



# HILLGROVE RESOURCES

## EXPLORATION IN THE DELAMERIAN OF SOUTH-EAST SOUTH AUSTRALIA



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#### **Competent Person's Statement**

The information in this release that relates to Exploration Results, Exploration Targets and Mineral Resource Estimates is based on information compiled by Mr Peter Rolley, who is a Member of The Australian Institute of Geoscientists. Mr Rolley is a full-time employee of Hillgrove Resources Limited and has sufficient experience relevant to the styles of mineralisation and type of deposit under consideration to qualify as a Competent Person as defined in the 2012 Edition of the ‘Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code)’. Mr Rolley has consented to the inclusion in the release of the matters based on their information in the form and context in which it appears. All exploration drill results, soil sampling images, and rock chip results have previously been reported to the ASX by Competent Person at the time.



### ENDOWED

- Cu, Au
- Cu, Pb, Zn, Au
- Cu, Mo

### SHALLOW COVER

- Cu, Au, Mo outcrop in various areas
- 60-100 metres cover over large areas

### UNDER-EXPLORED

- No regional exploration for ~20 years
- New technology now available

### GREAT OPPORTUNITY

- Minex CRC with large \$\$\$ into Delamerian
- Section 15 Moratorium now in place
- Hillgrove hold ~6150 sq kms
- Outcropping Cu – Mo never drilled



Hillgrove has a staged Exploration and Development strategy in the Delamerian

**STAGE 1**

- Converting Mine Lease assets to Reserves at Kanmantoo

**STAGE 2**

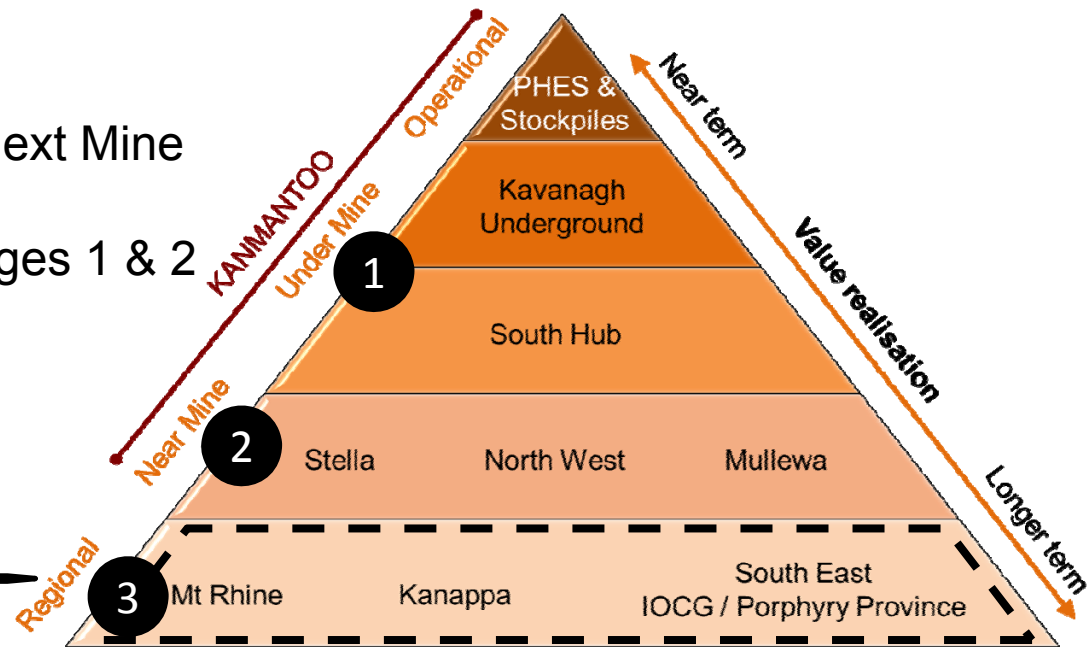
- Establishing resources near the Kanmantoo mine for production growth

**STAGE 3**

- Exploration of Region for the next Mine

Lachlan Wallace will address Stages 1 & 2 later today.

