



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



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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



Iron Ore*
2.6B

LARGEST END-USE



Steelmaking



Construction



Chemicals



Alloying Agents



Energy/Batteries



Magnets



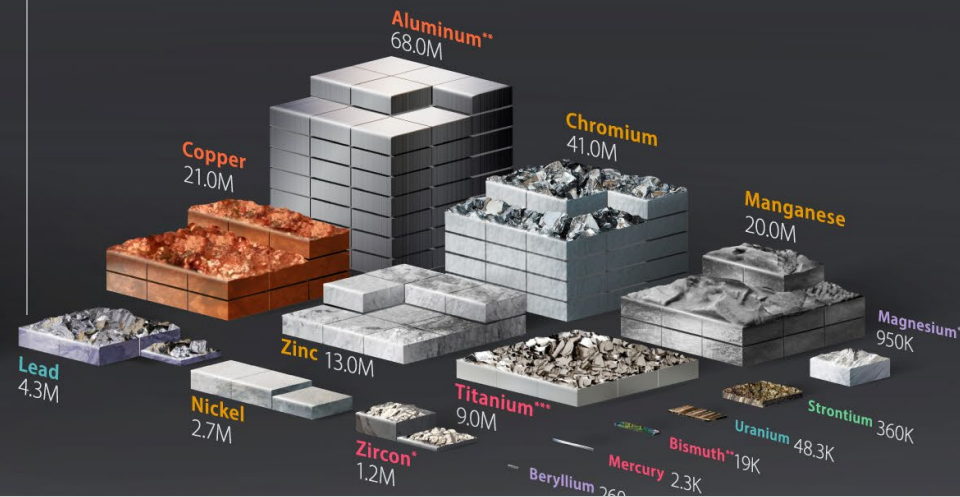
Electronics



Other

INDUSTRIAL METALS

181,579,892 tonnes



TECHNOLOGY AND PRECIOUS METALS

1,474,889 tonnes



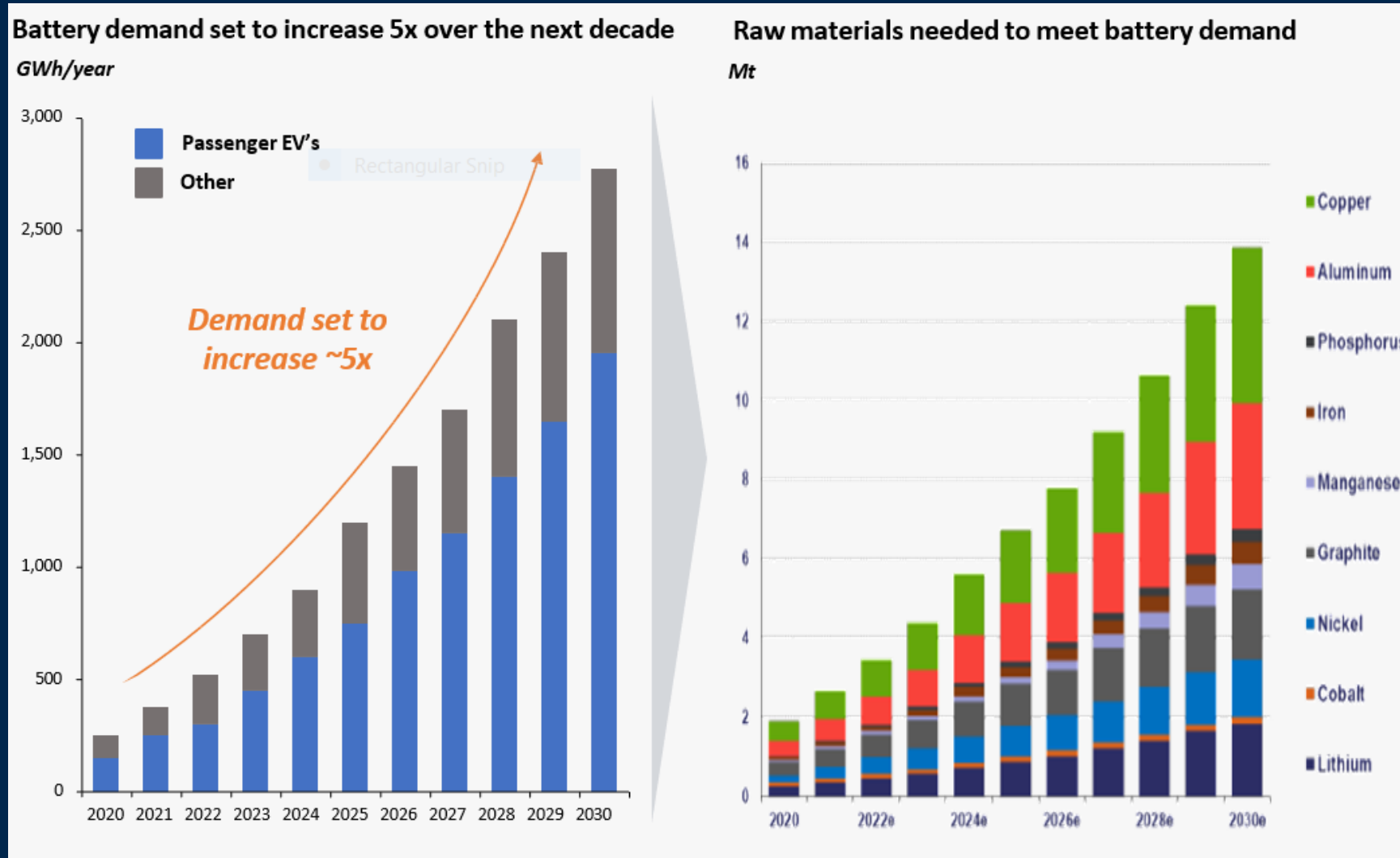
Keeping it Real – the context!

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?*



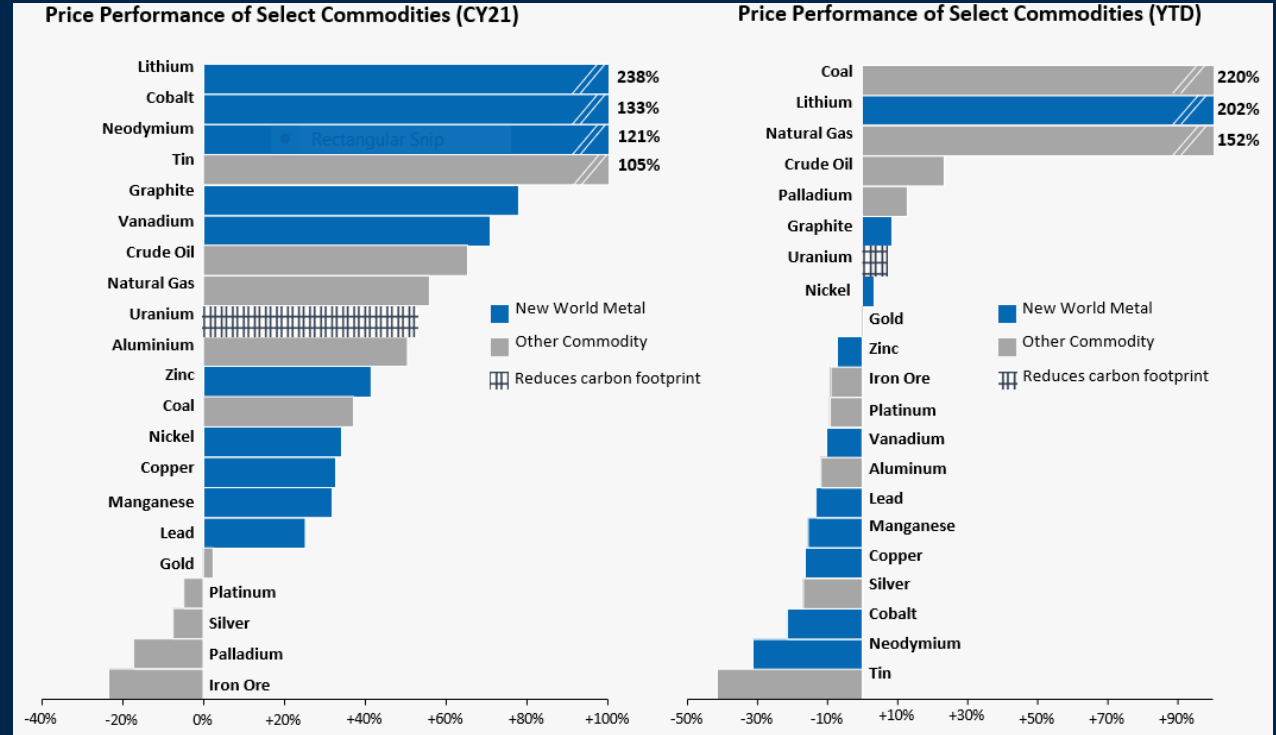
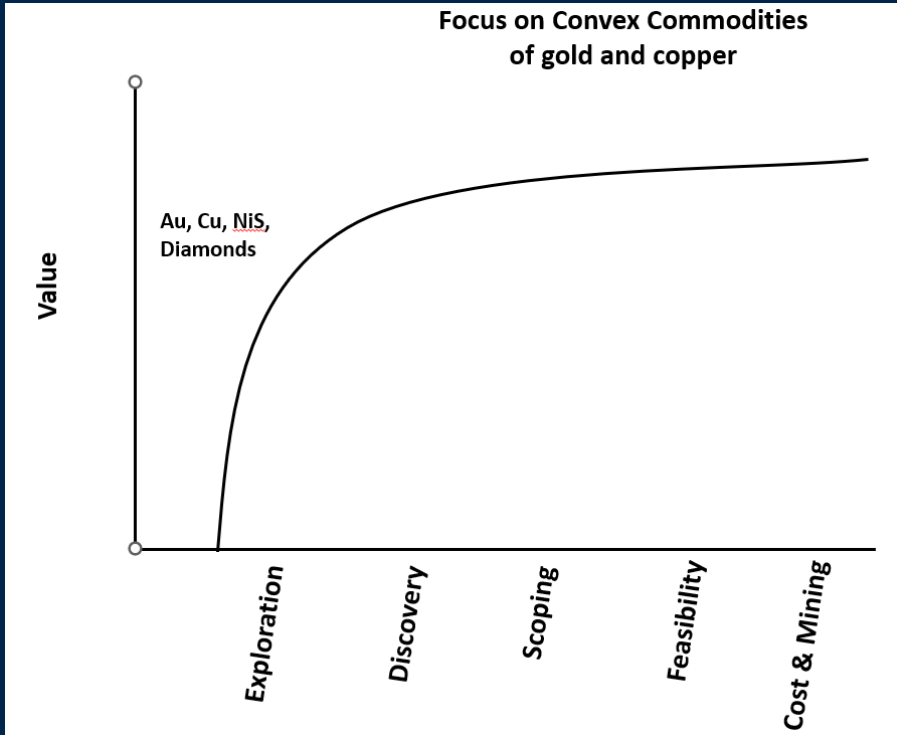
New battery technology... companies pivot to Li, Ni, Co, phosphate, REE Clays... Playing the market or Keeping it Real?



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





Rare Earths

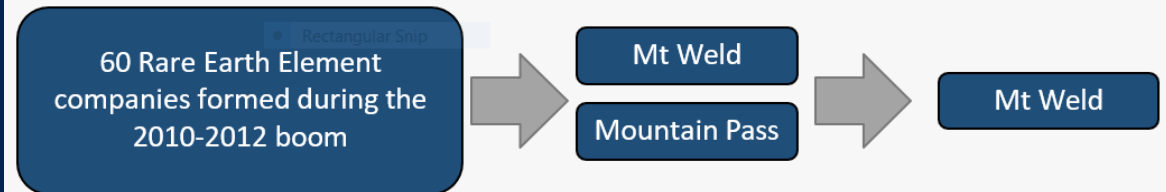


Keep it REAL
Rare but not
well done!!

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

*Two major mines
Developed*

*Only **one** that
actually works*



Where to from here?

