Geological Assessment of Soil Geochemical Data
EL27628 and EL27751 EPENARRA, NT
for Oneva Exploration Pty Ltd, Alice Springs NT

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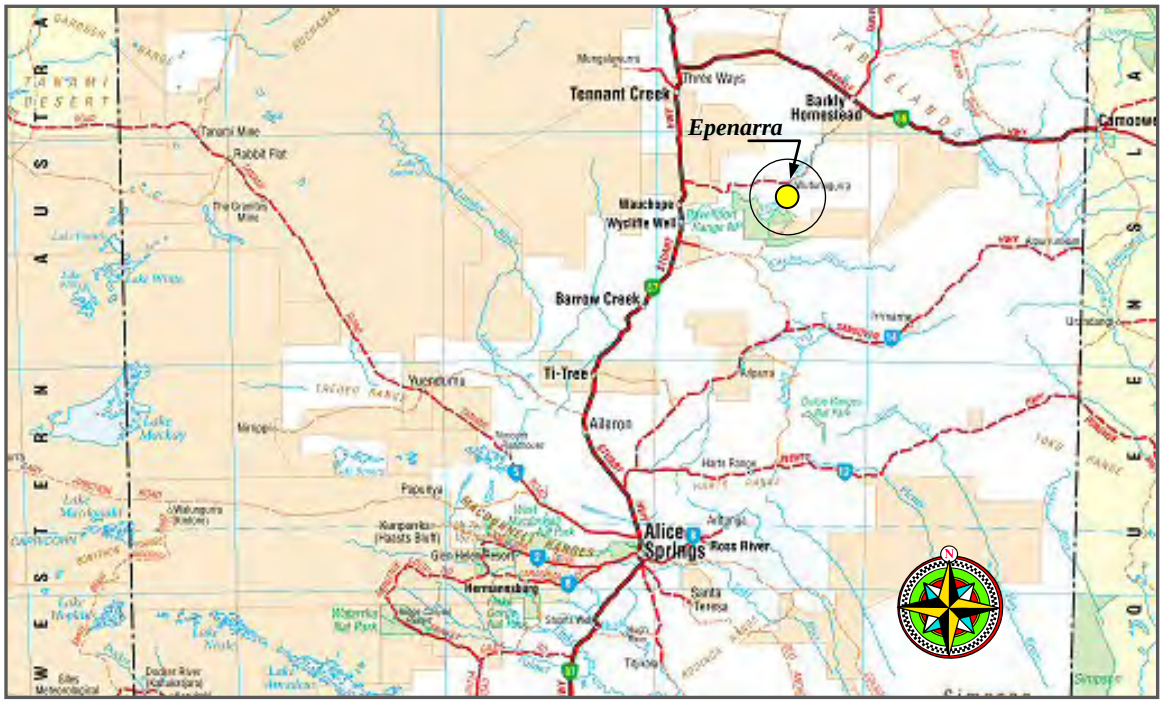
Summary of work rationale and work completed

Exploration license EL27628 + EL27751 (henceforth referred to as Epenarra) were visited in August 2012. The Epenarra project comprises back-to-back licences ~450 km N-NE of Alice Springs and ~150 km SE of Tennant Creek, NT. The field visit was incorporated into a week of road and field traverse efforts to link field and regional geologic data with partial leach soil geochemical data generated by Oneva Exploration Pty Ltd (Oneva) on their Epenarra tenements. This forms a geologically valid rationale for further targeted work. Oneva's range of target commodities include Au, W (+Ag) and REE.
The field visit was also designed to aid in exploration targeting and efficiency, by adding external knowledge and project review to Oneva's understanding of local geology and



Location map

mineralising systems. Another primary motivation for geologic consultation was to provide a geochemical and geographical information system (GIS) overview of the tenements prospectivity in terms of geodynamic processes and mapped geology.

Two and a half days were spent assessing the local geology within the Epenarra tenements and sampled by Oneva. The assessment focussed upon searching for evidence for geologic systems conducive to significant mineralisation, namely thermal, chemical, redox and rheological gradients in the local vicinity of high response ratios of elements of interest. Additional areas were briefly visited upon recommendation of the consulting geologist. Oneva supplied published geology maps, previous exploration data and current analytical data to the consulting geologist.

Oneva's partial leach sampling geochemical data was recalculated (by individual element) to local backgrounds (determined by field visit, a key outcome of linking the geochemistry to field data). Phase 2 recalculated datasets, expressed as response ratios (RR), are considered more robust than phase one orientation sampling due to localised

differential dataset size and as such, a high degree of confidence is assigned to phase 2 grid sampling anomalies generated by Oneva.
Element RR maps for all groups of elements (precious, base metals, HFSE, LILE, REE etc) were generated and those that show the most identifiable trends were highlighted for focussed attention.

Summary of prospectivity and recommendations

The Oneva project is located on major Proterozoic basin margins and is underexplored for mineralisation in the targeted region. Oneva has generated high priority targets through detailed soil sampling that invite further work to test the extent and abundance of Au anomalies, secondary W, Ag and REE. The most advanced Au targets are the highest priority, due to the current high price of Au. It is considered due to the Au activity in recent months (market/conferences/investment groups), that other elements of interest should be of secondary concern and to focus upon gold.

