Strategic Energy Resources Ltd

East Tennant IOCG Drilling
Greenfield Diamond Drilling application

EL32617

FINAL REPORT
Geophysics and Drilling Collaborations Program
Round 14 (2021)

Project title	East Tennant IOCG drilling
Applicant (Company Name)	Strategic Energy Resources Ltd
Granted exploration licence number(s) where this proposal is to be undertaken	EL32617
Brief summary of program (total number of holes / metres to be drilled, number of gravity stations, total length of flight lines etc.)	Drilling 1 deep diamond hole (690.4m) to test IOCG targets based on gravity and magnetic responses
Names and positions of signatories to the funding contract	Mr Stuart Rechner (Executive Chairman of SER)
Map Sheets	250k Alroy SE5315: 100k Frewena 5959
Datum	GDA 94 Z53
Date	16-12-2021

2. Copyright Statement

3. Abstract

The object of the program was to discover a copper-gold orebody by testing for the source of a large coincident magnetic and gravity anomaly within EL32617. Two 650m diamond drillholes were planned, designed to test different parts of the interpreted Iron Oxide Copper Gold (IOCG) target. One 690.4m diamond drillhole was completed BKDD001, the second hole was not completed due to the delays in completing the program which resulted in cost increase compared to budgeted and that the rocks identified in BKDD001 indicated that the magnetic and gravity anomalies were likely to be explained by lithological units rather than iron rich IOCG fluid influx.

The drillhole intersected limestone and sediments of the Georgina Basin to 203.4m when it intersected a package of metasediments with fine grained hematite alteration and zones of intense hematite – carbonate – chlorite alteration with patchy breccia texture.

SER completed comprehensive geochemical suite in 1m samples of the entire basement intersection totalling 508 samples including standards and duplicates every 40m. Each sample was analysed for Au using Fire Assay (Au-AA23 ALS) and multi element geochemistry after four acid digest (ME-MS61L ALS). The sampling included the bottom three metres of the Georgina Basin and all the intersected basement. The results indicated no significant intercepts for any metals. IOCG indicator elements were also uniformly low suggesting that BKDD001 has not intersected an IOCG fertile system. Full drilling data and geochemistry is provided in Appendix 1-7.

Petrology of selected samples indicated that all the basement rocks intersected were sedimentary in origin with evidence of a regional low grade metamorphism. The magnetic response in the metasedimentary package is likely due to a significant volume of fine grained stilpnomelane (hydrated K-silicate mineral like biotite, but forms at lower metamorphic grade) and lesser magnetite. The syn peak metamorphic fractures are filled with quartz + stilpnomelane + chlorite + opaque (magnetite), which is equivalent to the host mineralogy whilst the post peak metamorphic fractures which form as thin brittle fractures and local brecciation are filled with a variety of minerals associations including carbonate chlorite- hematite (CO2-Ca-Mg-Fe-rich fluid), quartz- clinozoisite -chlorite (CO2-poor and silica-Ca-Fe-Al-rich fluid), and quartz-K-feldspar-chlorite-hematite (silica-K-Fe-Al-rich fluid). Hematite commonly forms as pink-red stain salvages (Appendix 8).

4. Contents

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5. Introduction

SER has five tenements which make up its East Tennant Project (EL32109, EL32306, EL32307, EL32617 and EL32760 (application)). EL32617 is located ~100km east of the township of Tennant Creek, 12km south of the Barkly highway. The terrain is predominantly flat sandy plains and dunes. The tenement is within vacant crown land. The drilling of BKDD001 was SERs first drilling program within the East Tennant region.

The target area is only 12 km from the Barkly Highway however there are no gazetted tracks onto or within EL32617. Access is via the Barkly Highway then turning south at Ngurrara, east of the tenement, utilising an overgrown 4WD track which traverses the tenement from the east or turning south at T & W bore within Rockhampton Downs and travelling south via the track formed by SER to intersect the existing E/W track.

The EL32617 tenement is located on vacant crown land. SER utilised water, earthworks and consumables (poly pipe) from Rockhampton Downs pastoral station. The delays in gaining access to site were due to the fact that the access tracks were more sandy than anticipated and made access via all vehicles difficult. The planned use of a water carting truck was deemed to not be practical and a logistical change was required to poly pipe water 11km from the T & W bore on Rockhampton Downs to the drillhole. This late change meant that poly pipe needed to be secured and laid out before drilling could begin.

Drilling was completed in September 2021 with the overburden core (Georgina Basin) left as full core and all basement 1m sampled and assayed using fire assay (Au) and full geochemical four acid digest (ME-MS61L) at ALS.

6. Regional context

The geology of the Tennant Region has been described in Ahmad et al., 2009 and Ahmad and Munson 2013[1]. It comprises three geological provinces: the northern Tomkinson Province, the central Warramunga Province, and the southern Davenport Province.

The Tomkinson Province contains Palaeoproterozoic sedimentary rocks that are interpreted to be stratigraphically equivalent to the McArthur Basin.

The Davenport Province is defined by the extents of the Hatches Creek Group, a siliciclastic sequence of sedimentary rocks with interbedded volcanic and pyroclastic rocks that postdates the ~1810 Ma Murchison Event. The Hatches Creek Group overlies the Ooradidgee Group.

