Frewena Group Project

AMAGRAD GDC Final Report

East Tennant, NT

Tenements:	Frewena East (EL 32289, EL 32580, EL 32365) Frewena Far East (EL 32293) Frewena Frontier (EL 32688, EL 32689, EL 32690)
Tenement Holder:	Frewena East & Frewena Far East (Inca Minerals Ltd 90%, MRG Resources Pty Ltd 5%, Dr Jonathan West 5%) Frewena Frontier (Inca Minerals Ltd 90%, MRG Resources Pty Ltd 10%)
Project Operator:	Inca Minerals Ltd
Date:	December 2021
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1:100k Mapsheets:	Dalmore (6058), Wonarah (6158), Alroy (6159), Alexandria (6259), Ranken (6258), and Barry Caves (6257)
1:250k Mapsheet:	Alroy (SE5315), Ranken (SE5316), and Avon Downs (SF5304)
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1. Summary

This Geophysics and Drilling Collaboration (**GDC**) grant was awarded funding of $100,000 to undertake detailed airborne magnetic-radiometric surveying over 3,497km^2 in the emerging East Tennant region of the Northern Territory.

Following innovative target generation by the Tenure Holders, in conjunction with the excellent pre-competitive geophysical surveying and stratigraphic drilling by Geoscience Australia, the Northern Territory Geological Survey, and MinEx CRC, several standout exploration projects – Frewena Fable, Frewena East, Frewena Far East and Frewena Frontier – have been developed by Inca Minerals that are considered highly prospective to host large scale Iron Ore Copper-Gold and SEDEX mineralisation.

Exploration and generative work on these Projects, to date, has made use of regional geophysical datasets and various survey results from Geoscience Australia and the Northern Territory Geological Survey that are specific to the East Tennant region. While these datasets have been effective for prioritising regional scale features, higher resolution magnetic-radiometric surveying will greatly aid a shift towards prospect scale vectoring that is hoped to ultimately lead to successful mineral resource discovery.

Detailed magnetic-radiometric surveying completed under this grant covered the Frewena East, Frewena Far East, and Frewena Frontier Projects, and built on the 2020 GDC supported program successfully undertaken by Inca Minerals that covered 1,182km^2 over the Frewena Fable and Frewena Far East Projects. The 2021 program substantially expanded on this work covering a further area of 3,497km^2, representing a large portion of the East Tennant region.

Geophysical surveying was undertaken by MagSpec Airborne Surveys Pty Ltd between 8 September and 18 December 2021, and was based at the Barkly Homestead. Survey design and processing was undertaken by Resource Potentials Pty Ltd.

Captured data has undergone initial processing and filtering to produce various images of magnetics, radiometrics, and local digital terrain models. Data resolution has been significantly increased by more than tenfold with image cell size, or pixels, now measuring c. 8m by 8m in size. The datasets will improve geological understanding of the region, and in particular the structural architecture. Additional, filtering and interpretation of detailed magnetics – outside the scope of this GDC grant – is ongoing at the time of writing and will be included in future tenure annual reports. This work aims to delineate subtle, coherent bodies in the subsurface that may relate to large scale hydrothermal mineralisation and alteration.

While the East Tennant region has rapidly emerged as a hot spot for potential Iron Ore Copper-Gold and SEDEX mineralisation, the vast size of the area dictates that exploration endeavours need to be efficient and systematic in their approach. The detailed magnetic-radiometric surveying completed under this GDC grant aimed to provide data to bridge the gap between regional and prospect scale vectoring. Ensuring subsequent, higher cost exploration techniques are well placed will allow the best chance of mineral resource discovery.

2. Introduction

Inca Minerals (**Inca** or the **Company**), an ASX listed explorer, holds 4,736km^2 of granted tenure and exploration licence applications in the emerging, yet underexplored, East Tennant region of the Northern Territory. The land holding, known as the Frewena Group Project (the **Project**), is primarily considered prospective for large scale Iron Ore Copper-Gold (**IOCG**) mineralisation and includes:

- **Frewena Fable** (granted EL 31974 and EL 32287);
- **Frewena East** (granted EL 32289, and applications EL 32580 and EL 32635);
- **Frewena Far East** (granted EL 32293); and,

- **Frewena Frontier** (applications EL 32688, EL 32689, and EL 32690).

Frewena Fable, Frewena East, and Frewena Far East are part of a joint venture between Inca (90%), MRG Resources Pty Ltd (5%) and Dr Jonathan West (5%), with Frewena Frontier a joint venture between Inca (90%) and MRG (10%) (collectively, the **Tenure Holders**). Inca is the operator for all projects.

The Projects are located between 120km and 260km east of Tennant Creek and lie proximal to the Barkly Highway, as shown in Figure 1. The Barkly Homestead, a useful early stage exploration base complete with an airstrip, sits centrally between the Projects.

The 2021 survey area falls over the Dalmore Downs (NT Portion 773), Alexandria (NT Portion 000 Parcel 1), West Ranken (NT Portion 000 Parcel 2), and East Ranken (NT Portion 000 Parcel 3) Stations. Access to the Projects is by the Barkly Highway and existing pastoral station tracks.

This GDC grant was awarded $100,000 funding assistance to undertake detailed airborne magnetic-radiometric (**AMAGRAD**) surveying over 3,497km^2 at Frewena East, Frewena Far East, and Frewena Frontier Projects. While AMAGRAD is a standard early stage exploration technique, it is considered important to not only significantly advance resolution of these public datasets over a large portion of the East Tennant region, but also to provide high quality data at a more local level to best guide prospect scale targeting for subsequent high impact exploration, including gravity and/or induced polarisation geophysical surveying and drill testing.

The efficiency of AMAGRAD as a targeting tool has been clearly demonstrated by GDC supported surveying in 2020 over the high priority Mount Lamb prospect in Frewena Far East where widespread alteration and significant sulfides were intersected in stratigraphic drilling by MinEx CRC within an area excised from EL 32293. Numerous additional targets have resulted from the 2020 program at both the Frewena Fable and Frewena Far East Projects; the 2021 AMAGRAD program aimed to significantly expand on the Company's 2020 surveying program.

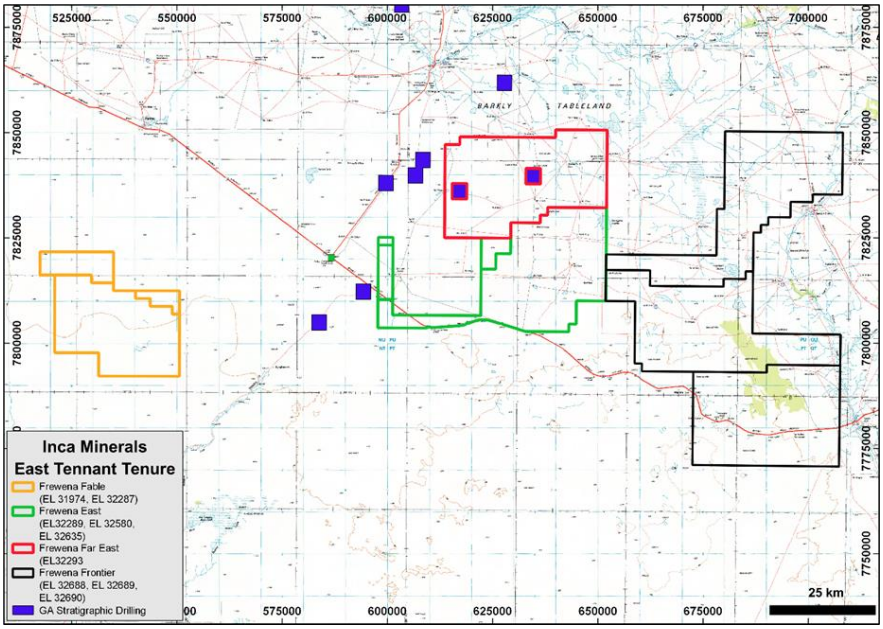

Figure 1: The Frewena Projects are located between 120km and 260km east of Tennant Creek in the emerging East Tennant region of the Northern Territory

3. Regional Geology

The Frewena Projects lie within the Georgina Basin, a 360,000km² remnant of the Neoproterozoic to Palaeozoic sedimentary sequence that was originally deposited across an intra-continental platform in central Australia. Outcrop within the region, and locally within the Projects, is generally rare with geology largely comprised of carbonate sedimentary rocks, limestone, and shale. Cover thickness within the region is thought to vary from negligible to many hundreds of meters thick.

Sedimentary lithologies of the Georgina Basin largely obscure older basement rocks. Past exploration of the region has largely been restricted to sedimentary hosted phosphate deposits, which has left large swathes unexplored by modern methods for base and precious metals. The region's location between the mining centres of Mt Isa and Tennant Creek, however, suggests Proterozoic basement could be prospective for large scale base and precious metal mineralisation and this realisation has seen the East Tennant region emerge as a potential new IOCG province in recent years.

Significant pre-competitive data acquisition has been undertaken in the East Tennant region by Geoscience Australia (**GA**), the Northern Territory Geological Survey (**NTGS**), and MinEx CRC. This work has included seismic, gravity, magnetotelluric (**MT**), and airborne electromagnetic (**AEM**) geophysical surveying, and stratigraphic drilling in the area covering the Projects. Important observations and conclusions with regard to the East Tennant region from the various Government led work programs include:

- Occurrence of a large scale and deep-seated structural architecture;
- Modelled iron-oxide alteration;
- Accessible basement depths (Figure 2);
- Modelled IOCG mineral potential (Figure 3);
- High conductivity features modelled to extend from the mantle which could indicate past metal bearing fluid flow zones relating to IOCG mineralisation (Figure 4); and,
- Confirmation of hydrothermal alteration and significant copper (**Cu**) sulfides in stratigraphic drilling (Figure 5).

