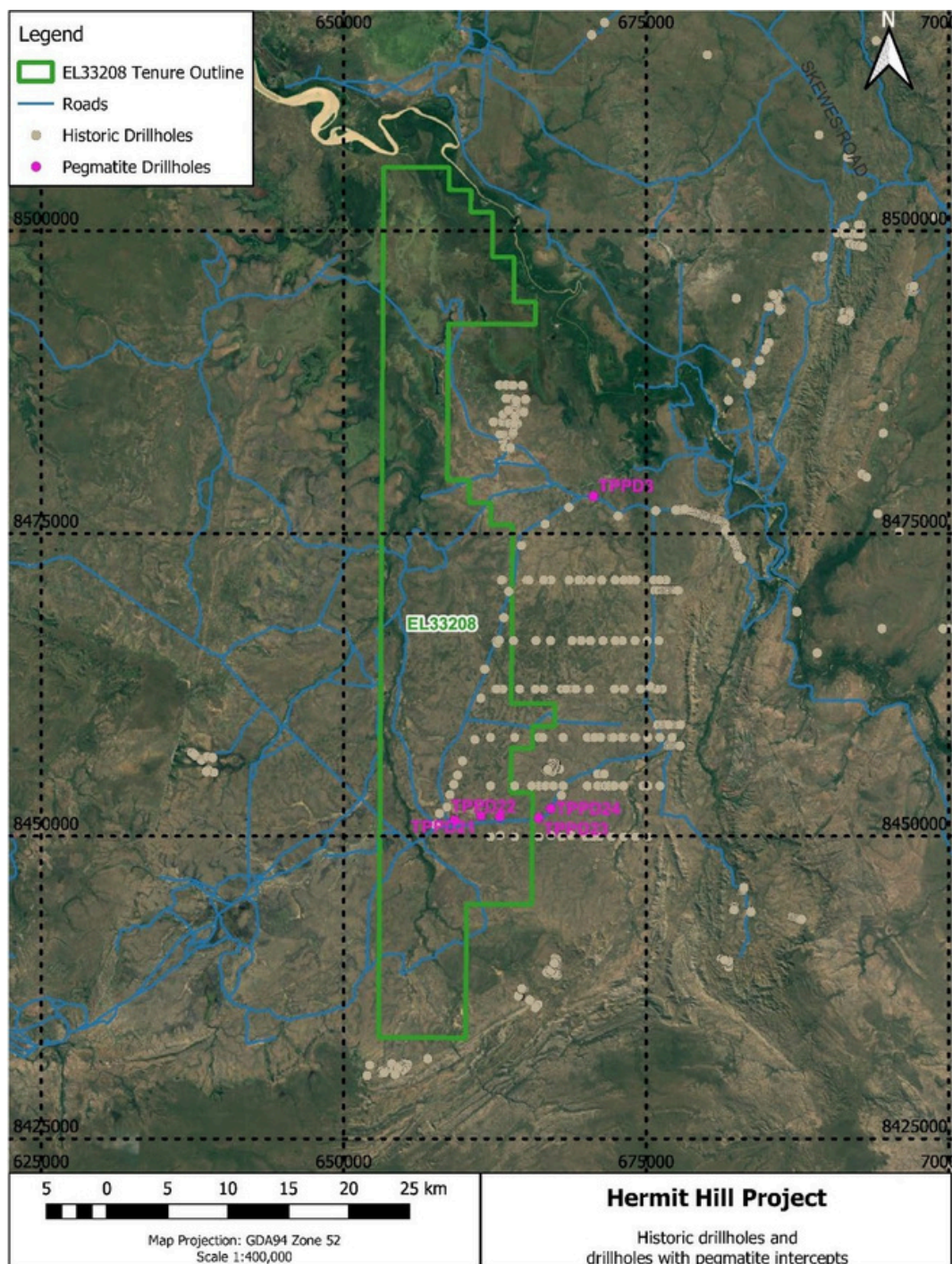
Several pegmatite rock chip samples and intercepts in drillholes while some Sn anomalies were identified in stream sediment sampling programs. Denehurst mapped pegmatites around the Hermit Hill area with some anomalous Sn (max 24ppm) and Ta (max 22ppm) both in pan concentrates.



**Figure 5: Elliot Resources geological mapping for Denehurst of the Hermit Hill area outlines pegmatites to the NE of tenure**

Mobil Energy Minerals completed a 24 RAB program in 1981 with drillholes TPPD3, and TPPD20-24 intersecting pegmatites with three of these drillholes (TPPD20-24) intersecting pegmatite within the current tenement. No details about the widths of the intercepts have been recorded (Figure 6).

