



# Polymetallic gold, silver and base metal mineralisation at Paupong, NSW: A new intrusion-related system

Sept 2017

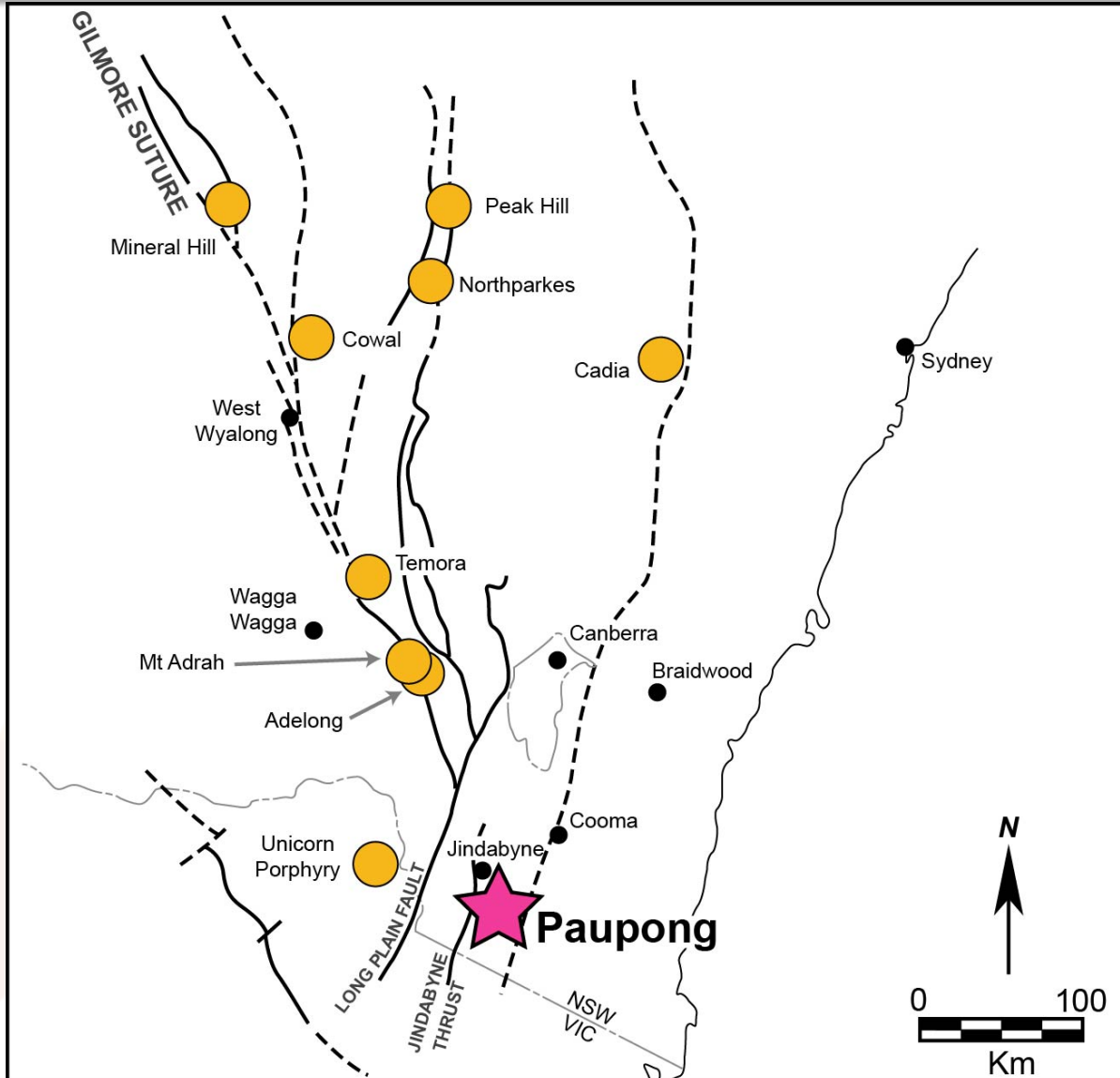
# Disclaimer

The information in this presentation that relates to exploration results is based on information compiled by or under the supervision of Dr Helen Degeling, who is a member of the Australian Institute of Mining and Metallurgy (AusIMM) and an employee of Alt Resources Limited. Dr Degeling has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to 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” (JORC Code 2012). Dr Degeling consents to the inclusion in this document of the information in the form and context in which it appears.

This presentation is based on information available to Alt at the time of preparation. No representation or warranty, express or implied, is made as to the fairness, accuracy or completeness of the information, opinions and conclusions contained herein. To the maximum extent permitted by law, Alt, its related bodies corporate (as that term is defined in the *Corporations Act 2001 (Cth)*) and the officers, directors, employees, advisers and agents of those entities do not accept any responsibility or liability including, without limitation, any liability arising from fault or negligence on the part of any person, for any loss arising from the use of the Presentation Materials or its contents or otherwise arising in connection with it.

Certain statements contained in this presentation, including information as to the future financial or operating performance of Alt Resources Ltd (Alt) and its projects, are forward-looking statements. Such forward-looking statements: are necessarily based upon a number of estimates and assumptions that, whilst considered reasonable by Alt, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies; involve known and unknown risks and uncertainties that could cause actual events or results to differ materially from estimated or anticipated events or results reflected in such forward-looking statements; and may include, among other things, statements regarding targets, estimates and assumptions in respect of metal production and prices, operating costs and results, capital expenditures, ore reserves and mineral resources and anticipated grades and recovery rates, and are or may be based on assumptions and estimates related to future technical, economic, market, political, social and other conditions. Alt disclaims any intent or obligation to update publicly any forward-looking statements, whether as a result of new information, future events or results or otherwise. The words “believe”, “expect”, “anticipate”, “indicate”, “contemplate”, “target”, “plan”, “intends”, “continue”, “budget”, “estimate”, “may”, “will”, “schedule” and other similar expressions identify forward-looking statements. All forward-looking statements made in this presentation are qualified by the foregoing cautionary statements. Investors are cautioned that forward-looking statements are not guarantees of future performance and accordingly investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.