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

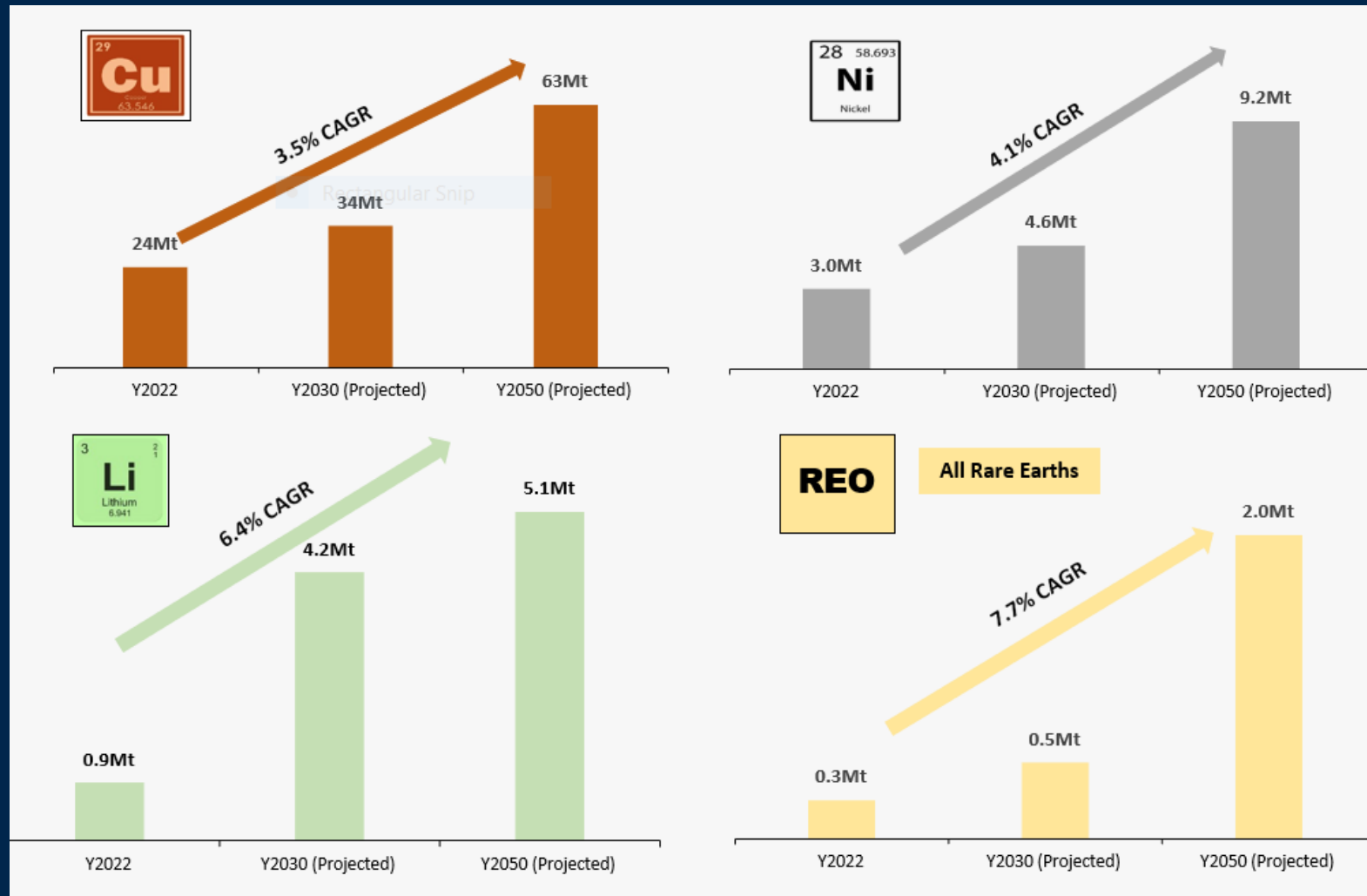
Total Rare Earth Oxide (REO) global demand (250ktpa) is expected to double to 500ktpa by 2030

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

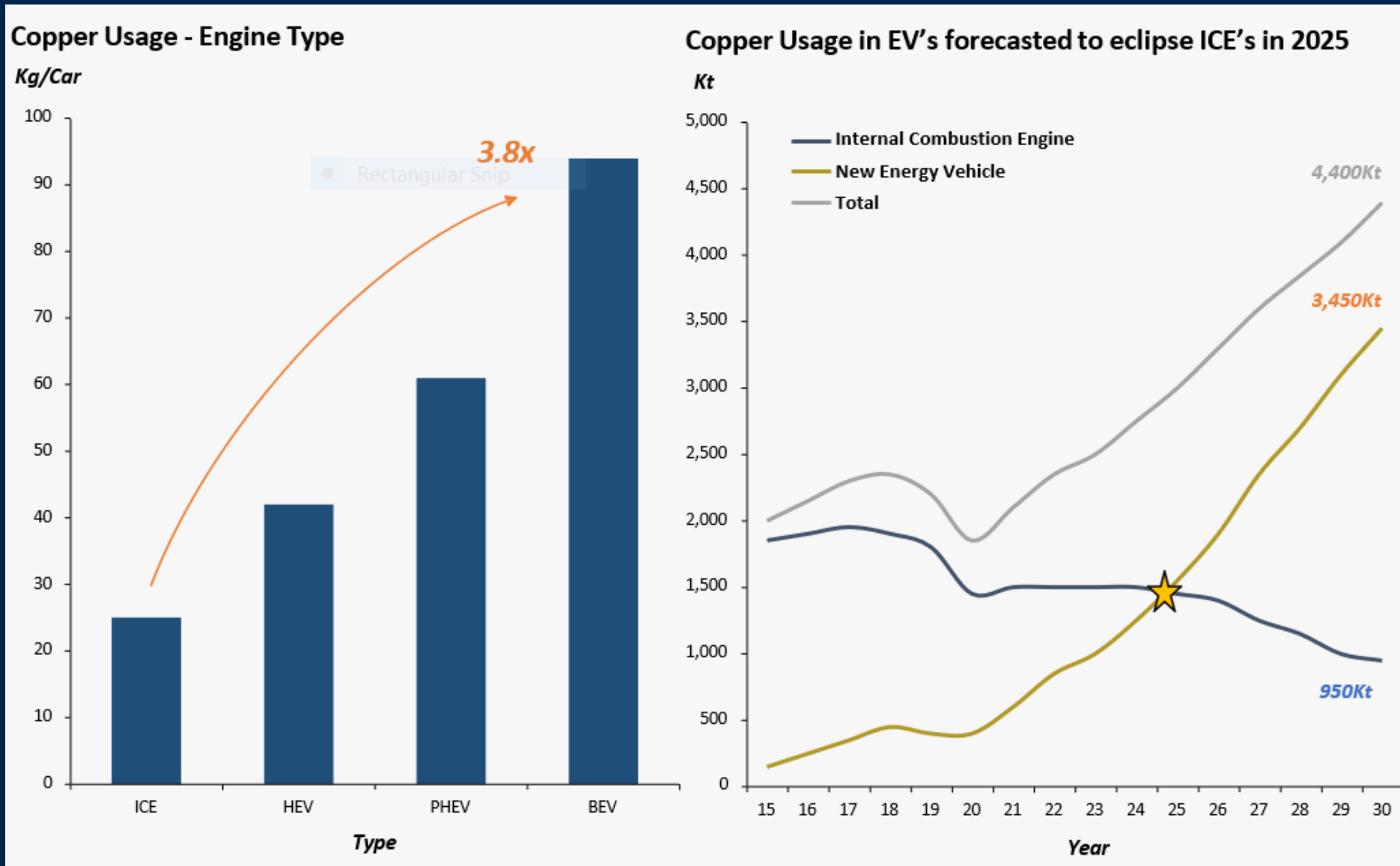
Mt Weld took approximately 29 years to be studied, developed and profitable as an REE mine (from commissioning to positive cashflow in ~7 years)

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

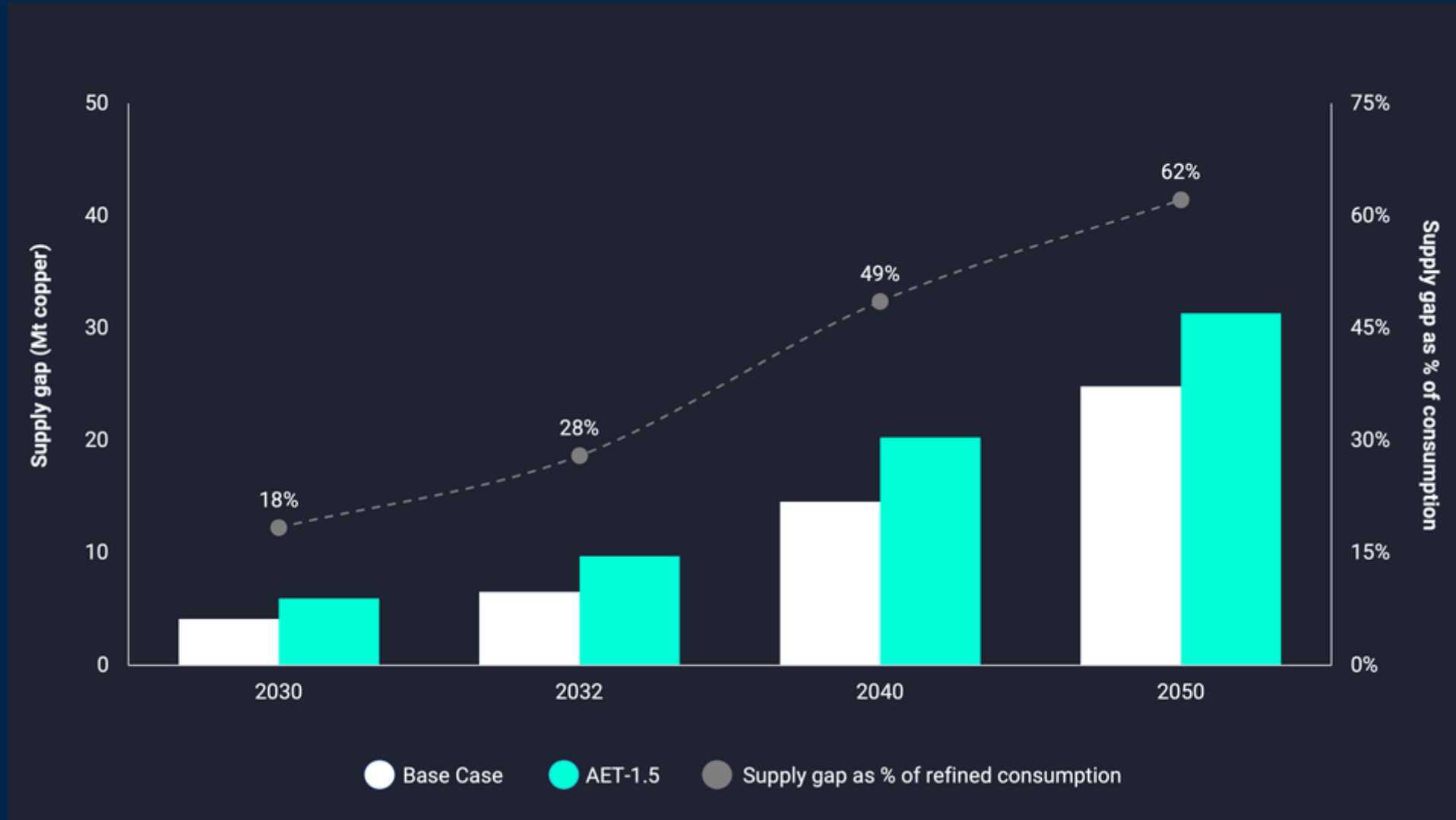


Strategic - long time-frame with investment in systematic, science-based discovery (the convex minerals traded on the LME)... Opportunistic – sitting on a discovery until it becomes economic or playing the market (short term)