A standout interpretation from GA and NTGS's precompetitive work is conductivity cross sections derived from MT surveying. As shown in Figure 4, a large mantle tapping feature is noted to occur along the East Tennant Ridge and extends to the near surface below the Frewena East and Frewena Far East Projects. This conductive feature potentially represents an ancient fluid flow zone from the mantle and may relate to a fluid pathway associated with IOCG style mineralisation and alteration. Its occurrence beneath the Frewena Group adds great weight to the Project's exploration model (see Exploration Concept section for details).

The extensive work undertaken by GA and the NTGS resulted in a pegging rush to secure tenure in the region during late 2019, in which Inca was an early mover. The Applicants have since expanded their tenure holding in the region through the pegging of the Frewena Frontier Project. Frewena Frontier was identified through innovative generative studies that combined the existing exploration model (responsible for identifying Frewena Fable, Frewena East and Frewena Far East), with recent results from Government led pre-competitive work.

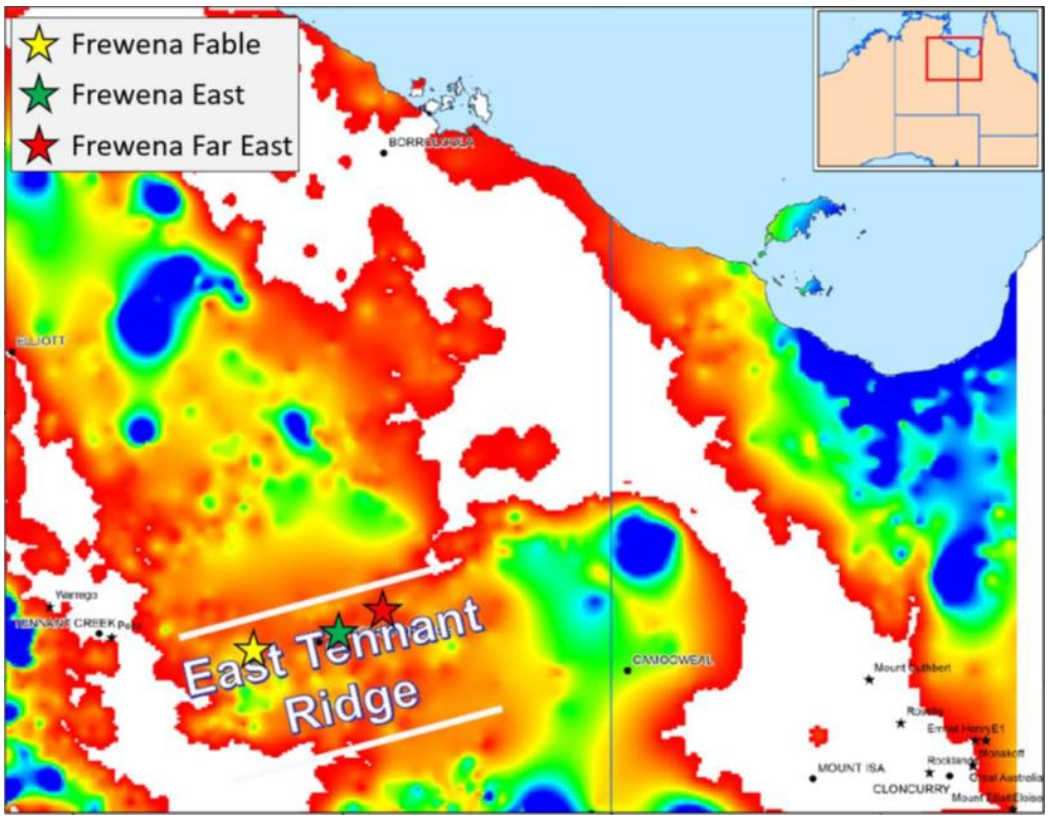

Figure 2: Depth to basement along the East Tennant Ridge as modelled by GA/NTGS (after Czarnota, 2019)

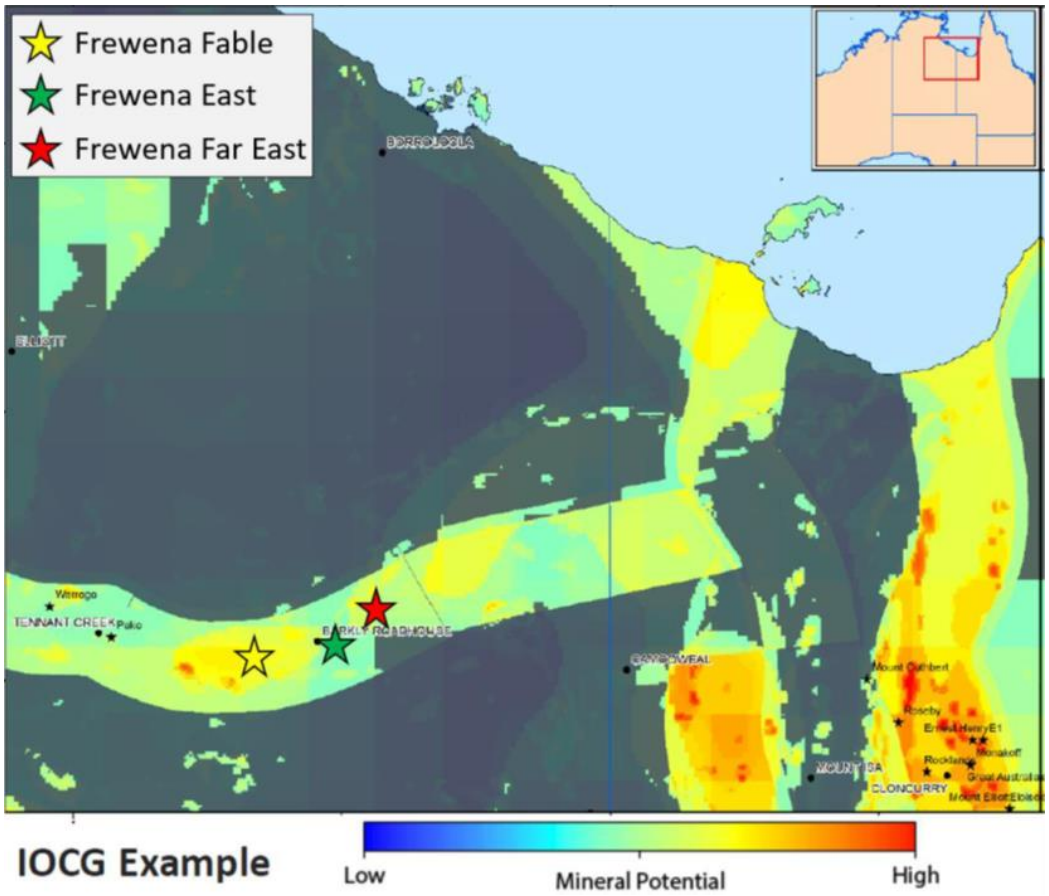

Figure 3: Modelled IOCG mineral potential within the East Tennant region (after Murr, 2019)

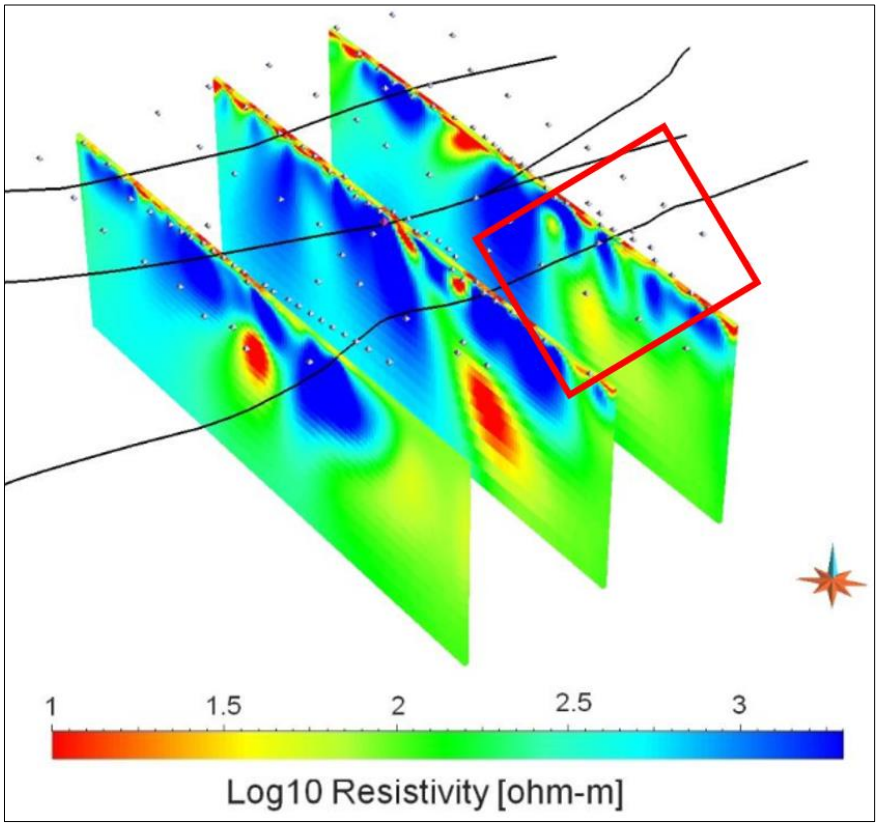

Figure 4: Stacked MT conductivity cross sections in the East Tennant region indicate a series of mantle tapping features beneath the Frewena Group Project that might represent large scale fluid flow zones related to IOCG style mineralisation (red outline marks approximate location of the Frewena Far East Project) (after Duan, 2019)

Figure 5: Chalcopyrite-pyrite vein and veinlets at 251m depth in MinEx CRC stratigraphic drill hole, NDIBK04, located at the high priority Mount Lamb prospect within an area excised from Frewena Far East

4. Previous Exploration

Limited historical exploration is reported over the area of the proposed AMAGRAD surveying, with the majority of historical exploration having targeted sediment hosted phosphate (mainly in the 1960's onwards) and minor base metal exploration by Jacaranda Minerals Pty Ltd in 2008-2010.