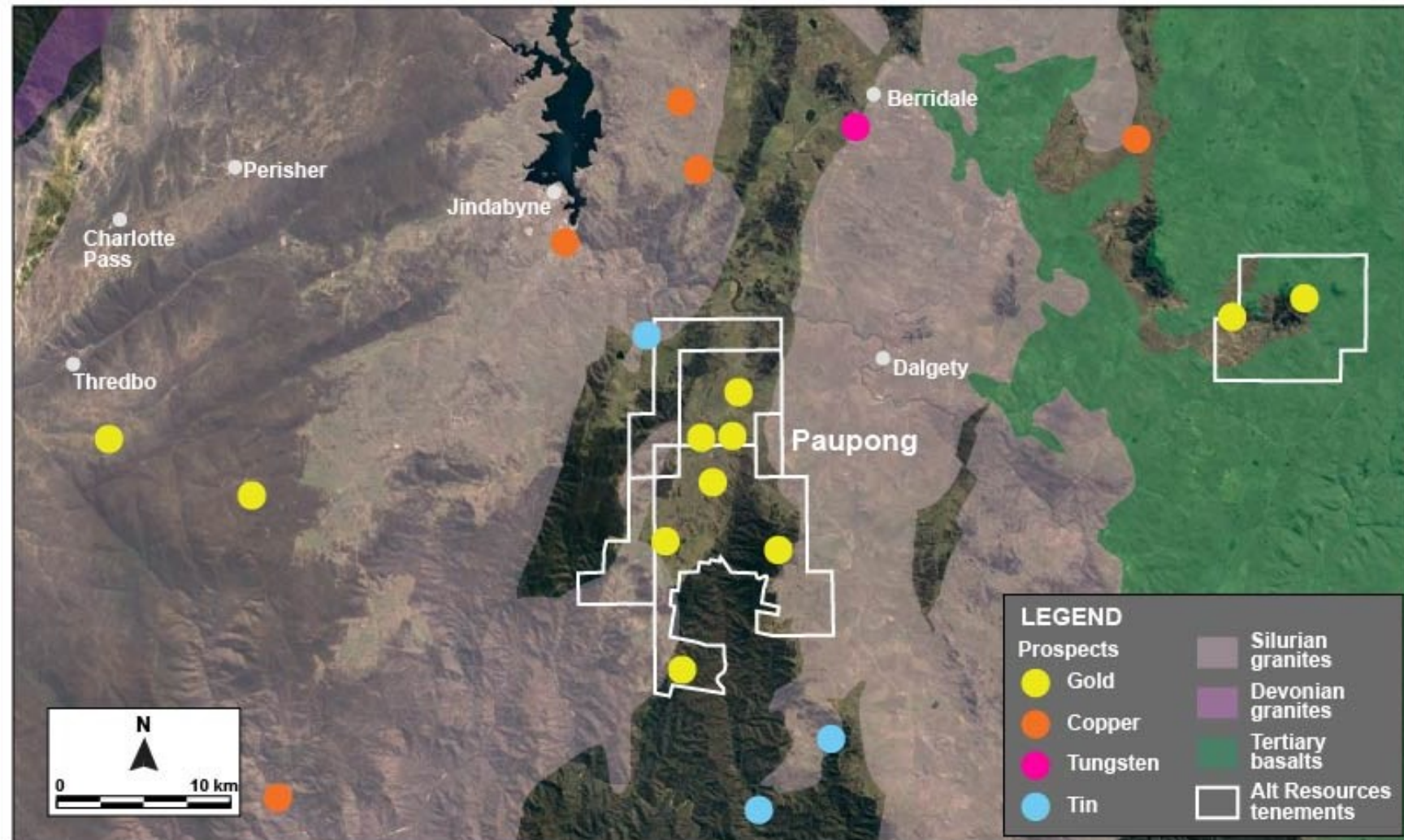
# Paupong Gold Project



- South-eastern Lachlan Orogen
- **Polymetallic gold-silver-copper intrusion-related system**
  - With associated Pb-Zn-Bi-Te
- Under-explored area of NSW
- Stream sediment sampling in 1970's
  - One sample (in hindsight) identified Paupong system but was not followed up



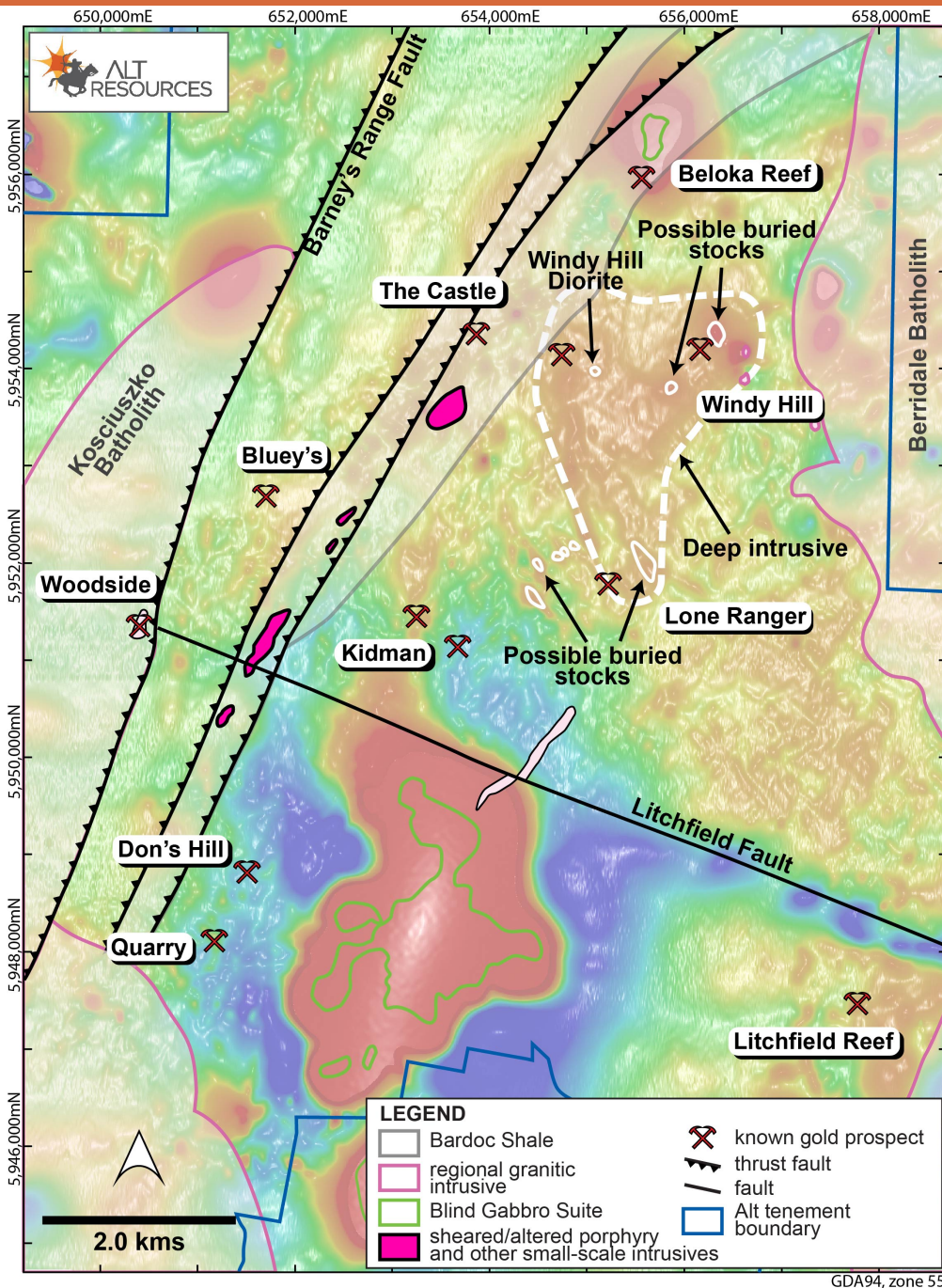
# Paupong Gold Project



- Ordovician sediments (Adaminaby Group)
- Silurian intrusives (Kosciuszko and Berridale Batholiths)
- **Regional gold, copper, tin and tungsten deposits**
- ***Characteristic IRG metallogenesis***



