



Targeting  
Golden Grove - type  
VHMS Deposits  
at Wongan Hills, W.A.

Chris Ringrose – Managing Director | October 2018





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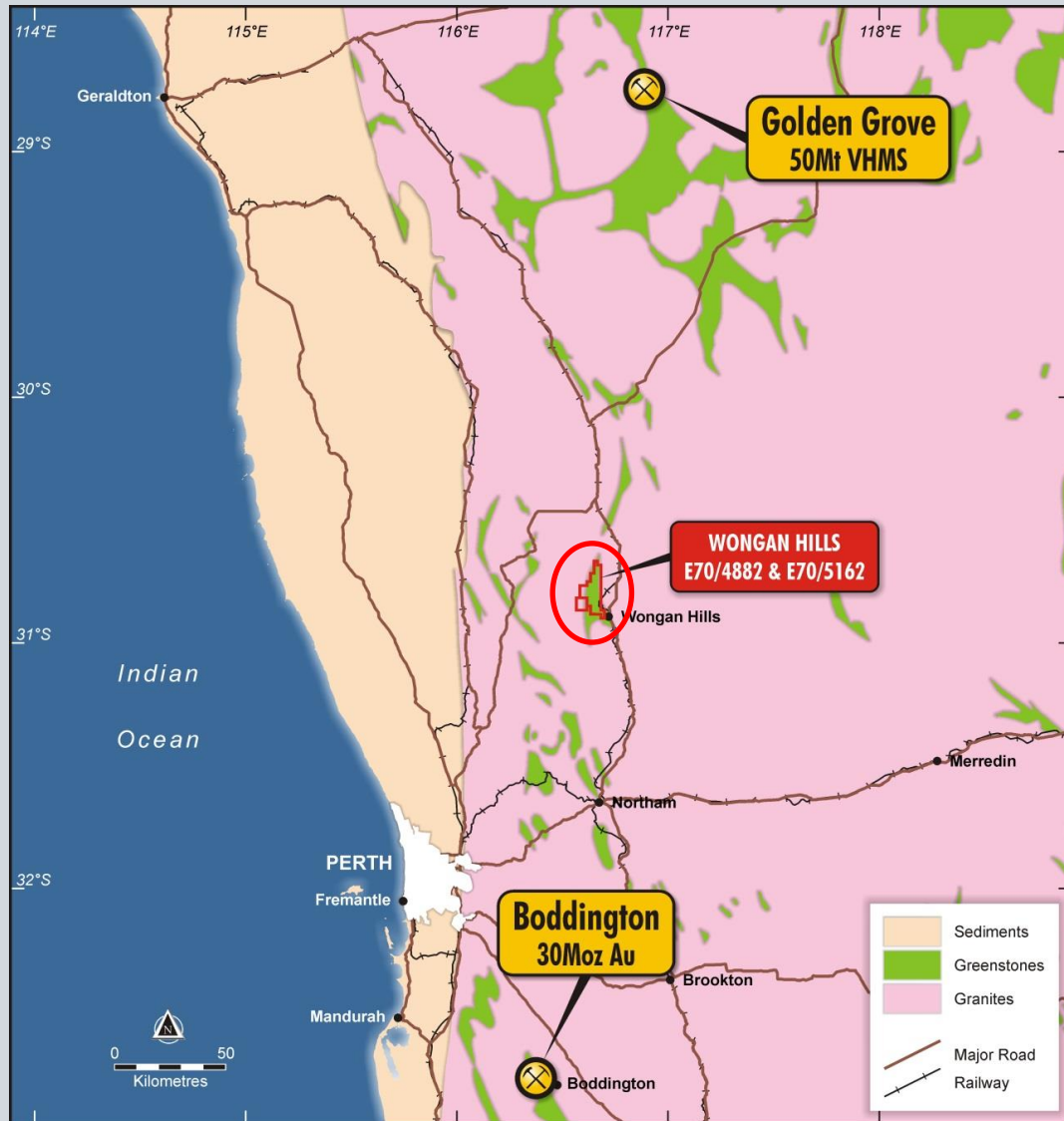
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# WONGAN HILLS







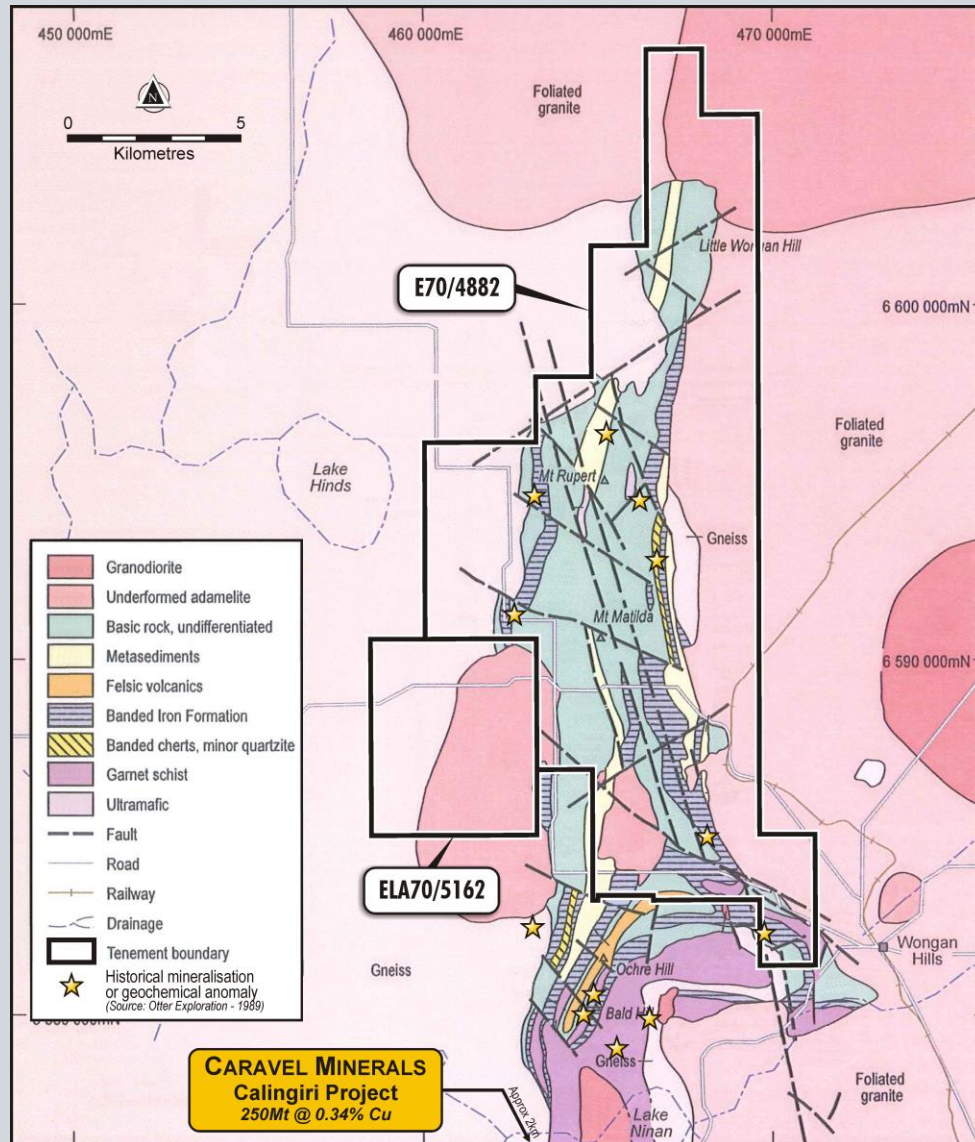
**Cullen holds 90% of granted EL 70/4882 (145 sq. km) and ELA 70/5162 (26 sq. km) with Tregor Pty Ltd (10%).**

The project is very favourably located just 180km from Perth by road and 15km from the wheatbelt town of Wongan Hills offering roads access, power, housing, water and labour.

The project area also has rail connections to the ports of Fremantle and Geraldton.

The tenure covers mostly freehold private farmland which will necessitate the signing of compensation agreements (currently being developed) to allow for surface exploration, including drilling.

Geologically, the region hosts two very significant, world-class orebodies – at Boddington (gold) and Golden Grove (base metals).