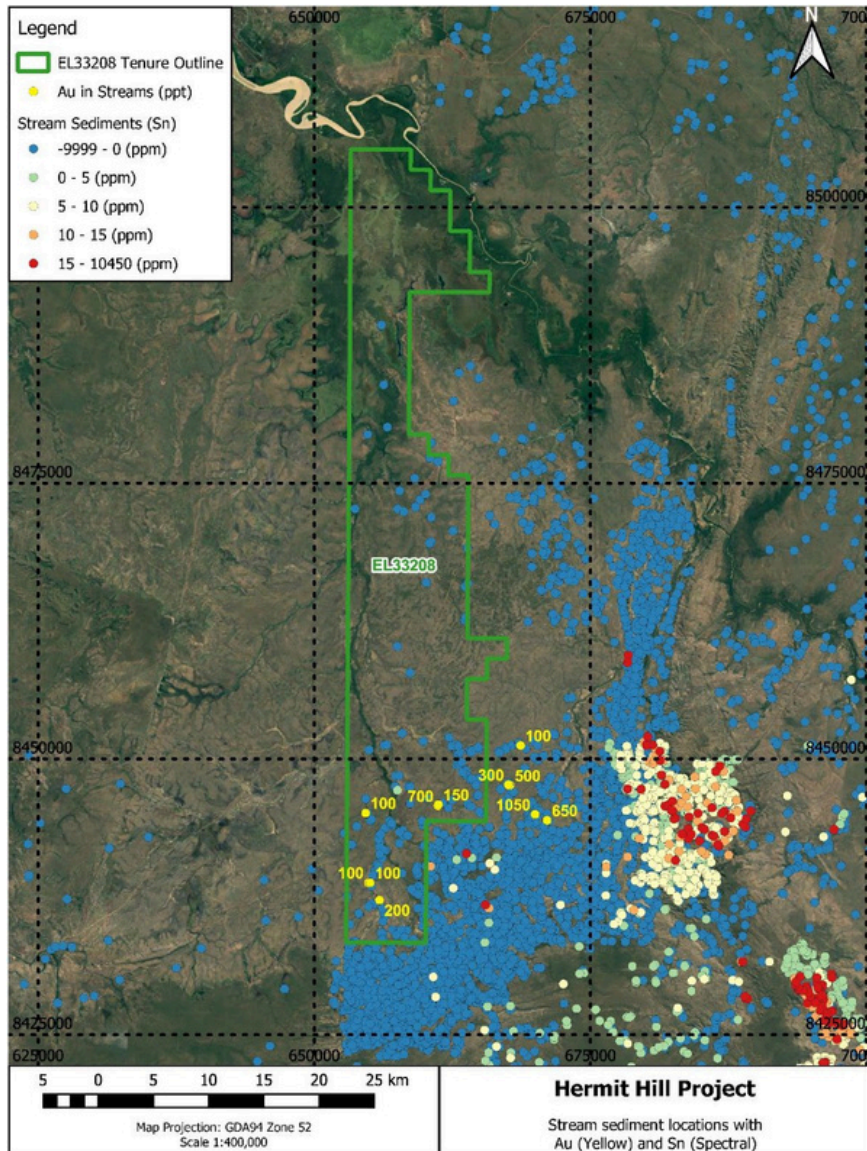




**Figure 6: Drillholes within the tenement and the holes with Pegmatite intercepts**

Historic stream sediment sampling has been compiled by the NTGS from open file data to aid in exploration activities. A potential issue with the use of this dataset is that several elements particularly anything outside of the standard gold, uranium and base metal suites may not have been analysed for and will show up as below detection (this is particularly the case for Li, Sn Ta, etc).

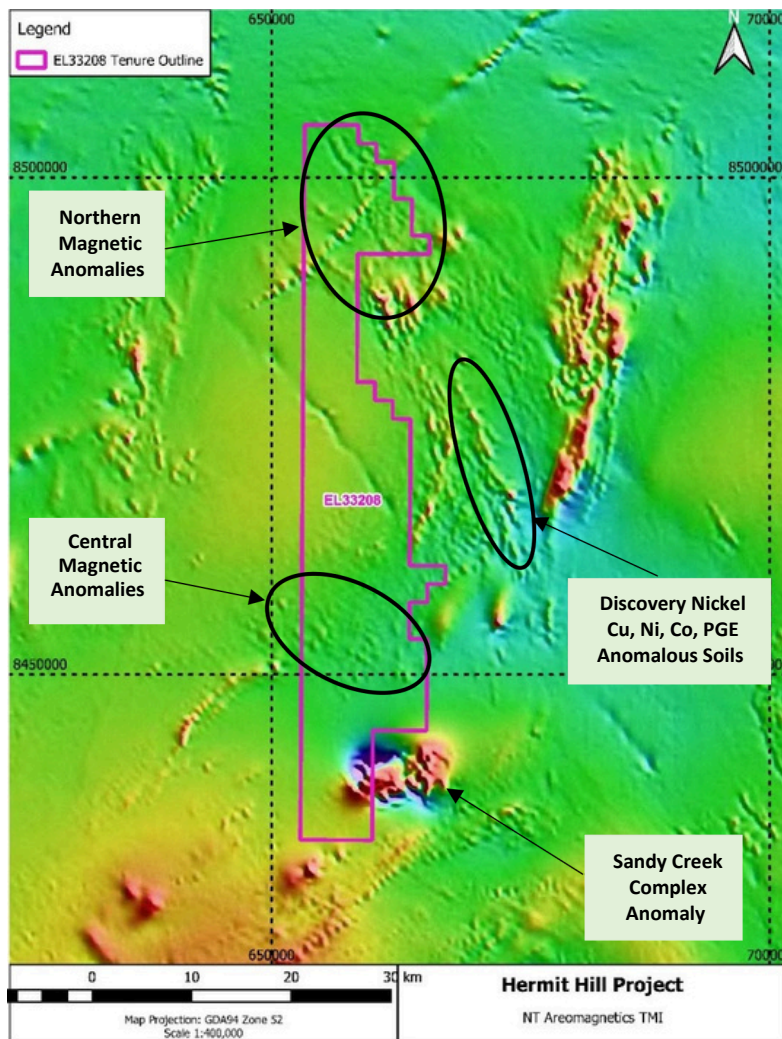
The being said there is one sample (PKM45) that returned 5ppm Sn and 6 anomalous Au samples returning 100ppt or above within the tenement (figure 7). As these are isolated samples, they are unlikely to indicate significant mineralisation, particularly with some anomalous results upstream and off tenure.



**Figure 7: Stream sediment sampling with Sn in ppm (spectral) and gold in ppt (yellow)**

The Northern Territory statewide aeromagnetic data has outlined three anomalous zones within the tenement (figure 8). The dominant magnetic feature is the Wangi Basics known as the Sandy Creek Mafic-Ultramafic Complex at the southern end of the tenure. Historic exploration by Mobil, Placer, Geopeko and Discovery Nickel returned some anomalous Cu, Ni, Co and PGE results (figures 9, 10, 11 and 12).