The Warramunga Province predates the ca 1860-1850 Ma Tennant Event and comprise the Warramunga Formation. The Warramunga Formation is a polydeformed succession of lower greenschist-facies turbiditic sequence of metasediments and hematite-rich argillaceous banded ironstone with interbedded felsic volcanic rocks, which have been intruded by syn-orogenic granite and granodiorite, as well as by felsic porphyries. U-Pb geochronology indicates a maximum depositional age of ~1860 Ma for the Warramunga

[1] Ahmad M, Wygralak AS and Ferenczi PA, 2009. Gold deposits of the Northern Territory (Second Edition). Northern Territory Geological Survey, Report 11 (Second Edition update by Wygralak AS and Scrimgeour IR).

Ahmad M and Munson TJ (compilers) (2013). Geological and mineral resources of the Northern Territory. Northern Territory Geological Survey, Special Publication 5.

Formation. The Tennant Event resulted in an erosional angular unconformity between the Warramunga Formation and the overlying bimodal Ooradidgee Group. The Ooradidgee Group is a discrete package made up of fluvial to deltaic sedimentation accompanied by subaerial felsic and mafic volcanism (1830 – 1815 Ma) and by penecontemporaneous subvolcanic intrusive activity. The Ooradidgee Group is characterised by lateral facies variations around several volcanic centres.

The name Warramunga defines the formation that hosts IOCG mineralisation in the Tennant Creek Goldfield. The identification of Warramunga Formation underneath the covered East Tennant region would increase the prospectiveness of the region.

Very little is known about the basement geology of the entirety of EL32617. As per the STRIKE database no existing drilling is recorded below 100m depth. The area is covered in transported sediments, typically sandy plain, sand dunes and dry water courses. EL32617 is also covered by the Georgina Basin a Neoproterozoic basin which is underlain by flood basalts of the Kalkarindji suite.

The closest known mineralisation is the copper gold deposits/prospects within the Tennant Creek area. These are commonly interpreted as ironstone (magnetic) end members of the IOCG mineralisation classification. High-grade gold deposits and prospects are common such as Mauretania prospect which is associated with hematite ironstones and has high grade gold and copper in drilling (see EMR ASX announcement 5 February 2020). This Mauretania discovery is proof of concept to the potential for hematite rich IOCGs to exist in the East Tennant region where NE structures and density features remain untested. Prospectivity analysis undertaken by Geoscience Australia identified the NE striking zone between Tennant Creek and Mt Isa as highly prospective for IOCG mineralisation. The recent NDI uncovered evidence for key mineralising processes, favourable host rocks, hydrothermal alteration, and base metal sulphides.

7. Previous exploration

During a 2020 review of available geophysical datasets, an 8 x 5 km, broadly elliptical zone of coincident magnetic and gravity feature was identified by SER as a potential IOCG target given (a) the size of the anomaly and (b) the uniqueness of the response compared to the surrounding region. The feature is distinctly different to the ribbon-like magnetic response associated with Kalkarindji suite flood basalts which dominate the region.

During early 2010's VALE Exploration Pty Ltd undertook shallow drilling within the target region of EL32617 (their tenement EL27198) exploring for phosphate (Group Reporting 135). The holes were typically <100m deep and lithology logging indicated they ended in 'dolomite' interpreted to be part of the Georgina Basin sediments. The closest applicable hole is VGRC079 which is located 1.2km NW from SERs drilling. It terminated at 101m, with minor limonite within dolomite noted in the end of hole logging. This phosphate drilling is the only recorded drilling within EL32617.

SER work on the prospect to date is summarised below:

Unconstrained magnetic inversion of the available government aeromagnetic data (2002 Tennant Creek survey flown at 400 m line spacing) was undertaken using 80 x 80 x 50 m cells. Isosurfaces and depth slices were generated which indicated the bulk of the magnetic response occurs below ~650 m depth from surface with a magnetic susceptibility of 800 – 1600 x 10^{-5} SI (Figure 2). The magnetic response appears to be concentrated in two clusters, (NW and SE), separated by approximately 3 km (Figure 7).

In spite of the area being just inside the recent 2 x 2 km gravity infill of the East Tennant Region, the existing data was deemed to be too sparse to evaluate the geometry and intensity of the gravity feature. SER

contracted Daishsat Geodetic Services (Daish) to acquire 738 new ground gravity stations over the bulk of EL32617 in February 2021 (Figure 3) to supplement the government dataset. The station distribution was configured with a 400 x 400 m core region surrounded by 800 m "padding" stations.

The Daish dataset was merged with the government gravity data and inverted using 100 x 100 x 50 m cells. The resulting gravity inversion delineated a large, complex dense body which incorporates the magnetic portions of the combined anomaly. Of significance is a central pipe-like response which appears to come to with 200 m of surface, associated with the SE magnetic cluster (Figure 3). The modelled density of the pipe-like body is ~2.8 g/cc compared to a background of 2.67 g/cc, i.e. 0.12 g/cc excess density (Figure 7). It should be noted unconstrained magnetic and gravity inversions deliver a possible distribution of physical properties which match the observed data within an acceptable level of misfit. As a result, it is not uncommon for the depth to the modelled source to be slightly overestimated.

8. Exploration concept

Describe the target, deposit or conceptual model, or mineralising style in relation to the regional geological context, with supporting evidence.