Winks prospect area

The **Winks** prospect *(see location C in Fig-1)*, has a large proven Au in shallow soil anomaly as well as high Au RR detected in surrounding cover sequences. Historical reports from Arafura Resources reveal Au-in-soil concentrations are up to 13 ppb at this location.
Complex fault relationships and competency contrasts correlate with anomalous Au RR also in the **Jugular** *Fig-1, location* and **Purple** *Fig-1, loc B* prospect areas with the presence of metal bearing fluid. Evidence for regional poly-deformation can be interpreted in the *Fig-1* magnetic data. This interpretation suggests that the areas of prospectivity; **Jugular**, **Purple** and **Winks-***Fig-1, loc C* are located in the hinge of a large scale, tight, shallowly east-north-east plunging F_2 fold in the acid Epenarra Volcanics. The southern limb of this fold has been dextrally sheared. The preserved shear zone appears to be long-acting with early sinistral movement also apparent from kinematic indicators in the Epenarra Volcanics interpreted in the magnetics.

The shear zone strikes E–NE along the margins of a pluton that intrudes the Epenarra Volcanics and is proximal to the areas of prospectivity discussed. This structural framework provides evidence for major and long-lived E–NE fluid conduits with second order N–NE and NW–SE trending structures acting as dilation sites for potential mineralisation during regional Proterozoic and Phanerozoic deformation.

Future work is suggested to generate specific infill soil sampling around Au anomalies and rock chip sampling to advance these areas from "Au-in-soil" and "loosely-bound-Au-in-overlying-cover" to "Au-in-rock" (proof of mineralisation).
In addition, very detailed interpretation of local geophysical data to provide more constraints on the sub-cropping geology could be undertaken. These reviews and additional sampling will allow confident drill targeting and efficient first-phase drill testing.
A simplified economic auger drilling campaign of shallow (8-10 m) holes is recommended, save that Oneva may opt for a more precise aircore or RC method if budget permits. Drilling would be an ideal next phase of exploration to test the highest priority targets in each project area from follow-up infill work.

Assessment of regional geology

Oneva has selected regions of underexplored Palaeo- to Neoproterozoic basement across major basin margins of the Northern Territory. Portions of the Warramunga Province unconformably overlies Neoproterozoic- Palaeozoic Georgina Basin within each back-to-back tenement area. These basin margins are favourable regional target areas for significant mineralisation, for in these zones crustal rocks of differing lithology are more often juxtaposed than within stable basin or craton interiors. This juxtaposition can result in high thermal, chemical (including redox) and rheologic gradients across which fluids may interact (e.g. Chi and Savard, 1998).

Importantly, margins accommodate strain associated with tectonic stress by the development of lithosphere scale structures, which are often the site of later reactivation. These controlling structures, across which high gradients of the types summarised above occur, are key zones for localised differential pressure distribution, resulting in dilational sites favourable for ore mineral precipitation (e.g. Groves et al., 1987; Morey et al., 2007).

Magnetic intensity data - structural context

Publically available aeromagnetic data was re-gridded at 100m across the two highest priority areas; **Winks** and **Jugular**+**Purple**. The first vertical derivative was taken to filter out deep (broad wavelength) signal, and sun angle adjusted to highlight structural features, in order to gain an overview of structural grain and possible sites of complexity and dilation.

A brief overview of magnetic domains and features are interpreted as follows:
At Epenarra, the complex regional geology is well demonstrated in ***Figure 1***. This map shows that some prospective second order structures are picked out by Oneva soil sampling, yet the region has many appealing locations for further work, made even more encouraging by the success to date. A smaller slice of magnetic data ***(Figure 2)***,

encompasses three distinct terrains. In the north, the Epenarra Volcanics appear to contain a regional fold with cross cutting shear zones and possible dilation zones. Oneva sampling grids with Au anomalies as well as previous explorers Au-in-soil anomalies are present in these areas. To the southwest, Georgina Basin sediments return a striped/stippled texture and to the east, extensive Quaternary successions cover overlie a large pluton producing a broad magnetic high.

Assessment of local surface geology

Cogent with the Frew River 1:250,000 geologic map sheet, rocks viewed across the tenements have been subject to deep chemical weathering followed by landscape aridification during the Neogene. The resultant outcrop in Oneva's target areas are generally sparse and comprises low undulating rises of colluvium and occasional ferri- or calcreted surfaces. Areas of ironstone or quartz lag are common, indicating widespread deflation and sand or clay cover extensive areas. Bedrock is most often indicated by the dominant rock type present in float. Where outcrop is observed it is most often intensely oxidised. Notwithstanding these limitations, some geologic relationships are tractable and form the focus of the assessments below.

Epenarra Prospects

Recently Claoué-Long et al. (2008) improved knowledge of stratigraphic relationships in the Davenport province through detailed zircon U–Pb isotopic work of intercalated volcanics and sediments and intrusive bodies. Key target lithologies within the Winks, Purple and Jugular sites are the Epenarra Volcanics (dominantly felsic volcanics ~1840 Ma) and Rooney Formation (feldspathic sediments intercalculated with the Epenarra Volcanics) of the Ooradidgee group. Together with dolerites mapped by the Northern Territory Geological Survey (NTGS) as younger Wauchope Group, the Ooradidgee forms a tight syncline that trends NW-SE. The dolerites are most likely sills.