Exploration by Jacaranda within Frewena East targeted Pb-As anomalism that related to sub-cropping siliceous breccia units. The breccias were interpreted by Jacaranda to be weathered silicified "crackle breccias" typical of Mississippi Valley Type Pb-Zn mineralisation, with these occurring in proximity to large scale, off set magnetic and gravity features (Collings 2009).

A total of three holes (DDH001-DDH003) for 769.6m were drilled with a maximum depth of 270.4m (see Figure 6 for collar locations). Sedimentary cover in each hole varied between 100-115m thick, and while drilling failed to explain the cause of the magnetic and gravity features, encouraging alteration assemblages were noted in basement lithologies that included epidote, glauconite, chlorite, sericite, quartz-silica, feldspar, hematite, calcite, and biotite, with rare, disseminated pyrite and chalcopyrite. Veining and brecciation zones were commonly noted throughout the drill holes (Collings 2009).

While drill holes were not multielement assayed by Jacaranda, description of their intersected lithologies are not dissimilar to lithologies noted in parts of MinEx CRC's stratigraphic drill holes, NDIBK01 and NDIBK04, 40km to the north. Additionally, the description of surface silicified crackle breccias with elevated Pb-As is very similar to silica-Fe breccias interpreted to have formed through karst collapse of limestone units at the high priority Mount Lamb prospect. These karst style breccias occur extensively at Mount Lamb (and an additional look-a-like target nearby in Frewena East; see Figures 6 and 11), and may relate to weathering of sulfide rich material at depth; surface base anomalism within these systems is attributed to upwards migration of metals during groundwater fluctuation.

A more recent exploration development of note is the discovery by Middle Island Resources Ltd (**MDI**) of supergene malachite within calcretes-silcretes at the Crosswinds prospects a mere 800m from the western border of Inca's Frewena East tenure. Low temperature, groundwater precipitation of Cu into the sedimentary cover sequence is considered further evidence of the East Tennant's potential to host multiple, large scale base metal mineral systems within Proterozoic basement lithologies.

Exploration field work undertaken by Inca, to date, in addition that that previously reported at Frewena Fable and the Mount Lamb prospect at Frewena Far East, includes orientation soil and reconnaissance rock chip sampling at the Highway Target (Point A in Figure 6), reconnaissance rock chip sampling at various locations along the Barkly Highway (Points B and C in Figure 6), and helicopter assisted reconnaissance in late 2018 at Frewena Frontier (Point D in Figure 6).

At the Highway Target, orientation soil sampling returned a low tenor but distinguishable correlation of Cu-Au-As-Bi above regional, offset magnetic and gravity features. Rock chipping in this area has returned encouraging results in ferricrete and silcrete that match – and in the case of Au, doubled – rock chip anomalism observed within silica-Fe karst breccias at Mount Lamb. Further evidence of elevated base metals in the area are noted in a series of limestones that show increasing Mn content. As Mn content increases, so too does metal accumulation through scavenging that, similar to MDI's Crosswinds prospect, indicates elevated metals in groundwater being sourced locally, most likely from basement enrichment. Figures 7 to 9 illustrate a selection of rock chips from the Highway Target.

Roadside rock chip sampling at Point B in Figure 6 returned limonitic shale-chert and silicified material (see Figure 10) with maximum values of **1.9g/t Ag**, **7ppb Au**, **10ppm Mo**, **270ppm As**, **245ppm Pb**, and **106ppm Zn**, which suggests a SEDEX style metal suite and raises the potential for sedimentary hosted mineralisation in this area. Rock chipping further along the Barkly Highway at Point C in Figure 6 observed karst style silica

and Fe breccias whose topographic, lithological, and geochemical characteristics strongly mimic rock types sampled at the high priority Mount Lamb target 40km north within Frewena Far East.

Helicopter assisted reconnaissance within Frewena Frontier, while restricted in its scope, has returned hematite-goethite brecciated sedimentary lithologies with large, fully goethitised clasts (see Figure 12). Low level but elevated Au and S has been returned in these rock chips (Point D in Figure 6), that occurs above a large intrusive feature interpreted in regional geophysical data.

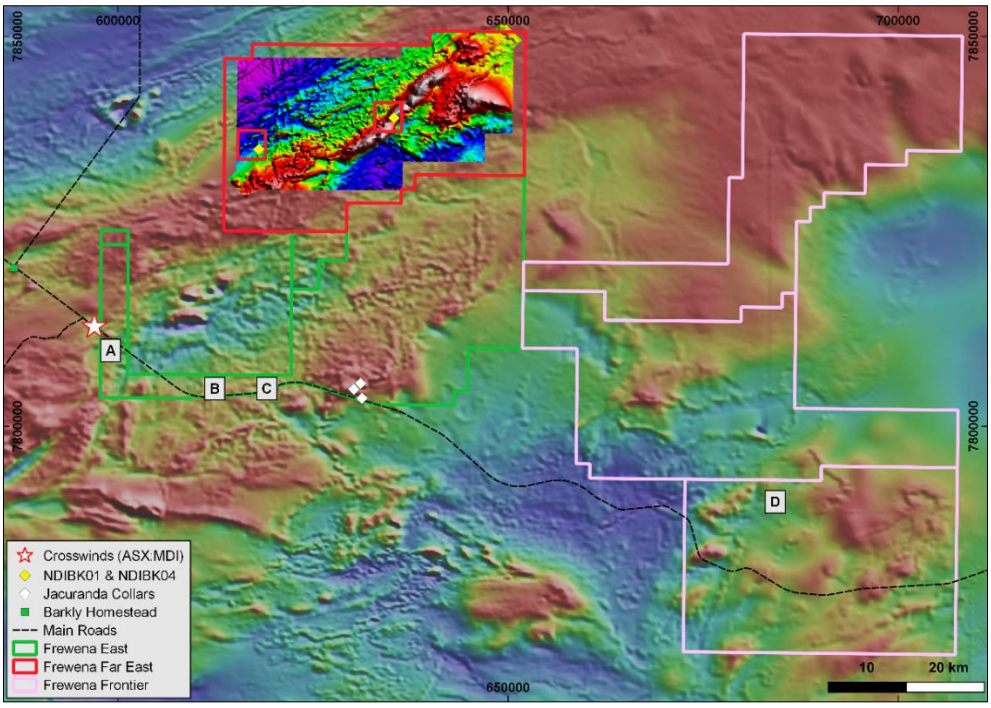

Figure 6: TMI map of Frewena East, Frewena Far East, and Frewena Frontier displaying the 2020 detailed TMI image over part of Frewena Far East, location MinEx CRC holes NDIBK01 and NDIBK04, drill collars of Jacaranda Minerals, and MDI's Crosswinds prospect; annotated locations include: A) Inca's Highway Target (Figures 7 to 9), B) enriched sedimentary units of SEDEX affinity (?; Figure 10), C) a silica-Fe karst (?) breccia very similar to that seen at Mount Lamb (Figure 11), and D) location of brecciated, goethitised sedimentary units with elevated Au and S (Figure 12)

Figure 7: Ferricrete samples from the Roadhouse Target with elevated metal anomalism (Heaslop 2021)

Figure 8: A series of limestones from the Roadhouse Target with increasing Mn content; base metal scavenging by Mn indicates ground water is elevated in metals suggesting a possible local basement source (Heaslop 2021)

Figure 9: Silcretes from the Roadhouse Target are highly leached and formed after limestone (?), with the 17ppb Au result of FE0007 the highest achieved to date across the entirety of Inca's Frewena Group Project (Heaslop 2021)

Figure 10: Limonitic shale-chert and silicified material from Point B (Figure 6) suggesting potential for SEDEX style mineralisation within the Georgine Basin sediments (Heaslop 2021)

