

8th Mines and Wines Meeting: Discoveries in the Tasmanides 2022

Preservation of the Cadia Valley porphyry gold and copper district: Review of Silurian event chronology

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Disclaimer

Forward Looking Statements

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Forward looking statements are based on Newcrest’s good faith assumptions as to the financial, market, regulatory and other relevant environments that will exist and affect Newcrest’s business and operations in the future. Newcrest does not give any assurance that the assumptions will prove to be correct. There may be other factors that could cause actual results or events not to be as anticipated, and many events are beyond the reasonable control of Newcrest. Readers are cautioned not to place undue reliance on forward looking statements, particularly in the current economic climate with the significant volatility, uncertainty and disruption caused by the COVID-19 pandemic. Forward looking statements in this document speak only at the date of issue. Except as required by applicable laws or regulations, Newcrest does not undertake any obligation to publicly update or revise any of the forward looking statements or to advise of any change in assumptions on which any such statement is based.

Ore Reserves, Mineral Reserves and Mineral Resources Reporting Requirements

As an Australian Company with securities listed on the Australian Securities Exchange (ASX), Newcrest is subject to Australian disclosure requirements and standards, including the requirements of the Corporations Act 2001 and the ASX. Investors should note that it is a requirement of the ASX listing rules that the reporting of Ore Reserves and Mineral Resources in Australia is in accordance with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code) and that Newcrest’s Ore Reserve and Mineral Resource estimates and reporting comply with the JORC Code.

Newcrest is also subject to certain Canadian disclosure requirements and standards, as a result of its listing on the Toronto Stock Exchange (TSX), including the requirements of National Instrument 43-101 (NI 43-101). Investors should note that it is a requirement of Canadian securities law that the reporting of Mineral Reserves and Mineral Resources in Canada and the disclosure of scientific and technical information concerning a mineral project on a property material to Newcrest comply with NI 43-101.

Newcrest’s material properties are currently Cadia, Lihir, Red Chris and Wafi-Golpu. Copies of the NI 43-101 Reports for Cadia, Lihir and Wafi-Golpu, which were released on 14 October 2020, and Red Chris, which was released on 30 November 2021, are available at www.newcrest.com.au and on Newcrest’s SEDAR profile. Brucejack is expected to be a material property to Newcrest. A NI43-101 Report on Brucejack dated 9 March 2020 was filed by Pretivm on SEDAR (www.sedar.com).

Competent Person Statement

The information in this document that relates to Group Mineral Resources, Ore Reserves, and related scientific and technical information has been extracted from Newcrest’s release titled “Annual Mineral Resources and Ore Reserves Statement –as at 31 December 2021” dated 17 February 2022 (the original MR&OR release). The original MR&OR release is available to view at www.asx.com.au under the code “NCM” and on Newcrest’s SEDAR profile. Newcrest confirms that it is not aware of any new information or data that materially affects the information included in the original MR&OR release referred to above and that all material assumptions and technical parameters in the original MR&OR release continue to apply and have not materially changed but are subject to depletions. Newcrest confirms that the form and context in which the Competent Person’s findings are presented have not been materially modified from the original MR&OR release.

Reliance on Third-Party Information

This document contains information that has been obtained from third parties and has not been independently verified. No representation or warranty is made as to the accuracy, completeness or reliability of the information. This document should not be relied upon as a recommendation or forecast by Newcrest.

Technical and Scientific Information

The technical and scientific information contained in this document relating to Red Chris and Cadia was reviewed and approved by Fraser MacCorquodale, Newcrest’s General Manager – Greenfields Exploration, Member of the Australian Institute of Geoscientists and a Qualified Person as defined in National Instrument 43-101 – Standards of Disclosure for Mineral Projects (NI 43-101).

Preface

Compare and contrast higher grade alkalic porphyry systems



Cadia Valley, New South Wales, Australia



Key Statistics	
Gold M&I Mineral Resources ¹ :	33 Moz
Copper M&I Mineral Resources ¹ :	7.4 Mt
Past Production ³ :	13.7 Moz Au, 1.4 Mt Cu

Red Chris, British Columbia, Canada



Key Statistics	
Gold M&I Mineral Resources ² :	8.9 Moz
Copper M&I Mineral Resources ² :	2.6 Mt
Past Production ⁴ :	0.3 Moz Au, 0.2 Mt Cu

1 Gold and Copper M&I Mineral Resources contain Measured Resources of 0.31Moz gold and 0.041Mt copper (32Mt @ 0.30 g/t gold and 0.13% copper) and Indicated Mineral Resources of 33Moz gold and 7.3Mt copper (2,800Mt @ 0.36 g/t gold and 0.26% copper). Probable Ore Reserves include 19Moz gold and 3.9Mt copper (1,300Mt @ 0.43 g/t gold and 0.29% copper). Mineral Resources & Ore Reserves are extracted from the release titled "Annual Mineral Resources and Ore Reserves Statement – as at 31 December 2021" dated 17 February 2022 which is available to view at www.asx.com.au under the code "NCM" and on Newcrest's SEDAR profile.

2 M&I Mineral Resources are shown at Newcrest's joint venture interest of 70%. Gold and Copper M&I Mineral Resources represent Measured Resources of 0.040Moz gold and 0.017Mt copper (7.3Mt @ 0.16 g/t gold and 0.24% copper) and Indicated Mineral Resources of 8.9Moz gold and 2.5Mt copper (670Mt @ 0.41 g/t gold and 0.38% copper). Mineral Resources & Ore Reserves are extracted from the release titled "Annual Mineral Resources and Ore Reserves Statement – as at 31 December 2021" dated 17 February 2022 which is available to view at www.asx.com.au under the code "NCM" and on Newcrest's SEDAR profile.

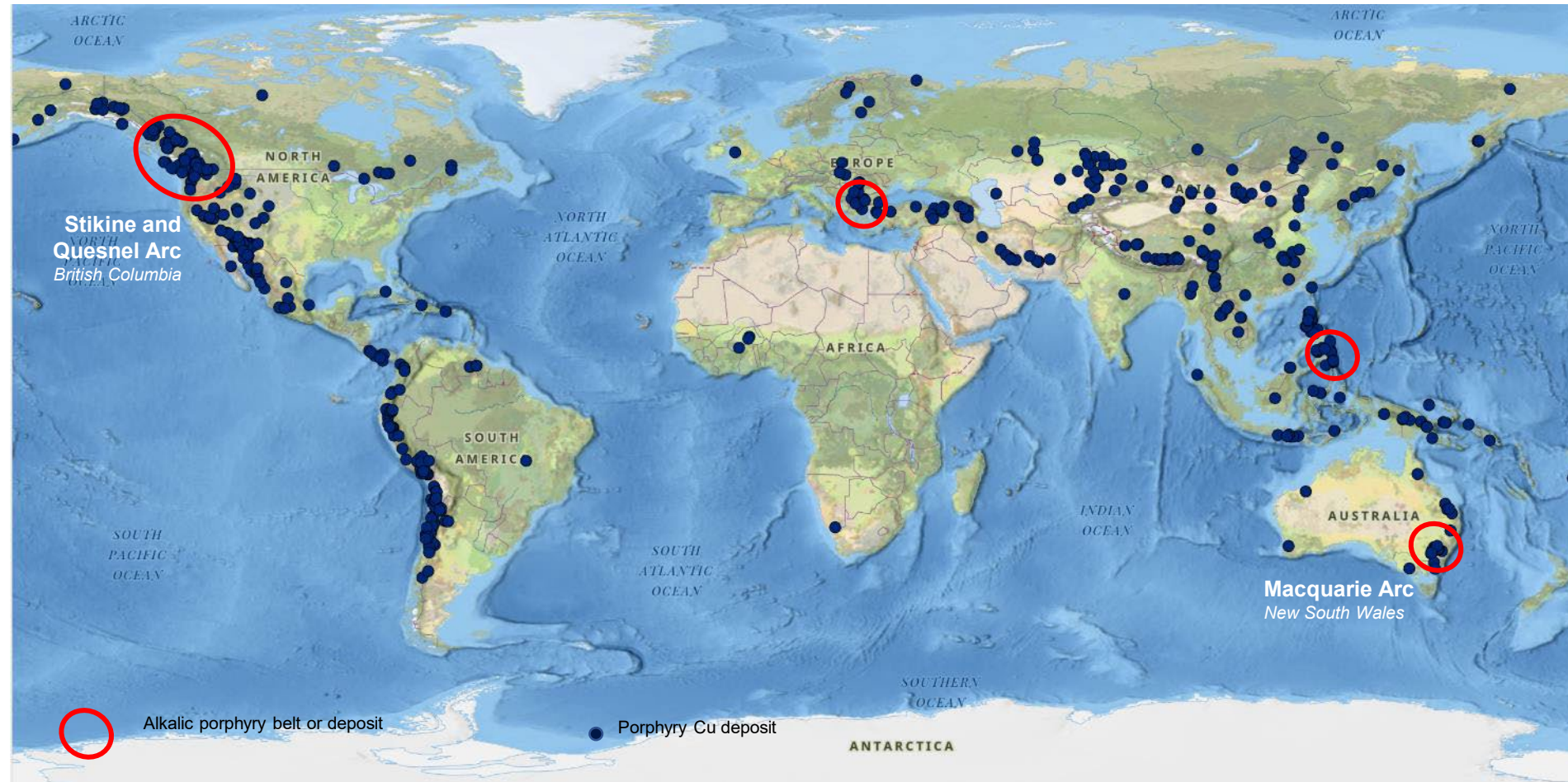
3 Past production is based on figures to 31 December 2020 including gold metal production for Cadia East Mine (4,277koz gold and 417kt copper), Ridgeway (3,928koz gold and 487kt copper) and Cadia Hill Open Pit (4,311koz gold and 372kt copper) as reported on pages 53, 54 and 55 in the "Cadia operations New South Wales, Australia NI 43-101 Technical Report" dated 14 October 2020, plus FY21 production (765koz gold and 106kt copper) reported in the Newcrest FY21 Annual Report dated 5 October 2021, plus HY22 production (224koz gold and 33kt copper) reported in the Newcrest "Half Year Results FY22" dated 17 February 2022, plus Q3 FY22 production (150koz gold and 23kt copper) reported in the March 2022 Quarterly Report dated 28 April 2022 which are all available to view at www.asx.com.au under the code "NCM" and on Newcrest's SEDAR profile.

4 Past production is based on figures to 31 December 2021 as reported on page 61 in the "Red Chris operations British Columbia, Canada NI 43-101 Technical Report" dated 30 November 2021, plus Q3 FY22 production (8koz gold and 4kt copper) reported in the March 2022 Quarterly Report dated 28 April 2022 which are available to view at www.asx.com.au under the code "NCM" and on Newcrest's SEDAR profile.

Alkalic Porphyry Deposits

Some of the world's largest and highest grade alkalic porphyry Au-Cu deposits occur in the circum-Pacific.