Winks Prospect Area

Arenites of the Rooneys Formation and dolerite-gabbros of the Wauchope group outcrop within the Winks prospect as low rises. Two thin felsic, potassic bands with chaotic quartz veining ~0.5 m thick were observed, strike ~60° and possibly represent tuff beds. A more likely alternative is that they are quartz veins that have recrystallised the immediate feldpathic arenite, leading to a difference in preservation potential. In either scenario, the polyphase quartz veining suggests protracted, focussed fluid flow along a rheological contrast, consistent with NTGS mapped geology, which illustrates a quartz vein that separates the Rooney Formation from the dolerites.

This area was the subject of a ~1x1 km soil sample grid (50 m intervals x 250 m line spacing) completed by Arafura Resources across areas of shallow cover/outcrop. This campaign returned several Au assays >5 ppb, with a few >10 ppb. Two anomalous values coincide with a mapped quartz vein within the Wauchope group dolerite, however it is unclear whether the other anomalous values can also be linked to quartz veining or possibly to rare observed epidote/uralite alteration. Arafura relinquished this ground to concentrate on results from areas of historic Au mining immediately to the west at Kurinelli (also defined by quartz-carbonate veining-in Wauchope group rocks) and as such, these positive indications of Au at the **Winks** target remain untested. Hand

samples were assessed by microscope work although no sulphide was observed. Work by Oneva has nevertheless confirmed the presence of Au within the Arafura grid area by partial leach methodology, increasing confidence by demonstrating repeatability across geochemical techniques. Oneva also extended the zone of interest several hundred meters to the north and west into cover sequences, again via partial leach scheme.

Jugular (background) & Purple in foreground Prospect Areas

The **Jugular** site is framed to the north by a range-front (~40 m above plain level) of Epenarra Volcanics that steeply dip (~75-80°) to the south (NTGS mapping). The target landscape feature is a niche point (palaeo-stream cut) in the range (~100 m) that has formed a ~200 m wide roughly semi circular scour and removal of material into alluvial fans up to ~5 m above the plains level. An assessment suggested that a structure ~north-south striking, offsets outcropping rocks. No fault plane movement or shear sense was observed due to unsuitable outcrop. It is highly likely that this fault is the reason for the niche point. Time and access constraints did not allow further investigation on top of the range front. Psammopelitic rocks that form a foothill to the range front strike subparallel to the Epenarra Volcanics, yet dip steeply to the north, suggesting that local structural complexity may have tilted these sections.

An intensely ferrugenised and resistive outcrop ~2 m wide is located at 531845 E, 7733200 N and strikes parallel to the range front and dips steeply to the north. Evidence of brecciation and clay alteration overprints the original rock type (suspected to be pelitic), suggesting that this outcrop may represent a fault breccia. No sulphide was evident by microscopic observation. Partial leach geochemistry in the vicinity reveals an anomalous gold footprint extending onto the plain.

A <30 cm vein of quartz + hematite was discovered at the boundary between pelite and felsic volcanics. Sawn samples of this rock exhibit bladed hematite <5 cm within a massive quartz matrix. K-feldspar is present in diffuse zones surrounding the hematite blades. These observations are consistent with a Fe rich fluid that has cooled rapidly. No sulphide was evident by microscopic observation. Float samples of ostensibly the same rock were discovered ~2 km ESE along the rangefront, where the Epenarra

Volcanics form very low lying bevelled ridges at **Purple**. These low ridges sampled by Oneva returned a consistent Au RR footprint (up to 11 times > background).

Recalculated phase two data shows encouraging trends that are sympathetic to the Epenarra Volcanic rangefront and undercover volcanics. The smaller sampling grid (**Jugular**) and larger sampling grid (**Purple**) are strongly discriminated by Li Nb RRs (**Figure 3**). This could be due to the depth of cover (minimal, greater respectively), returning a stronger signal from rocks less diluted by eroding Epenarra Volcanics.

Principle Hill Prospect Area

As **Principle Hill** (located at far south) returned the highest Au response ratios calculated by Oneva to date, field work was carried out to find a geologic explanation. The high RRs (**Figure 4**) —concomitant with other elevated metals— appear to correlate well with an intensely lateritised and indurated section ~300 m in length (~E-W) located within/on top of the Gum Ridge Formation of the Georgina Basin, which locally overlays Warramunga age basement. This material forms a local bevelled ridgeline (~10 m wide) with a shallow slope to the north and a steeper scree slope to the south that is dominantly comprised of material from the ridgeline. This material has a dark brown-black appearance, contains broken fragments of ferrugenised chert with a goethitic supported matrix that exhibits typical laterite textures on a hand sample scale (confirmed by sawing and microscope work) and outcrop scale (sinking of resistant blocks by undercutting). The asymmetric ridge shape may be influenced by a dip slope, as brief traverses (a few hundred m) in a ~N-S direction defined a stratigraphic section of sedimentary units (chert, sandstone, thin debris breccia) dipping shallowly to the north.