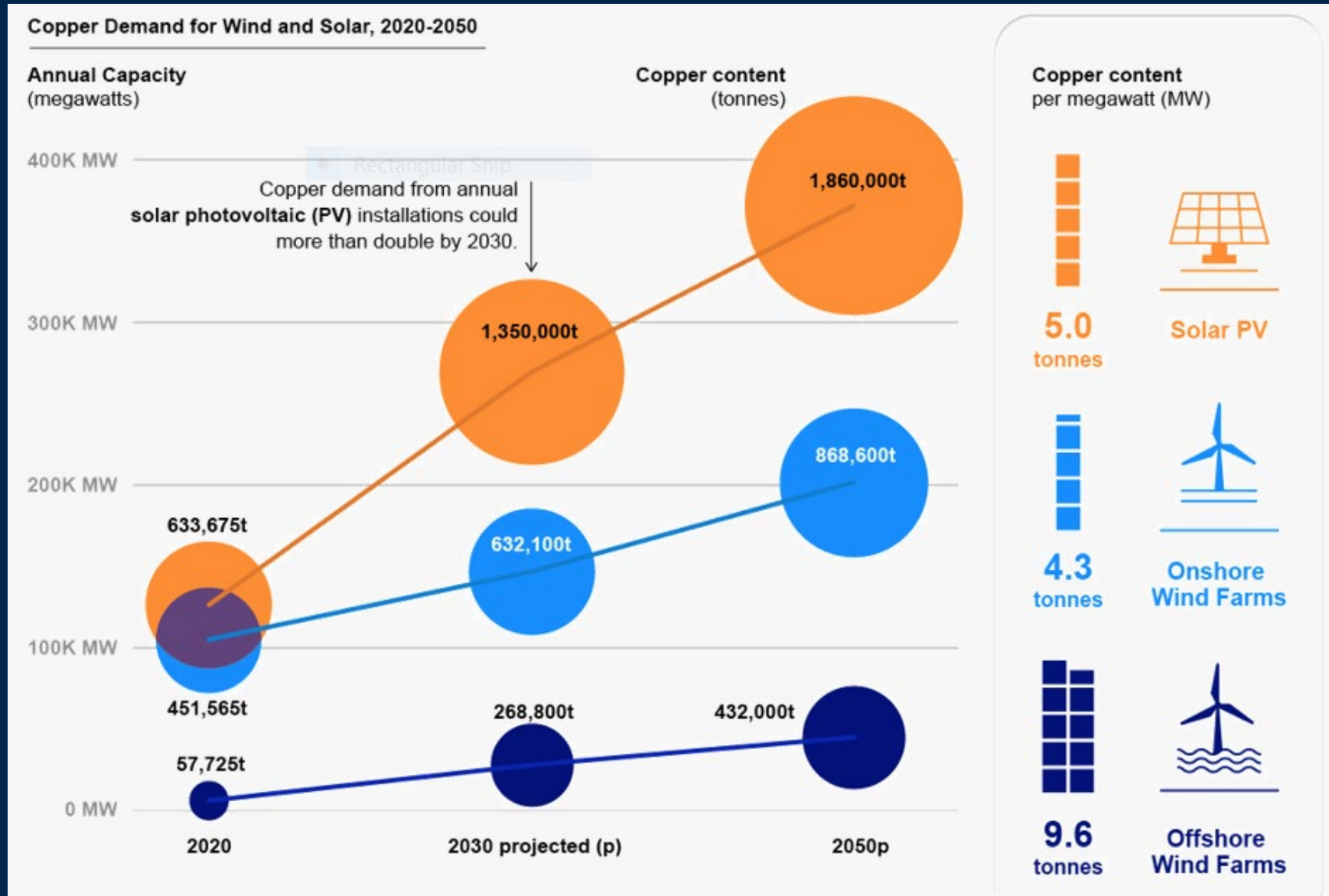
Copper is KING... a new old-world LME metal!



Copper supply gap (under Energy Transition)



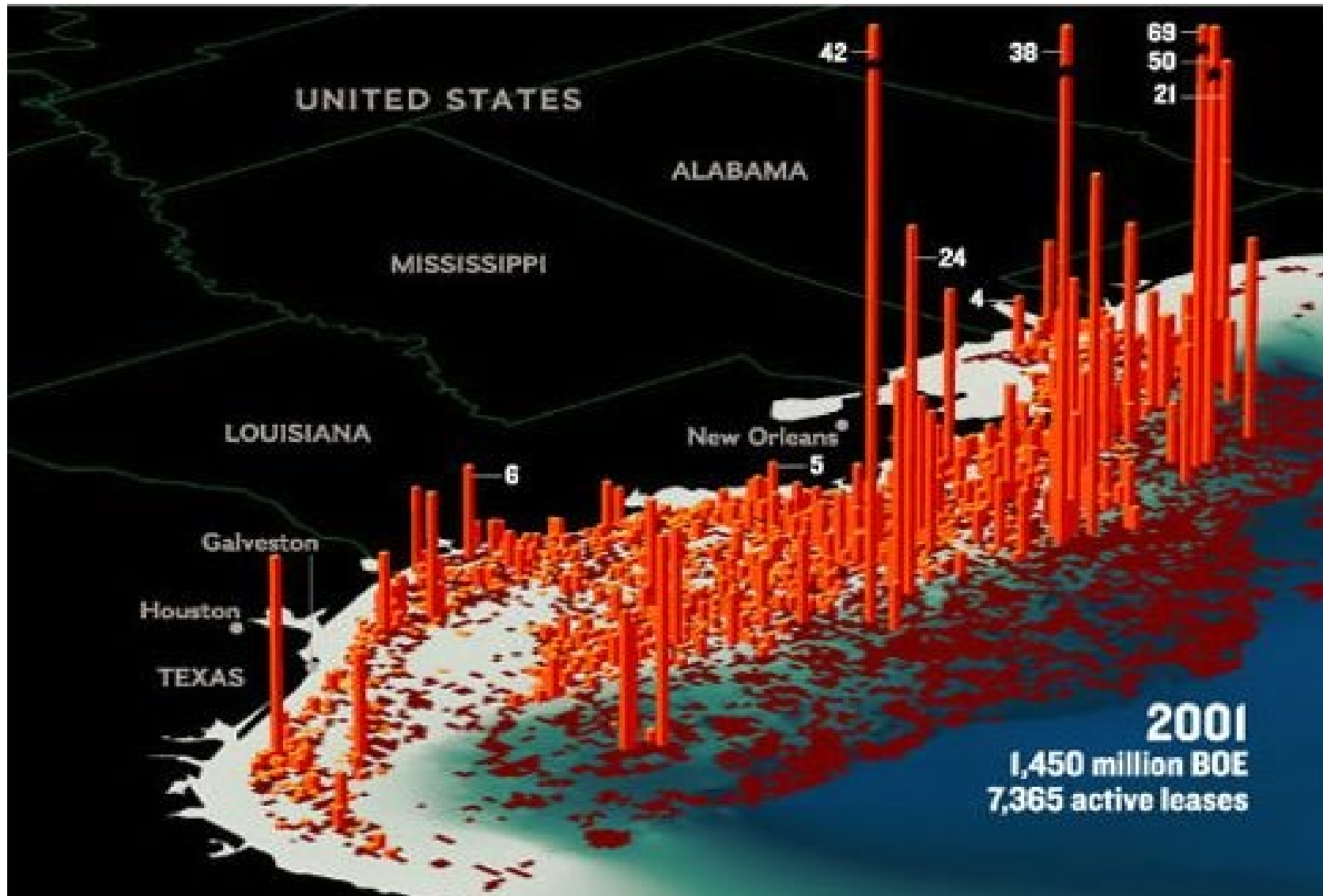
Copper demand remains strong... but can we find enough?



The strategic approach... brownfields is the new greenfields



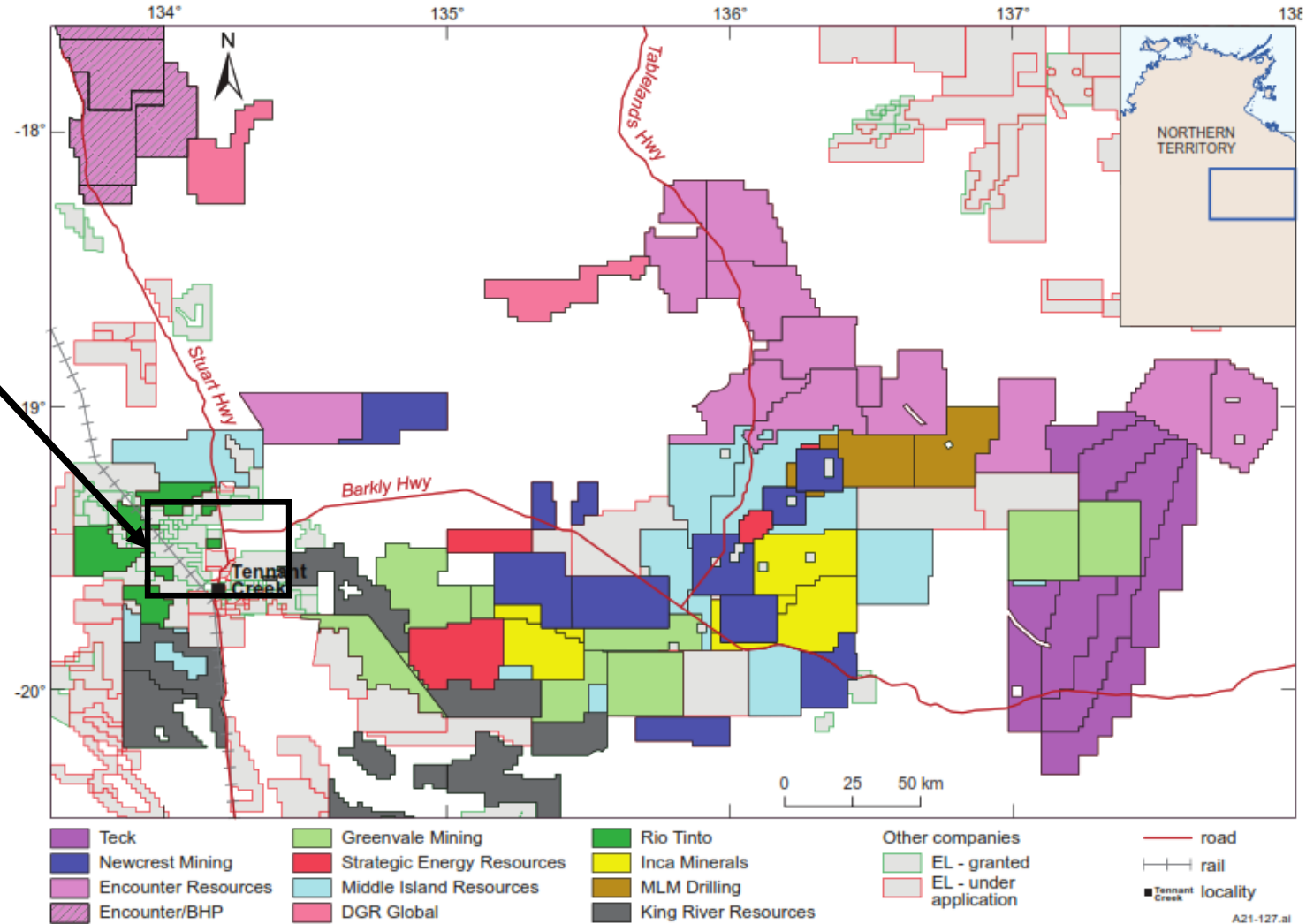
The prize... after 40 years of technology (3D seismic), science and improved deep water drilling and extraction... but not simply near well or mine exploration!



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 1,700km² of the key IOCG Paleo-Proterozoic province

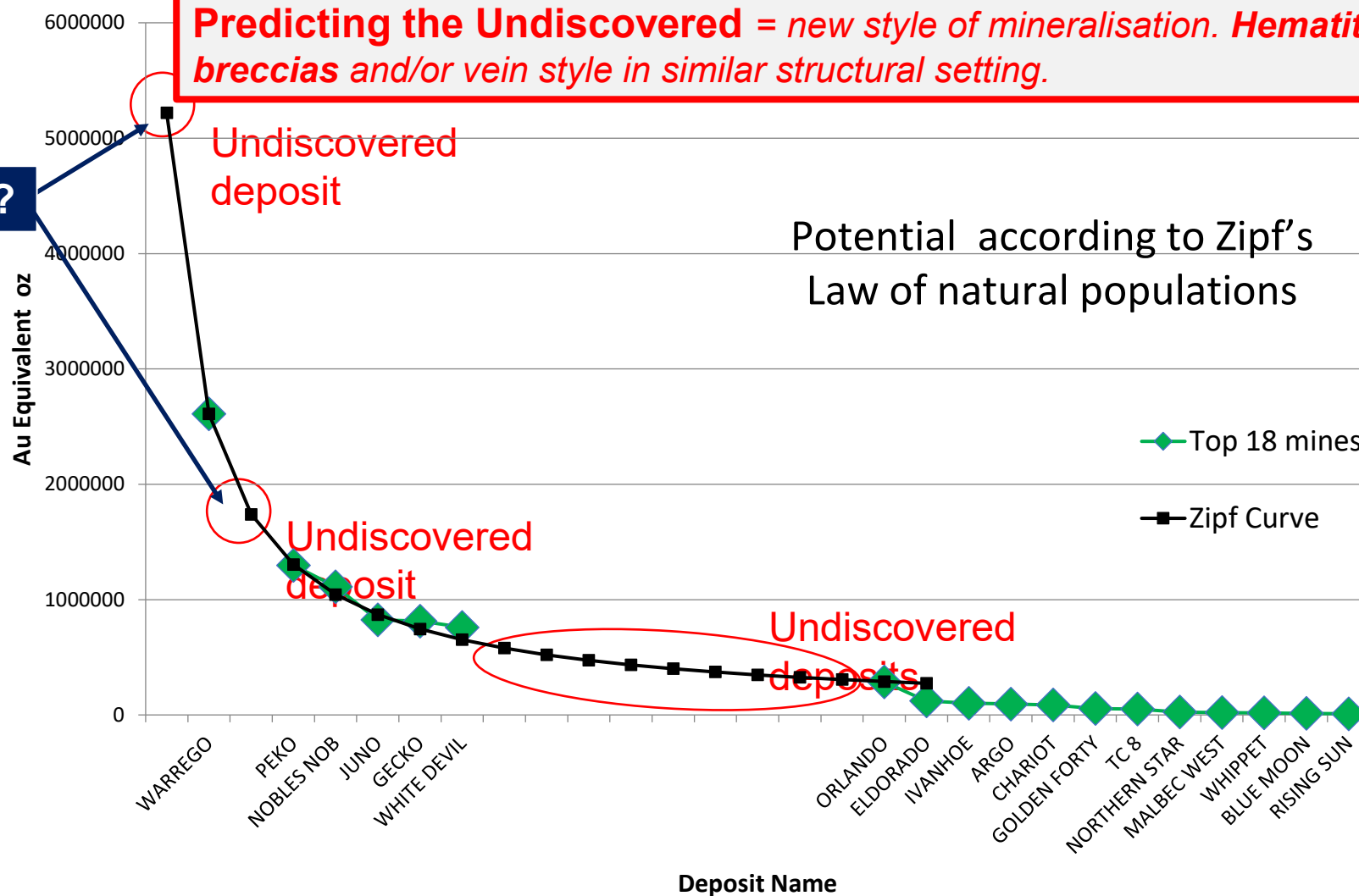


Map of exploration licences and application in the Barkly Tableland in March 2021, showing the distribution of tenure of selected exploration companies. Most highlighted licenses were applied for since 2019. (Map from AGES 2021).

