

## **New World Metals Presentation to JCU - Amended**

**EMMERSON RESOURCES LIMITED (ASX: ERM)** (“ERM” or “the **Company**”) has re-released its announcement from 7 November 2022 “New World Metals Presentation to JCU”.

The amended announcement includes additional disclosure in accordance with ASX Listing Rule 5.23.

**This ASX announcement was authorised for release by the Board.**

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# Keeping it REAL – new technology and science for discovery of new world metals



- Probability of discovery is 1-5% (at best) - **luck is not a good strategy!!**
- Rather discovery is the journey of applying systematic science (usually with limited data and \$\$) over large prospective ground positions, using great people (geoscientists in small empowered teams) and typically by small nimble companies (~60-70% of all discoveries by juniors)... ✓
- Probability of economic development of mineral deposits is declining... despite the need to discover and secure more metals (the energy transition)
- Discovery and Economic development of mineral deposits requires all the “planets to align”...
  - favourable regulatory regime
  - Stakeholder/shareholder support/engagement
  - enhanced value proposition for exploration (investability)



# Important notice and disclaimer



## Cautionary Statement

This presentation has been prepared by Emmerson Resources Limited ACN 117 086 745 (ASX: ERM) (the "Company") and is being provided to a limited number of investors for the sole purpose of providing preliminary background information to enable recipients to review the business activities of the Company. It is not intended as an offer, invitation, solicitation or recommendation with respect to the purchase or sale of any securities.

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## Forward-Looking Statements

This document may include forward-looking statements. Forward-looking statements include, but are not limited to, statements concerning Emmerson Resources Limited's anticipated future events, including future resources and exploration results, and other statements that are not historical facts. When used in this document, the words such as "could", "estimate", "plan," "expect," "intend," "may", "potential," "should," and similar expressions are forward-looking statements. Although Emmerson believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks, assumptions, uncertainties, and other important factors, many of which are beyond the control of the Company, and which may cause actual results, performance, or achievements to differ materially from those expressed or implied by such statements.

The Company does not undertake any obligation to update forward-looking statements even if circumstances or management's estimates or opinions should change. Forward-looking statements are provided as a general guide only and should not be relied on as an indication or guarantee of future performance. Given these uncertainties, investors should not place undue reliance on forward-looking statements. The Company cautions investors against using this announcement solely as a basis for investment decisions without regard for this disclaimer.

## Regulatory Information

The Company does not suggest that economic mineralisation is contained in the untested areas, the information contained relating to historical drilling records have been compiled, reviewed and verified as best as the Company was able. As outlined in this presentation the Company is planning further drilling programs to understand the geology, structure and potential of the untested areas. The Company cautions investors against using this announcement solely as a basis for investment decisions without regard for this disclaimer.

## Competent Person Statement

The information in this presentation that relates to Exploration Results is based on information compiled by Dr Ana Liza Cuison, MAIG, MSEG. Dr Cuison is a Member of the Australian Institute of Geoscientists and has sufficient experience which is relevant to the style of mineralisation and types of deposits under consideration and to the activity which she is undertaking 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. Dr Cuison is a full-time employee of the Company and consents to the inclusion in this report of the matters based on her information in the form and context in which it appears.

The information in this presentation that relates to Mineral Resource estimate and classification for the Chariot Gold deposit and Mauretania Gold deposit is based on information compiled by Justine Tracey. Justine Tracey is an employee of Optiro Pty Ltd, and a Member of the Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists. Justine Tracey has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and the activity she is undertaking 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 ('the JORC Code')". Justine Tracey consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

The Company confirms that it is not aware of any new information or data that materially affects the information included in previous market announcements and, in the case of estimates of Mineral Resources that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings area presented have not been materially modified from the original market announcements.

Authorised for release by the Managing Director, Mr Rob Bills.




# ALL THE METALS WE MINED

IN 2021

The world produced roughly **2.8 billion tonnes** of metals in 2021. Here are all the metals we mined, visualized on the same scale.

## IRON ORE

2,600,000,000 tonnes\*

 = 1,000,000 tonnes

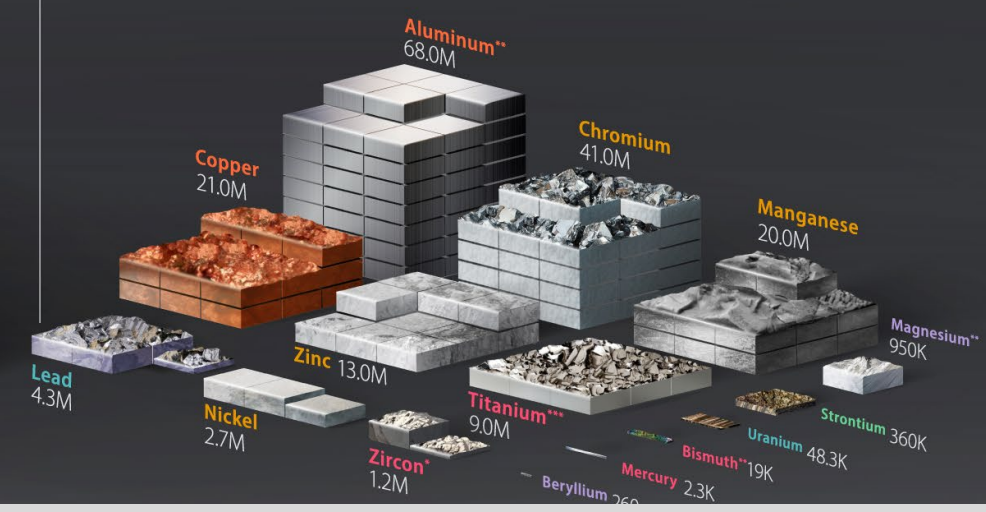


## LARGEST END-USE

-  **Steelmaking**
-  **Construction**
-  **Chemicals**
-  **Alloying Agents**
-  **Energy/Batteries**
-  **Magnets**
-  **Electronics**
-  **Other**

## INDUSTRIAL METALS

181,579,892 tonnes



## TECHNOLOGY AND PRECIOUS METALS

1,474,889 tonnes



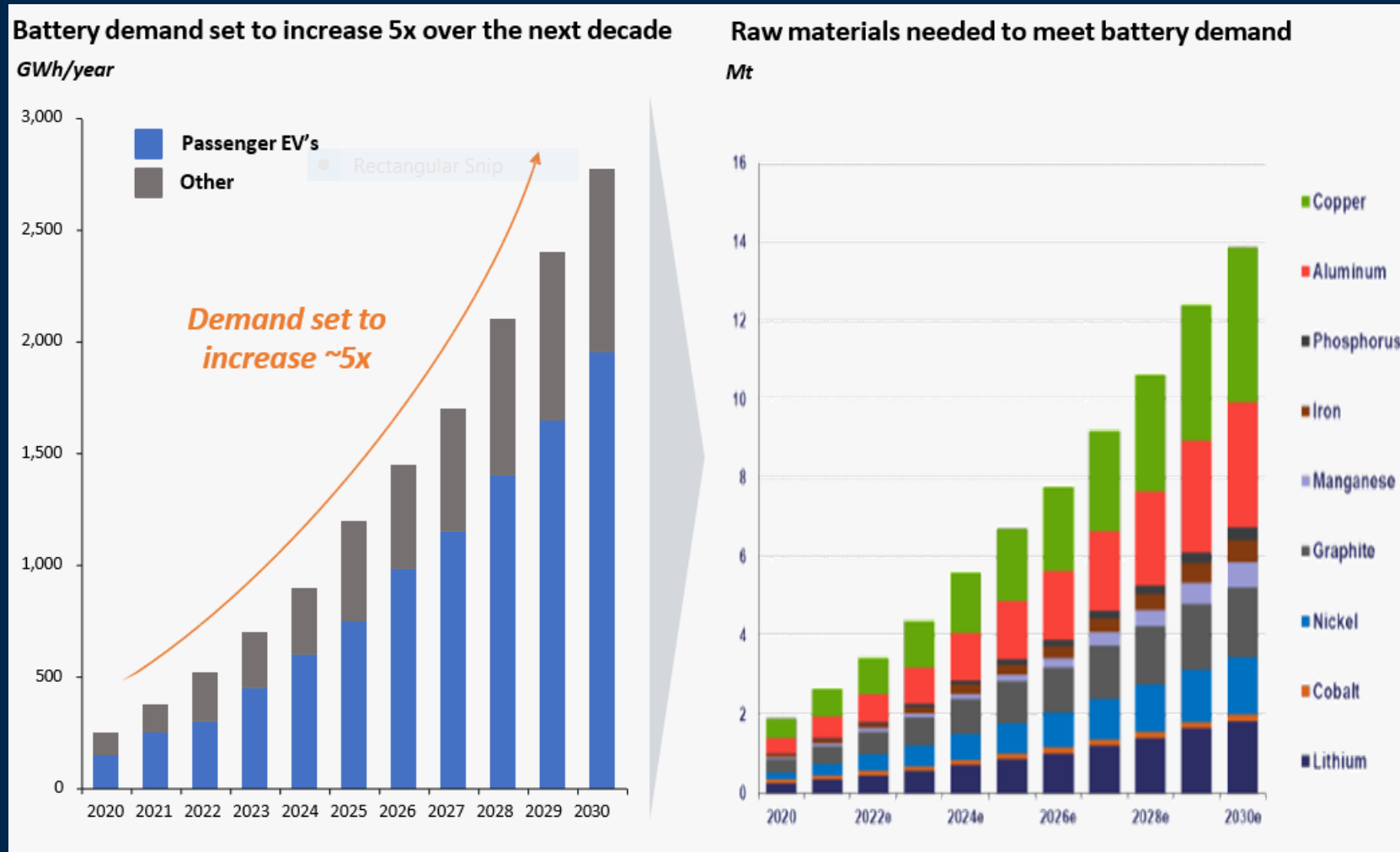
Keeping it Real – the context!

# What are New World Metals... fashionable today but will they be tomorrow?



The energy transition... using what metals and driven by technological change!  
Can we find these metals in the required timeframes?... already seeing the move away from Li-ion, to LFP, Salt, to Sand batteries!

# No electrification without commodities... *but which ones?*

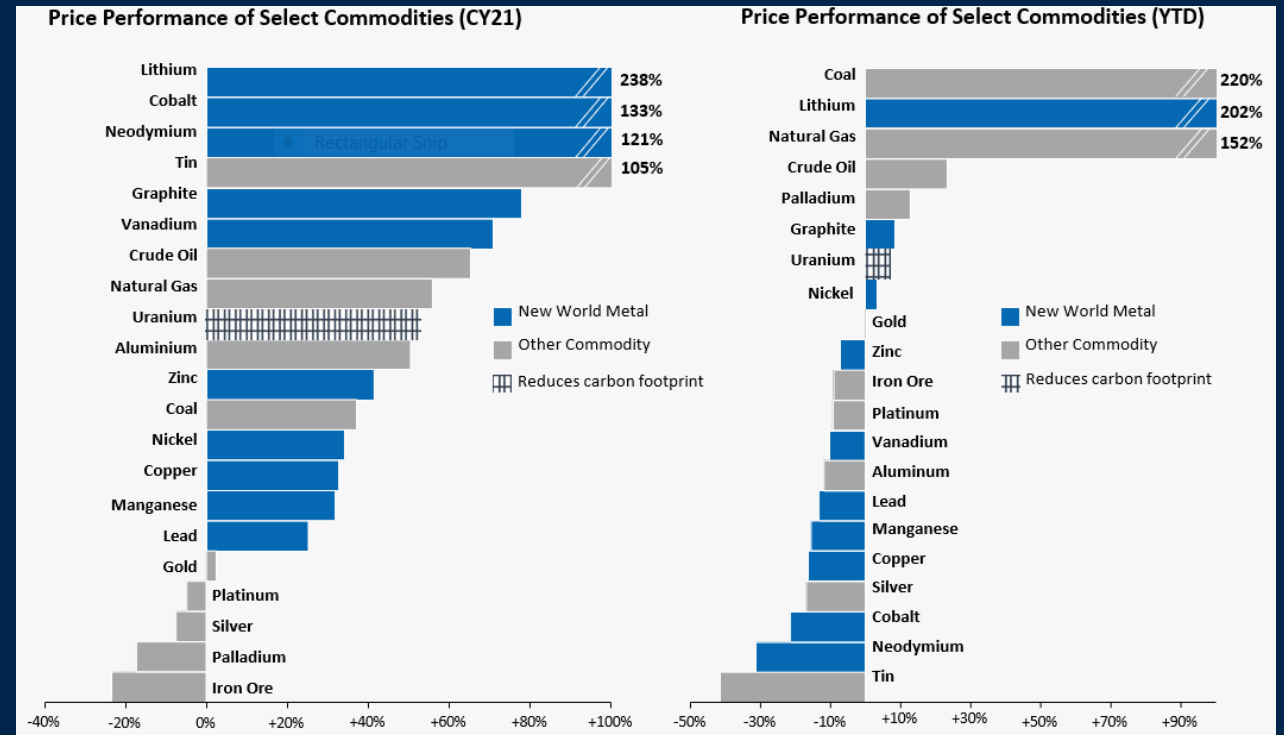
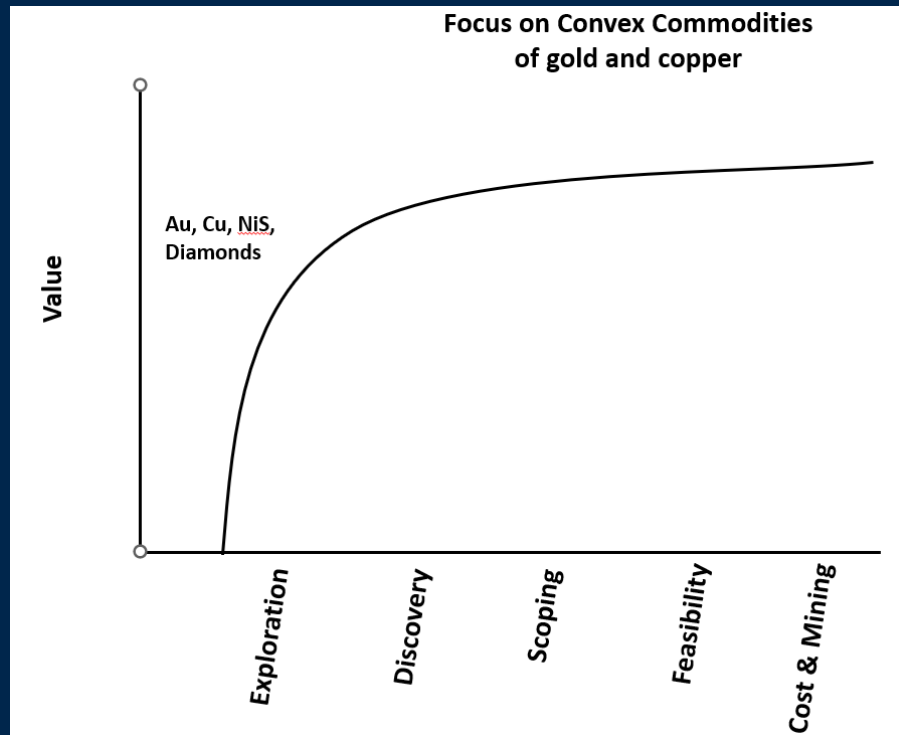


