

EL29952

Barney Creek 1 Project Area

Third Relinquishment Report 2017

Ripple Resources Pty Ltd

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Summary

Ripple Resources is a fully owned subsidiary of Armour Energy Ltd. Armour has been exploring the gas and oil resources of the McArthur Basin, and has made a significant gas discovery in the Glyde sub basin.

Ripple has selected Exploration Licences within areas inside the Armour Energy permits, and has been cooperating with Armour in order to evaluate these ELs for their base metal potential.

This cooperation has involved modifications and extensions to the Armour program so that it has greater relevance for base metal exploration. Ripple and Armour are taking a basin – wide approach, using expensive large scale geophysical geochemical and geological studies in order to select the optimal targets for expensive deep drilling. Future work will become more separated.

Base metal exploration within these Licences is challenging because of the rugged topography and cover geology. Breccia hosted and stratiform mineralisation trends into the area from outcropping areas, the most notable being the Bald Hills - HYC trend and Western Emu fault. The imputed depths of mineralisation are believed to range from about 200m – 1000m, much of which is below the limit of airborne EM penetration.

Previous exploration by Amoco Minerals (and Petroleum) and by BHP RTZ and MIM relied on airborne EM as a target generating technique. Amoco found outcropping Barney Creek shales and breccias in what was named the Glyde sub basin. Subsequent drilling found little evidence of proximal hydrothermal sulphide deposition in the sub basin, although it did encounter gas flows. Very little is known about the Barney Creek formation away from the Amoco drillholes.

No field work was conducted within the surrendered sub blocks. Stratigraphic or petroleum drilling is needed to understand the geology and prospectivity within the licence area.

A basin wide Frogtech study was conducted, and evaluated along with a compilation of previous work. No targets lay within the surrendered areas.

1.0 Introduction

Ripple Resources Pty Ltd was set up by DGR Global Ltd for the purpose of exploring for base metals within areas of the McArthur and Mount Isa basins that were being examined by Armour Energy Ltd for gas and oil. After the float of Armour Energy, Ripple Resources was sold to Armour at cost. Since that time, Armour has been providing funding and much of the operating resources for Ripple. Armour Energy restructured during late 2015 by bringing in American Energy Partners (AEGP) as a major shareholder, and as the manager and funds provider for the NT petroleum exploration.

AEGP was to pay a substantial sum to Armour Energy which would have funded Ripple Resources as a separately managed entity. The subsequent fiery death of the AEGP CEO (and ultimate funding source) has caused these plans to unravel. Armour and Ripple have been negotiating new funding arrangements with other parties, but this has meant that 2016 has seen no field program.

Modern concepts regarding the formation of sediment hosted basemetal deposits have given new emphasis to the century old model that the metals were introduced along with hydrocarbons, either in conventional trap sites or within basin centred accumulations.

There was an opportunity to modify and extend the Armour program so that Ripple Resources could benefit from aspects of the petroleum evaluation which were relevant to base metals. Ripple and Armour have employed a basin wide approach towards exploration, and has widened its search away from the Batten trough and the Barney Creek formation.