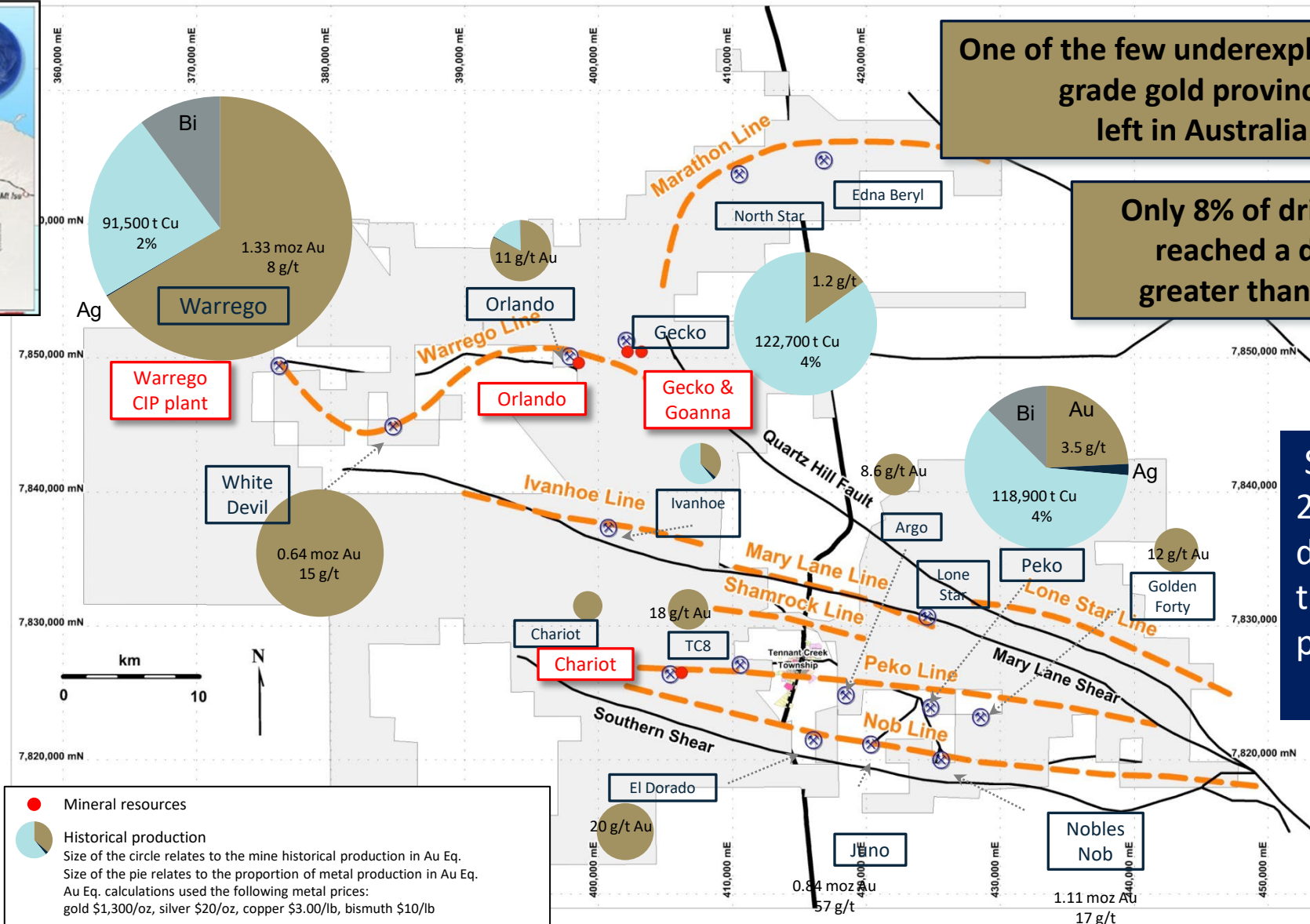
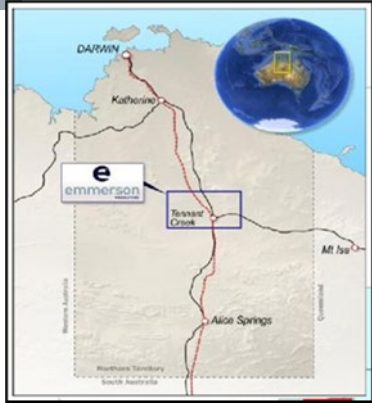
The undiscovered potential of the Tennant Creek Mineral Field

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.



Tennant Creek – brownfields is the new green fields?



One of the few underexplored high grade gold provinces left in Australia

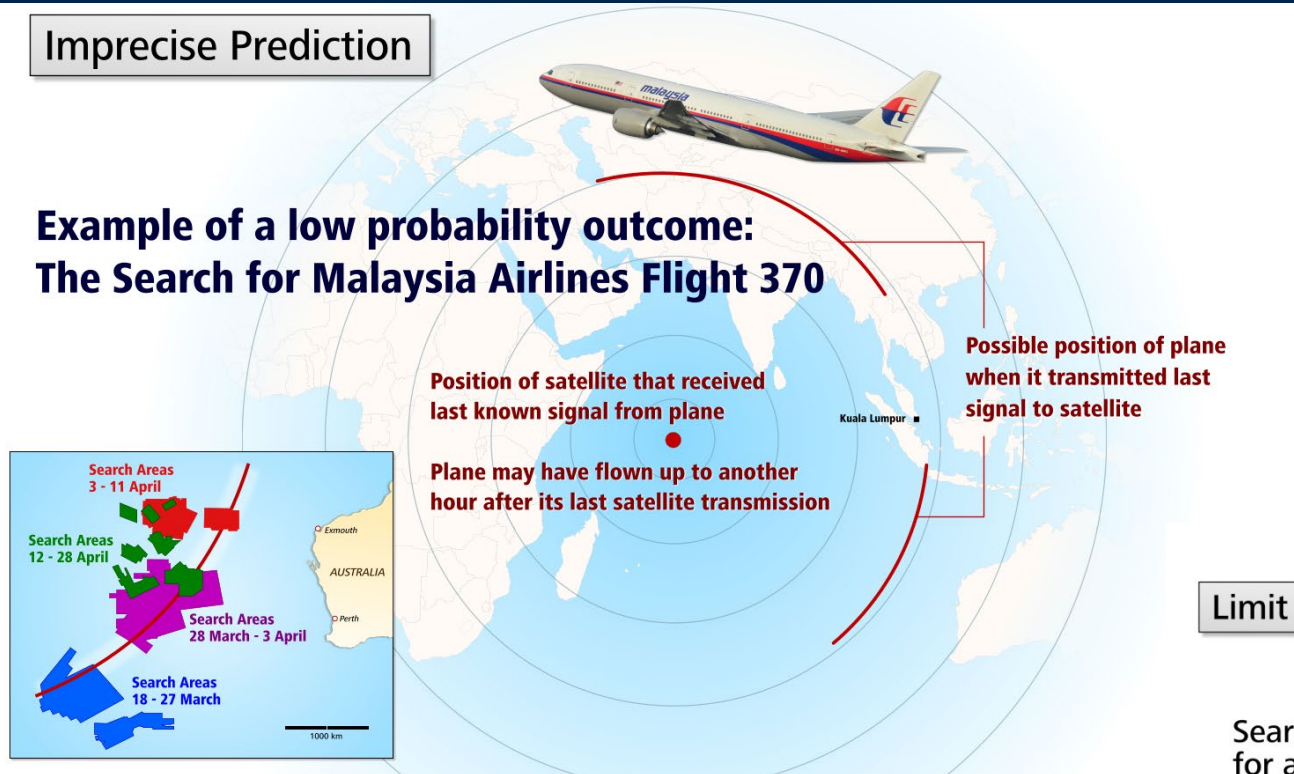
Only 8% of drill holes reached a depth greater than 150m

Statistically it is company 2.8 that makes the major discoveries...leverage off the known=lower risk path to value!

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

Imprecise Prediction

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



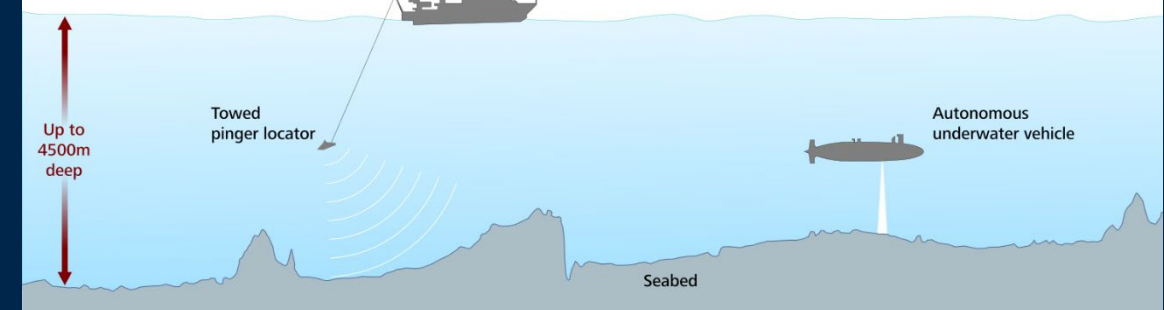
Limit of Detection Techniques

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

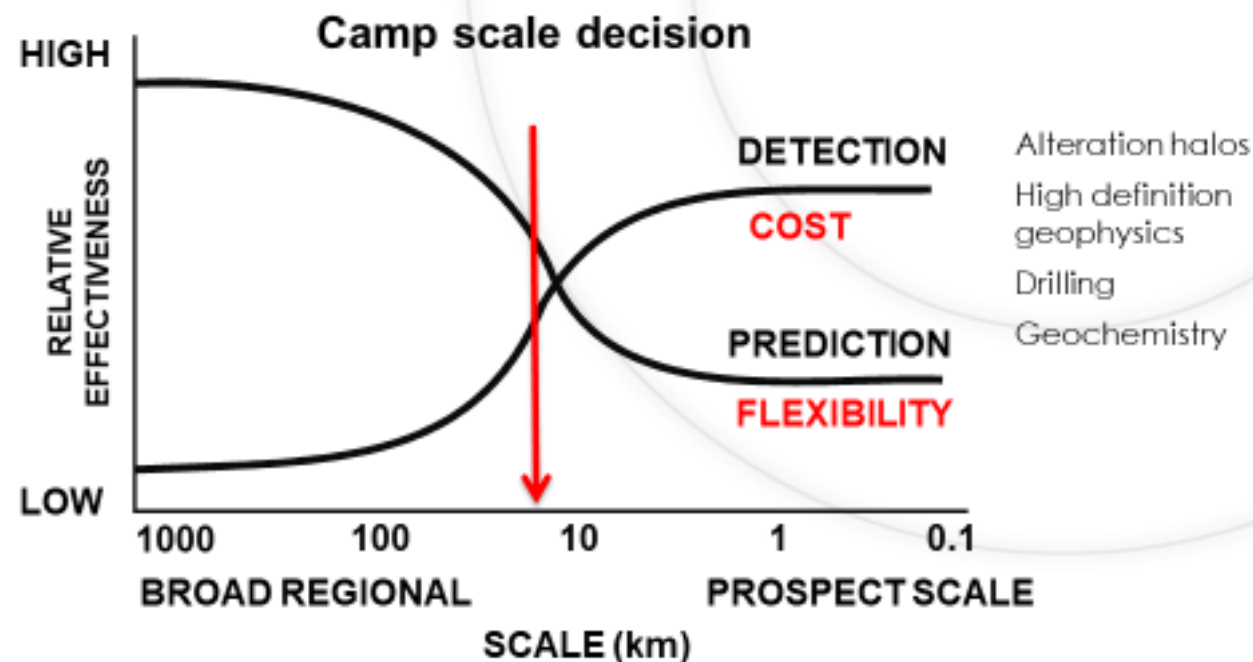


Getting the scale right...