The mineralisation model explored for within the East Tennant region is Iron Oxide Copper Gold (IOCG). The Tennant Creek area approximately 100km to the west of EL32617 is a well known mining district which includes magnetite bearing IOCG type (ironstones). Whilst Tennant Creek mineralisation is a different mineralisation model compared to the classic IOCG deposits (i.e. Olympic Dam or Mt Isa) it is a derivative of the same system. The recent prospectivity analysis work undertaken by Geoscience Australia identified the NE striking zone between Tennant Creek and Mt Isa as potentially prospective for IOCG mineralisation. The geophysical response of the coincident magnetic and gravity anomaly on EL32617 has affinities to large scale hematite IOCGs. The 8 x 5 km body has an amplitude of +5mGal on the ground and 150 nT in the air. The size, geometry and amplitudes of the response are consistent with a body hosting IOCG mineralisation. Whilst this interpretation is based on the geophysical responses, the drilling proposed in this application will test the target to determine if the geological source is linked to IOCG mineralisation.

Describe the rationale for why the proposed drilling (greenfields, brownfields or RC) or geophysical technique is appropriate for testing the exploration concept in this region.

This target, nor any comparable features, have been tested in the region and as such the aim of the program is to test a greenfields target. The target has affinities to large scale hematite IOCG hosting system. Given the depths and spatial extent of the peak magnetic and gravity response, (derived from the inversion modelling), diamond drilling is required to test the targets. In addition, proximity to the Barkly Highway enhances the attractiveness of the target.

9. Details of collaborative program

Proposed Hole ID	Northing	Easting	Datum	Zone	Dip	Azimuth	EOH	Pre-collar (from to)	HQ (from to)	NQ (from to)
BKDD001	7847086	519875	GDA94	53	-75	180	690.4m	0-38.2m	38.2-205m	205-690.4m

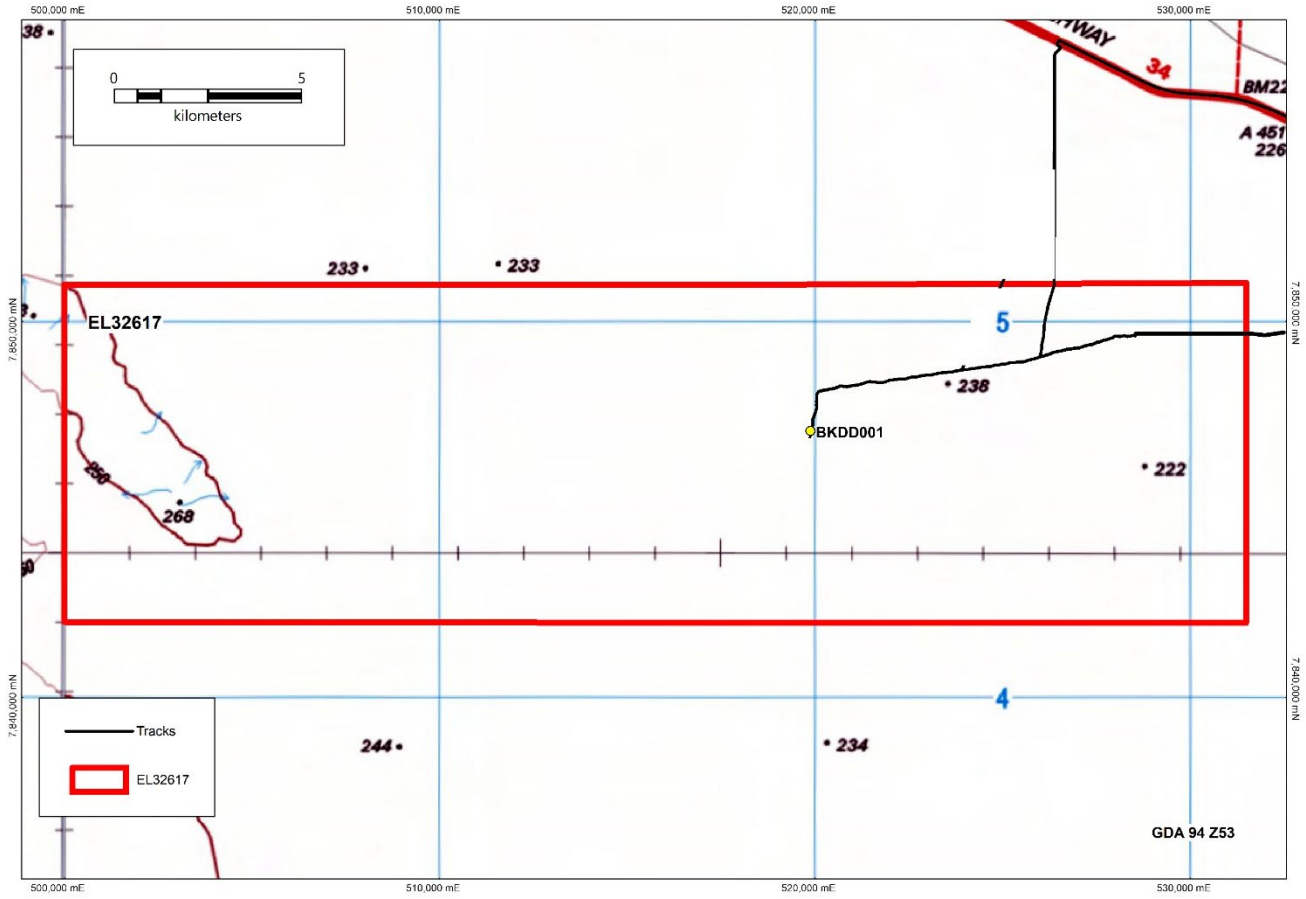


Figure 1: Location map with EL32617 and BKDD001

BKDD001 was designed to test the source of the pipe like feature evidenced in the gravity modelling with a deeper magnetic feature, planned as BKDD00A (Figure 1).