**Figure 8: Statewide Northern Territory aeromagnetic data (TMI) outlining anomalies within the tenure.**



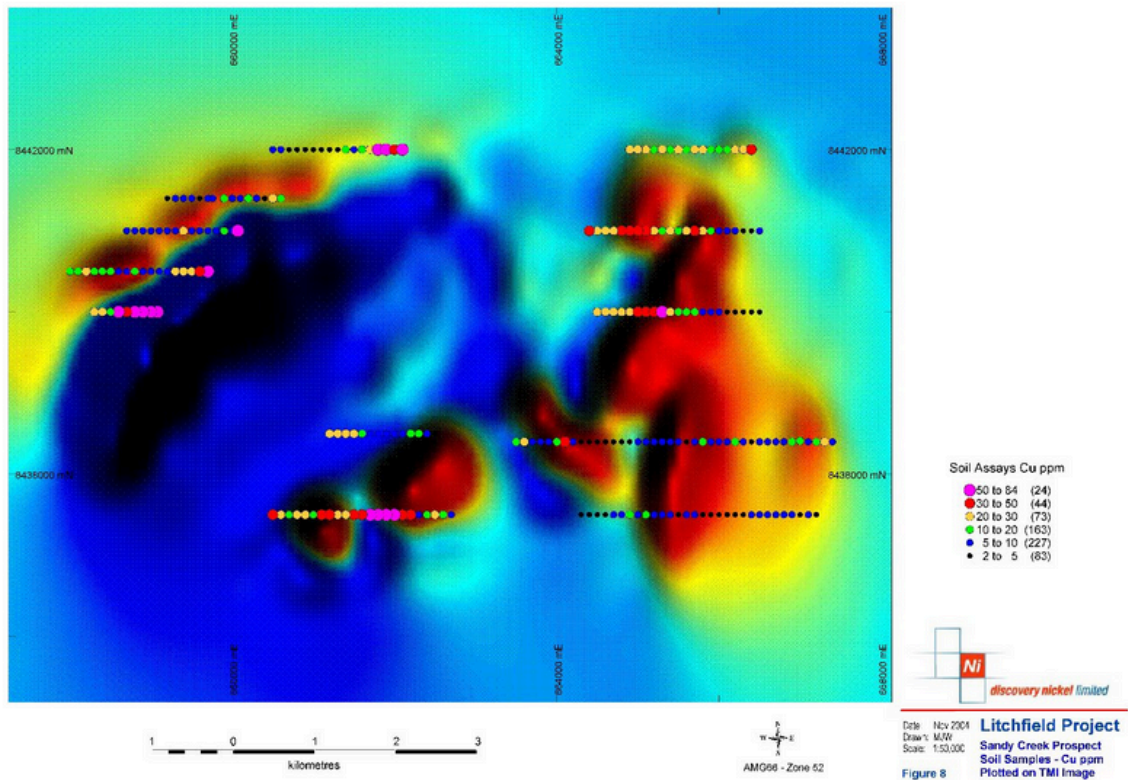


Figure 9: Sandy Creek Complex with anomalous Copper in soil results on TMI magnetics

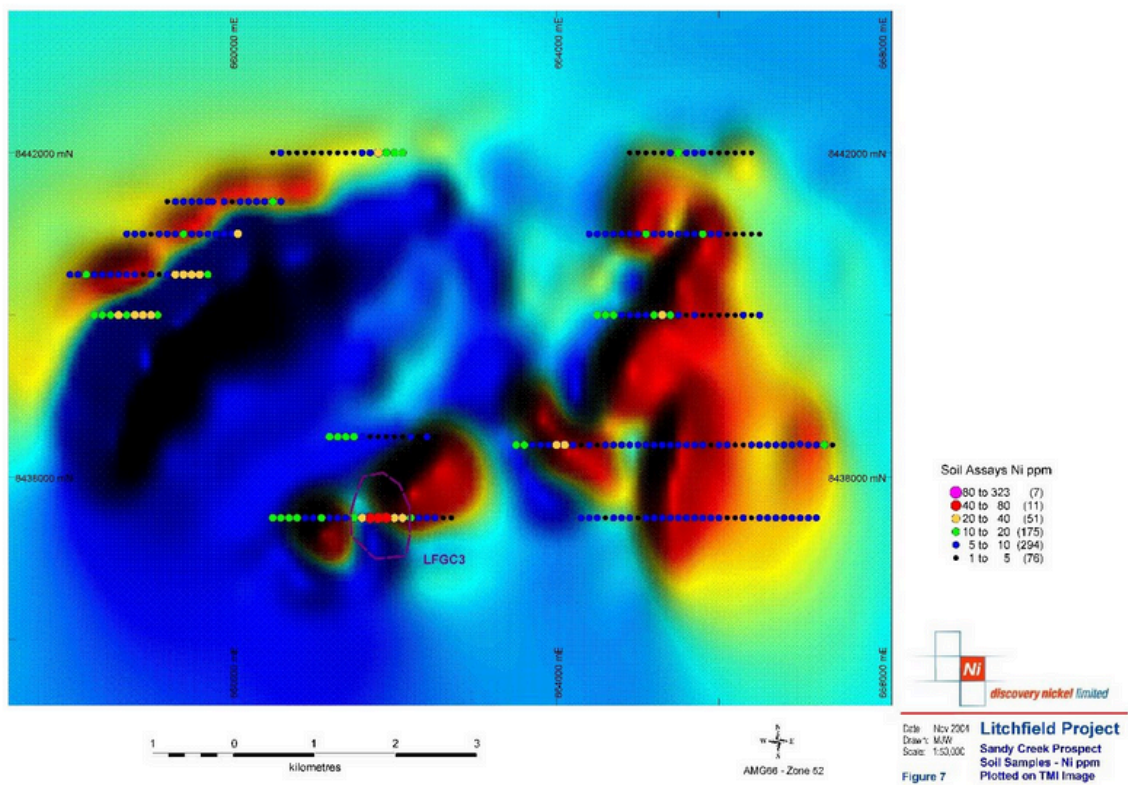


Figure 10: Sandy Creek Complex with anomalous Copper in soil results on TMI magnetics