# Paupong Intrusive Suite



- Linear trend of granites and granodiorites intruded parallel to thrust faults
  - Non-magnetic
- More deformed than neighbouring Kosciuszko and Berridale Batholiths
  - Pervasive fracturing, weakly sheared, weak pyrite mineralisation, localised stockwork or sheeted veining anomalous polymetallic mineralisation
- Middle Creek granodiorite dated at  $430.9 \pm 2.1$  Ma (Waltenberg et al. in prep)
  - Berridale Batholith:  $435.1 \pm 4.4$  Ma
  - Blind Gabbro:  $414.6 \pm 4.1$  Ma -  $380.5 \pm 5.1$  Ma
- Interpreted buried intrusions from detailed aeromag



# Paupong Intrusive Suite

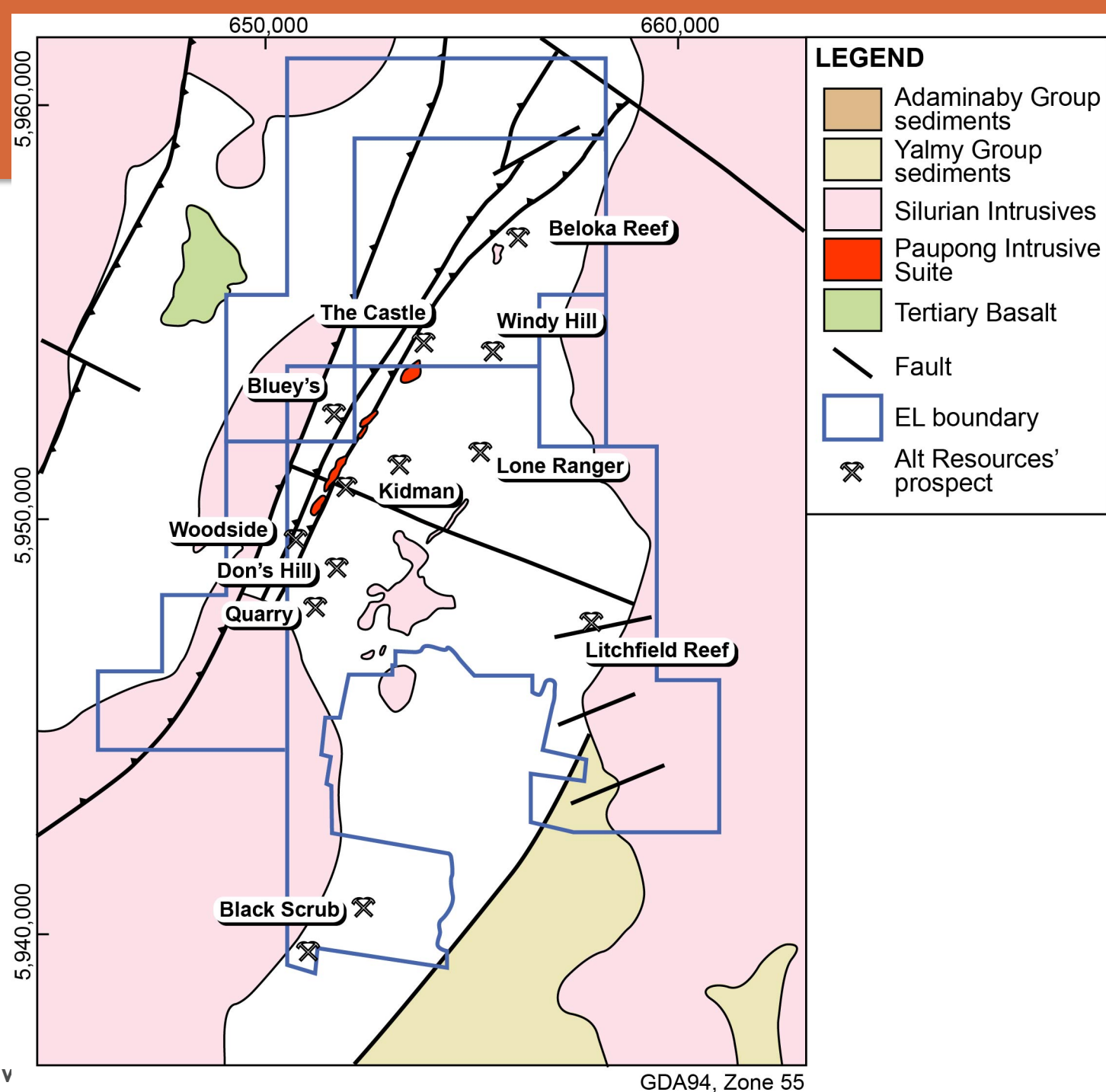


- Deformed, anomalously mineralised porphyritic granite with pervasive sheeted veining
- Weak but anomalous Au, Ag, Bi, Cu and Pb



# Mineralisation

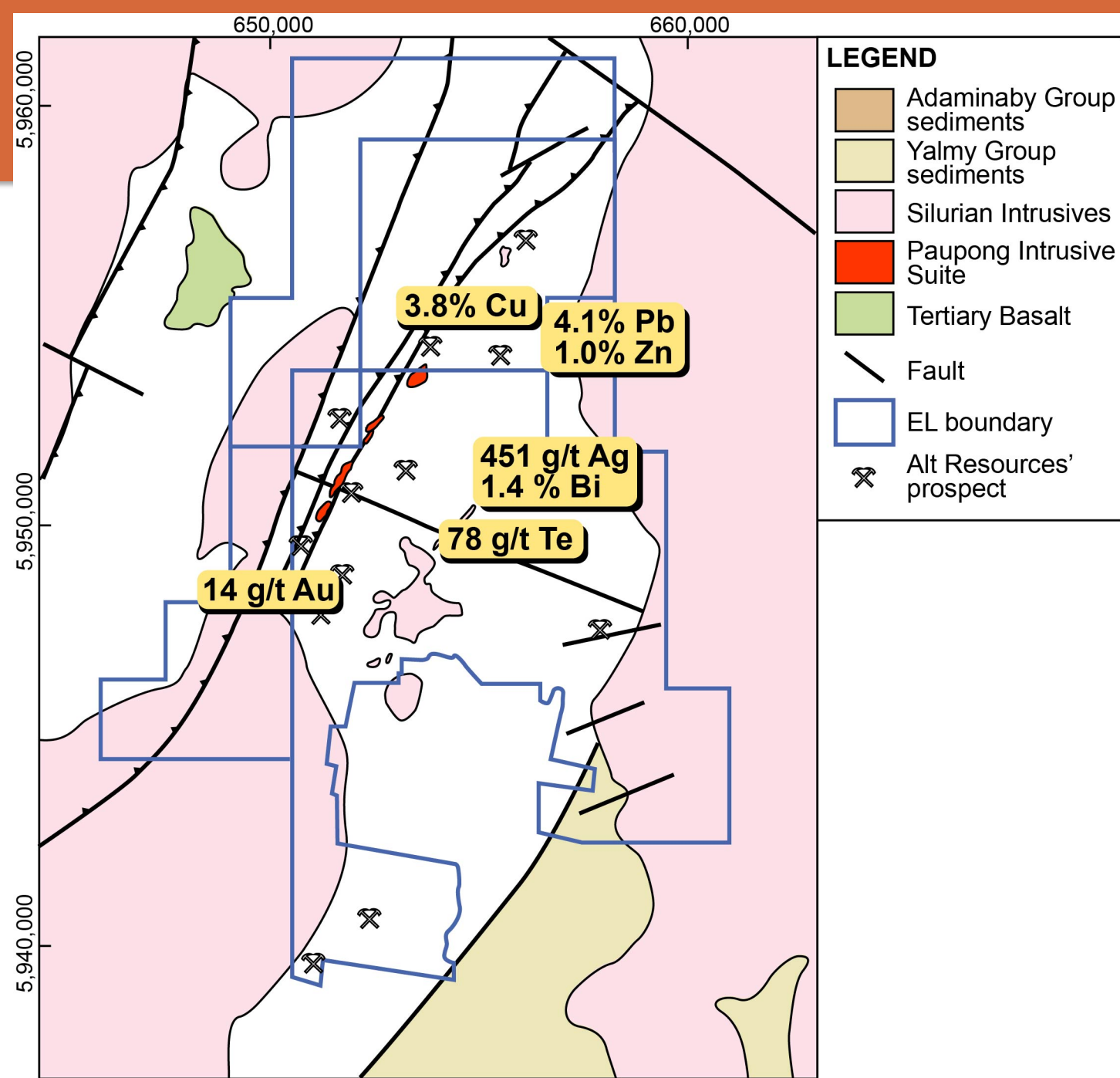
- Structurally controlled vein-hosted mineralisation in turbidites and sandstones
- Minor historical workings at Litchfield Reef, Beloka Reef and Don's Hill
  - Unknown production
  - Litchfield Reef: reported average grade = 15 g/t Au
- Modern exploration has defined **8 x 4 km footprint of vein-hosted Au (+Ag+Cu+Pb+Zn+Bi) mineralisation**
  - Matches granite geochemistry