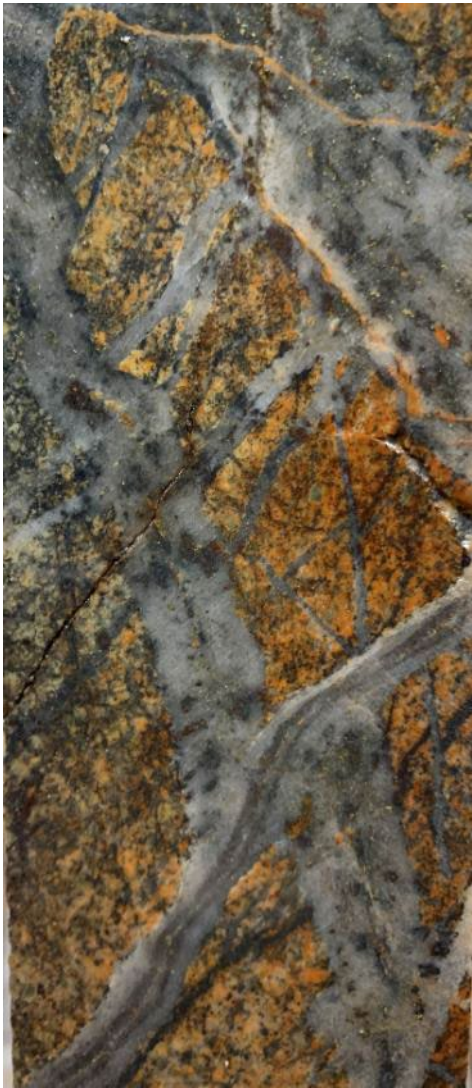
Distribution of porphyry copper deposits¹



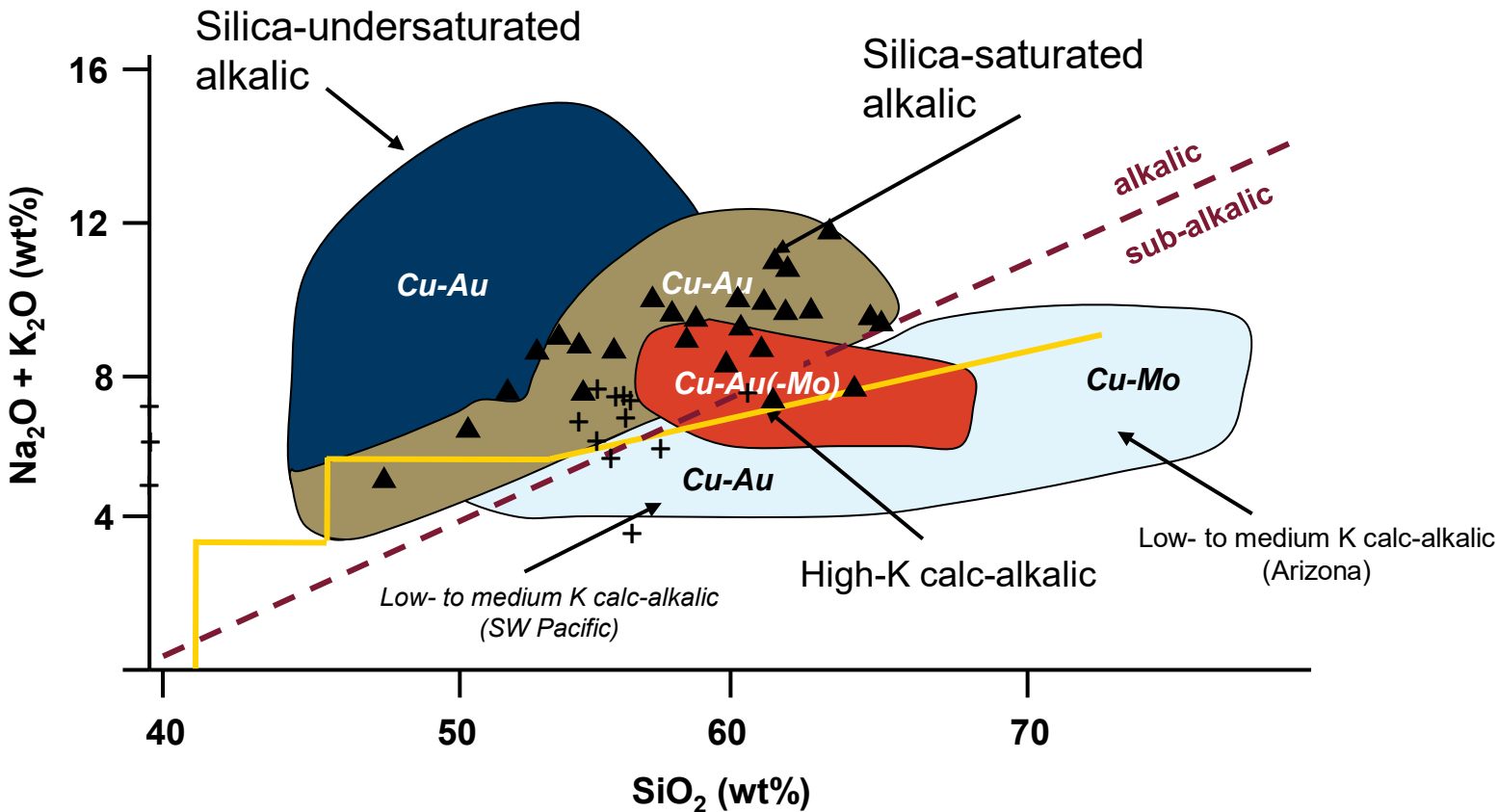
¹ Data from MinEx Consulting

Alkalic Porphyry Deposits

Whole rock geochemistry



Mineralised quartz-bearing P2 porphyry, Red Chris



+ Red Chris Intrusion Geochemistry (data from Zhu et al., 2018)

▲ Cadia Valley Intrusion Geochemistry (data from Wilson, 2003)

