

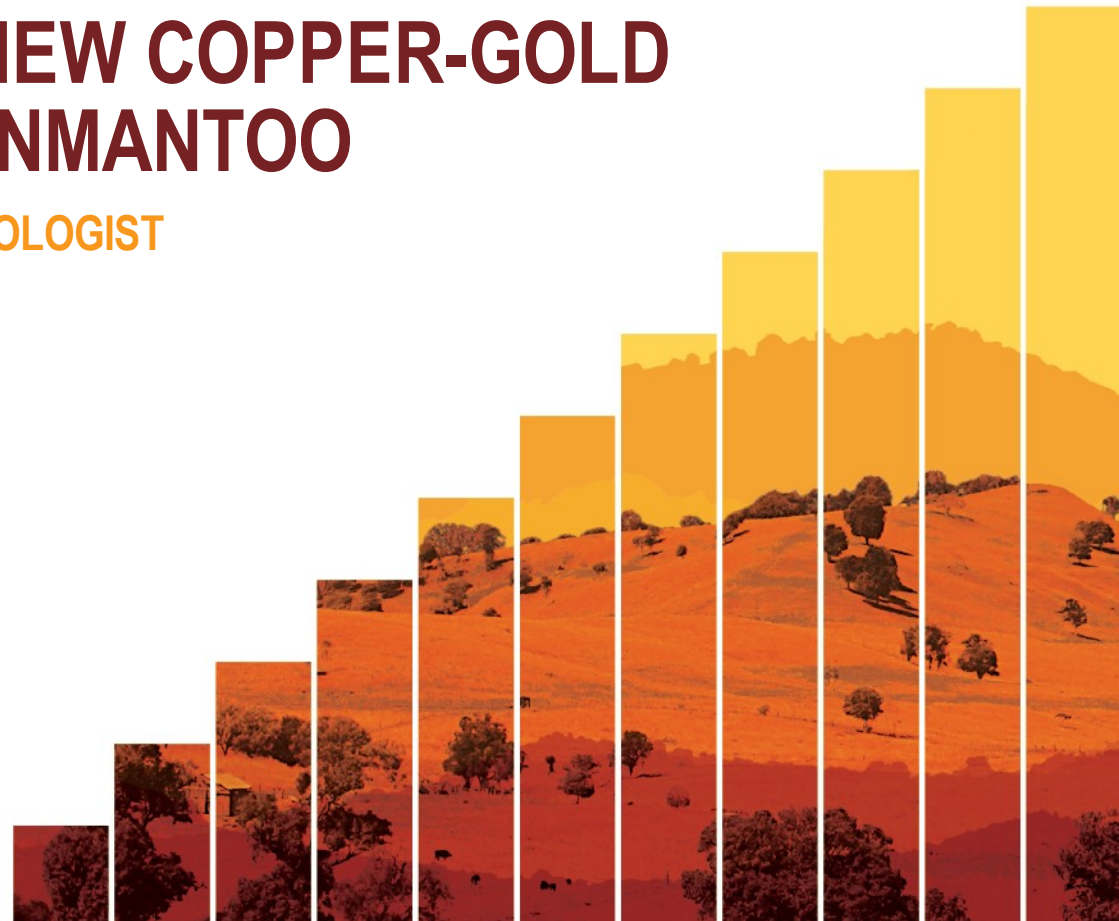
**HILMGROVE**  
**RESOURCES**

**BRISBANE**  
**RESOURCES ROUND-UP**  
THE 2018 MINING RESOURCES CONVENTION



# UNCOVERING A NEW COPPER-GOLD PROVINCE AT KANMANTOO

**PETER ROLLEY** ||||| **CHIEF GEOLOGIST**  
**17 OCTOBER 2018**



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

The information in this release that relates to the 2016 Mineral Resource Estimate for Giant is based upon 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.

The information in this release that relates to the 2013 Mineral Resource not including Giant is based upon information compiled by Ms Michaela Wright, who is a Member of The Australasian Institute of Mining and Metallurgy. Ms Wright is a former 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)'. Ms Wright has consented to the inclusion in the release of the matters based on their information in the form and context in which it appears.

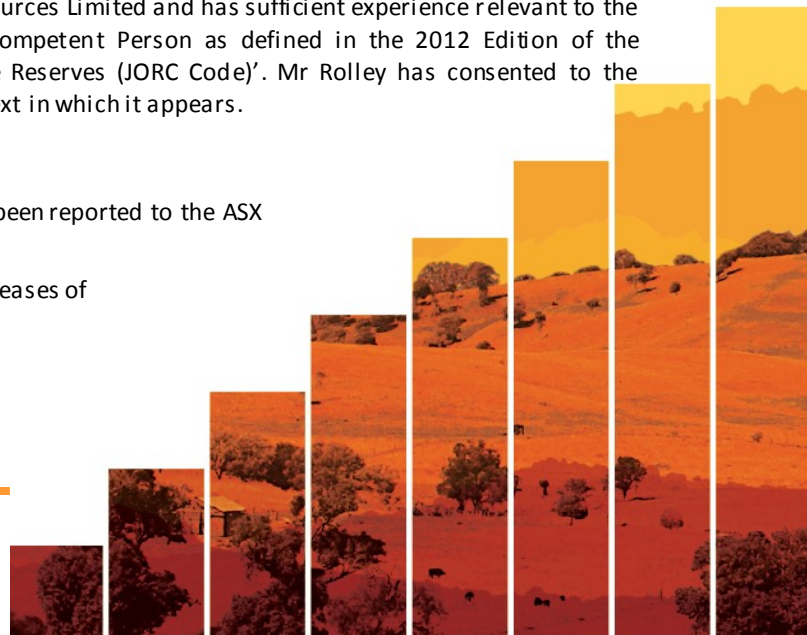
The information in this release that relates to Ore Reserves is based upon information compiled by Mr Lachlan Wallace, who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Wallace is a full-time employee of Hillgrove Resources Limited and has sufficient experience relevant to the 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 Wallace has consented to the inclusion in the release of the matters based on their information in the form and context in which it appears.

The information in this release that relates to Exploration Results 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.


### **Exploration Results Here-In**

All exploration drill results, soil sampling images, and rock chip results have previously been reported to the ASX by Competent Person at the time.

The results reported herein are reported in the form and context of the original ASX releases of 15 May 2015, 18 Oct 2016, 25 May 2017, 20 Oct 2017.





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- 1. KANMANTOO MINE – THE ASSETS**
  - 2. EXPLORATION UNDER & NEAR MINE**
  - 3. KANMANTOO MINE – WHAT WE HAVE LEARNED**
  - 4. EXPLORATION IN THE REGION**

*Utilising existing infrastructure and cash flow at Kanmantoo to  
create Company transforming mining projects*



Hillgrove Resources Ltd (ASX:HGO) operates the Kanmantoo Copper-Gold Open Pit in the south-east of South Australia.