Source: IGO September 2021 Presentation

*New battery technology... companies pivot to Li, Ni, Co, phosphate, REE Clays... Playing the market or Keeping it Real?*

Keeping it REAL.....  
Can we position exploration  
for the New World Commodity Cycle?  
And what does this cycle look like?

- Investment in Discovery is typically a long-time frame business – requires metals that have a convex value chain.. Strategic approach
- Niche New World Metals present a challenge, with value eroded by changing technology... Opportunistic approach



Source: Factset, Bloomberg, Trading Economics.

Keep it REAL  
Rare but not  
well done!!



## Rare Earths

**Lynas**  
Rare Earths



**US\$10-15 Billion** Raised  
on the ASX/TSX/NYSE/LSE

**Two** major mines  
Developed

Only **one** that  
actually works

60 Rare Earth Element  
companies formed during the  
2010-2012 boom

Mt Weld

Mountain Pass

Mt Weld

## Where to from here?

Magnet metals Neodymium, Praseodymium, Terbium & Dysprosium are forecast to be in short supply from 2023

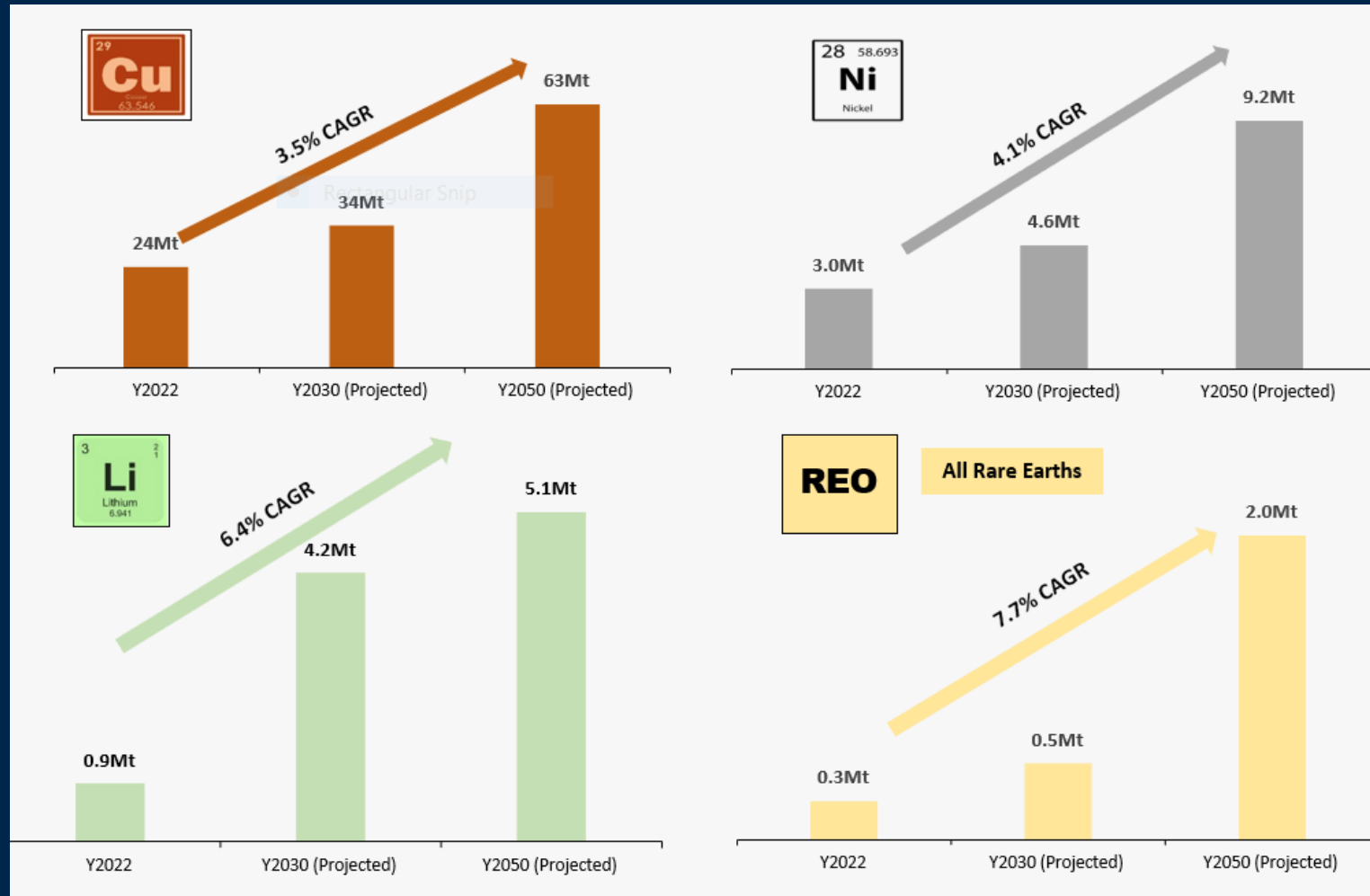
Total Rare Earth Oxide (REO) global demand (250ktpa) is expected to double to 500ktpa by 2030

Independence from China is required but development of deposits is easier said than done

To meet demand, the equivalent of a new Lynas Mt Weld operation is required every 2 years

Mt Weld took approximately 29 years to be studied, developed and profitable as an REE mine  
(from commissioning to positive cashflow in ~7 years)

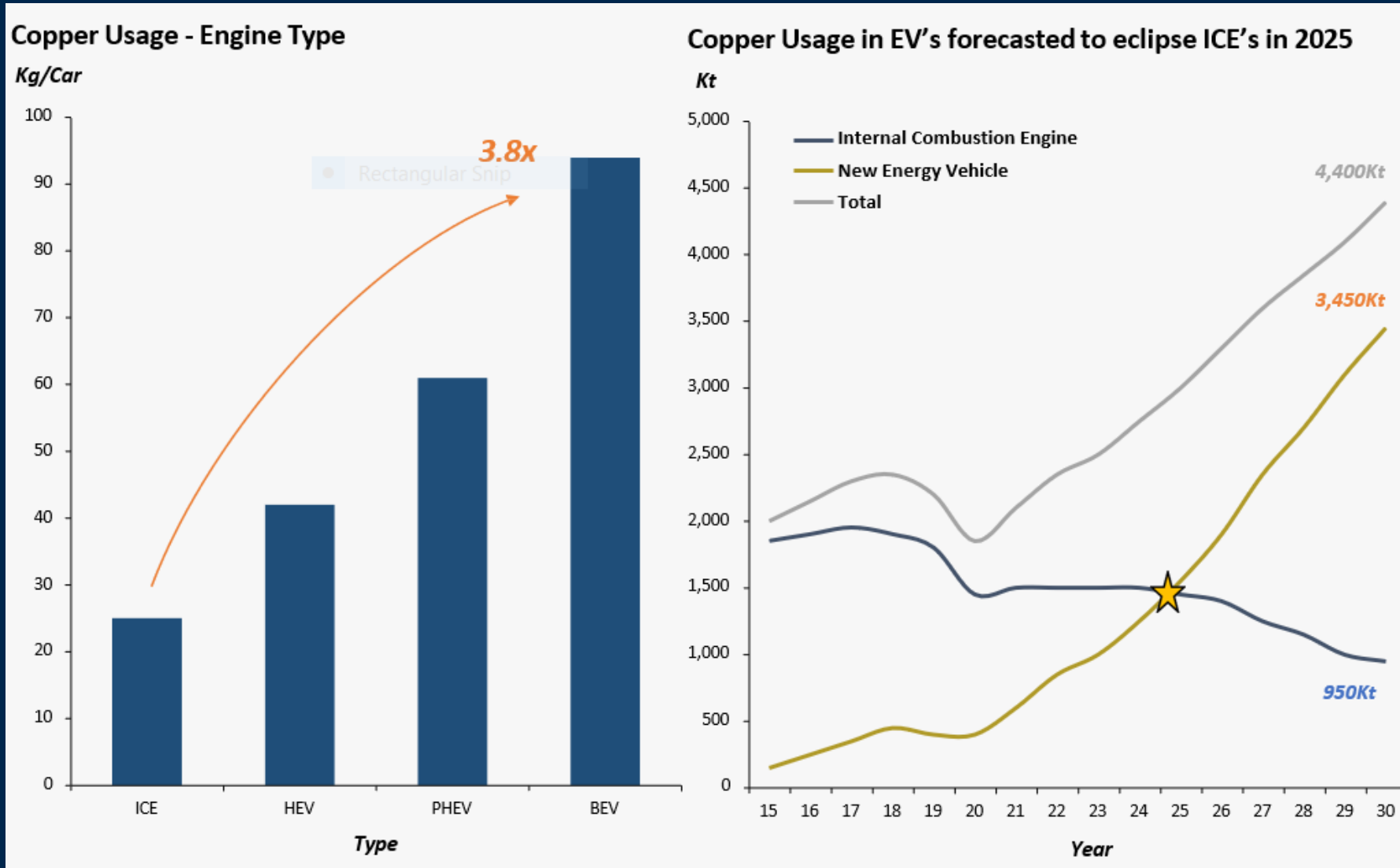
# Significant growth in New World Metals... but which ones?



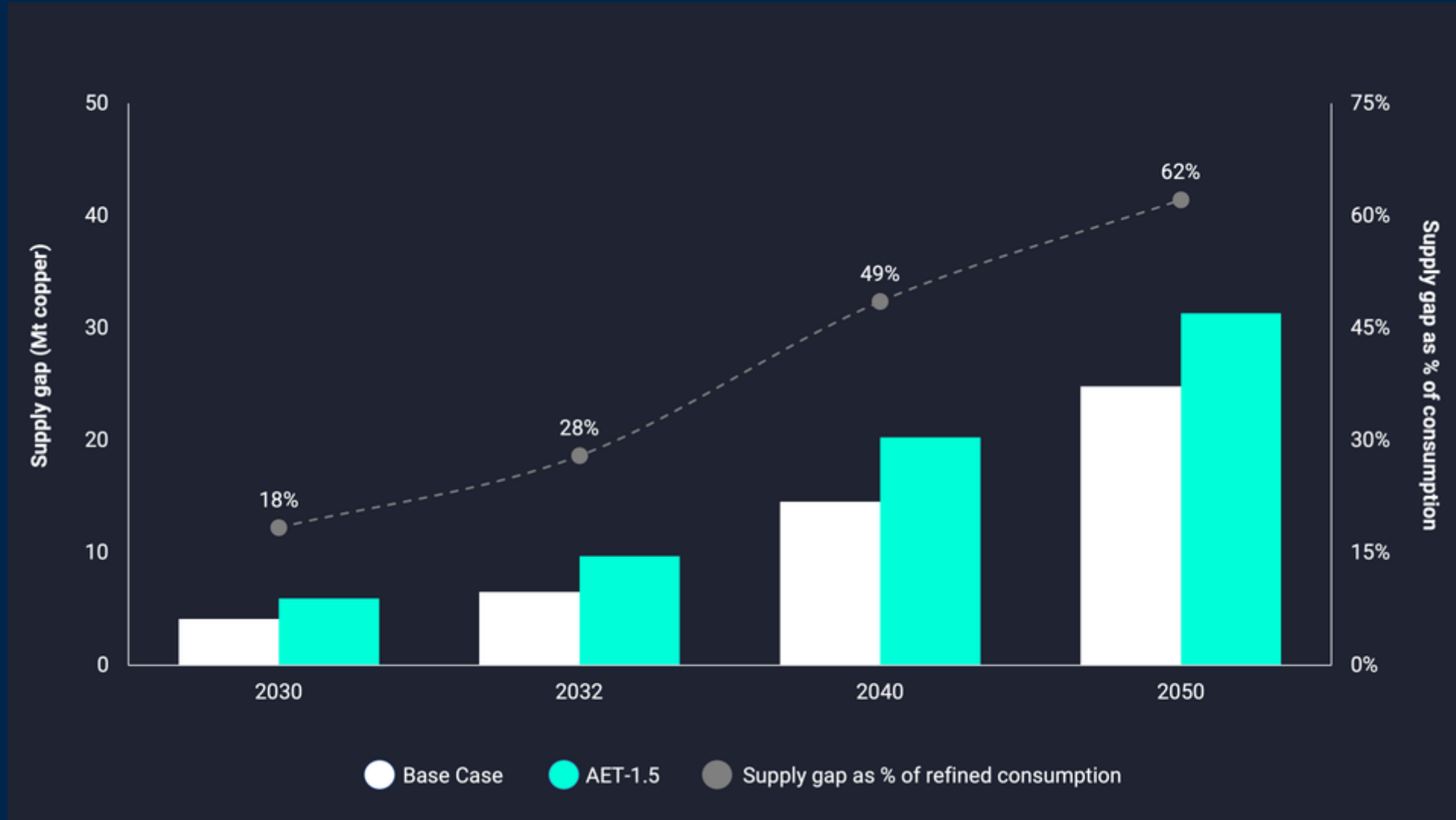
Source: Argonaut Research, Wood MacKenzie, S&P and World Bank