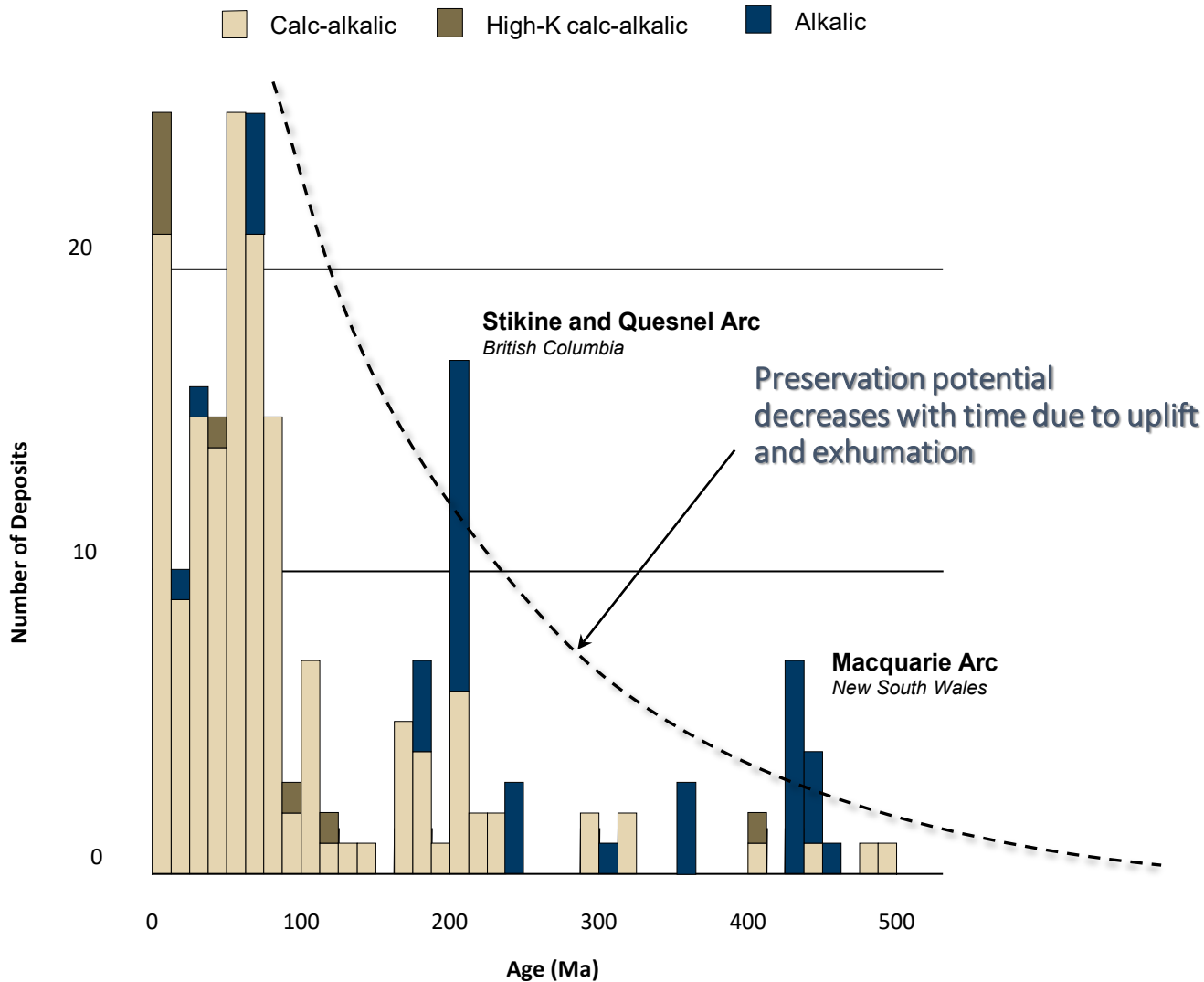
¹ Modified after Lang et al., 1995

Alkalic Porphyry Deposits

More commonly found as older porphyry systems



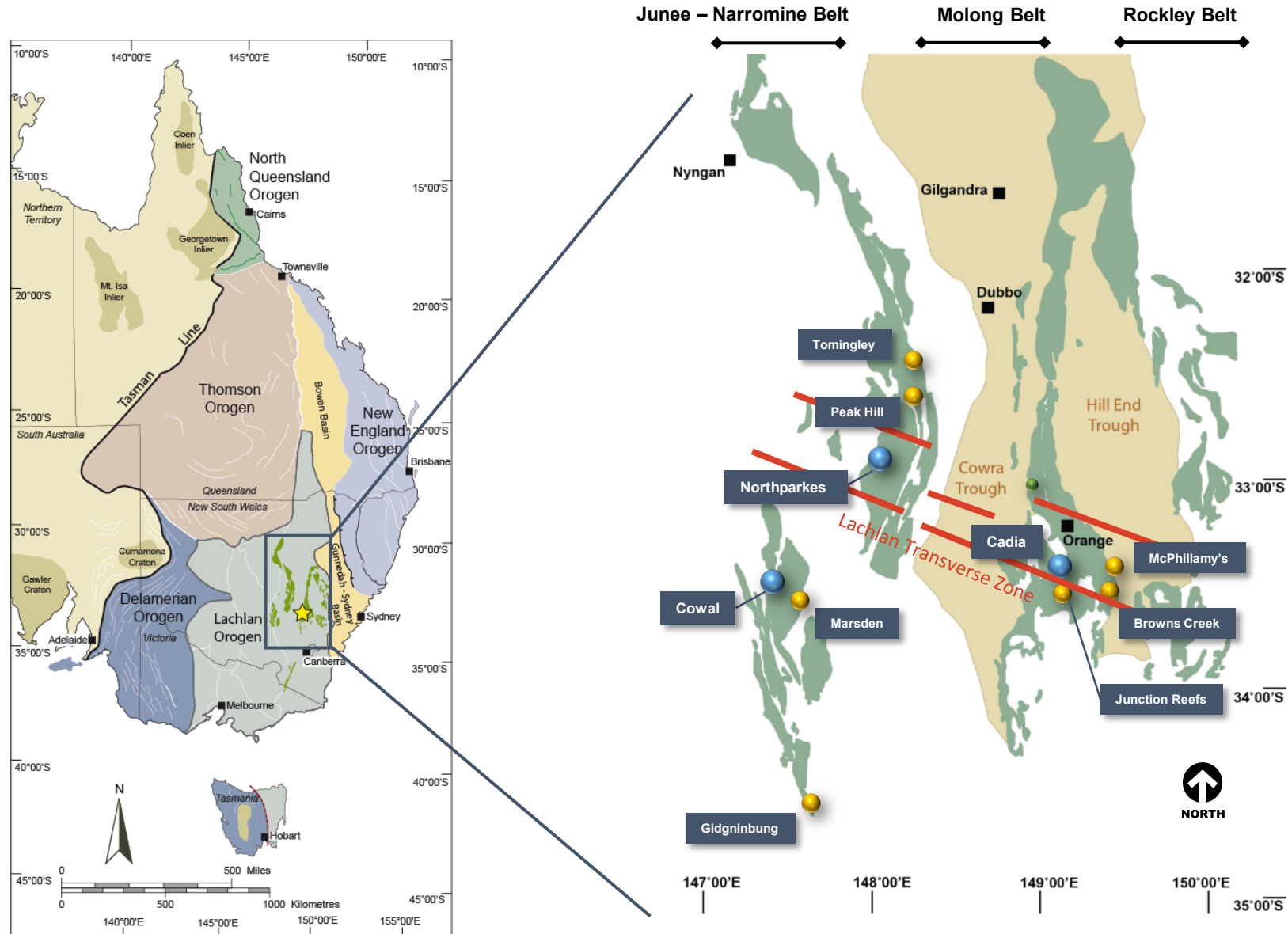
Skarn clasts in cover rocks to Cadia East



¹ Modified after Kirkham and Dunne 1999 and Wilson and Cooke, 2002

Cadia – Location and Geological Setting

Porphyry emplacement during dramatic tectonic reorganisation



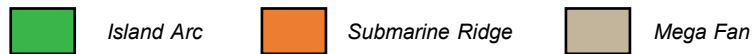
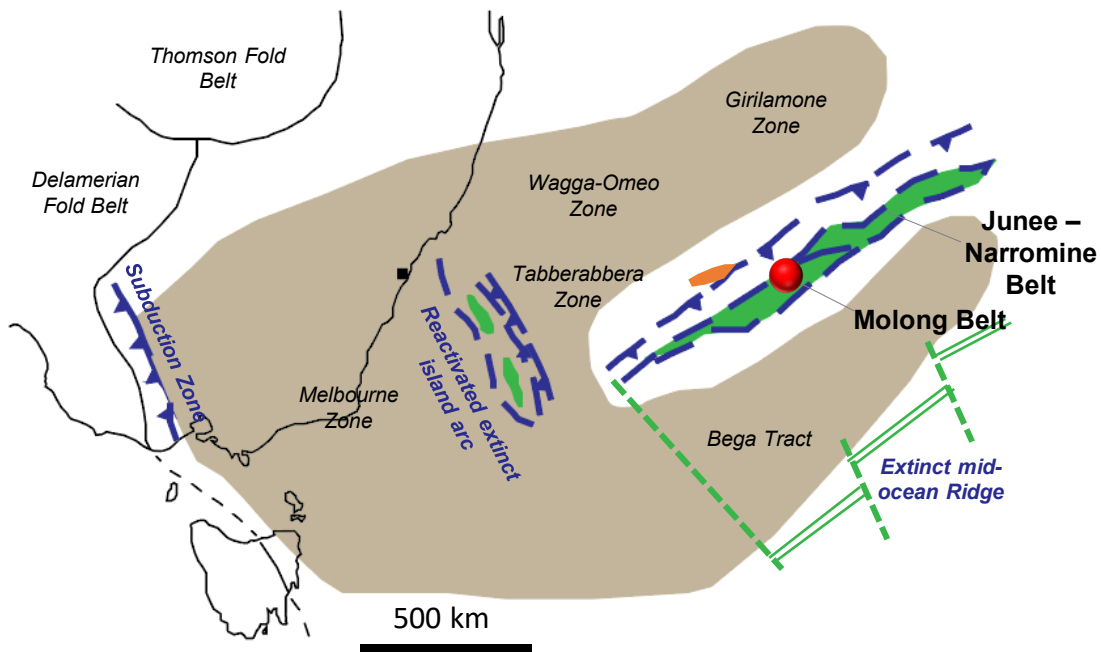
Deep-crustal zones that provided permeable pathways for magma ascent