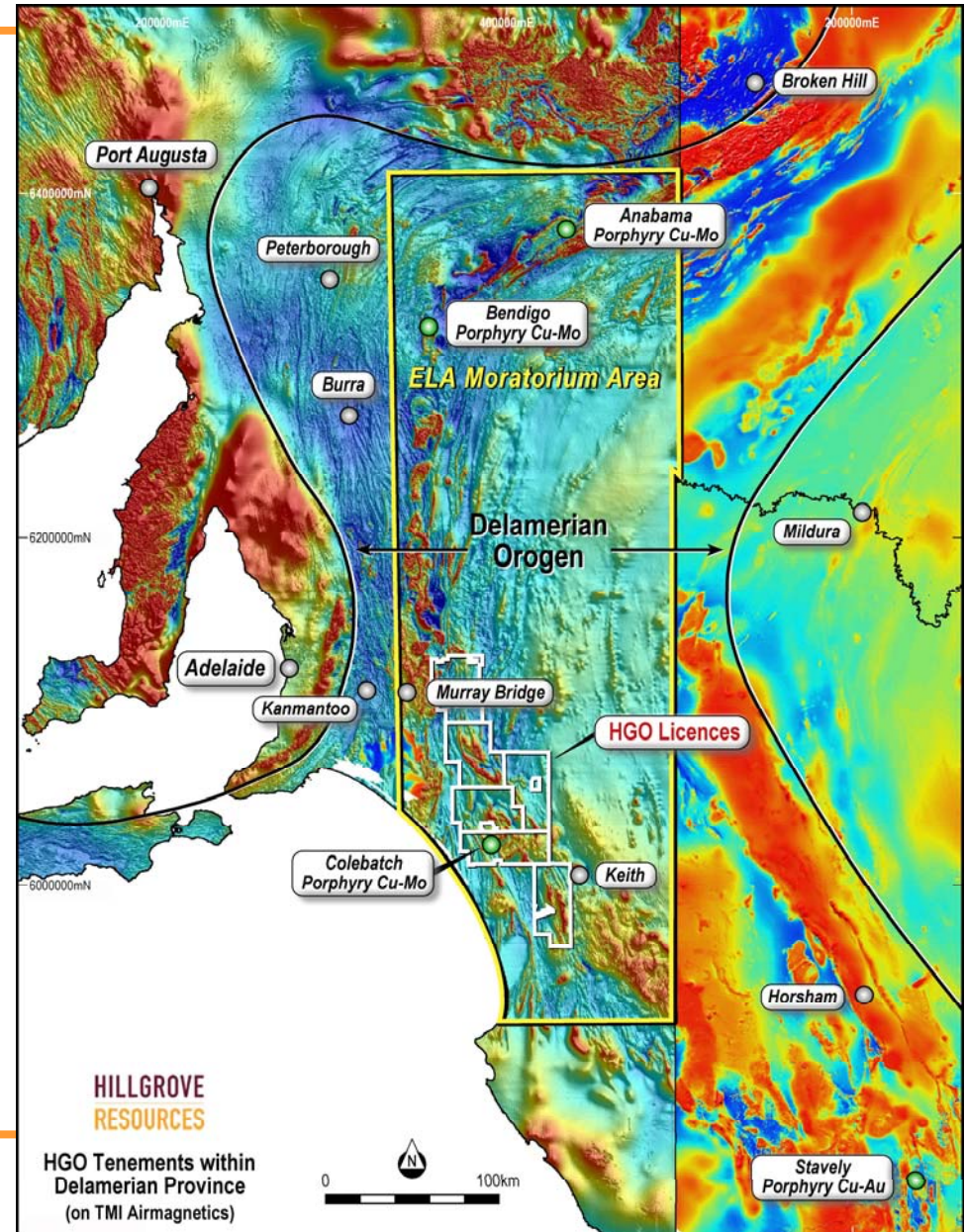
This talk presents Stage 3



Apart from;

- Extensive Copper fertility
- Host to Stavelly Porphyry Cu-Au (in Vic)
- Several Porphyry Cu-Mo occurrences
- Extensive calc-alkaline and alkaline volcanism and intrusives
- Identified by GA and USGS as the third most prospective Porphyry belt in Australia
- There is gold there as well as copper!
- Now under a Section 15 whilst Minex CRC and GSSA spend \$\$\$!

***The Delamerian is a big under-explored volcanic belt***



What's with the IOCG label on slide 4 and in previous presentations?

Dr R. Taylor has undertaken detailed petrology on a series of > 100 rock specimens from Cambrai down to Keith, incl Kanmantoo. He concludes;

- "... although not perfect the sequence has some sympathy with a species of IOCG style." April 2018.
- "... has major analogies with the magnetite rich IOCG systems." July 2019

In addition, samples of the Kanmantoo ore included into the OSNACA geochemical data base fit well within the IOCG grouping

Mapping, logging, clearly show that the high temperature gradient at Kanmantoo is an alteration front and NOT a metamorphic gradient

***Important to work from known to unknown***



There are Multiple Mineralising events, so let's keep an open mind;