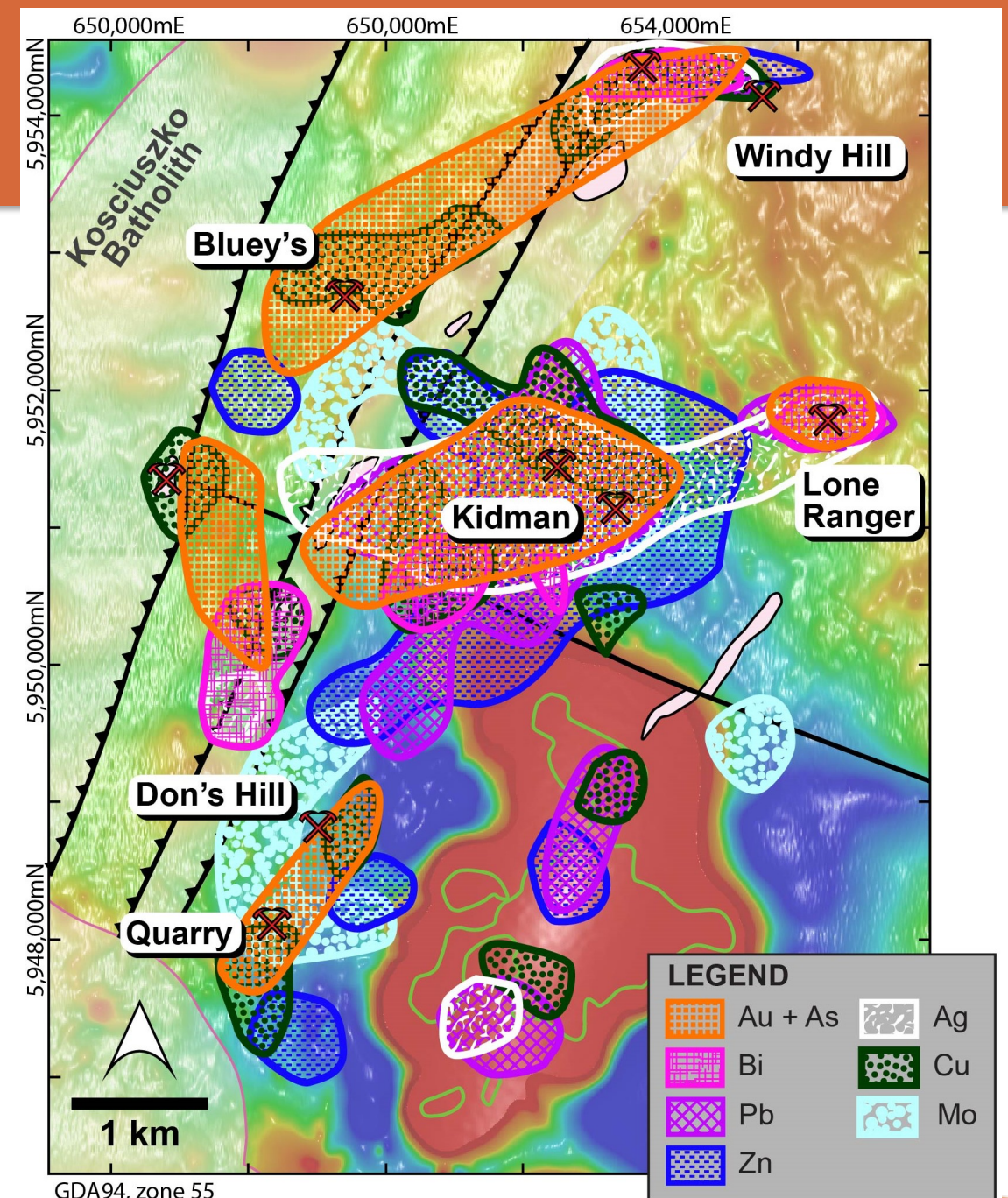
# Polymetallic System

- Polymetallic mineralisation in quartz veins
  - Rock chips and narrow massive sulphide drilling intersections
- Up to **14 g/t Au** and **451 g/t Ag**
  - **3.8% Cu**
  - **4.1% Pb**
  - **1.0% Zn**
  - **1.4% Bi**
  - Localised anomalous **Te (up to 78 g/t)**
  - Broadly elevated **As (>7.5%** in some rock chips)
- **Zoning** on local and regional scale



# Metal zoning - Kidman

- **Kidman area shows strong polymetallic mineralisation in large quartz vein system**
  - 1.5 km mapped strike length
  - Structural influence with fault intersection?
- **Windy Hill also shows polymetallic mineralisation in veins adjacent outcropping diatreme breccia**
- No detailed exploration yet at Don's Hill/Quarry, Lone Ranger or Bluey's