Strategic - long time-frame with investment in systematic, science-based discovery (the convex minerals traded on the LME)... Opportunistic – sitting on a discovery until it becomes economic or playing the market (short term)

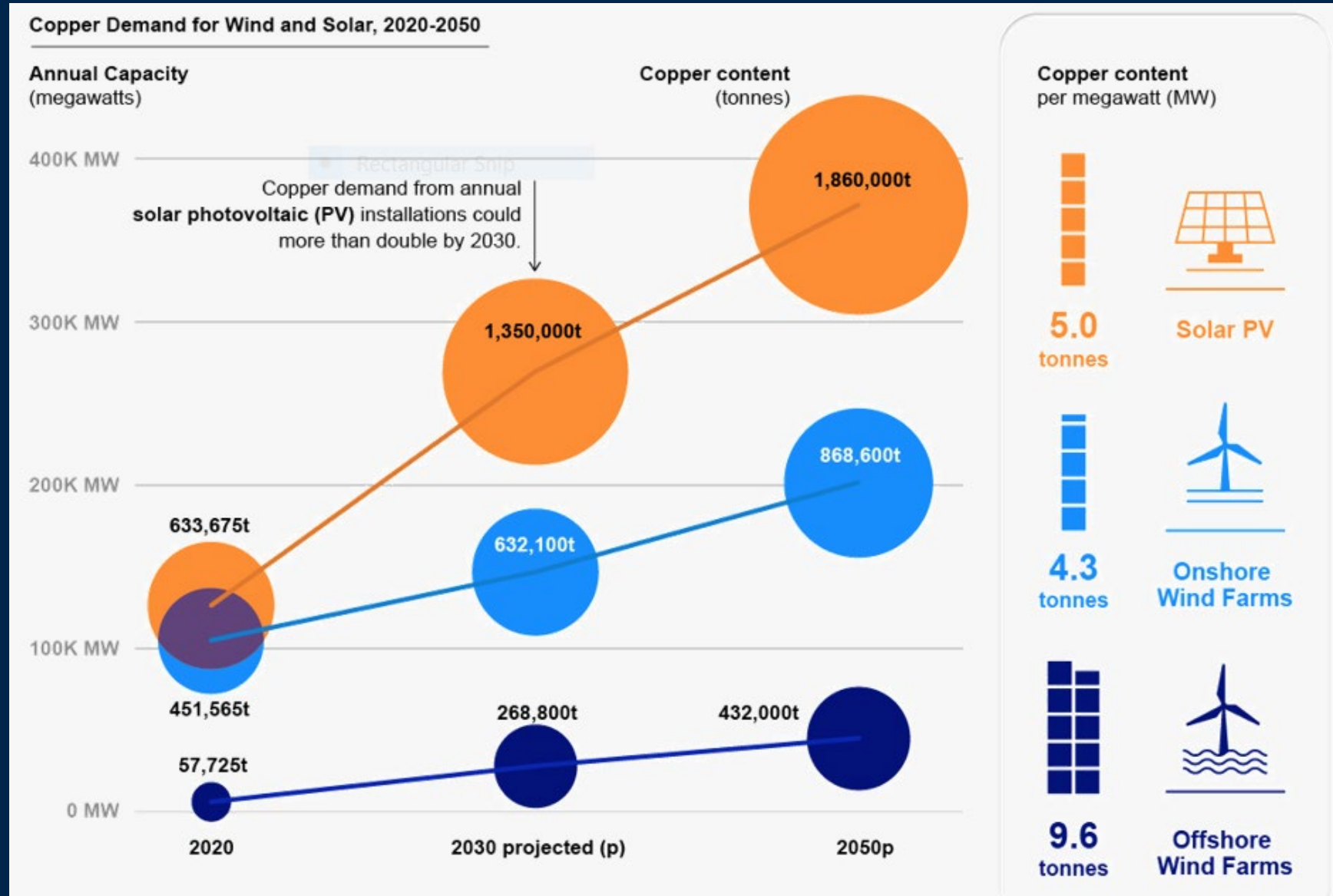
# Copper is KING... a new old-world LME metal!



# Copper supply gap (under Energy Transition)



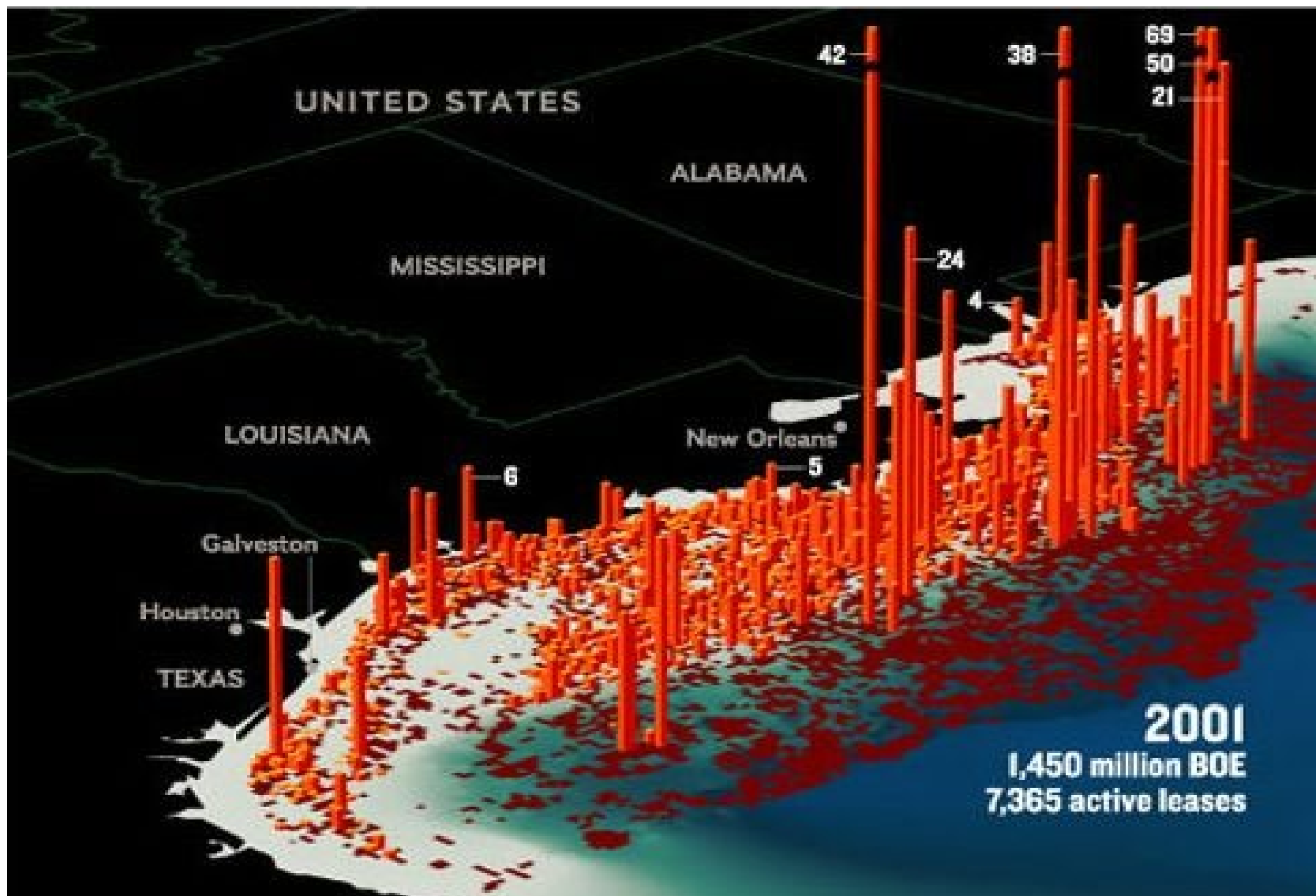
# Copper demand remains strong... but can we find enough?



# The strategic approach... brownfields is the new greenfields



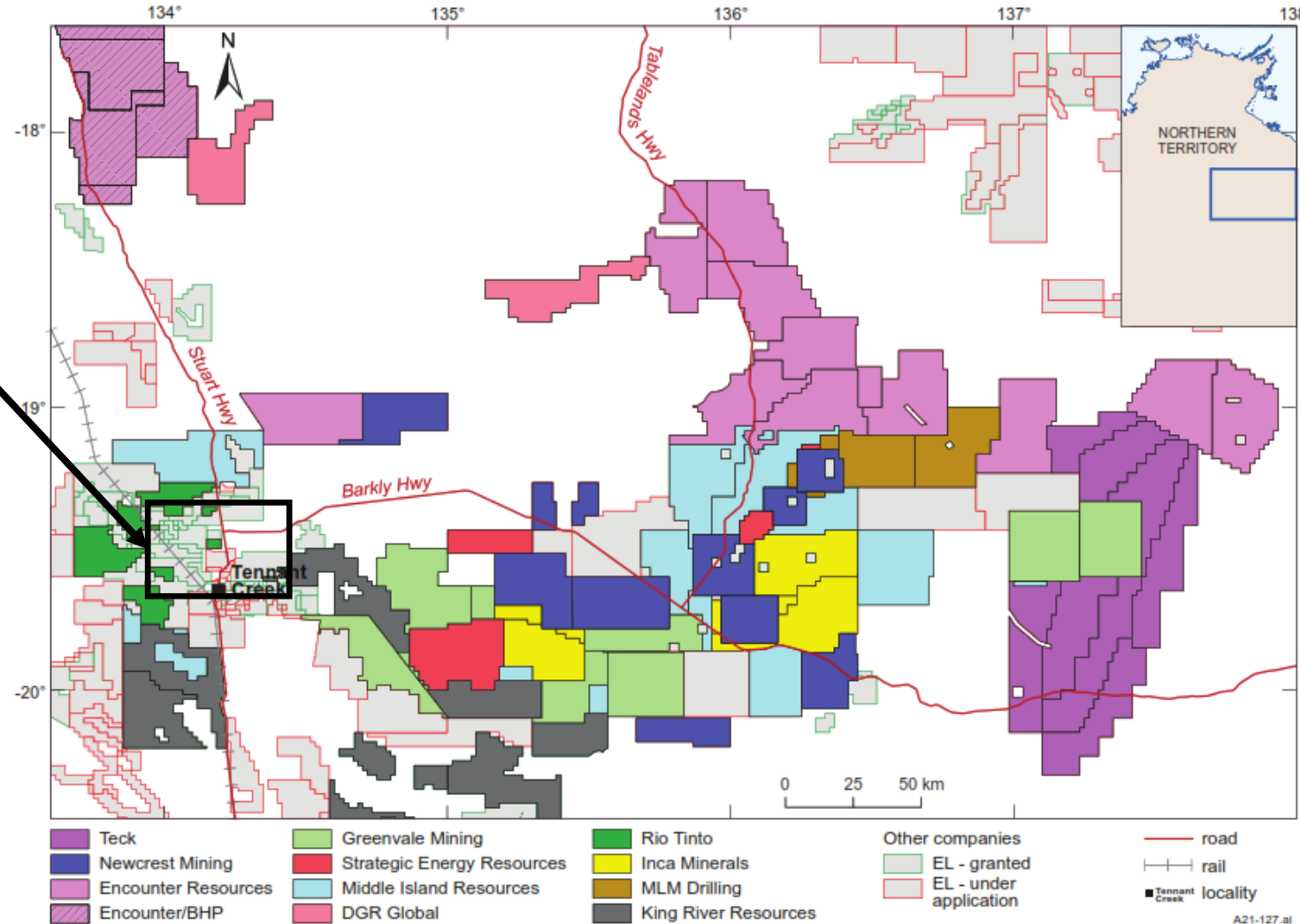
The prize... after 40 years of technology (3D seismic), science and improved deep water drilling and extraction... but not simply near well or mine exploration!