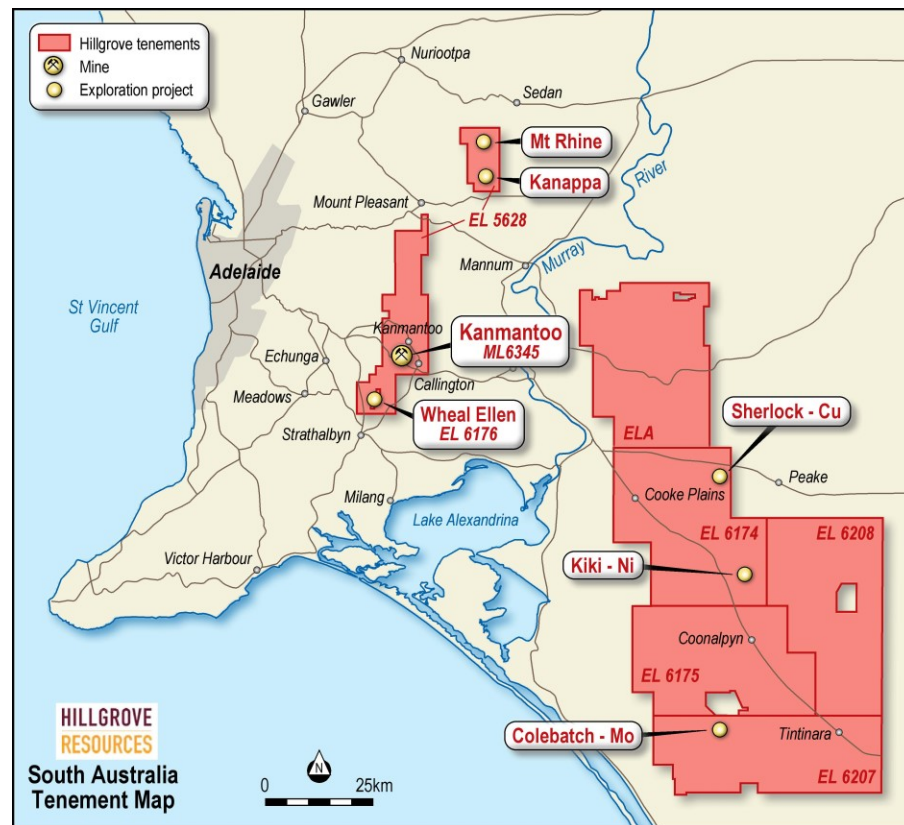
Located approx. 55kms from Adelaide

Grid power, water on site

Local labour force – no FIFO Camp/Travel

Awards for Community Consultation

Leader in Environmental Rehabilitation practises



### KEY TAKEAWAYS

- Infrastructure fully operational and permitted
- Ideal location for services and on-site labour

For more info, Refer to HGO's Annual Report of 15 March 2018



Strong revenue with increasing Cu Metal

Last Half C1 cash costs           A\$2.63/lb Cu

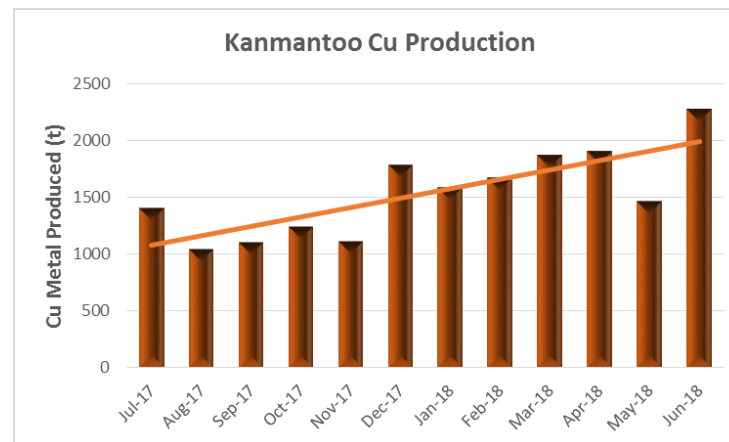
Realised Copper price            A\$4.08/lb Cu

Open pit to conclude in Q2 2019

Processing stockpiles to conclude Q3 2020

Assets include:

- Open Pit Shell
- Haul Road to ultimate depth of 350m
- Tailings Facility
- Processing Plant - Mill cost A\$8.57/t
- Tenement Holdings with
  - Cu-Au mineralised systems



### KEY TAKEAWAYS

- Generating strong cash flows
- Entering Growth Phase utilising current assets

For more info, Refer to HGO's releases 31 July 2018 & 23 August 2018



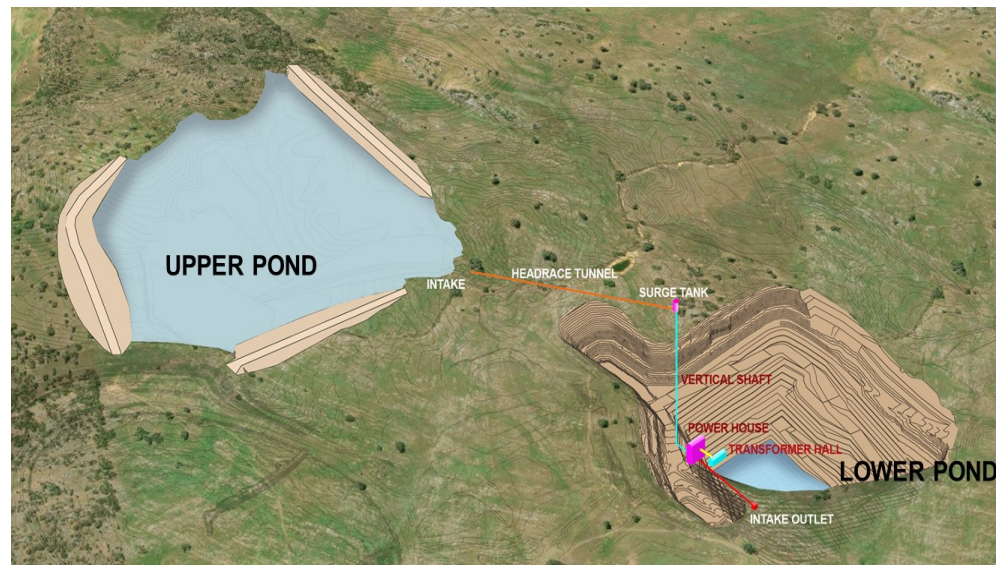
The Pit Shell at end of Mine Life is an Asset

Looking to convert it to income as a PHES

HGO has no desire to become an energy generator and is

- Seeking a partner to take forward
- Open to buy out, or revenue royalty

Formal sale process is underway



Either the pit shell generates income as a PHES scheme, OR  
Its Haul Road is a pseudo-decline to 350m for Cu-Au underground production

### KEY TAKEAWAYS

- Multiple options to convert assets to Company transforming businesses
- PHES scheme is an outstanding opportunity for a sustainable future for the mine site

For more info, Refer to HGO's ASX release 21 March 2018 Kanmantoo Pumped Hydro



The Kanmantoo Mine extracts

- copper-gold-silver
- from a series of structurally controlled
- shears, lodes and breccias

Original host rocks are greywackes, siltstones, sandstones

Cu lode alteration is garnet, chlorite, staurolite

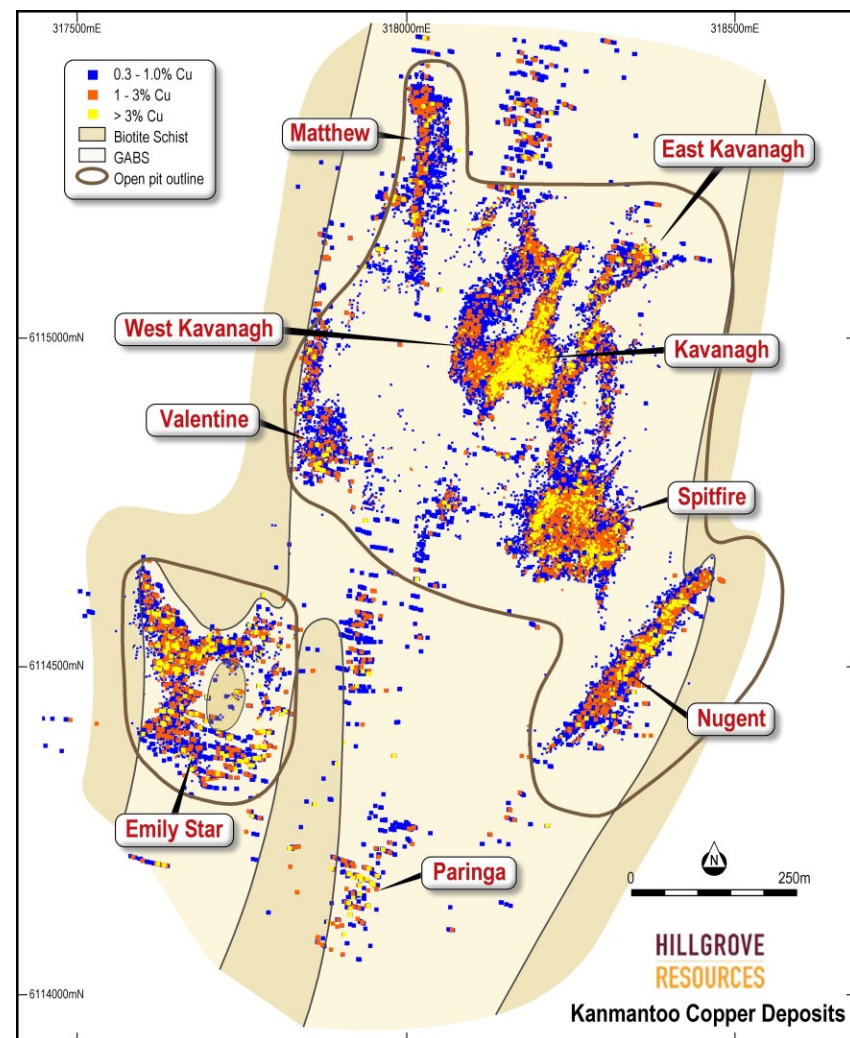
Zone alteration is chlorite, garnet, andalusite

