CHALCO RESOURCES PTY LTD

EL32693

Carrara

Northern Territory

ANNUAL REPORT

For the period

26 October 2021 to 25 October 2022

Project holders:	Chalco Resources Pty Ltd
Project operator:	Sabre Resources Ltd
Target commodity:	Gold, copper, base metals
Standard NT map sheets:	Mt Drummond (SE 5312), Ranken (SE5316), Mitchiebo (6360), Carrara (6460), and Lulu (6359)
Author:	N Burn, Exploration Manager, Corporate Resource Services Pty Ltd
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	Chalco Resources Pty Ltd
	Sabre Resources Ltd
	McMahon Mining Title Services Pty Ltd

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ABSTRACT

EL32693 comprises 248 blocks covering an area of 805.46 km^2, situated approximately 180 km northeast of the Barkly Homestead in the Northern Territory. The license was granted for a 6-year term on 26 October 2021.

The Carrara tenement (EL32693) is located at the junction of two Palaeo-Proterozoic, mineralised corridors:

- The approximately east-west trending Tennant East Belt, prospective for Tennant Creek style, high-grade, copper-gold deposits, and,
- The southern edge of the Lawn Hill Platform, faulted against the buried Palaeo-Proterozoic basement, which is the interpreted extension to the McArthur River-Mount Isa provinces.

Geoscience Australia (GA) have highlighted the prospectivity of the 'Tennant East' belt that extends from Tennant Creek, east towards the Mt. Isa Block. The south and eastern boundary of the tenement is dominated by a significant northeast-trending, magnetic high feature that is interpreted to represent the eastern equivalent to the Warramunga Formation, which is the host to the high-grade Tennant Creek style Iron-Oxide Copper Gold (IOCG) deposits.

Near surface within EL32693 are the Georgina Basin sediments, which are interpreted to unconformably overlie the prospective Palaeo-proterozoic units at depth. The area is poorly explored, particularly for minerals within the basement. There are several stratigraphic holes drilled in the area by Geoscience Australia (GA) and the Northern Territory Geological Survey (NTGS) that, in combination with seismic data, reveal that the Tennant East corridor lies at only moderate depth below the clastic sediment filled basins. The Mt Isa Province units are interpreted to lie at greater depth to the south of the faulted contact with the Lawn Hill Platform.

The Company is planning to carry out drone magnetics and detailed gravity survey over the structural corridor to define coincident gravity and magnetic targets in the Palaeoproterozoic basement. In addition, surface geochemistry will be carried out to detect "leakage" into the overlying Cambrian Georgina Basin sediments above potential basement IOCG mineralisation. Further target refinement via Induced Polarisation (IP) surveying to detect sulphide occurrences to follow, then selected aircore and/or RC/diamond drilling to test basement IOCG targets.

Total expenditure on EL32693 during the reporting period was $27,130.

TENEMENT STATUS

EL32693 comprises 248 blocks covering an area of 805.46 km^2 (Table 1, Figure 1). The license was originally granted for a 6-year term on 26 October 2021.

Table 1: Tenement Status Summary EL32693

Tenement	Block No.	Area (km^2)	Granted	Expires	Holders
EL32693	248	805.46	26 October 2021	25 October 2027	Chalco Resources Pty Ltd (100%)

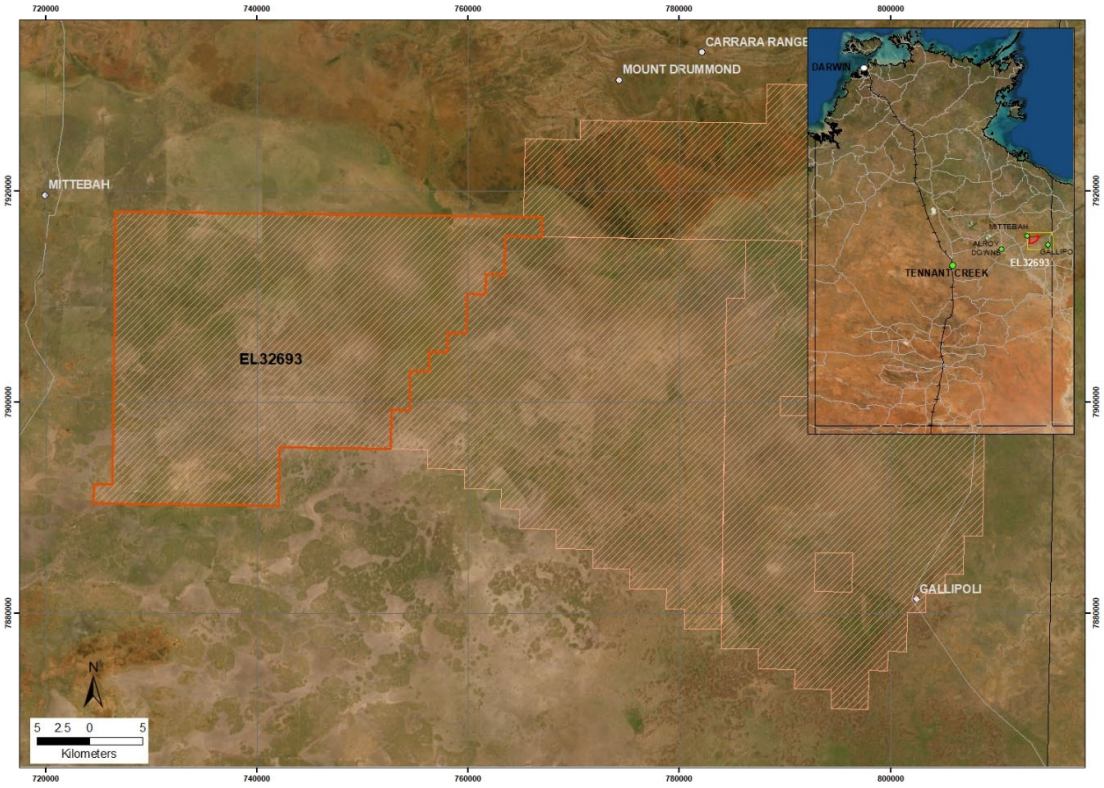

Fig 2: Location and tenement status map of EL32693

LOCATION AND ACCESS

EL32693 is situated approximately 150 km northeast of the Barkly Homestead, north of the Barkly Highway in the Northern Territory (Figure 1). The license area falls within the Mitchiebo (6360), Carrara (6460) and Lulu (6359) 1:100 000-scale map sheets. The tenement is within the Alexandria, Mount Drummond and Mittiebah Perpetual Pastoral Leases.

Access to the Licence area from the Tennant Creek Township is via the sealed Barkly Highway to the Ranken Rd intersection (approximately 160km east of Barkly Homestead), and then via the unsealed Ranken Road for approximately 160km north. A network of unsealed tracks provides reasonable vehicular access to the remainder of the tenement.