This is likely a similar scenario for the minerals industry?... the brownfields is the new green fields?

# The role and power of pre-competitive data - Tennant Creek Mineral Field (NT)

Emmerson holds  
1,700km<sup>2</sup> of the  
key IOCG Paleo-  
Proterozoic  
province



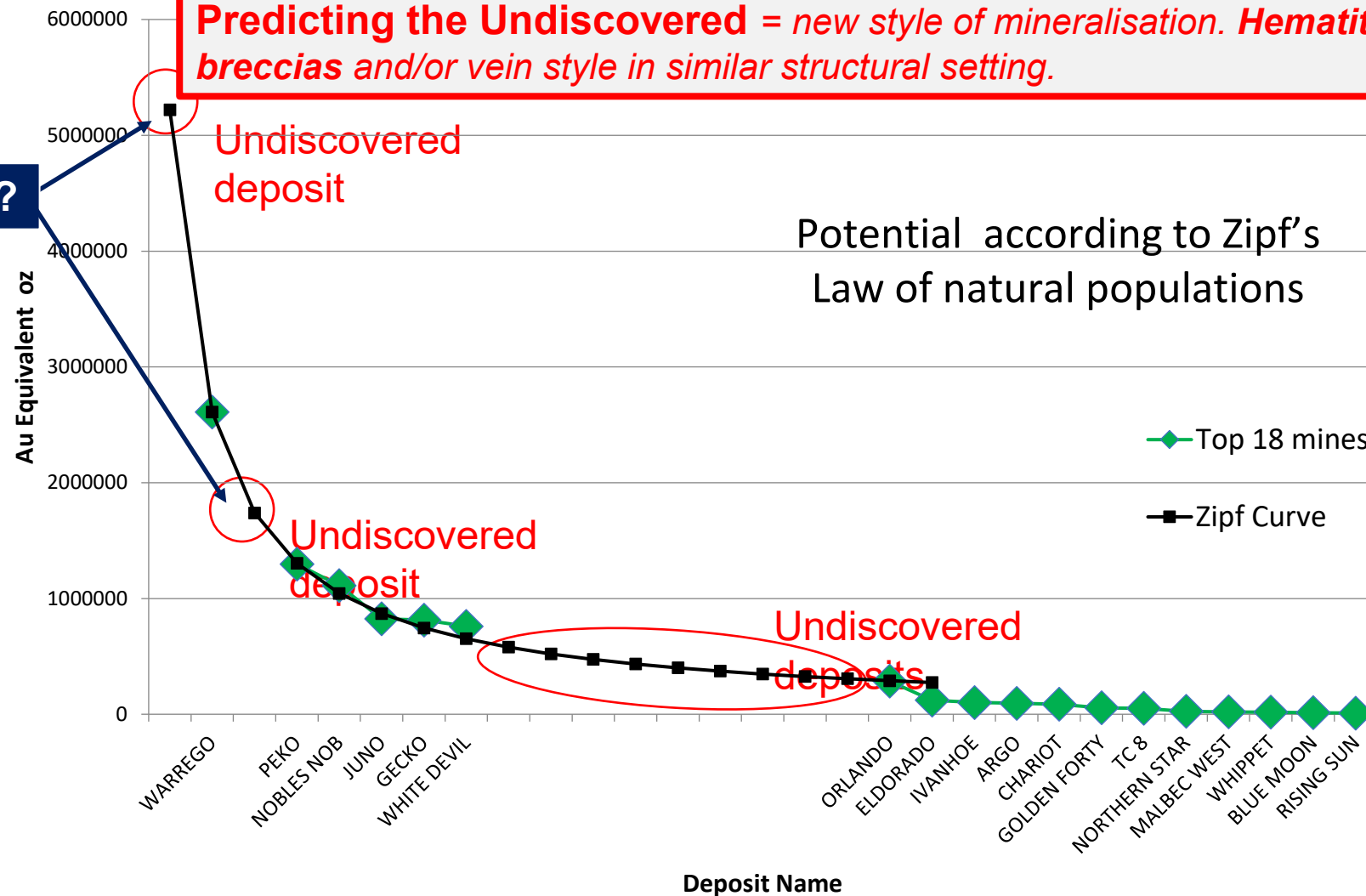
Map of exploration licences and application in the Barkly Tableland in March 2021, showing the distribution of tenure of selected exploration companies. Most highlighted licenses were applied for since 2019. (Map from AGES 2021).

# The undiscovered potential of the Tennant Creek Mineral Field

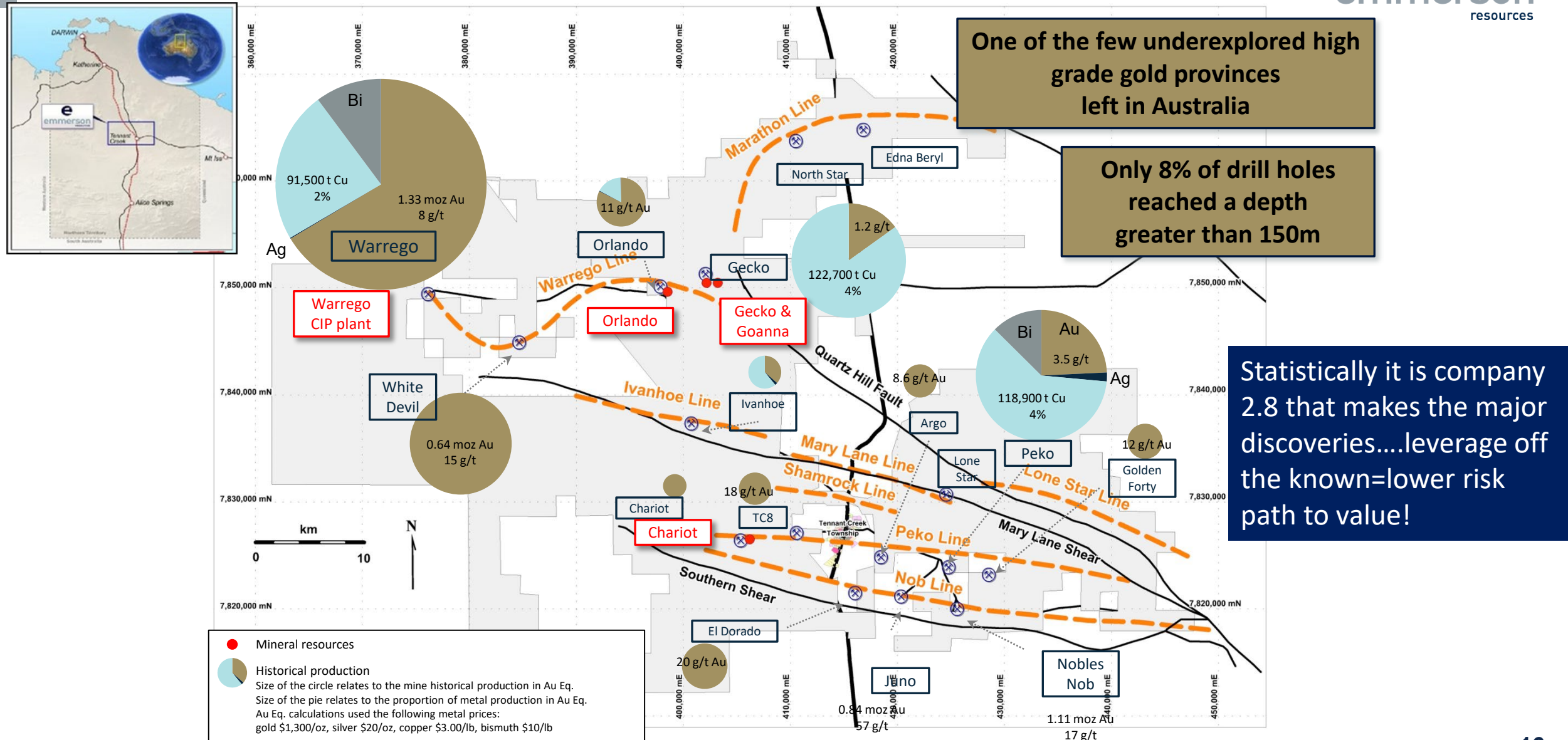
*Missing: 1 deposit @ 5.2Mozs, 1 deposit @ 1.74Mozs, +++*

**Predicting the Undiscovered = new style of mineralisation. Hematite hosted breccias and/or vein style in similar structural setting.**

**Company 2.8?**



# Tennant Creek – brownfields is the new green fields?

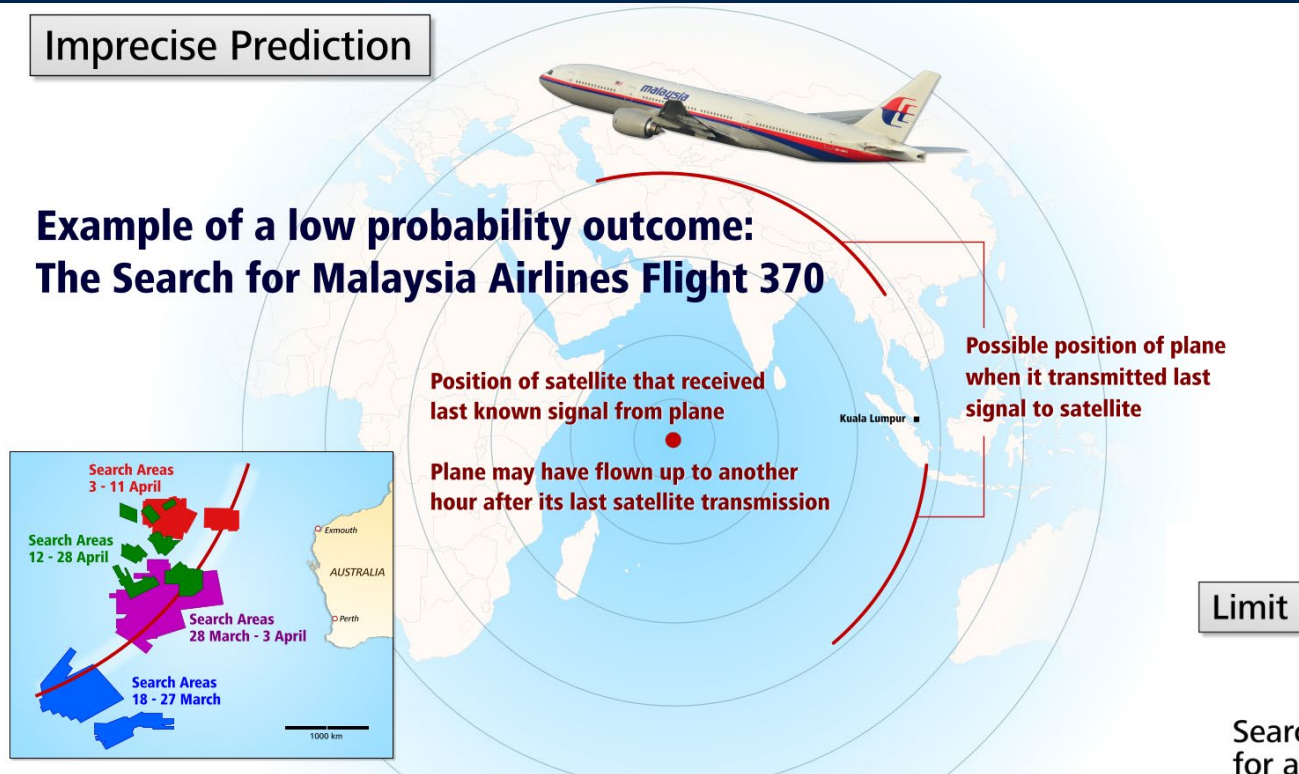


Source: Quoted production from major historical deposits after Ahmad, M. and Munson, T.J. (2013). Geology and mineral resources of the Northern Territory, Special Publication 5, p. 9:37. For Chariot mine and Malbec West mine, quoted production from Giants Reef Mill Reconciled Production to end of month September 2005 (internal report)

