

7 December 2018

## Mutooroo Copper-Cobalt District: Emerging New Discoveries

**Havilah Resources Limited (Havilah)** is pleased to present a technical presentation, entitled "The Mutooroo Copper-Cobalt District: Emerging New Discoveries", which is being presented at the South Australian Exploration and Mining Conference today by Chief Geologist, Andy Price.

This presentation highlights Havilah's successful low-cost exploration strategy during 2018, which has resulted in the definition of several high priority copper-cobalt drill targets in the Mutooroo Copper-Cobalt District. This district, covering 720 km<sup>2</sup> of Havilah exploration tenements, encompasses copper-cobalt prospective terrain with high potential for new discoveries.

Havilah is systematically targeting copper and cobalt, in northeastern South Australia, in line with its [Copper Strategy – Enhanced by Cobalt](#). It plans to expand the Mutooroo Copper-Cobalt District exploration program in 2019 in support of an expanded Mutooroo project scope, which will target resources within trucking distance of the current Mutooroo deposit. This will be supported by a comprehensive metallurgical testing program for the copper stream. Cobalt remains a valuable component that could add significant value in the future but quantifying and realising the scope of this potential upside requires more detailed study. The recommended commencement of a scoping level study into a copper only project with an increased throughput and extended mine life can be funded without raising additional capital.

Details of the Mutooroo execution strategy for 2019 will be provided at Havilah's AGM.

The presentation will also be available on the Company's website at [www.havilah-resources.com.au](http://www.havilah-resources.com.au).

For further information visit [www.havilah-resources.com.au](http://www.havilah-resources.com.au)

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# Havilah Resources



**The Mutooroo Copper - Cobalt District:  
Emerging New Discoveries**



# Cautionary and Competent Person Statement



## Cautionary Statement

The information contained in this presentation is not financial product advice. The presentation is for information purposes and is of a general and summary nature only. Neither Havilah Resources Limited (Havilah) nor any member of the Havilah Group of companies, gives any warranties in relation to the statements and information in this presentation. Investors should seek appropriate advice on their own objectives, financial situation and needs.

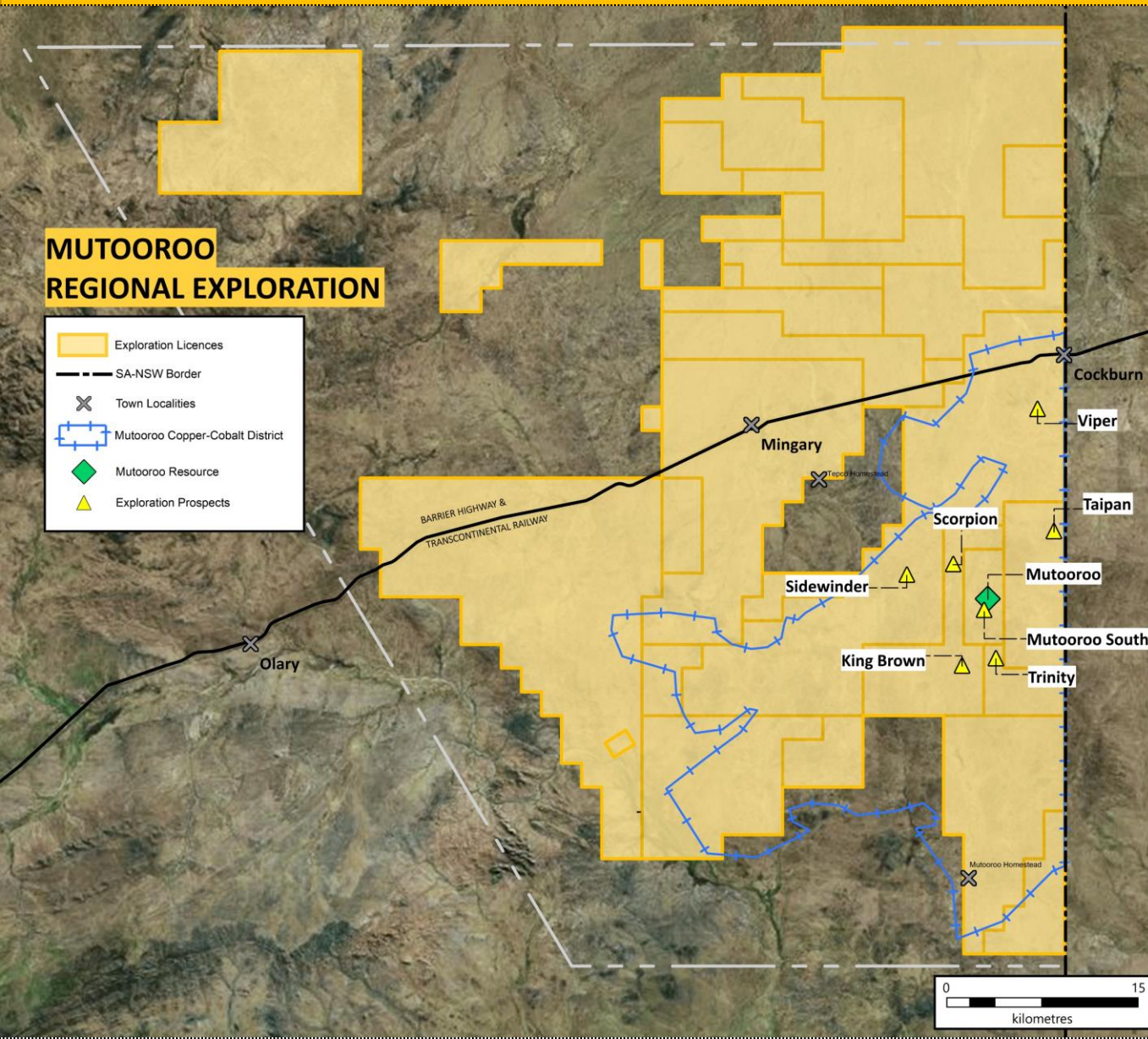
This presentation contains certain statements which may constitute “forward-looking statements”. Such statements are only predictions and are subject to inherent risks and uncertainties which could cause actual values, performance or achievements to differ materially from those expressed, implied or otherwise.

Investors are cautioned that forward-looking statements are not guarantees of future performance and investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.