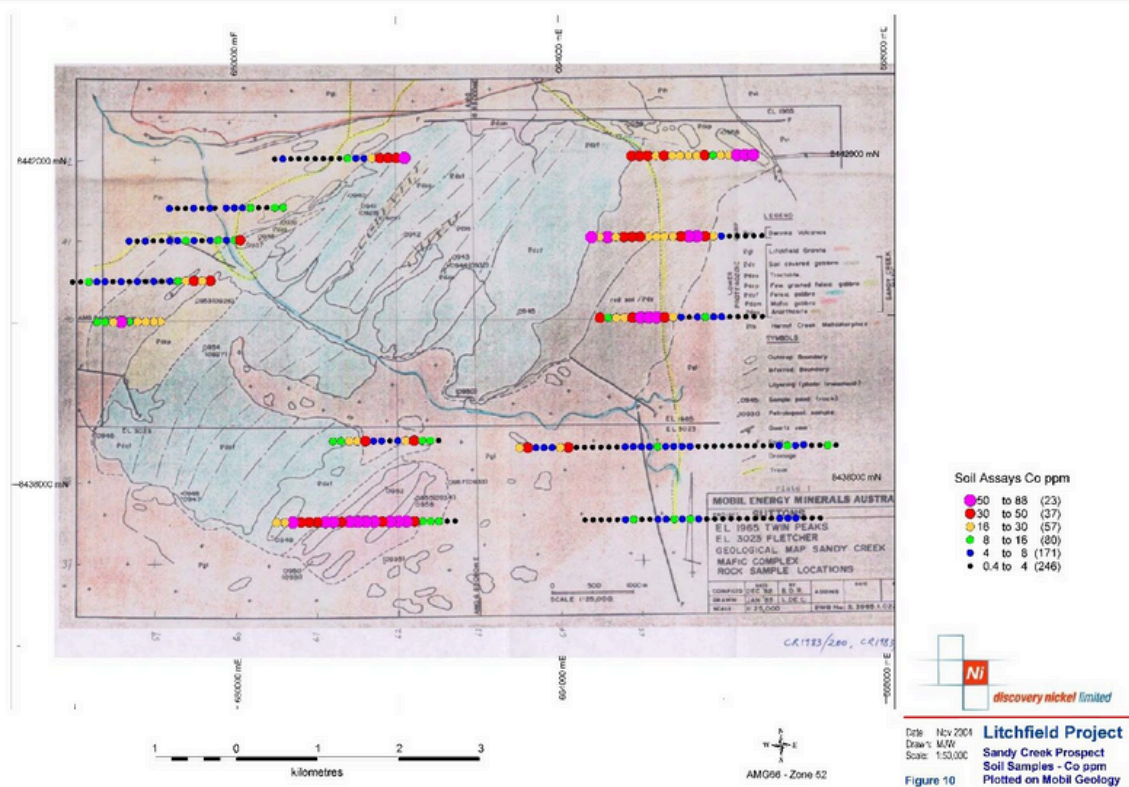


Figure 11: Sandy Creek Complex with anomalous Cobalt in soil results on Suttons geological mapping

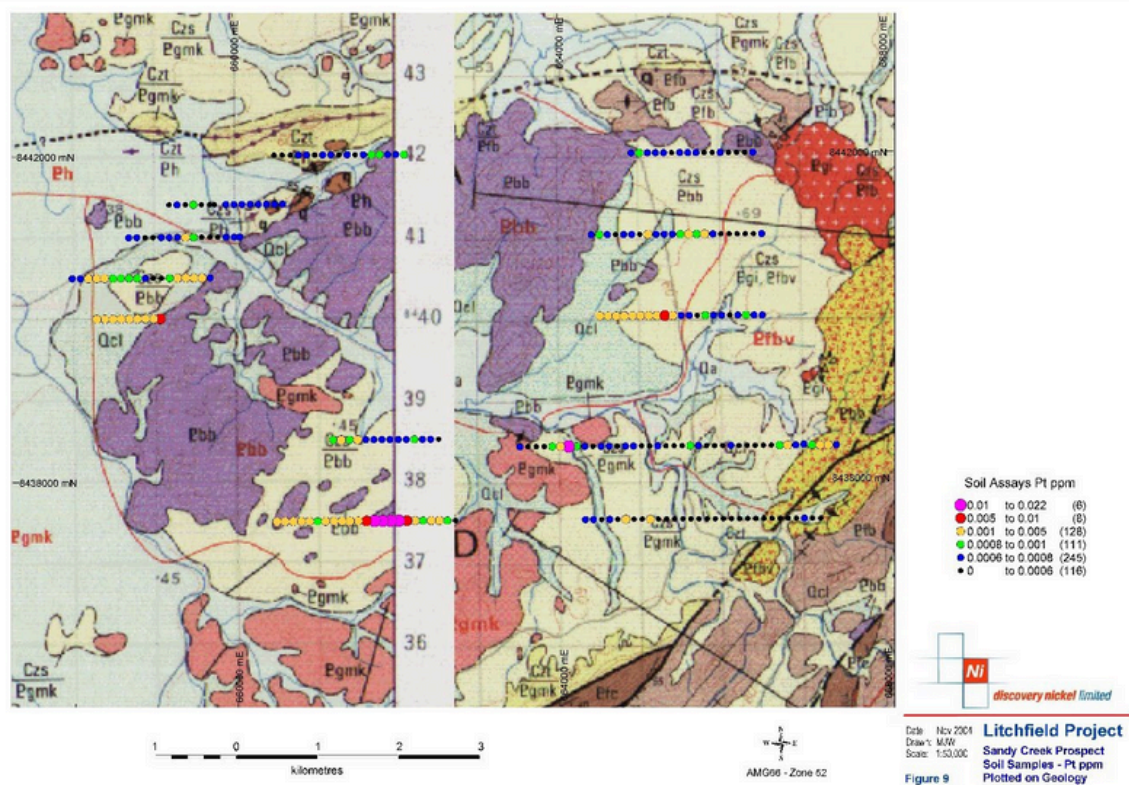
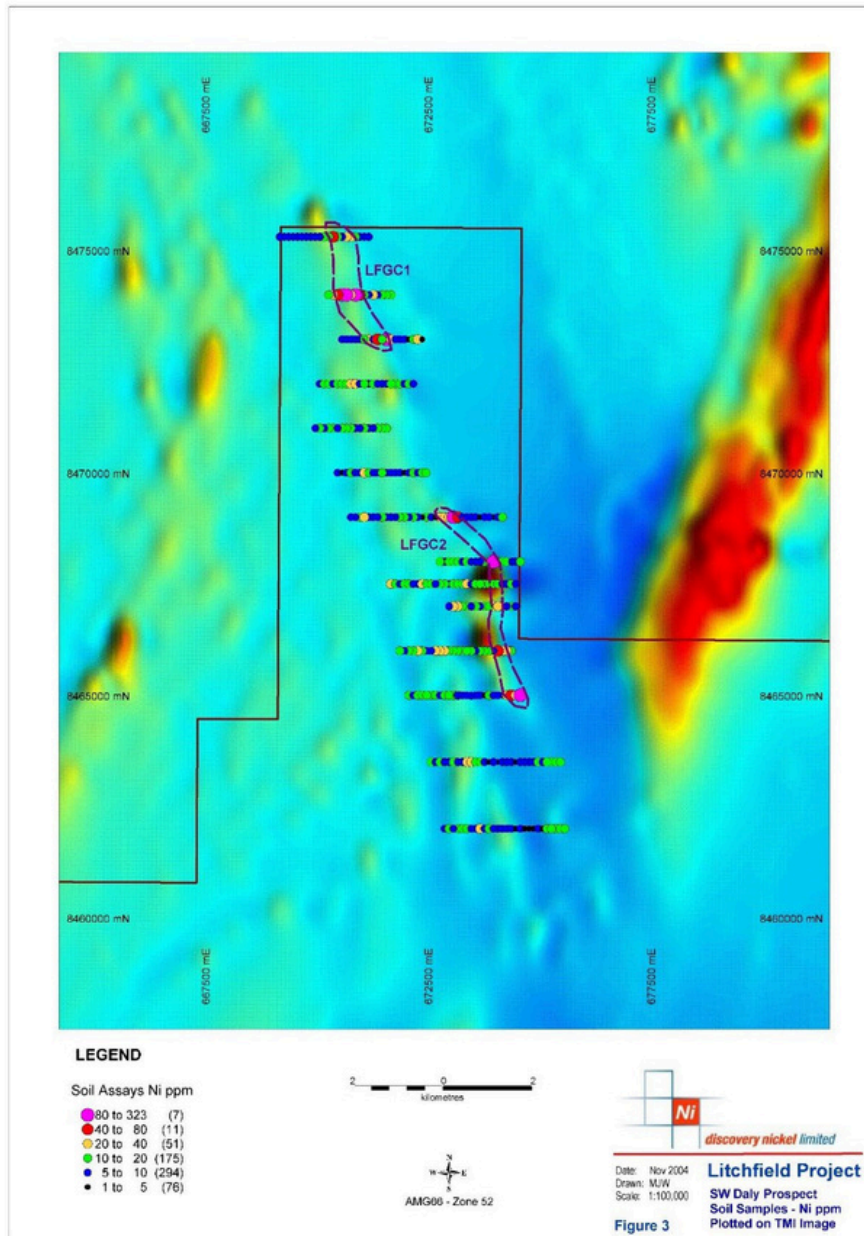