# The business of exploration: First Predict... then Detect

## Imprecise Prediction

### Example of a low probability outcome: The Search for Malaysia Airlines Flight 370



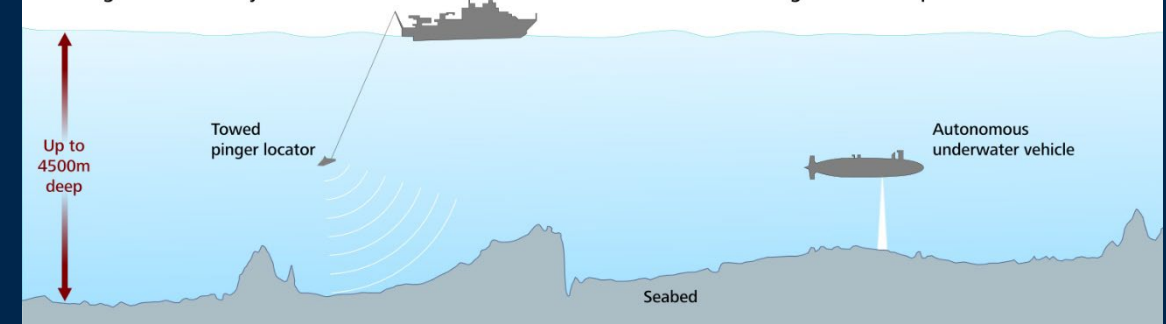
## Limit of Detection Techniques

### Searching for a signal

Ships tow hydrophones through water to locate signals emitted by black box

### Scouring the seabed

Remote underwater vehicles scour the seabed to capture high resolution photos

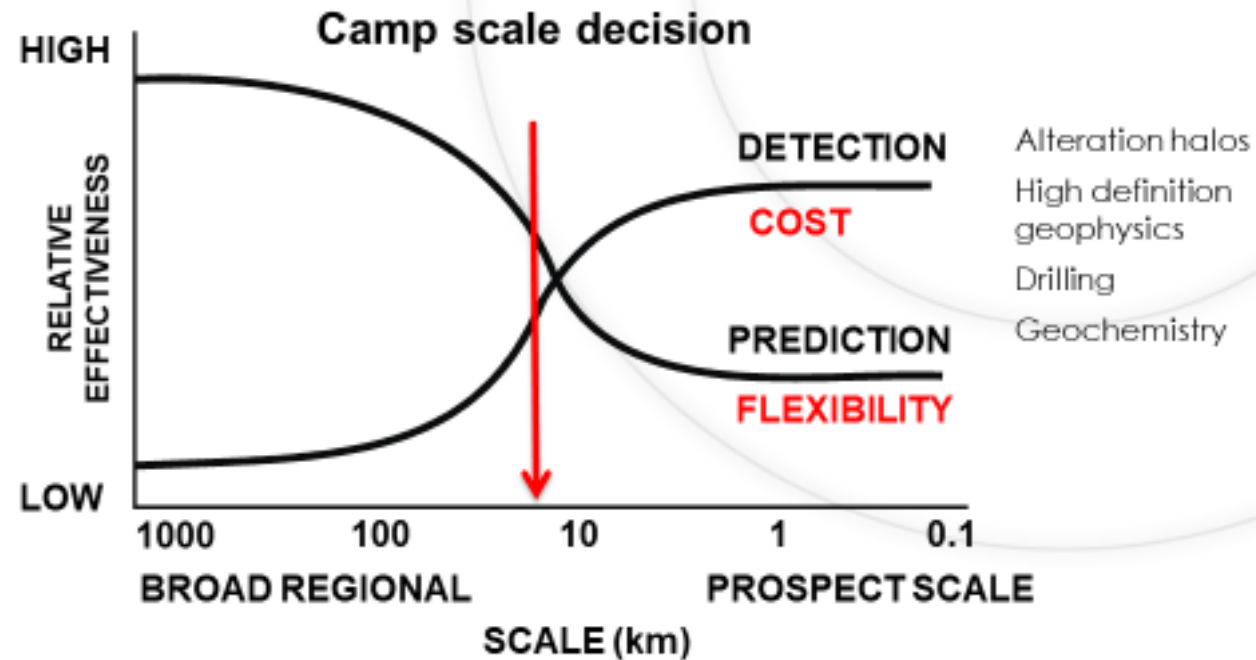


# Getting the scale right...

*where to focus the more detailed and expensive Detection Technologies*

## Scale Dependent Targeting

Centre for **EXPLORATION**  
**TARGETING**



Where do we focus the more systematic, detailed and expensive detection technologies?

# The probability of success...

The business case for exploration and the confluence of land access, data, people, science...

## Precise Prediction and Detection = increasing probability of Discovery!

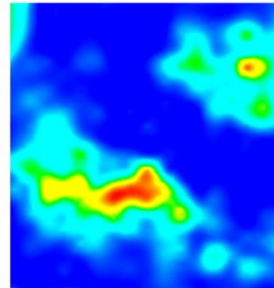
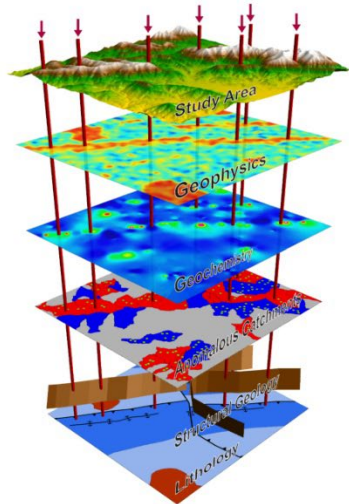
### Precise Prediction and Detection

Aiming to deliver:

- New greenfields targets & discoveries
- Underexplored brownfields targets to grow current resource base

Weighted  
aggregation  
process\*

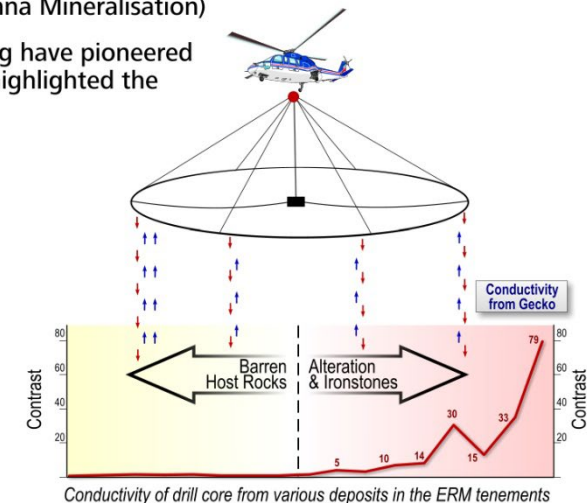
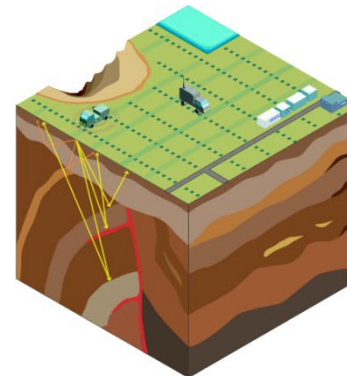
\*Unbiased, probability based



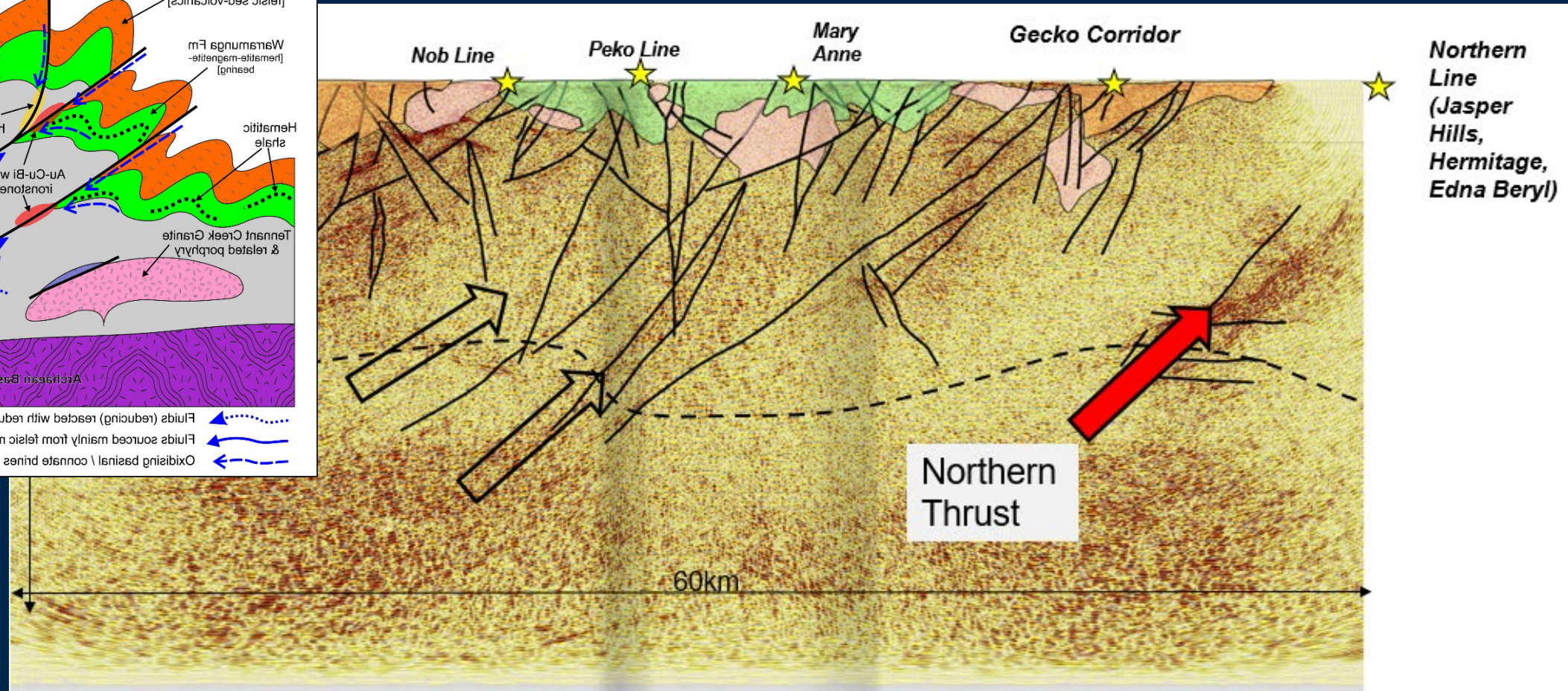
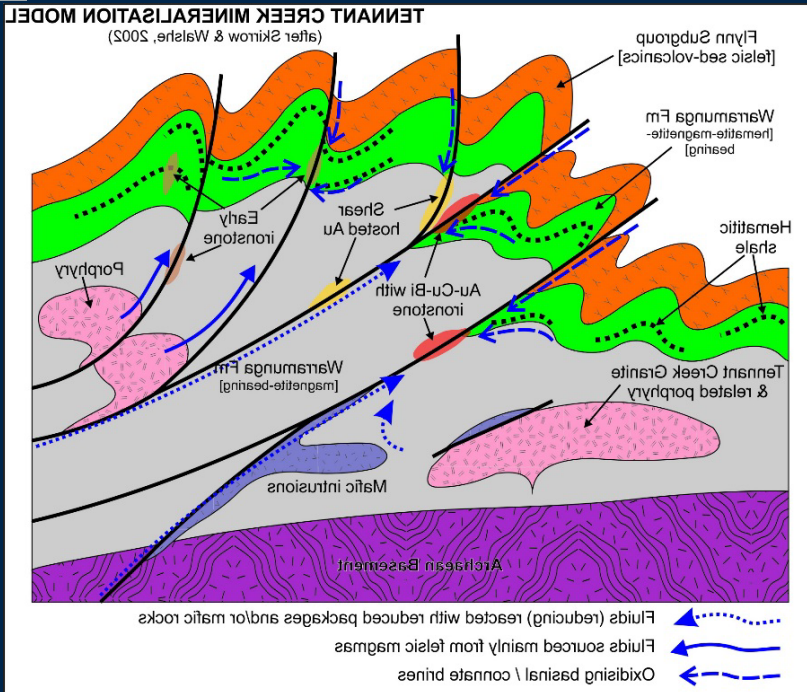
New Targets

## Advanced Detection Technology

- Multiple (applicable) detection technologies increase the probability of discovery
- Emmerson have pioneered the first use of high powered, airborne electrical geophysics in Tennant Creek (and discovered the Goanna Mineralisation)
- Emmerson and JV Partner, Evolution Mining have pioneered seismic geophysics in Tennant Creek (has highlighted the Edna Beryl mineralisation)



# Prediction from seismic... collaborative NTGS and ERM project

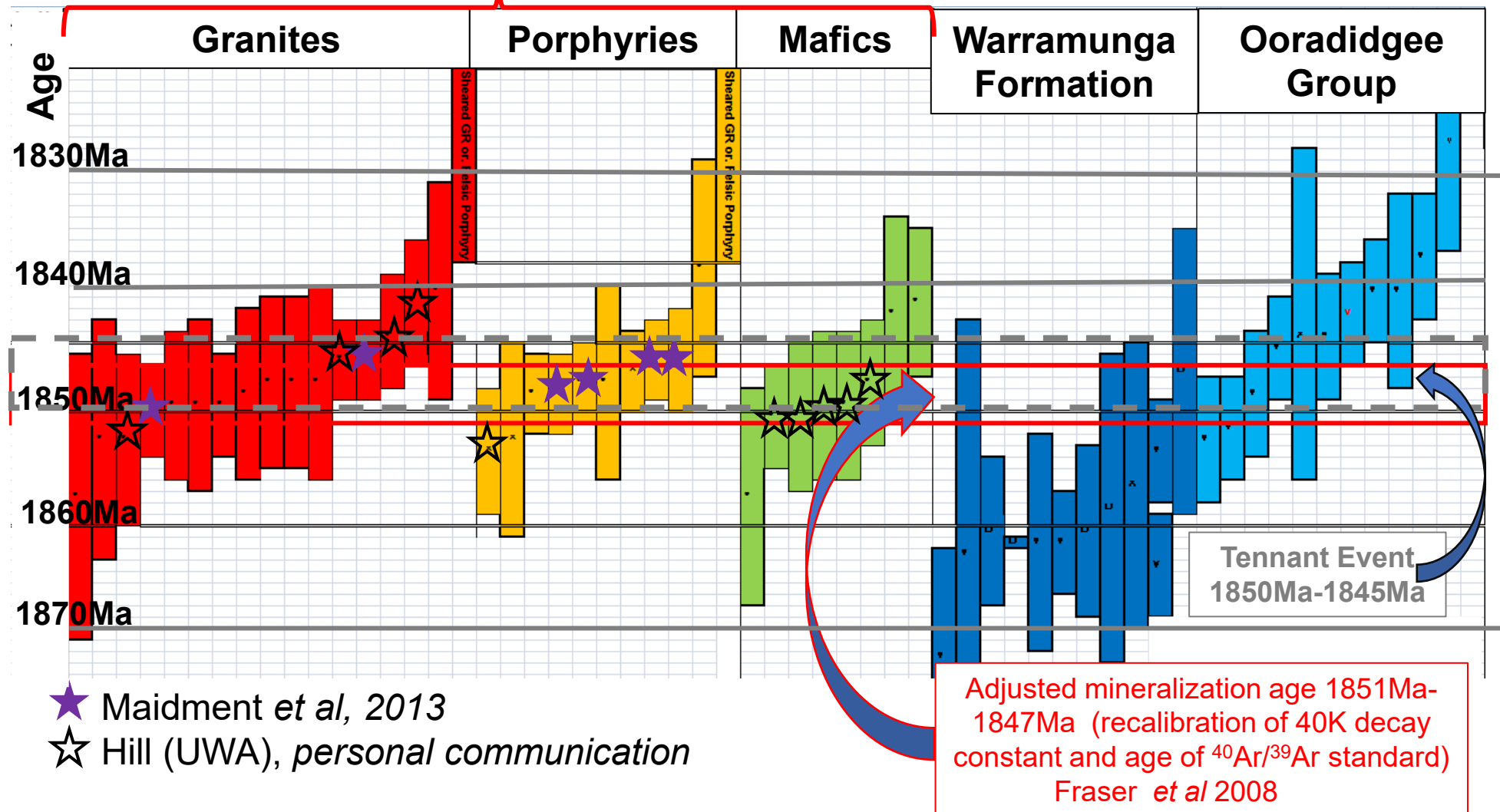


Gold and copper deposits in the TCMF occur along predictive D1 structural corridors, associated with deep seated thrust faults and the later intrusion (D2-D3) of the Tennant Creek Supersuite

