

**EL 30077 Gonzo**  
**Part of Barney Creek Project Area 2**  
**Final Report**  
**Ripple Resources Pty Ltd**  
**09 May 2014 – 19 April 2016**

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Summary.....	3
1.0 Introduction.....	4
2.0 Location and Access.....	4
3.0 Licence Details.....	5
4.0 Geology and Mineralisation.....	5
5.0 Exploration Completed during the Reporting Period.....	<a href="#">8</a>
5.1 EL 30077.....	9
6.0 Results and Conclusions.....	10
6.1 Wollogorang formation Targets.....	10
6.2 Diamond Targets.....	10

## Figures

Fig.1 Location and access.....	4
Fig. 2 Stratigraphic Column.....	5
Fig. 3 Model - Basin Hosted.....	6
Fig. 4 Model - Porosity Infill.....	6
Fig. 5 Previous exploration summary.....	7
Fig. 6 Overall Compilation around ELs 30076 to EL 30080.....	<a href="#">8</a>
Fig. 7 Prospective Structures and Stratigraphy around EL 30077.....	8
Fig. 8 Targets around EL 30077.....	9

## **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. Additionally the techniques and concepts used in hydrocarbon exploration overlap with leading edge base metal exploration.

Base metal exploration within these Licences is challenging because of the 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.

Ripple has conducted a compilation of previous exploration inside and around EL 30077. There are fault trends with sporadic copper anomalism trending into the EL, with an interesting structural target along the western boundary, where the prospective Wollogorang formation is interpreted to be in fault contact with basic volcanics.

Ripple has had its funding dramatically reduced by the recent death of Aubrey McLarendon, owner of AEP Australia. AEP Australia had undertaken to inject large amounts of cash into the Armour Energy group.

Ripple has decided to reduce its exploration portfolio to match its reduced funding. EL 30077 has no compelling targets and was surrendered in late April 2016.