Macquarie Arc – Geodynamic Setting

Porphyry emplacement during dramatic tectonic reorganisation

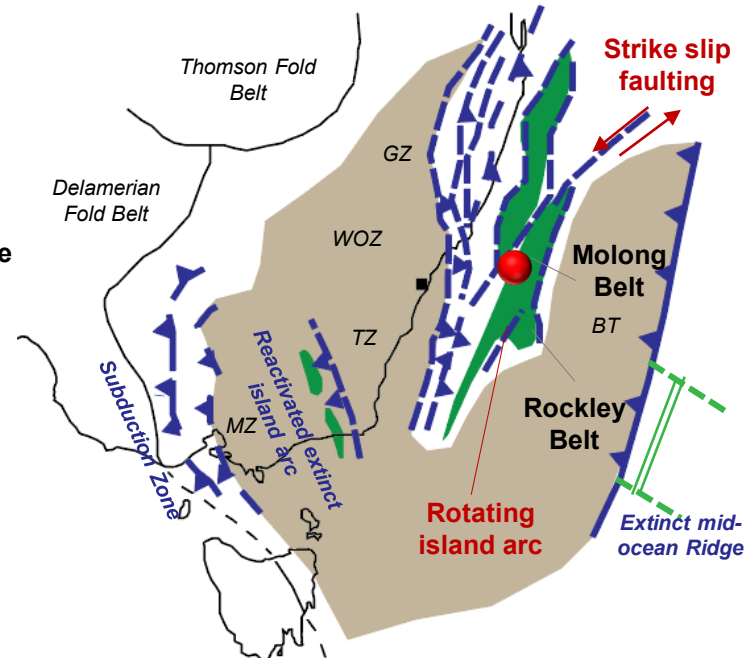
460 Ma

Arc evolution outboard of Gondwana



445 Ma

Arc-Craton Collision



Cessation of arc volcanism

Extinct mid-ocean Ridge

435 Ma

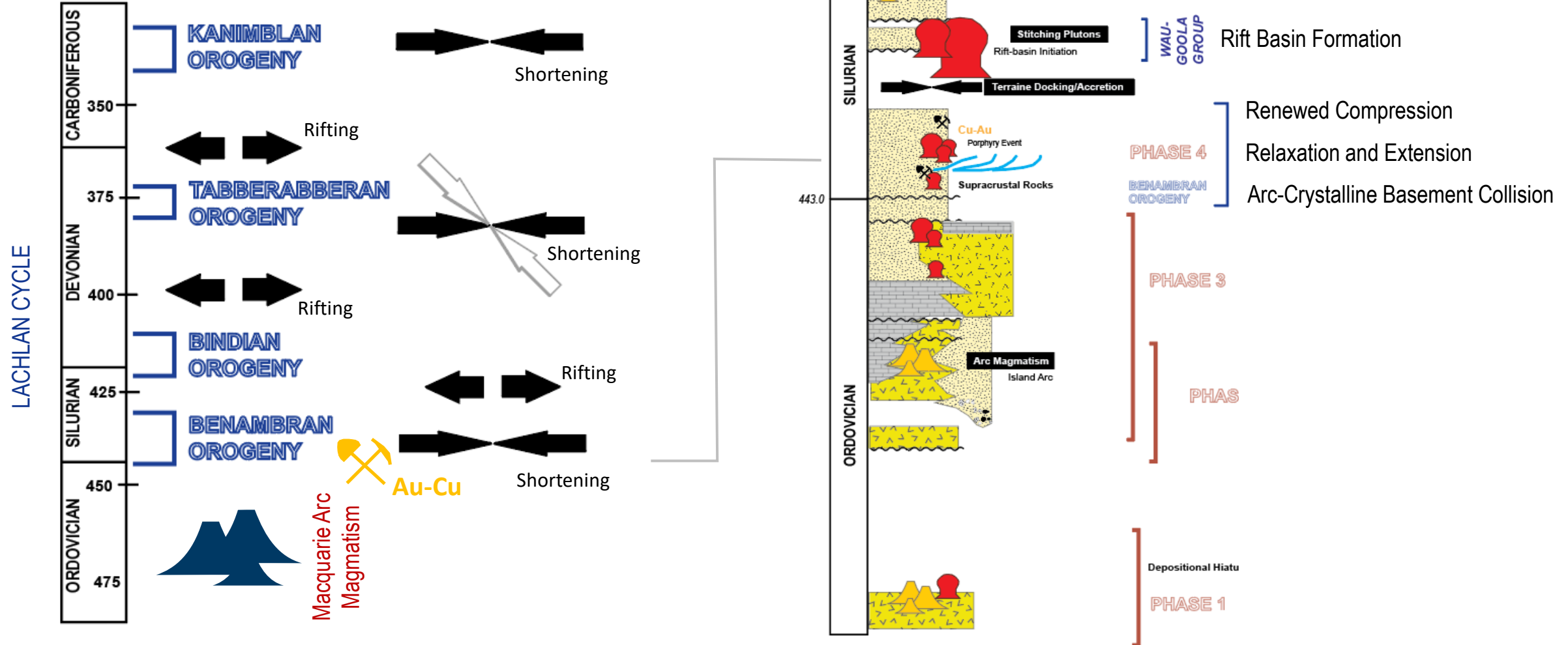
Peak of porphyry Au-Cu



Peak of porphyry emplacement

Geodynamic Setting

Porphyry emplacement during dramatic tectonic reorganis
















Cadia Valley – District Geology

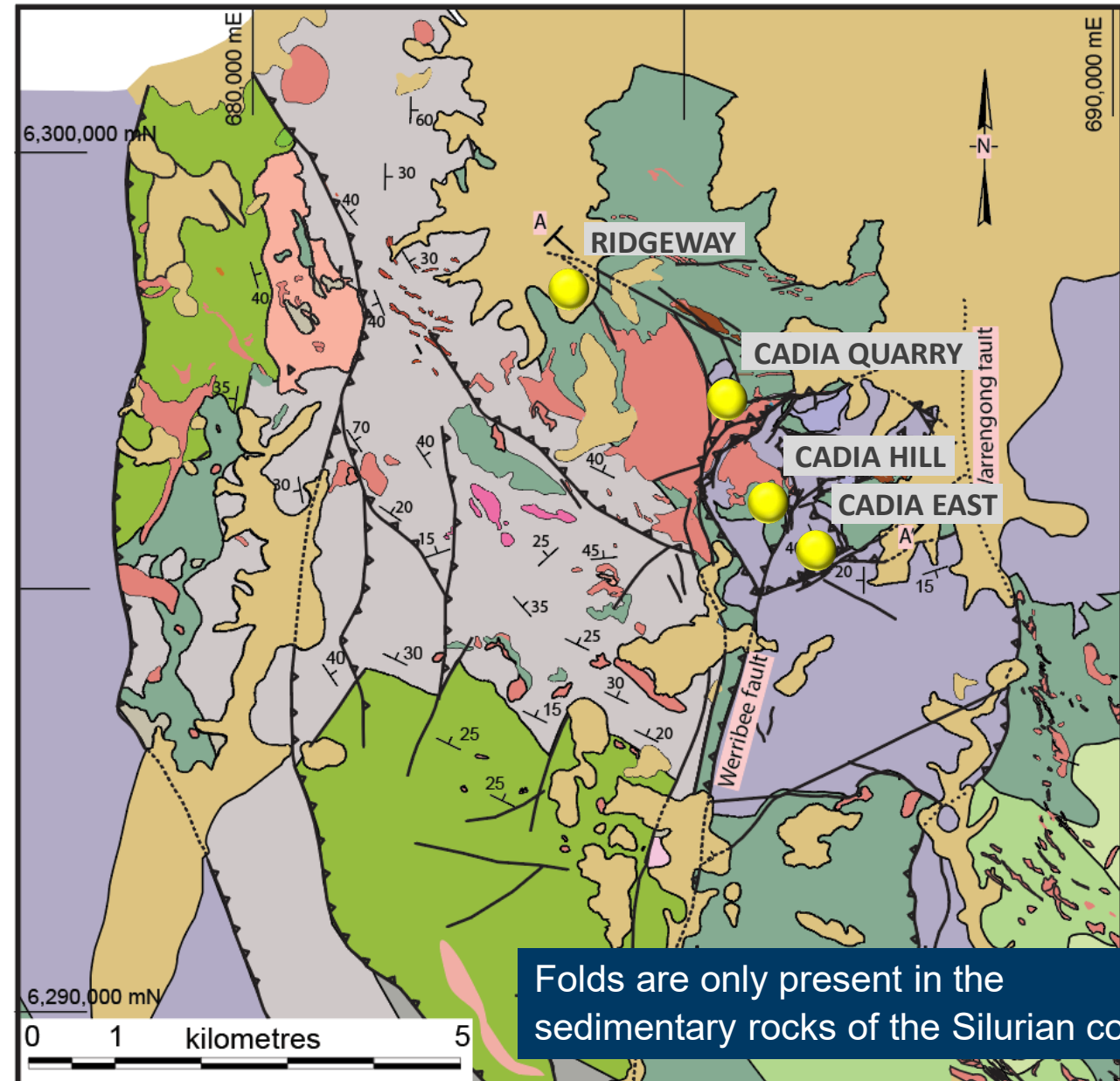
Geological setting and mineralisation

Complex fault and related fold architecture exist in the Cadia Valley.

Generally subdivided into three major fault sets: (1) N-striking, W-dipping reverse faults and associated folds and fault splays, (2) NE-striking, NW-dipping faults and associated folds, and (3) W-NW striking, steeply N-dipping oblique reverse faults

Explanation

-  Basalt (Miocene)
-  Waugoola Group (Silurian)
-  Intrusive rocks (E Silurian and L Ordovician)
-  Forest Reef Volcanics (Ordovician)
-  Angullong Formation (Ordovician)
-  Feldspathic sandstone (Ordovician)
-  Weemalla Formation (Ordovician)
-  Feldspathic sandstone
-  Black feldspathic sandstone
-  Walli Volcanics (Ordovician)
-  20° Bedding
-  Fault
-  Thrust fault



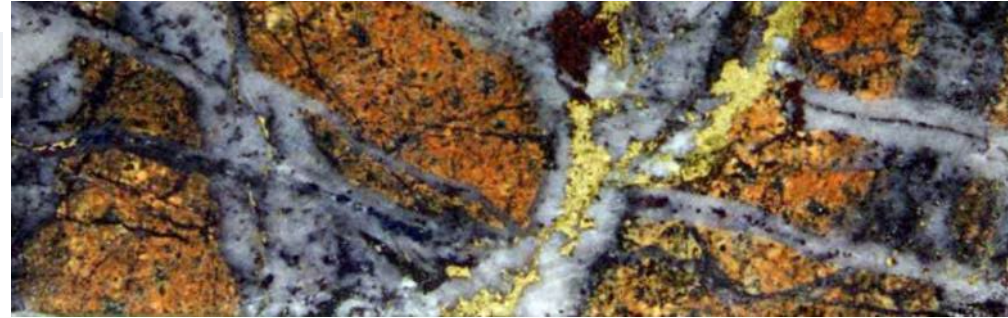
Cadia Valley – Mineralisation Styles

1. Intrusion Centered Porphyry Deposits

Ridgeway and Cadia East

Ridgeway = stockwork / sheeted veins

Cadia East = sheeted veins / disseminated



2. Porphyry Wall-rock Deposit

Cadia Hill and Cadia Quarry

Envelopes of sheeted quartz veins



3. Skarn Mineralisation

Big and Little Cadia

Replacement style hematite/magnetite Cu/Au



4. Pegmatitic Mineralisation

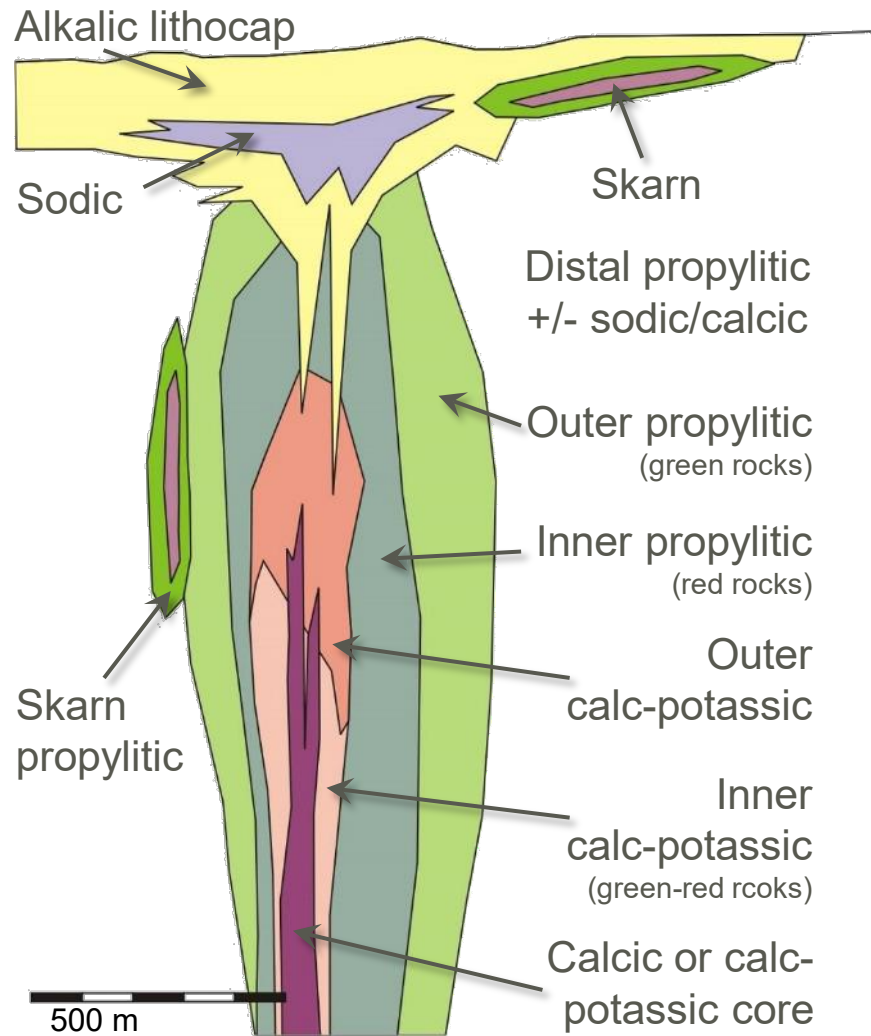
Cadia Quarry

Pegmatite and breccias



Cadia Valley – Deposit Model

Silica saturated deposit model



Controls

- Clusters of deposits, variations
- Pipe shaped geometries
- Multi-stage intrusions, multi-stage hydrothermal events – large km-scale batholith
- Basin-control and dyke swarms
- Reactivity of host rocks

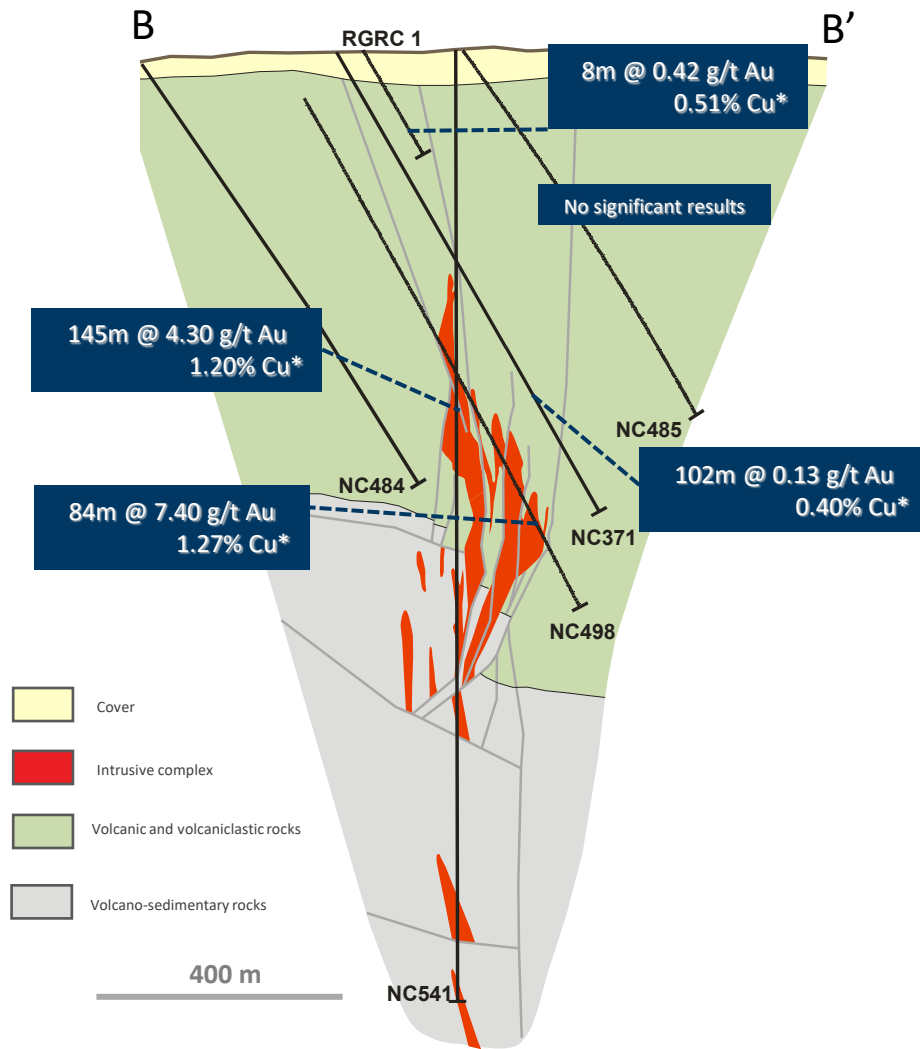
Mineralization/Alteration

- Complex alteration: Na, Na-Ca-Fe, Ca, K, K-Ca-Fe
- Mt-rich core, distal Hem.
- Replacement, veins, breccias
- Low sulfide (+Au, +/- PGE)
- Oxidized fluids