- 522 - 514 Ma – SHMS Base metals – e.g. Angas, Mt Torrens
- 500 – 490 Ma – Epigenetic Cu with D2 – e.g. Kanmantoo (Uni Adelaide – HGO work)
- A reminder – The Delamerian orogen is around 514 – 490 Ma (Foden 2006)
- 483 Ma – Cu mineralised Potassic veins at Kanmantoo (Uni Adelaide – HGO work)
- 487 – 478 Ma – Cu mineralised monzonites at Kanappa (Uni Adelaide – HGO work)
- 471 Ma – Gold vein systems at Deloraine, Kitticoola
- 478 – 450 Ma – Cu-Mo veins through K-spar Porphyritic granite at Colebatch
- 450 Ma – Cu-Mo Porphyry at Anabama

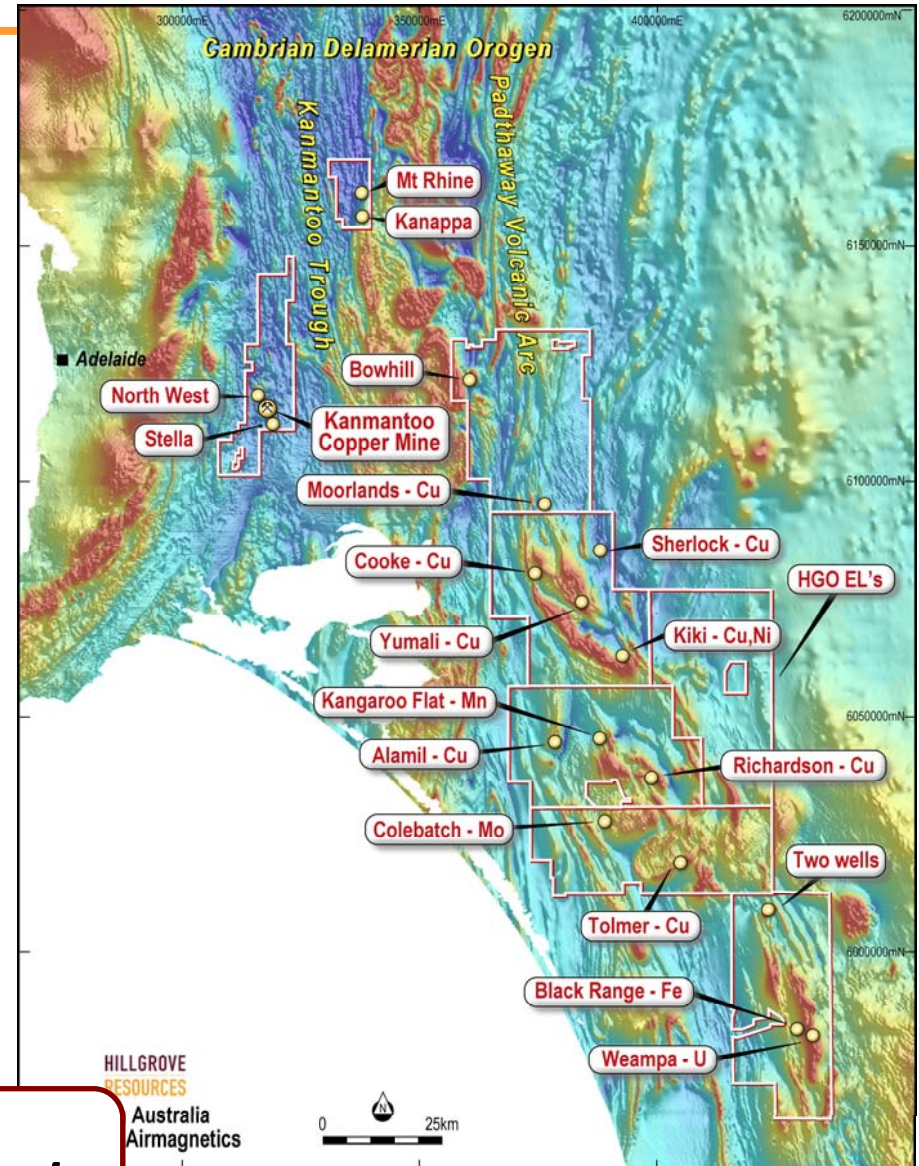
***Multiple mineralising events and complexity***



Hillgrove hold 6,150 sq kms of EL's of opportunities in the Delamerian.