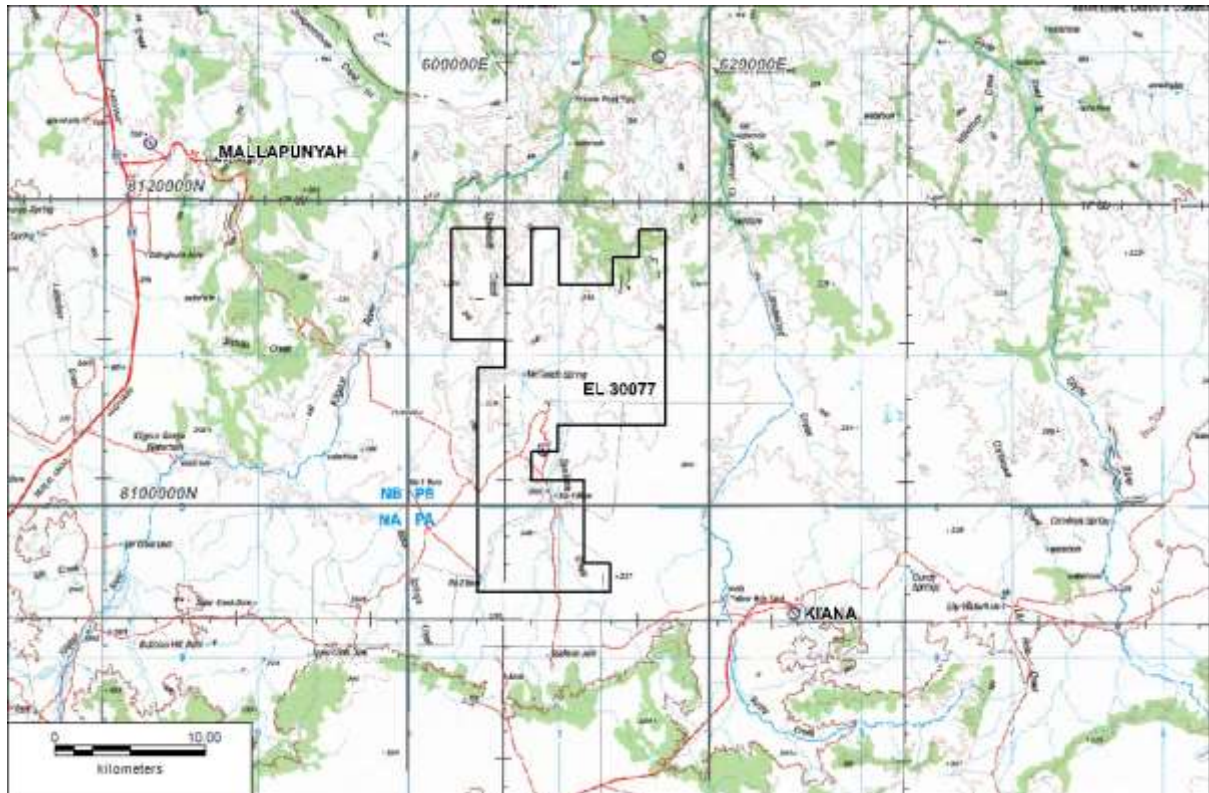
## **1.0 Introduction**

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.

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. This program was to be funded by AEP Australia under an agreement in late October 2015. Since that time, the situation has changed with the death of the owner, Aubrey McLarendon. Alternative funding has been arranged for Armour, but at a reduced level.

## 2.0 Location and Access



**Fig. 1 Location and access EL 30077**

The EL lies astride the Mallapunyah to Kiana road near the head of the Kilgour River, about 30km south of the Cape Crawford roadhouse and caravan park. Access within the EL is by rough driving along fencelines and station tracks.

## 3.0 Licence Details

EL 30077 was granted over 67 blocks on the 9th May 2014 for 6 years. Native Title and Heritage clearances have been handled concurrently with overlapping EP 171 and EP 176.

The expenditure covenant was \$22050 in the first year.

The Exploration Licences was part of the Barney Creek Project Area 2, which allows for combined expenditure covenants reductions and reporting.

## 4.0 Geology and Mineralisation

Most of the district is comprised of the prospective McArthur Basin. The formations of prime interest are the Barney Creek and adjacent/underlying Coxco dolomite member. The McArthur basin is more deformed and faulted in this district which is referred to as the Central Batten Fault zone.

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 as the dolomitic shales of the McDermott formation. As a rule, the highlighted formations in Fig.2 contain mineralisation and hydrocarbon shows.

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 with 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 (Fig. 3).

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 was until recently the worlds 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. (Fig. 4)