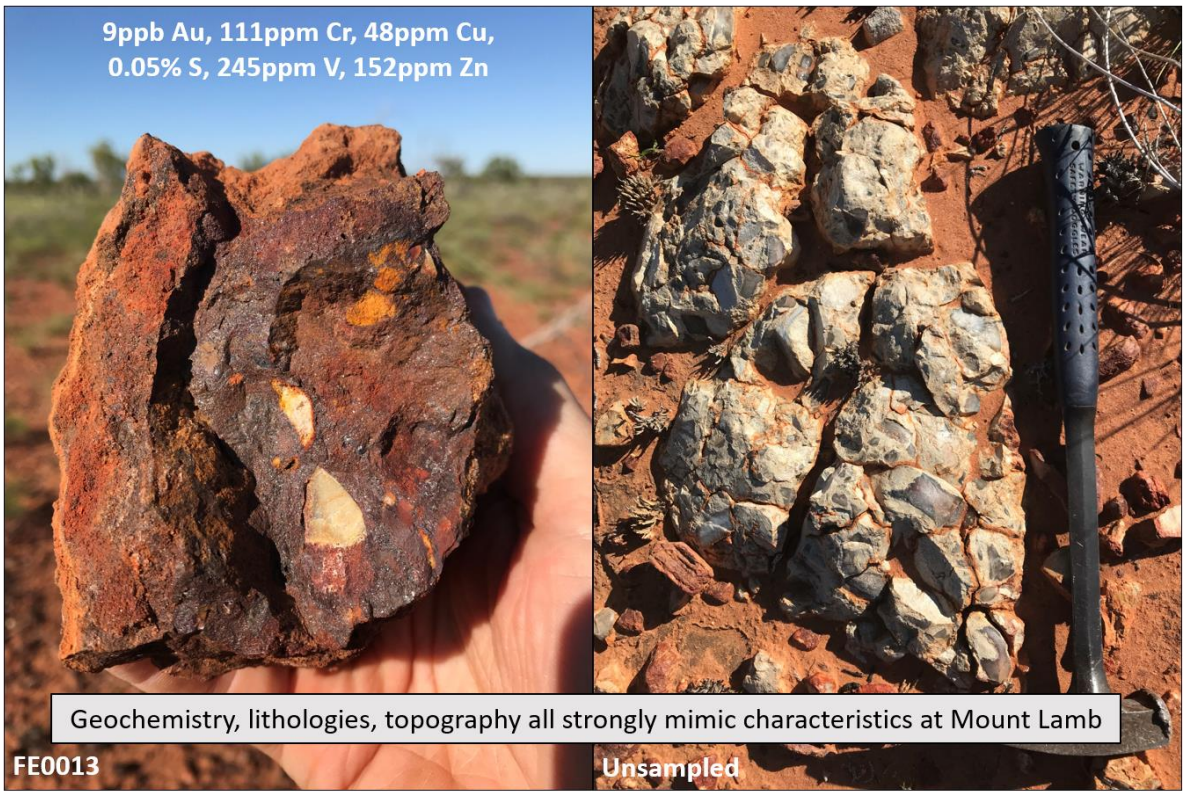

Figure 11: Fe and silica breccias interpreted as limestone karst collapse at Point C (Figure 6) with topography, lithologies, and geochemistry strongly mimicking the high priority Mount Lamb prospect 40km north (Heaslop 2021)

Figure 12: Hematite-goethite brecciated sedimentary lithologies with goethite clasts from Point D (Figure 6) within Frewena Frontier; limited reconnaissance work to date has returned low level Au and S above a large scale intrusive feature (Heaslop 2018)

5. Exploration Concept

The Frewena Group Project – similar to the greater East Tennant region – is primarily considered prospective for large scale IOCG mineralisation, though potential also exists for other deposit styles including intrusion related Au-Cu, orogenic Au, and SEDEX base metal systems.

IOCG is a broad term that includes iron enriched Cu-Au mineralisation that can form through a number of different mechanisms, as illustrated in Figure 13. Common to these different mechanisms is the mixing of hot, metal endowed, reduced fluids from magmatic or metamorphic sources, with cool, oxidised surface waters that leads to metal precipitation and – ideally – ore deposit formation.

A central tenet in the formation of IOCG systems, and indeed for most metallic ore deposits, is ground preparation that includes fracturing and faulting, leading to weakening of host lithologies and an increase in permeability. Weakening of lithologies can assist magmas to intrude, while increased permeability along faults and fractures is crucial for fluid mixing.

Across the East Tennant region, the excellent pre-competitive work led by Geoscience Australia and the Northern Territory Geological Survey has confirmed existence of an extensive, mantle tapping fault network that has allowed metal bearing magmas and fluids to ascend to the near surface during the geological past. While the dominant trend of these faults is SW-NE (e.g. a trend well demonstrated by the Mount Lamb prospect), other more subtle secondary and tertiary structure orientations exist that likely represent accommodation structures resulting from a long lived, multi-episodic structural history.

Within the Frewena Group Project, numerous NW-SE accommodation structures are noted to cross cut the older, more dominant SW-NE trends. Where compelling gravity and magnetic anomalies occur proximal to intersection of these structures, the potential for IOCG mineralisation increases.

Detailed AMAGRAD surveying is, therefore, a crucial early stage technique to rapidly assess mineral potential of large areas to allow best targeting of subsequent exploration pogroms. Surveying proposed under this GDC application aims to both advance understanding of the structural architecture within the Frewena Group Project while also testing for magnetic signatures relating directly to hydrothermal alteration and mineralisation.

It is anticipated that results of the proposed survey will assist prioritising targets that warrant follow up ground based gravity and/or induced polarisation surveying to define concise, de-risked targets for initial drill testing. This exploration program has been well demonstrated by Inca's 2020 AMAGRAD program that has resulted in a number of quality targets at both the Frewena Fable and Frewena Far East Projects with gravity surveying currently being scheduled ahead of initial drill testing that is anticipated to occur during the current field season.

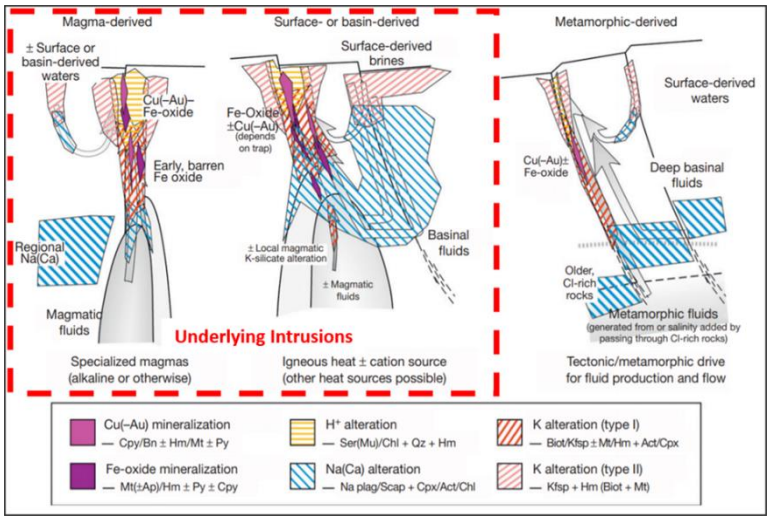

Figure 13: Schematic diagrams of different IOCG models includes the Magma-derived and Surface- or basin-derived types where metal-enriched fluids derived from underlying intrusions migrate upwards to mix with surface waters resulting in metal precipitation and ore deposit formation. Ground preparation through extensive faulting is required to allow fluid mixing (after Fabris 2015)

5.1 *Frewena East and Frewena Far East*

The Frewena East and Frewena Far East Projects have received considerable attention by Inca's geophysical consultancy with a wholistic review underway of all available East Tennant data.

This review has identified at least four IOCG trends that traverse Frewena East and Frewena Far East as seen in Figure 14. Principle among these is the most northern trend along which falls MDI's Crosswinds prospect (IOCG-T1), the SW Area (IOCG-T2), Mount Lamb (IOCG-T3), and Desert Creek (IOCG-T4).

The remaining three trends host the Plains Target (IOCG-T5) and other lesser defined magnetic and gravity targets that require higher resolution data to further advance. Both Frewena East and Frewena Far East host numerous off-set magnetic and gravity features that warrant exploration. Detailed AMAGRAD surveying proposed under this GDC application seeks to extend survey coverage over all of these targets as shown.

While the mineralisation potential of this area has been strongly demonstrated by the outstanding drilling results of NDIBK04 at Mount Lamb, exploration attention is also deserving at other prospects whose magnetic and gravity features can be modelled to extend to significant depth, as shown by the 3D magnetic image illustrate in Figure 15.

Notably, a number of prospects in the central and southern portion of Frewena East occur proximal to base metal anomalous, silica-Fe karst breccias as observed by Jacaranda Minerals and Inca, as well as hydrothermally altered basement with rare pyrite-chalcopyrite as drilled by Jacaranda. In light of MinEx CRC's stratigraphic drill results, the Frewena East and Frewena Far East Projects warrant advanced exploration. Extension of detailed AMAGRAD surveying over these areas is a logical first step in the exploration process.

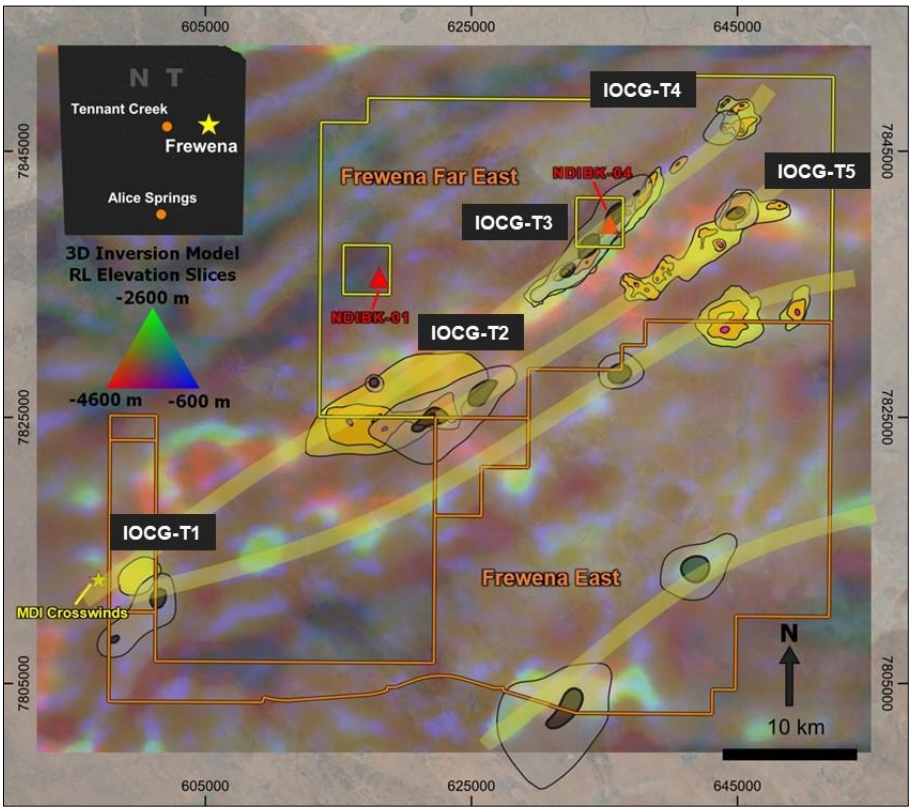

Figure 14: Regional image of Frewena East and Frewena Far East showing modelled magnetic high responses at source body depth slices extending to 4.6km, overlain by magnetic-gravity ridge trends in pale yellow. Spot magnetic highs are outlined (yellow-orange shapes with solid black lines) and gravity highs are outlined (grey-brown shapes with solid black lines). The magnetic ridges are highlighted as well as MDI's Crosswind Copper Prosect and the government's NDIBK04 "copper hole" (Brown 2021)