The climate of the project area is semi-arid with a mean annual rainfall of about 460 mm, with rainfall mostly in the period November to March. Temperatures are moderate to high in the summer months with an average of 18.8 days per year over 40ºC between October and March and the winters are mild with the lowest temperature recorded being 4.5ºC during the month of July.

The Barkly Tableland rises to more than 300 metres (1,000 feet) near the Queensland and Northern Territory border. Black soil plains cover much of the Barkly Tableland**.** The Tableland drains into the Gulf of Carpentaria via the Flinders River while the southwestern plains drain into Lake Eyre via the Diamantina River or into the Simpson Desert via the Georgina River which has its source on the Tableland.

The dominant flora of the Tableland is semi-arid savanna of Mitchell grass. The Tableland forms the western portion of the Mitchell Grass Downs ecoregion, which covers an area running 1500 km from here southeast into the Channel Country of Queensland. The Carpentaria tropical savanna ecoregion lies to the north in the lowlands around the Gulf of Carpentaria. The Victoria Plains tropical savanna lies to the west. The central Australian desert lies south of these savannas and grasslands.

GEOLOGICAL SETTING

The bedrock geology of EL32693 is dominated by shallow marine shelf carbonate sequences of the middle Cambrian aged intra-cratonic Georgina Basin, which is completely obscured by clay-rich Cenozoic black soil .

A near vertical deep diamond drill hole CRCDD1 (drilled by Teck Australia in 2016) intersected the base of the Georgina Basin at 568.76m (Figure 2). The lower most horizon intersected within the basin sequence is interpreted to be the Helen Springs Volcanics of the Kalkarindji Volcanic Group, which comprised mafic volcanics, which exhibit pervasive and banded hematite alteration (Cawood 2017; Fig. 3). Overlying the volcanics is a series of limestone dominant horizons of the Barkly Group (Cawood 2017).

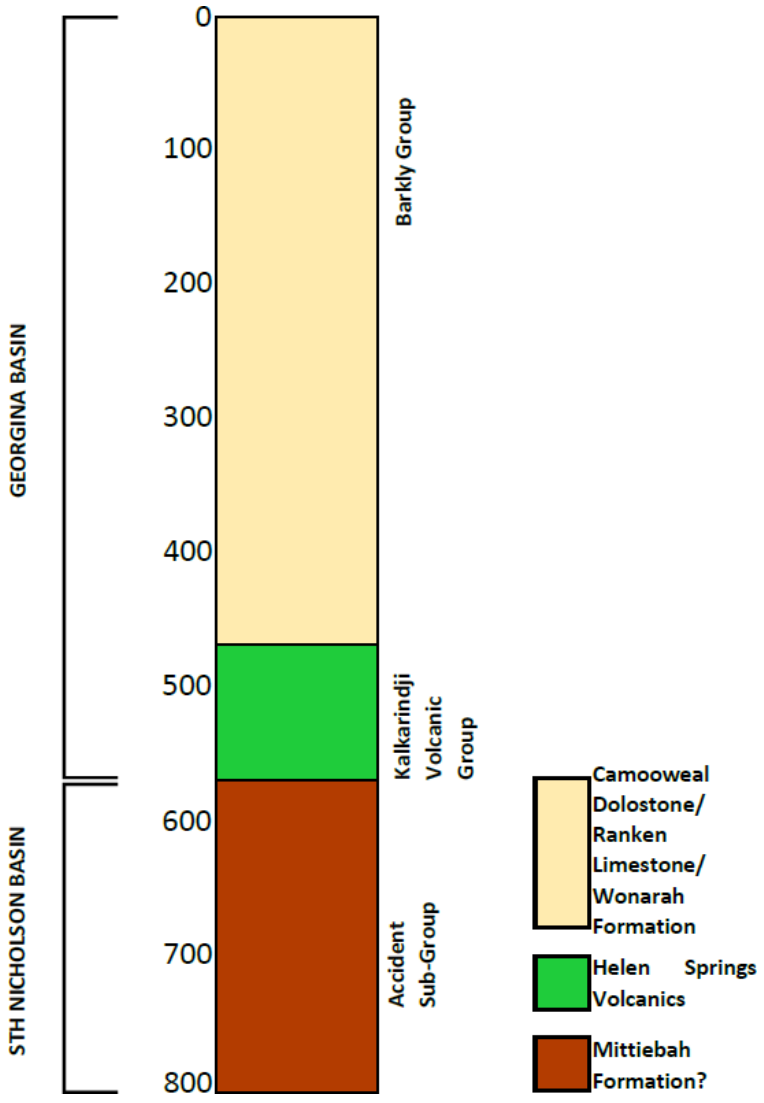

Fig. 2: Summary of stratigraphic units intersected in CRDD001. Taken from Cawood (2017)

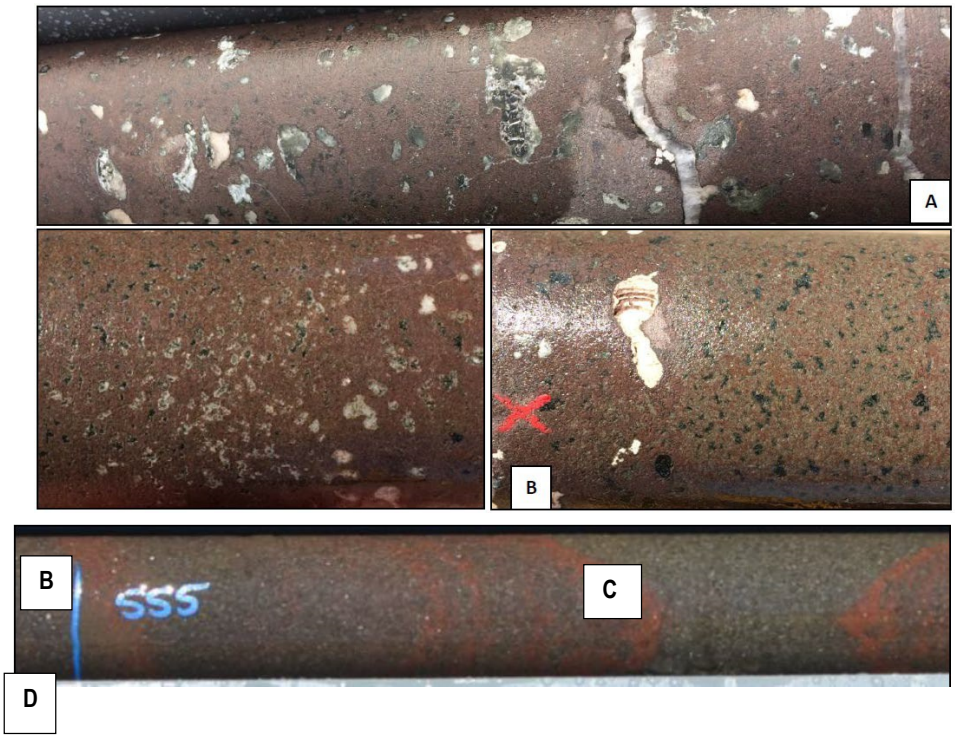

Fig. 3 Drill core from CRDD001 showing interpreted Helen Springs Volcanics with A: amygdaloidal structures, B: pitting, C: coarser grainsize and D: hematite banding. Cawood (2017).