The WH region offers a prospective geology with interpreted BIFs, mafic and felsic volcanics and numerous known prospects and Cu-Pb-Zn-Ag-Au mineral showings including:

- Ninan
- Ninan North
- Bald Hill
- Area 2
- Rogers & Follets gossans
- Mt Rupert
- Mt Matilda etc.

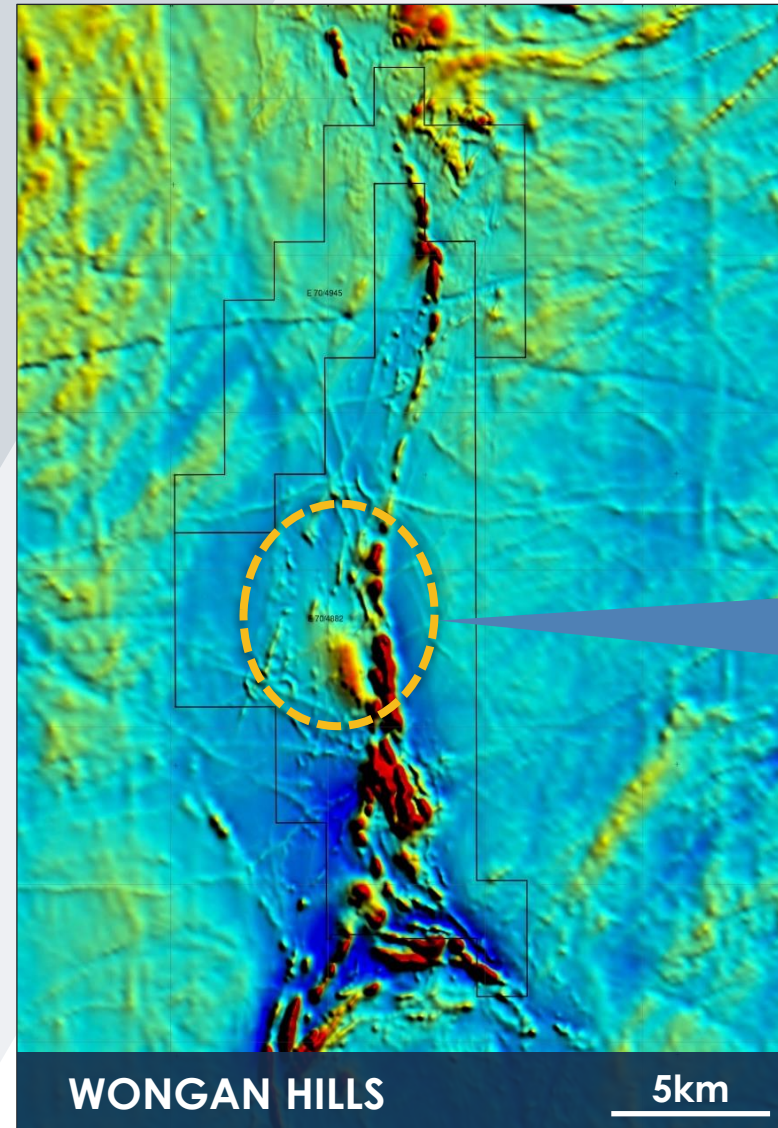
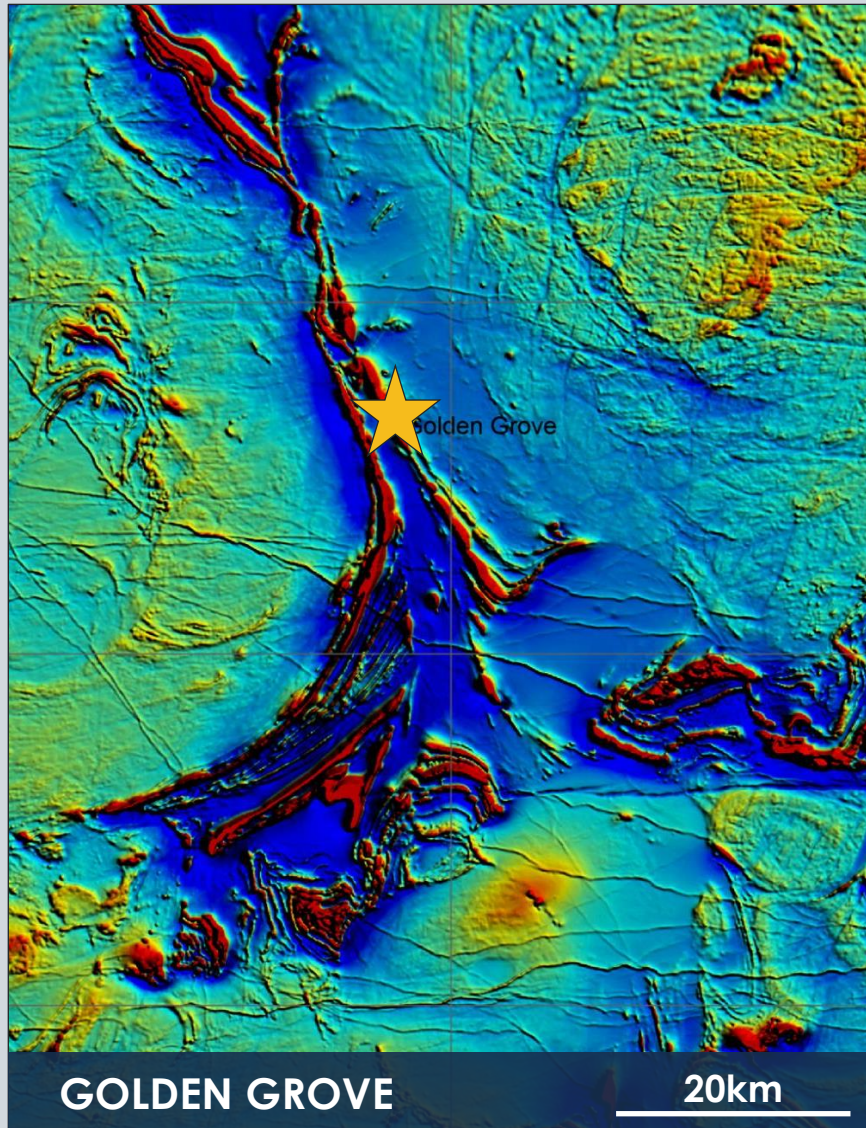
It is also notable that Caravel Minerals' Calingiri Project, lies just ~15-20 km to the south where 250Mt @ 0.34% Cu (Consolidated Indicated and Inferred Resource Estimate at (0.25% cut-off) has been delineated.

[www.caravelminerals.com.au](http://www.caravelminerals.com.au)

Geology from : Karajas, J., 2005. Swancove Enterprises Pty Ltd. Combined annual mineral exploration report – E70-2437 and E/70-2443, Wongan Hills. For the Year to 14 January, 2005. WAMEX report A70056.