2.0 Location and Access

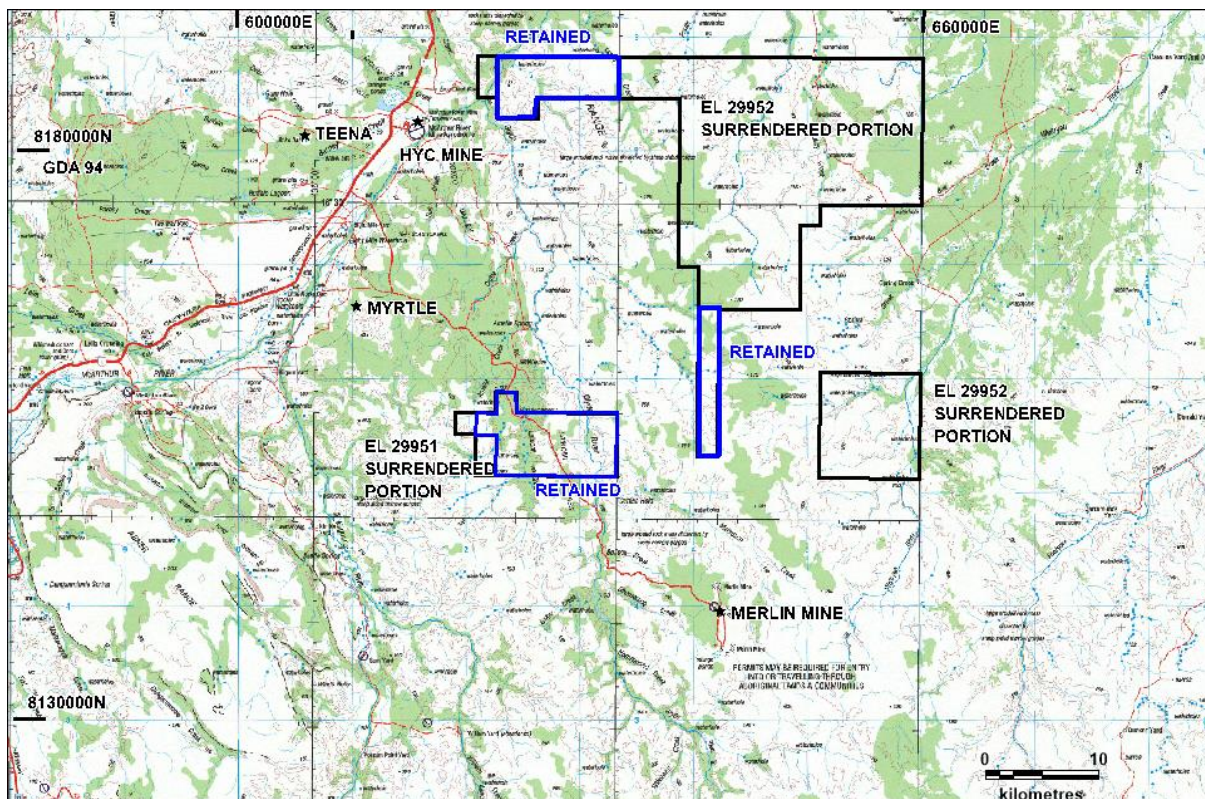


Fig. 1 Location and access – ELs affected and surrendered blocks

The ELs extend over 120 km in an east – west belt around the HYC mine at McArthur River. Access is made via the road to Merlin diamond mine, or via a track along the McArthur River in the north. Within the ELs, access is difficult due to a rugged physiography, and the only rough tracks are along the ridge lines. Helicopter support is essential in most areas away from the Merlin Road.

3.0 Licence Details

EL29952 was granted on the 21st November 2013 for 5 years, and is part of the Barney Creek 1 Project area. EL 29952 originally covered 218 blocks, but earlier reductions meant that it was reduced to 168 blocks. This reduction of 147 blocks will bring the size down to 21 blocks.

4.0 Geology and Previous Exploration

Most of the area is comprised of the flat lying late Proterozoic Bukalara sandstone, which forms a rugged plateau and largely obscures the prospective McArthur Basin, which is faulted and gently folded. The formations of prime interest are the Barney Creek and adjacent/underlying Coxco dolomite member. Most mineralisation of note lies between the Coxco and the Caranbirini member of the Lynott Formation, but some bitumen – galena- sphalerite infills extend up as far up sequence as the Bessie Springs sandstone in the Roper Group, and as low the organic dolomitic shales of the McDermott formation. As a rule, the lower formations with hydrocarbon shows as shown in Fig.2 are those with mineralisation.