One of the five seismic traverses conducted by Geoscience Australia in 2017 (17GA-SN1) transects the tenement from west to east, and section 17GA-SN5 is located just to the west oriented N- S (Fig. 4). Interpretation of the seismic line 17GA-SN1 (Fig. 5) by Carr et al. (2020) suggests that the sedimentary sequence which hosts the Century and Mt Isa Zn, Pb and Ag deposits extends into the Northern Territory, albeit at significant depth. In addition, a large, interpreted, felsic intrusion is present west of the tenement area, which is coincident with an area of low gravity and low magnetic anomalism. Interpretation of 17GA-SN2 (Fig. 5), which is perpendicular to the strike of the major faults, is suggestive of a series of north-dipping thrust faults. In addition, the area to the south of Little Range Fault (just to the north of the tenement) shows less deformation and this change is interpreted to represent a significant structural boundary.

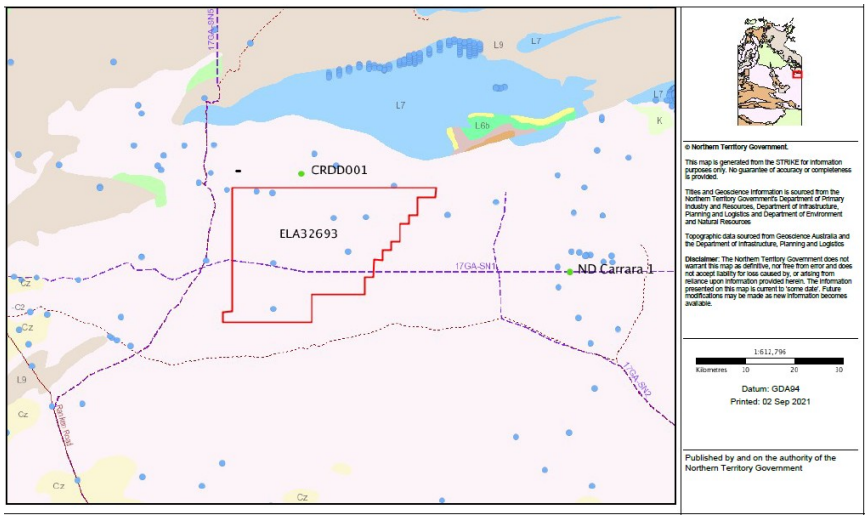

Fig. 4: Geology, exploration drill hole's location (blue circles) and NT core library holes (green circles). Others are water bores. Purple dashed lines are the South Nicholson seismic lines conducted by GSA 2017.

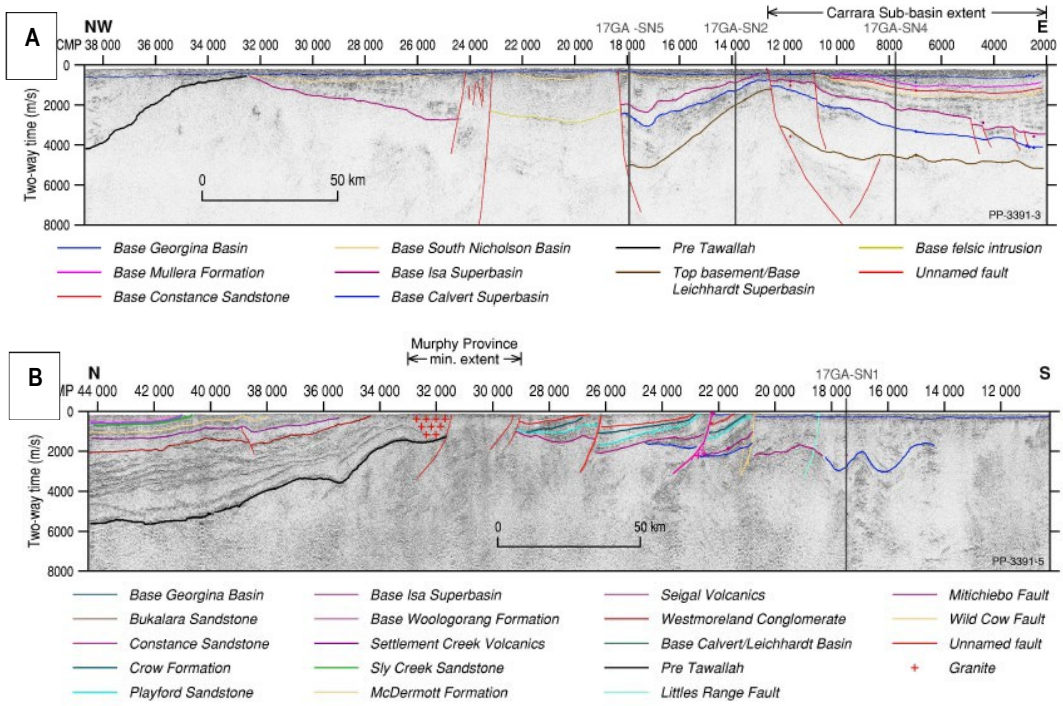

Fig. 5 Interpreted seismic sections A) 17GA-SN1 and B) 17GA-SN5. Taken from Carr et al. (2020)

Geophysics

Magnetic TMI imagery of the area covered by EL32693 (Fig.6) displays predominantly low to moderate magnetic intensity. The northern margin of the tenement has a series of magnetic high anomalies trending approximately E-W.

Regional gravity imagery covering EL32693 (Fig. 7) shows a NE-trending gravity ridge on the eastern and southern boundary of the tenement, coincident with the magnetic TMI anomaly. The western margin of the tenement shows the presence of a coincident gravity/magnetic low feature (Fig. 6 & 7), which is interpreted in the seismic section (Fig. 5) to be a felsic intrusion.