## Competent Person Statement

The information in this presentation that relates to Exploration Targets, Exploration Results, Mineral Resources and Ore Reserves is based on data compiled by geologist, Dr Chris Giles, a Competent Person who is a member of The Australian Institute of Geoscientists. Dr Giles is a Director of the Company and is employed by Havilah on a consultancy agreement. Dr Giles has sufficient experience, which is relevant to the style of mineralisation and type of deposit and activities described herein, to qualify as a Competent Person as defined in the 2012 Edition of “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Dr Giles consents to the inclusion in this presentation of the matters based on his information in the form and context in which it appears. Information for 2018 exploration results complies with the JORC Code 2012. All other information was prepared and first disclosed under the JORC Code 2004 on the basis that the information has not materially changed since it was last reported.

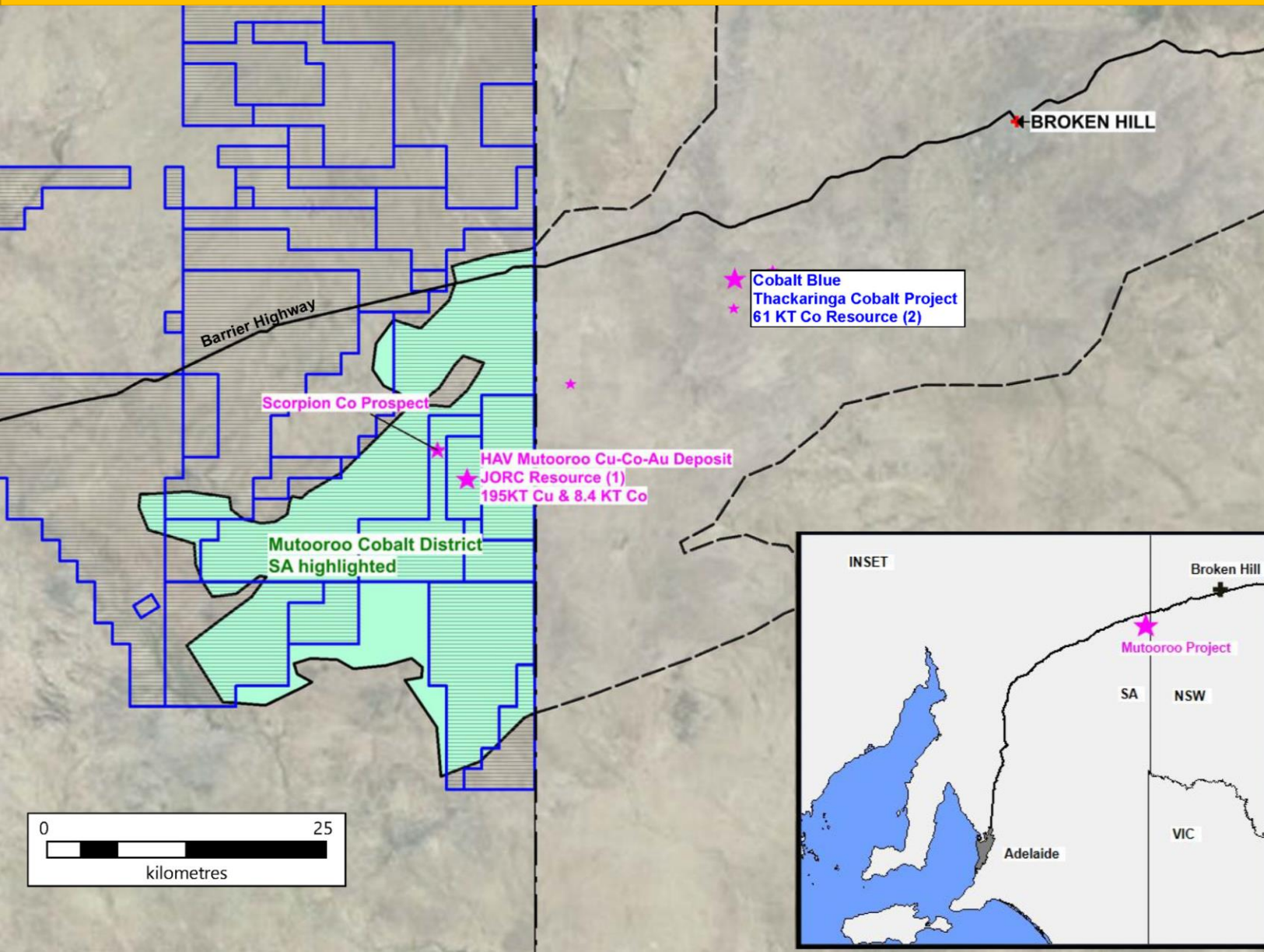
# Introduction



- Location
- Large strategic tenement holding acquired over time
- Covers majority of the Mutooroo Copper-Cobalt District in SA
- Centred around Mutooroo Cu-Co-Au deposit drilled 2007-2009
- Minimal cobalt exploration outside Mutooroo deposit
- Need to develop exploration strategy for **priority Mutooroo style Cu-Co-Au**