Topics within this presentation include:

- How deep is the cover?
- Does geochemistry work with transported cover?
- Kanappa – a Cu-Au skarn
- Colebatch – a Cu-Mo Porphyry
- Sherlock – a Zn-Pb-Cu volcanogenic
- et al



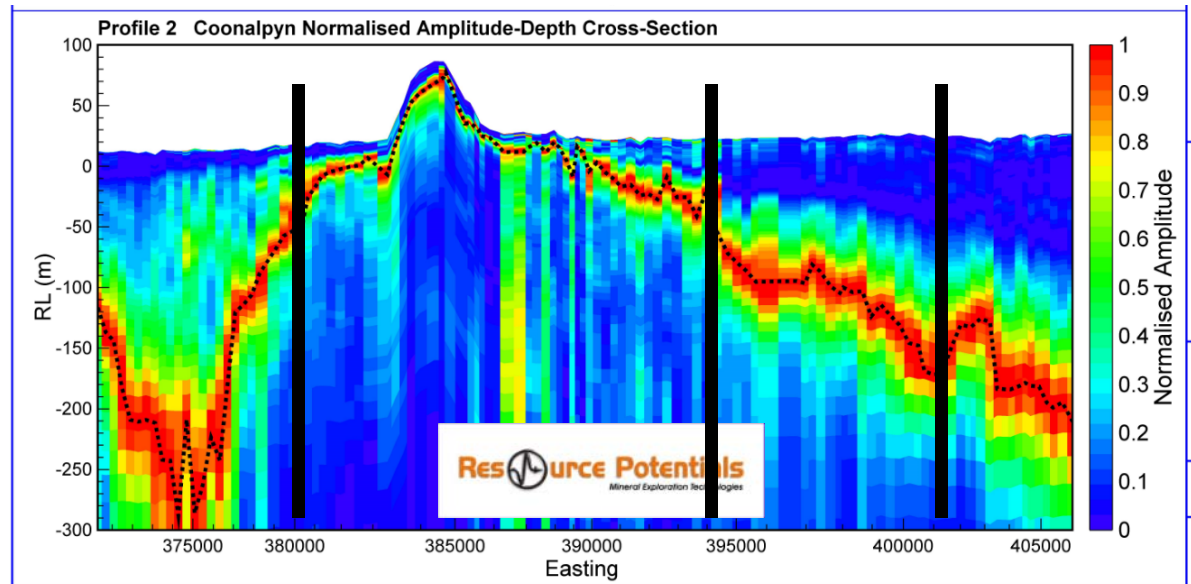
***Too many targets to speak about***





Passive Seismic used for the first time in the area.

- Worked really well when trialled over two areas already drilled
- A great discriminator of depth of cover
- Identified large areas with < 100m cover
- A better constraint for gravity modelling
- Co-occurrence of rapid change in depth with GSSA interpreted basement faults



***A new model of depth to basement***

***A new method to map major basement structures***



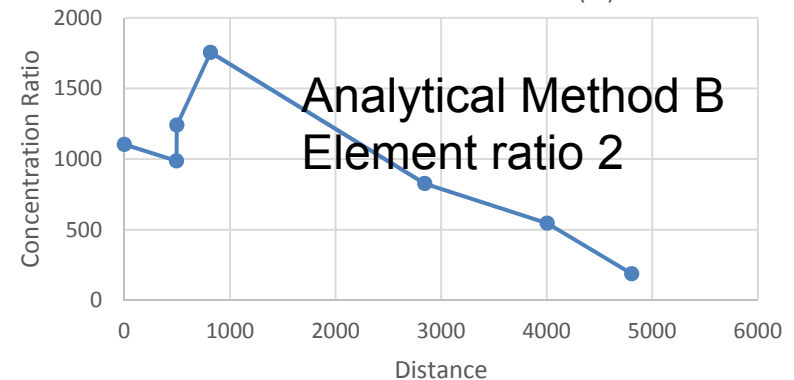
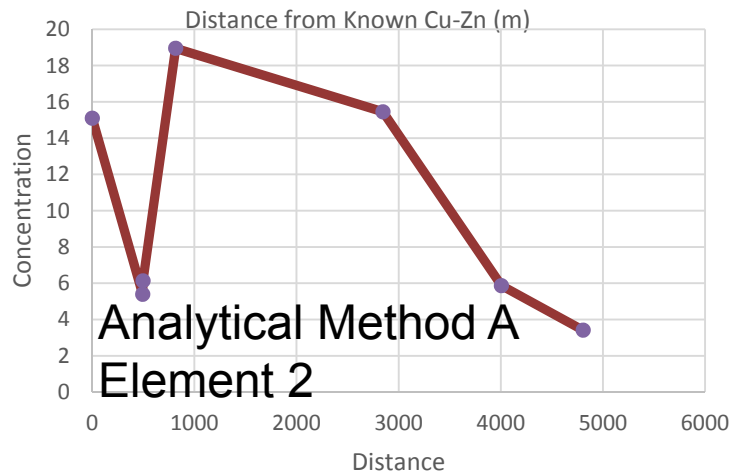
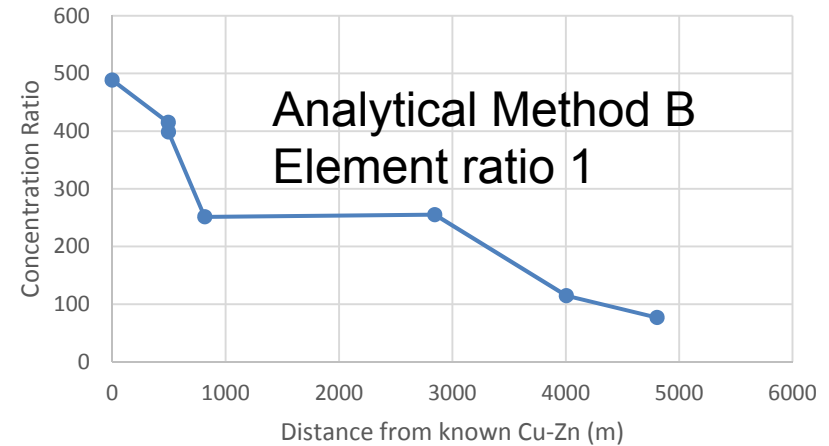
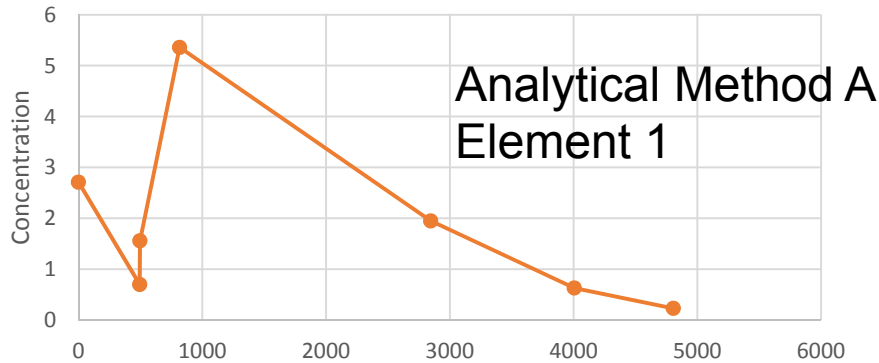
A number of analytical techniques trialled over two known mineralised areas covered by 50 – 100m of Tertiary marine sediments