Gold grades vary between the lodes from

- Lowest grades at West Kavanagh
- Highest grade at Spitfire (5m @ 32g/t Au)
- Most consistent grade at Nugent (12m @ 7.9g/t Au, 2.2% Cu)

### KEY TAKEAWAYS

- Structural control of mineralisation



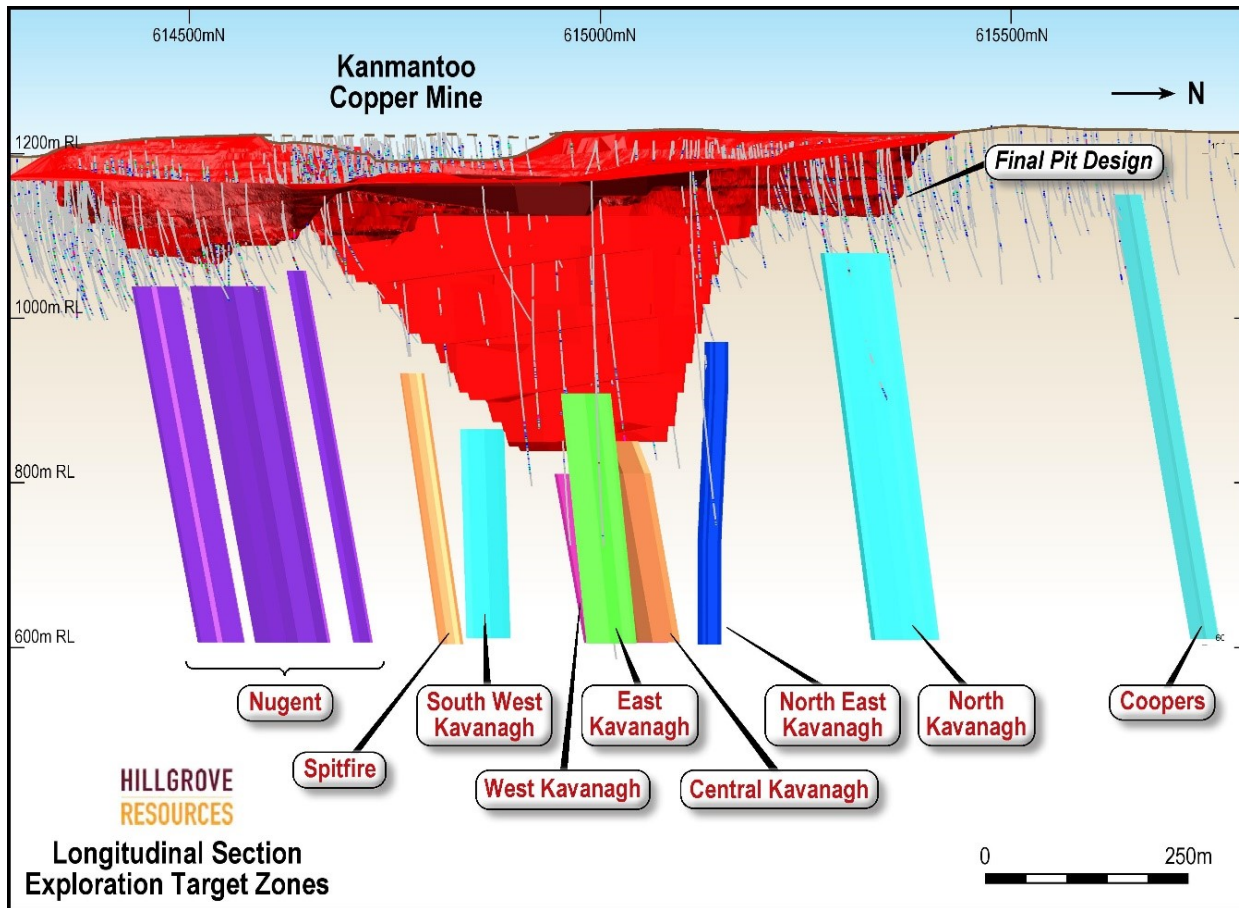




## **2. EXPLORATION UNDER & NEAR MINE**

***UTILISING EXISTING DATA AND KNOWLEDGE TO  
IDENTIFY NEW CU-AU TARGETS***





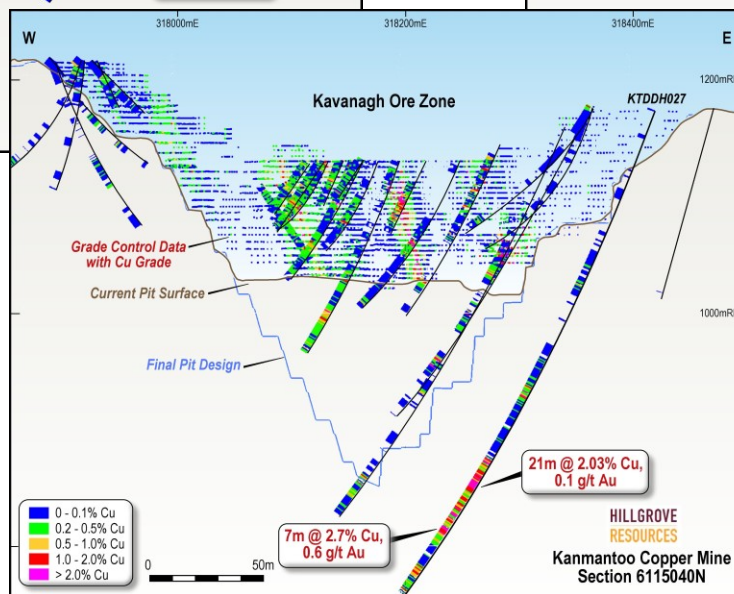
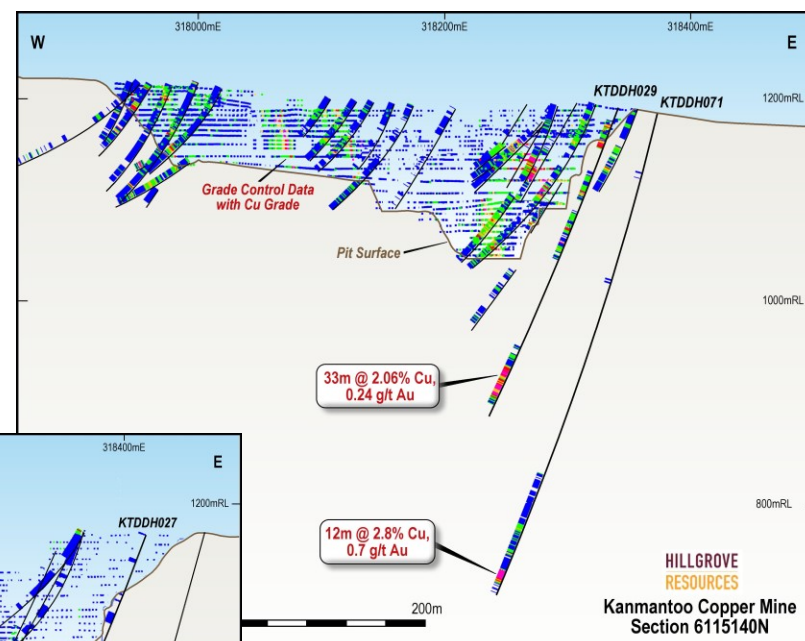