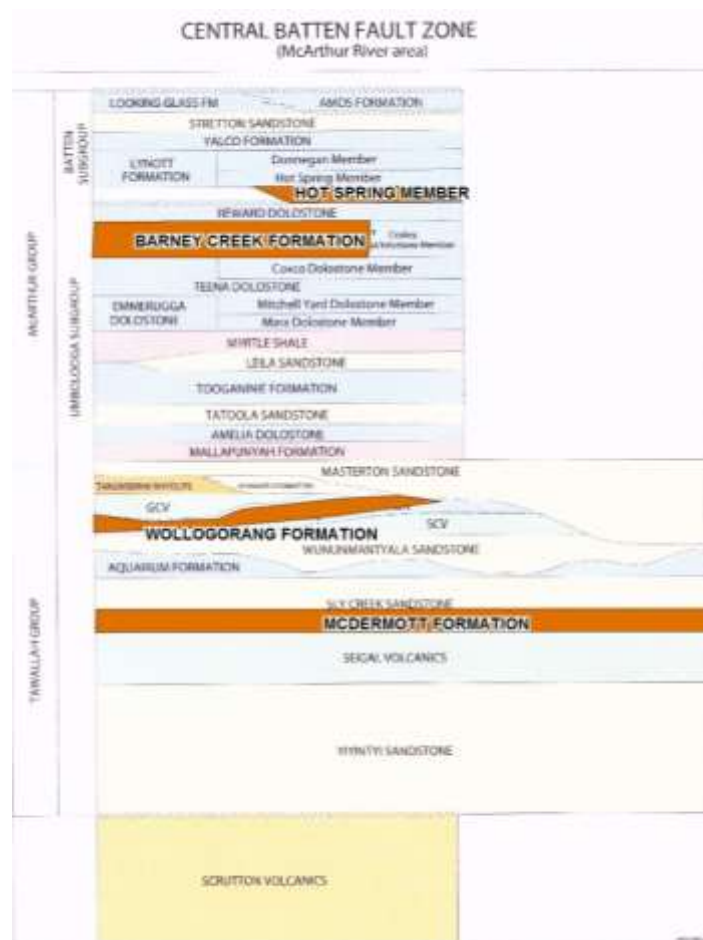


Fig. 2 Stratigraphic column highlighting target sequences

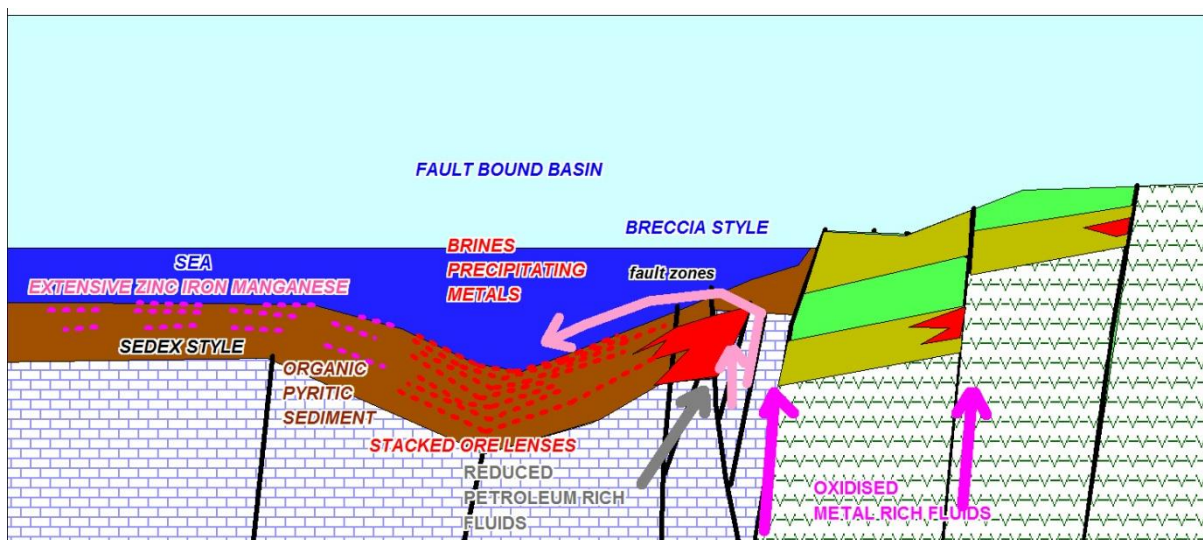


Fig. 3 Model – Basin hosted deposits



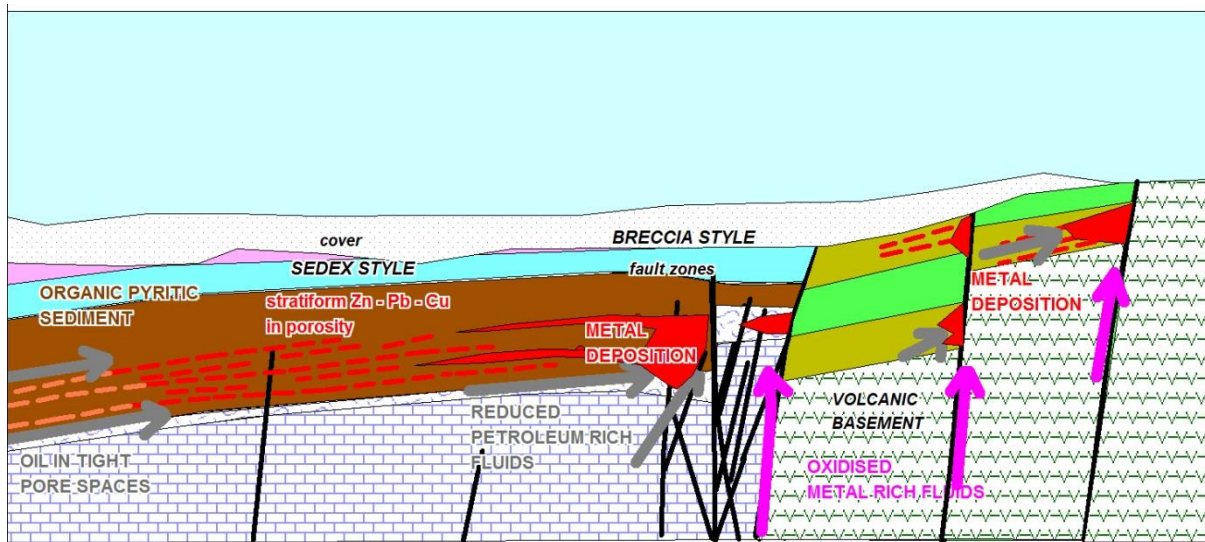


Fig. 4 Model – Porosity Infill deposits ( eg Century Cooleys )

## 5.0 Exploration Completed during the Reporting Period

The major activity conducted during the year included a study of historical data and material announced by neighbouring explorers