# The role of applied Research in predicting the undiscovered

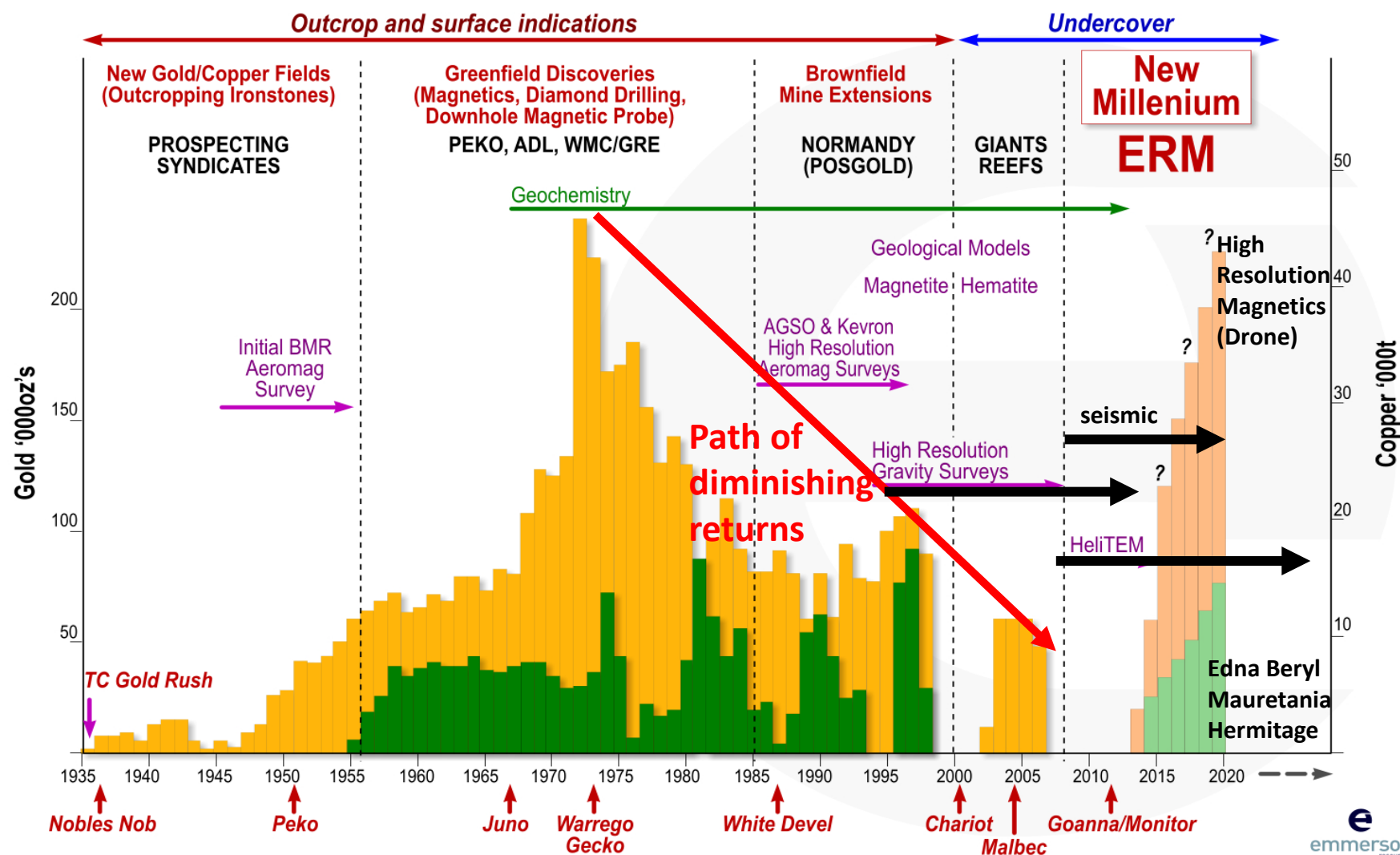
Mineralisation (D3) now synchronise with the main igneous event (1851 -1846Ma)... ERM sponsored PhD

TC SuperSuite is locally syn-deformational



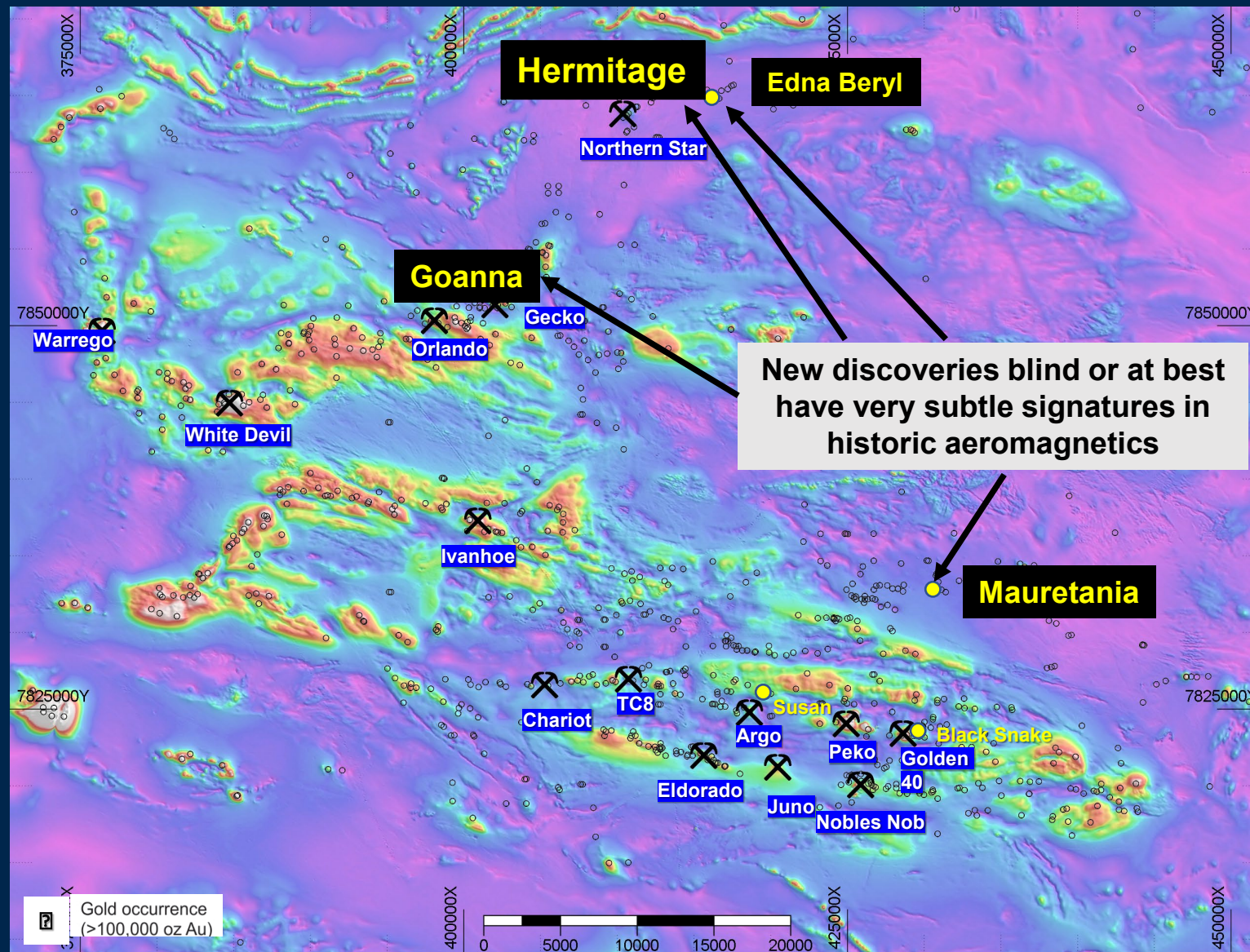
# Discovery history of the Tennant Creek Mineral Field

New detection techniques + models = discoveries but no silver (or gold) bullet!!!

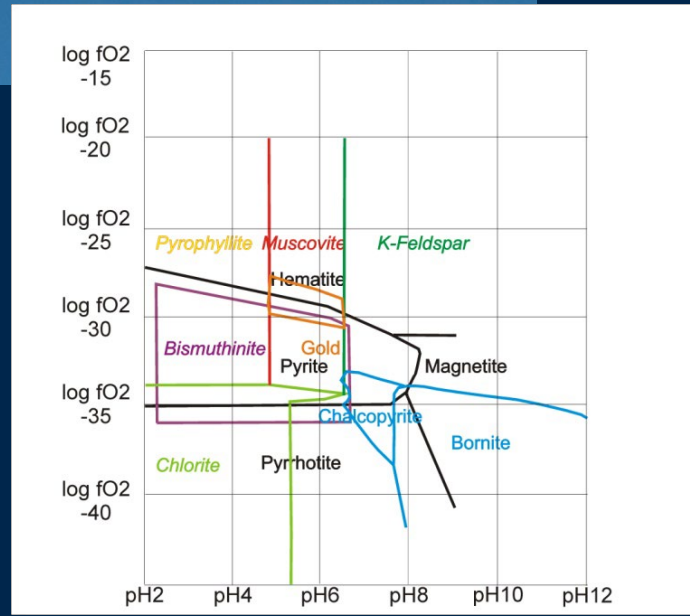
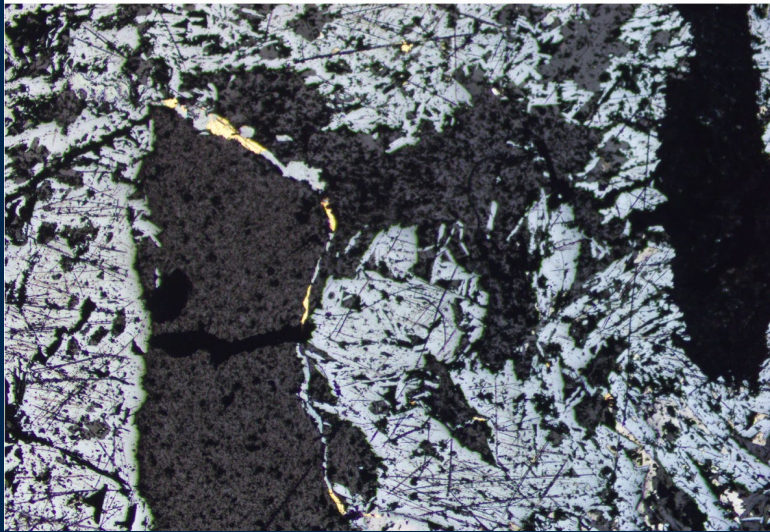


# Old Detection Technologies

Fixed-wing aeromagnetics was very effective at that time... providing the mineralisation was hosted in magnetite



# Mauretania Discovery – hematite hosted IOCG



**Mauretania discovery:  
Drone magnetic anomaly  
and Geophysical Inversion  
Model**

Refined detection technology, data processing... but so much more!