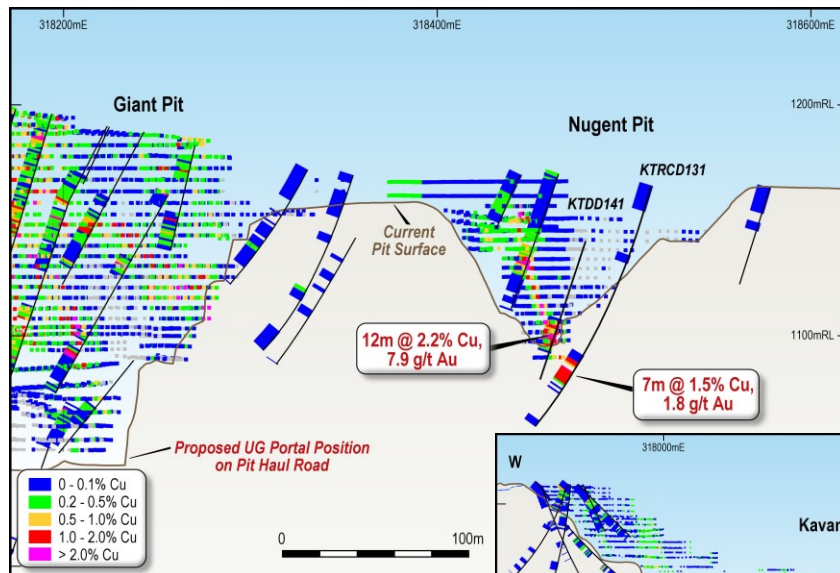
The Principal targets in the wall of the Giant Pit are:

- East Kavanagh
- Nugent
- North-East Kavanagh (Schultze)
- Spitfire
- Central Kavanagh – main prize

### KEY TAKEAWAYS

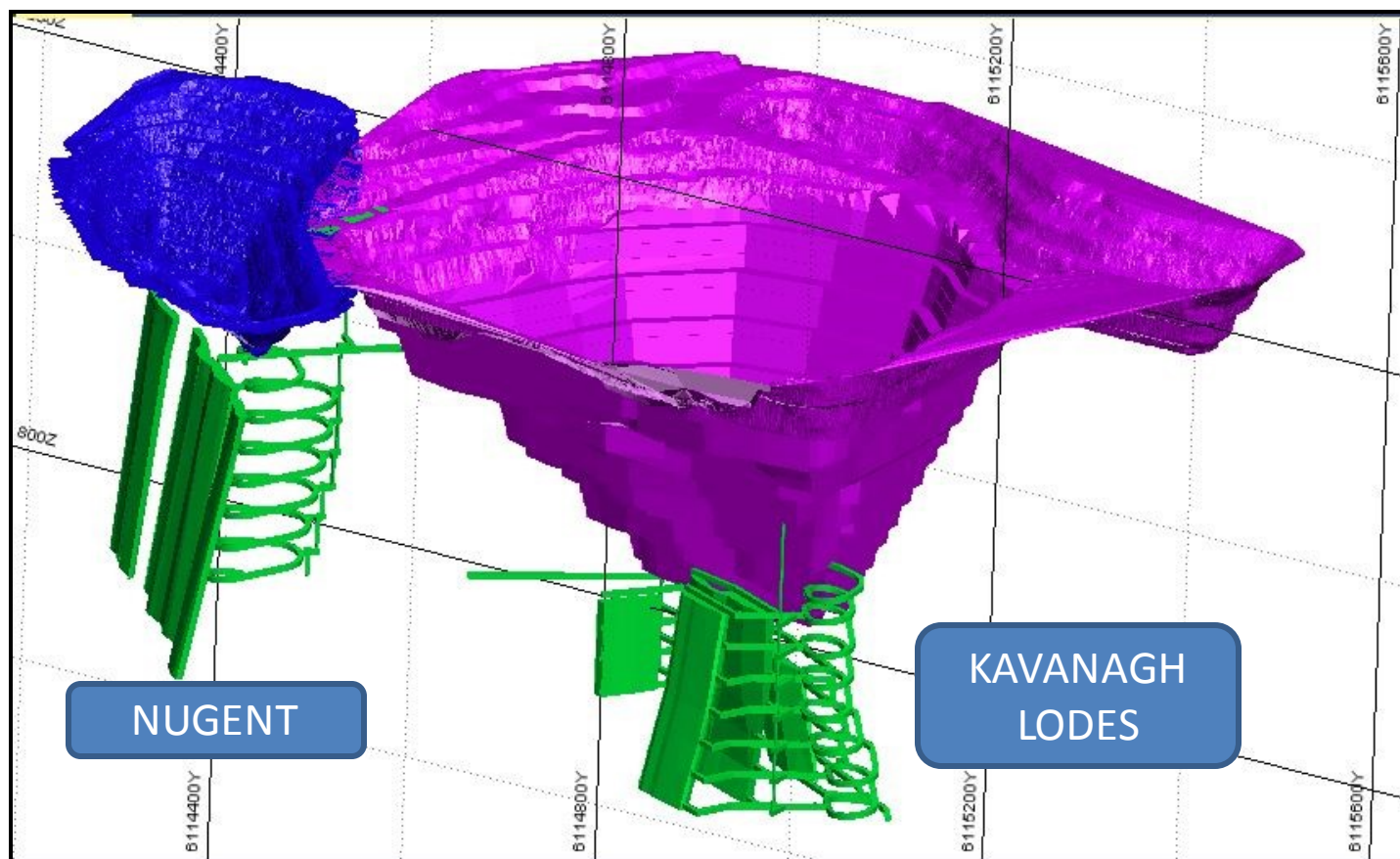
- Significant >1.5% Cu Equiv zones continue beyond open pit





## KEY TAKEAWAYS

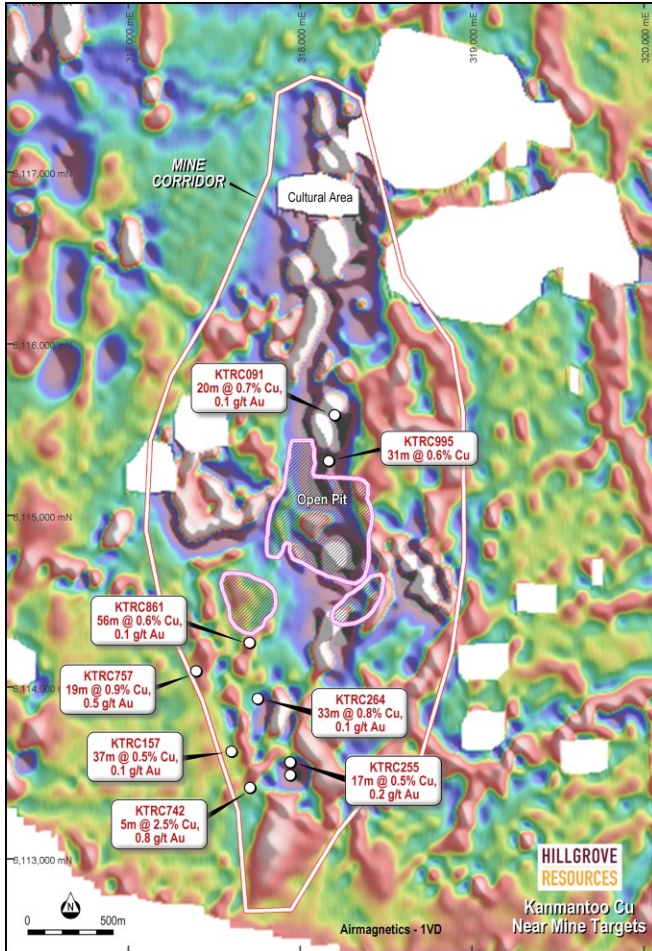
- Past drilling confirms UG targets and ready for infill drilling



UG access from Giant Pit to Nugent Lodes now Permitted.