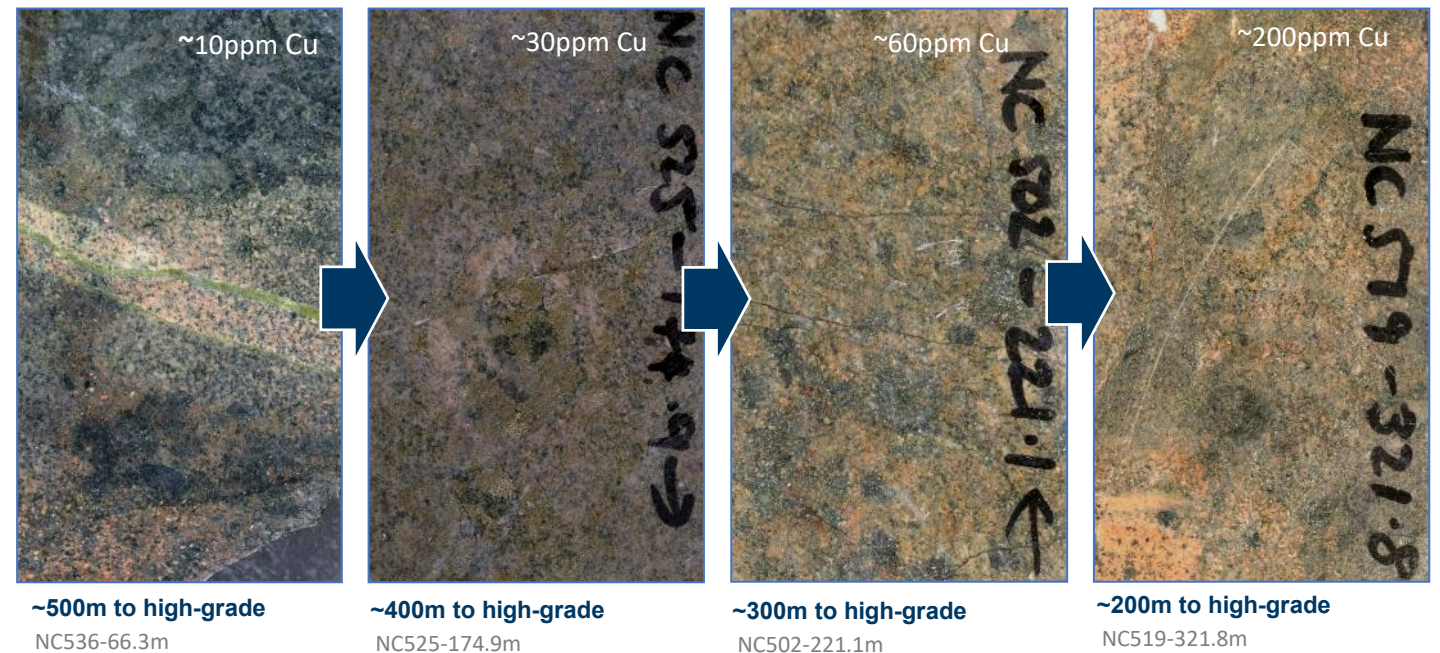
Cadia Valley – Deposit Model

Subtle Ridgeway Footprint



- Ore-bearing hydrothermal alteration assemblages occur 10s of metres from the intrusions
- Unremarkable propylitic alteration assemblages extend 100s of metres laterally away from Ridgeway

SODIC Halo



Modified after Wilson et al., Econ. Geol. (2003) v.98 1637-1666; *historic drill hole intercepts Wood and Holliday (1995) New Generation Gold Mines: Case Histories of Discovery, Australian Mineral Foundation.

Host Rock Timing

Palaeontology and Geochronology

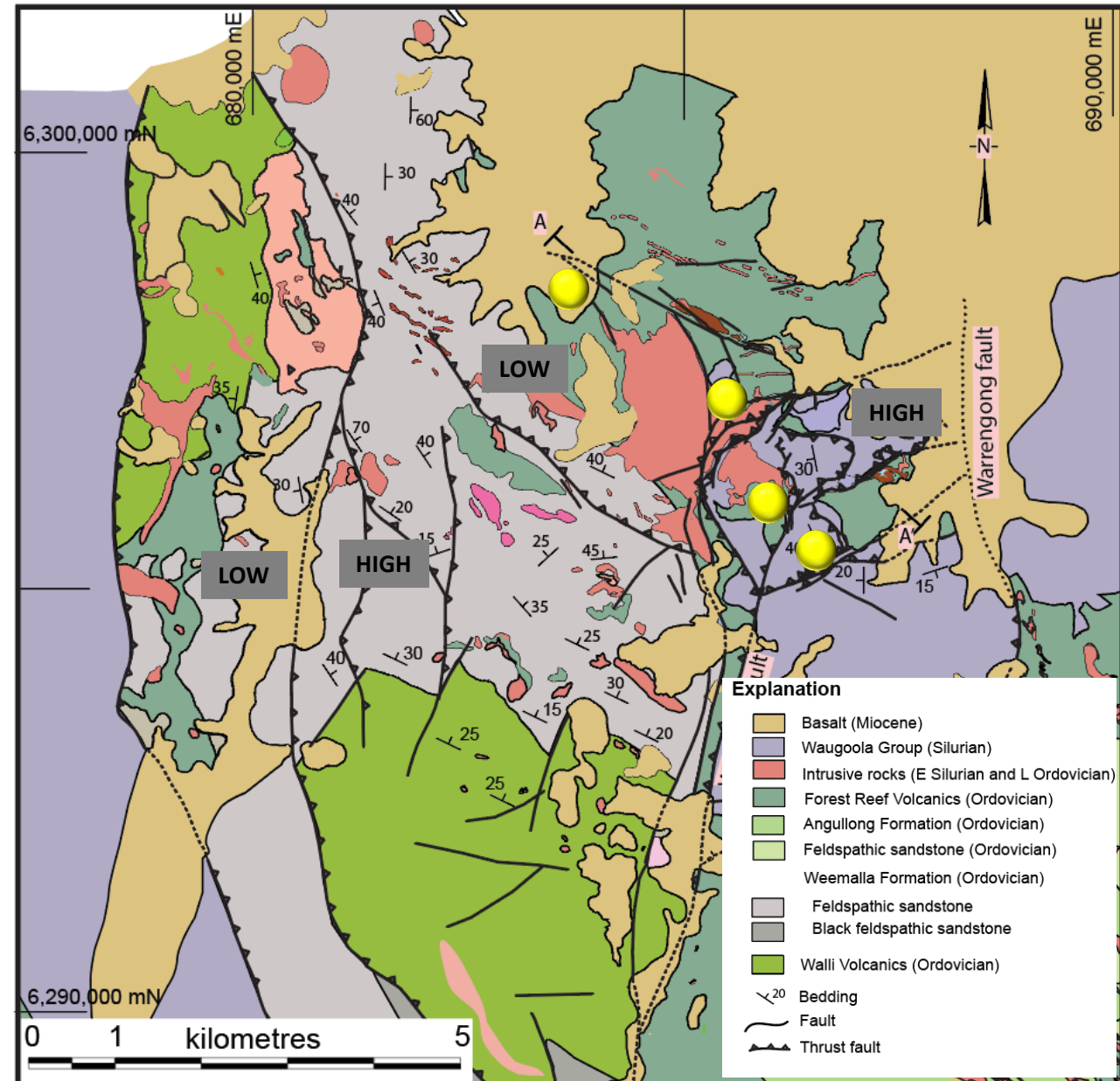
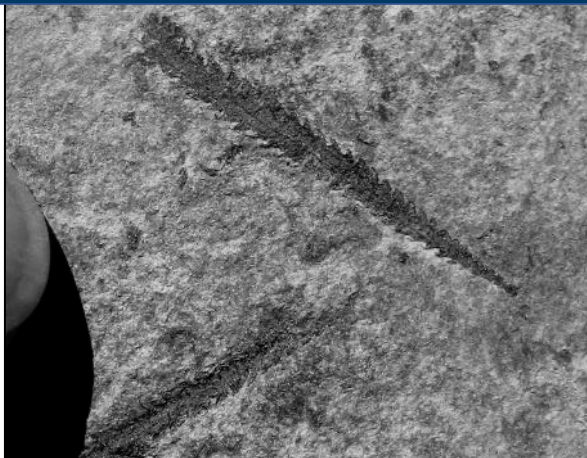
Palaeofauna, includes graptolites, conodonts, brachiopods, fragmentary coral and trilobite remains

Mid-Darriwilian (Da2-3) to late Gisbornian (Gi2) graptolites and L. Ordovician to Silurian conodonts