One explanation for the elevated RRs is that the iron-oxides that comprise this lateritised surface have scavenged base metals and upgraded them in the weathering environment, then later have been locally redistributed by mechanical erosion.

The striking zonation of elements with different high temperature geochemical affinities Li, Zr, Cr, supports this explanation as these are predicted to behave differently in such a regime (see Figure 4 graph).
Understanding whether the Au-anomalous material is an intensely lateritised/reworked ex-sulphide gossan or a laterite that has scavenged base metals is clearly important. It is plausible that observable features of sulphide-bearing hydrothermal alteration such as presence of sulphides, extensive boxwork, other mineral relationships, veining/stringers (and possibly pressure shadows, shear indicators etc), may have been obliterated during a lateritic process. An adequate test would be to drill below the cap with an economic auger drill (or another type of drill) to 8-10 m depth and this work with coupled geochemistry should sufficiently verify.

Riverside Prospect Area

West from Principal Hill at the **Riverside prospect (E),** partial leach geochemistry returned anomalous Au and W within the confluence of two sections of the Frew River. While this target has no outcropping geology, previous explorers identified visible Au in 2 out of 8 off 100 m shallow (<2 m) EW costeans, spaced along the ~N-S Frew River. The presence of Au and W (possibly nuggetty and diffuse) in this target suggests that partial leach may encounter difficulty detecting Au. Nevertheless tungsten appears to present well here, although there is caution as to homogenous river-wash or underlying structures that are producing geochemical signals at **Riverside**. Costeaning and panning might define a palaeochannel from which Au can be effectively recovered. Drilling to basement could help define palaeochannels which may provide a high priority target.

Additional sites at Epenarra

A Zn-in-soil anomaly was detected by Oneva using partial leach analysis in the vicinity of 527400 E 7725350 N, directly east and north of outcropping Gum Ridge Formation (limestone, siltstone, mudstone) shown in Fig-1 as ***location F***, but as yet a pre-planned orientation grid is incomplete of sample collection.
A brief assessment of sampled sites and neighbouring outcrop in a road cut returned extremely fine grained hand samples with reduction spots in otherwise intensely oxidised mudstones. These are encouraging indicators of favourable conditions for base metal mineralisation and together with elevated Zn results, constitute an area requiring priority follow-up.

Oneva's Data – *Targeting*

Targeting by Oneva to date across the licenses consists principally of using landscape and/or satellite imagery anomalies. The methods employed hold great value in helping to identify underlying geology and structure and are considered a complimentary technique to that of macroscale prospectivity based on identifying geologic systems.

Partial Leach Geochemistry

This method of orebody detection has a number of attractions, such as an increased success rate of detecting —and definition of— mineralisation under cover (Mann et al., 2005). The method is most useful and the resulting data most cogent, when as many degrees of freedom (natural conditions such as soil type, soil depth, cover depth, age of landscape etc) are as constant as possible. This is because the method measures accumulated loosely-bound ions rather than the elements of a total digest and in this way, a statistically robust dataset identifies samples with anomalous ions.

The landscape, regolith and soil nature across the licenses include a range of observable differences, however, observations within this data do make sense in terms of mapped geology, such as the distribution of REE with granites.

Recommendations for data treatment and future work on Prospects:

A significant Au deposit at **Winks (C)** is considered the most prospective exploration target within the tenement areas, due to the proven Au-in-soil anomaly, strengthened greatly by Oneva's partial leach data (repeated across techniques). Further soil sampling and analysis by both fire assay (infill upon subcopping areas surrounding known Au soil anomalies) and partial leach (extending from the Arafura grid across surrounding cover) is recommended to better define and characterise the Au distribution. Close spaced rock chip sampling with geological descriptions is recommended adjacent to the highest Au soil anomalies to aid understanding of Au in rock (mineralisation character) and generate/define drill targets.

Jugular (A) and Purple (B) should be considered as the same target area as they share the same geologic domain (Epenarra Volcanics). Here a recalculated to local background Au anomaly extends in a linear fashion sympathetic to magnetic structure and is considered the second highest priority target. Shallow drilling to basement would complement the work effort thus far by testing the nature and extent under cover of the volcanic pile.

Principal Hill (D): Shallow drilling (8-10 m across the length of the Au anomaly) would be a well-directed and diagnostic test.

Area 3 (F) & Area 4a (G): Coupled Zn & Ag partial leach anomalies to be followed up with a statistically robust array off >30 samples each area upon the same soil type and rock chip sampling of fine grained units. The package of rocks these samples correspond to (limestone, siltstone and mudstone of the Georgina Basin), are highly prospective for Pb-Zn-Ag mineralisation. The base metal spikes in the small number of samples gathered are encouraging.

References – covering both Utopia & Epenarra Areas

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Mann, A.W., Birrell, R.D., Fedikow, M.A.F., and Souza, H.A.F., 2005, Vertical ionic migration: mechanisms, soil anomalies, and sampling depth for mineral exploration: Geochemistry, Exploration, Environment, Analysis, v. 5, p. 201-210.