Figure 12: Sandy Creek Complex with anomalous Platinum in soil results on NTGS outcrop geology



In the north of the tenement there are many subtle magnetic features that might have an association with mafic/ultramafic lithologies. Territory Uranium engaged a geophysical consultant that identified these anomalies but didn't provide any further information on possible source of economic significance. Discovery Nickel outlines some anomalous Ni, Cu, Co and PGE results along these trends in soils to the SE (figure 13).



**Figure 13: Discovery Nickel anomalous Platinum soils over TMI magnetics.**

In the central portion of the tenement there are several subtle magnetic features that might have an association with mafic/ultramafic lithologies. Territory Uranium engaged a geophysical consultant that identified these anomalies but didn't provide any further information on possible source of economic significance. Southdale Holdings Pty Ltd undertook reconnaissance geological mapping and geochemical sampling program for Ni, Cu, PGEs over the interpreted metabasites from the NTGS. The program consisted of 15 x rock chip, 5 x -2mm stream sediments, 4 x -2mm soils and 3 x lag samples, with no anomalous results were returned. However not all metabasites were evaluated, so potential still remains to identify economic mineralisation.

## 8 Work Completed

West Cobar engaged GeoRem Pty Ltd (GeoRem) to provide an independent review of the historical exploration on the Hermit Hill Project, particularly for LCT pegmatites. The review of public and open file data has identified gold, base metal and Li/Sn targets.

Neil Pendock of Dirt Exploration was engaged by West Cobar to identify potential Lithium targets utilising Sentinel-2 satellite remote sensing data.

The Sentinel-2 satellite sensors collect eight spectral bands of VNIR imagery that have 10 m spatial resolution and 2 bands of SWIR that have 20 m resolution. It is applicable to exploration undercover to define targets by mapping gasses. Serpentinization is a hydration and metamorphic transformation of ferromagnesian minerals, such as olivine and pyroxene, in mafic and ultramafic rock to produce serpentine with H<sub>2</sub> and CH<sub>4</sub> as byproducts.

From this data provided Neil identified 30 targets based on the best response from the s\_targetc imagery, that do not consider ground disturbance. 18 targets were identified based on the best responses from the imagery provided as well as accounting for geological and spatial parameters (figure 14).

A field trip was undertaken from the 30th June to 7th July 2023. The purpose of the field trip was primarily to field check the Li targets identified by from the Sentinel-2 data and the open file review. Sample sites were visited by 4WD vehicle mainly staying on existing tracks but occasional walking traverses when required. A total of 14 rock chip samples were collected with all samples were submitted for Li suite with selected samples for gold and base metals (figure 15). Limited outcrop and isolated granite boulders are rarely observed above the black soil plains.

A second field trip was undertaken to follow up on exploration targets from the CSA Global desktop review. A total of 19 rock chip samples were collected with all samples were submitted for Li suite with selected samples for gold and base metals (figure 15).

From the 48 targets identified from the Sentinel-2 data a total of 22 were evaluated in field with the remaining targets unable to be accessed due to wet ground conditions or steeply incised creek channels. Four of these unchecked targets have subsequently been categorised based on aerial imagery and the results of the field investigation. Sixteen of the targets were found along roads, gravel pits or disturbed ground with a further ten samples from flood plains or drainage systems (table 1). From the observations of the landscape throughout the project area it is unlikely that the Sentinel-2 data is effective in identifying Li targets.

**Table 1: Sentinel-2 Targets and field observations**

Source	Roads	Gravel Pit	Disturbed Ground	Flood Plain or Drainage	Unchecked	Total
Neil Pendock	10	3	2	4	11	30
West Cobar	0	0	1	6	11	18
<b>Total</b>	<b>10</b>	<b>3</b>	<b>3</b>	<b>10</b>	<b>22</b>	<b>48</b>