The economically significant lead zinc copper deposits are part of the Mt. Isa – McArthur metallic province, which is the most productive zinc district in the world. Locally, the HYC mine is the only producer, with a global resource of over 200 million tonnes of lead zinc with minor copper. New exploration by Rox Resources (Teck) has enhanced the nearby Myrtle and Teena deposits by means of deeper drilling and larger richer intercepts. They are typical of the basin hosted deposits which are normally richest in the structurally lowest sites, within the most organic dolomitic shales.

Other zinc-lead copper deposit types are known, and are mainly of the porosity infill type, where hydrocarbons and metals have migrated into trap sites usually in solution breccias or decarbonated dolomitic shales. Locally, these include the Coxco, Cooleys and Ridge deposits. Century in Queensland is the largest known deposit of this type, and is currently the world's largest source of zinc. At Century, the stratiform sulphide mineralisation occurs in a matrix of live oil occupying secondary porosity sites, and adjacent smaller mines have produced pitch as well as silver lead. Renewed exploration at Walford Creek (in Queensland, close to the NT border) has discovered significant Mt. Isa style copper cobalt phases that overprint the silver lead zinc. This style is also present in breccias at Cooleys, but is not economically significant.

Locally, the major previous work on the Bukalara Plateau was done by Amoco and its J-V partners and has been reported in CRs 1979-192, 1979-013, 1980-064, 1981-28, 1982-228 and 393, 1983-24 and 48, and 1986-299. Amoco found outcropping Barney Creek shales and breccias in what was named the Glyde sub basin. Subsequent drilling found little evidence of proximal hydrothermal sulphide deposition in the sub basin, although it did encounter gas flows within hydrothermal breccias close to the Emu fault. The Glyde sub basin boundaries are reactivated growth faults that are displaced variable distances away from the original planes of movement. Very little is known about the Barney Creek formation in the northern ELs. Lesser work was done by MIM who drilled a single hole in the EL – CAPD1 to 438m to test an EM conductor sourced in the Lynott formation (1996-236).

Diamond exploration has been conducted throughout, and this led to the discovery of the Merlin field.

The EL area has seen little serious base metal exploration due to the difficult topography and the problematical cover sequences. To understand the targets that may lie within the EL, a compilation must rely on extrapolation from exploration outside of the EL itself. Most of the relevant work in the exposed areas to the north and west was done by MIM and more recently by the Rox Resources – Teck joint venture. The latter partnership has had considerable success in improving the Myrtle and Teena

stratiform deposits by locating and drilling the structurally lowest portions of the Barney creek formation within localised metalliferous sub basins. Rox – Teck encountered a problematic strong gas flow at Myrtle and oil has also been reported in earlier drilling by MIM.