Morey, A.A., Weinberg, R.F., and Bierlein, F.P., 2007, The structural controls of gold mineralisation within the Bardoc Tectonic Zone, Eastern Goldfields Province, Western Australia: Implications for gold endowment in shear systems: Mineralium Deposita, v. 42, p. 583-600.

Figure Summaries:

Figures 1 & 2: Epenarra Structural Framework & Magnetic Maps

- Regional structural interpretation of the TMI (Total Magnetic Intensity) data showing ductile structures (folds and shear zones) in the Epenarra region.
- Magnetic overview of priority Epenarra targets.

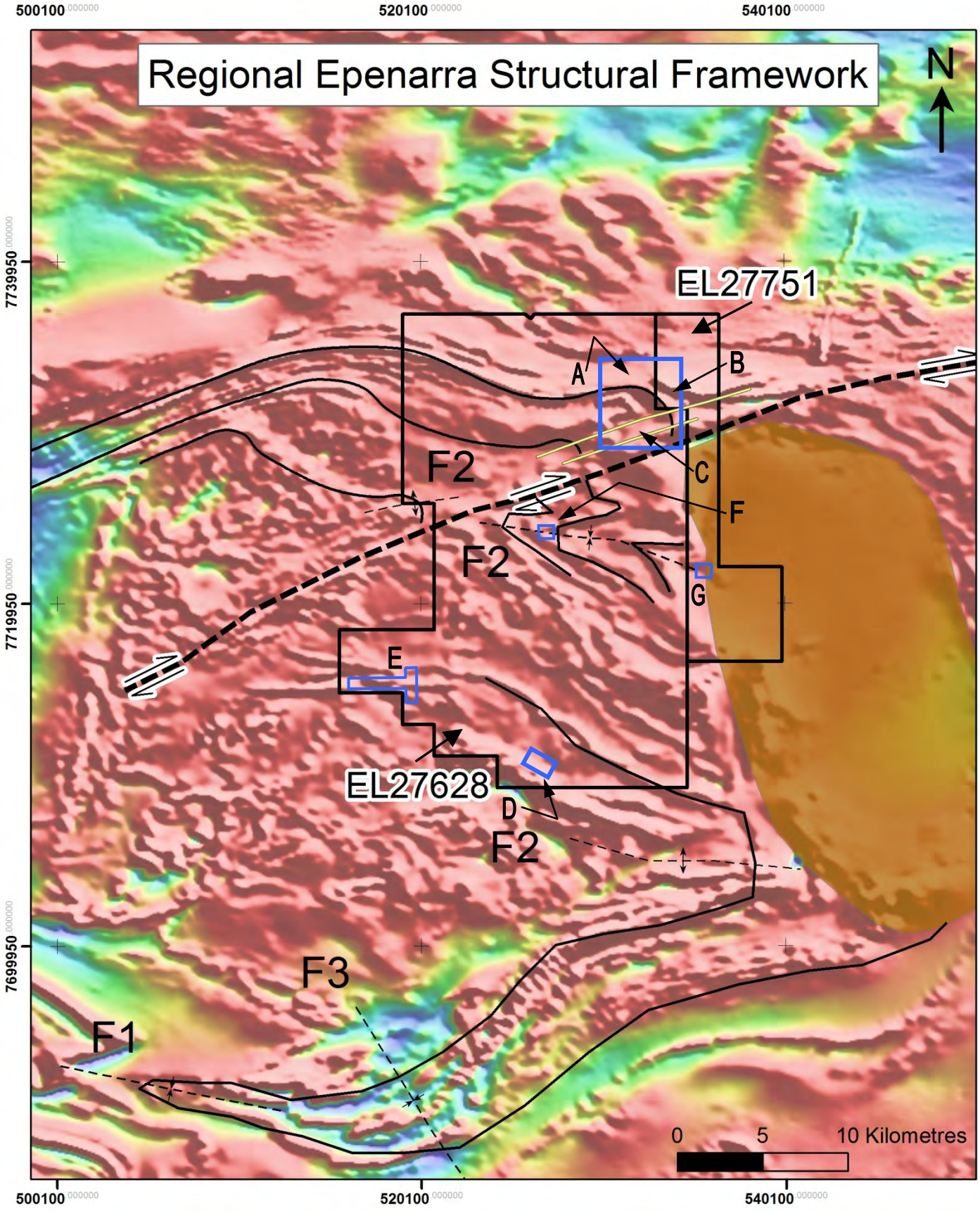
In the north, the Epenarra Volcanics appear to contain a regional fold with possible dilation zones and cross cutting shear zones. Oneva sampling grids with Au anomalies as well as previous explorers Au-in-soil anomalies are present in these areas. To the southwest Georgina Basin sediments return a striped/stippled texture and to the east extensive Quaternary successions cover overlie a large pluton. Here major shearing and plutonism are key features that bolster the prospectivity of these target areas.

Figure 3. Jugular & Purple

Geochemical summary of Jugular & Purple: Elevated Au is shown to be highest at the most proximal areas to Epenarra Volcanics in a trend sympathetic to second order structures observed best in magnetic data sets (Figures 1 & 2). Li and Nb discriminate between the Jugular and Purple sites, largely due to depth to rock (subcrop at Jugular; cover at Purple).