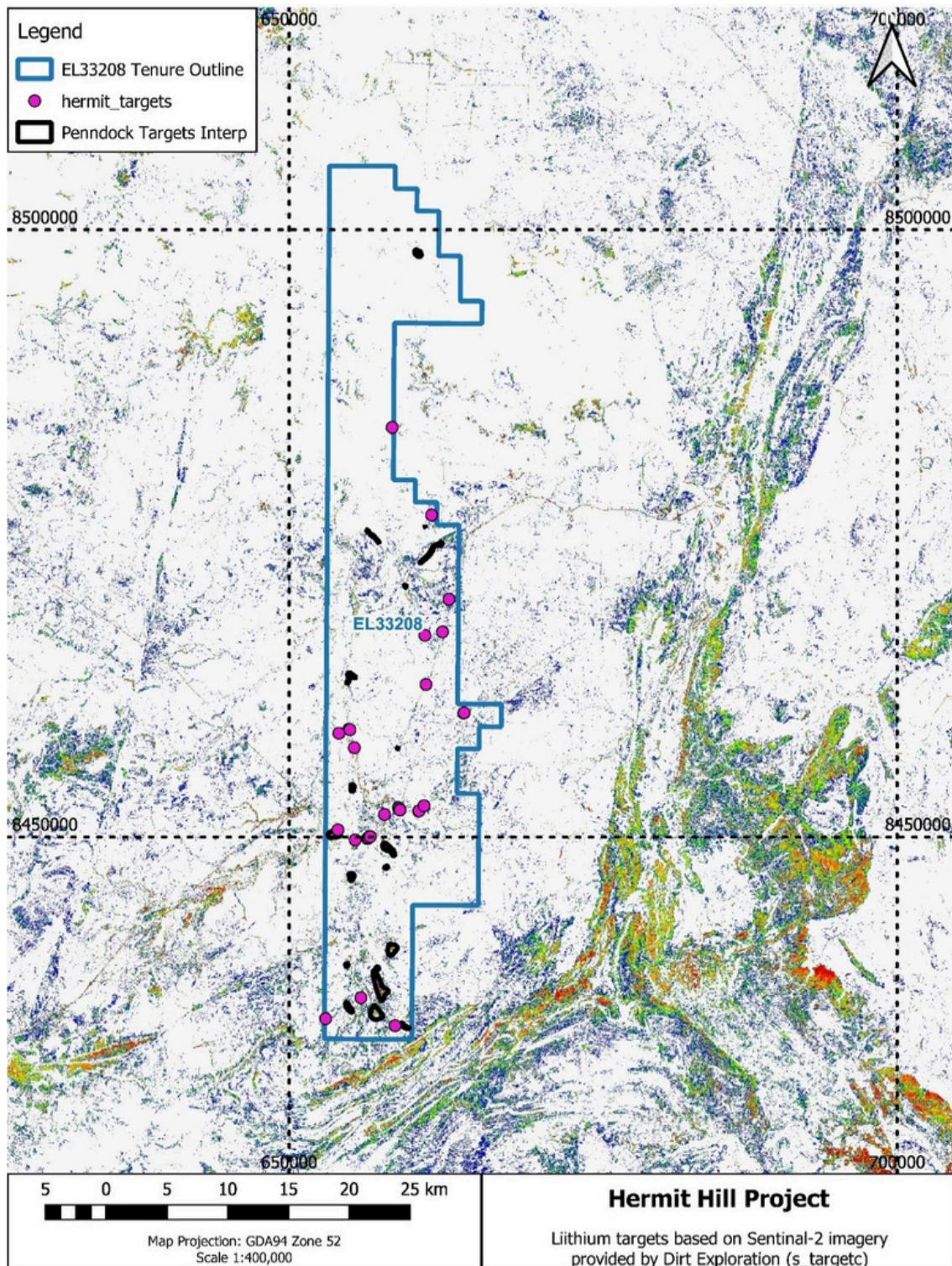
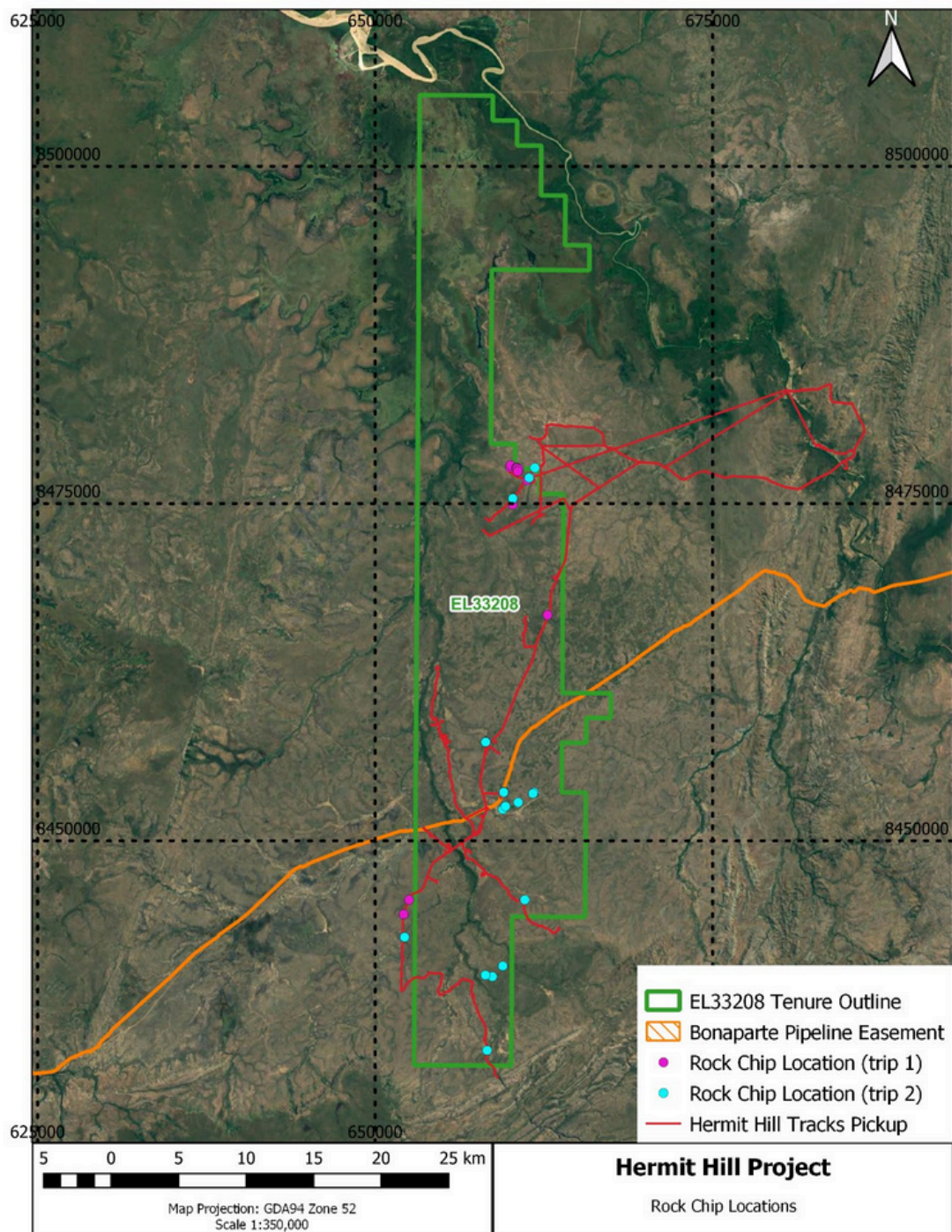


Figure 14: Hermit Hill Project with Li targets based on Sentinel-2 remote sensing data.