### KEY TAKEAWAYS

- Value of PHES versus Kavanagh Underground is being evaluated



The Mine Corridor has not seen any systematic exploration since 2008 when the focus was on permitting the Kanmantoo open pit operations

**The Mine Corridor is ~5kms long AND clearly a large alteration and structural footprint**

Significant drill intercepts have not been followed up, including

- KTRC742 5m @ 2.5% Cu, 0.8g/t Au**
- KTRC757 19m @ 0.9% Cu, 0.5g/t Au**
- KTRC264 33m @ 0.8% Cu, 0.1g/t Au**
- KTRC255 17m @ 0.5% Cu, 0.2g/t Au**

## KEY TAKEAWAYS

- Targets are prioritised along structural corridors

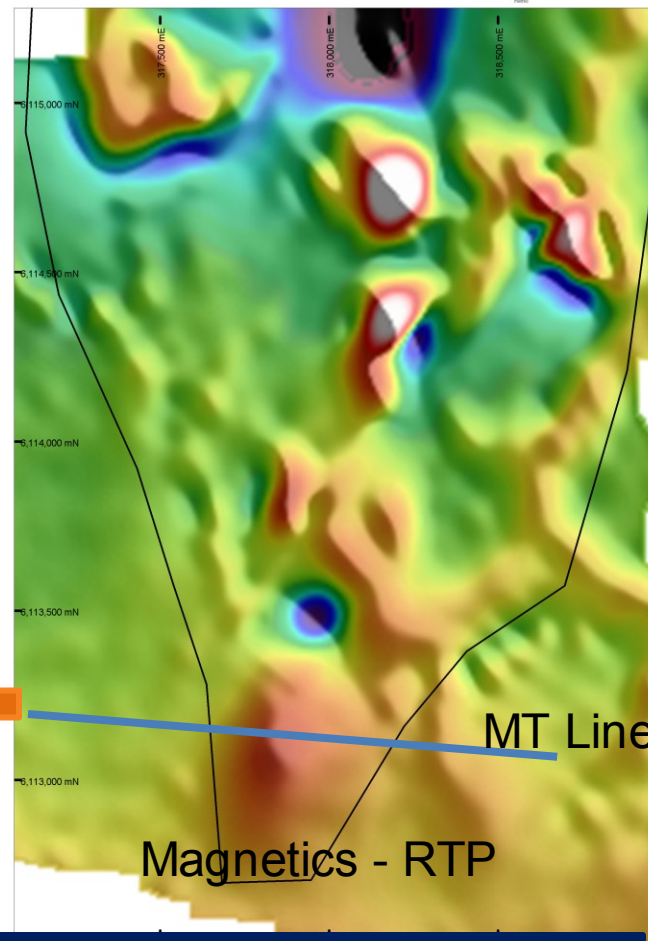
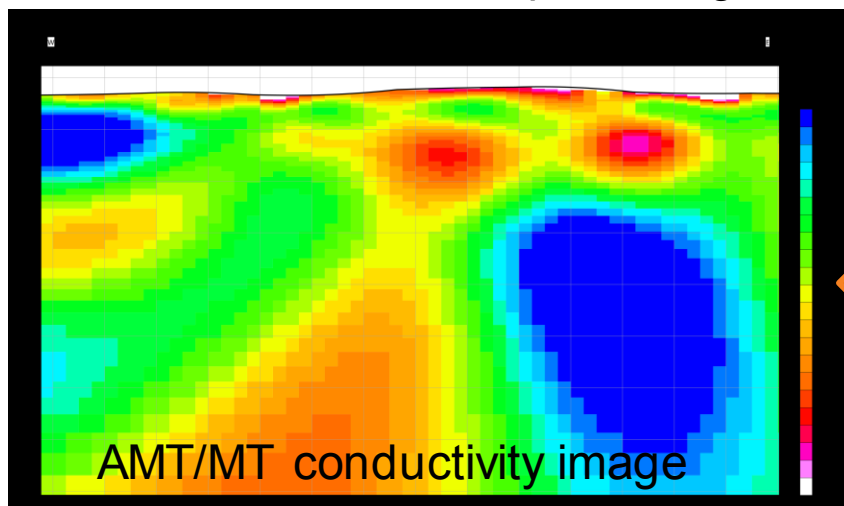




1.8 kms SE of Process Plant

Coincident MT Conductivity  
Magnetic RTP High  
Geochem Cu – Au

Further work to define depth to target and scale



### KEY TAKEAWAYS

- Large deep-seated conductivity target focuses exploration activities





### **3. KANMANTOO MINE – WHAT WE HAVE LEARNED**

***UNDERSTANDING THE EXPOSED GEOLOGY  
TO UNLOCK THE OPPORTUNITIES  
UNDER-COVER***

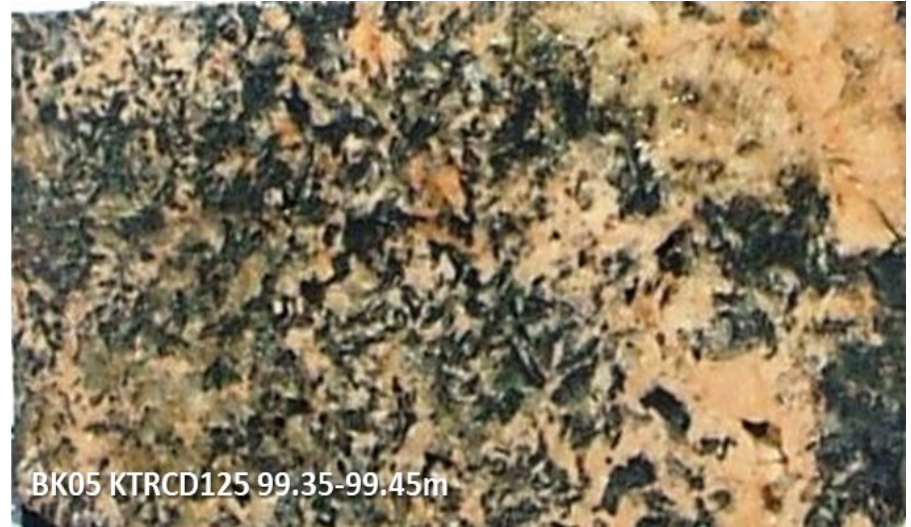


Early igneous activity within the pit are alkali feldspar granite dykes

These are pre-mineralisation  
– U-Pb age dating of monazite  
500.5 +/- 4.6 Ma  
(Uni Adelaide – Dr R. Lilly)

Dykes of highly chloritized  
Albite, K-feldspar, biotite, quartz

To put into a regional context – the  
Delamerian orogeny extends from  
515 to 490 Ma



### KEY TAKEAWAYS

- Magmatic activity is evident during Delamerian Orogen and pre-mineralisation







Undeformed alkali feldspar dykes at the mine site are overprinted with Cu & Fe sulphides

Monazite age dating = 483 +/- 2.4 Ma  
Uni Adelaide – Dr R. Lilly

These dykes are syenites, monzonites to granodiorites and are Cu mineralised

Post main Cu-Ag mineralising event

Post Orogenic deformation



### KEY TAKEAWAYS

- Continuing magmatic activity, with sulphides, is evident post orogenic deformation