SERs collected a range of datasets from the drillhole including qualitative lithological, alteration and mineralisation log, SG data (1 sample per tray ~ every 5m), magnetic susceptibility (1 per metre), structural measurements (only when the confidence in the reconstruction of the core was high as demonstrated by linking the core between two successful orientations at the end of each run), core tray photos and full suite of geochemistry in 1m samples of the basement. The basement was heavily fractured, which not only slowed the drilling rate within the basement, it also made reconstructing the core for accurately orientating difficult, resulting in only a small percentage of the basement being confidently orientated.

The geochemistry sampling involved analysis of 508 samples covering from 201m to 690.4m EOH of BKDD001 and including standards and duplicates every 40 samples. BKDD001 was sampled as 1m half core samples and analysed at ALS completing Fire assay analysis (for Au) and 4 acid digest ME-MS61L (61 elements).

A petrological investigation was undertaken on twelve selected samples from within BKDD001. The samples were selected to get mineralogical information on specific lithologies and alteration phases identified within BKDD001. The full report is provided in Appendix 2.

10. Results and Interpretations

Overall the results of BKDD001 were underwhelming. The hole successfully drilled to depth testing the interpreted gravity 'pipe' and the underlying magnetic response. The gravity response is not directly resolved by the rocks intersected but is likely the result of either a palaeo-topographic high or a denser part of the overlying Georgina Basin sediment. No basalts were intersected between the Georgina Basin and the basement as anticipated which may contribute to the anomalous geophysical expression targeted at the prospect. To definitively conclude that the gravity response is due to palaeo-topographic high or related to the overlying Georgina Basin sediments more drilling would need to be done away from the interpreted density target to determine if depth to basement and the nature of the overlying sediments is comparable to what was intersected in BKDD001, however based on the lack of prospective geochemical signatures in BKDD001 it is difficult to justify follow up drilling.

The bottom part of BKDD001 intersected a fine grained metasediment which was more magnetic that the other metasediments intersected, petrology identified that the stilpnomelane and minor magnetite were common and could account for the magnetic response. The magnetic petrophysical response was consistently greater that 10^{-3} SI which could account for the deeper magnetic response modelled at the Cottage Prospect.

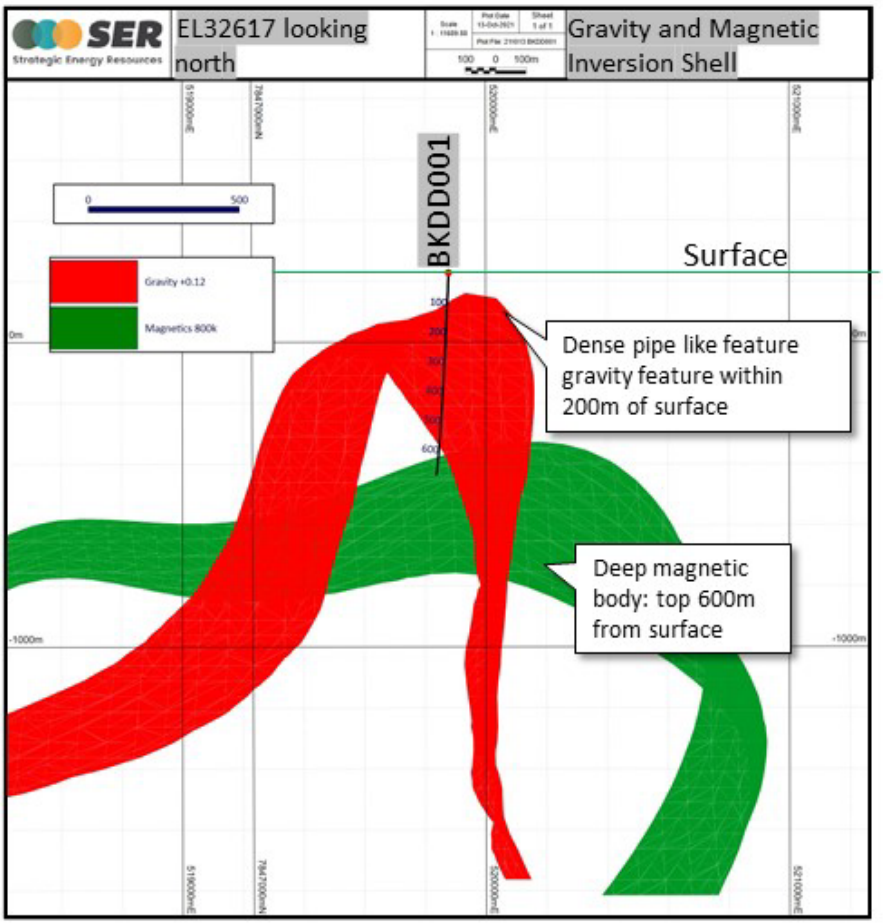


Figure 2: Cross section, looking north of BKDD001 intersecting the gravity and magnetic modelled shells