- Same areas sampled on two occasions
- Five different analytical methods tested
- Used GSSA/ASTER and radiometric imagery to “level” the geochemistry to different regolith domains
- Two totally different analytical methods came up with the same sulphide anomaly in both sample trials

And we have had the work verified by an independent consulting group

***A new geochemical technique successfully identifies known mineralisation through transported cover***





NB: the origin is the basement mineralisation at 95m depth

***So now we have a new basement mapping tool AND  
A new geochemical tool to discriminate fertile geophysical anomalies***



## Kanappa

The Kanappa Cu-Au zone is 50kms from Kanmantoo

A series of diorites, pegmatites and aplites intrude into a sequence of schists and carbonates

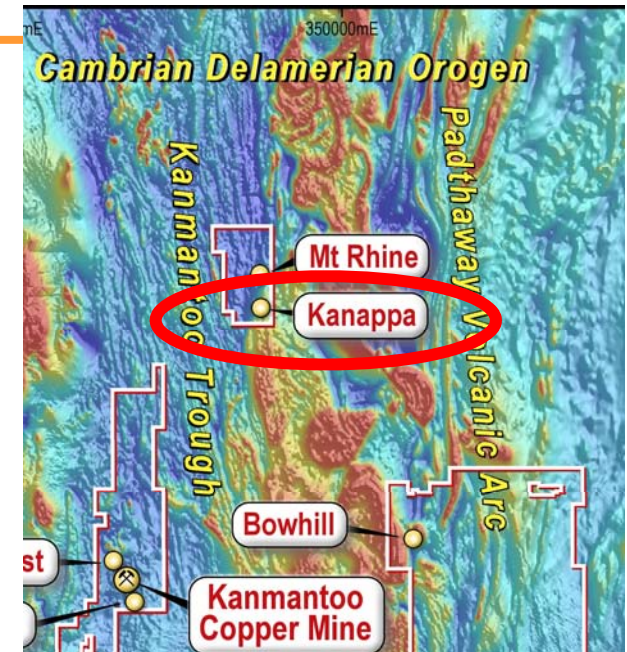
Soil copper zone 4.4kms long

Petrology of the drill core shows the 250m wide alteration zone overprints both sediments and intrusives and is high magnetite, pyrrhotite with Fe-Cu-W-Mo-Au-Zn