**Figure 15: Hermit Hill Project with rock chip sample locations and track pickups.**

The pegmatites mapped by Denehurst in the Hermit Hill area were investigated, which is one of the few places of outcrop throughout the tenement package. On the scree slope on the side of the hill to the west of Hermit Hill there were numerous small holes that may have been diggings for minerals but more likely animal diggings, on the top of this hill however there was what appears to be some historic digging targeting pegmatite, possibly Sn? The pegmatites in the area appear to have some zonation or phases with a quartz/muscovite phase and a more feldspar rich phase, with some large books of mica up to 7cm. The presence of several phases or zonation of pegmatites is viewed as a positive as it may indicate fractionation of the source.

Pegmatites in the Hermit hill area appear to extend north and south on a NW-SE trend and even though difficult to follow due to thick grasses, can be traced for 300-400m along strike. Most of the rock chip samples were collected in this area. No obvious Li bearing minerals were identified.

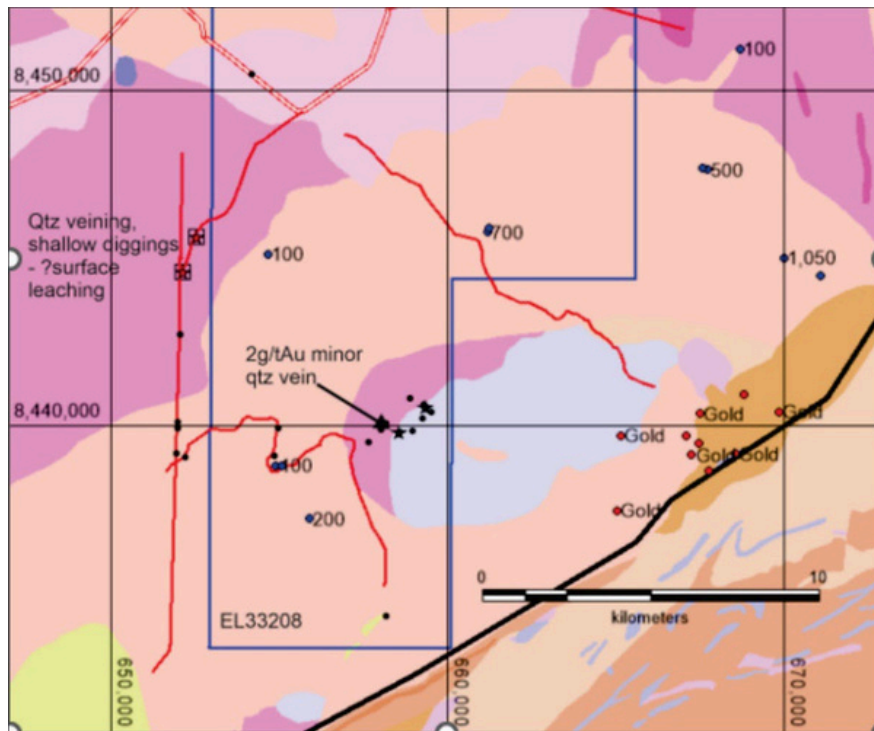
The Mobil drillholes TPPD3, and TPPD20-24 that intersected pegmatites were unable to be evaluated. Attempts to locate drillholes along the Port Keats Road were also unsuccessful either in the field or from aerial imagery, possibly due to several factors:

1. There may be an issue with the exact location of drillholes due to the coordinate system being used and subsequent translations/registration leading to incorrect GPS coordinates.
2. The drill spoil is unlikely to be preserved after 40 years due to environmental factors. E.g. high rainfall, muddy sheetwash nature of the landscape, coupled with the interaction of stock constantly turning over the surface.
3. Tracks and drill pads unable to be identified due to the rapid regrowth of vegetation and burning by station owners to remove tall grasses and promote regrowth.

However, the area was prospected and some outcropping and float pegmatites in the area were sampled.

These Au and Sn stream sediment samples from the NTGS were not followed up in the field as most of the area is sheetwash with limited outcrop to enable tracking back the source of any anomalies. Initial thoughts are that the landscape was mainly sheetwash but on reflection this may be incorrect as Discovery Nickel identified a base metal and PGE anomaly in soils over a similar landscape. Any surface geochemical (streams, soils) sampling program needs to be carefully planned and implemented to ensure that it is effective.

Reconnaissance was carried out over the Sandy Creek Complex area of base metals and PGE anomalies identified in historic soils. Apart from the contact zones with chloritic shears the bulk of the Complex within EL33208 consisted of fresh relatively massive metabasites. One thin discontinuous quartz vein with gossanous material was sampled by West Cobar and contained anomalous gold and copper values (Figure 16). The outcrop along the contact zones was poor.



**Figure 16: Southern part of EL33208 – minor gold potential**

No attempt was made to locate the northern and central Geophysical magnetic anomalies as they are in areas of extensive sheetwash, limited to no outcrop and inaccessible at this time due to wet access tracks.

Numerous historical diggings and costeans were observed over and area of multiple quartz veins and what looks to be a lithological contact with a ferruginous metasediment. No indication of this work was identified in the open file review.

There appears to be some issue with registration of some of the NT government datasets as it was observed that the boundary between Elizabeth Downs station and the Aboriginal reserve to the east is out by approx. 160m (possible datum shift).

CSA Global were engaged to provide a desktop review of the results of the initial field trip and to provide recommendations and potential exploration targets for further work. The summary of this report is below:

The available data relevant to exploration for rare-element the lithium-caesium-tantalum (LCT) family of pegmatites within EL33208 is very limited. Most information relates to exposed pegmatites at Hermit Hill and based on available rock chip analytical data for Rb and Sr some of these pegmatites are weakly fractionated with slightly elevated Rb and  $Rb/Sr > 10$ . No other indicators for the presence of LCT pegmatites was identified within EL33208.