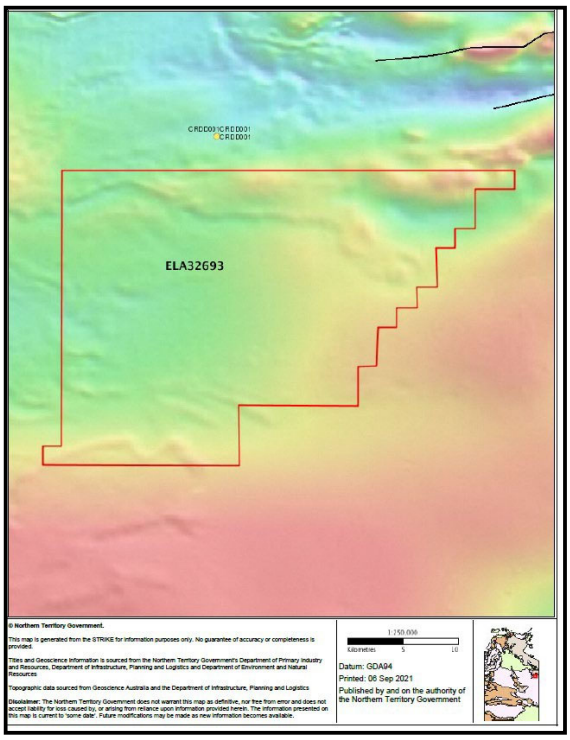

Fig. 6: TMI covering EL32693, showing CRCDD001

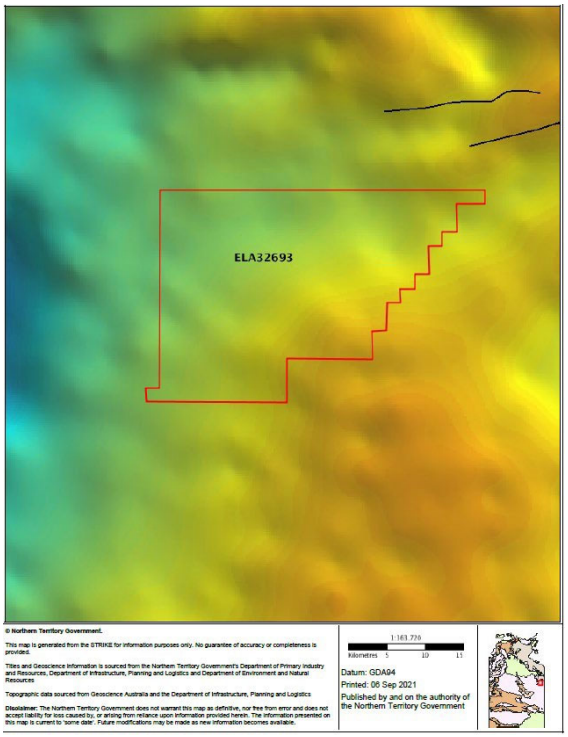

Fig.7: Gravity image covering EL32693

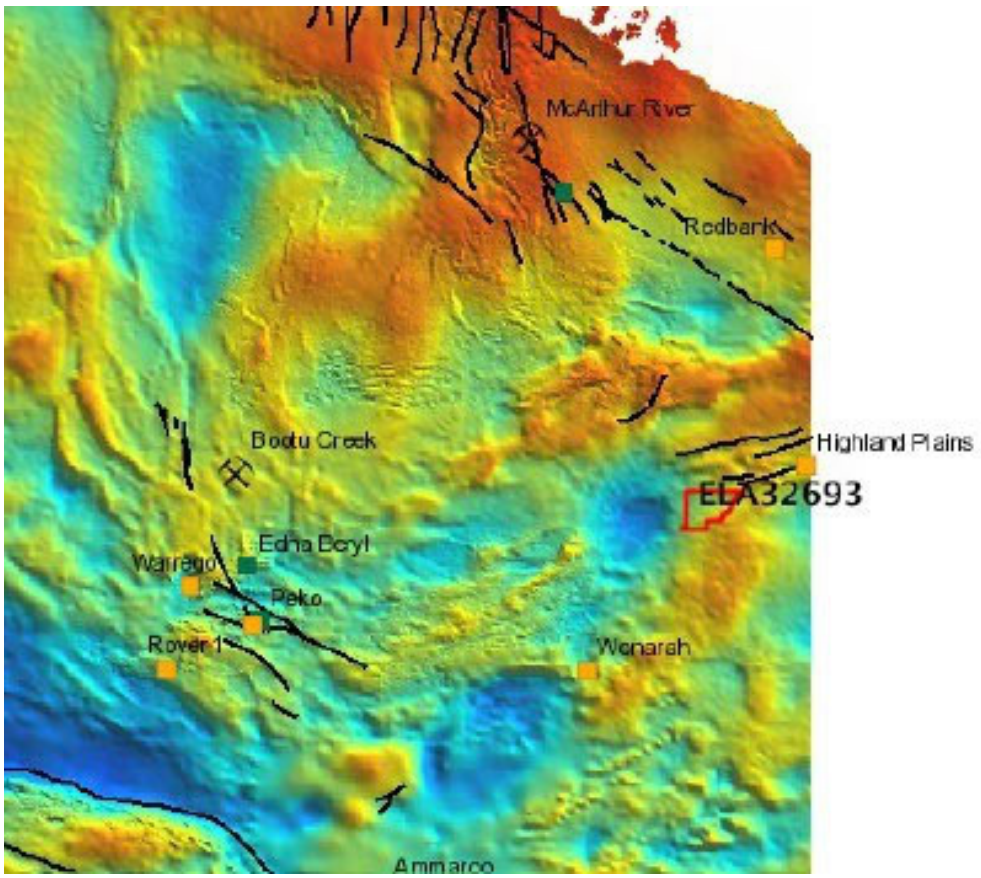

Fig. 8: Regional scale gravity image showing EL32693 location with respect to key Tennant Creek deposits.

EXPLORATION CONCEPTS AND TARGETS

The deep (1,750.82m) stratigraphic diamond drill hole ND Carrara 1 (Fig. 2) (drilled in 2019-2020 by the collaboration of GSA, the NTGS and MinEX CRC to test the Carrara Sub-Basin) intersected the base of the Georgina Basin at approx. 630m and continued into approx. 1000m of Proterozoic aged carbonate, black shales and siliciclastics. Weakly disseminated sphalerite and chalcopyrite were also detected at depths > 1,300m. **The Proterozoic stratigraphy intersected is interpreted to be equivalent to similar horizons within the Mt Isa Province that host to the world class Century and Mt Isa Zn, Pb and Ag SEDEX deposits, highlighting the prospectivity of this sequence that is interpreted to occur at depth within the tenement area.**

The observation of hematite-altered mafic volcanics at the basal contact of the Georgina Basin in CRCDD001, indicates the circulation of oxidizing fluids (potentially basinal), that have a strong capacity to carry metal cations in solution (e.g Cu, Pb, Zn, U). Where these fluids interact with reduced rock types e.g organic-rich siltstone/shale, deposition of sulphides e.g sedimentary copper deposits can result. The Wonarah Formation within the Georgina Basin was intersected in CRDD001 at ~ 400m and does contain minor shale and siltstone according to Rawlingset al. (2008). **The Wonarah Formation is interpreted to continue into the EL and represents a reduced rock type that may have interacted with oxidizing fluids if suitable fluid pathways e.g., faults, are present and should be targeted for either IOCG and/or base metal sulphide mineralisation.**

The area covered by EL32693 is also prospective for 'Tennant Creek' style IOCG mineralisation (Fig. 17). The south and eastern boundary of the tenement is dominated by a significant magnetic high feature trending NE. This feature is interpreted to represent the eastern extension of the Warramunga Formation, which is the host to the 'Tennant Creek' style IOCG deposits (Skirrow et al. 2019).