# Golden Grove vs. Wongan Hills Greenstone Belts

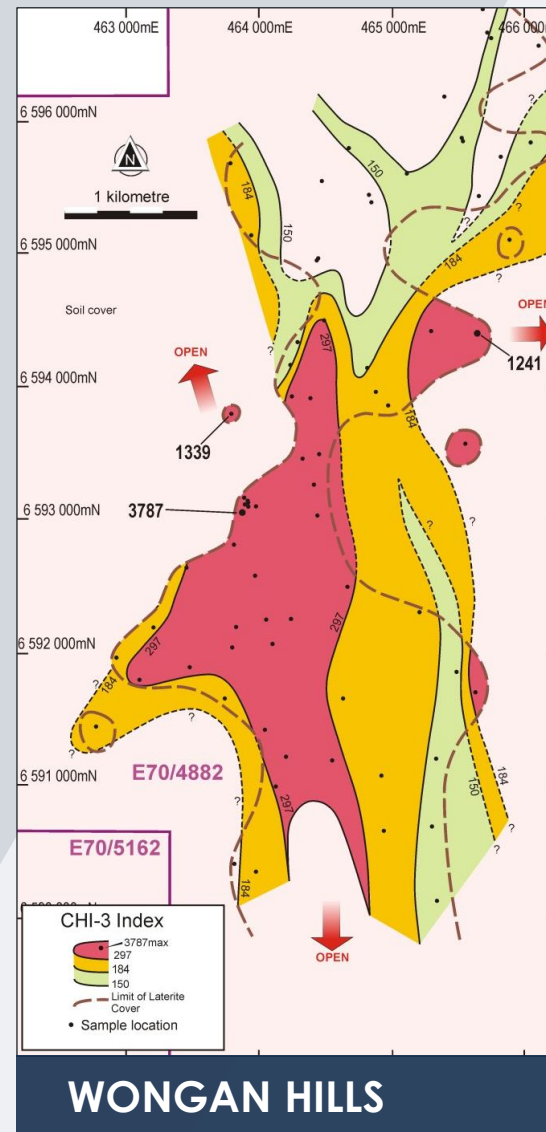
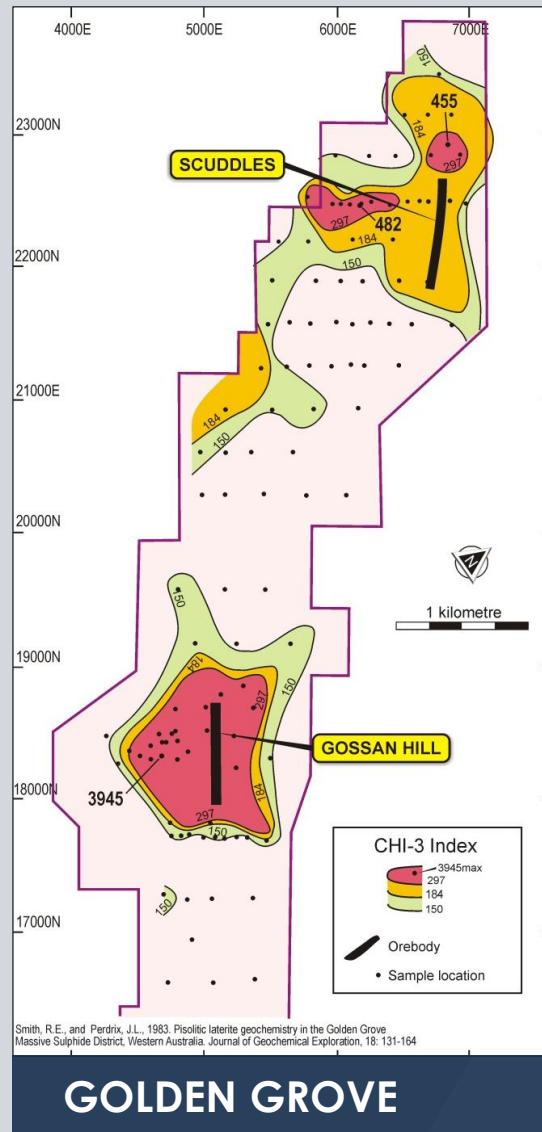


Golden Grove and the Wongan Hills projects are both located in Archaen greenstone belts, Yilgarn Block, W.A.

Core of several overlapping geochem. anomalies: Sn, Au, Ag, Cu and others.

Aeromagnetic Images

# Golden Grove vs. Wongan Hills Laterite Geochem. | CHI-3 Index



Cullen's laterite samples from Wongan Hills, show tin (Sn) levels as high as the best anomalies at Gossan Hill deposit at Golden Grove, W.A. (117 vs. 95ppm).

The "CHI-3" geochem. index for laterite samples at WH also has high levels, equivalent to those at Gossan Hill and Scuddles. WH shows a compelling CHI-3 peak of 3787, vs. Golden Grove, 3945.

Note – there are open positions to anomalies beyond the limit of laterite at WH and in several directions.

$$\text{CHI-3} = \text{As} + 3\text{Sb} + 10\text{Bi} + 10\text{Cd} + 10\text{In} + 3\text{Mo} + 30\text{Ag} + 30\text{Sn}$$





In summary, the Wongan Hills Project lies within an Archaean greenstone belt with known Cu-Au mineralisation and is in Cullen's opinion, a very favourable setting for the location of a Golden Grove-type, Volcanic-Hosted Massive Sulphide deposit (VHMS). Compelling laterite geochemistry with similarities to that of the 50Mt Golden Grove VHMS system, supports this premise.

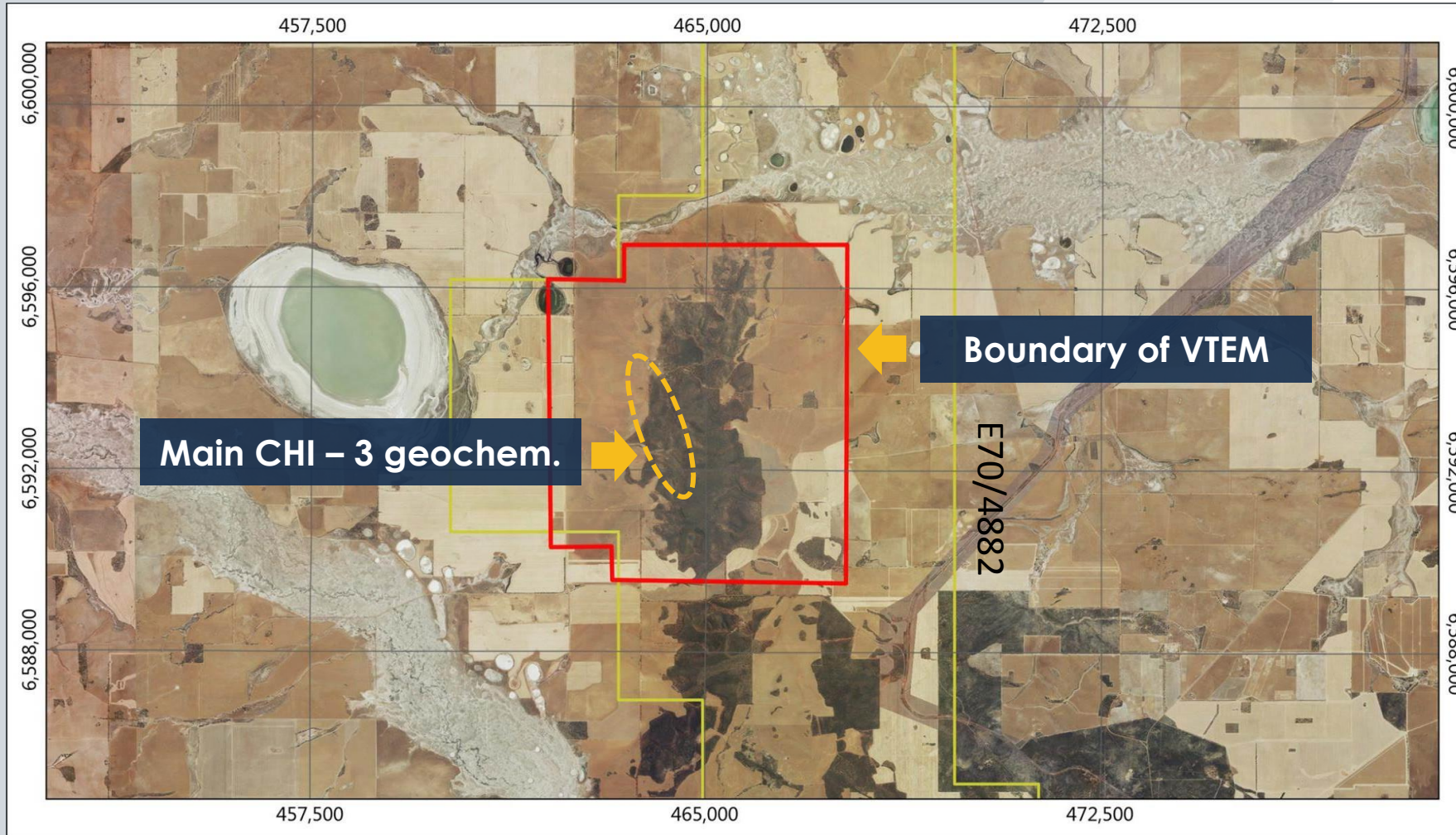
Sn-As-Bi-Sb-Mo-W-Se-Ag +/- Cu-Au laterite geochem. with peak CHI - 3 geochemical index score of 3787 - compared to Golden Grove CHI - 3 score of 3945; and a +3km historical Au-Ag-Cu soil anomaly ("Louise") adjacent to the multi-element laterite anomaly. There has been no previous drilling across the major parts of the multiple geochemical anomalies.