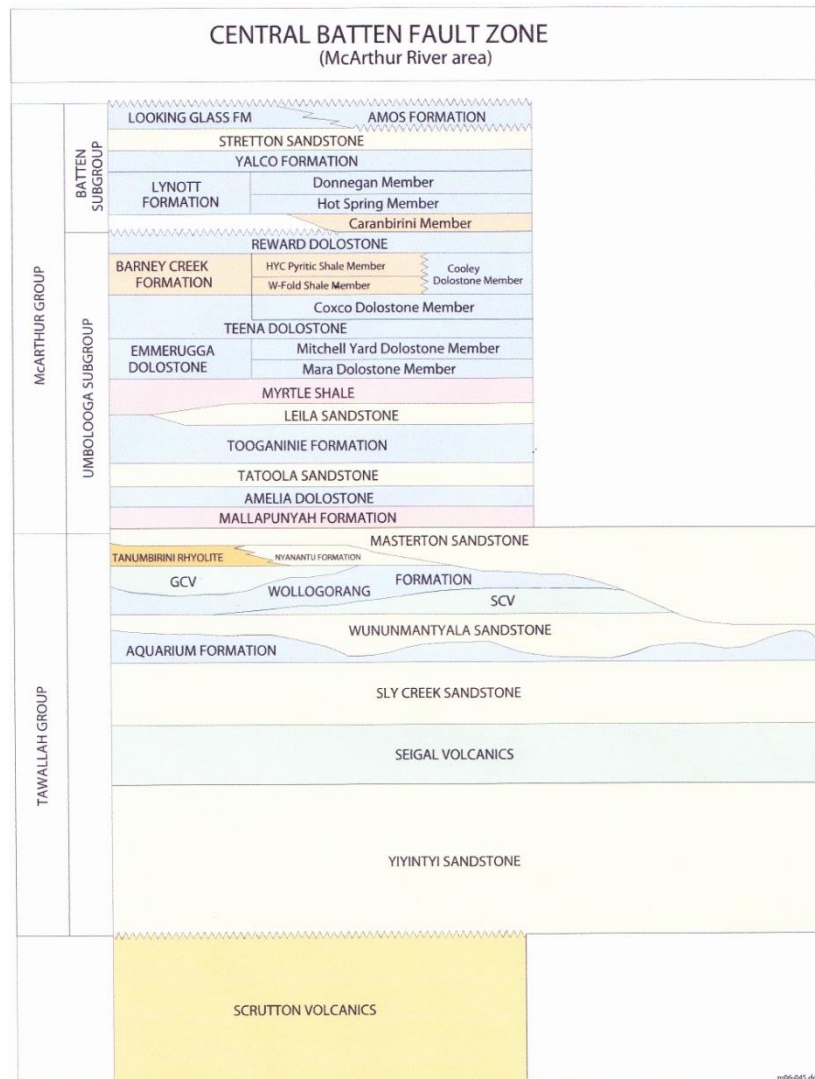
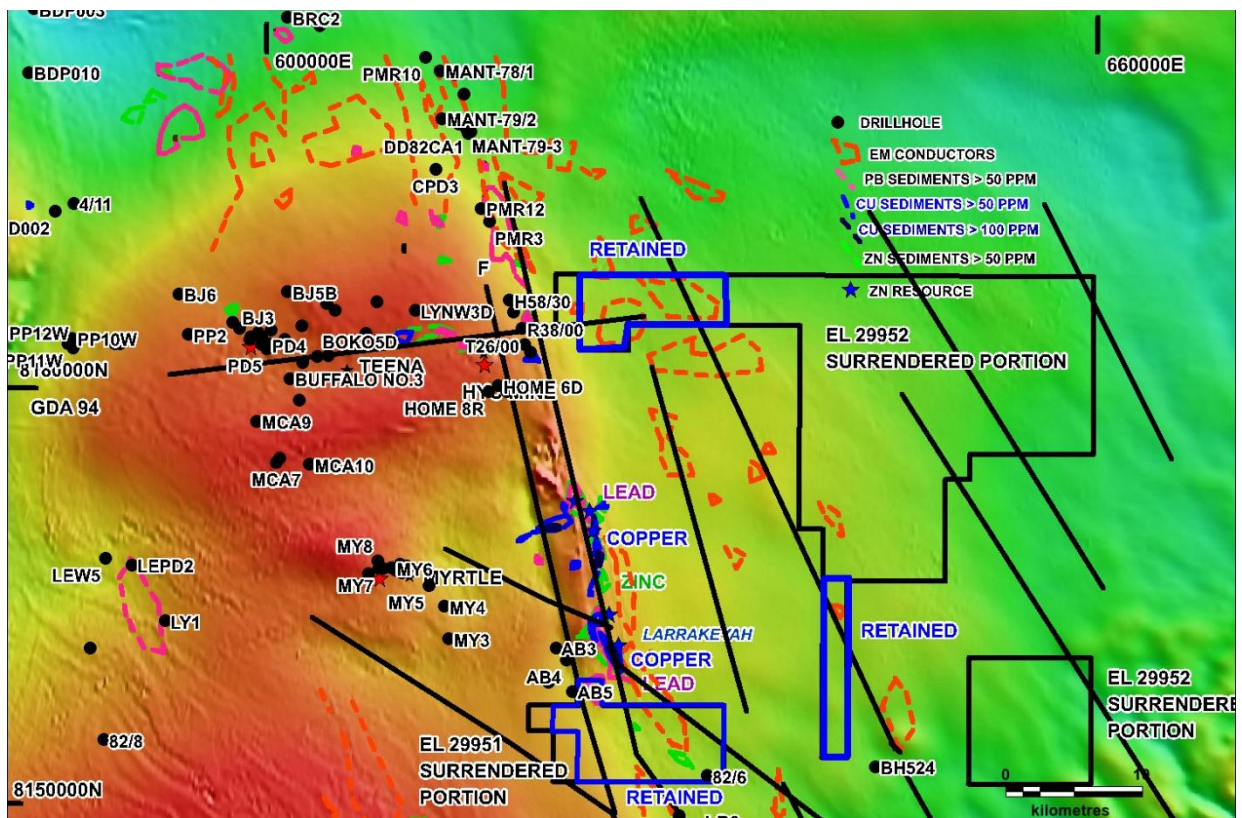