Petrology of drill core – definitely magmatic skarn

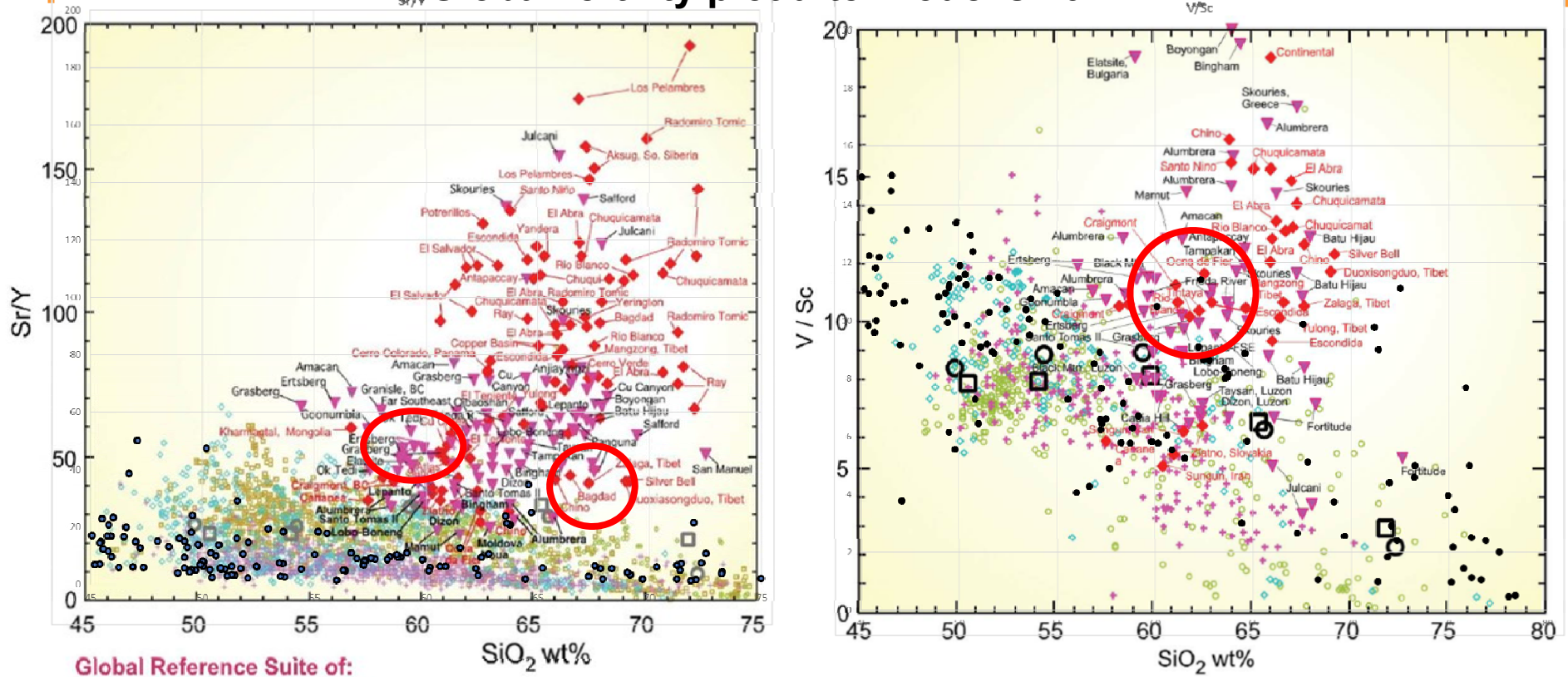
Uni Adelaide age dating of monzonite dykes – 478.4 +/- 6.4 Ma

Target is source intrusives – not skarns



***These drill results confirm Hillgrove's view that the Kanappa area is prospective for large scale magmatic related copper-gold mineral deposits***

**Global fertility plot after Loucks 2014**



The red circles are the whole rock geochemistry of the monzonites at Kanappa, and these are very similar to signatures of the global Porphyry Copper felsic intrusives

***Kanappa Magmatism is consistent with Cu Porphyry fertility indexes***



## Colebatch

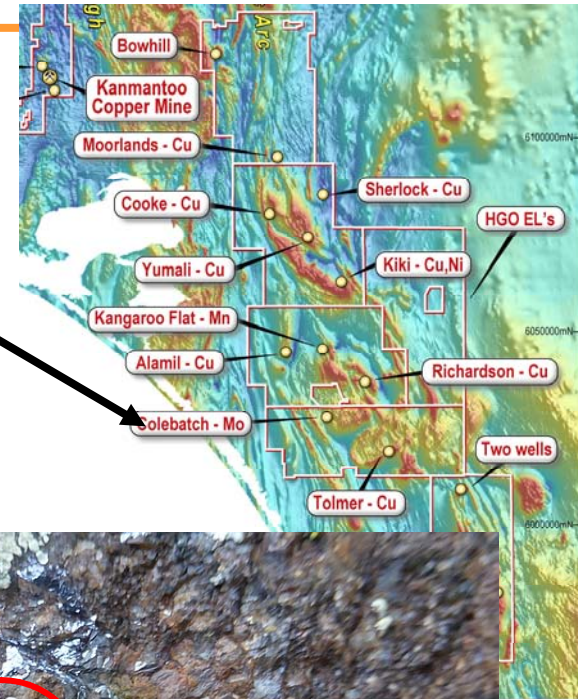
Field sampling of Cu-Mo outcrop

Petrology

Quartz monzonites, fluorite, molybdenite, rapakivi textures,

Interpreted as classic Porphyry Cu-Mo system

Never drilled



## Sherlock

Drill core with

- SHR08 0.5m @ 11.6% Cu, 1.1% Zn from 102m<sup>1</sup>

in an interbedded sequence of;