Detrital zircon U-Pb (454 Ma) ages

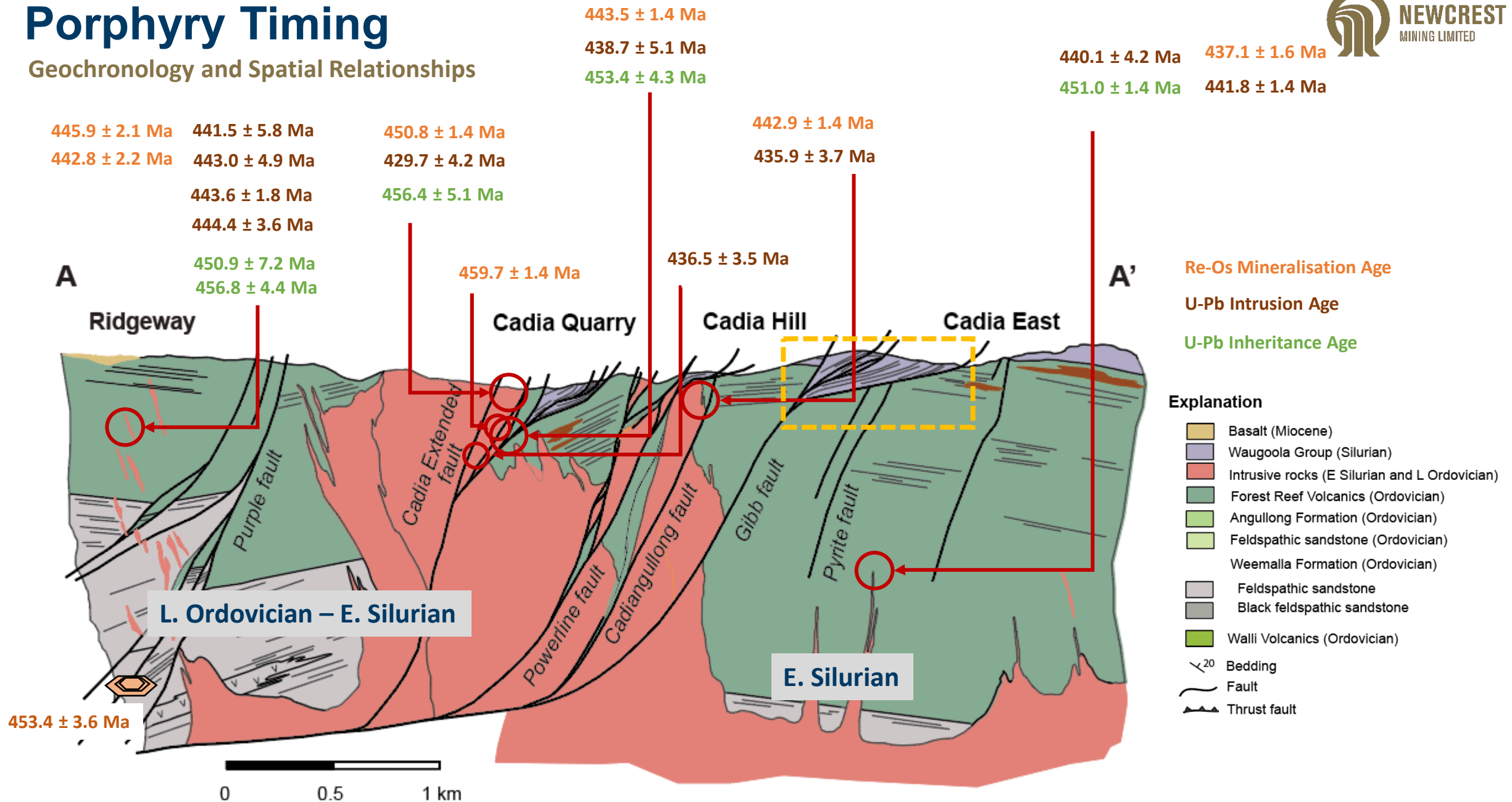
Younger depositional Ea3 (ca. 452 Ma) ages are recognized in upper parts