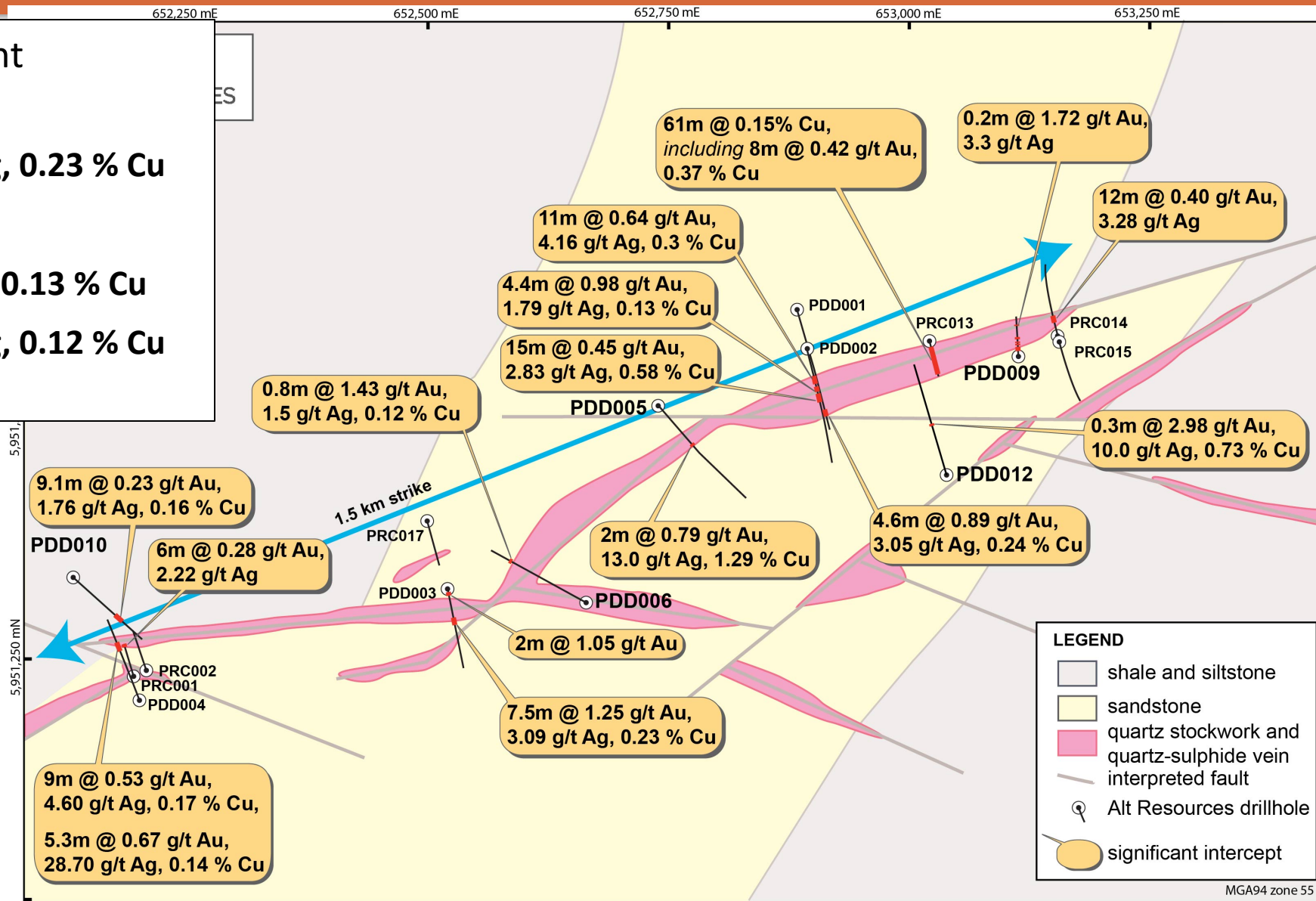
# Kidman drilling results (2015-2016)

Drilling at Kidman gave significant intercepts:

- 7.5m @ 1.25 g/t Au, 3.1 g/t Ag, 0.23 % Cu
- 2m @ 1.05 g/t Au
- 4.4m @ 1.0 g/t Au, 1.8 g/t Ag, 0.13 % Cu
- 0.8m @ 1.43 g/t Au, 1.5 g/t Ag, 0.12 % Cu

Veins are:

- structurally controlled
- show multiple deformation phases
- mineralisation has been strained and deformed
- locally strongly anomalous in Bi and Te (**up to 7,380 ppm Bi and 30 ppm Te**)





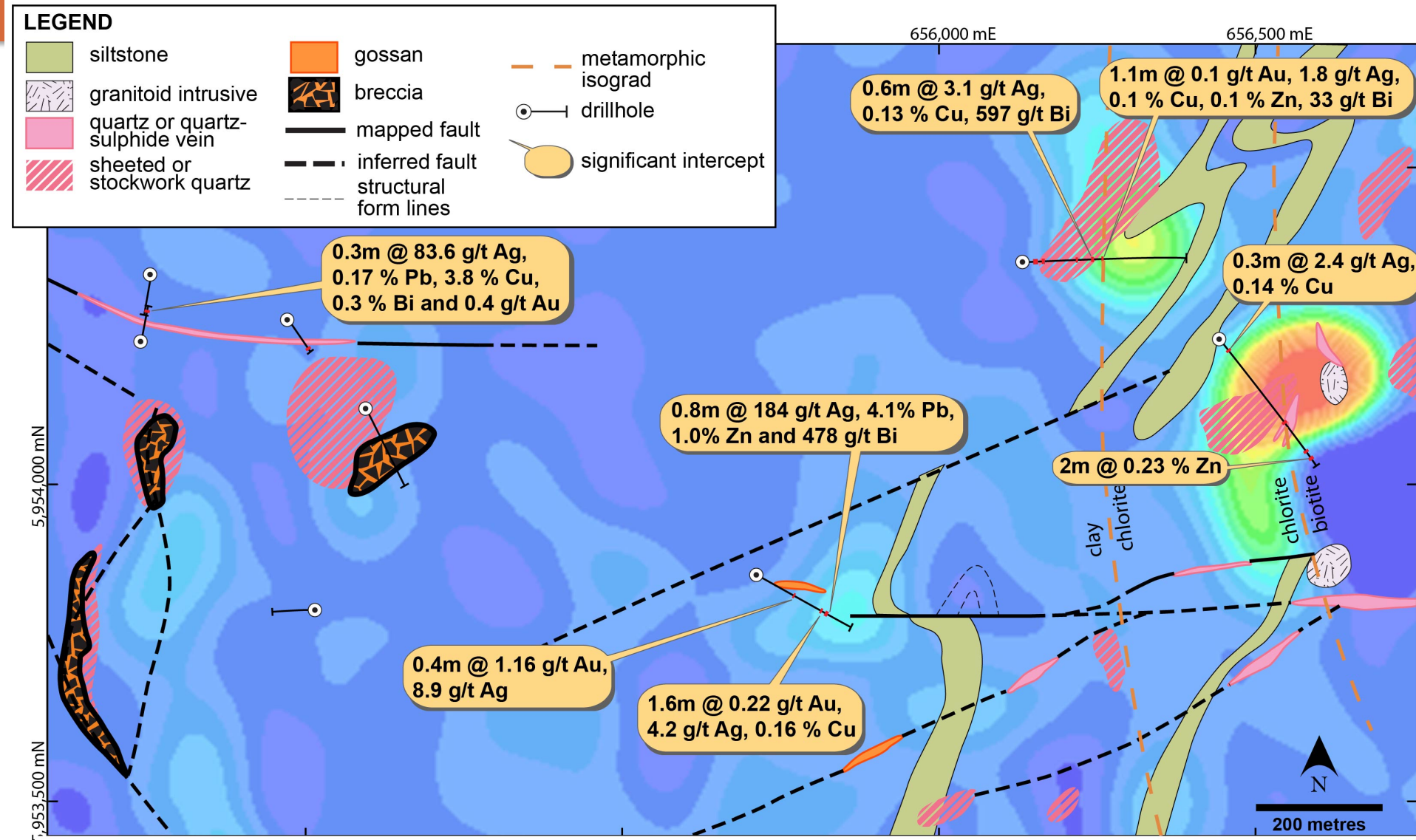
# Windy Hill drilling results 2016-2017

- **strong As+Ag+Bi+Cu+Pb + Zn anomalism**

- Intercepts include:

- 0.8m @ 184 g/t Ag, 4.1% Pb, 1% Zn, 478 g/t Bi
- 0.3m @ 83.6 g/t Ag, 0.17% Pb, 3.8% Cu, 0.3% Bi, 0.4 g/t Au
- 0.4m @ 1.16 g/t Au, 8.9 g/t Ag

- magnetic highs are magnetite+pyrrhotite alteration, above buried intrusions?