- Basalts, gabbros, and dolerites
- Calc-silicates
- Tuffs
- Meta-sediments
- Andesites

Sulphides include pyrite, sphalerite, chalcopyrite, galena, pyrrhotite

Nothing like the Kanmantoo Group!

Considered by the past owners of Roseberry – Pasminco – to be similar to the Mt Read Volcanics in Tasmania of the same age.



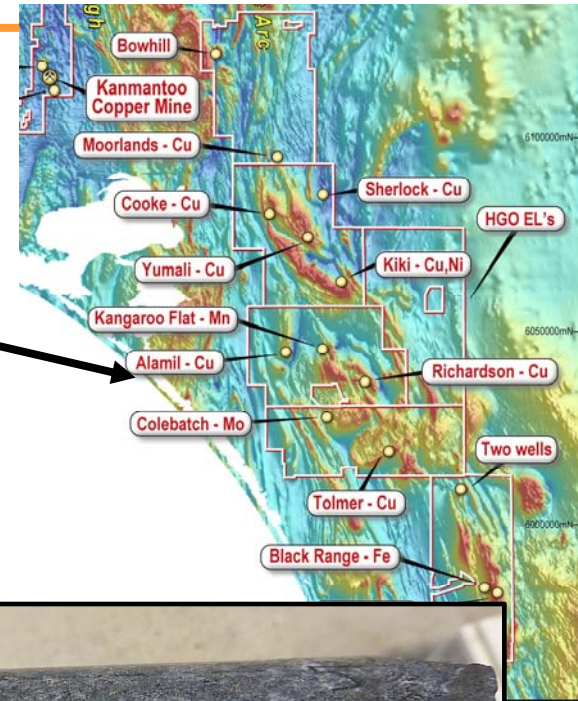
***Large Exploration holding is prospective for large scale copper mineralisation***



## Alamil

Drill core with narrow veins and disseminated adularia/chlorite/epidote/galena zones of chalcopyrite and sulphides in diorite over 267m, from 86m depth

Perhaps akin to an “*epithermal mineralising system*”? (Petrology report by Dr R. Taylor)



KMD-07-01 326.5m

***Large Exploration holding is prospective for large scale copper mineralisation***



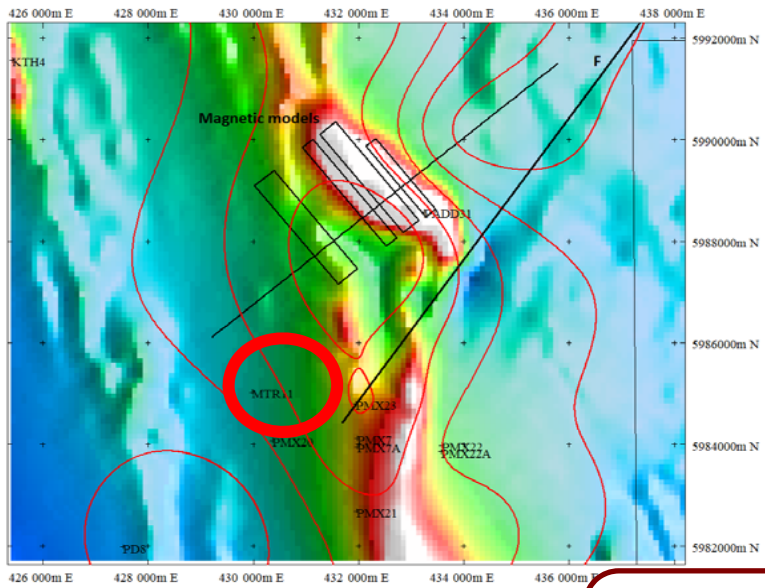
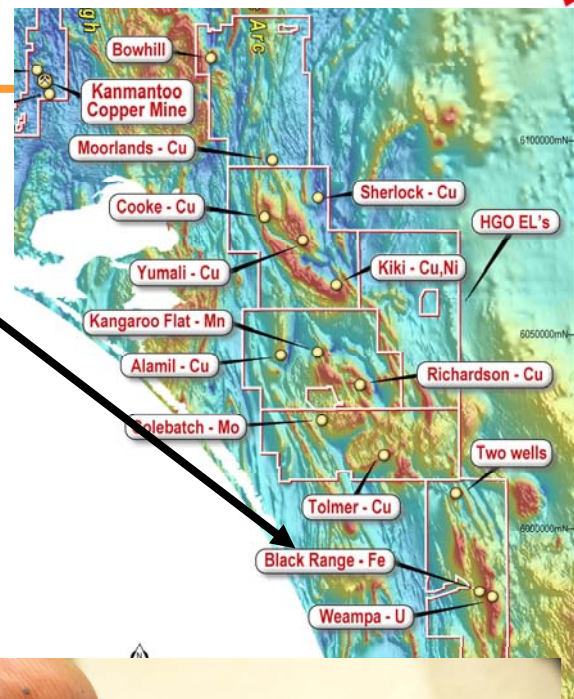