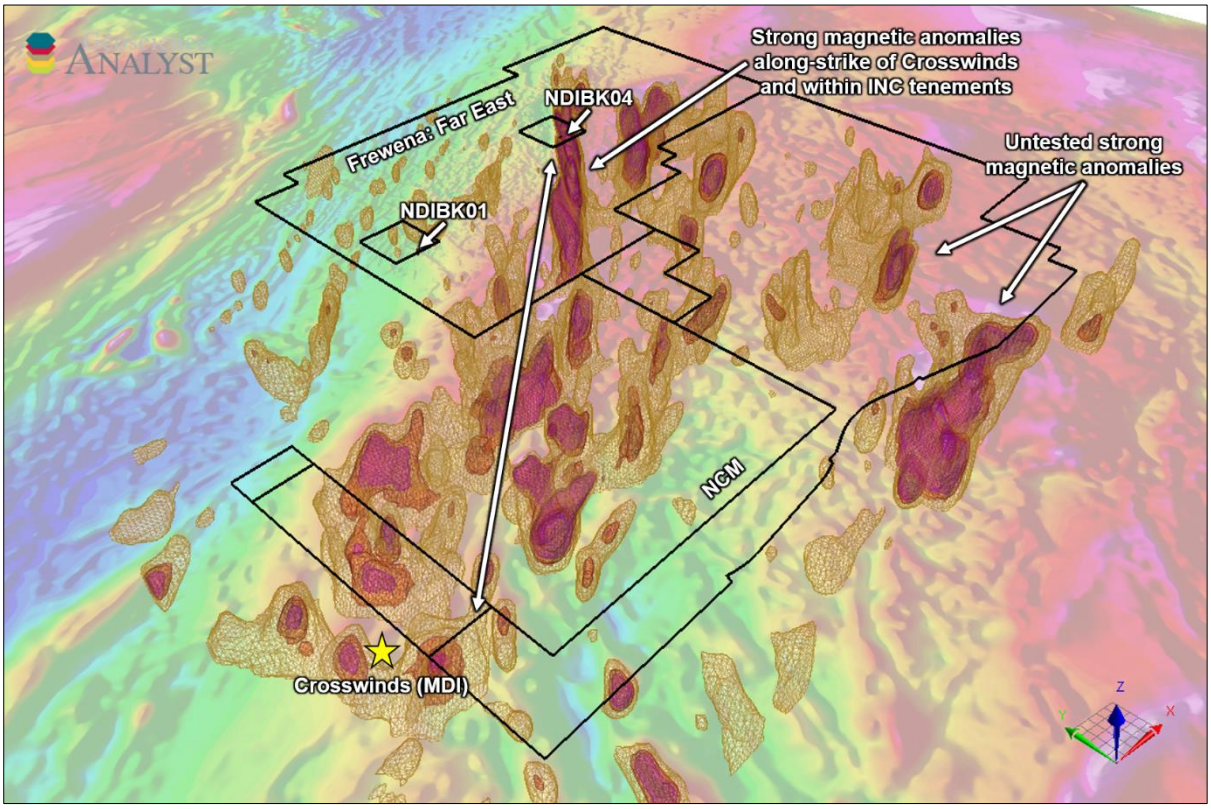

Figure 15: 3D visualisation looking northeast over Frewena East and Frewena Far East showing relatively high, magnetic susceptibility modelled bodies generated from 3D inversion modelling of airborne magnetic data with a sun-shaded image of filtered magnetic data shown below as background. Multiple potential IOCG targets are interpreted to occur within the areas. Recent high-grade copper results from MDI Crosswinds (yellow star) appear to be located along-strike of a modelled NE oriented magnetic ridge, which extends into the Frewena Far East prospect (Brown 2021)

5.2 *Frewena Frontier*

The Frewena Frontier Project, located immediately east of Frewena East and Frewena Far East, can be divided into northern and southern sections.

The northern part of Frewena Frontier hosts a large target area extending over 25km x 35km that is highly prospective for IOCG-style mineralisation. The target area comprises multiple off-set magnetic and gravity anomalies identifiable in regional scale data that are distributed along SW-NE trending corridors that appear to be extensions of IOCG trends defined within the Frewena East and Frewena Far East Projects, as shown in Figures 16 and 17.

At a local scale, the dominant SW-NE trends are cross cut by a series of younger NW-SE structures with the prospective magnetic-gravity features often occurring in proximity to intersection of structures. A similar spatial relationship between controlling structures and priority IOCG targets is noted across the East Tennant region and confirms the importance of ground preparation for IOCG style mineralisation.

The size, strength and structural setting of offset magnetic and gravity anomalies within the northern portion of Frewena Frontier marks these features as quality, unexplored IOCG targets, especially in light of the highly encouraging results from MinEx CRC's drill hole NDIBK04 nearby.

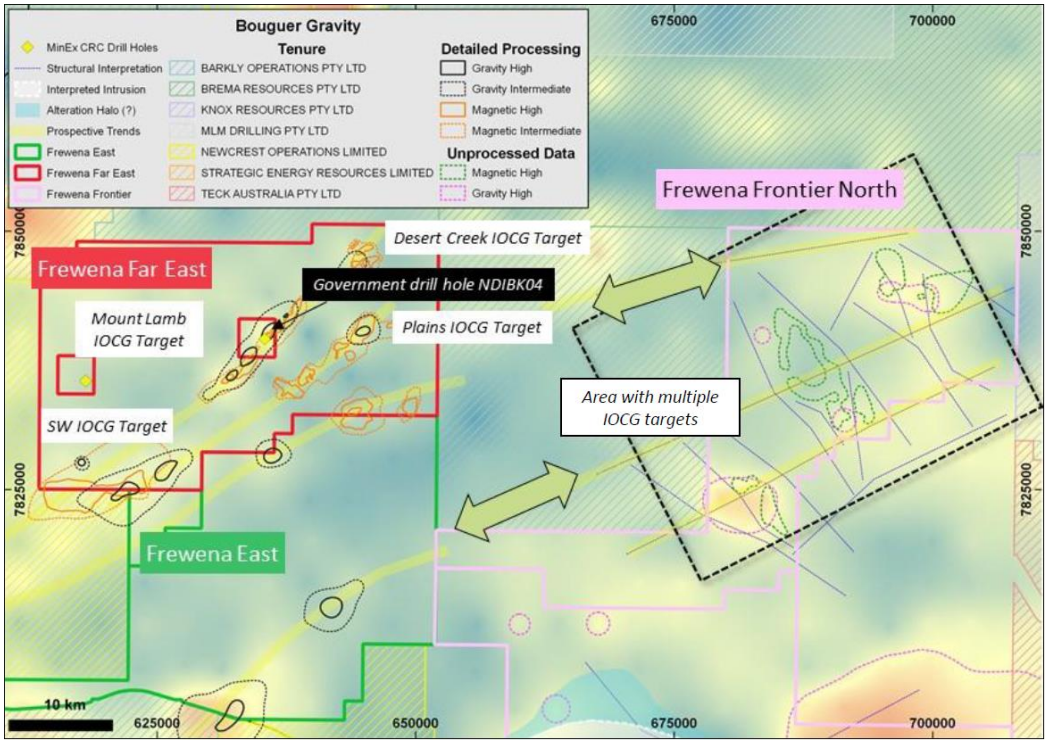

Figure 16: Bouguer gravity map of northern portion of Frewena Frontier, Frewena Far East, and part of Frewena East. Gravity highs are highlighted (dotted pink lines) as are magnetic highs (dotted green lines) and a basic structural interpretation (dotted blue lines) in Frewena Frontier. The hydrothermal-related magnetic-gravity trends of Frewena Far East and Frewena East (thick transparent yellow lines) align with magnetic-gravity trends and interpreted structures of Frewena Frontier