In addition, the northern margin of the Georgina Basin has been historically explored for shallow water phosphorites like the Highland Plains phosphate deposit on the margin of the Lawn Hill Platform. The area is still prospective for phosphate accumulations particularly proximal to basement high positions.

SUMMARY OF PREVIOUS EXPLORATION

HISTORICAL EXPLORATION

The key phases of previous exploration relevant to the Carrara EL tenement area include:

1967-1968 IMC Development Corporation (AP1788)

Exploration for phosphate. Drilled 15 holes, limited assays for phosphate and gamma ray logs. Collar locations have not been recorded on STRIKE. Reference: Barrie (1968)

1967-1969 Mines Exploration Pty Ltd (AP1776)

Exploration for phosphate as shallow water phosphorites, like Highland Plains deposit, on the northern shelf of the Cambrian Georgina Basin (Mittiebah-Mt Drummond

area). Drilled 21 RAB holes (collar locations have not been recorded on STRIKE). Drilling intersected equivalent prospective horizons, equivalent to phosphorite-bearing Burton Beds of the Highland Plains deposit. However, only one hole intersected a horizon of weakly anomalous phosphate. Overall, the depositional environment was deemed to be unfavourable for accumulation of phosphorite. Reference: Russell (1969)

1976-1977 ICI Australia Ltd (EL1125)

Exploration for phosphate. Drilled 7 RC holes (collar locations have not been recorded on STRIKE). No significant phosphate horizons were intersected. Reference: Hackett (1977).

1984-1998 Aberfoyle Exploration Pty Ltd/Ashton Mining Ltd JV (EL's 4372, 4374, 4530, 4373, 4531)

Exploration for diamonds. Stream sediment sampling of the Playford River and tributaries, just west of the tenement, plus regional gravel sampling contained microdiamonds. Four microdiamonds were recovered from samples collected during the tenure of the JV. (Fig.1). Reference: Ashton Mining Ltd (1986a, 1986b, 1988, 1989a, 1989b)

1991-1992 BHP Minerals Ltd (EL7203)

Exploration for SEDEX style mineralisation. Conducted ground magnetic surveys and SIROTEM soundings. Estimated depth to Proterozoic basement was interpreted to be > 320m. Based on this depth the tenement was relinquished. Reference: Stewart and Turner (1992).

2003-2004 Anglo American Exploration Ltd (EL23634)

Completed an exploration program targeting SEDEX style Pb-Zn mineralisation over a tenement that overlaps the northern part of EL32693. Work included a review of previous exploration and 40.2 km of TEM surveying over 3 lines (north of EL32693). Evaluation of the data and target review downgraded the prospectivity of the lease and it was surrendered. Reference: Lane et al. (2004).

2010-2013 Natural Resources Exploration Pty Ltd (EL27647)

Exploration for phosphate, uranium and diamond in EL27647 (McNicol). Collection of1 rockchip for multielement analysis. Results were insignificant with regards to phosphate. Percussion chips from 4 water boreholes RN025701 (125m), RN023361 (112m), RN033447 (132m) and RN006511 (93m) were analysed using pXRF (Fig. 2). Reference: Forder (2013)

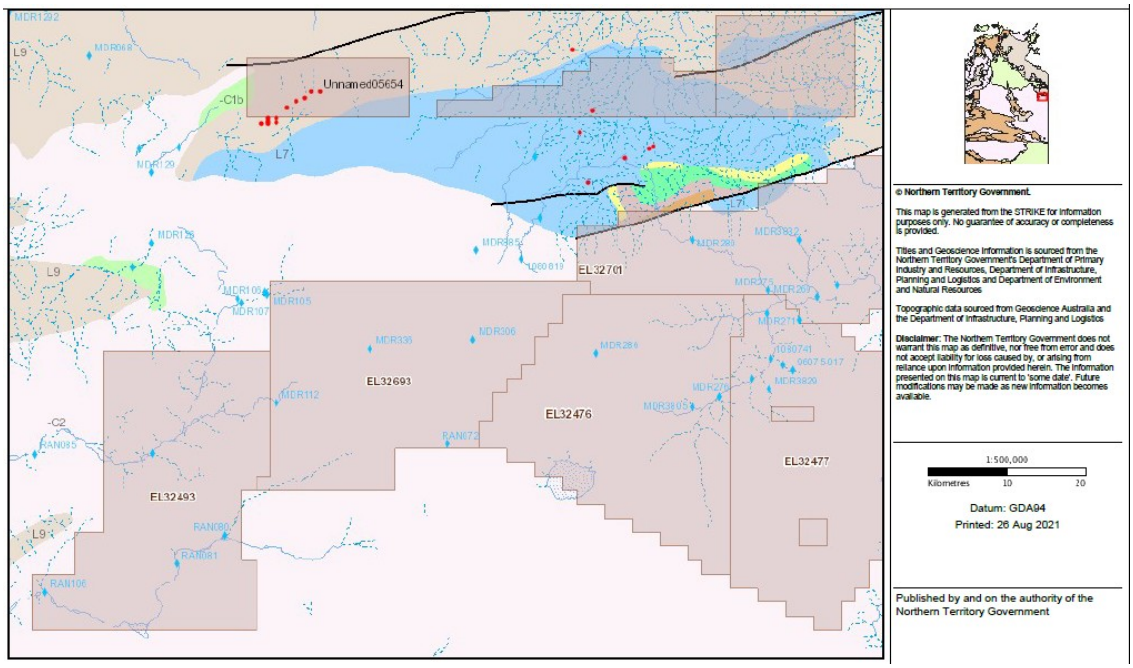

Fig. 9 Location of microdiamonds and drainage in the area covered by EL32693 (STRIKE)

2008-2012 Mantle Mining Corporation Ltd (EL26019 & EL27035)