## Black Range

MTR11 204.5m Fe – Sn – Zn magnetite breccia

Petrology shows the rock to be haematite after magnetite

At margin of coincident gravity and magnetic highs



***Large Exploration holding is prospective for large scale copper mineralisation***

TMI magnetics base map with contoured Residual gravity

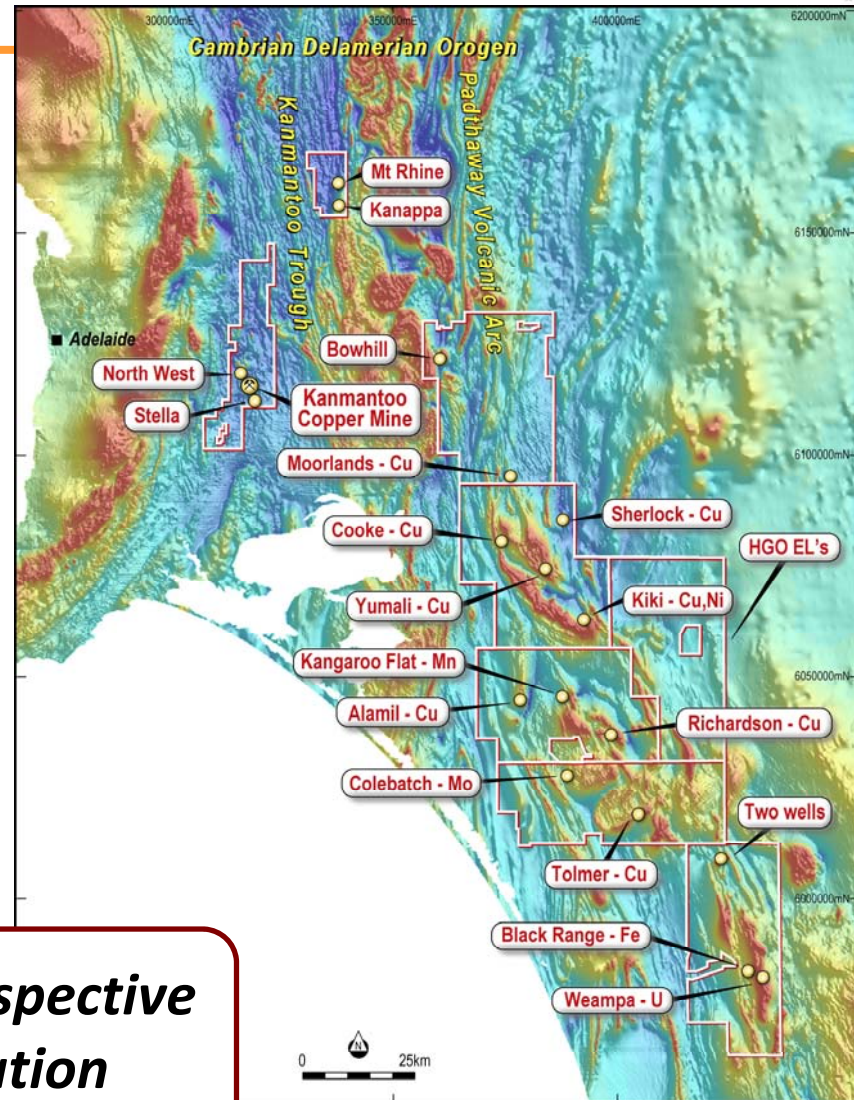
et al

Tolmer – Chalcopyrite in altered basalts (MTR12)

Richardson – altered volcanoclastic with pyrite, K-spar, epidote alteration and veining with anomalous Cu, Au, Ag (Codd04)

Mt Rhine - Au – Cu outcrops in calc-silicates to 40 g/t Au (ASX:HGO 25-10-2017)

***Large Exploration holding is prospective for large scale copper mineralisation***





***Realising value for shareholders through a pipeline of Cu-Au projects***