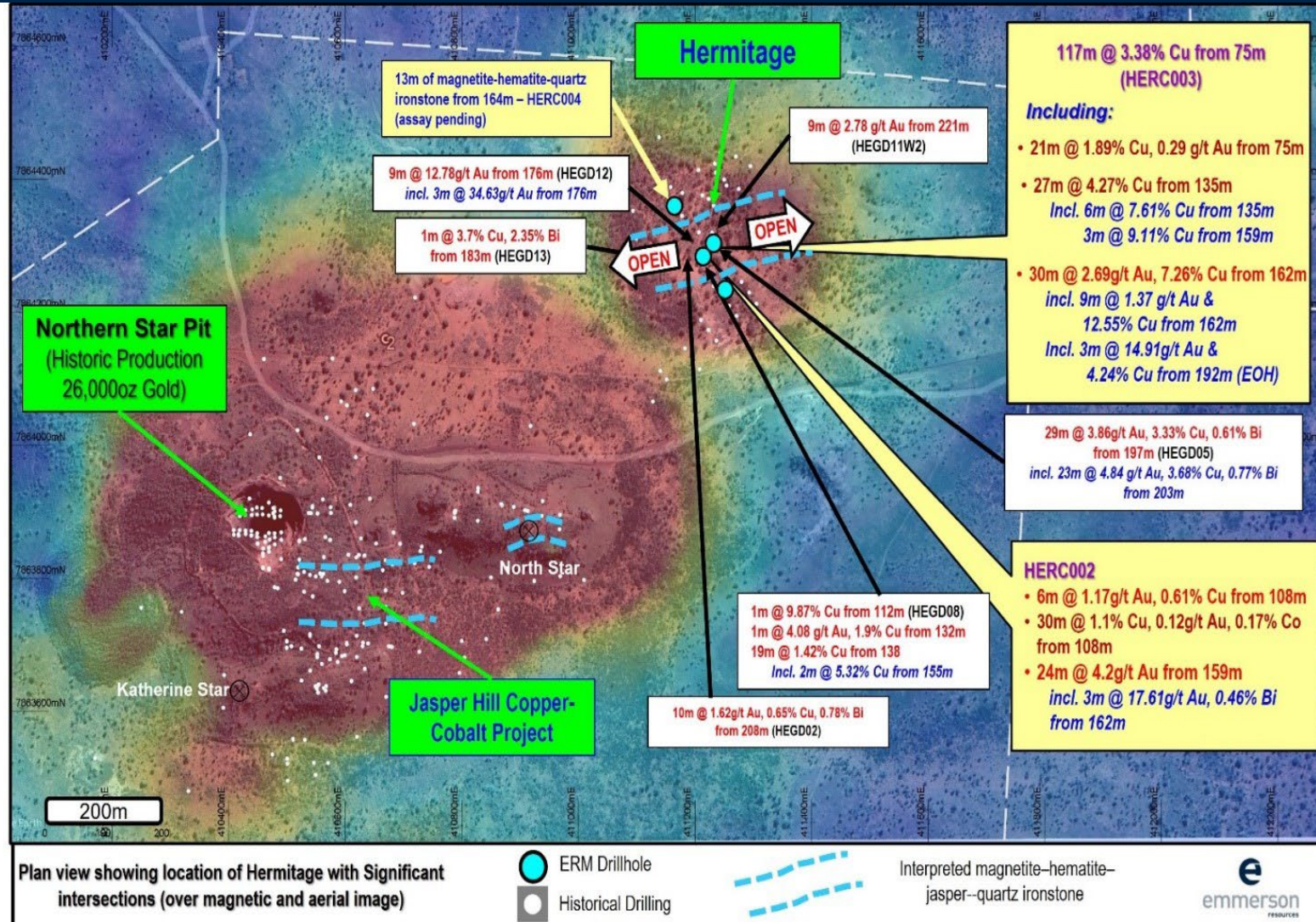
# The Discovery Team

An “overnight success”... that took 12 years of systematic science-based exploration!!

*Keeping it real – new technology and science for the discovery of new and old metals.*

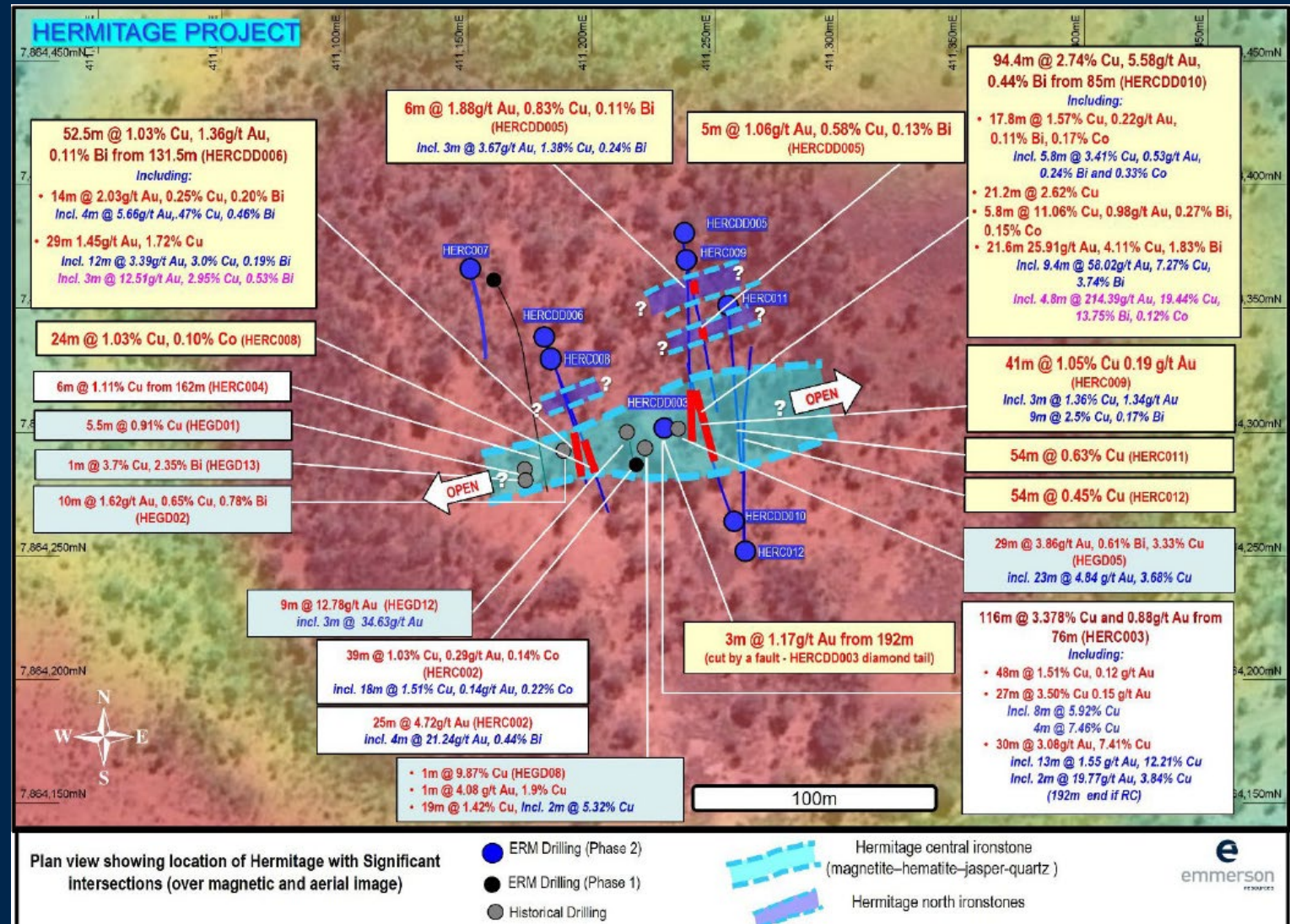


# Stunning 117m at ~3.4% copper at Hermitage (ASX: 8 December 2021)





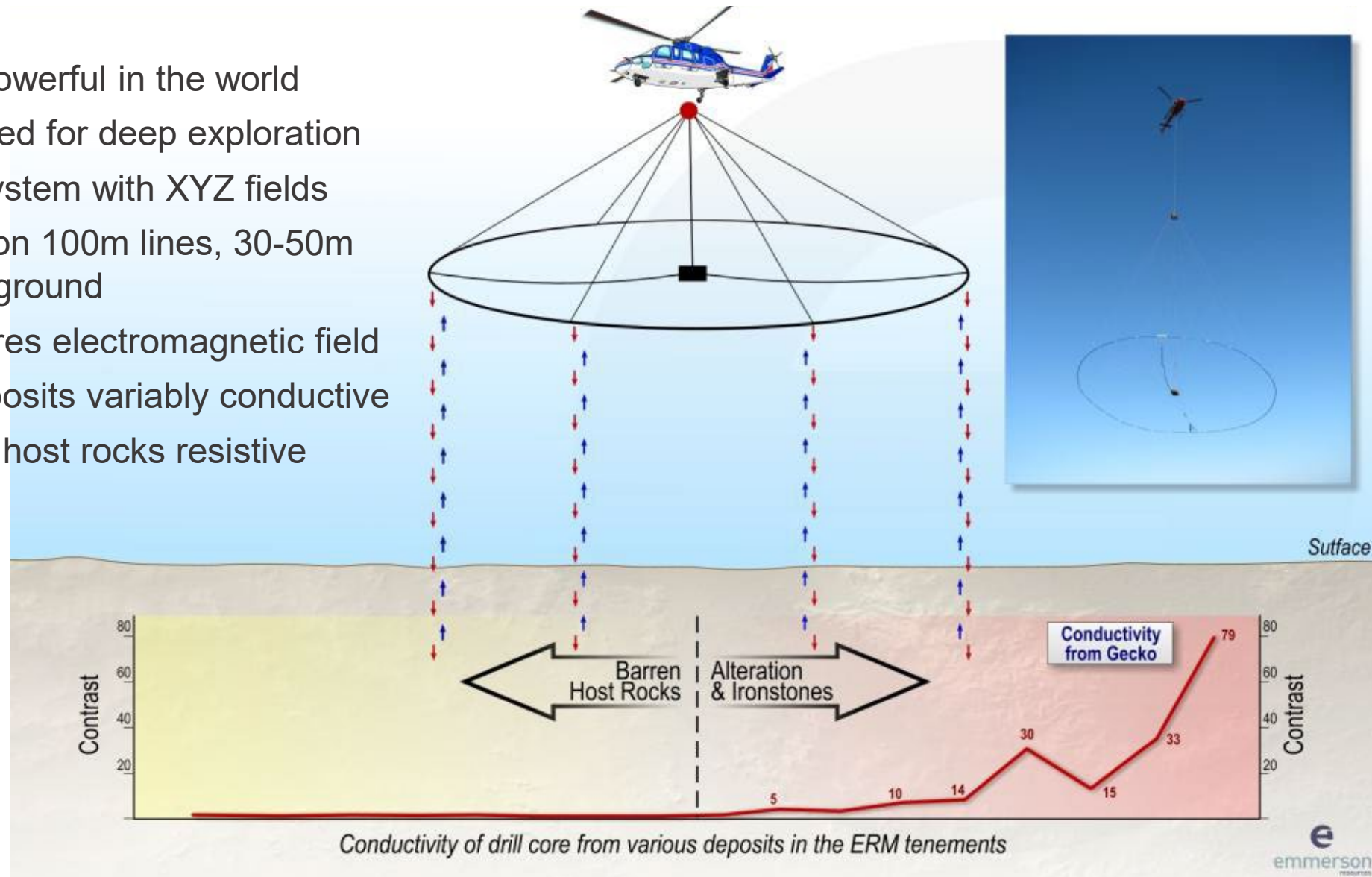
- **21.6m at 4.11% copper, 25.91g/t gold, 74.89g/t silver and 1.83% bismuth (from 157m) including:**
  - **9.4m at 7.27% copper, 58.02g/t gold and 3.74% bismuth (from 159.4m) including:**
  - **4.8m at 19.44% copper, 214.39g/t gold, 103.8g/t silver, 13.75% bismuth and 0.12% cobalt (from 164m)**