Exploration for phosphate and uranium targeting the northern boundary of the Georgina Basin. Several shallow vertical RC holes were drilled including BTRC003 (30m) and BTRC045 (40m) drilled within EL32693 (Fig. 9). No significant results were obtained. Reference: Moore (2012)

2008-2013 Australis Exploration Pty Ltd (EL26309)

Exploration for phosphate, uranium and SEDEX base metal deposits. Completed geophysical review of existing data, field reconnaissance and soil testing using hand-held Nitron scintillometer and pXRF. Tenement was relinquished based on the belief that the area has low prospectivity. Reference: Chai (2013)

2013-2020 Teck Australia Pty Ltd (EL29793, EL29557, EL30816, EL31538, EL30665)

Exploration for shale-hosted Zn, Pb and Ag massive sulphide deposits like the Century Mine. Primary focus was the boundary between the Georgina Basin and Lawn Hill Platform. Reference: Reed (2020), Cawood (2017)

2015: Detailed Audio Magnetotellurics (AMT) survey was conducted (Fig. 10 &11). Vertical section (Fig.12) shows the presence of conductors at adepth between 700 to 1000m. An extensive detailed ground gravity survey was conducted with stations spaced at 500m (Fig. 14) which potentially shows the trace of the Little Range Fault.

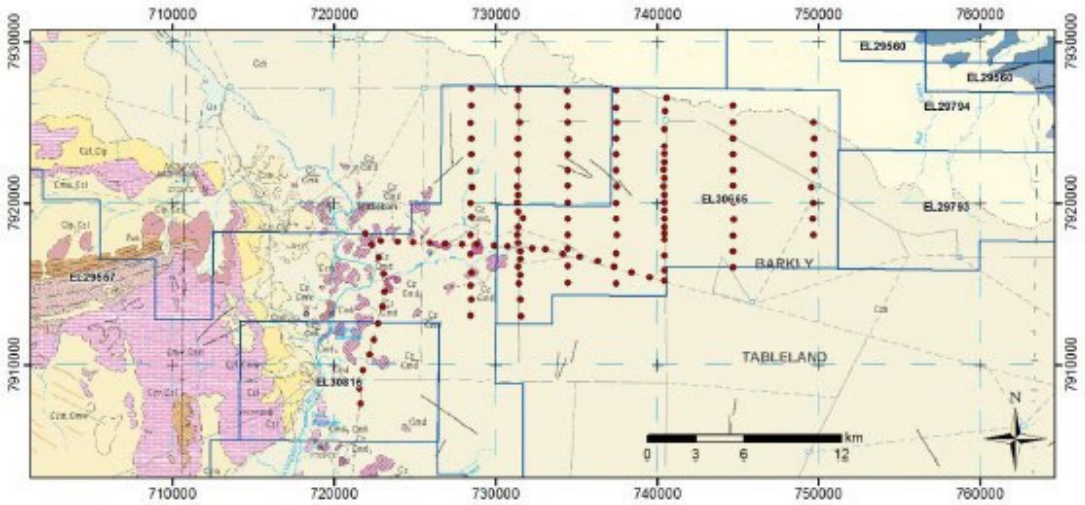

Fig.10 Location of AMT survey location points on regional geology. Taken from Teck Australia Pty Ltd CR2020-0005 Report

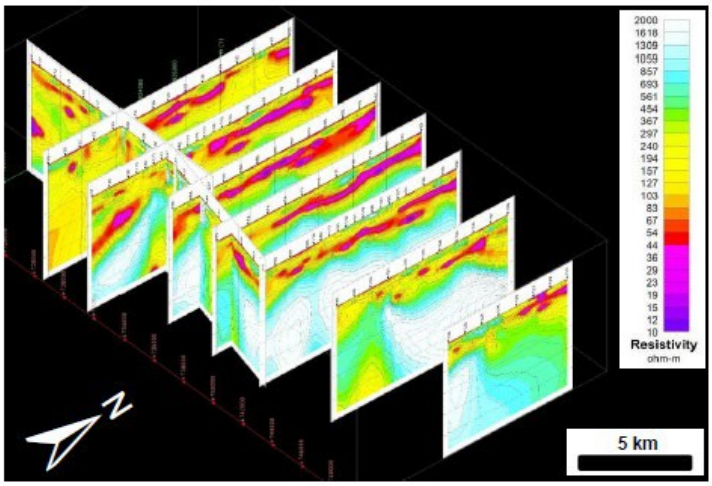

Fig.11 3D view of AMT survey. Taken from Teck Australia Pty Ltd CR2020-0005 Report

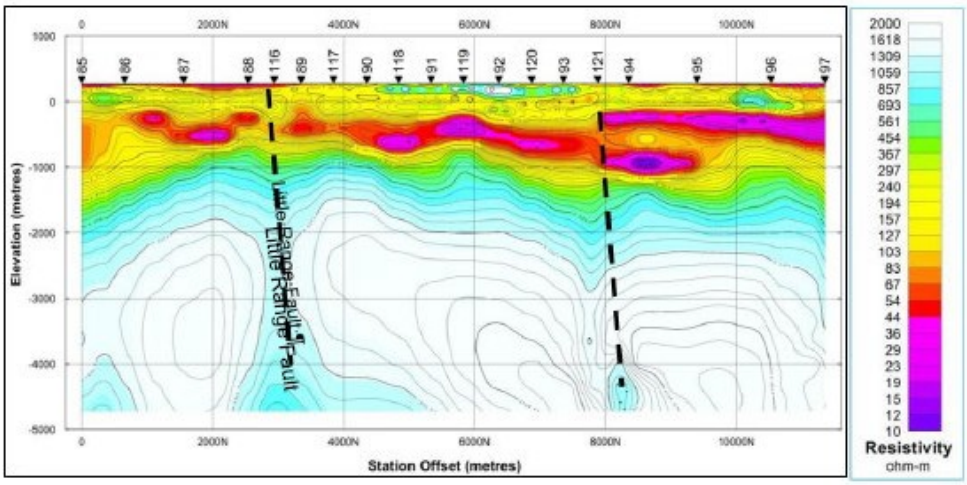

Fig.12 Vertical section of AMT showing the presence of flat lying conductors. Taken from Teck Australia Pty Ltd CR2020-0005 Report