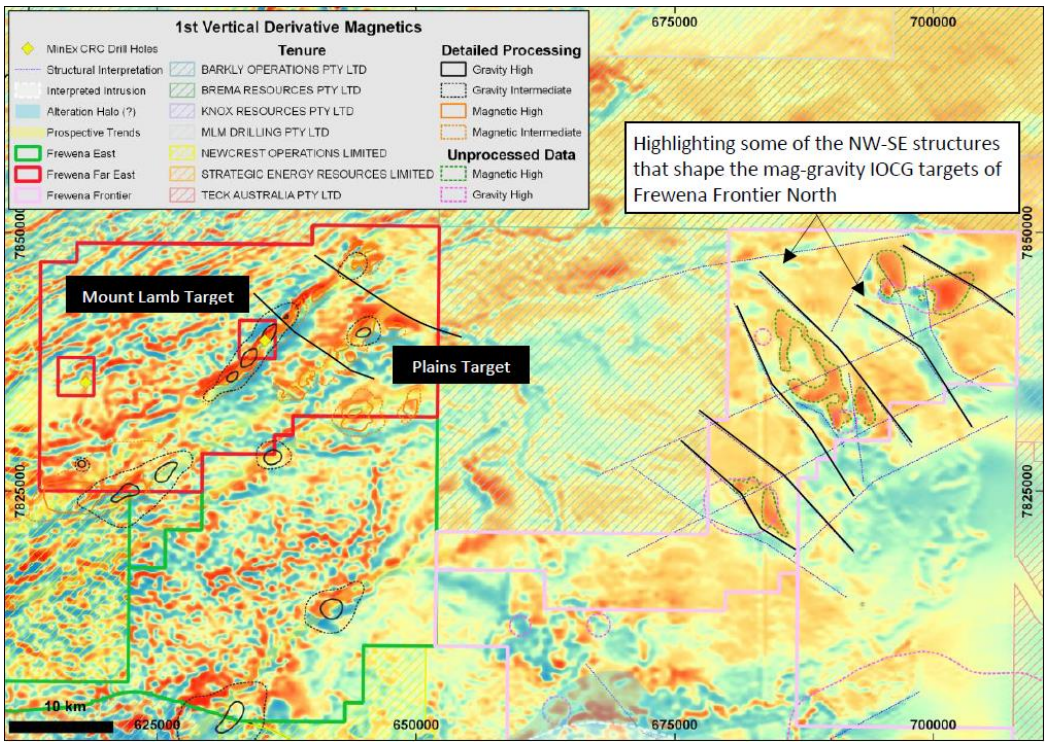

Figure 17: First vertical derivative magnetic map of the northern portion of Frewena Frontier, Frewena Far East, and part of Frewena East. Gravity highs are highlighted (dotted pink lines) as are magnetic highs (dotted green lines) and a basic structural interpretation (dotted blue lines) in Frewena Frontier. Several NW-SE cross cutting structures are highlighted (thin solid black lines) at Frewena Fronter and Frewena Far East. Those at Frewena Far East are important in the alignment and shape of the Mount Lamb and Plains IOCG targets

In the southern portion of the Project, a series of highly disjointed magnetic anomalies occur within an extensive, SW-NE trending, stratigraphic related gravity high, as shown in Figure 18. Structural disruption in this area is attributed to a 14km by 35km intrusion that is interpreted in magnetic, radiometric, gravity, ASTER, and electromagnetic datasets. An alteration halo is thought to partially surrounding this feature.

As with IOCG targets nearby in the norther portion of Frewena Frontier, this intrusion is elongated NW-SE indicating its emplacement was in part controlled by younger cross cutting faults, which suggests a younger age of emplacement compared with older SW-NE trending stratigraphy.

Magnetic highs above this intrusion, and adjacent to its outer margin, are considered as IOCG style targets that warrant exploration, especially in areas of higher gravity response. Indeed, this setting bears strong similarity to the schematic Magma-derived and Surface- or basin-derived IOCG models as illustrated in Figure 13 in Section 5. Additionally, potential also exists for intrusion related Au-Cu mineralisation and/or orogenic Au within faults zones associated with this intrusion.

Prospectivity of this area was initially noted in 2018 when the Frewena Fable exploration model was expanded over the greater East Tennant region. Notably, the southern portion of Frewena Frontier was one of two high priority areas identified through this process at the time, with the other being the Frewena Far East Project, including the Mount Lamb Prospect. While limited historical exploration has occurred over the Project area, reconnaissance in 2018 identified brecciated sedimentary rocks with strong iron content as hematite-goethite cement and goethite breccia clasts as illustrated by Figure 12 in Section 4, providing support for the IOCG exploration model.

As with the other areas presented under this GDC application, the sheer size of the project area and its large number of high quality targets demands that efficient programs are undertaken to allow thorough assessment and ranking of targets ahead of more detailed ground based surveying (i.e. gravity and/or induced polarisation) and drill testing.

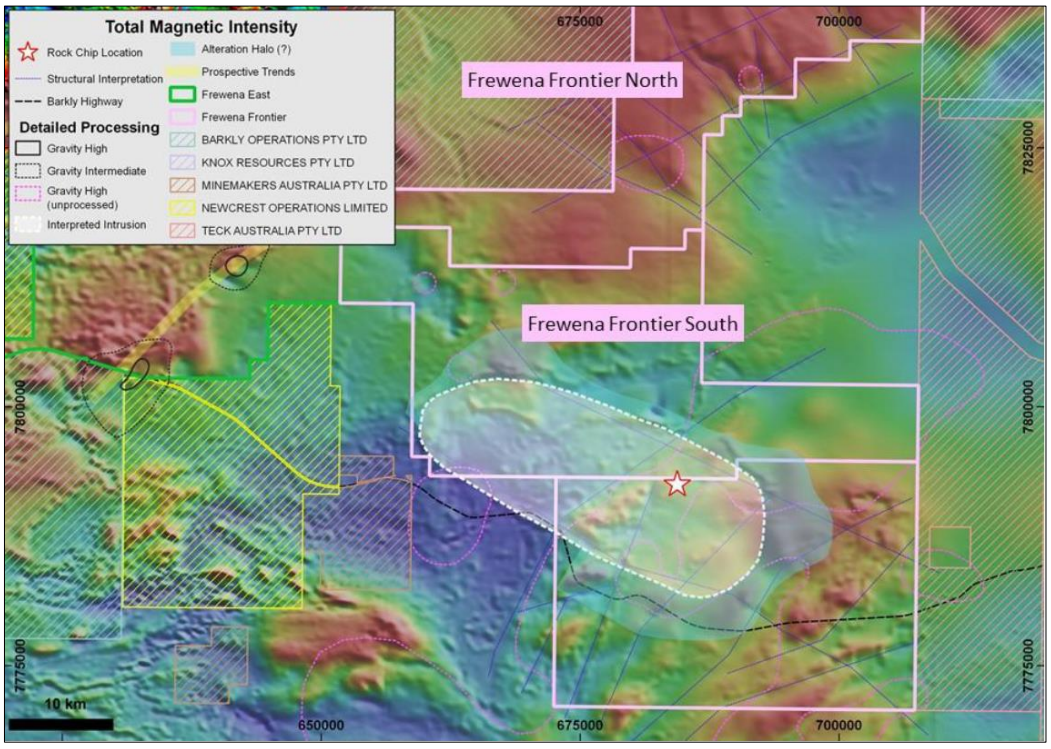

Figure 18: Total magnetic intensity map of the southern portion of Frewena Frontier and part of Frewena East. Gravity highs are highlighted (dotted pink lines) and a basic structural interpretation (dotted blue lines). The area is considered prospective for IOCG, intrusion related Cu-Au and/or orogenic Au mineralisation. The white and red star mark the location of the rock chip shown in Figure 12 in Section 4

6. Detailed of the Collaborative Program

The geophysical program completed by Inca under this GDC grant was detailed airborne magnetic-radiometric (**AMAGRAD**) surveying over the Frewena East, Frewena Far East, and Frewena Frontier Projects.

While AMAGRAD surveying is a standard early stage exploration technique, its use at Inca's Frewena Projects is considered important not only to significantly advance the resolution of these datasets over a large portion of the East Tennant region but also to provide high quality data for prospect scale targeting.

To date, exploration targeting at the Frewena Group Projects has largely been restricted to review of regional scale geophysical datasets and, more recently, the excellent Government initiative pre-competitive geophysical surveying and stratigraphic drilling. Importantly, acquisition of detailed AMAGRAD by Inca will provide data to begin assessment of subsurface features – principally a greater understanding of the structural framework of the region and also innovative filtering that – in conjunction with gravity data – attempts to delineate coherent bodies that may relate to IOCG mineralisation or hydrothermal alteration.

In achieving this latter point, prioritisation and efficiency of subsequent ground based exploration will be enhanced, which might include gravity surveying and/or induced polarisation electrical surveying at the prospect scale ahead of initial drill testing of highest priority targets. Inca believes acquisition of detailed AMAGRAD is a critical technique to advance exploration in the East Tennant by shifting from regional to prospect scale vectoring, ultimately leading to mineral resource discovery.

To facilitate the program, Inca engaged Resources Potentials Pty Ltd (**ResPot**) – a specialist geophysical consultancy – to undertake survey design, seek quotes for data acquisition, and to complete post survey data processing, filtering, and modelling. Data acquisition was undertaken by MAGSPEC Airborne Surveys Pty Ltd (**MAGSPEC**) at a highly competitive price of $6.65/line km.

The program was based from the Barkly Homestead with total lineage to be flown being 58,171km covering 3,497km^2. Line spacing included a mix of 50m and 100m sections to balance efficient cost of delivery while providing higher resolution over priority areas of interest. Sensor high was between 30-40m. Survey boundary coordinates and parameters are presented in Tables 1 and 2 and flightline direction is illustrated in Figure 19.