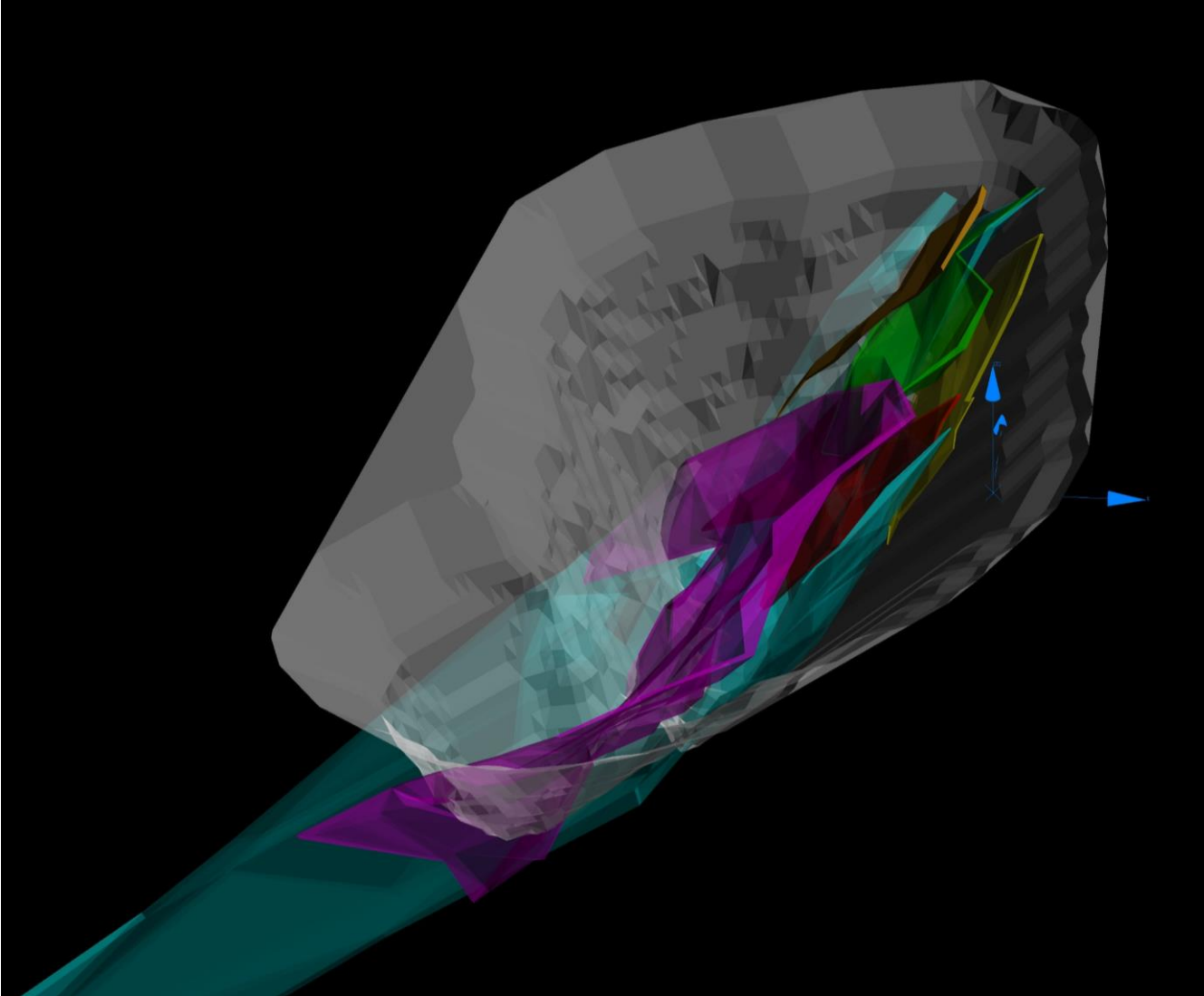


# Mutooroo Copper-Cobalt District



- Covers Broken Hill and Thackaringa Group lithologies
- Includes Mutooroo Cu-Co deposit and new prospects
- NSW extension includes Thackaringa Co project
- Western edge broadly follows the boundary between the BHD and OD marked by increase in magnetic response, = major NE structure
- Southern margin defined by Adelaidean cover