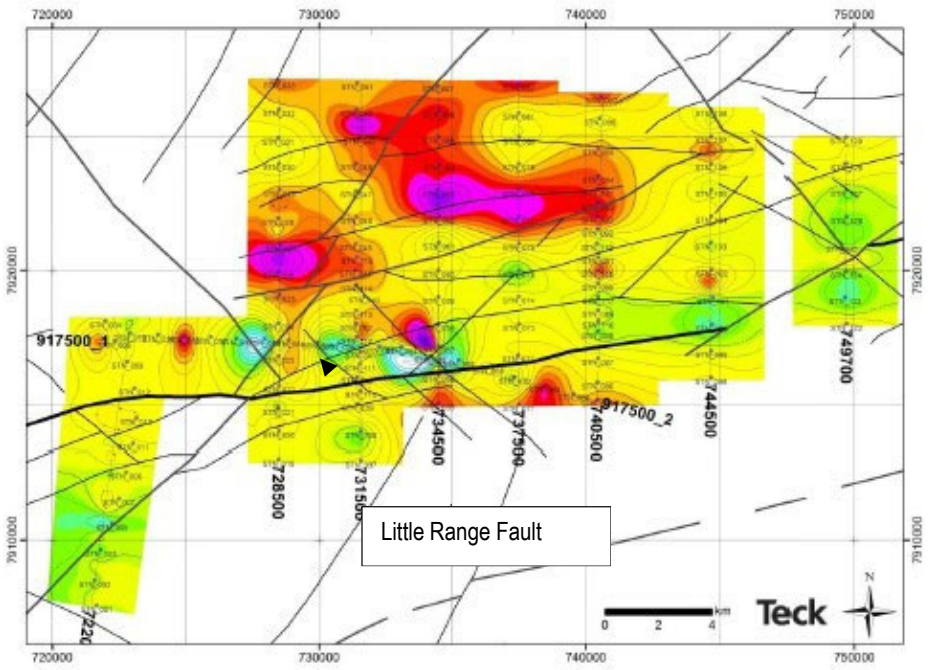

Fig.13 Projected plan view of the AMT survey combined with structural interpretation. Taken from Teck Australia Pty Ltd CR2020-0005 Report

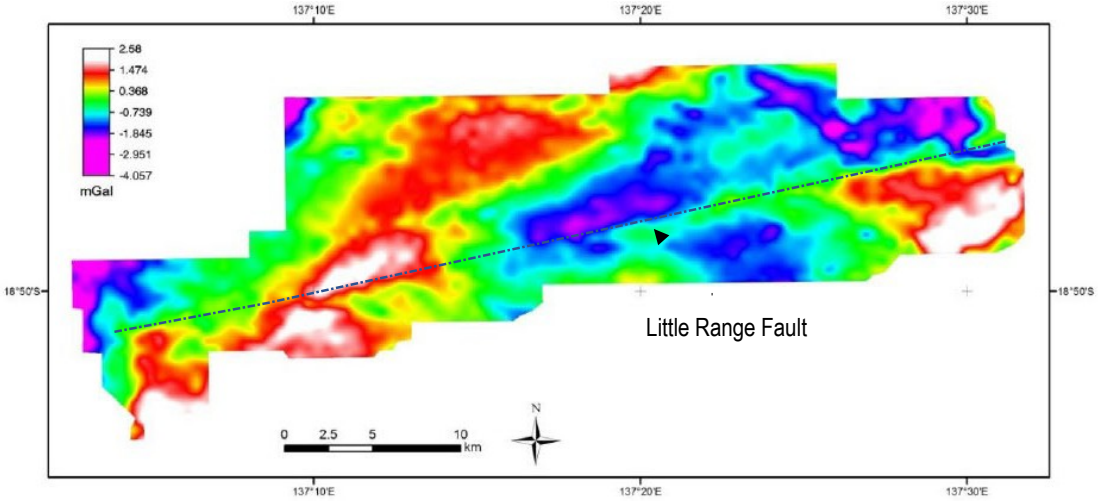

Fig. 14 Bouguer gravity image of Teck Australia Pty Ltd detailed ground gravity survey with the potential trace of the Little Range Fault. Taken from Teck Australia Pty Ltd CR2020-0005 Report

2016:

Diamond hole CRDD001 was drilled, in collaboration with Northern Territory, Geophysics and drilling collaborations, to test a prospective sub-basin proximal to the Little Range Fault The hole terminated at 800.42m in what was interpreted to be the Proterozoic South Nicholson Group.

EM-SMARTEM over area covered by AMT survey to confirm the shallow conductors. The EM profile shown in Fig. 15 shows the presence of a sub-horizontal conductor at about 400m depth that strengthens in magnitude to the north (outside EL32693).

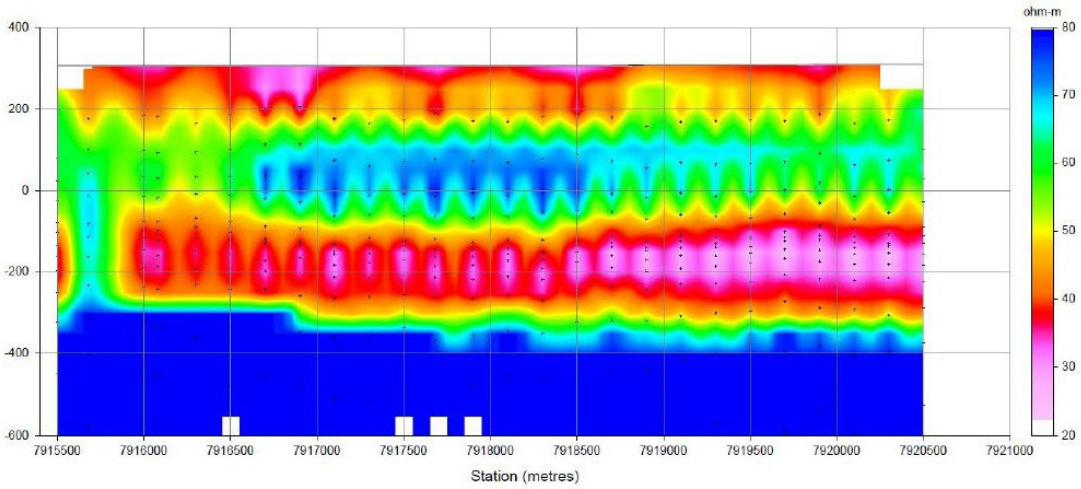

Fig. 15 EM profile of 731250N SMARTEM. Taken from Teck Australia Pty Ltd CR2020-0005 Report

2017-2019:

In 2017 Geoscience Australia completed 5 seismic surveys over the Georgina Basin. Two of these lines 17GA-SN1 (E-W orientation) and 17GA-SN5 (N-S orientation) transected the Teck Australia group of tenements. In 2019 Teck Australia completed interpretation of seismic sections.