To further investigate the area of multiple geochem. anomalies, Cullen flew an Airborne EM survey in June 2018.



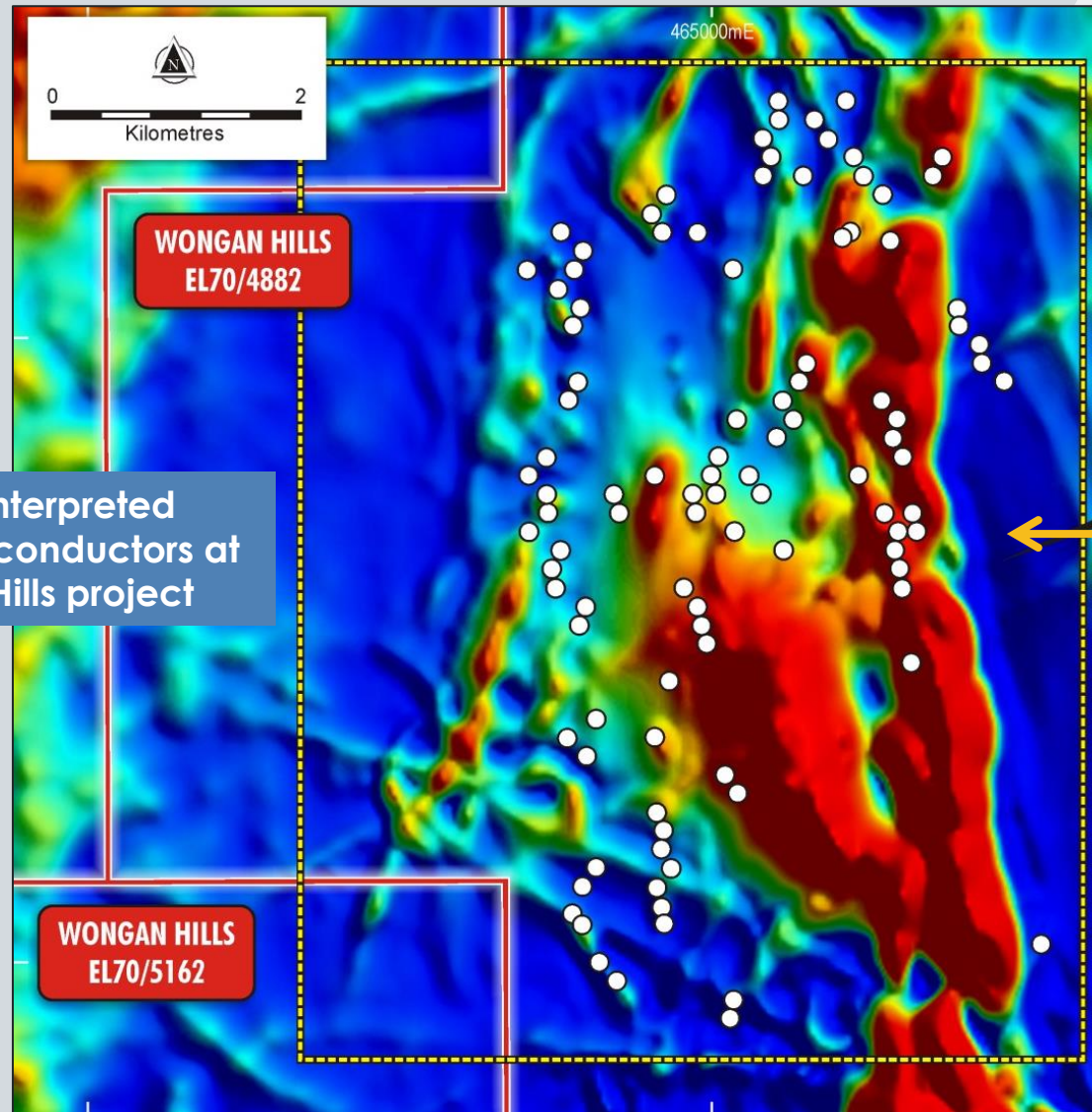


The helicopter-borne VTEM survey was centred on geochem. anomalies and comprised :

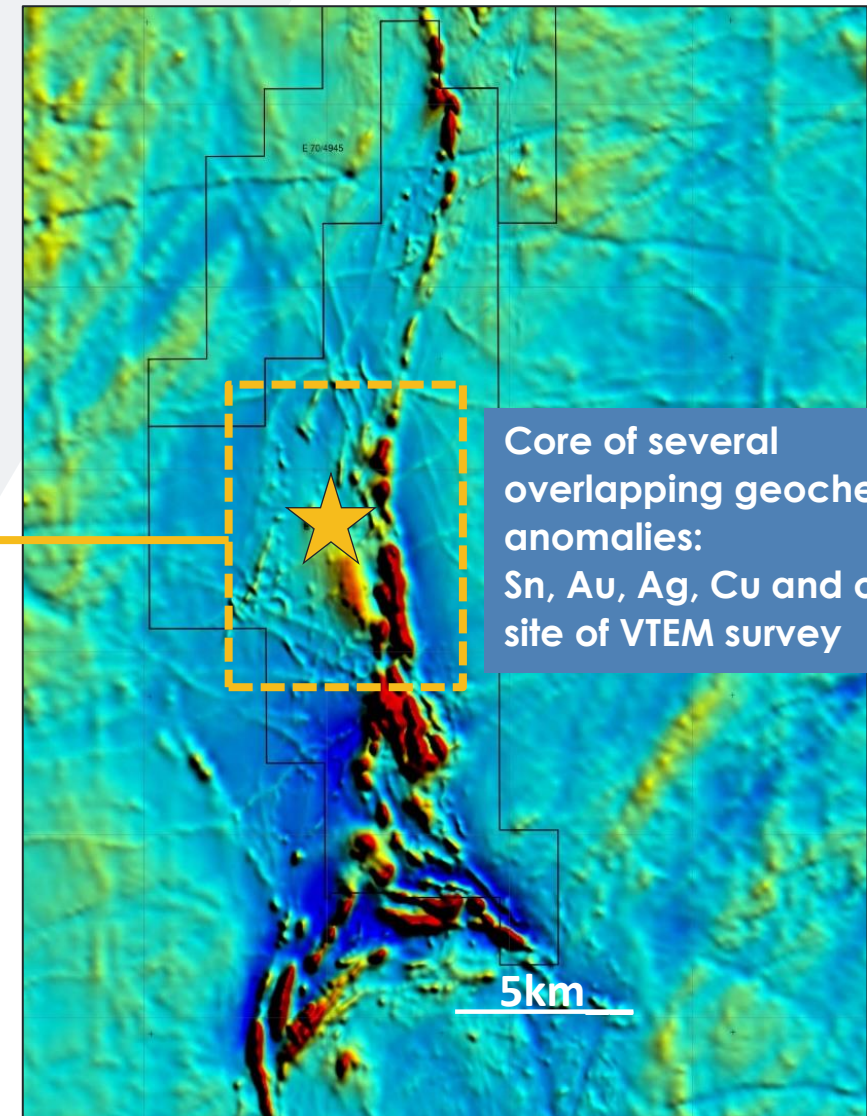
266 line km; 150m line spaced – preliminary data interpretation received.