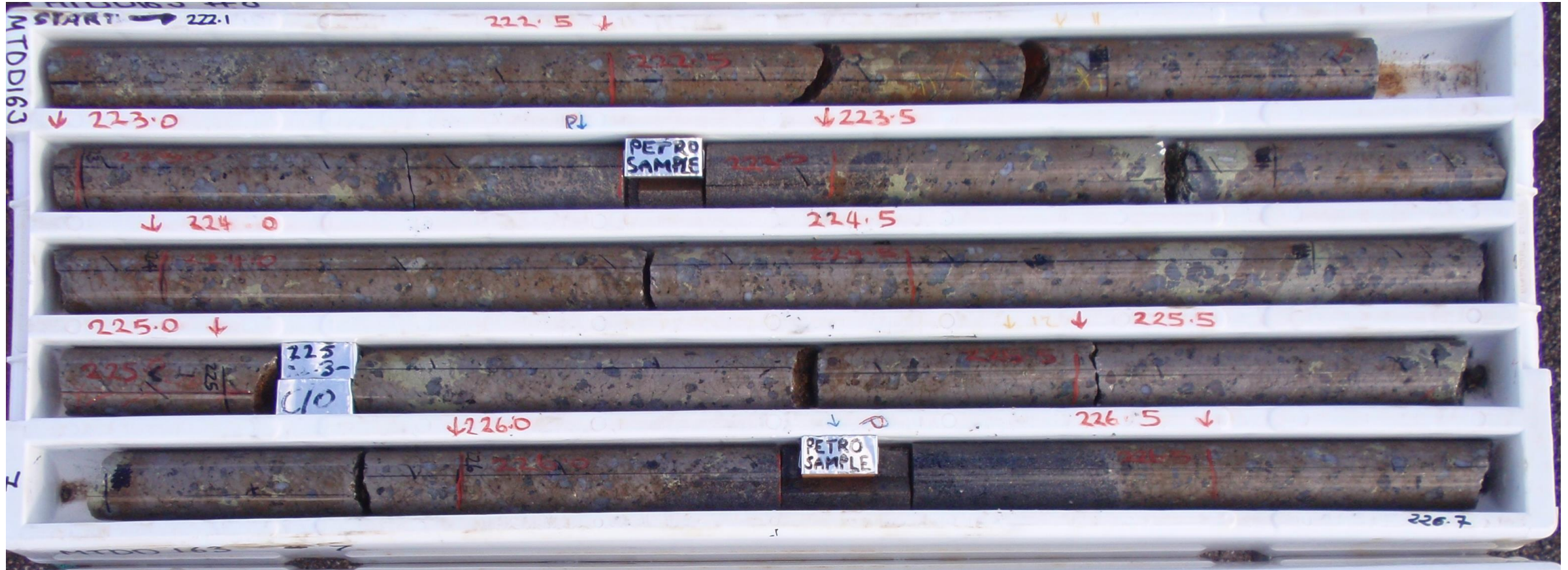
# Mutooroo Cu-Co-Au Deposit



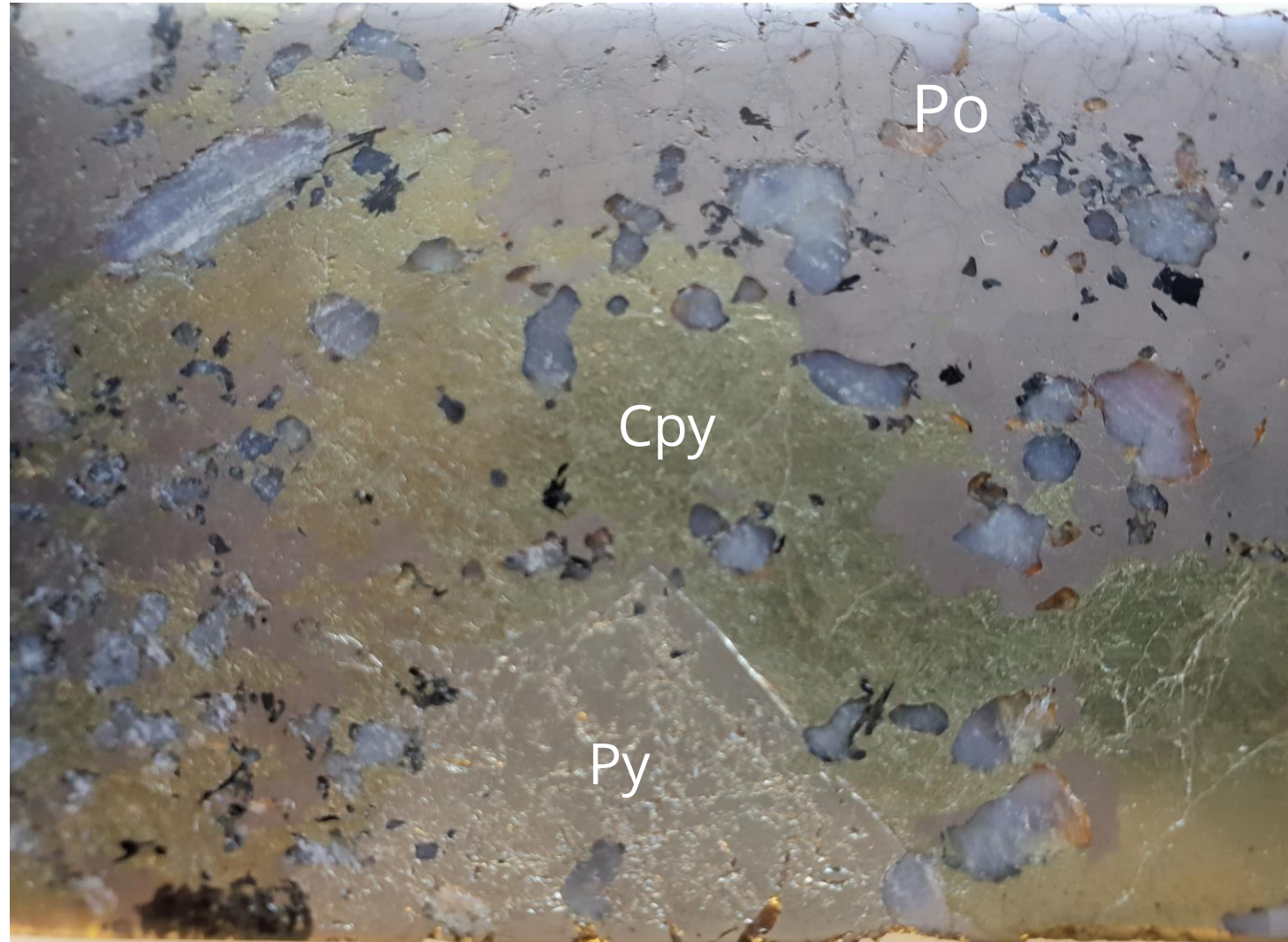
- Lode structure/shear outcrops for ~ 2kms
- Dips 45° W, hosted by shear/fracture zones in thick (+100m) amphibolite body in felsic gneisses and schists
- Series of stacked, en echelon, sulphide breccia lodes with quartz & altered rock fragments
- Oxidised to ~ 30m
- Po dominant sulphides, Po>>Py-Cpy
- Sulphide content of lodes 10-80%
- Resource 195 KT Cu, 8.4 KT Co & 44 K oz Au
- Pit shell contains ~3.5 MT @ 1.5% Cu & 0.14% Co



# Mutooroo Primary Massive Sulphide Breccia



# The Good Stuff!



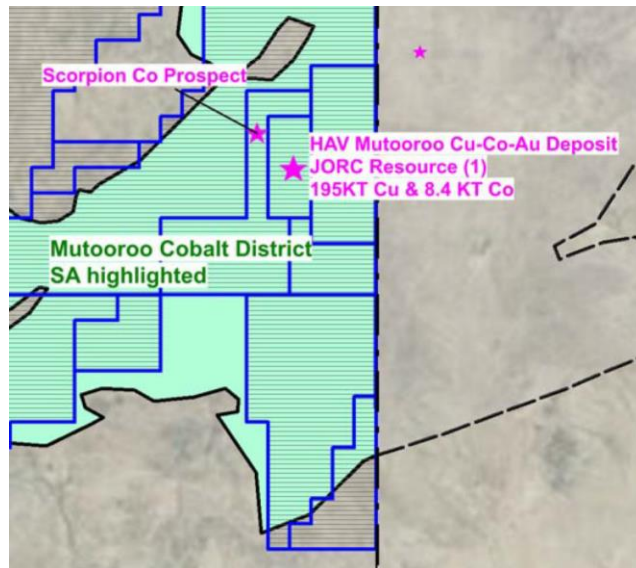
60mm



# Surface Expression of Mutooroo Style Min



- Fe lag (gossan derived) can be found up to 200m from outcrop/source
- Depletion in oxide zone **but** Co > Cu in Fe lag
- E.g. Mutooroo Sth Fe lag
  - Max 3,230 ppm Co
  - Max 1,830 ppm Cu





# Regional Exploration Strategy 2018

- All previous HAV work (2007-2010) targeted at Mutooroo Resource
- Needed a plan to investigate regional Cu-Co potential!
  1. Compile historical data
    - a. **Drilling data**
    - b. **Surface geochem**
    - c. Geophysics
  2. Regional sampling
  3. Drilling (2019)