Technical specifications of the proposed AMAGRAD survey include:

- **Geometrics G-823A tail sensor mounted magnetometer**
  - Sensor Type - Caesium vapour
  - Resolution - 0.001 nT
  - Sensitivity - 0.01 nT
  - Sample Rate - 20 Hz (≈3.5 metre sample interval)
  - Compensation - 3-axis fluxgate magnetometer
- **RSI RS-500 gamma-ray spectrometer**
  - 2x RSX-4 detector packs.
  - Total Crystal Volume - 32 L
  - Channels - 1024
  - Sample Rate - 2 Hz (≈35 metre sample interval)
  - Stabilisation - Multi-peak, automatic gain
- **Bendix/King KRA 405 radar altimeter**
  - Resolution - 0.3 m
  - Sample Rate - 20 Hz
  - Range - 0-760 m
- **Renishaw ILM-500-R laser altimeter**

- Resolution - 0.01 m
- Accuracy - 0.1 m
- Sample Rate - up to 20 Hz
- Range - 0-500 m

- **GEM Overhauser / Scintrex ENVIMAG proton precession magnetic base stations**
  - Resolution - 0.01 / 0.1 nT
  - Accuracy - 0.1 / 0.5 nT
  - Sample Rate - 1.0 / 0.5 Hz
- **NovAtel OEM 719 DGPS Receiver.**
  - Channels - 555
  - Signal Tracking - L1/L2 + GLONASS Multi Frequency
  - Positional Accuracy - 0.4 m RMS (NovAtel CORRECT)
  - Sample Rate - 2 Hz

Frewena Far East		Frewena Far East		Infill-1		Infill-2		Infill-3	
EASTING	NORTHING	EASTING	NORTHING	EASTING	NORTHING	EASTING	NORTHING	EASTING	NORTHING
680227	7850326	640712	7800100	613557	7830505	622190	7808682	658856	7808900
708232	7850025	622175	7800100	636322	7830418	632234	7808700	677656	7808882
710383	7847859	618712	7803565	636367	7834147	643597	7820443	685750	7800579
708181	7845649	600211	7803630	646785	7834086	648279	7815712	685750	7789400
708061	7835264	598963	7802384	646866	7837769	645017	7812856	707522	7789334
701066	7835344	596544	7804804	652121	7837713	644851	7804524	707302	7770683
701045	7833498	597733	7806004	654393	7835436	643106	7804538	674952	7771037
695799	7833557	597839	7825136	652080	7833071	643091	7802693	673705	7769786
695758	7829867	601333	7825117	652035	7828067	640793	7802697	671246	7772245
690514	7829923	603817	7822661	640512	7828112	640682	7800100	672477	7773473
690494	7828078	601305	7820141	636756	7824884	622175	7800100	672647	7790755
688746	7828097	601242	7809062	616324	7825024			670182	7793227
688726	7826252	603654	7806657	614319	7823024			660460	7793319
686978	7826270	622174	7806540	611432	7826036			658730	7795042
686749	7804469	622290	7822474	613560	7828170				
688960	7802260	619746	7825000						
705556	7802075	616324	7825024						
706658	7803160	614319	7823024						
708779	7801039	611432	7826036						
707647	7799908	613560	7828170						
707302	7770683	613557	7830505						
674952	7771037	636322	7830418						
673705	7769786	636367	7834147						
671246	7772245	646785	7834086						
672477	7773473	646866	7837769						
672647	7790755	652121	7837713						
670182	7793227	654393	7835436						
660460	7793319	652080	7833071						
658730	7795042	651996	7823389						
658843	7807484	654335	7821046						
656368	7809959	678184	7820825						
644897	7810058	678294	7831894						
644851	7804524	680043	7831877						
643106	7804538								
643091	7802693								
640793	7802697								

Table 1: Survey boundary coordinates and 50m infill zones

Area Name	Traverse Line spacing (m)	Traverse Line Direction (deg)	Tie Line Spacing (m)	Tie Line Direction (deg)	Sensor Height* (m)	Total Line Kilometres
Frewena Far East	100	135-315	1000	045-225	30	39,801
Infill-1	50 (100m offset)	135-315	500 (1000m offset)	045-225	30	3,001
Infill-2	50 (100m offset)	135-315	500 (1000m offset)	045-225	30	3,142
Infill-3	50 (100m offset)	135-315	500 (1000m offset)	045-225	30	12,227
					Total	**58,171**

*Table 2: Proposed survey parameters (*The sensor height will be determined following a reconnaissance flight and maintained where possible; some draping may occur due to terrain and/or safety considerations)*

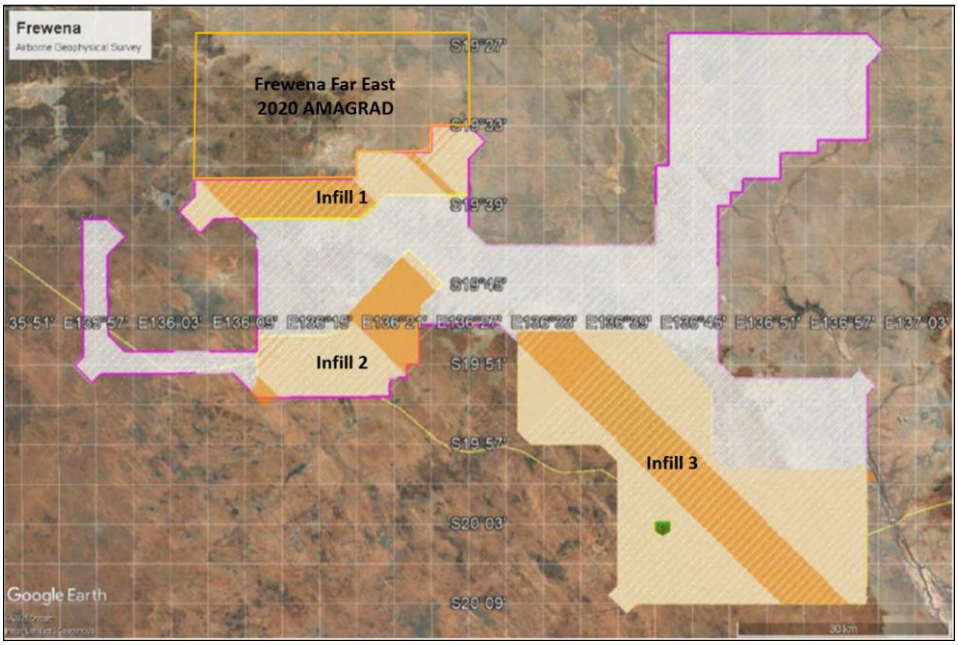

Figure 19: Proposed flightlines over the Frewena Group Project include a mix of 50m and 100m spaced lines for 58,171 line km to cover 3,497km²

7. Results and Interpretations

The AMAGRAD survey was successfully completed with high quality data acquired. Initial processing of the data has been undertaken by MagSpec and ResPot.

The survey has resulted in a more than tenfold increase in image resolution with the image cell size, or pixel, reduced from the regional scale of c. 85m by 85m to the detailed scale of c. 8m by 8m.

Further data processing and interpretation – beyond the scope of the GDC grant funding – remains ongoing at the time of writing and will be included as part of annual reporting requirements for the Jean Elson Project.

Initial processing of detailed AMAGRAD data has provided high resolution images to better define the area's elevation, radiometric, and magnetic characteristics. Figures 20 to 23 display topography, ternary radiometrics, total magnetic intensity, and the 1st vertical derivative TMI, respectively. Additional data processing and interpretation is ongoing at the time of writing. Results for topography, radiometrics, and magnetics confirm features defined from regional data, as would be expected, but with much better control on occurrence and geometry.

The tenure holders look forward to full interrogation of this new dataset and its compilation with other geological, geophysical, and geochemical data, to determine the next best steps at the Frewena Group Project and, ultimately, aid in facilitating drill targeting studies.

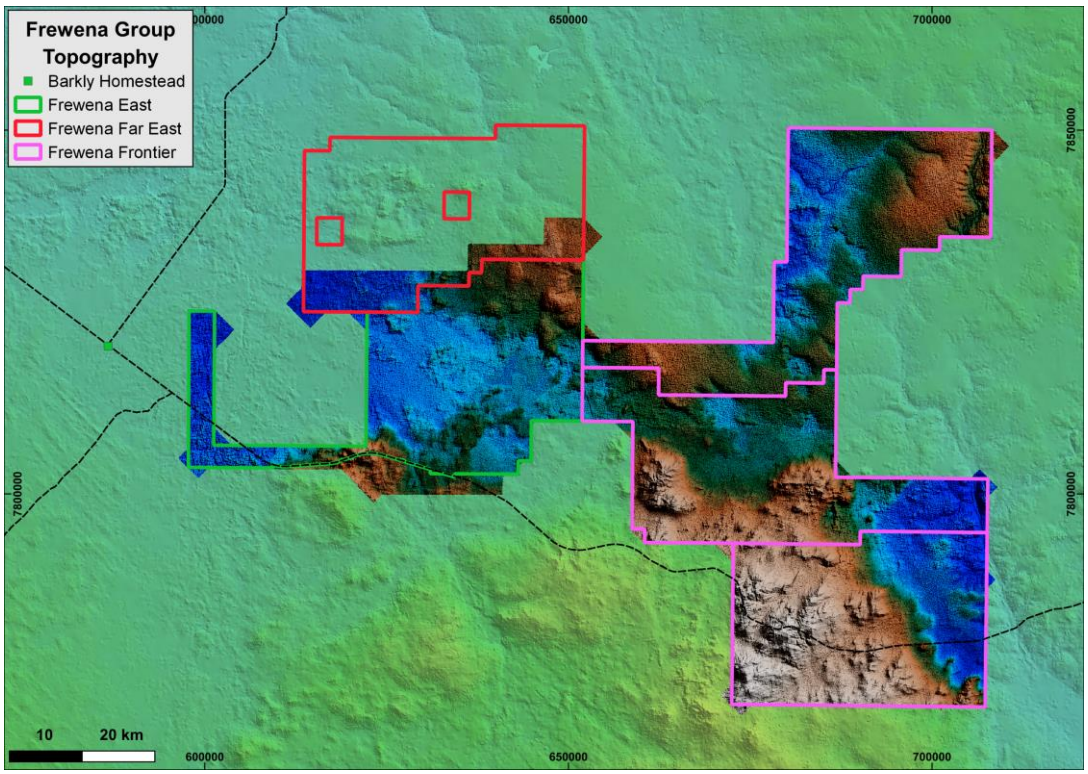

Figure 20: Digital elevation model derived from the detailed AMAGRAD survey over the Frewena Group Project