# Wongan Hills | VTEM results on mag. image

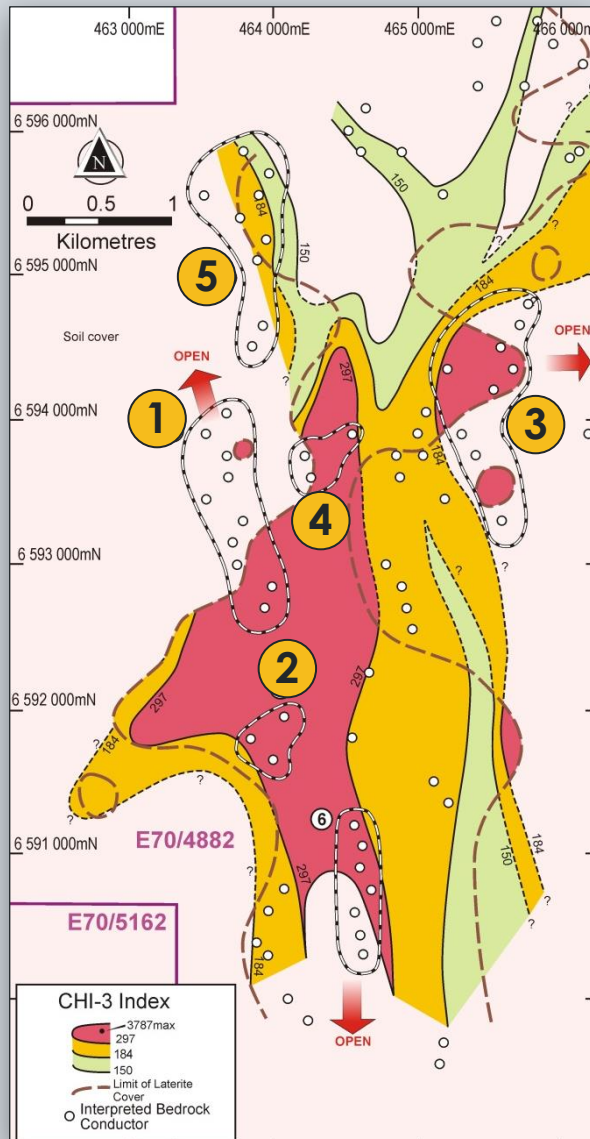


Multiple interpreted  
bedrock conductors at  
Wongan Hills project



Core of several  
overlapping geochem.  
anomalies:  
Sn, Au, Ag, Cu and others,  
site of VTEM survey





View along cluster 1 from NNW



The VTEM results highlight multiple clusters and trends of **interpreted bedrock conductors**.

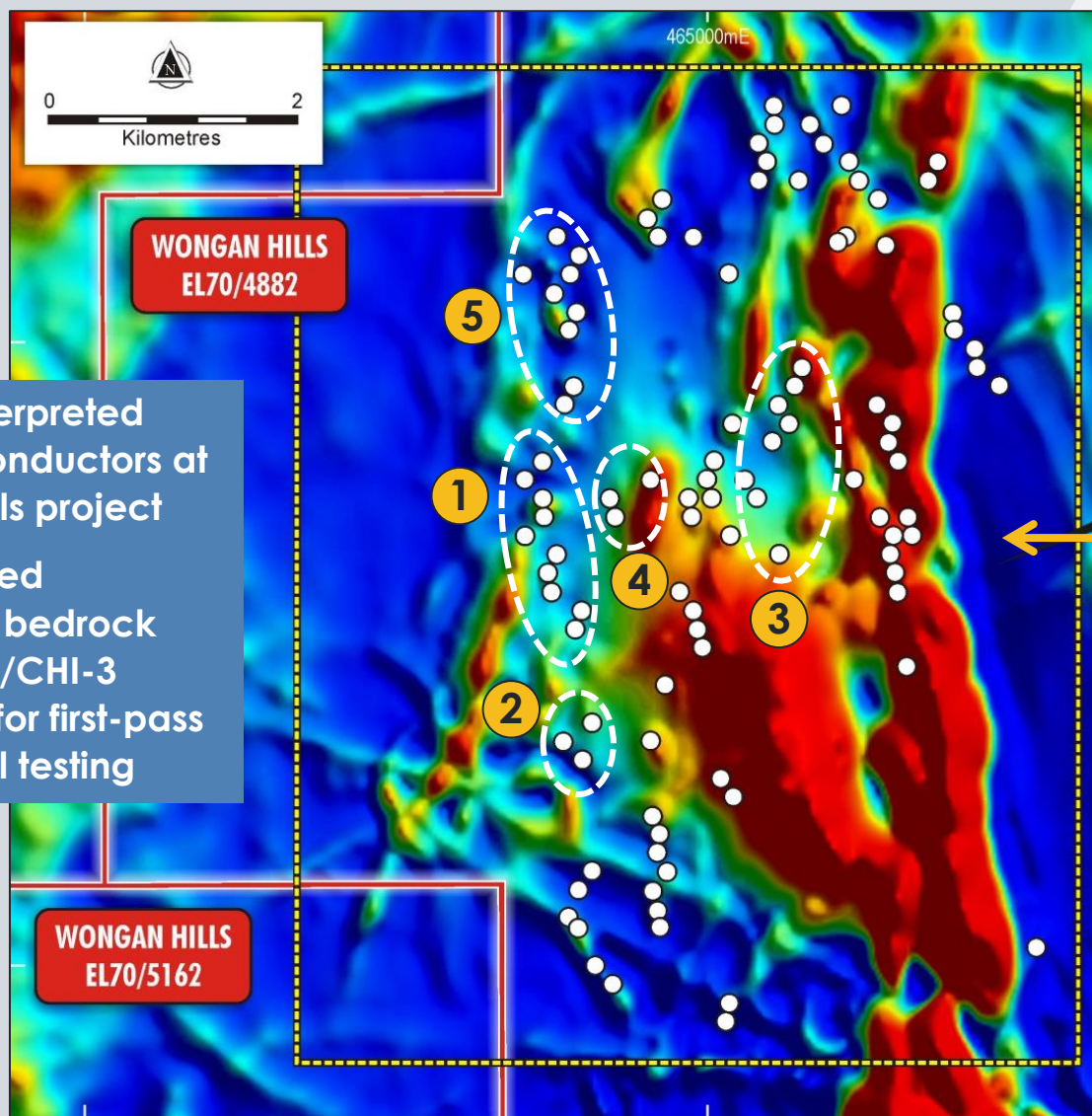
In particular, five clusters of interpreted bedrock conductors, over strike lengths of ~0.4 to 1.5km which are coincident with significant CHI-3 geochemical index anomalies now define priority VHMS targets.

None of the multiple geochemical anomalies with interpreted bedrock conductors has been the target of previous drill testing.

$$\text{CHI-3} = \text{As} + 3\text{Sb} + 10\text{Bi} + 10\text{Cd} + 10\text{In} + 3\text{Mo} + 30\text{Ag} + 30\text{Sn}$$