Figure 4. Principle Hill

Geochemical summary of Principle Hill: Au is concentrated at the southeast corner of a sampled grid array and is open in this direction. W, Zr, Li and Cr all return high RR in the southwest half of the grid. This observation of elements predicted to behave differently in high temperature settings could indicate the concomitant high levels are more indicative of a low temperature setting (e.g. lateritisation). However, the Au is zoned with respect to most elements, and further testing is required to resolve this target.



MGA94 (GDA94) Zone53

Figure 1

Legend

Strucutral lines

- Synform - Inferred
- Antiform - Inferred
- Shear Fabric
- Shear Zone Trend
- Bedding Trend

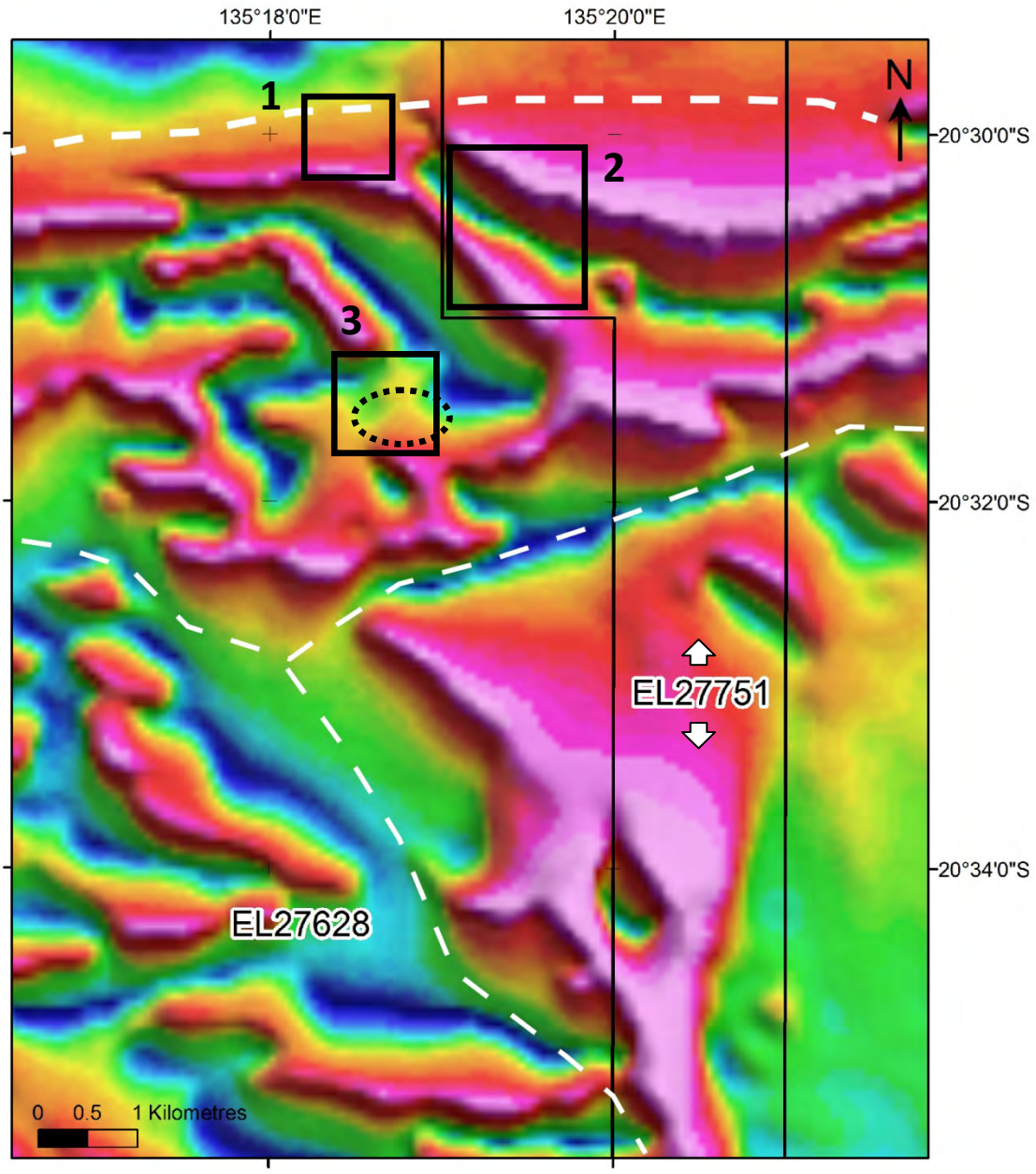
Regions

- Pluton
- Tenements
- F1 - First generation fold axis
- F2 - Second generation fold axis
- F3 - Third generation fold axis

Prospective Zones – Prioritised

	Anomalous Area		Priority
A	**Jugular**		
B	**Purple**		
C	**Winks**	**Au**	**1st**
D	Principal Hill (Au+W)		2nd
E	Riverside (Au+W)		3rd
F & G	Areas 3 & 4a (Zn)		4th