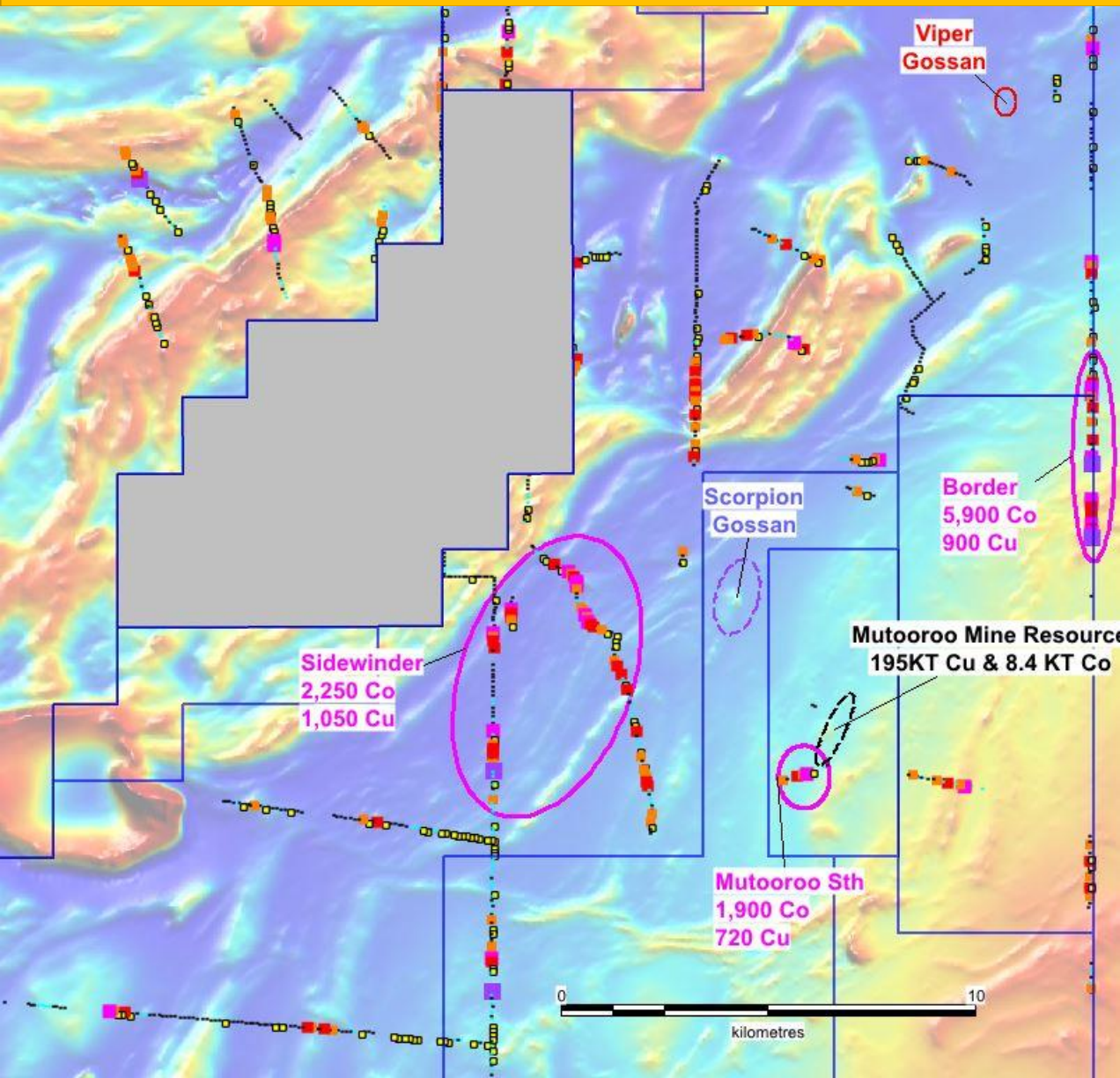


# Regional Open File Geochem Data Compilation

- **Total 12,153 open file surface samples collated**
  - Incl RX, SO, CC, SS, AUG
- **Most interest from 1985 Regional Ironstone**
  - 1,485 samples
  - **Very high Co to 5,900 ppm**
    - 101 samples > 500 ppm Co
    - 36 samples > 1,000 ppm Co
  - Also **high Cu to 3,000 ppm, Au to 1.7 g/t**

Co	Co
85	25
95	35
90	700
210	15
28	85
130	110
40	250
75	340
11	20
30	25
50	60
85	1650
170	5900
110	1650
85	1500
110	580
720	580
26	520
130	720
55	1200
1100	10
400	700
880	1900
1150	2550
1200	30
270	120
28	50
36	180
75	130
220	25
350	320
430	25
180	30
1600	20
390	30
1100	15
800	25
520	310
70	25
280	30

# Regional Open File Ironstone Results



## Questions?

- Are they real?
- Located within HAV tenure?
- Due to Fe/Mn scavenging?
- How/what was collected?

## Field validation required

- Need to develop regional sampling method



# Reconnaissance May 2018

## Site visit aims

- Regolith assess
- Ironstone - types, abundance
- Undertake confirmatory sampling
- Relocate lost “ironstone” (Viper)

## Conclusions/Findings

- Soils are mostly windblown/transported **X**
- -6+1mm sieved lag – no good **X**
- Selective Fe lag method developed **✓**
- Most sites returned confirmatory results **✓**
- Textures indicate sulphide source **✓**
- Rediscovered Viper gossan **✓**



# Selective Fe Lag Method

- Traverses up to 5km, teams of 2, incl a geo, 140 line kms walked to date
- Line spacing 1 km to 250m, samples every 100m (where Fe lag available)
- Search for suitable Fe lag, up to 50m radius, min 250 gm composite
- Record – sample area size, % of Fe lag, max size of Fe, Fe type, other float, o/c





# Preferred Ironstone Types

- Massive, black to dark brown ironstone, angular
- Vein/BX quartz fragments
- Boxwork textures
- Pseudomorphs after Py
- Commonly returns strong Cu-Co results



# Non Preferred “Ironstone” Material

- Earthy brown-orange-black ferricreted Tertiary grit/sand cover and ferruginised basement saprolite (Fe duricrust + mottled zone)
  - Appears related to Tertiary lateritic weathering, results in local Fe dominant lag areas/plateaux
  - Nearly always returns very low results, generally not sampled if preferred ironstone is available
- Roo poo (fresh = black and shiny), very deceptive, light weight a clue!
- Tektites