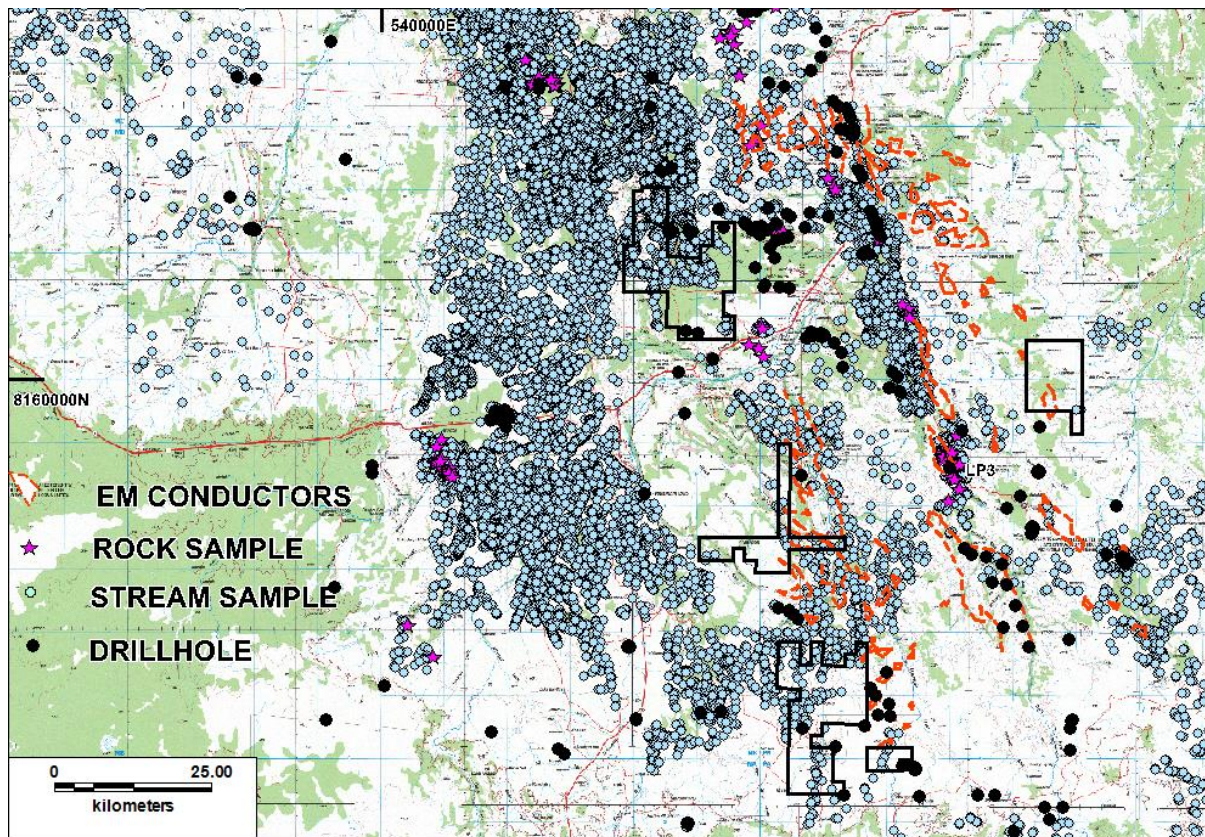
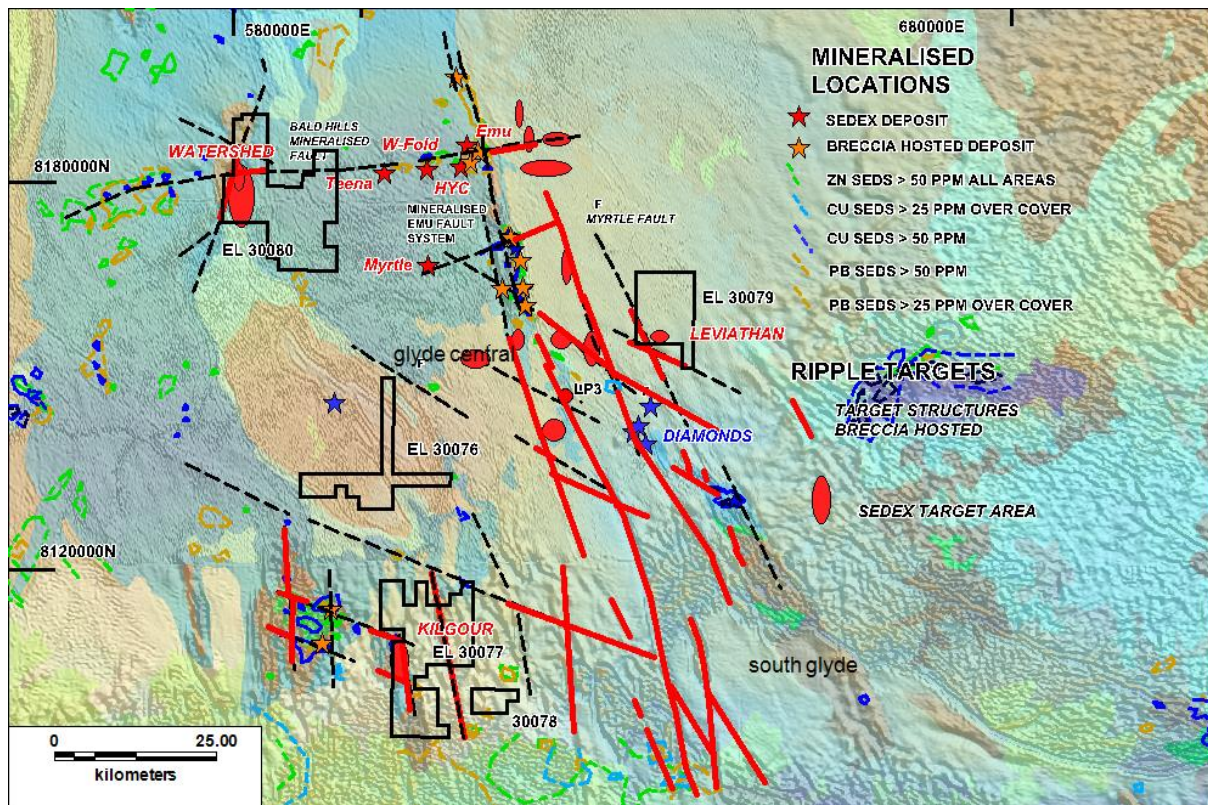


Fig. 5 Previous Exploration Summary





**Fig. 6 Overall Compilation around EL 30076 – EL 30080**

## 5.1 EL 30077

The previous work in this general area has been concentrated on the exposed Mallapunyah Dome to the west and on various diamond targets scattered throughout the area of cover.