1. Deposited during the Eastonian (454 and 452 Ma)



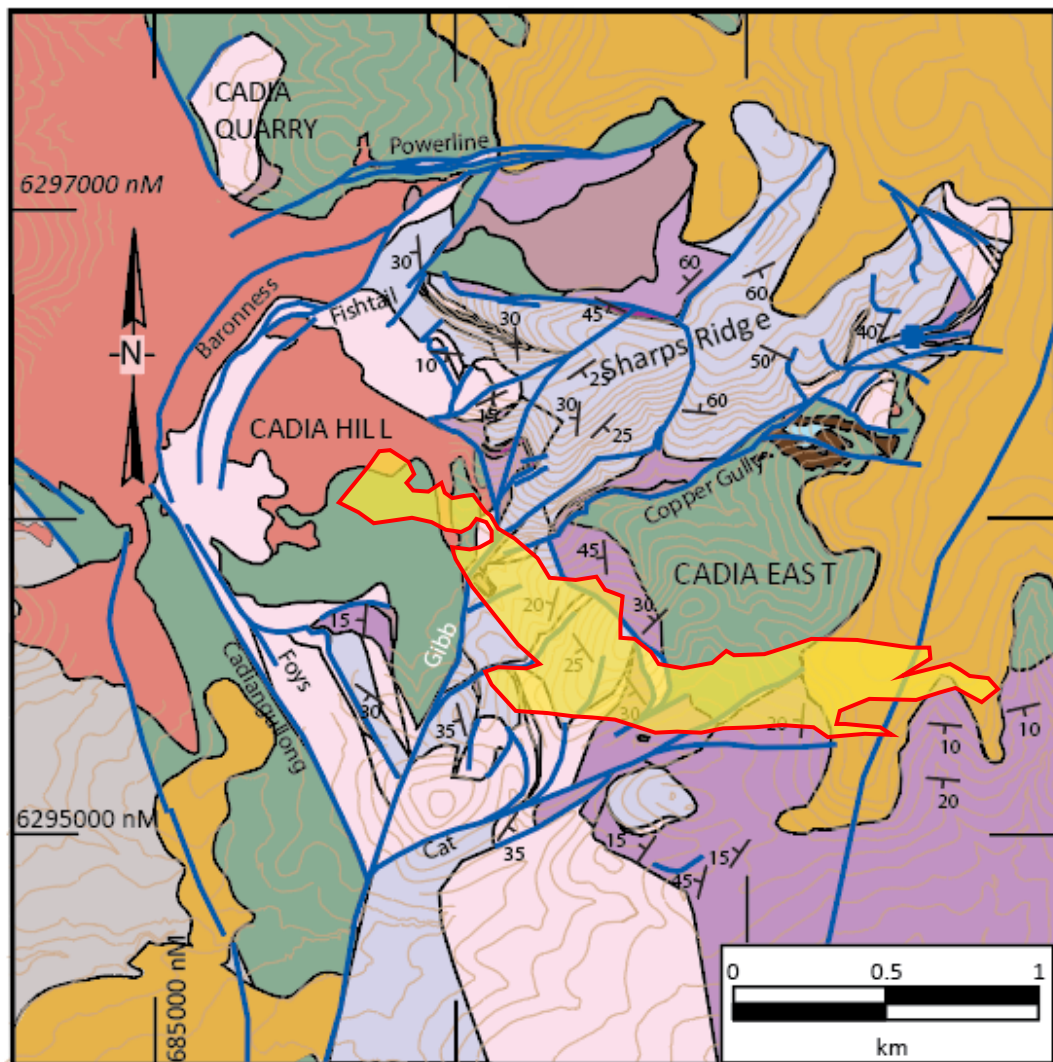
Porphyry Timing

Geochronology and Spatial Relationships

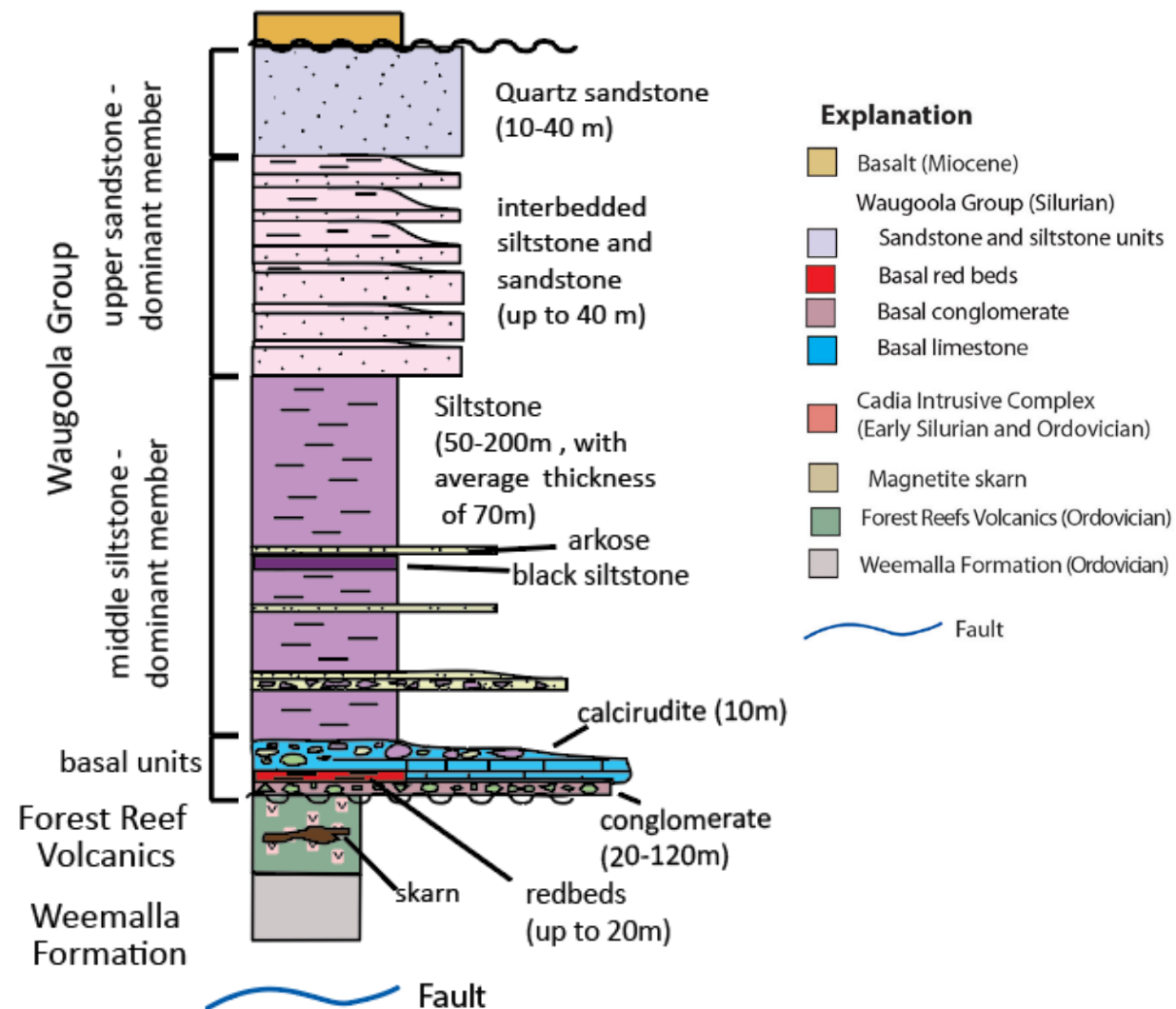


Cover Geology

70% of Cadia East is concealed beneath Silurian Cover

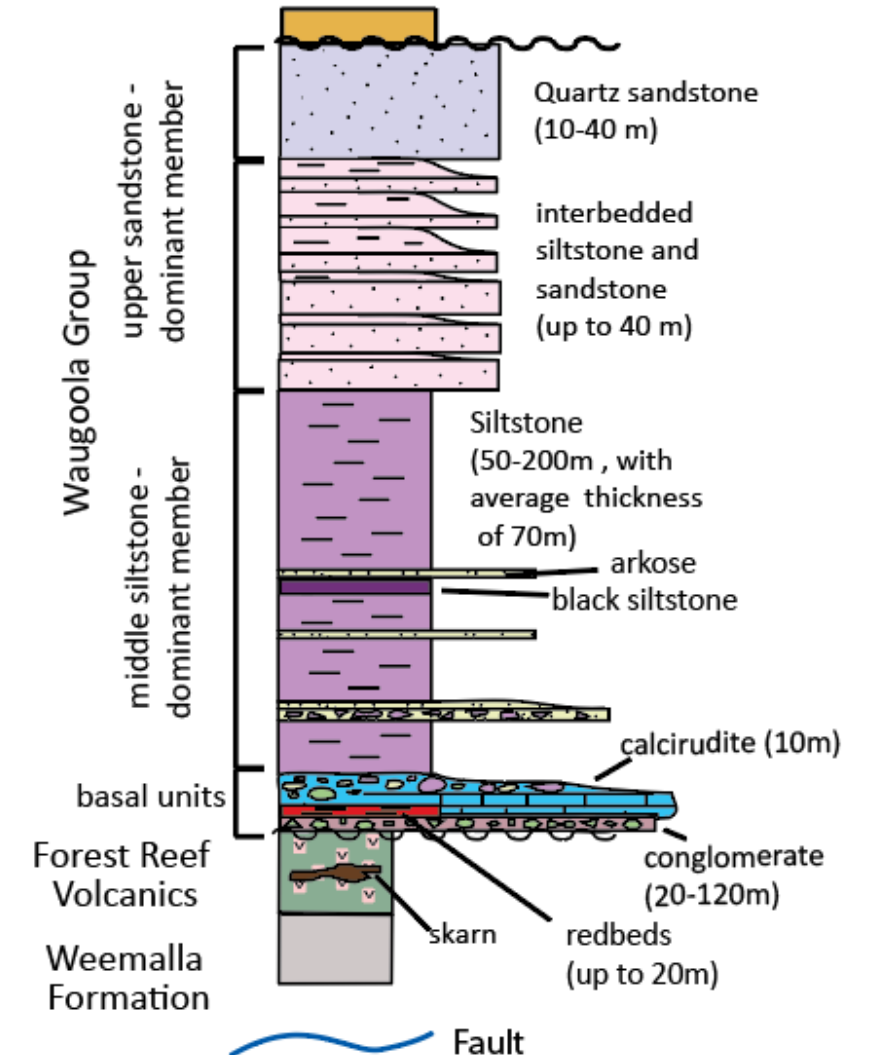


 Cadia East 0.7 g/t Au outline



Cover Geology

Silurian sedimentary rocks (Waugoola Group) cover the porphyry-related mineralisation



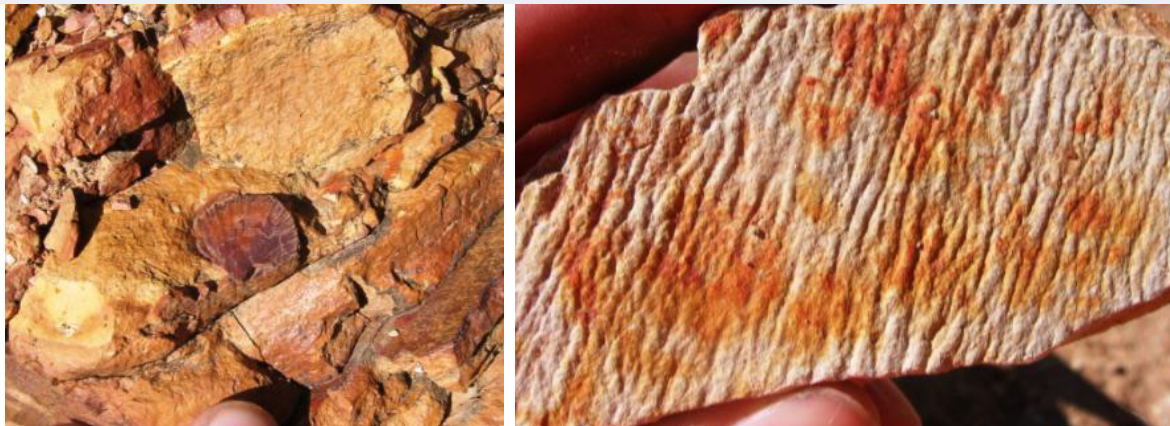
Cadia Valley Cover

Post mineralisation deformation and cover

1. Early Silurian Cover – Southern Wall Cadia Hill Pit



2. Early Silurian Cover – Fossil-bearing sandstones



Biostratigraphic data constrain the age of the cover - an earliest Wenlock age within the *Pterospiriferus amorphognathoides* conodont biozone for limestone 2m above the unconformity with the Forest Reefs Volcanics

Cover Geology

2 m.y. approx. 1-2 km of erosion 0.5mm/yr (1km)



Skarn clasts in boulder conglomerate covering Cadia East

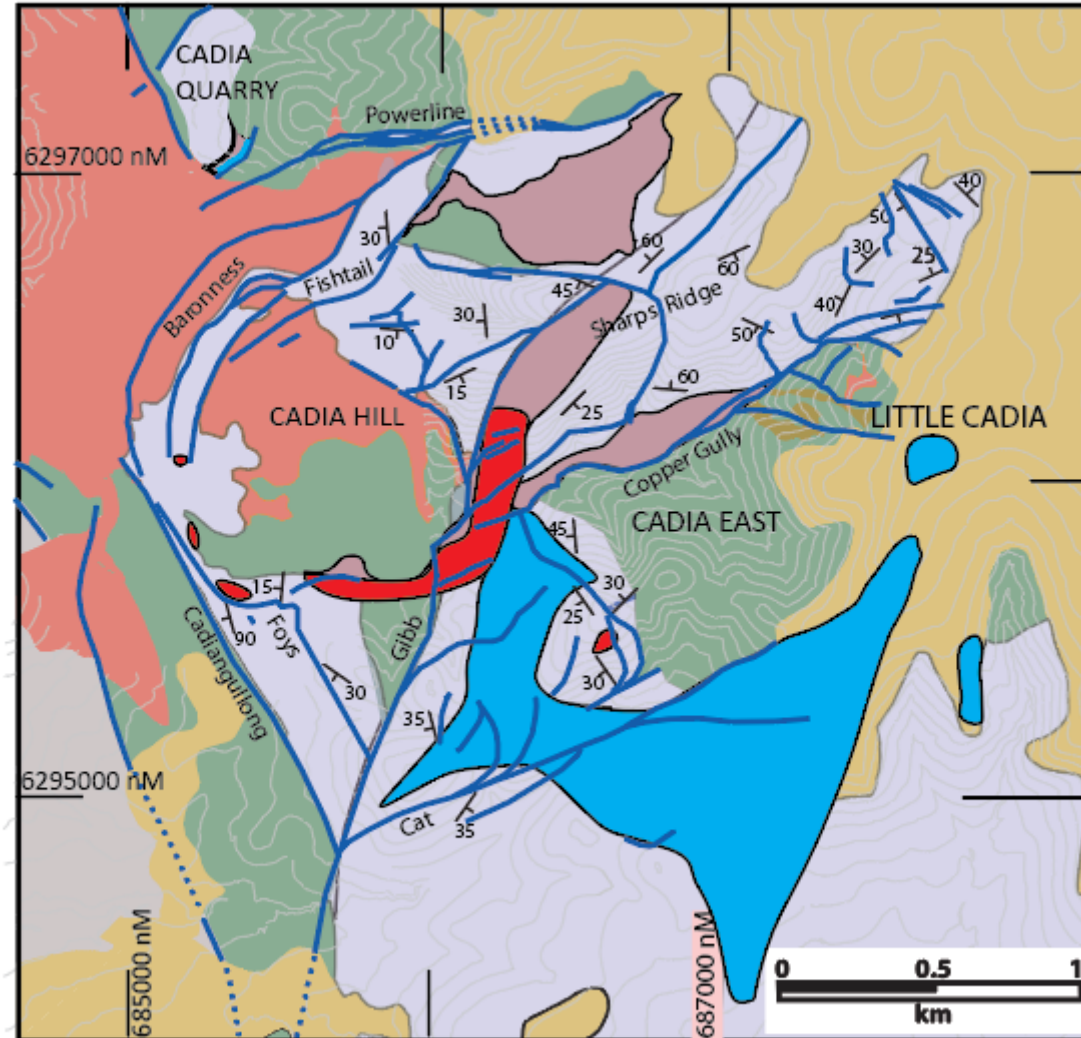
Cover Geology

Generalised distribution of rocks of the Waugoola Group that directly overlie the basal unconformity

1. Basal Red Beds



2. Basal Limestone



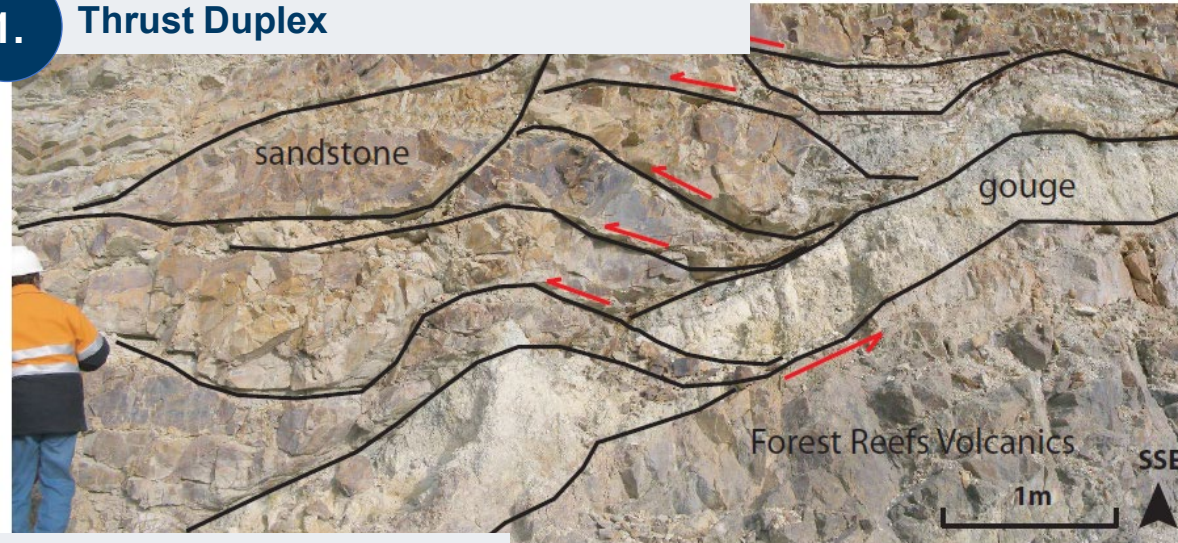
Explanation

- Basalt (Miocene)
- Waugoola Group (Silurian)**
 - Sandstone and siltstone units
 - Basal red beds
 - Basal conglomerate
 - Basal limestone
- Cadia Intrusive Complex (Early Silurian and Ordovician)
- Magnetite skarn
- Forest Reefs Volcanics (Ordovician)
- Weemalla Formation (Ordovician)
- Fault