Epenarra (NE) Magnetic Intensity Overview



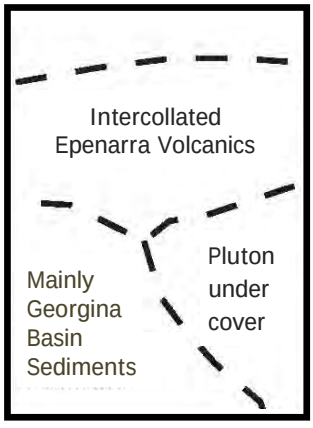
MGA94 (GDA94) Zone 53

Figure 2

Oneva sampling grid - Au anomaly areas

- 1: Jugular *(Area A)*
- 2: Purple *(Area B)*
- 3: Winks *(Area C)*
- Au in soil anomaly *(Arafura Resources)*

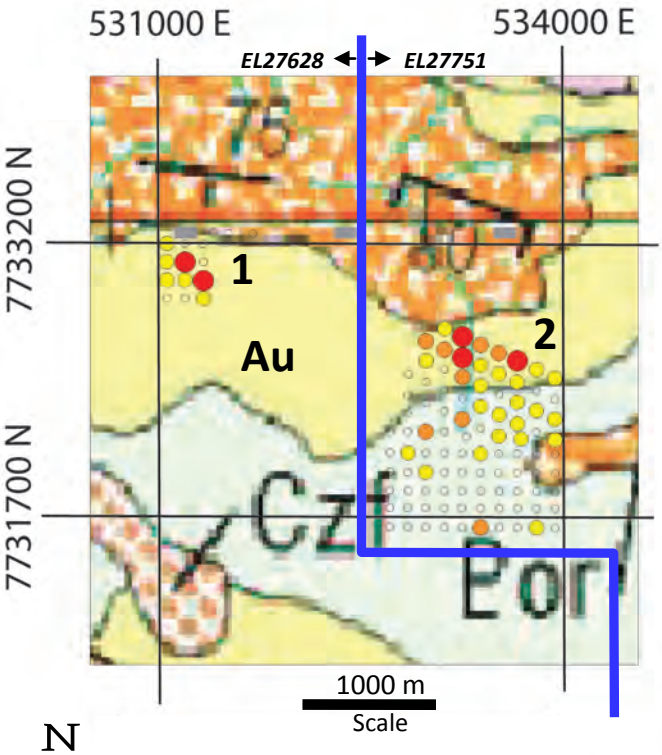
Key domains



Data: Re-gridded 100 m reduced-to-pole first vertical derivative magnetic intensity, sun shaded 45° from NE

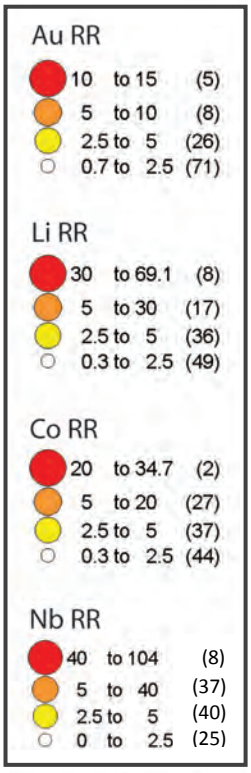
Figure 3: Jugular[1] & Purple[2]

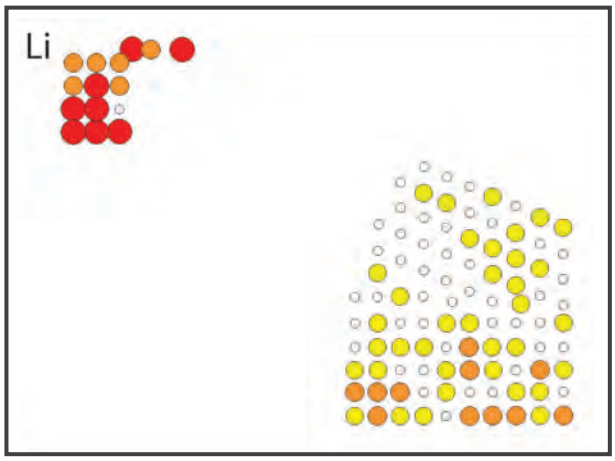
Phase-2 Ionic Soil – Anomaly/Summary Plots above Local Background