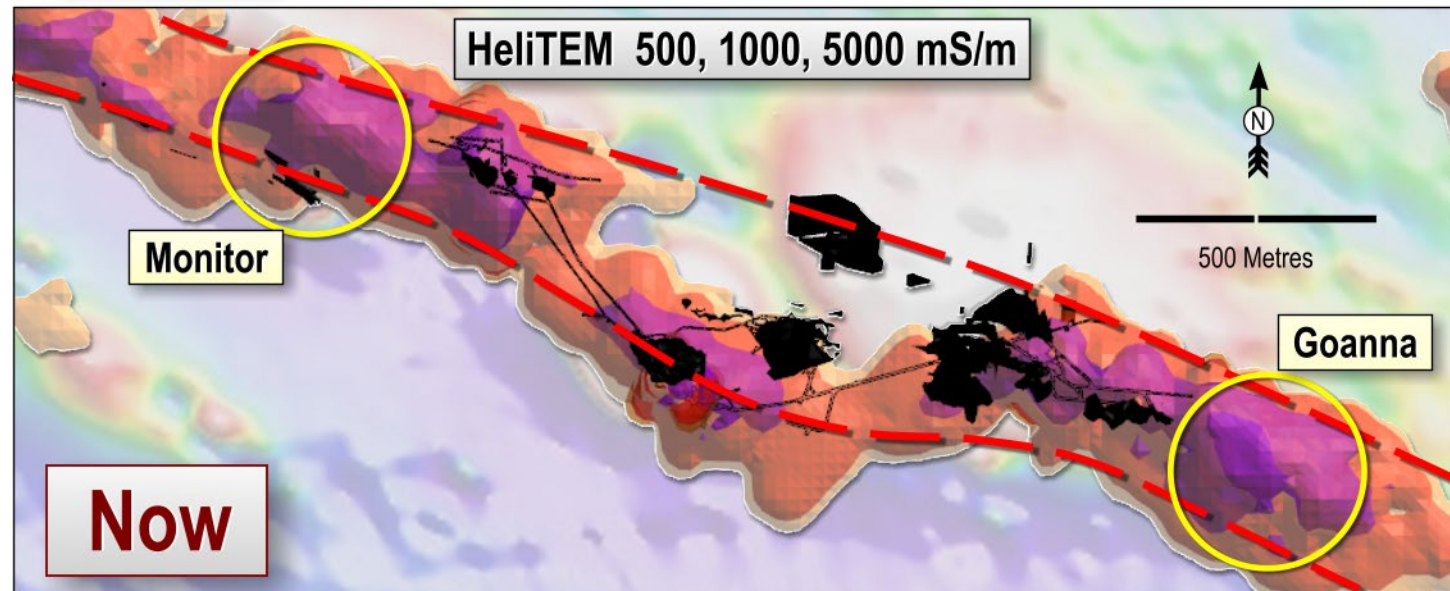
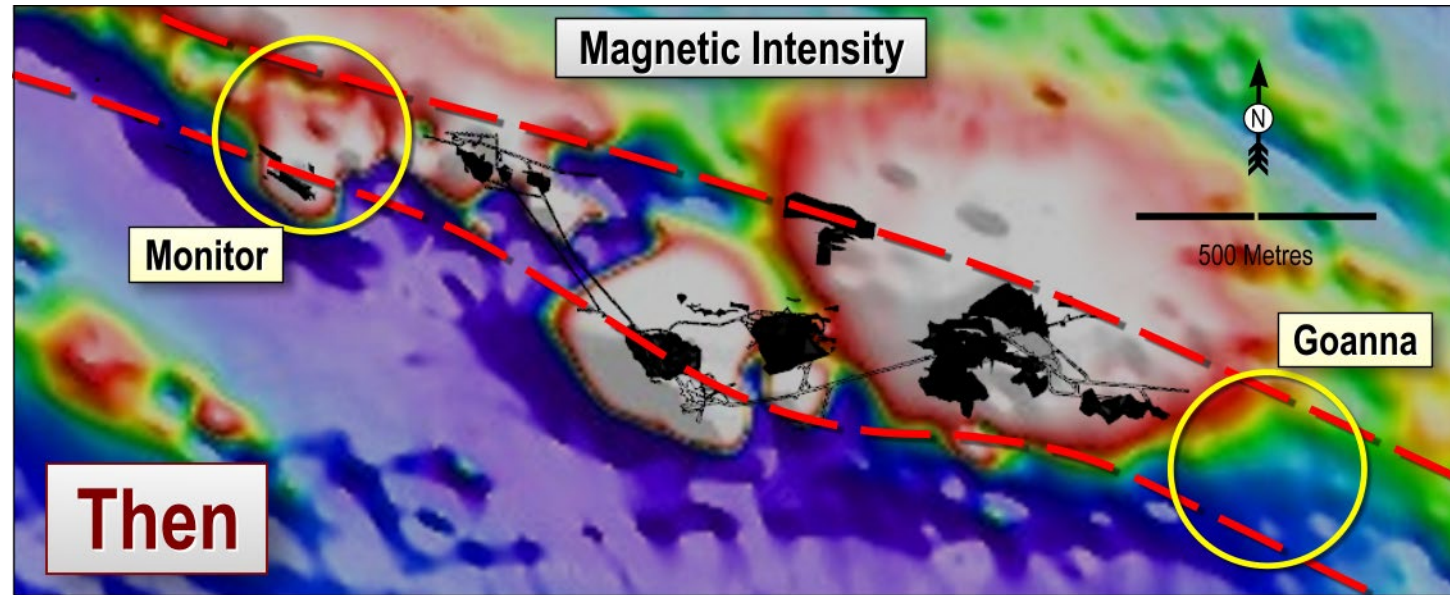
# New Tech and Ideas

## HelITEM:

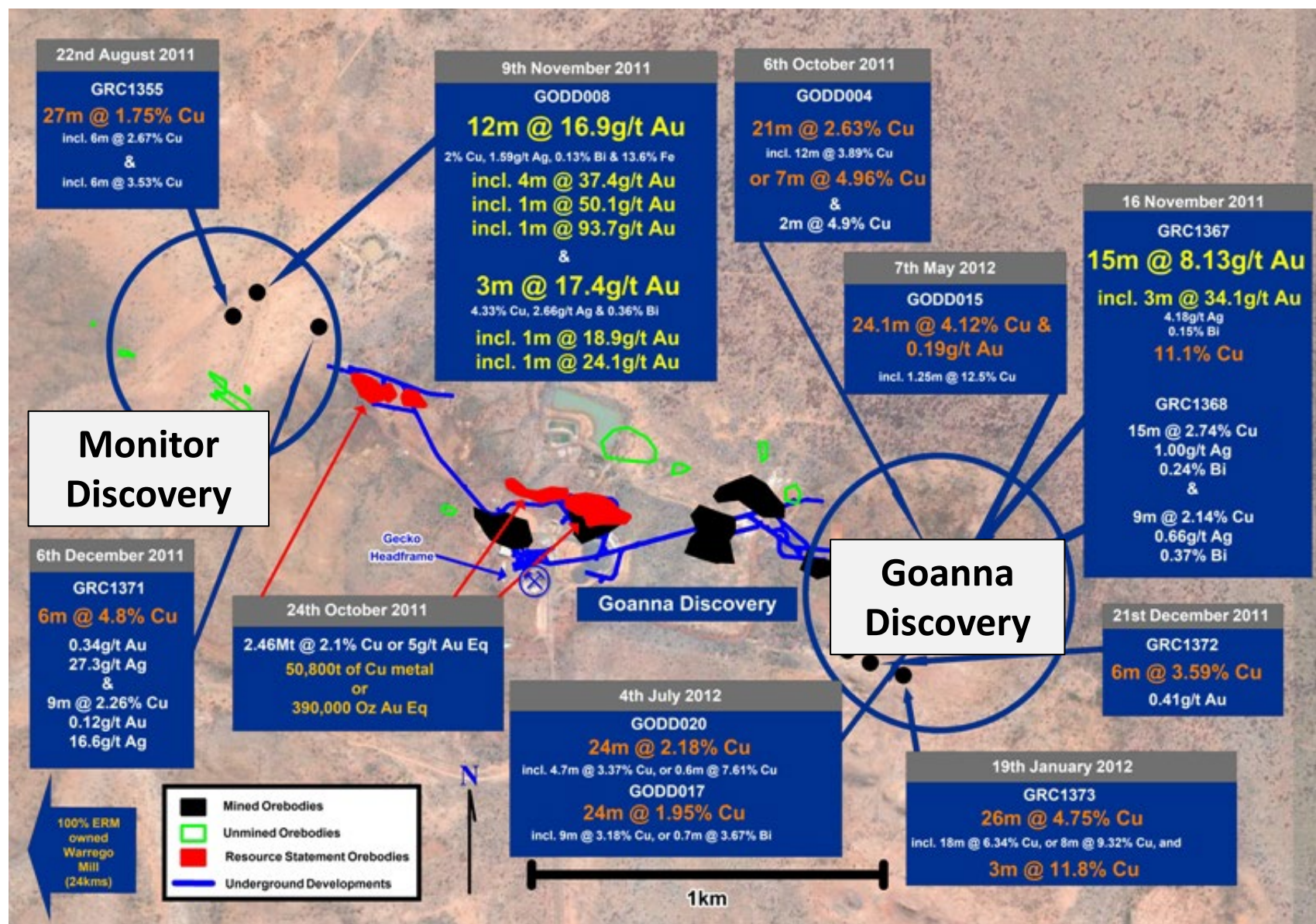
- Most powerful in the world
- Designed for deep exploration
- Only system with XYZ fields
- Flown on 100m lines, 30-50m above ground
- Measures electromagnetic field
- TC deposits variably conductive
- Barren host rocks resistive



# Old versus New: Detecting the Undiscovered



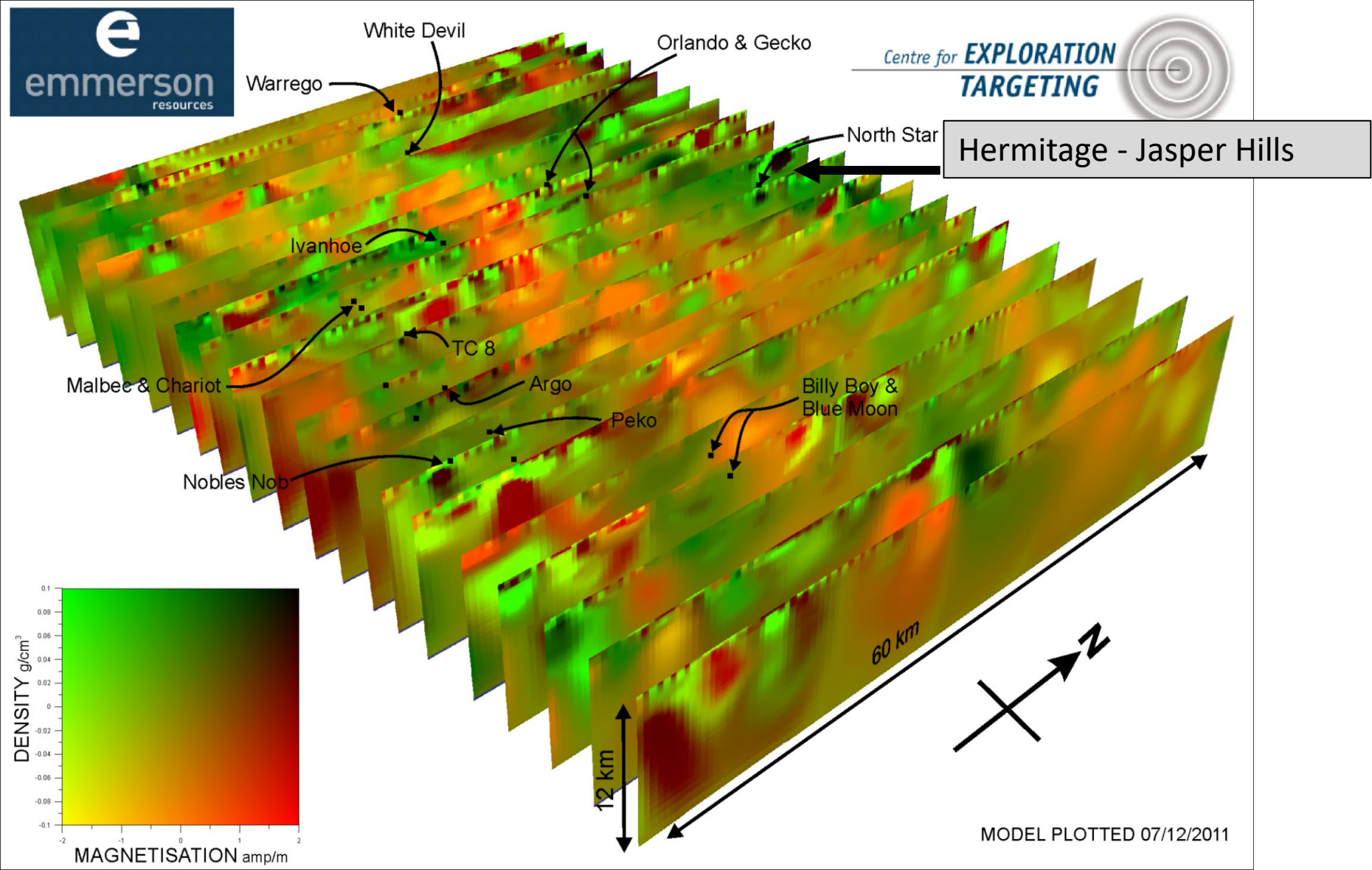
# The Undiscovered Discovered



Source:  
ASX: 6 October 2011  
ASX: 19 January 2012  
ASX: 7 May 2012  
ASX: 7 November 2012

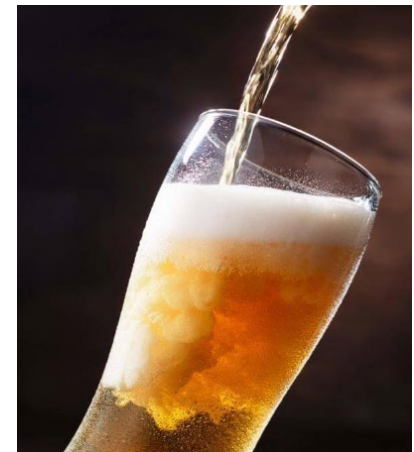
# Predicting the Undiscovered

a new 4D model of the Tennant Creek Mineral Field



# Some froth but mostly substance... Keeping it Real!

- Systematic science-based exploration more suited to a durable business case based on LME traded metals. It must be investable over the requisite time horizon!!
- The brownfields is the new green fields... leveraging off known mineral systems.
- Invest in people! – develop the intuitive mindset, visualize and work in 3D, embrace technology, applied research, upskilling via training/courses/conferences... add business acumen.
- Understand the 4D implications and crossover scale of Prediction and Detection... the MH370 issue
- GI not AI... Geological Intelligence not artificial intelligence! Working with independent and invariably incomplete datasets.
- Increase the probability of success – keep it real (skim off the froth)!





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