Cadia Valley Cover

Thin skin folding and thrusting

1. Thrust Duplex



2. Fault-related folding Silurian cover

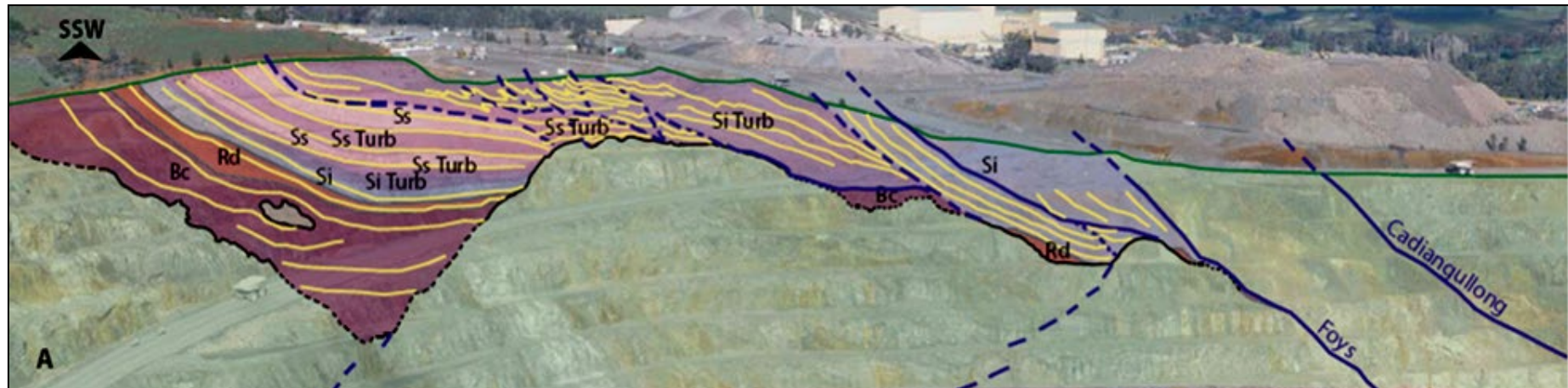


Cadia Valley Cover

Post mineralisation deformation and cover



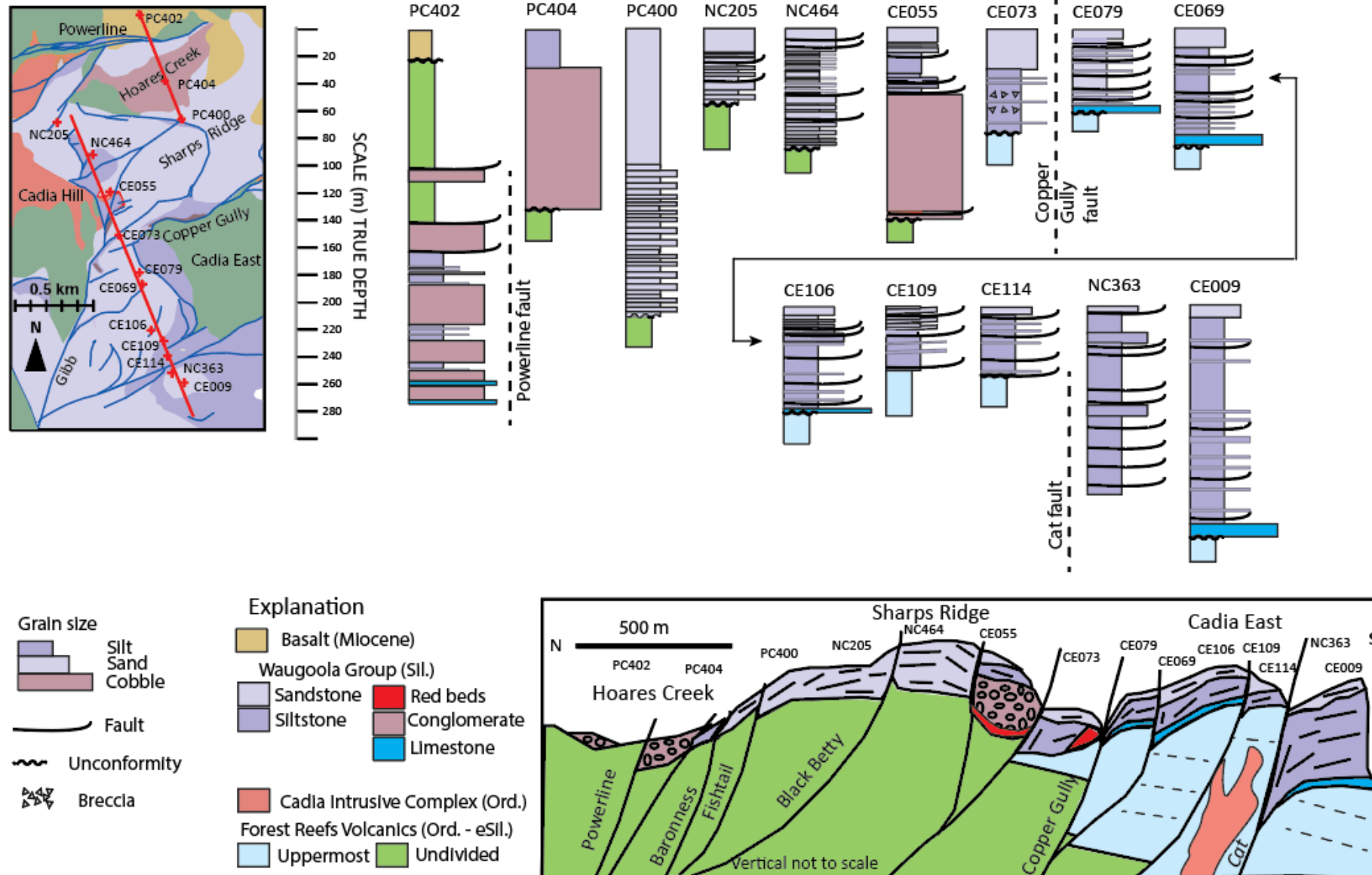
Deformed Silurian sub-basins cover the dismembered Cadia Hill deposit



Scale of thrust-related movement differs between the basement and cover rocks

Cadia Valley Cover

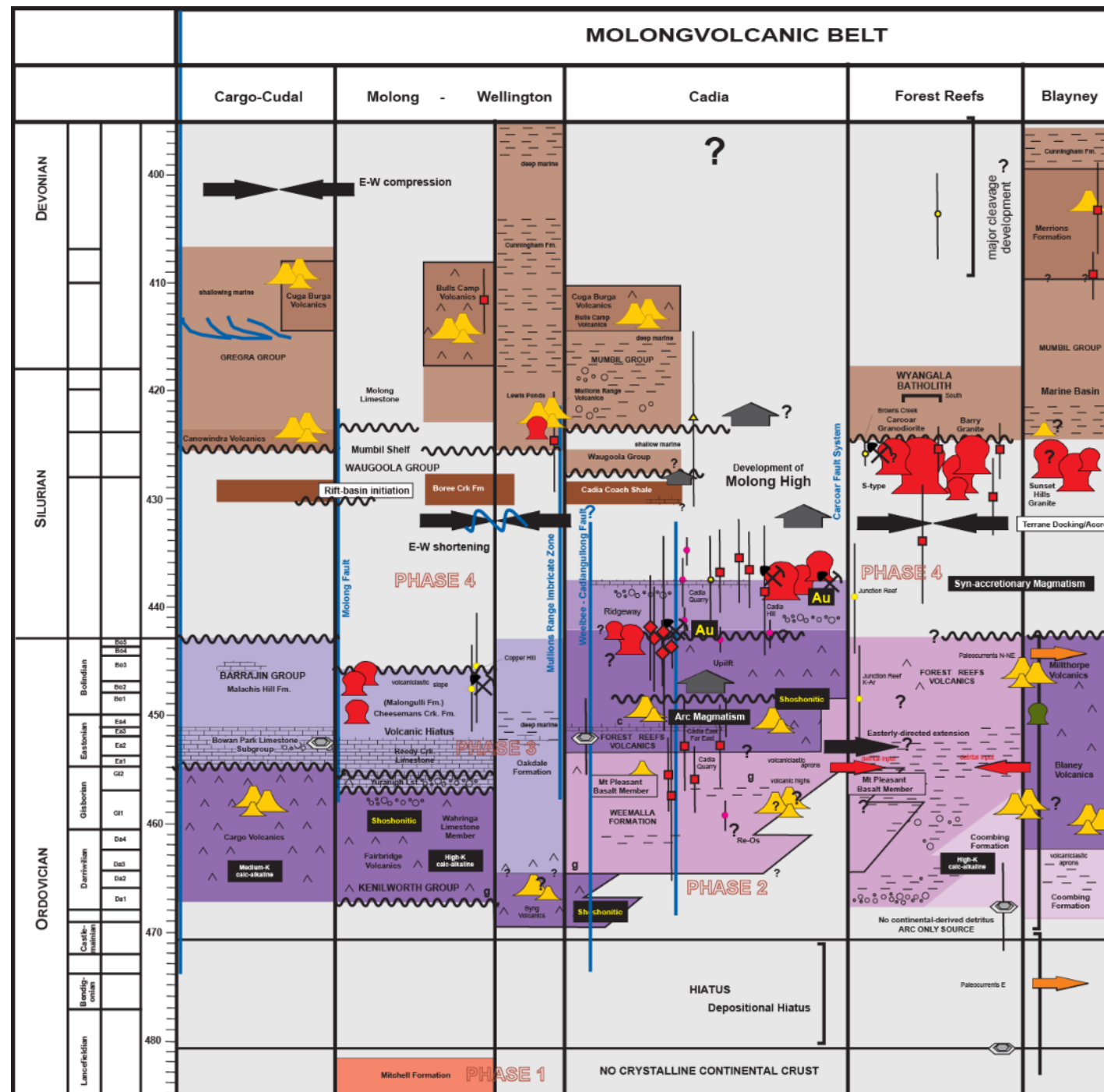
Basin inversion and deformation of cover



Event Chronology

A complex tectonic history is recorded in the Cadia Valley

The net effect of the complex post-mineralization tectonic history in the mid-Paleozoic was initial exhumation followed by subsequent burial and preservation of the world-class Cadia Valley district



Some of the world's largest and highest grade alkalic porphyry Au-Cu deposits occur in the circum Pacific.

Silica-saturated alkalic deposits of Cadia Valley highlights importance of:

- ❑ a **preconditioning of the crust** with deposits formed in post-subduction, trans-tensional environments after the initial stages of the accretion of remnant arc fragments
- ❑ **Highly oxidized and K-rich ore-related magmas** were derived from an enriched mantle source, previously modified by subduction processes (higher grade Au)
- ❑ **Deep-crustal zones** that provided permeable pathways for magma ascent
- ❑ **Local lithologically controlled permeability important for deposit localization**
- ❑ **Post-mineralization geological processes were critical for the preservation**