EXPLORATION COMPLETED DURING REPORTING PERIOD

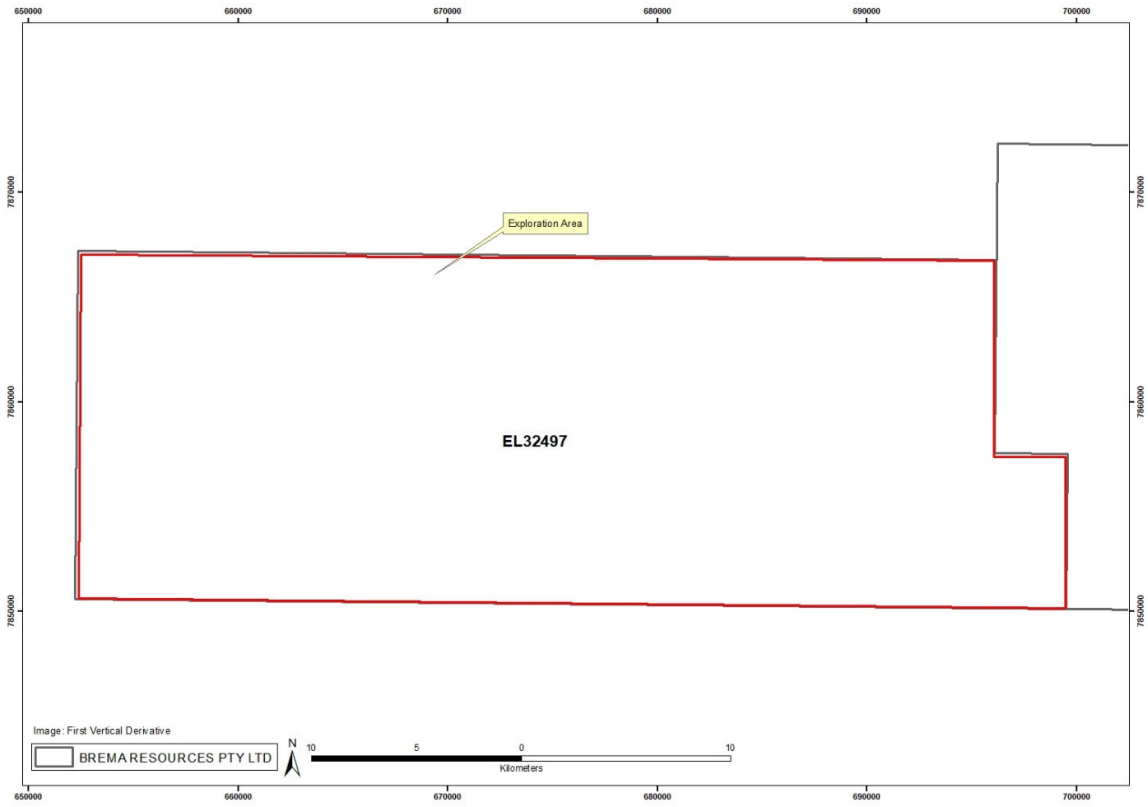

Fig 16: Index plan to 2022 exploration activities

Data Compilation

During the first year of tenure an extensive data investigation programme was undertaken with both government data bases and other historical exploration databases reviewed, with relevant information then compiled into GIS database.

This exploration data was then reviewed, in conjunction with peer comparisons in the East Tennant region, to develop planning, exploration activities and targeting of the exploration licence.

Covid restrictions in 2021 limited the ability of the company to complete proposed activities.

PROPOSED WORK PROGRAM FOR FORTHCOMING YEAR

Exploration would focus on acquiring detailed magnetic and gravity data in order to detect buried Warramunga Formation and target Tennant Creek style, high-grade, copper-gold deposits that could then be tested by drilling, focused on discrete and coincident magnetic and gravity highs.

The prospectivity for deeper, Mt Isa style, lead-zinc and copper mineralisation is supported by the intersection in a previous deep diamond hole, drilled by the NTGS in collaboration with GA, which intersected the base of the Georgina Basin at approx. 630m and continued into approx. 1000m of Proterozoic aged carbonate, black shales and siliciclastics with weakly disseminated sphalerite and chalcopyrite. The Proterozoic stratigraphy intersected is interpreted to be equivalent to similar horizons within the Mt Isa Province, which hosts the World-class Century and Mt Isa Zn, Pb and Ag SEDEX deposits, highlighting the prospectivity of this sequence that is interpreted to occur at depth within the tenement area.
Exploration for Mt Isa Province mineralisation would focus on modeling and interpretation of geophysical data sets to target coincident gravity/magnetic features that correlate with basement highs interpreted from seismic data in the area. Key stratigraphic holes, potentially in collaboration with the NTGS and/or GA, could then test these basement highs for mineralisation both within the overlying Georgina Basin and within the underlying Mt Isa style units.

CONCLUSION

Previous exploration in the EL32693 area highlights prospectivity to host SEDEX style mineralisation or IOCG style mineralization:

- The stratigraphic sequence intersected in stratigraphic diamond drill hole NDI Carrara 1 supports the interpretation that units of the Isa Superbasin that hosts the Century Mine extend throughout the Carrara Sub-Basin. The presence of minor copper and zinc mineralization in NDI Carrara 1 is evidence that the same mineralizing processes active in the Mt. Isa Basin were active in the Carrara Sub Basin.
- Little River Fault may be a reactivated basin margin fault that acted as a conduit for copper or lead-zinc bearing fluids migrating upwards from the deepest part of the Carrara Sub-Basin.
- Unexplained EM-defined flat lying conductors in the Carrara sub basin.
- No investigation of the “Tennant Creek” IOCG potential within the area

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VERIFICATION LISTING FORM

Exploration Work Type	File Name	Format
Office Studies		
Literature search	EL32693_2022_A_01_Report	
Database compilation		
Computer modelling		
Reprocessing of data		
General research	EL32693_2022_A_01_Report	
Report preparation	EL32693_2022_A_01_Report	pdf
Airborne Exploration Surveys		
Aeromagnetics		
Radiometrics		
Electromagnetics		
Gravity		
Digital terrain modelling		
Other (specify)		
Remote Sensing		
Aerial photography		
LANDSAT		
SPOT		
MSS		
Radar		
Other (specify)		
Ground Exploration Surveys		
Geological Mapping		
Regional		
Reconnaissance		
Prospect		
Underground		
Costean		
Ground geophysics		
Radiometrics		
Magnetics		
Gravity		
Digital terrain modelling		
Electromagnetics		
SP/AP/EP		
IP		
AMT		
Resistivity		
Complex resistivity		
Seismic reflection		
Seismic refraction		
Well logging		
Geophysical interpretation		
Other (specify)		
Geochemical Surveying		
Drill sample		
Stream sediment		
Soil		

Exploration Work Type	File Name	Format
Rock chip		
Laterite		
Water		
Biogeochemistry		
Isotope		
Whole rock		
Mineral analysis		
Other (specify)		
Drilling		
Diamond		
Reverse circulation		
Rotary air blast		
Air-core		
Auger		
Groundwater drilling		
All drilling		