As the exposed sequences are low in the stratigraphic column, there is considered to be no potential for Barney Creek formation hosted mineralisation. The most likely hosts are the Wollogorang and McDermott formation organic dolomitic shales, and possibly, locally reduced horizons in the Mallapunyah and Amelia Dolomite formations.

Mineralisation is widespread in the Mallapunyah dome, and is controlled by NW – SE dilational structures which have been the conduits for dykes and hydrothermal fluids. Drilling in the past has not been encouraging, but it has not been targeted on the coincidences of favourable structures and strata.

Extrapolation of the mineralising structures suggests that they pass through the Wollogorang formation within various localities within both ELs. Ripple has had the CSIRO examine and research a number of historic drill samples throughout the district. The geochemical and petrological examination of GSD 7 to the east of EL 30077 (Fig.7) has supported the possibility of mineralisation in this area. The CSIRO report stated that there was strong Wollogorang SEDEX potential in the vicinity of this hole.



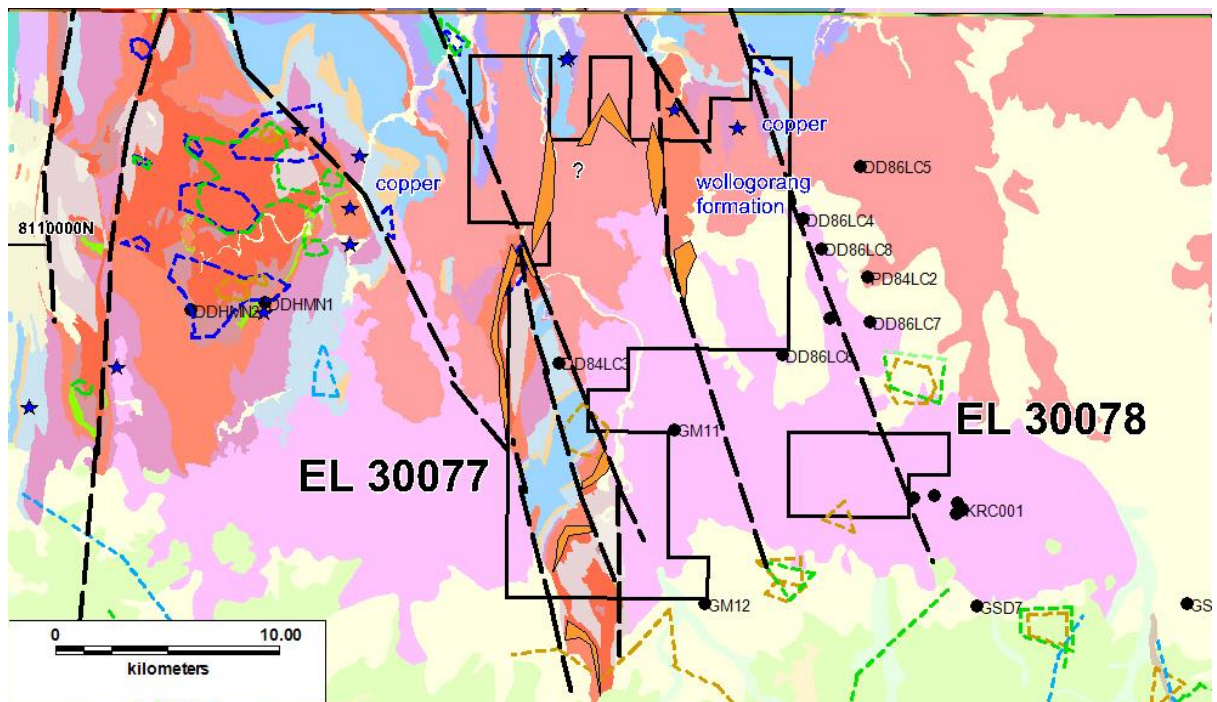