Dating of the main copper-gold lodes shows

492 +/- 7 Ma – Wilson, 2009 (Monazite in garnet, within main mineralisation)

Magmatic activity is therefore pre and post mineralisation

And the undeformed post mineralisation felsic dykes are also Cu-Au bearing

Such mineralisation has not been recognised before and is now a new exploration model for South East South Australia



Cu-Au ore from Kanmantoo

### KEY TAKEAWAYS

- Mineralisation is late Cambrian and related to extensional tectonics and magmatism

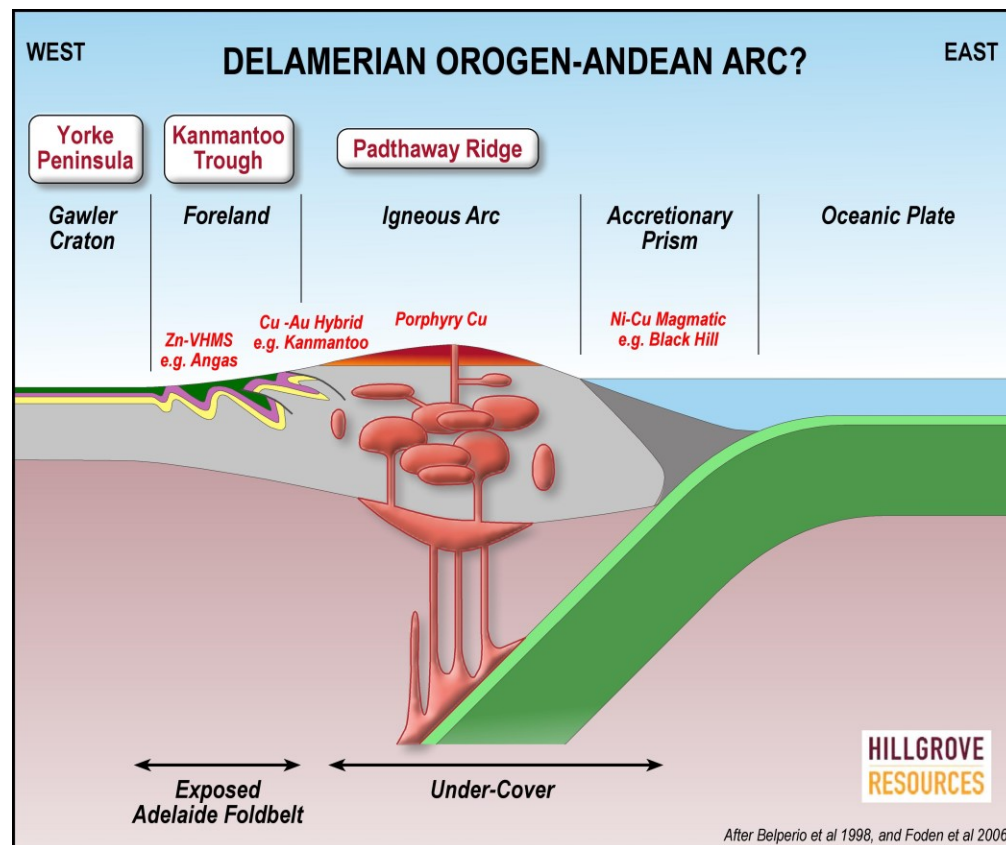


Here is an interpretation of the Delamerian Orogen in south-east South Australia (after Belperio et al, 1998 and Foden et al, 2006)

Kanmantoo is located in the rift basin – the Kanmantoo Trough

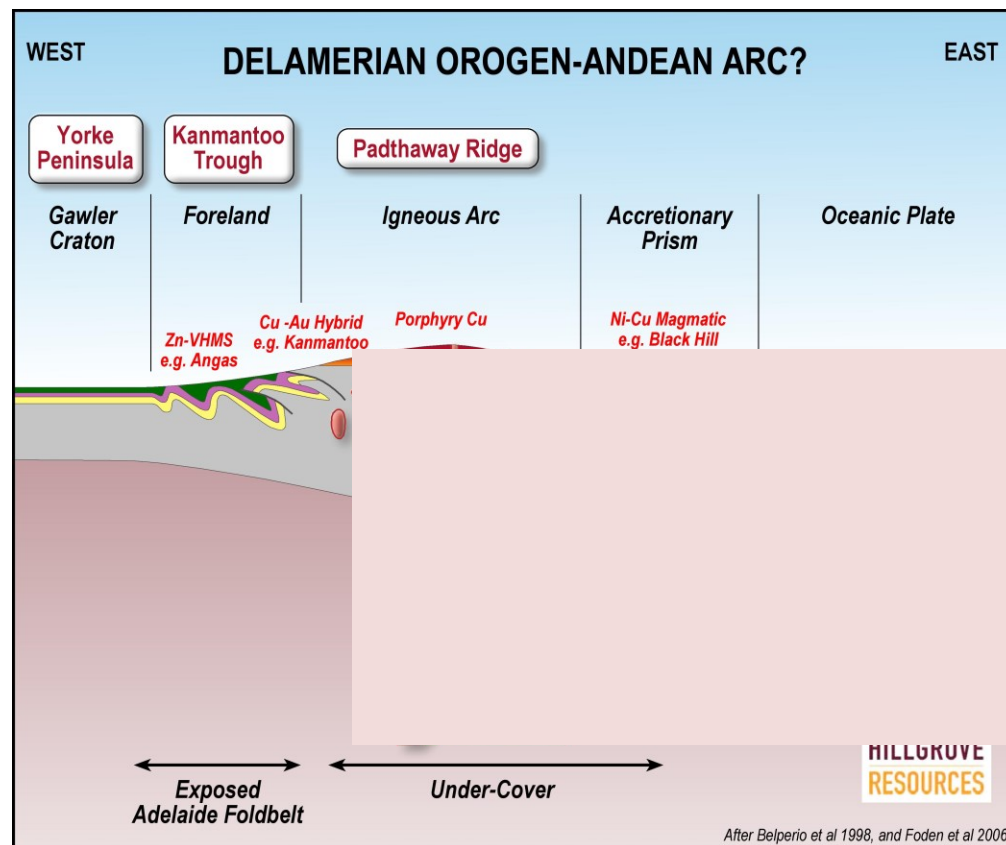
And the Kanappa – Mt Rhine projects are located at the margin of the Magmatic Arc and the Kanmantoo Trough

The Delamerian orogen is interpreted to continue through western Victoria (Stavely Belt) and to Western Tasmania (Mt Lyell, Henty et al)



For the Delamerian orogen in south-east South Australia

Most of the prospective stratigraphy and magmatism is hidden under the cover of the Murray Valley sediments and associated plains.