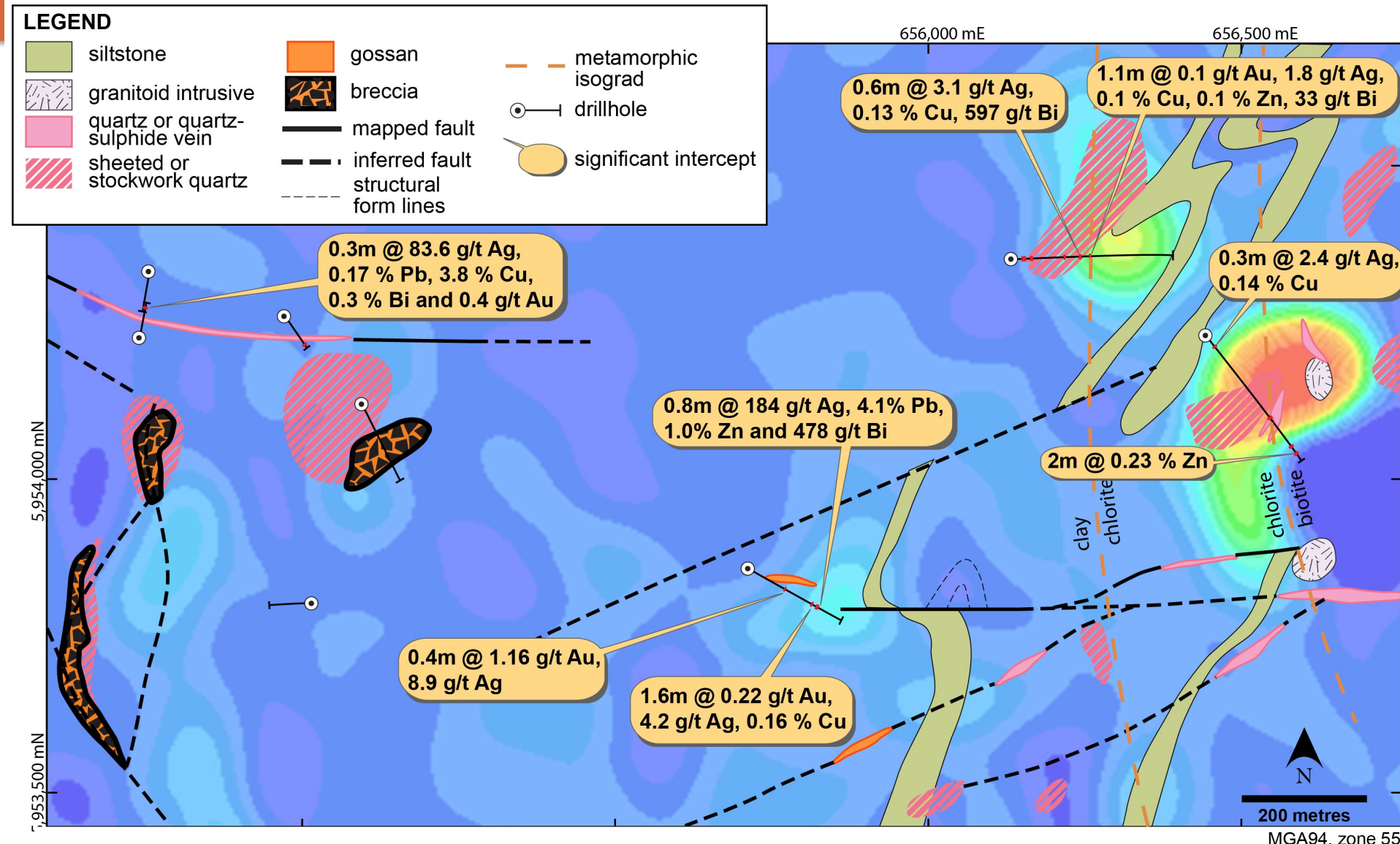
# Windy Hill drilling results 2016-2017

- Mapped **gossanous breccia** at surface with associated **quartz stockwork**, **sheeted quartz** and **individual quartz veins**

- Open spaced matrix (quartz+pyrite) between breccia clasts in outcrop at surface

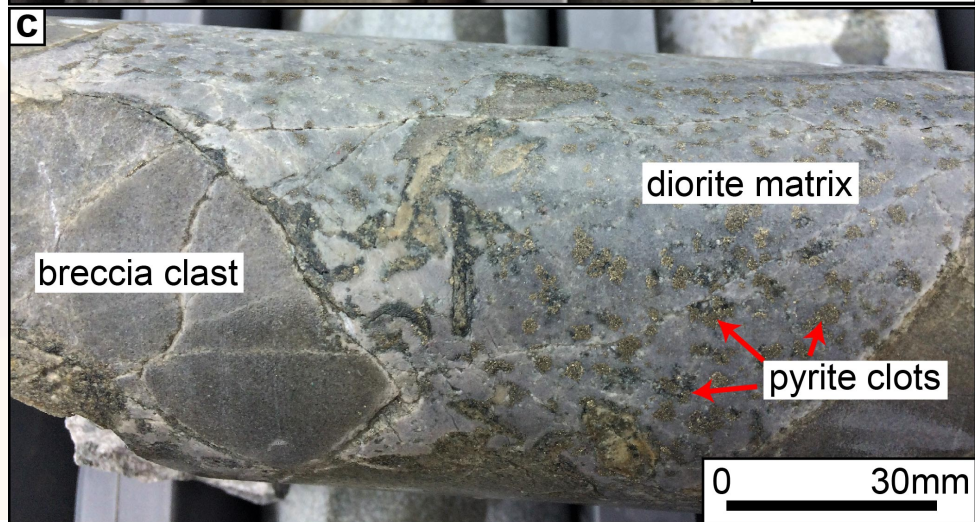
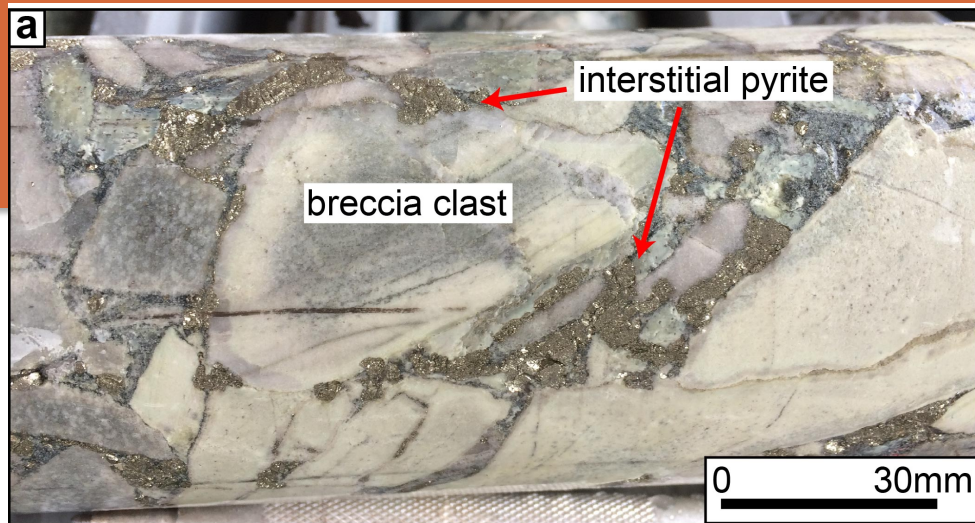
- Coincident with subtle magnetic 'donut'