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...

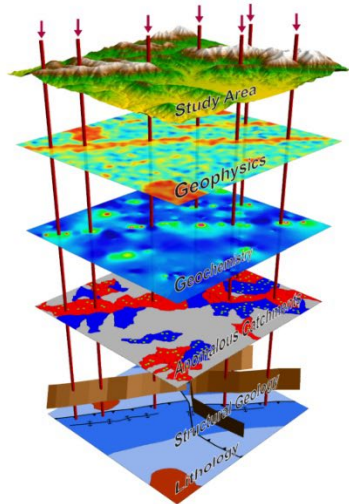
The business case for exploration and the confluence of land access, data, people, science...

Precise Prediction and Detection = increasing probability of Discovery!

Precise Prediction and Detection

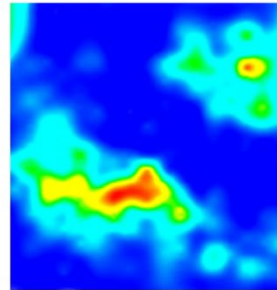
Aiming to deliver:

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



Weighted aggregation process*

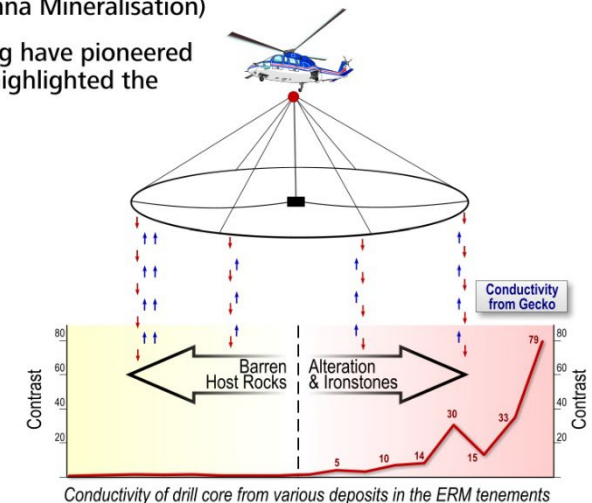
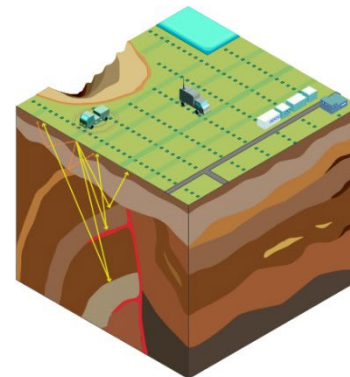
*Unbiased, probability based



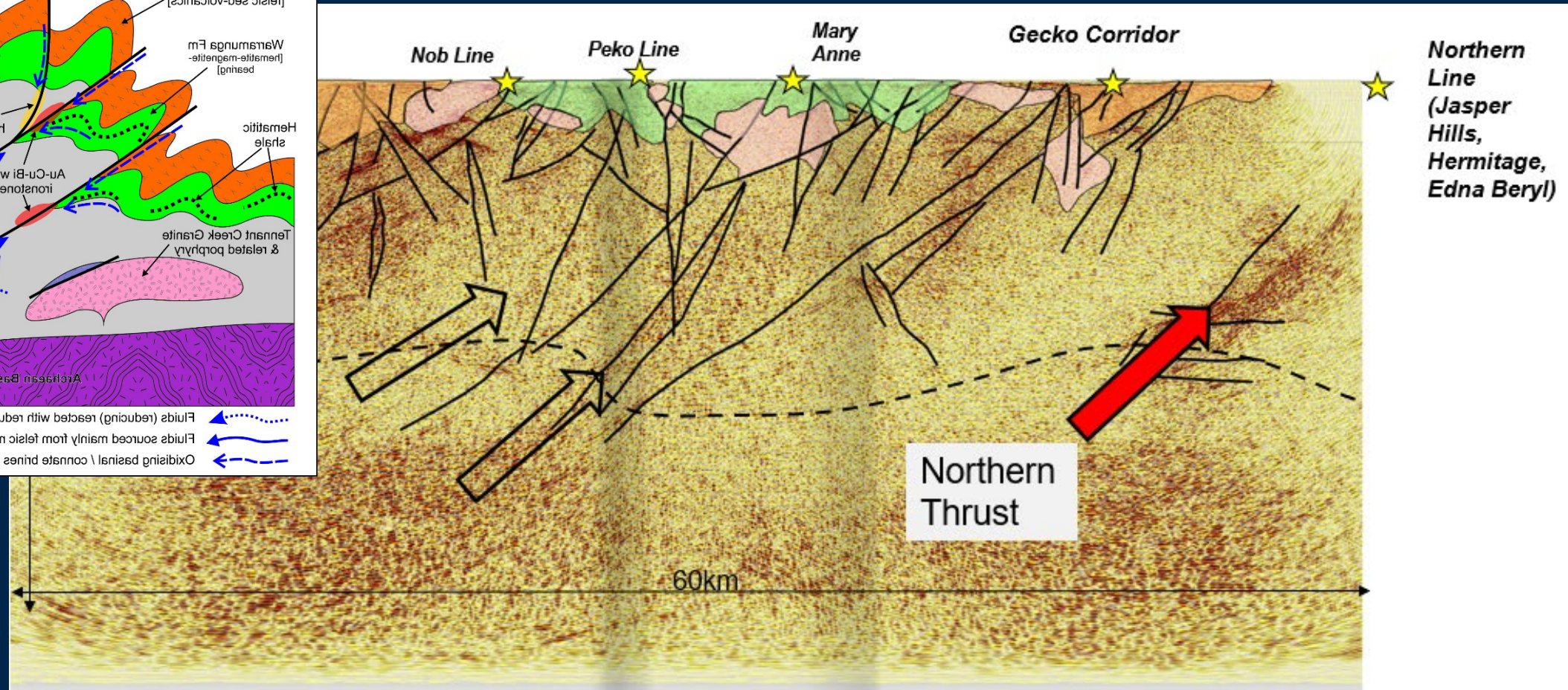
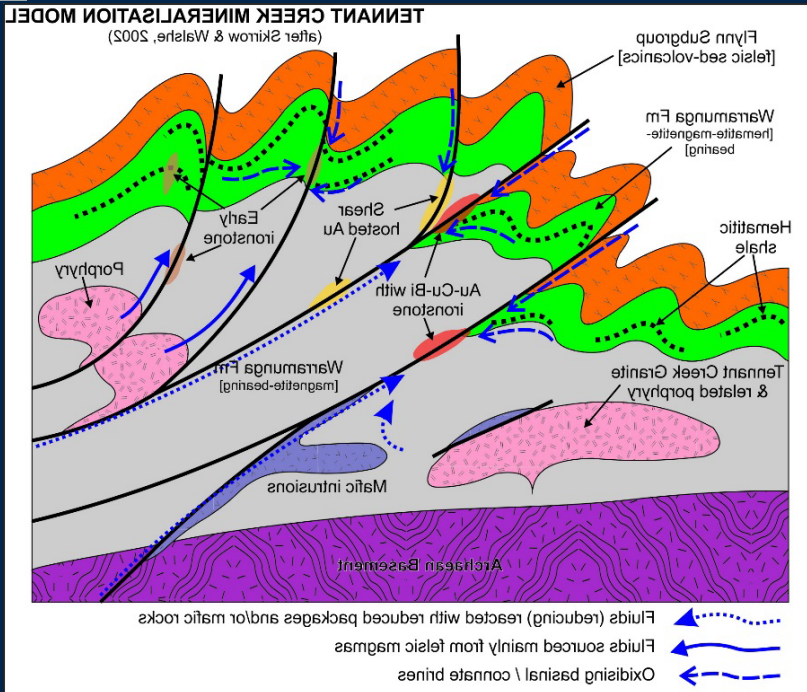
New Targets

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

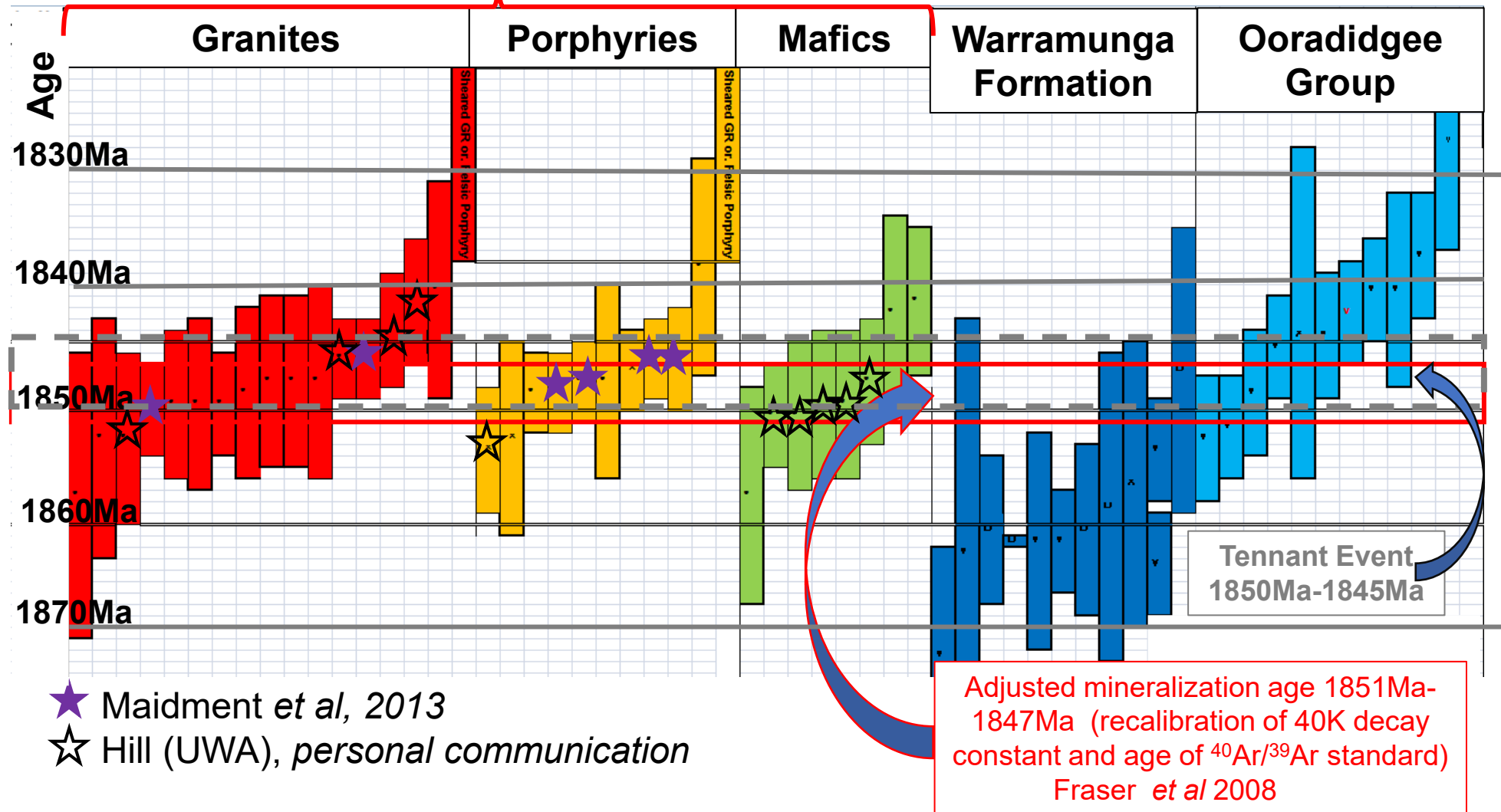


Gold and copper deposits in the TCMF occur along predictive D1 structural corridors, associated with deep seated thrust faults and the later intrusion (D2-D3) of the Tennant Creek Supersuite