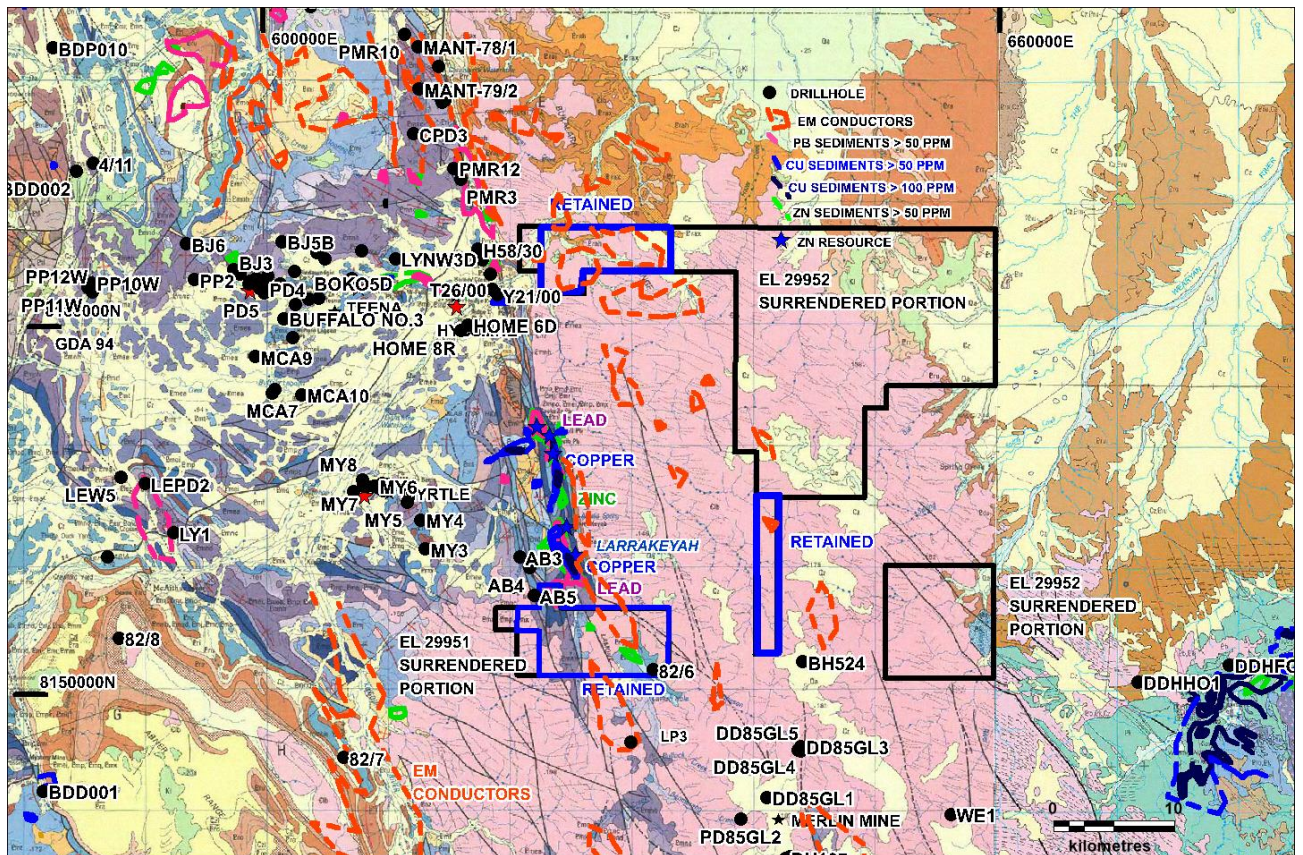