- **Diorite matrix to breccia** at depth (114m downhole)





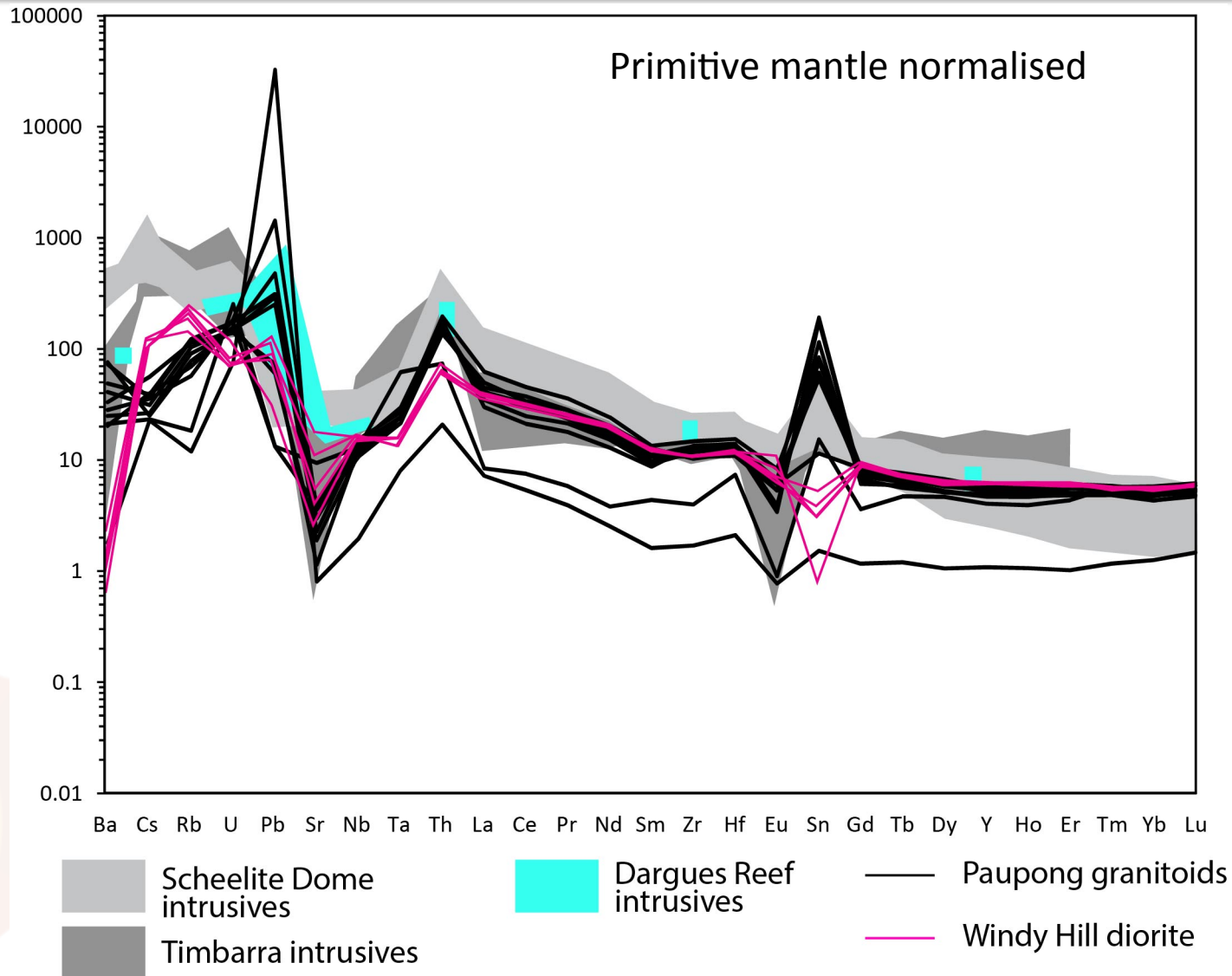
# Diatreme Breccia



- Drilling intersected strongly altered, **pyrite-rich diorite** as matrix to breccia
  - 235m intersection
- Alteration = **albite-muscovite-sericite-pyrite**
- Breccia clasts completely altered and recrystallised
- **Diorite contains 10-20% pyrite**, however no gold or base metals
- Undeformed; unrelated to Paupong Intrusive Suite??
  - U-Pb zircon or rutile geochronology planned