The role of applied Research in predicting the undiscovered

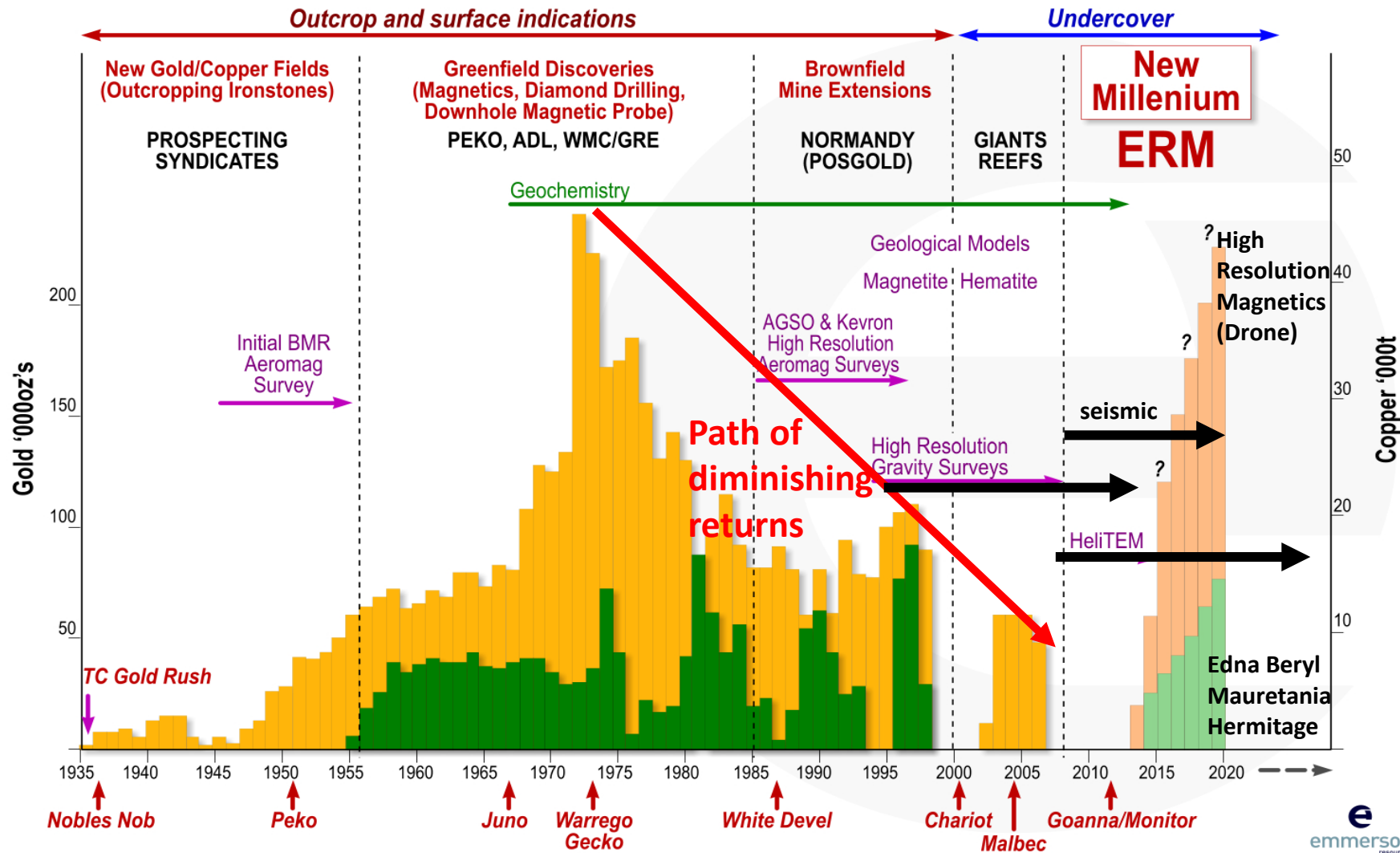
Mineralisation (D3) now synchronise with the main igneous event (1851 -1846Ma)... ERM sponsored PhD

TC SuperSuite is locally syn-deformational



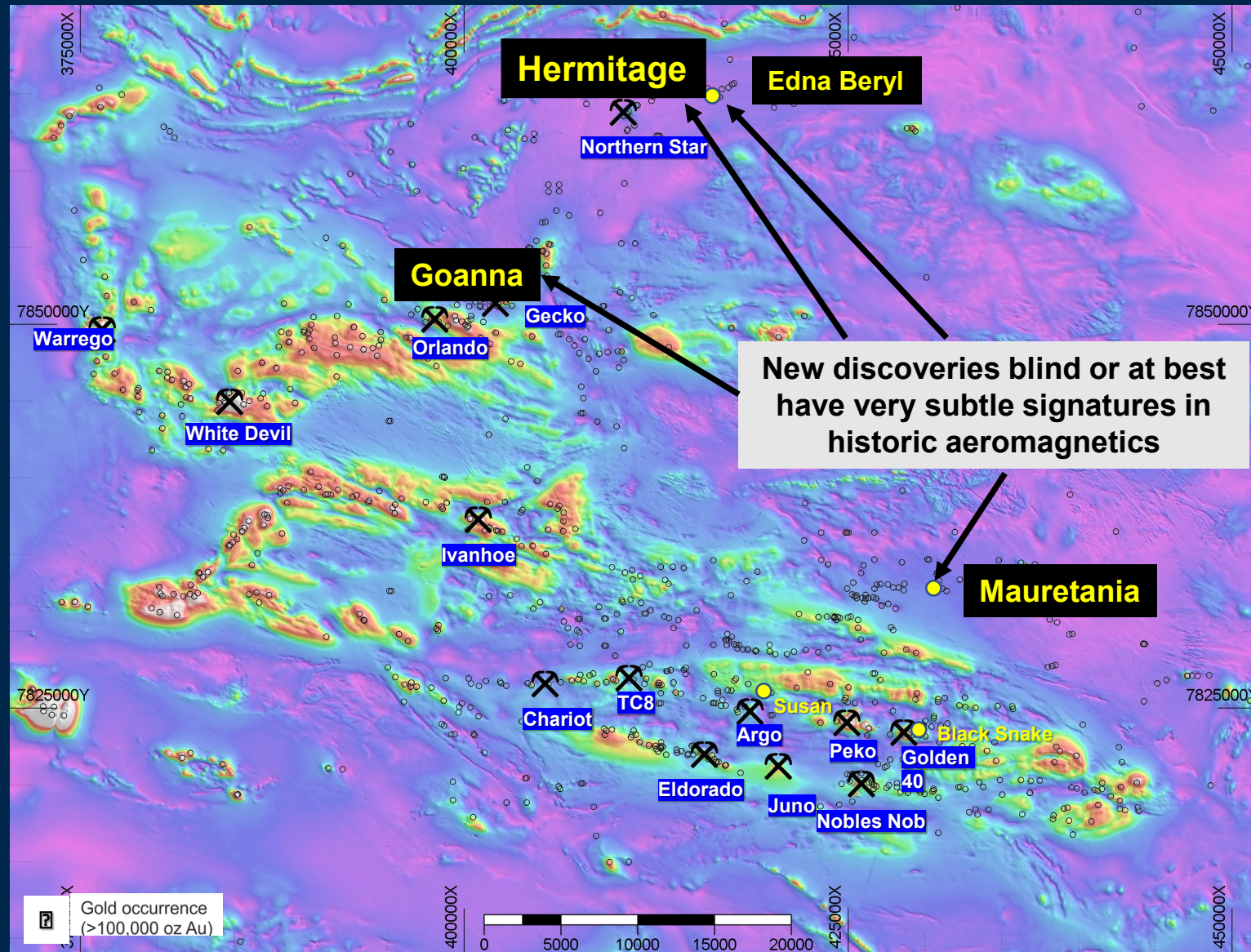
Discovery history of the Tennant Creek Mineral Field

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

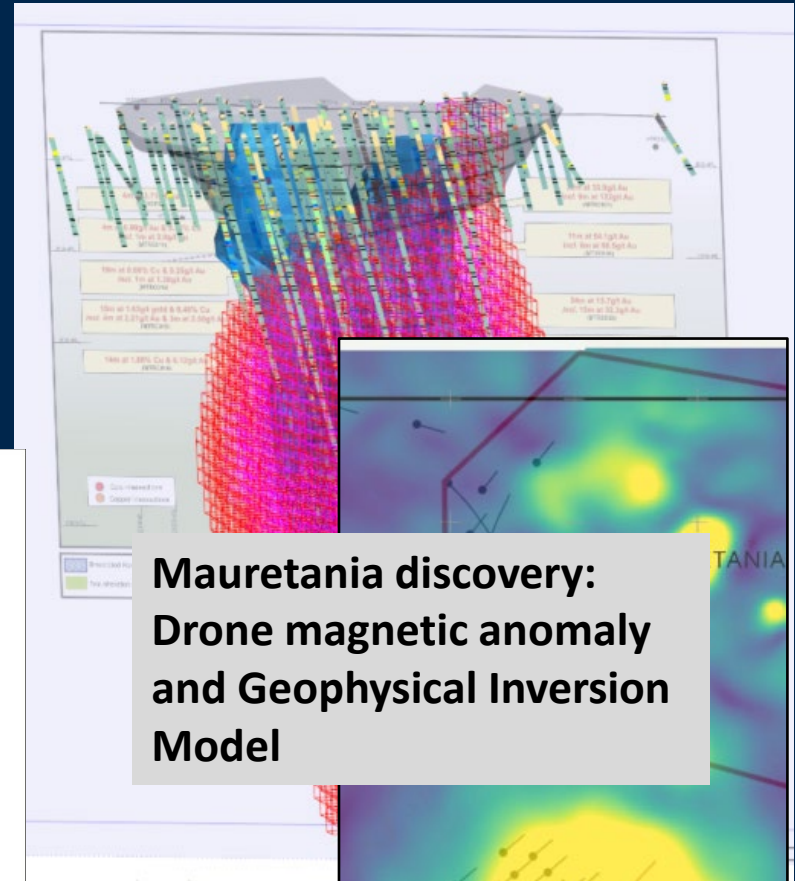
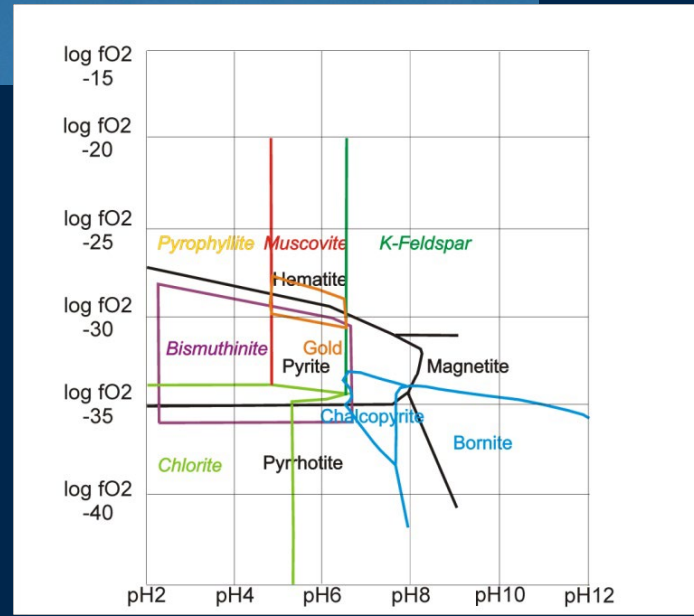
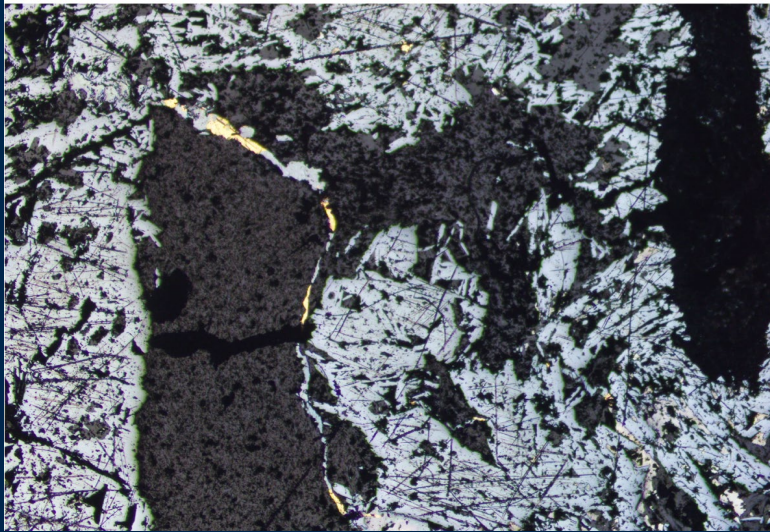