Logistics

The drill site is located within vacant crown land with no existing infrastructure. An overgrown previous company drill track (probably last used in 2010 by previous explorers drilling for phosphate) went to within 1km of the drill site. This existing track and a new track from it to the pad needed to be cleared. Issues occurred once the tracks were cleared due to the sandy nature of the surface. Wheel ruts began to immediately form, whilst the drill rig and support trucks could utilise the track to get in and out it was deemed that the planned water truck would not be able to regularly use the track to get water to site because the track would deteriorate to a point where it would be unusable. Re-grading the track was ineffective as there was no hard bottom to solidify the track. Subsequently it was decided to attempt to poly pipe water from the nearest holding tank (on the neighbouring pastoral station) to site. This meant sourcing the poly-pipe (multiple km) and laying it out prior to starting drilling. Whilst the professionalism and persistence of the drill crew meant that this was possible it did drastically increase costs and cause delays before the program started.

Once drilling was underway the program went smoothly with both the drill crew and SER representatives managing the conditions of the track and the pumps required to get water to site.

The COVID pandemic border restrictions also hindered the program with less rotation of staff possible (due to the requirement to quarantine).

Core was processed and logged onsite and had petrophysical measurements taken before the basement was transported to Mt Isa for cutting and sampling.

The full drillhole was submitted to the Alice Springs core library in December 2021.

Lithology

The lithologies identified in BKDD001 is displayed in Figure 4 with selected units, key contacts and alteration is displayed in Figure 3 & Figure 4.

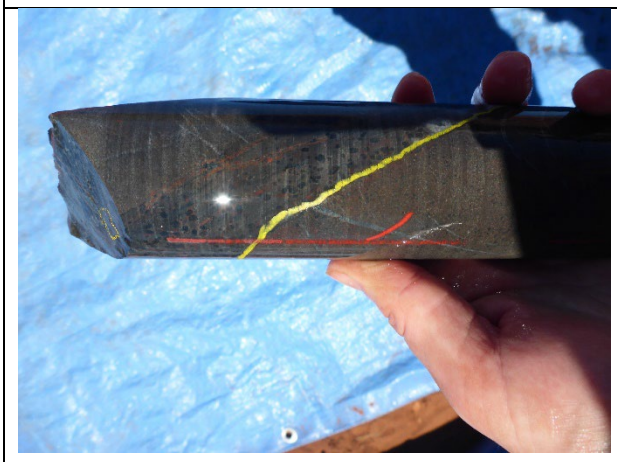
Georgina Basin sediments were intersected to 204.3m. These comprised of limestones progressing downhole into banded calcium sediments, with a thin breccia present at the bottom contact.

The basement has been lumped into three separate host units, which regularly were recorded interlayered or banded with each other, with the third magnetic fine grained unit not present until >500m when it was the dominant unit.

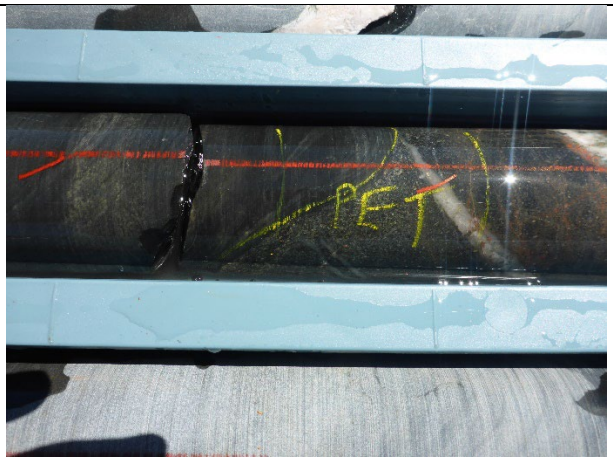
1. Fine grained metasediment – possibly psammitic or psammopelitic this fine grained hematite altered unit is dominant at the top of the basement, it regularly contains quartz ± amphibole ± hematite ± chlorite veins, generally <2cm, but observed up to 1m downhole. Top 100m of basement possibly oxidised giving this unit a more hematitic appearance which reduces downhole (Figure 3b).
2. Porphyroblastic pelitic unit - spotty sericite – stilpnomelane – minor magnetite – trace tourmaline replacing an alumino silicate(?) possibly andalusite ± pelitic metasediment which has patchy weak magnetic response. Porphyroblasts between 2-6mm and observed in banded layers (relict bedding) with finer grained versions of the same unit or with the fine grained psammitic metasediment already described (Appendix 2) (Figure 3c).
3. Homogeneous dark very fine grained magnetic unit, seemingly layer conformable with metasedimentary units, either a fine grained metasediment. Sericite – stilpnomelane-magnetite - chlorite arenite. Critical contact between dark fine grained unit with altered and quartz veined metasediment, with the dark fine grained unit truncating the quartz veining observed at 610.3m suggesting this unit could be an intrusive, however petrology indicated that both sedimentary in origin (Appendix 2). (Figure 3d).

a) top of basement contact (204m)

b) fine grained, hematite bearing metasediment with quartz veining (242m)



c) Spotted metasediment (pelitic) banded with fine grained metasediment (454m)



d) Magnetic fine grained metasediment (mafic) truncating quartz veins within fine grained metasediment (610.3m)