**4. EXPLORATION IN THE REGION**

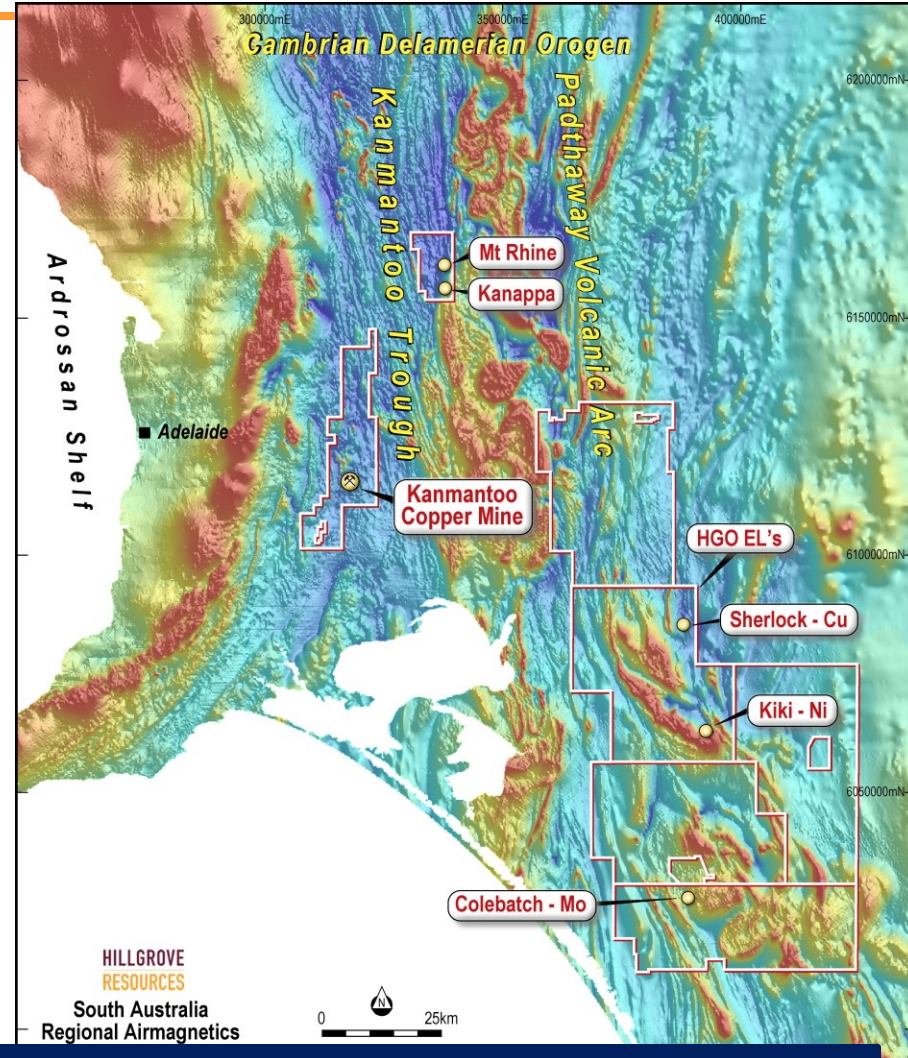
***UNDERSTANDING THE EXPOSED GEOLOGY  
TO UNLOCK THE OPPORTUNITIES  
UNDER-COVER***



The regional magnetics clearly show the Kanmantoo Trough sedimentary basin and the magmatic arc (Padthaway Ridge) to the east

Significant projects for Hillgrove within the Delamerian Orogen include

- Kanmantoo Cu - Au**
- Kanappa Cu - Au**
- Mt Rhine Cu - Au**

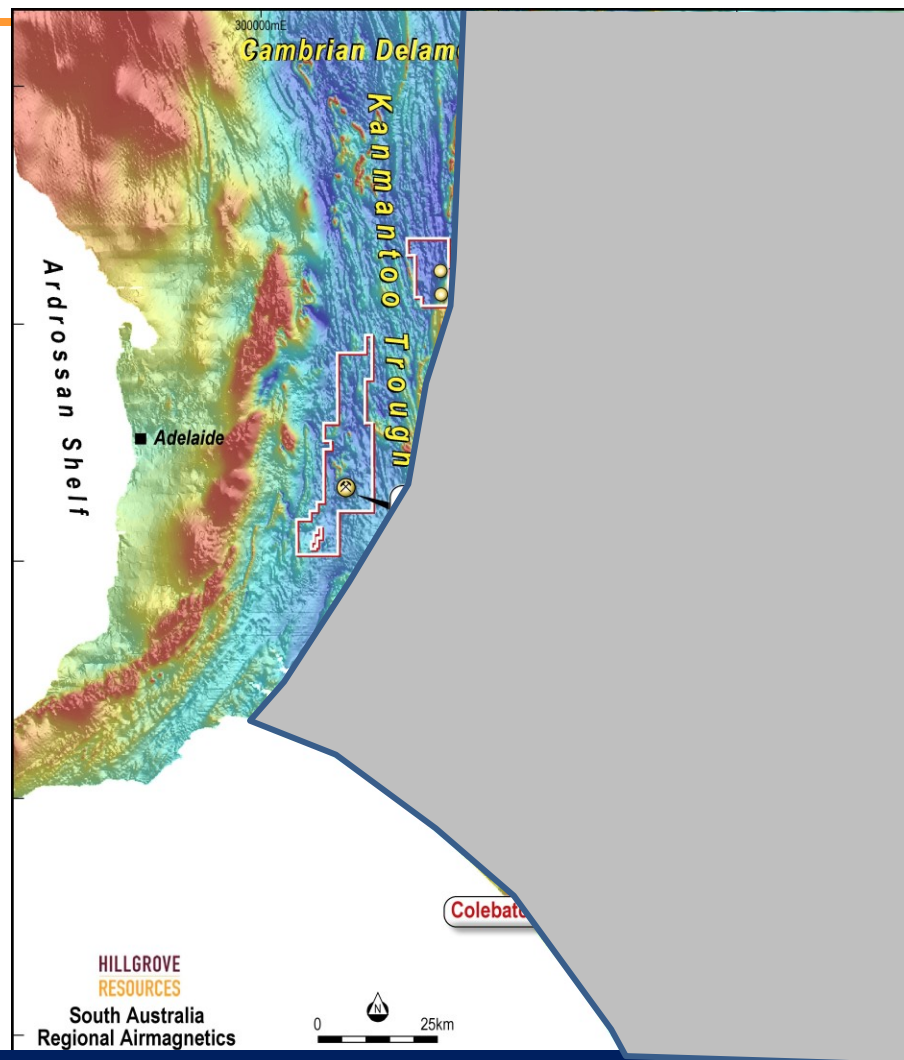


**KEY TAKEAWAYS**

- Strong Cu-Au endowment
- Voluminous magmatic activity



And then there is the portion of the Magmatic Arc that is now covered by the Murray Valley sediments



## KEY TAKEAWAYS

- Voluminous magmatic activity under cover



The Kanappa Cu-Au zone is 50kms from Kanmantoo

A series of pegmatites and aplites intrude into a sequence of Fe and potassic altered schists and carbonates