Old Detection Technologies

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



Mauretania Discovery – hematite hosted IOCG



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

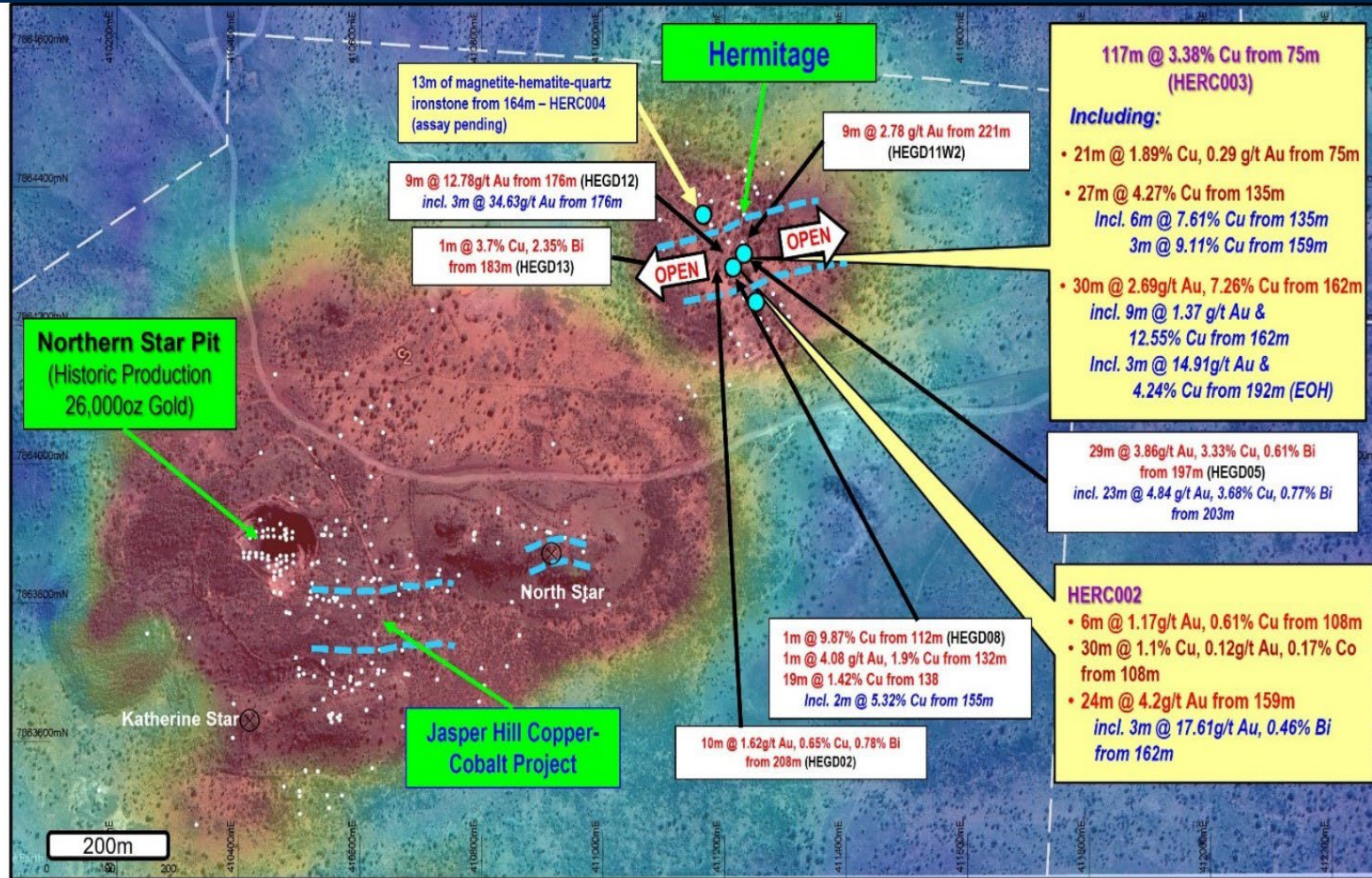
The Discovery Team

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.




ASX: Stunning 117m at ~3.4% copper at Hermitage



Plan view showing location of Hermitage with Significant intersections (over magnetic and aerial image)

ERM Drillhole
Historical Drilling

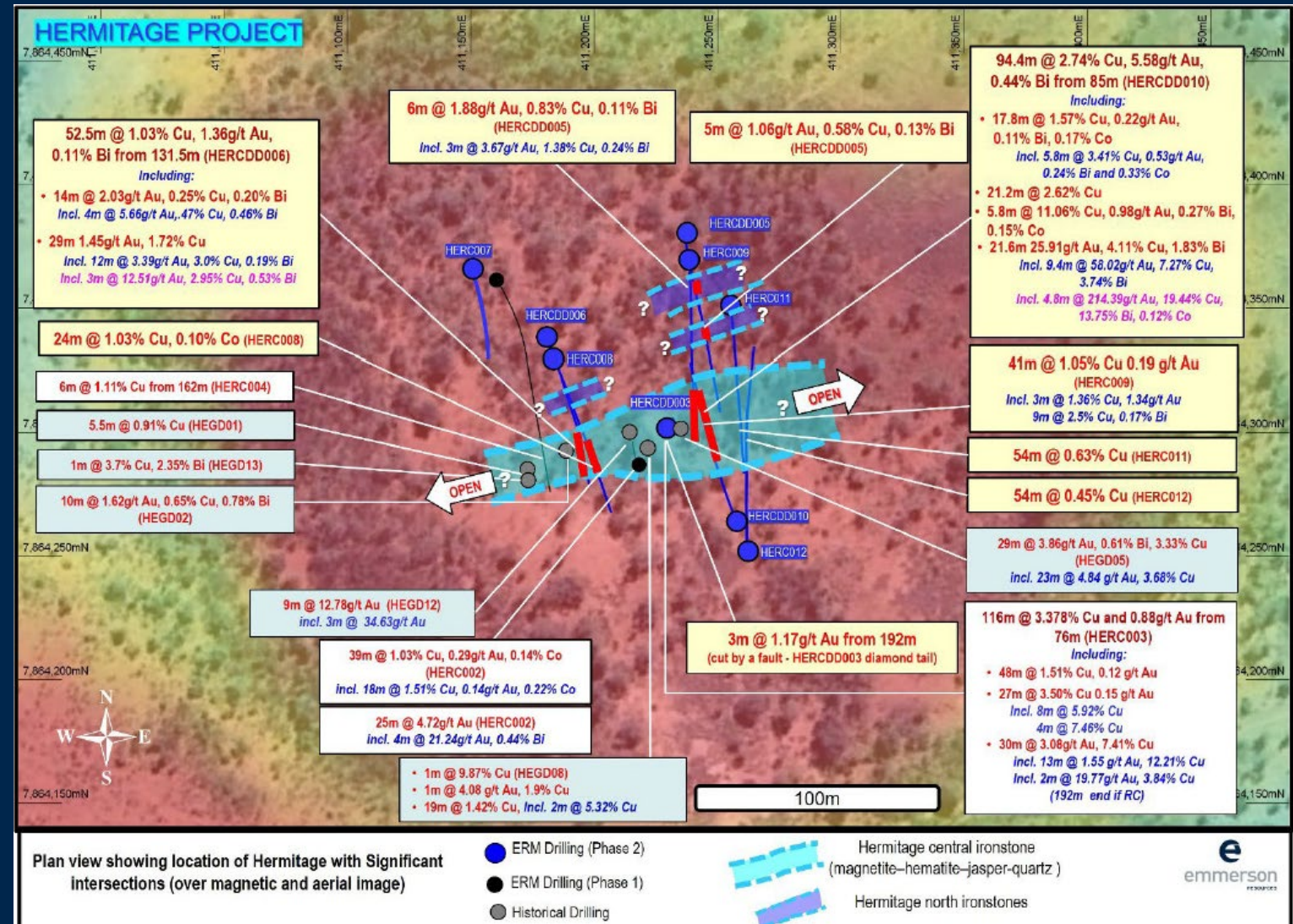
Interpreted magnetite-hematite-jasper-quartz ironstone



IOCG with some New World Metal credits

First diamond drill hole

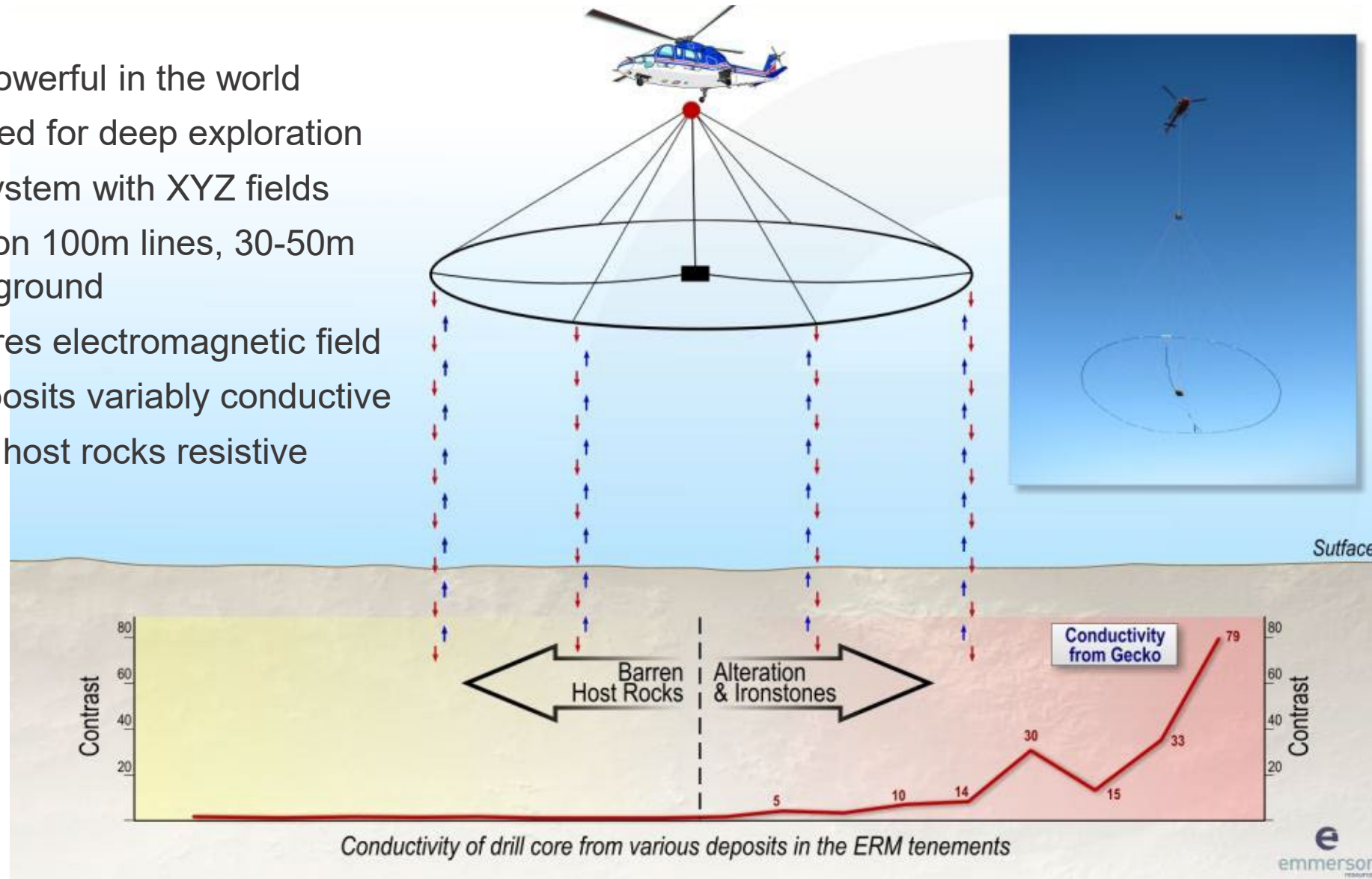
- 94m @ 2.7% Cu, 5.6g/t Au and 0.4% Bi incl.
- Up to 19% Cu, 13% Bi, 0.3% Co and 214g/t Au