The tenement largely covers granitic rocks of the Litchfield Complex with only small areas of older rock sequences mapped within the tenement and these are considered too close to the potential source granite to have high potential for LCT pegmatites.

However, in the Northern Territory Geological Survey (NTGS) Report 16 (Frater, K.M., 2005) the SE portion of the Litchfield Complex is differentiated as the Jamine Granite and this granite, based on its

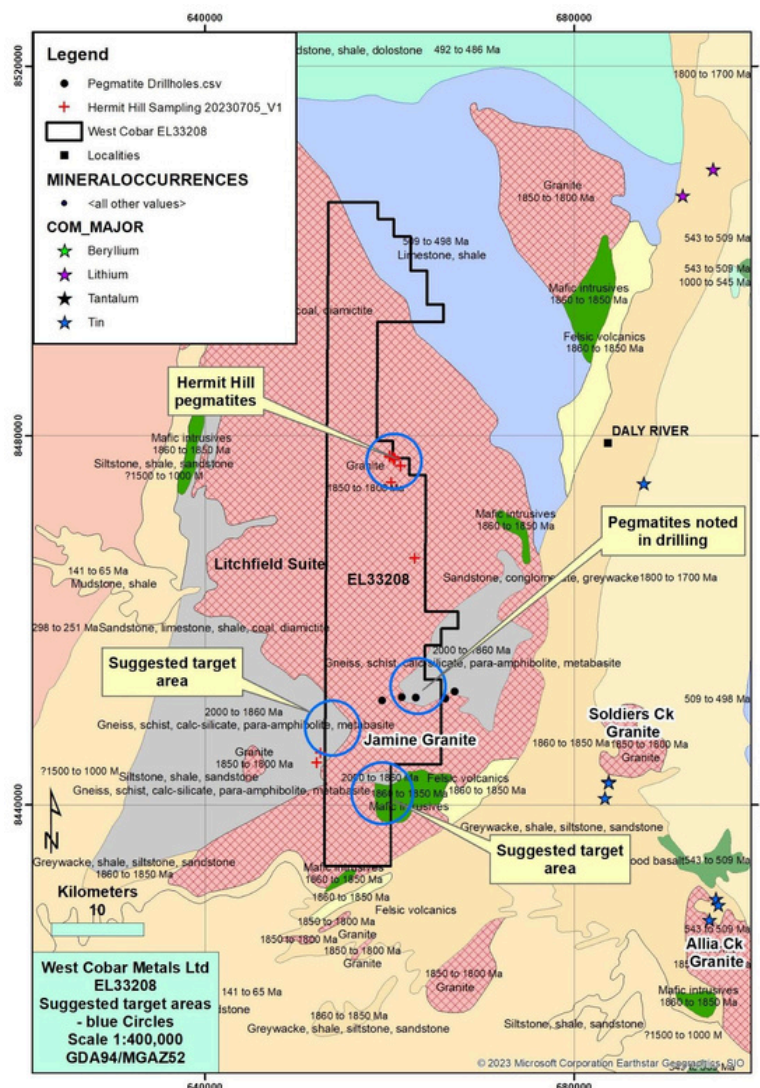


geochemical characteristics, is considered a potential source granite to LCT pegmatites. If this is correct, then there may be some age difference between granite phases within the Litchfield Complex and any pegmatites derived from the Jamine Granite (assuming it is a younger fertile phase) potentially hosted within the surrounding older granite phases. If true, this would increase the prospectivity of EL33208.

Overall while CSA Global is of the opinion that EL33208, based on the data and local geology, has low prospectivity for LCT pegmatites, it has identified several targets that WC1 may wish to follow up. These include:

- Re-sampling the Hermit Hill pegmatites to obtain good quality K/Rb fractionation data.
- Re-sampling or re-drilling the pegmatites intersected in previous drilling (Figure 17).
- Bedrock geochemical sampling within the target areas indicated in Figure 17.

It should be noted that deep weathering of bedrock and pegmatites is likely in this region which means that lithium is likely to be leached out and less mobile geochemical indicators such as Sn, Ta, Rb and Cs relied upon.



**Figure 17: Suggested target areas for LCT pegmatite exploration – blue circles, the Hermit Hill pegmatites also should be re-evaluated by sampling blocky K-feldspar and pegmatites in drilling sampled if possible.**

## 9 Results and Discussion

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It is encouraging that several pegmatites appear to have either several phases or zonation which may be derived from fractionation of the source granite. Outside of the Hermit Hill Area limited outcropping pegmatites or pegmatite float was observed even though pegmatites had been intersected in historic drilling. This indicated the potential for pegmatites to be located under cover within the tenement.

While CSA indicated a low prospectivity for the tenement the potential of the Jasmine Granite to be a potential source for LCT pegmatites is worthy of further follow up.

Assay results of the pegmatites were disappointing with no anomalous Li, Sn or Ta returned confirming initial observations of a lack of LCT mineral assemblages.

Denehurst mapped pegmatites and anomalous geochemical sampling has delineated anomalous Sn and Ta values that need to be followed up with a soil and stream sediment sampling program to determine if there are any LCT pegmatite potential.

Results of the Sentinel-2 targeting were generally disappointing with no obvious targets for further exploration identified. This is mainly thought to be because of the nature of the landscape of black soils plains with standing water emitting gases that appear to be from a Li mineral decay sequence.

Several quartz veins with well-formed quartz crystals up to 2cm were sampled in for gold with a single sample (ED01) returning 2g/t Au. There remains potential for gold and base metals and gold remain to be followed up.



## 10 Conclusions and Recommendations

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Future exploration for LCT pegmatites should focus on the recommendations outlined by CSA.

- Re-sampling the Hermit Hill pegmatites to obtain good quality K/Rb fractionation data.
- Re-sampling or re-drilling the pegmatites intersected in previous drilling.
- Bedrock geochemical sampling within the target areas

Future gold and base metal exploration should be focussed on the south of the tenement where extensive costeaning/workings were identified and around the Wangi Basic Intrusive as there is anomalous gold and base metal geochemistry associated with the contacts with the host rocks.

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