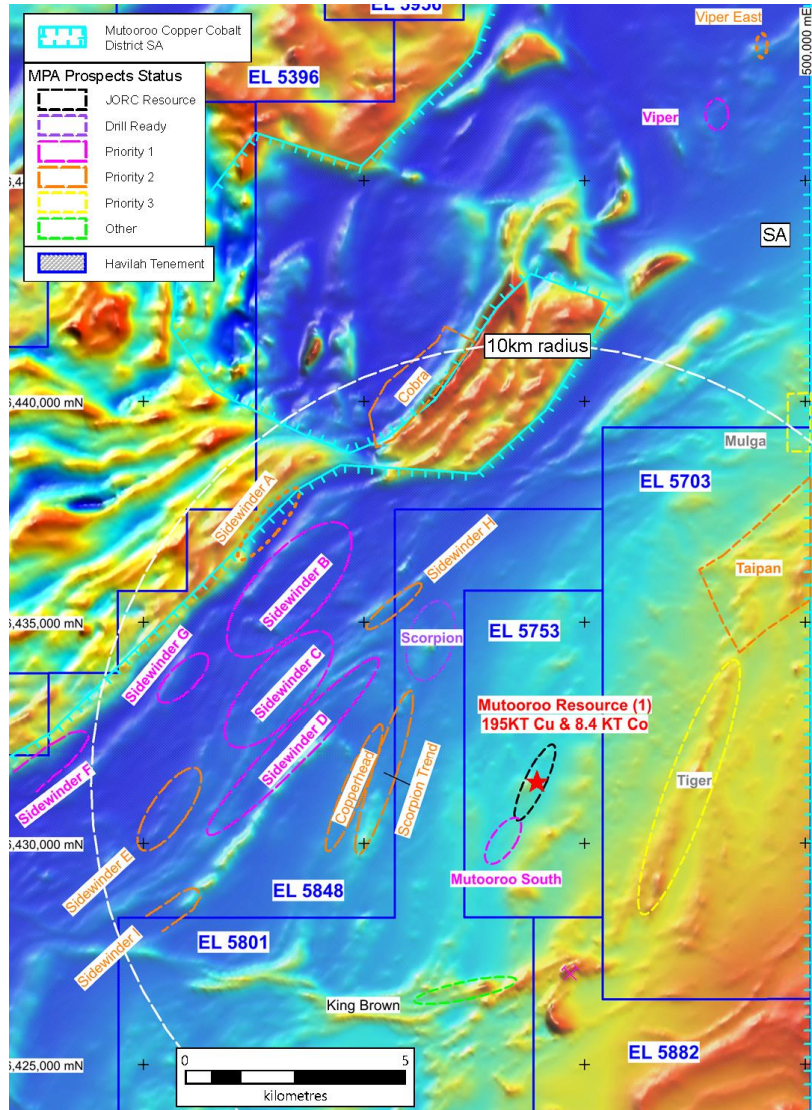


# Fe Lag Sampling





# Overview of Havilah Fe Lag Sampling Results

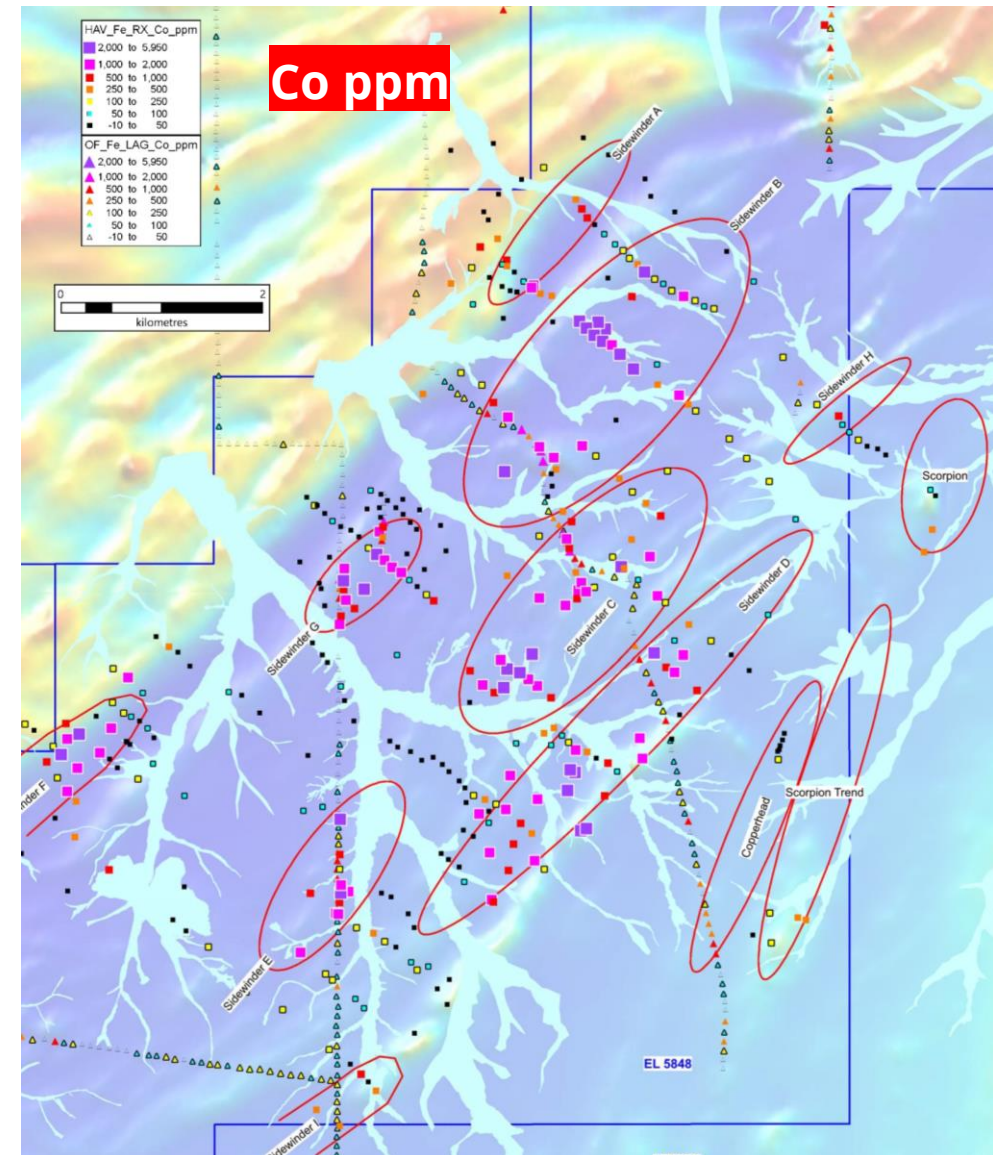


## Several large high Priority Cu-Co targets defined by Fe lag sampling

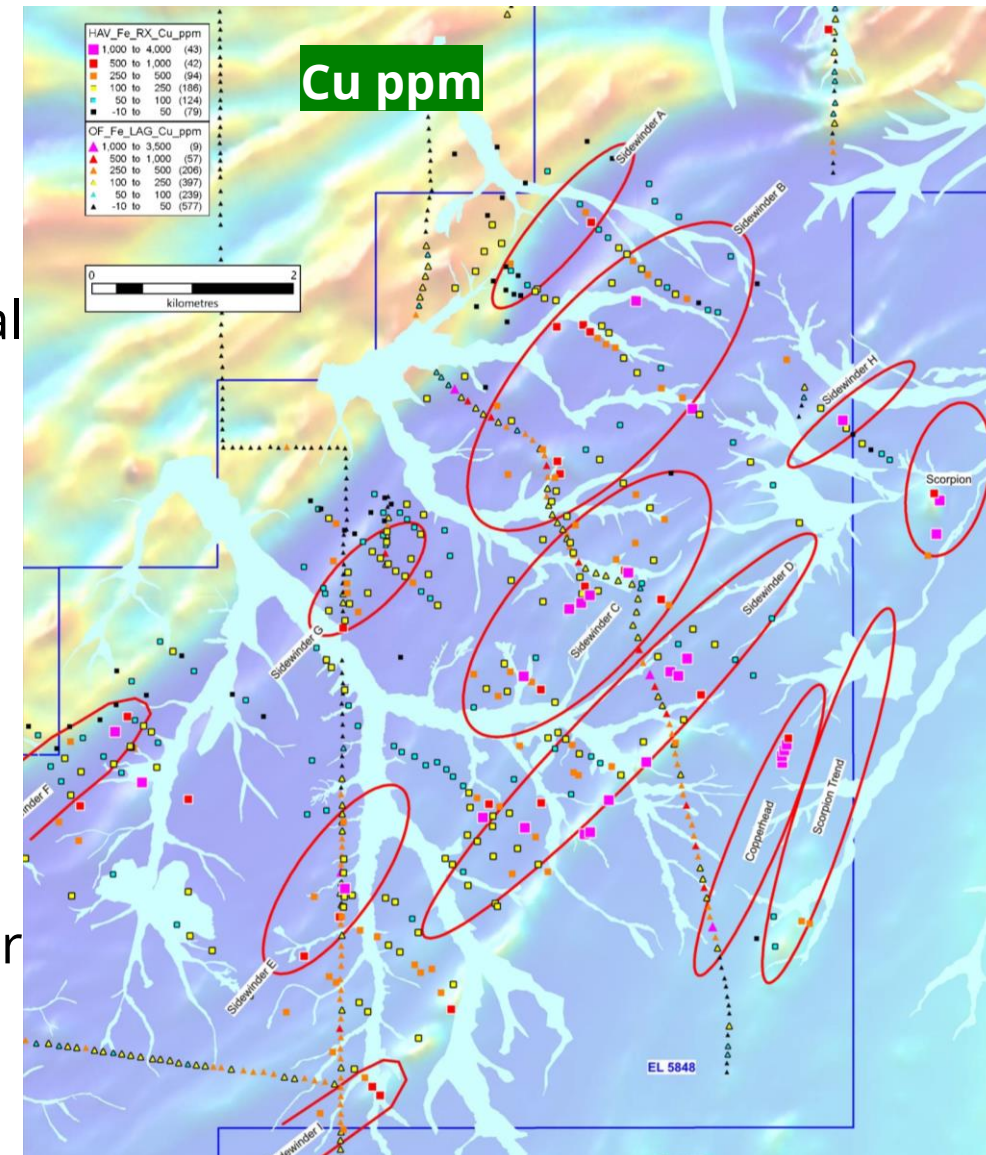
- **Sidewinder** - redefined as several anomalies with Cu to 2,230 ppm Co to 3,460 ppm
- **Viper** – outcropping gossan, ~300m strike, Cu to 2,590 ppm, Co to 1,630 ppm and Au to 1.03 g/t
- **Mutooroo South** – potential 1 km extension to south, beyond old workings and drilling, max Cu to 1,830 ppm and Co to 3,230 ppm
- **Taipan** - more Co dominant, max Co to 5,950 ppm, Cu to 748 ppm