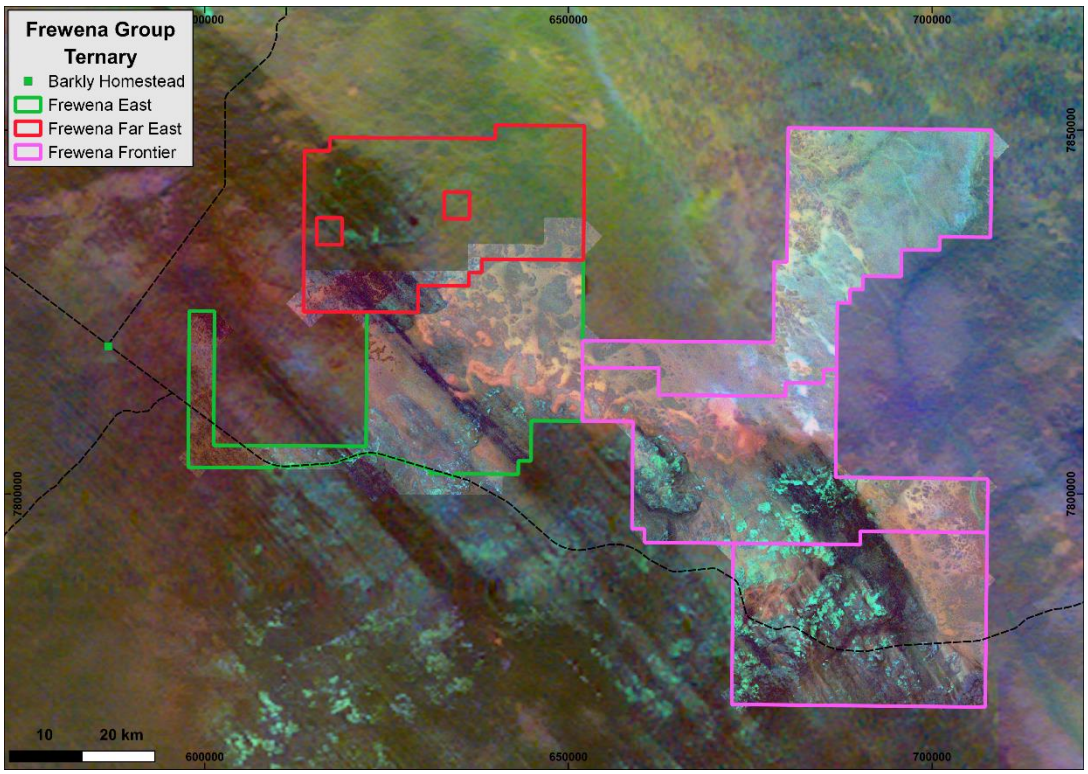

Figure 21: Ternary radiometric image derived from the detailed AMAGRAD survey over the Frewena Group Project

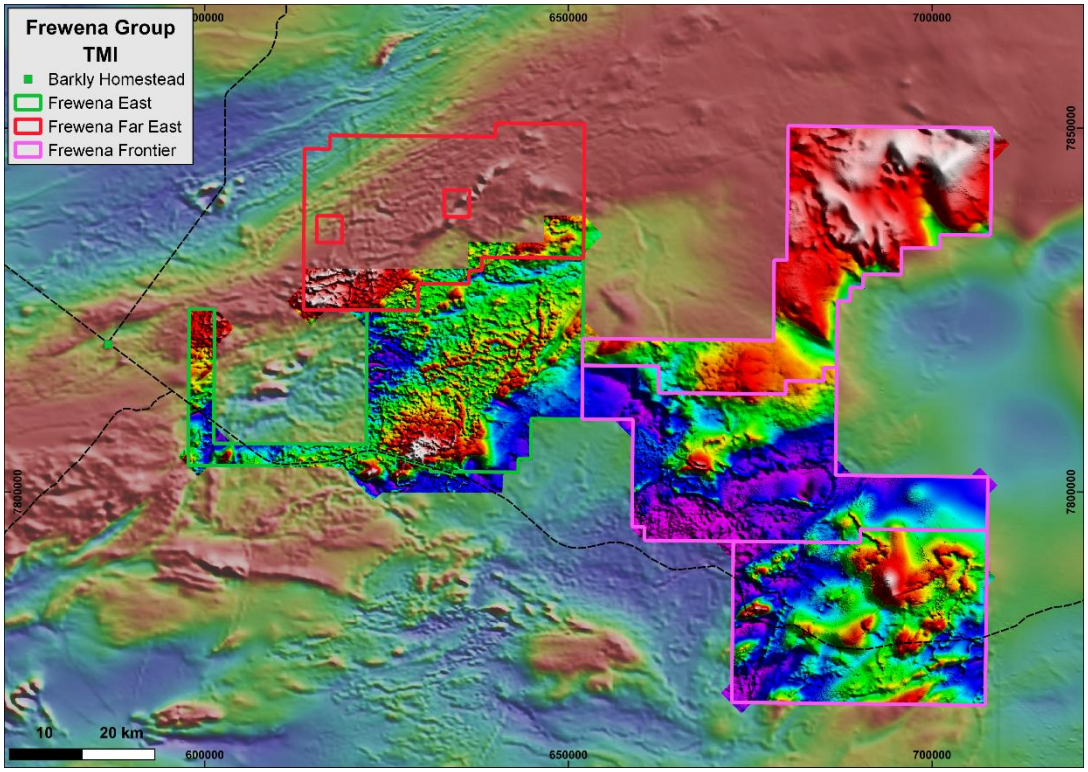

Figure 22: Total magnetic intensity image derived from the detailed AMAGRAD survey over the Frewena Group Project

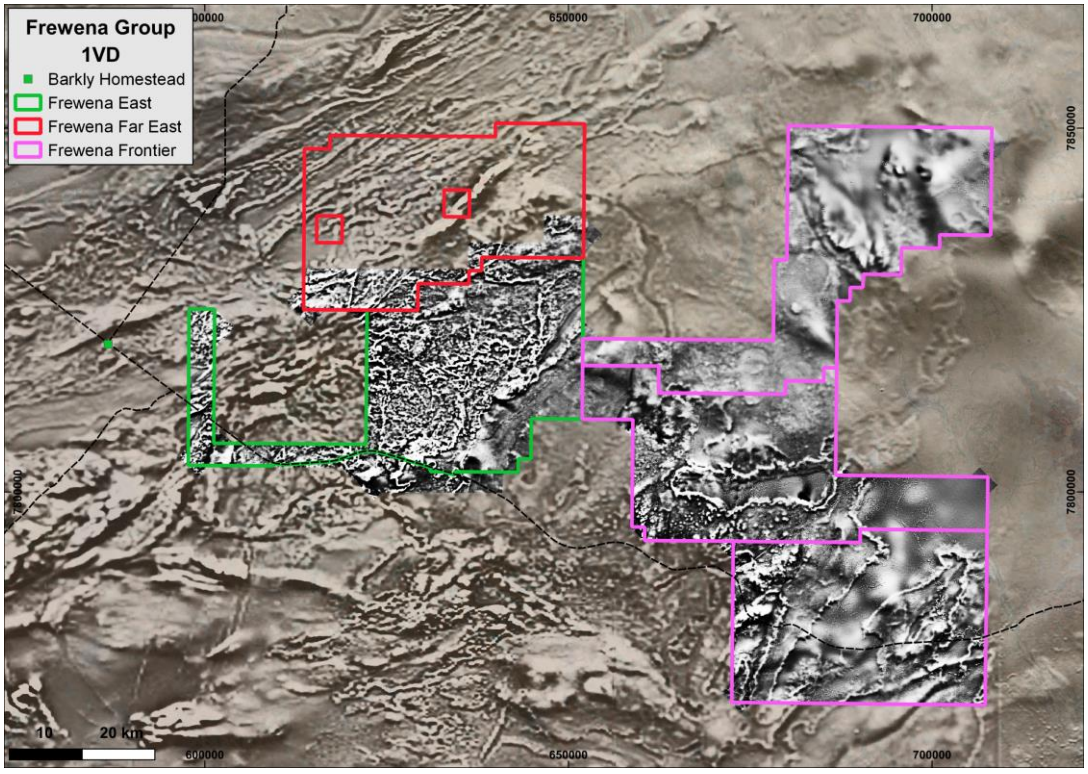

Figure 23: 1st vertical derivative TMI image derived from the detailed AMAGRAD survey over the Frewena Group Project

8. Conclusion

This GDC grant was awarded funding of $100,000 to undertake detailed AMAGRAD surveying over 3,497km^2 in the underexplored East Tennant region of the Northern Territory.

The AMAGRAD surveying was deemed by the tenure holders to be a requirement to shift from regional scale to prospect scale vectoring at the Frewena Projects, that is hoped to ultimately lead to successful mineral resource discovery.

Geophysical surveying was undertaken by MagSpec Airborne Surveys Pty Ltd between 8 September and 18 December 2021, and was based at the Barkly Homestead. Survey design and processing was undertaken by Resource Potentials Pty Ltd. Captured data has undergone initial processing and filtering to produce various images of magnetics, radiometrics, and local digital terrain models. Data resolution has been significantly increased by more than tenfold with image cell size, or pixels, now measuring c. 8m by 8m in size.

The datasets will improve geological understanding of the region, and in particular the structural architecture. Additional, filtering and interpretation of detailed magnetics – outside the scope of this GDC grant – is ongoing at the time of writing and will be included in tenure annual reporting requirements for the individual projects. This work aims to delineate subtle, coherent bodies in the subsurface that may relate to large scale hydrothermal mineralisation and alteration.

9. References

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