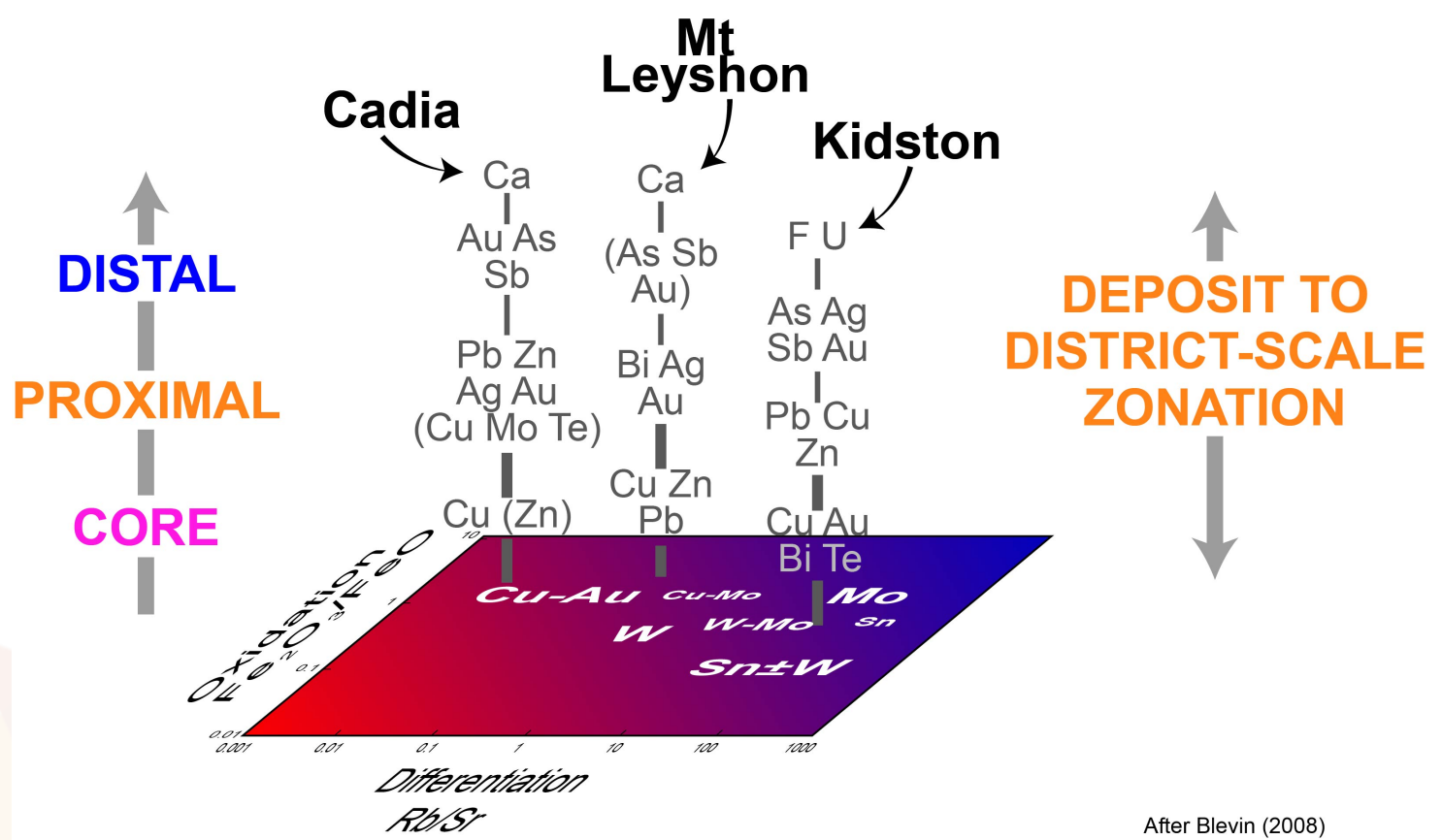


# IRG comparison – trace elements



- Windy Hill Diorite different to Paupong Intrusive Suite
  - **Sn, Pb**, Ba Cs, Rb
- Paupong Intrusive Suite depleted in Cs and Rb and enriched in Pb relative to other IRG systems
- **PIS broadly similar to Dargues Reef (LFB) and Scheelite Dome** in the Tintina Belt, Yukon
- Paupong and Dargues Reef (Lachlan Orogen) **distinct from Timbarra** (New England Orogen)

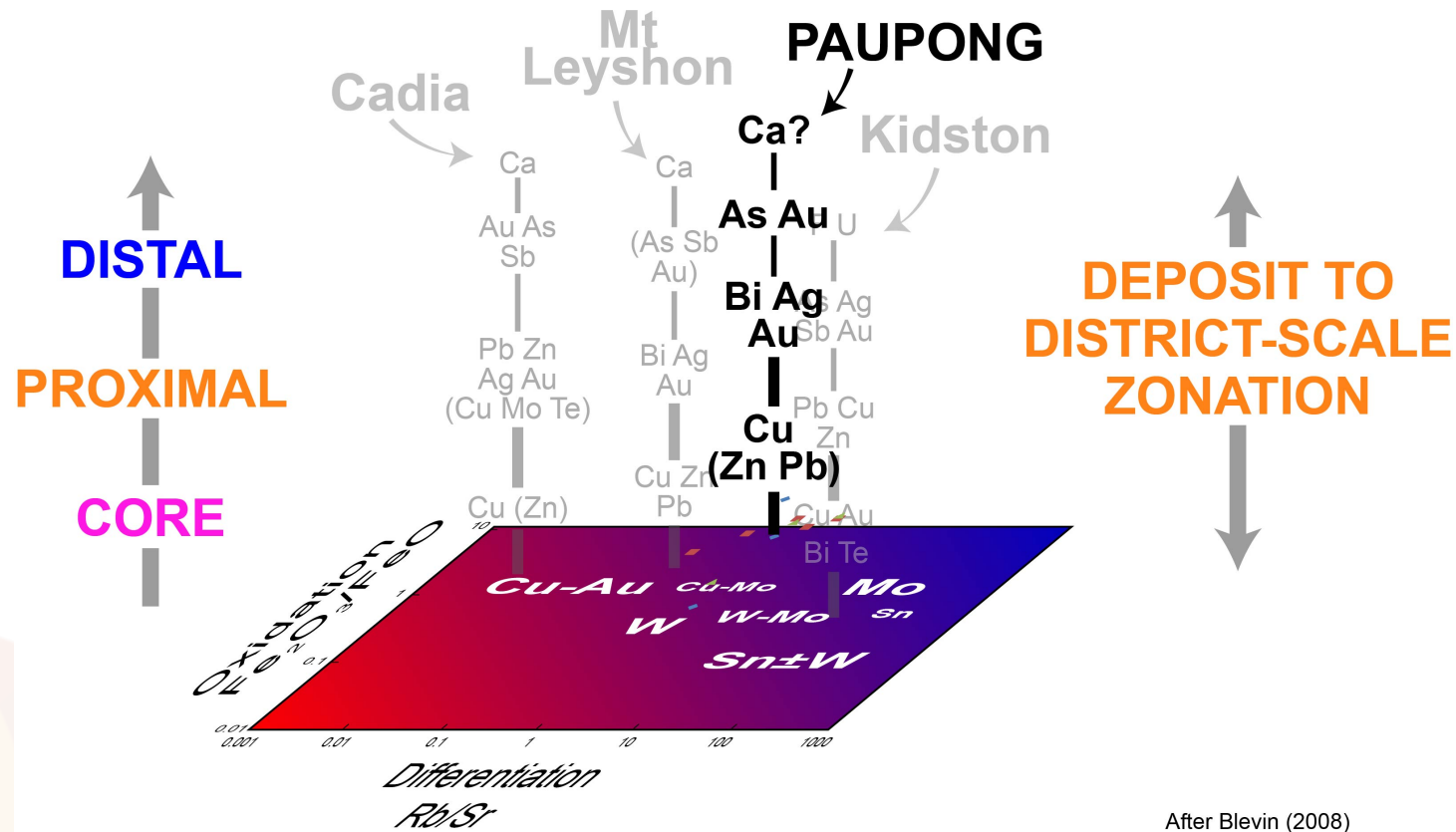
# IRG comparison – Oxidation vs Fractionation



After Blevin (2008)

- IRG systems also differentiated by degree of oxidation and fractionation, as well as temperature (e.g. Blevin, 2008)
- Leads to province, district and deposit-scale metal zonation
- Gold can be a proximal **and** distal component

# Comparison with other IRG systems



After Blevin (2008)

- I-type granites (e.g. Paupong Intrusive Suite) tend to be oxidised
  - Sn enrichment in PIS?
- Paupong intrusives may show **similarities with Mt Leyshon**
- Paupong shows strong Ca depletion (albitisation);
  - Ca migrated distally?
- All **metalliferous elements** are present at a **provincial to district scale**



# Conclusions

- **Complex intrusive history;**
  - Kosi + Berridale Batholiths
  - Paupong Intrusive Suite
  - Windy Hill Diorite?
  - Blind Gabbro
- Aeromagnetic data suggests presence of **additional non-outcropping intrusions**
- Surface sampling and drilling show strong association between **gold, silver, arsenic, bismuth, tellurium**, also with **copper and lead**
- Vein chemistry reflects **metal associations** in Paupong Intrusive Suite
- Additional targets based on geochemistry and geophysics
- **Similarities with other IRG systems, but also strong differences**
  - e.g. oxidised system, but Sn enrichment in intrusives







## **Acknowledgments**

NSW Dept of Planning and Environment – New Frontiers Cooperative Drilling Program

Phil Blevin

Russell Fountain and Tom Klein