# Sidewinder Area Fe Lag Results

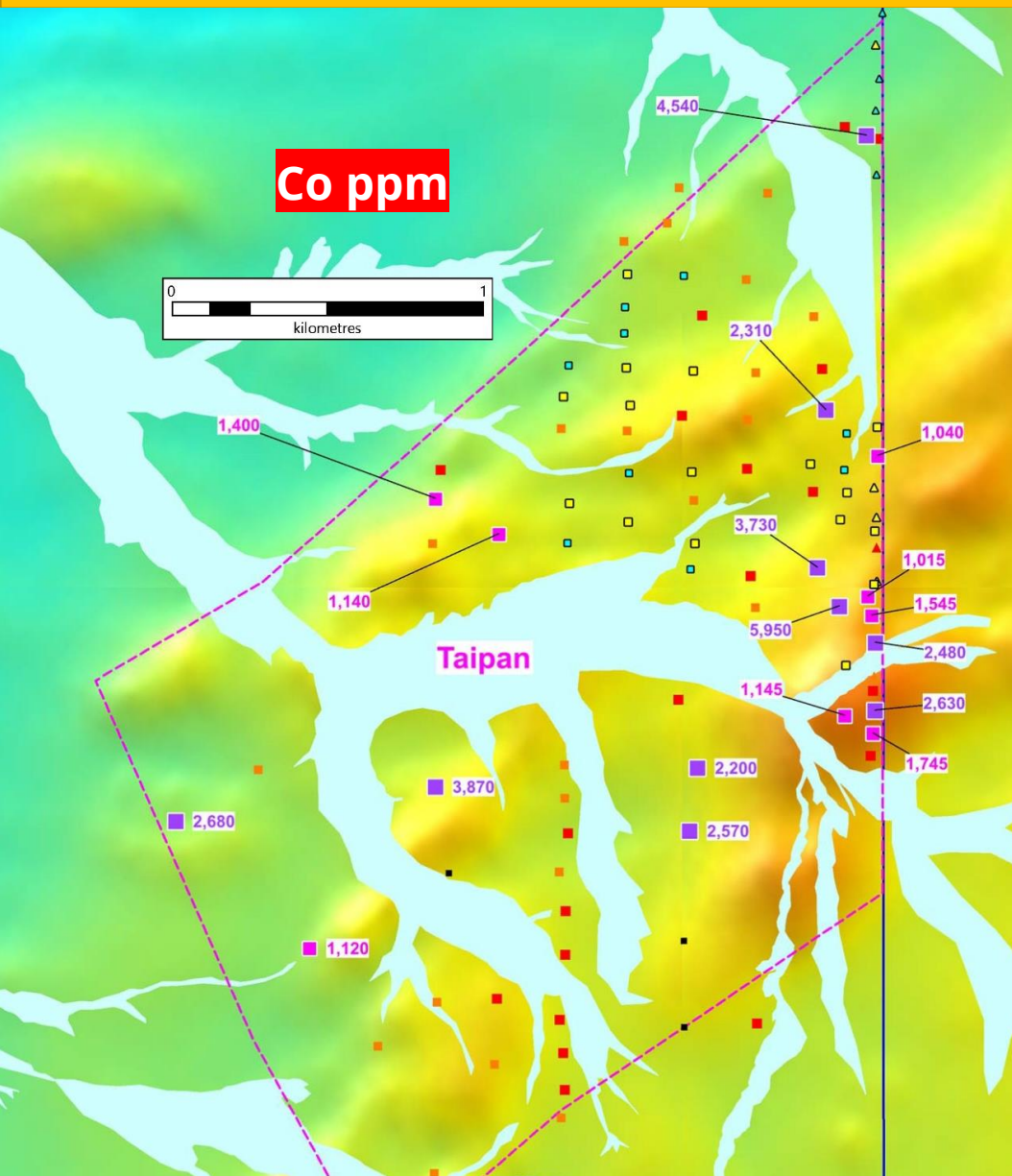


- Key points**
- Association with lower mag areas  
BHD vs OD?
  - Strong NE structural fabric + control?
  - Large size of Sidewinder
  - Mostly Cu-Co but some Cu only (Copperhead)
  - Scorpion Trend – mag anomalies under shallow cover
  - Influence of alluvium





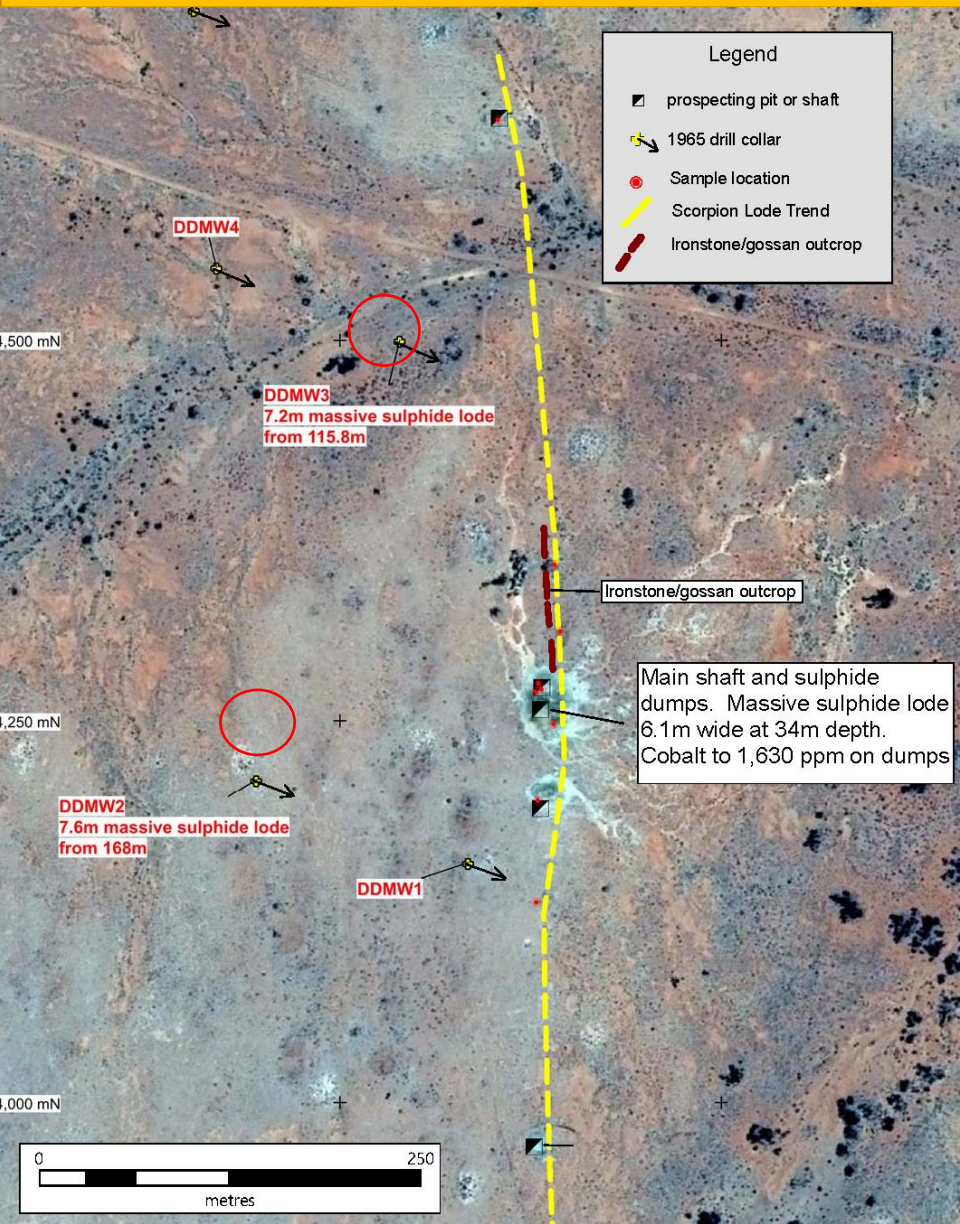
# Taipan Fe Lag Results



- Large prospect ~4.5 km<sup>2</sup>, open to west
- Extends from NSW border, large areas of alluvium
- Cobalt dominant, max 5,950 ppm
- Associated with weak magnetic lithology?
- Maybe "Thackaringa" style?



# Scorpion Prospect



- Data compilation and review early 2018
- No exploration for +50 years
- Gossan, old workings
- Wide massive sulphides in 2 x DDH, Cu only
- Significant sulphide potential
- Drilling planned + GEM
- Strike potential - mag anomalies (shallow cover)

# 2019 Plans

- **Drill ready – additional resource potential**
  - Scorpion – RC drill  $\pm$  GEM
- **First pass drill test new targets (RC  $\pm$  GEM)**
  - Sidewinder
  - Viper
  - Mutooroo South
  - Scorpion Trend
  - Copperhead
- **Continue with regional Fe lag sampling**
- **Regional AEM?**