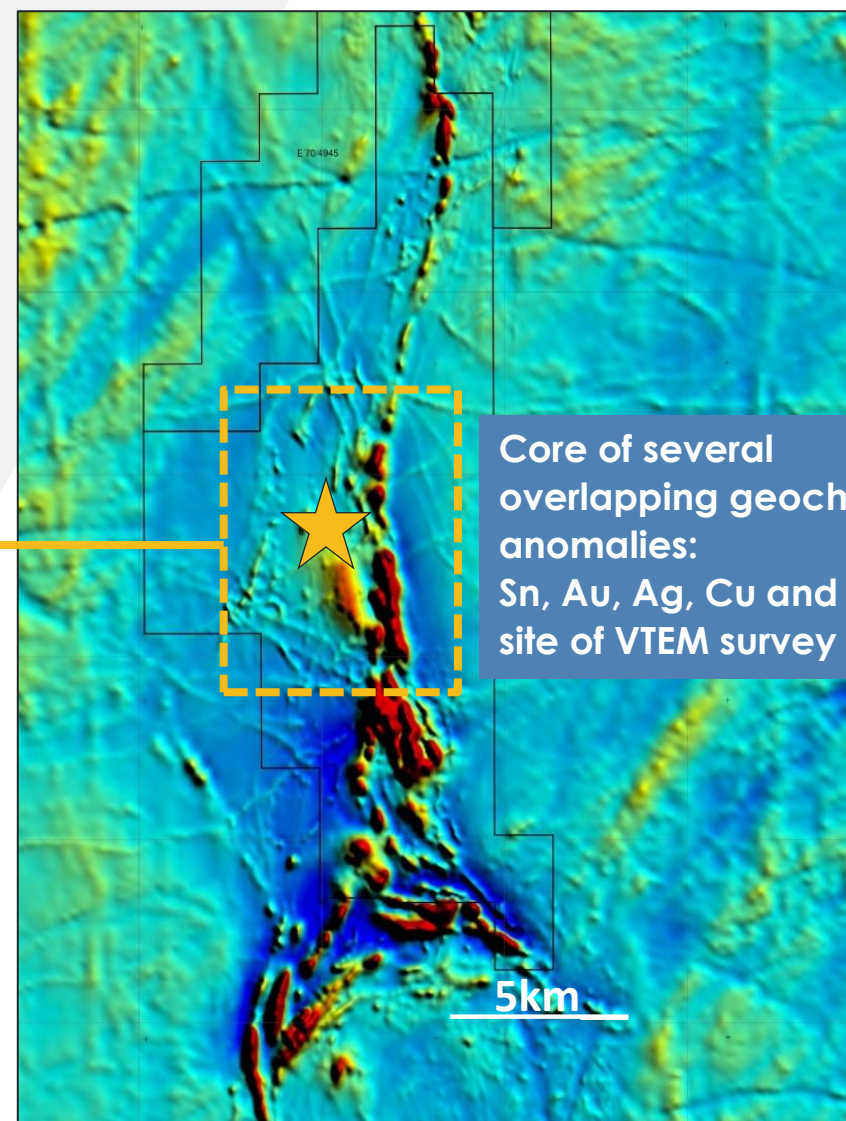


# Wongan Hills | Prioritised bedrock conductor trends



Multiple interpreted bedrock conductors at Wongan Hills project

1-5: Prioritised interpreted bedrock conductors/CHI-3 anomalies for first-pass air core drill testing



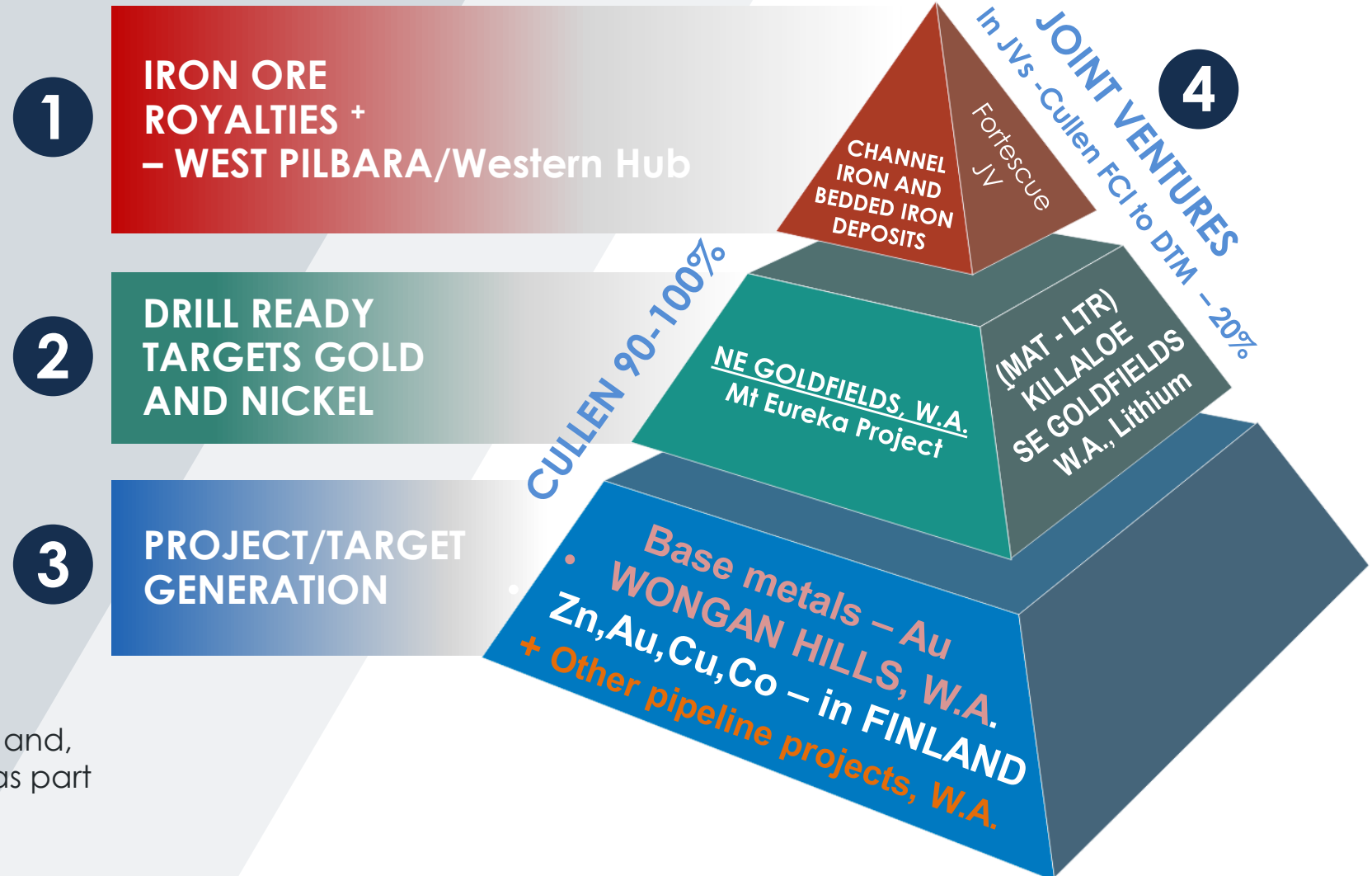
Core of several overlapping geochem. anomalies:  
Sn, Au, Ag, Cu and others,  
site of VTEM survey



# Wongan Hills in Cullen's Project Portfolio



Cullen has 4 components to its portfolio – 2 project areas it manages



+ Royalties: with **Fortescue** at Wyloo; and, with **Baosteel/AMCI/Posco/Aurizon** as part of West Pilbara Iron Ore Project