Fig. 7 Prospective structures and stratigraphy EL 30077

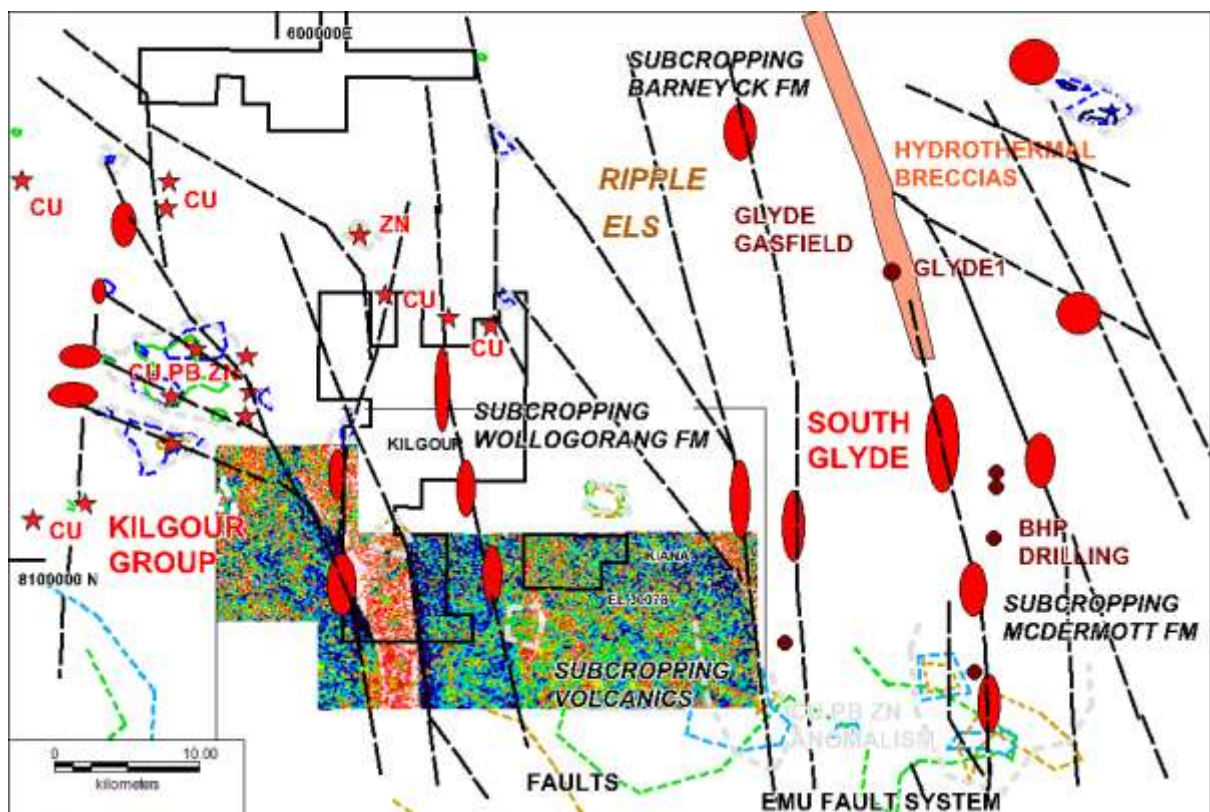


Fig.8 Targets around EL 30077 (on the Lancewood gravity survey with base metal anomalies)

## 6.0 Results and Conclusions

There are no compelling targets inside EL 30077. The EL has been surrendered accordingly.

### 6.1 Wollogorang Formation Targets

Mineralised fault systems pass through and along subcrops of Wollogorang formation within **EL 30077 and 78**. This favourable setting is supported by CSIRO research into nearby hole GSD 7 which concluded that it had petrology and geochemistry indicative of a nearby SEDEX deposit.

A priority structural target (Fig.8) has been identified along the western boundary where Wollogorang formation sediments lie in a jog in a mineralised fault that juxtaposes the favourable sediments with basic volcanics.

The great bulk of this conceptual target lies just outside the EL.

### 6.2 Diamond Targets

The remaining diamond potential is poor. There is a cluster of diamond occurrences 10km to the east. Only one occurrence lies inside the EL.

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