Fig. 2 Stratigraphic column - note that the >200m thick McDermott formation black dolomitic shales and evaporites have been removed from this official version, despite its widespread distribution about 150m above the Siegal volcanics. It is considered too relevant to ignore.



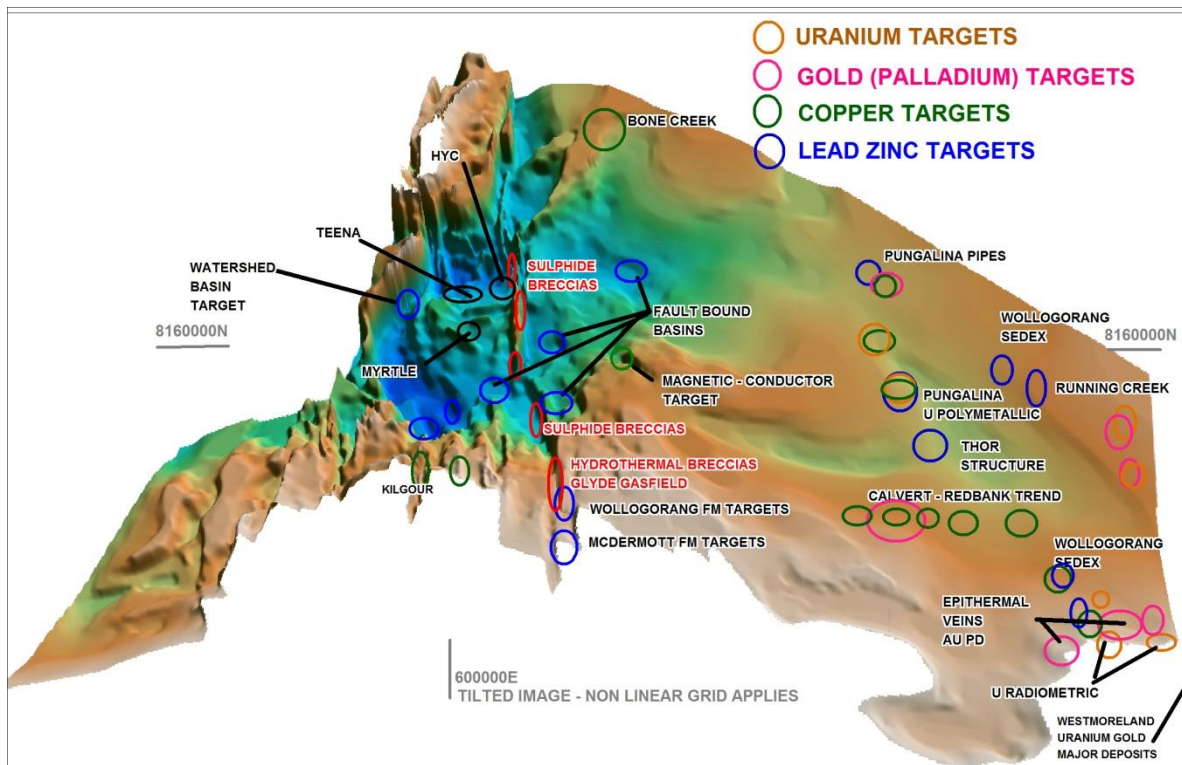


Fig.6 Tilted Frogtech image with regional targets

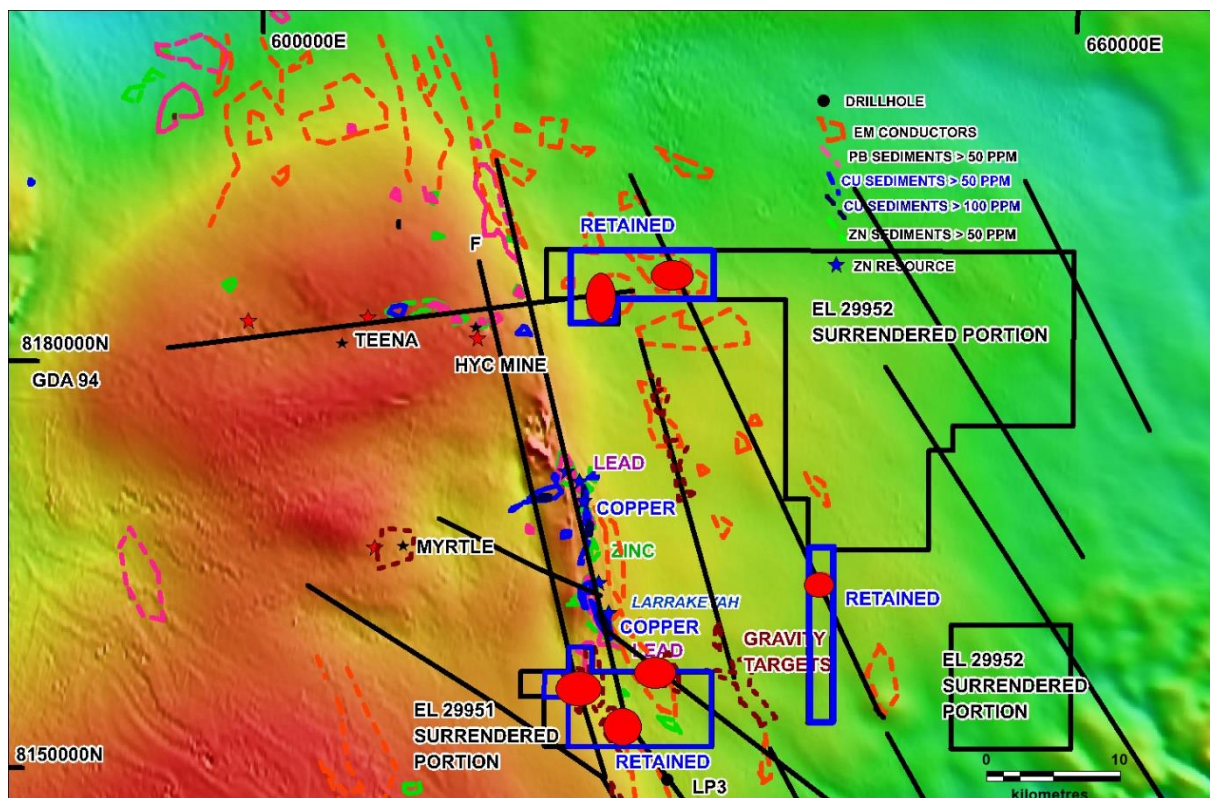


Fig. 7 Local targets on a TMI base

6.0 Results and Conclusions

The Frogtech basin analysis has not identified fault bound sub basins within the relinquished blocks.

The pre Bukalara geology of EL 29952 is very uncertain, and stratigraphic or petroleum drilling is needed to properly evaluate its potential. It is estimated that holes more than 500m deep would be needed in this area.

The surrendered blocks in EL 29952 were not in any way useful.