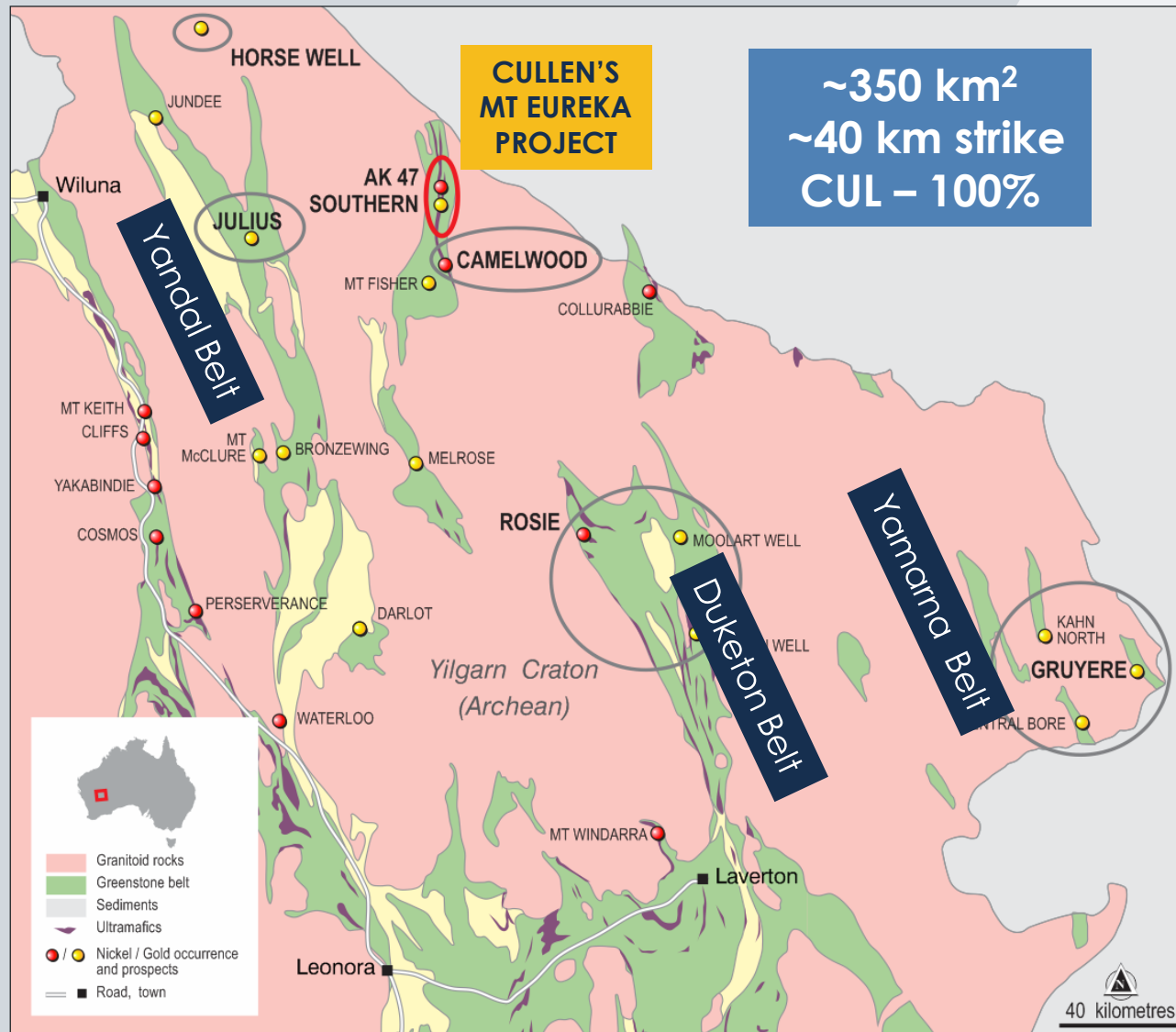


# MT EUREKA



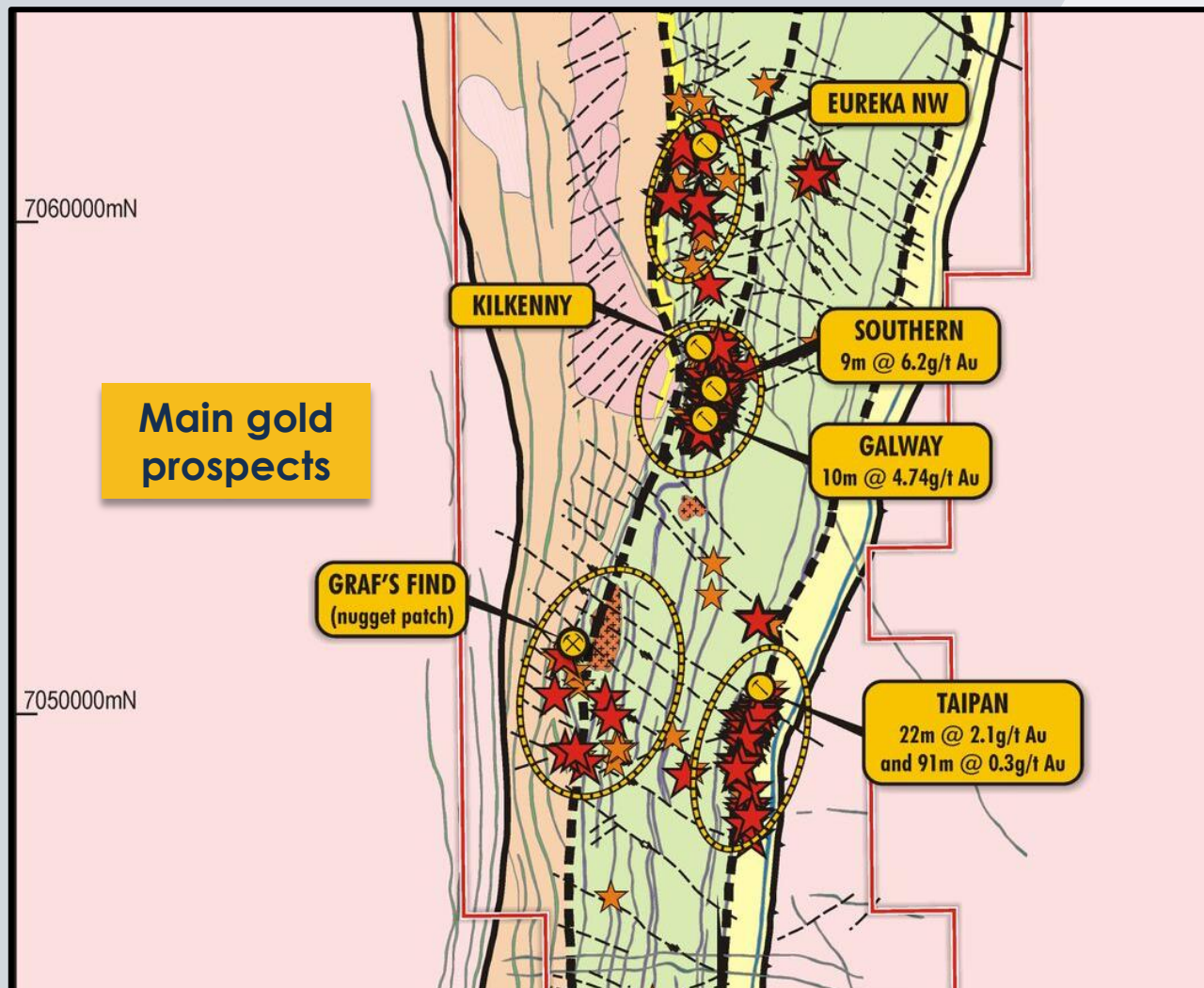


# Mt Eureka Project | NE Goldfields, W.A. – Gold and Nickel



Cullen's 100% owned Mt Eureka project is amongst prolific greenstone belts with long histories of exploration and discoveries yet it remains relatively underexplored for gold and nickel sulphide deposits.