Soil copper zone 4.4kms long

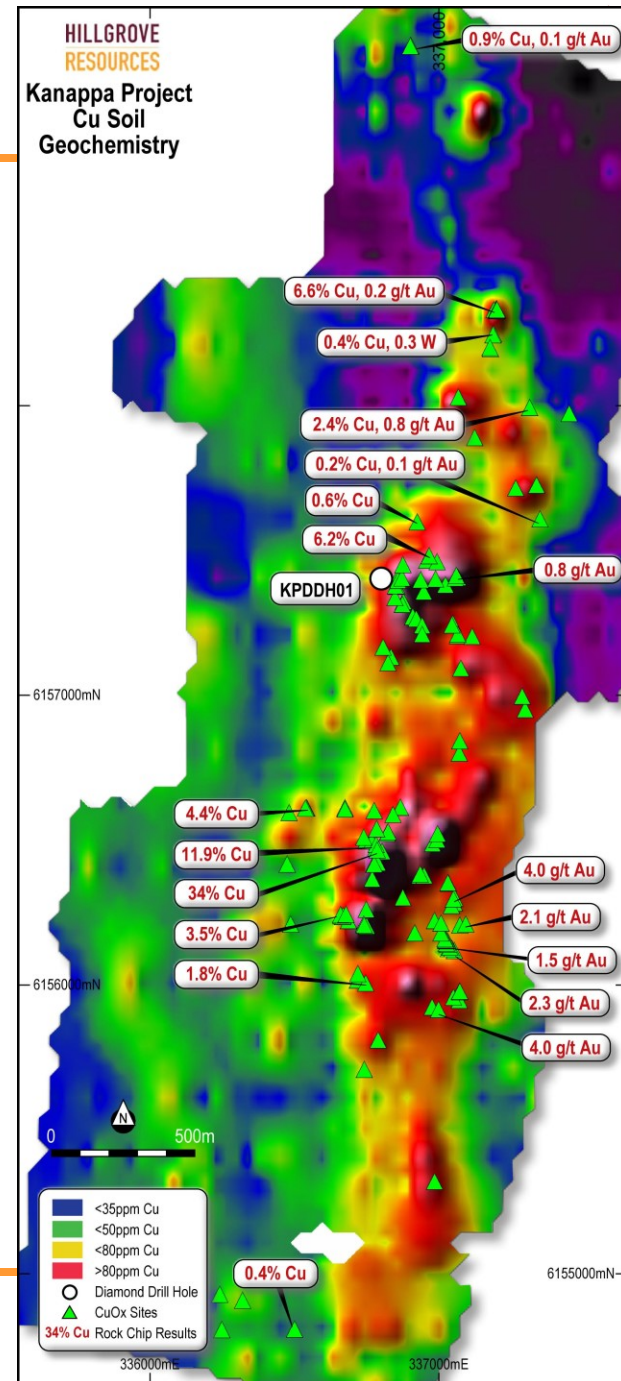
Geochem zoning from west to east

**Cu-Zn => Cu-Bi => Cu-Au => Au => W**

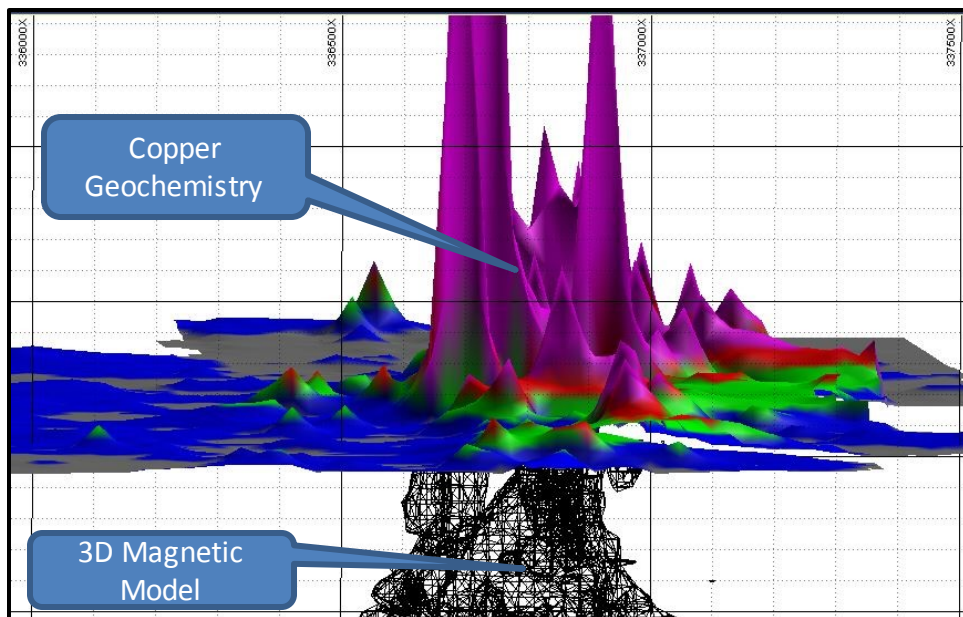
**Peak rock chips of 34% Cu 4.0g/t Au** (separate samples)

### KEY TAKEAWAYS

- Large hydrothermal alteration and Cu-Au mineralised system







Currently being drilled – results expected next month

### KEY TAKEAWAYS

- Magnetic anomalism is strong and not related to rock types, implying it is alteration related
- Best magnetic zones are correlated with the best geochemistry over 2km strike length



The Mt Rhine copper-gold zone is 10kms from Kanappa

Soil copper zone **1.7kms** long

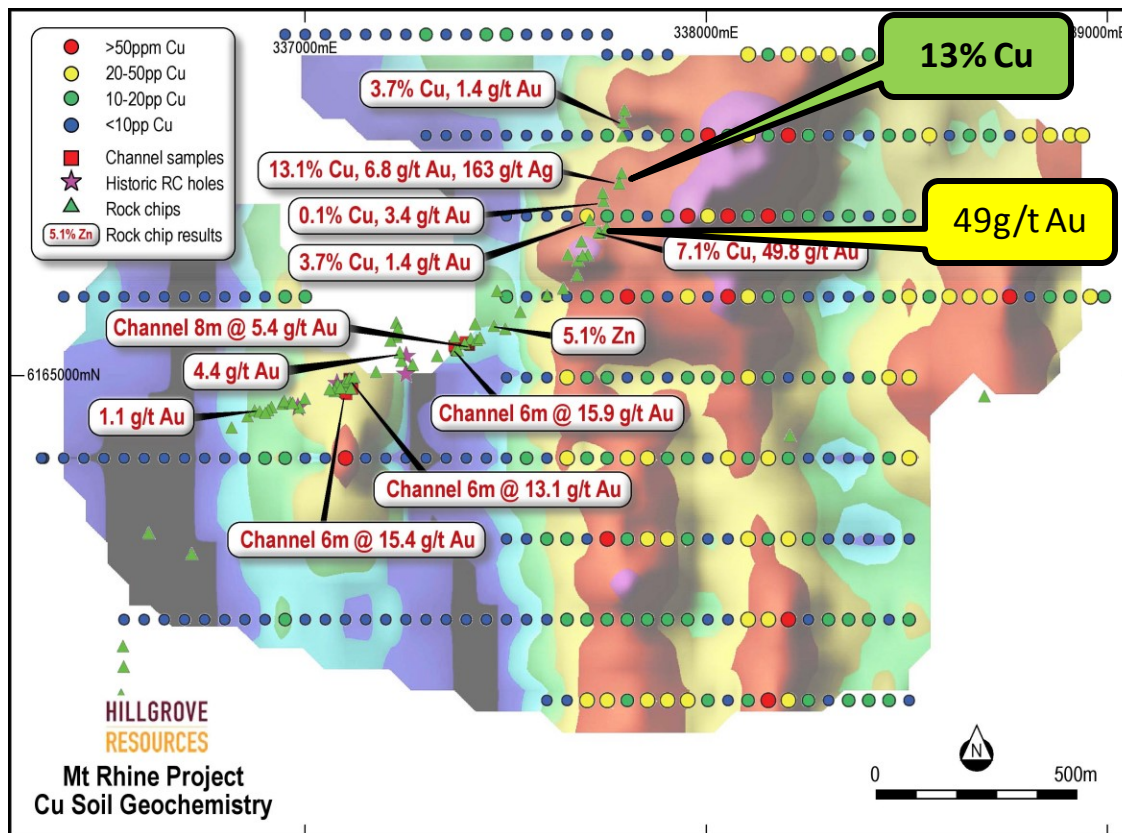
Peak rock chips of **13% Cu**

**49.8g/t Au** (separate samples)

Peak Channel Sampling of 6m @ 15.9g/t Au

**Much higher gold tenor cf Kanappa**

Also completed soils, mags, IP



### KEY TAKEAWAYS

- Large scale alteration system with
- Zone of Cu, IP and magnetic anomalism over 1.7kms long and 500m wide



### **COMPETITIVE ADVANTAGE**

- Fully owned Process Plant and permitted Tailings Facility
- Fully owned Pit as
  - Pseudo-decline or
  - Pumped Hydro Scheme
- Cu-Au endowed tenements with access rights

### **GROWTH COPPER-GOLD PROJECTS**

- Kanmantoo underground access is now permitted
- Kanmantoo near mine projects under evaluation for Underground opportunities
- Kanappa Cu-Au 2km long zone currently being drilled
- Evaluation of Magmatic Cu-Au systems

### **USING SCIENCE TO WORK FROM KNOWN TO THE UNKNOWN**

**Kanmantoo is located within a significant copper-gold province  
Which is being systematically uncovered by Hillgrove Resources**