Figure 3: Photos of significant geological units or alteration textures from BKDD001

Alteration/Veining

There were a number of alteration and veining phases recorded within BKDD001

- Pervasive hematite in fine grained metasediment likely more evident in top 100m of basement due to oxidisation (Figure 3b)
- Quartz (2-50cm) veining occurs regularly through hole, typically associated with hematite + chlorite ± sulphides (Figure 4d)
- Localised breccia formed by hematite + quartz + amphibole alteration (Figure 4a)
- Localised breccia formed by chlorite + carbonate alteration (Figure 4b)
- Thin amphibole-biotite veins common in upper part of hole (form slick and slides on fracture faces)
- Thin <5mm hematite veining common, can be intense in localised zones (i.e 583.1m) (Figure 4c)
- Epidote veinlets
- Hematite + carbonate + sulphide veins (Figure 4e)

a) localised (3m downhole width) hematite – quartz – chlorite pervasive alteration – breccia texture (458m):

b) chlorite + carbonate breccia (457.4m)

c) zones of intense hematite veinlets (519m)

d) quartz + hematite + chlorite + sulphide vein (577m)

e) (left) hematite + carbonate + sulphide veins (532m)

Figure 4: Alteration and veining textures within BKDD001

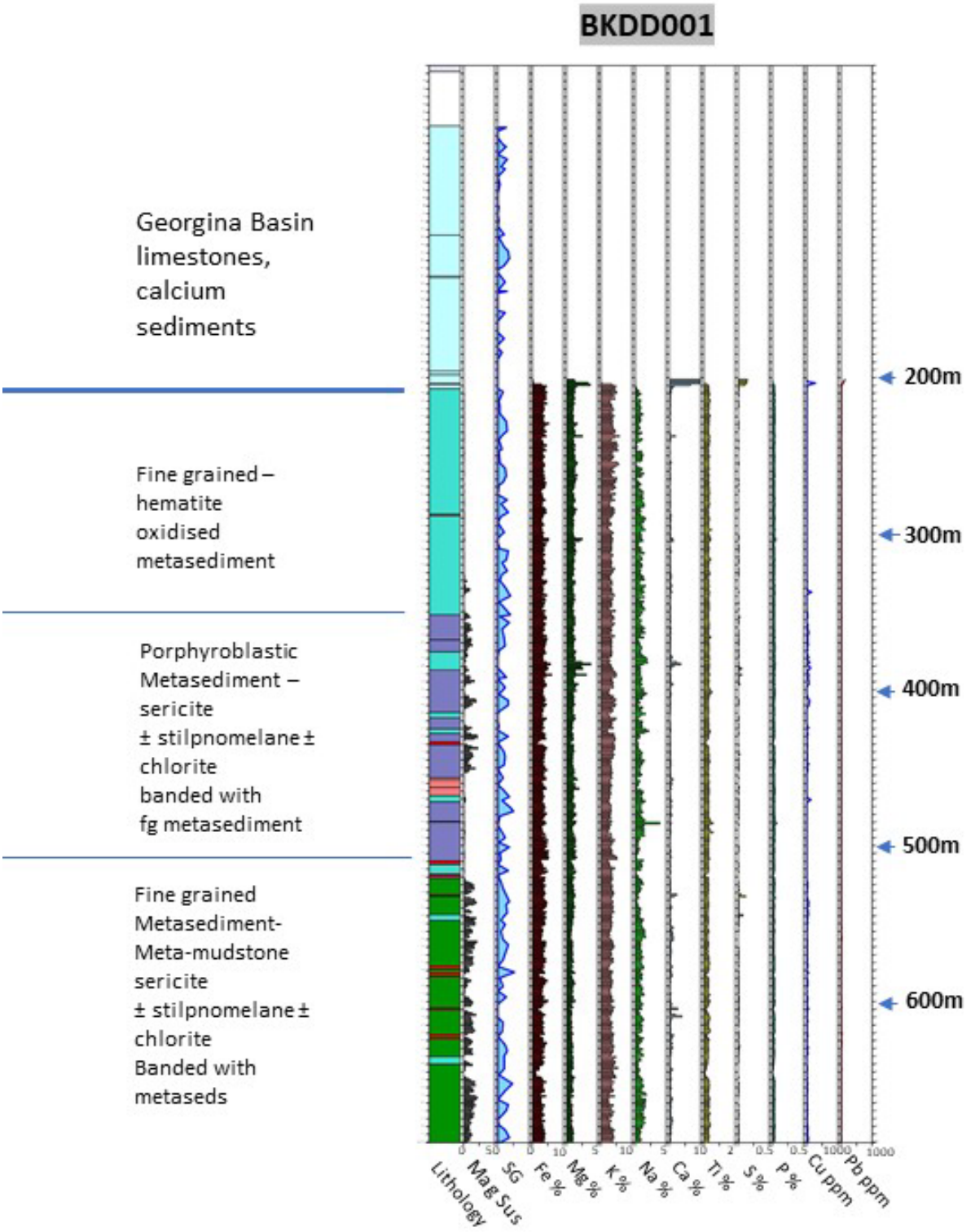


Figure 5: BKDD001 lithological and summary geochemical log

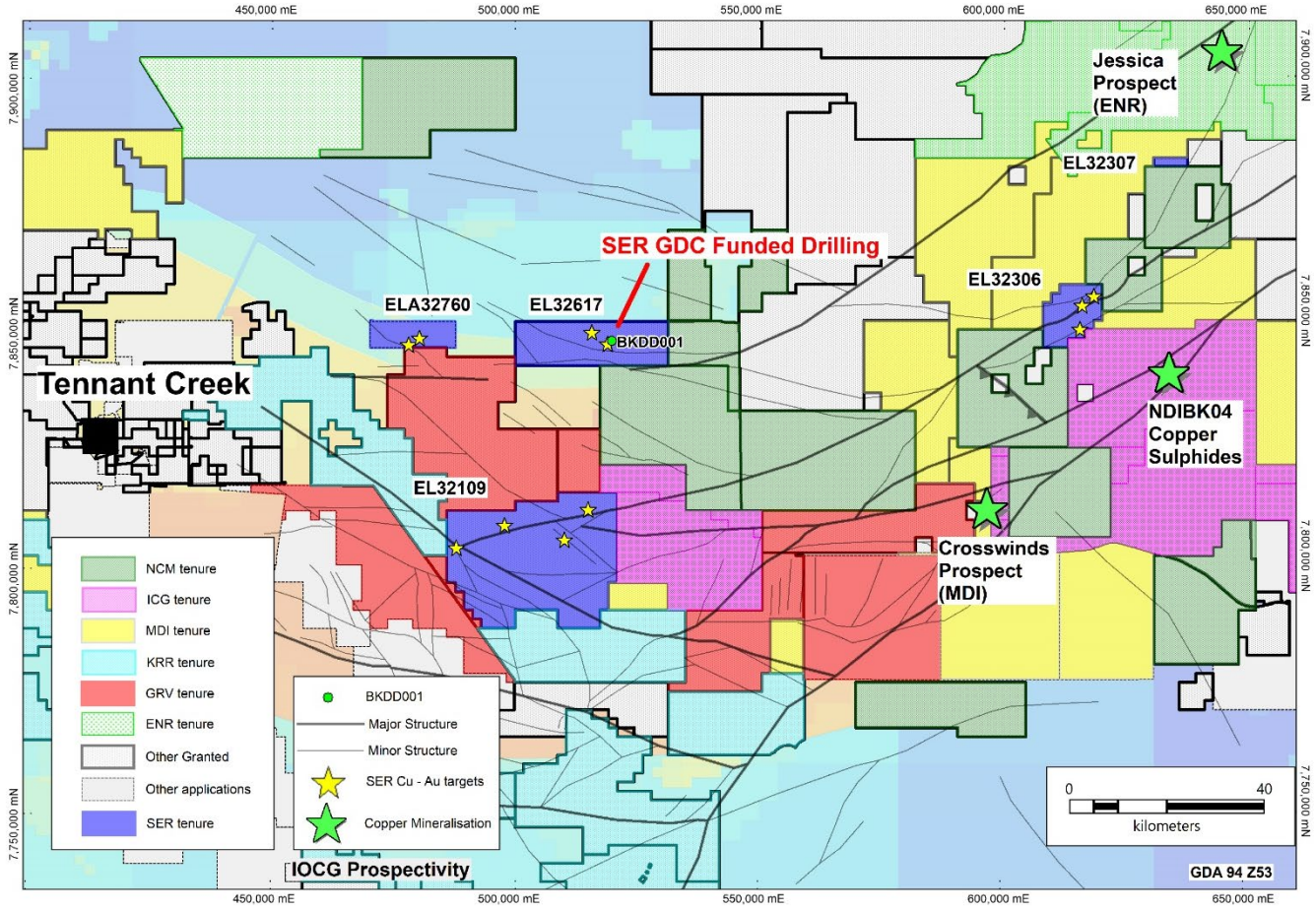


Figure 6: East Tennant tenure with BKDD001 and SER targets

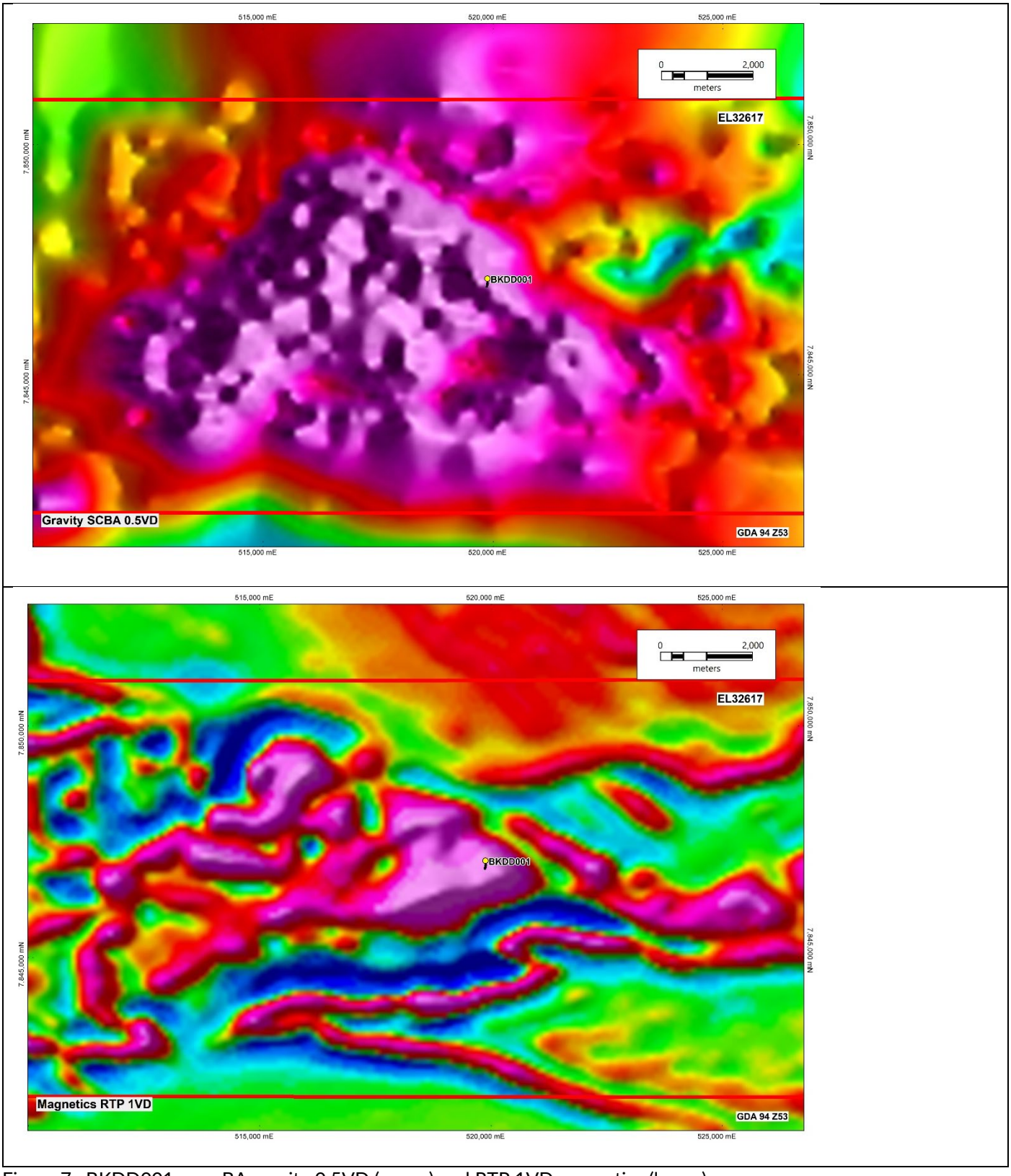


Figure 7: BKDD001 over BA gravity 0.5VD (upper) and RTP 1VD magnetics (lower)