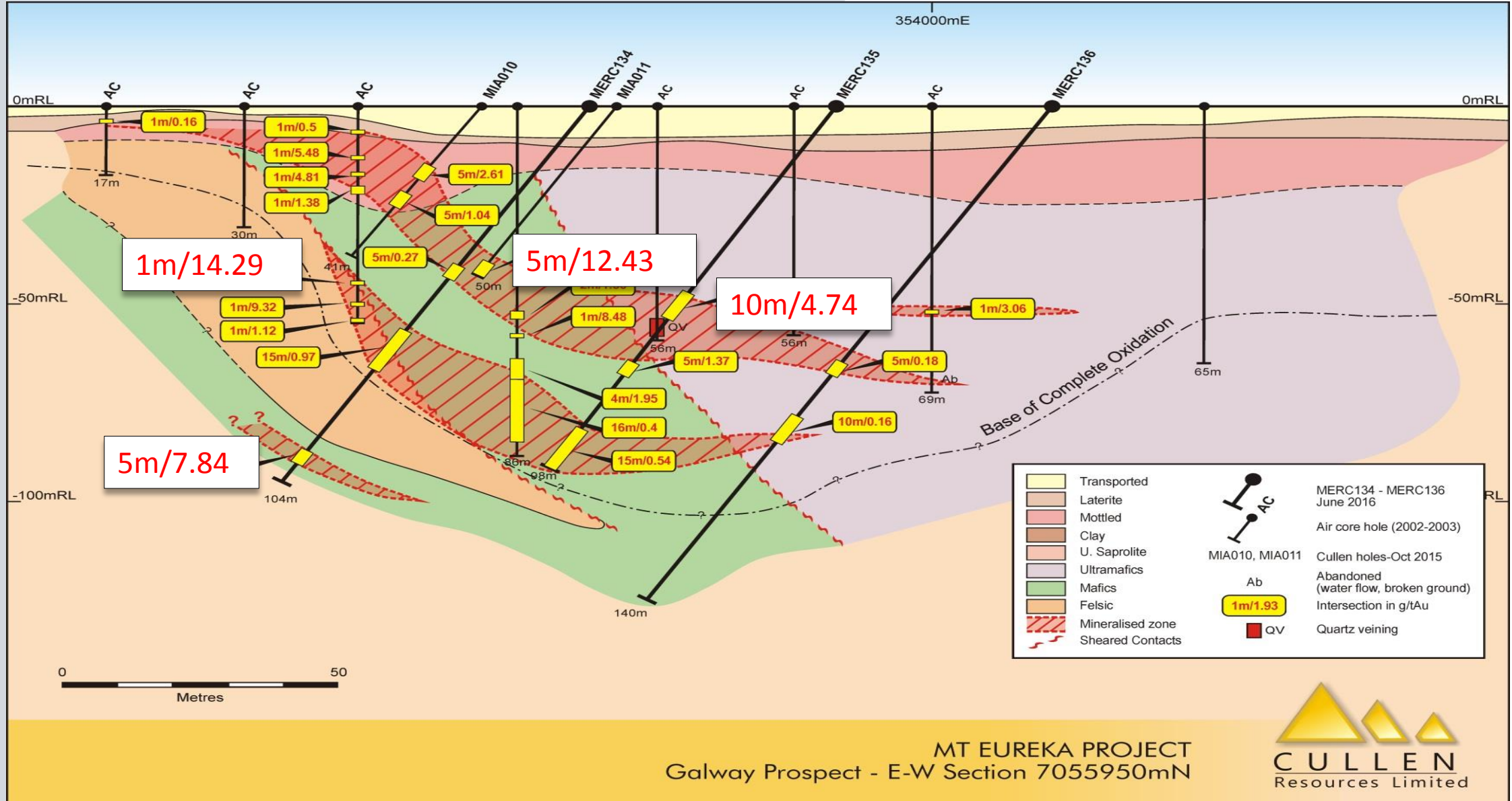


Gold mineralisation discovered to date is localised by a set of major fault zones (or Breaks) as evidenced by the distribution of >1.0 g/t Au in historical drilling (and not merely a reflection of the previous focus of these drilling programmes). These structures and gold zones are also coincident with unconformities between sediments and the mafic-ultramafic core to the greenstone belt - cf. Taipan and Eureka NW prospects. Such controls to gold mineralisation are evident in other greenstone belts in the North Eastern Goldfields of W.A. (such as Yamarna), and elsewhere in Archaean granite-greenstone terranes (see Bleeker, W., 2015). Further drilling to “flesh-out” known gold mineralisation at the known prospects in the Mt Eureka project - along strike, at depth, and down plunge - is clearly warranted.

**Reference :** Bleeker, W. 2015, Synorogenic gold mineralisation in granite-greenstone terranes : the deep connection between extension, major faults, synorogenic clastic basins, magmatism, thrust inversion, and long-term preservation, *In*, Targeted Geoscience Initiative 4 : Contributions to the Understanding of Precambrian Lode Gold Deposits and Implications for Exploration, (ed.) B Dubé and P. Mercier –Langevin; Geological Survey of Canada, open File 7852, p.25-47



# Mt Eureka Project | Drilling results to date invite further investigation



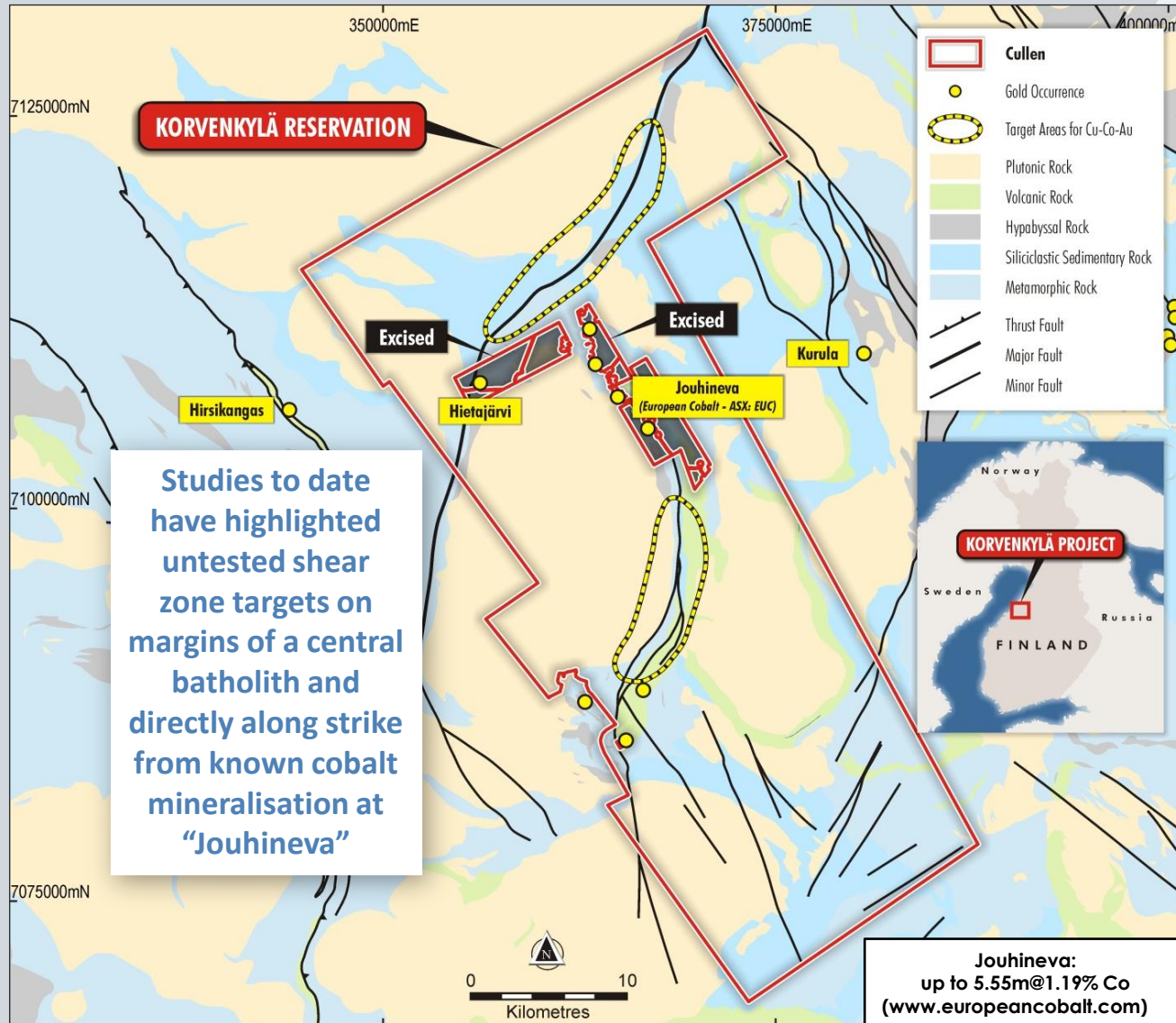


A photograph of a forest landscape. In the foreground, there are large, grey rocks covered in green moss and small plants. The ground is covered in a dense layer of green moss and small plants. In the background, there are tall, thin trees, likely pines or spruces, standing in a forest. A large, yellow, textured overlay covers the left side of the image, extending diagonally from the top left towards the bottom. A dark blue horizontal bar is positioned across the middle of the yellow overlay, containing the word "FINLAND" in white, bold, sans-serif capital letters.

# FINLAND



# Finland: Korvenkylä and Vesikko Projects | Co, Base Metals, Au



Boulders of highly-altered Kumpu Group conglomerate at **Vesikko** in the SW corner of the Central Lapland Greenstone Belt. Targeting gold in faults/breaks bounding this stratigraphy - see [www.aurionresources.com](http://www.aurionresources.com) for ore model.





# IN SUMMARY

At Wongan Hills, a VTEM survey has identified several clusters of interpreted bedrock conductors that are coincident with significant but undrilled, geochemical anomalies.

The compilation of geochem. data supports Cullen's contention that the area may contain an untested VHMS system similar in character to the Golden Grove deposit.

Cullen plans to drill test the anomalies at Wongan Hills, subject to successfully compensation agreements with landowners, and towards the end of the year after cropping.

Cullen is also planning reconnaissance air core drilling at its 100%-owned Mt Eureka project for Ni and Au; and is continuing “data mining” at the Korvenkyla and Veiskko Projects, in Finland.



# CORPORATE

## DIRECTORS

- Dr Chris Ringrose – MD
- Mr John Horsburgh – Chairman
- Mr Wayne Kernaghan – Co Sec

## CAPITAL

- Number of shares: 2598M
- Cash: ~ \$0.43M (30/06/18)
- Market Cap: ~ \$2.5M (@ 0.1c)
- Top 20: ~44%

## MAJOR SHAREHOLDERS

- Perth Capital, Wythenshawe and Associates: ~22%
- Directors: ~5%

## CONTACT

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