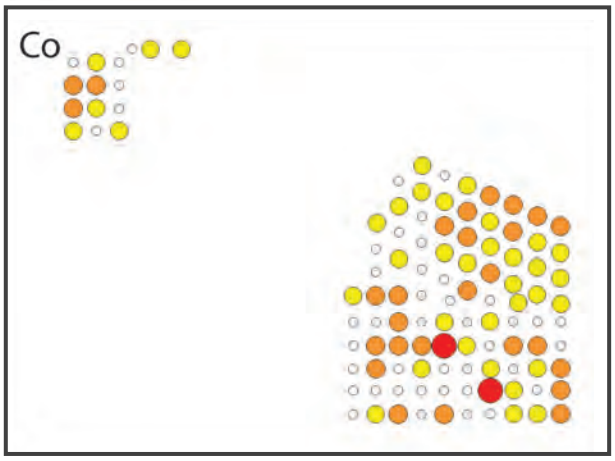


MGA94 (GDA94) Zone 53

Geology Source: NTGS 250,000 map







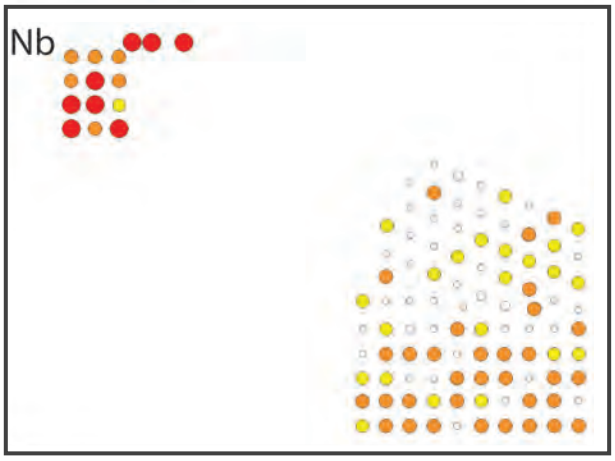
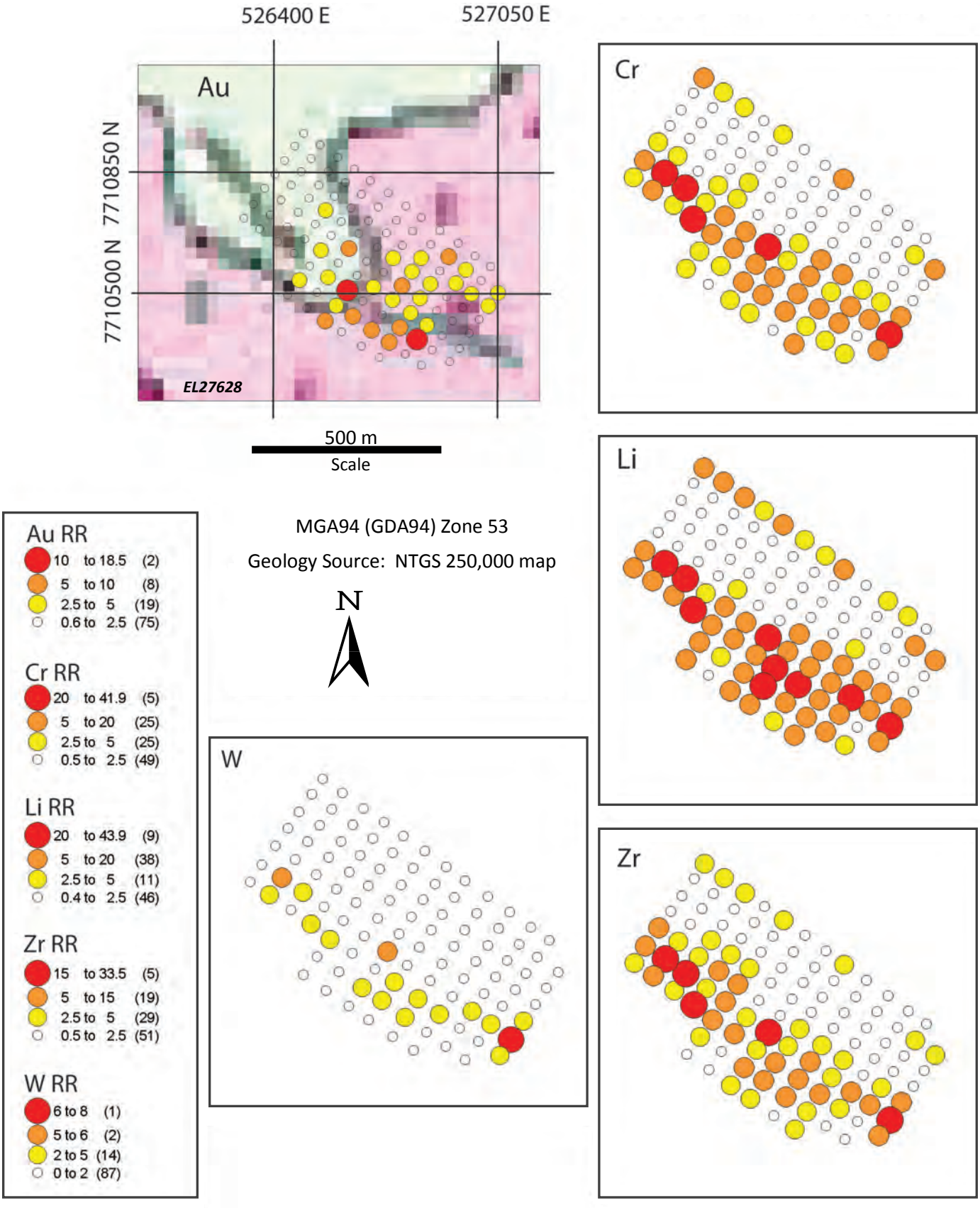


Figure 4: Principal Hill

See Area D



Phase-2 Ionic Soil – Anomaly/Summary Plots above Local Background