Geochemistry

The full geochemical data is provided in Appendix 4 with the major elements displayed in Figure 5.

SER completed comprehensive geochemical suite in 1m samples of the entire basement intersection totalling 508 samples including standards and duplicates every 40m. Each sample was analysed for Au using Fire Assay (Au-AA23 ALS) and multi element geochemistry after four acid digest (ME-MS61L ALS). The sampling included the bottom three metres of the Georgina Basin and all the intersected basement. The results indicated no significant intercepts for any metals. IOCG indicator elements were also uniformly low suggesting that BKDD001 has not intersected an IOCG fertile system (full results in Appendix 1).

Figure 5 displays the major element response plus copper and lead within BKDD001. The hole is relatively uniform in its composition which was supported by the petrology which indicated the major rock units were all low grade metasediments which similar mineral compositions. The bottom three metres of the Georgina Basin sediments is evident in if different composition to the basement most clearly in its high Calcium and low iron contents.

Petrophysics

SER systematically collected magnetic susceptibility and specific gravity measures on the drillcore (Appendix 5 & 6).

Magnetic Susceptibility was collected per every metre using a SM30 tool, measuring in the air to level then against the core each time. The tool was levelled against a known standard. Data is recorded in 10-3 SI units.

Specific gravity was measured at a ratio of one per drill tray (approximately 1 every 5m), the dry weight and wet weight were recorded and a SG calculated. The rock unit was recorded with each sample.

11. Conclusion

The drilling of BKDD001 was an important milestone in SER's exploration program within the East Tennant region, however the anomalism was concluded to be unrelated to an introduction of iron in a IOCG system. The alteration and breccia texture zone lack significant pathfinder geochemical anomalism.

SERs conclusion it that an additional dataset of anomalism needs to be identified coincident with gravity and magnetic targets before being deemed worthy drill targets within the East Tennant region, which could include geochemical anomalism (top of basement sampling) or electrical geophysical methods anomalism (IP or EM).

12. References

Ahmad M, Wygralak AS and Ferenczi PA, 2009. Gold deposits of the Northern Territory (Second Edition). Northern Territory Geological Survey, Report 11 (Second Edition update by Wygralak AS and Scrimgeour IR).

Ahmad M and Munson TJ (compilers) (2013). Geological and mineral resources of the Northern Territory. Northern Territory Geological Survey, Special Publication 5.

Appendix 1-7

Drilling data files (supporting files)

EL32617_2021_C_Appendix 1 Collars

EL32617_2021_C_Appendix 2 Surveys

EL32617_2021_C_Appendix 3 Lithology

EL32617_2021_C_Appendix 4 Geochemistry

EL32617_2021_C_Appendix 5 Mag Sus

EL32617_2021_C_Appendix 6 SG

EL32617_2021_C_Appendix 7 Structure

Appendix 9

EL32617_2021_C_Appendix 9 Lith codes

Appendix 8

Petrological Report