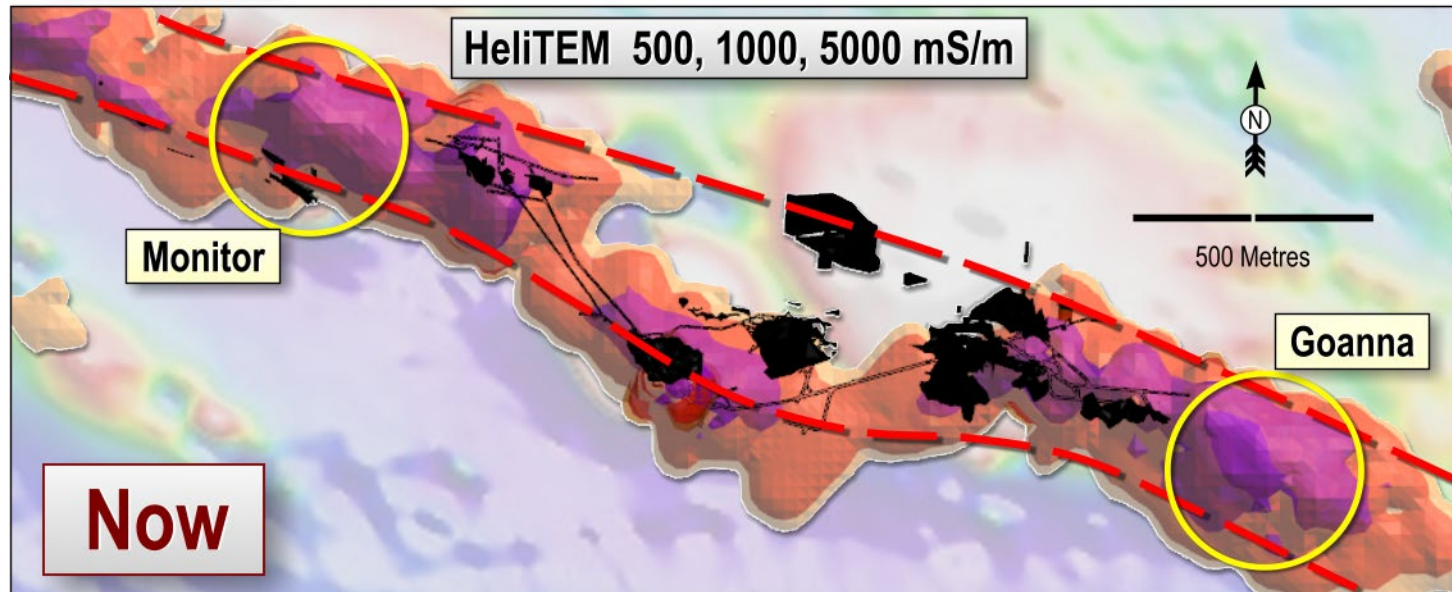
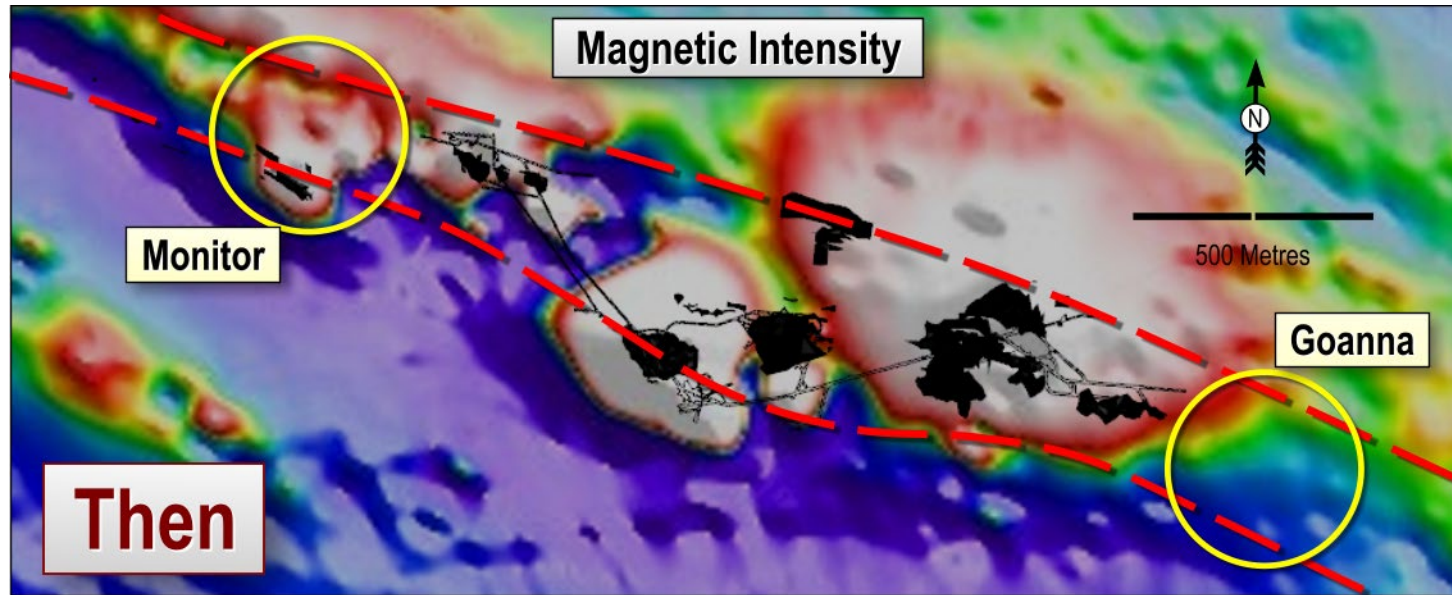
New Tech and Ideas

HelITEM:

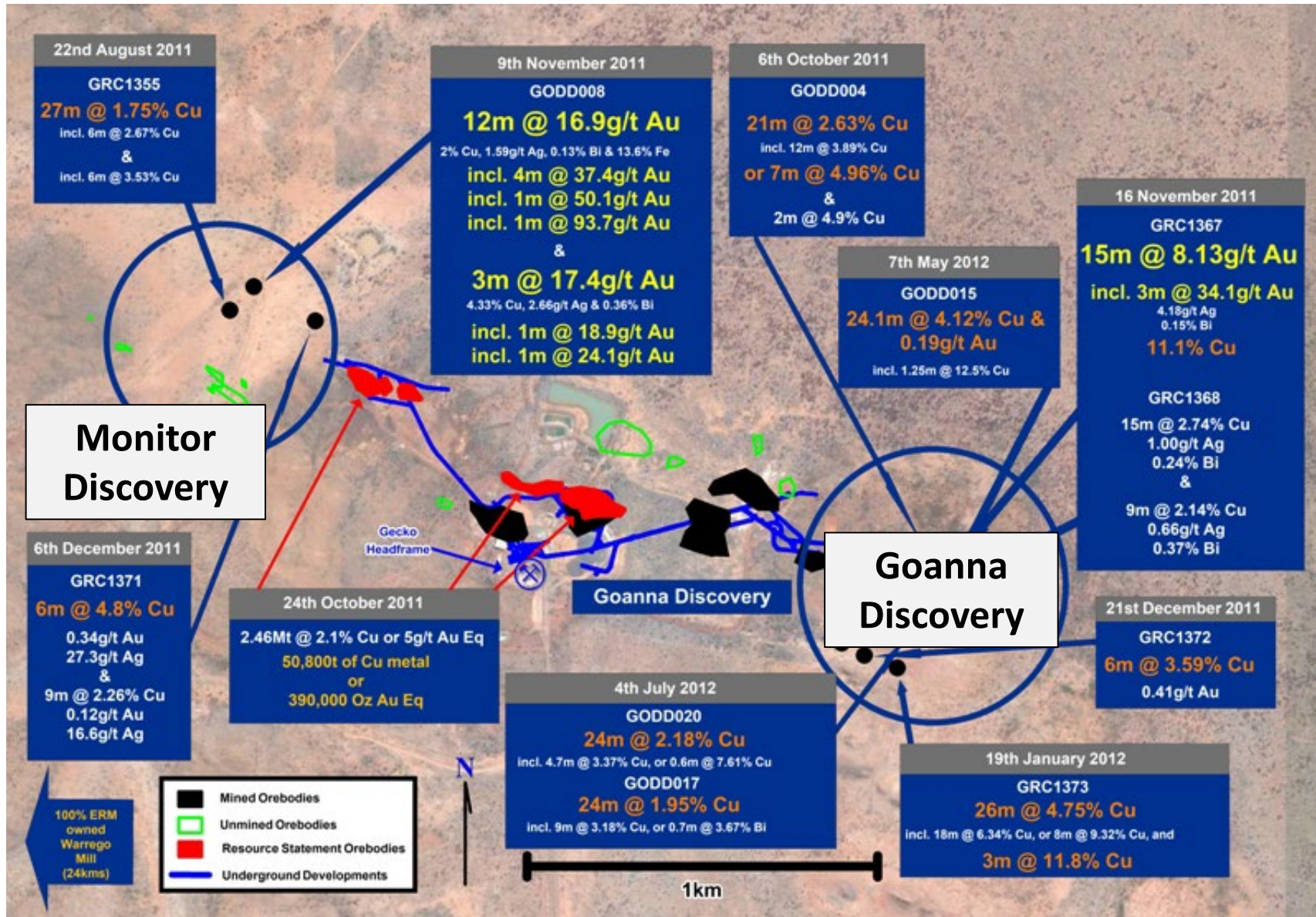
- Most powerful in the world
- Designed for deep exploration
- Only system with XYZ fields
- Flown on 100m lines, 30-50m above ground
- Measures electromagnetic field
- TC deposits variably conductive
- Barren host rocks resistive



Old versus New: Detecting the Undiscovered

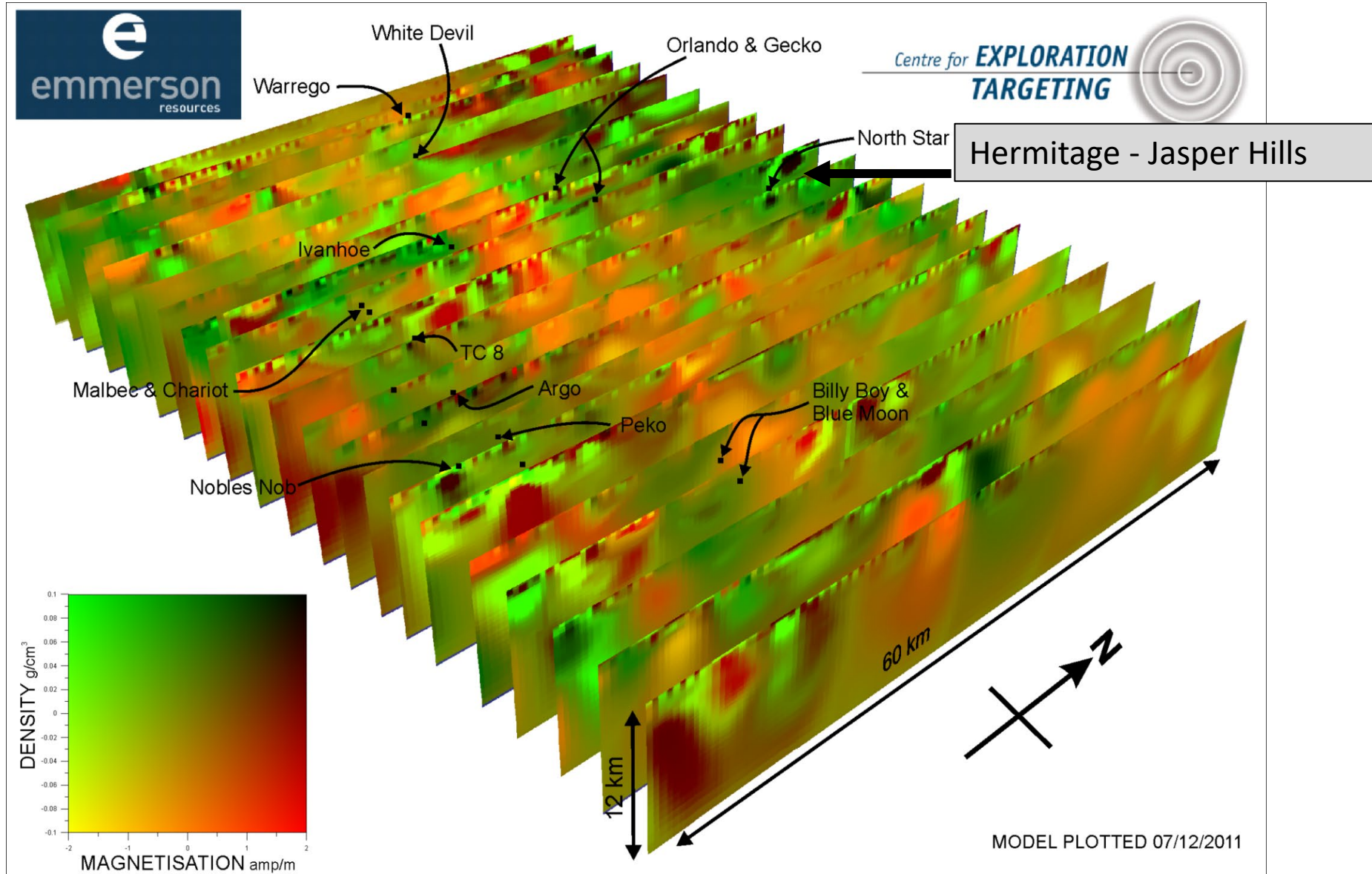


The Undiscovered Discovered



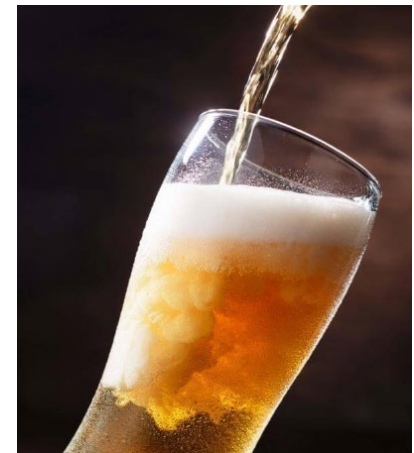
Predicting the Undiscovered

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)!





emmerson
resources

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