



THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA

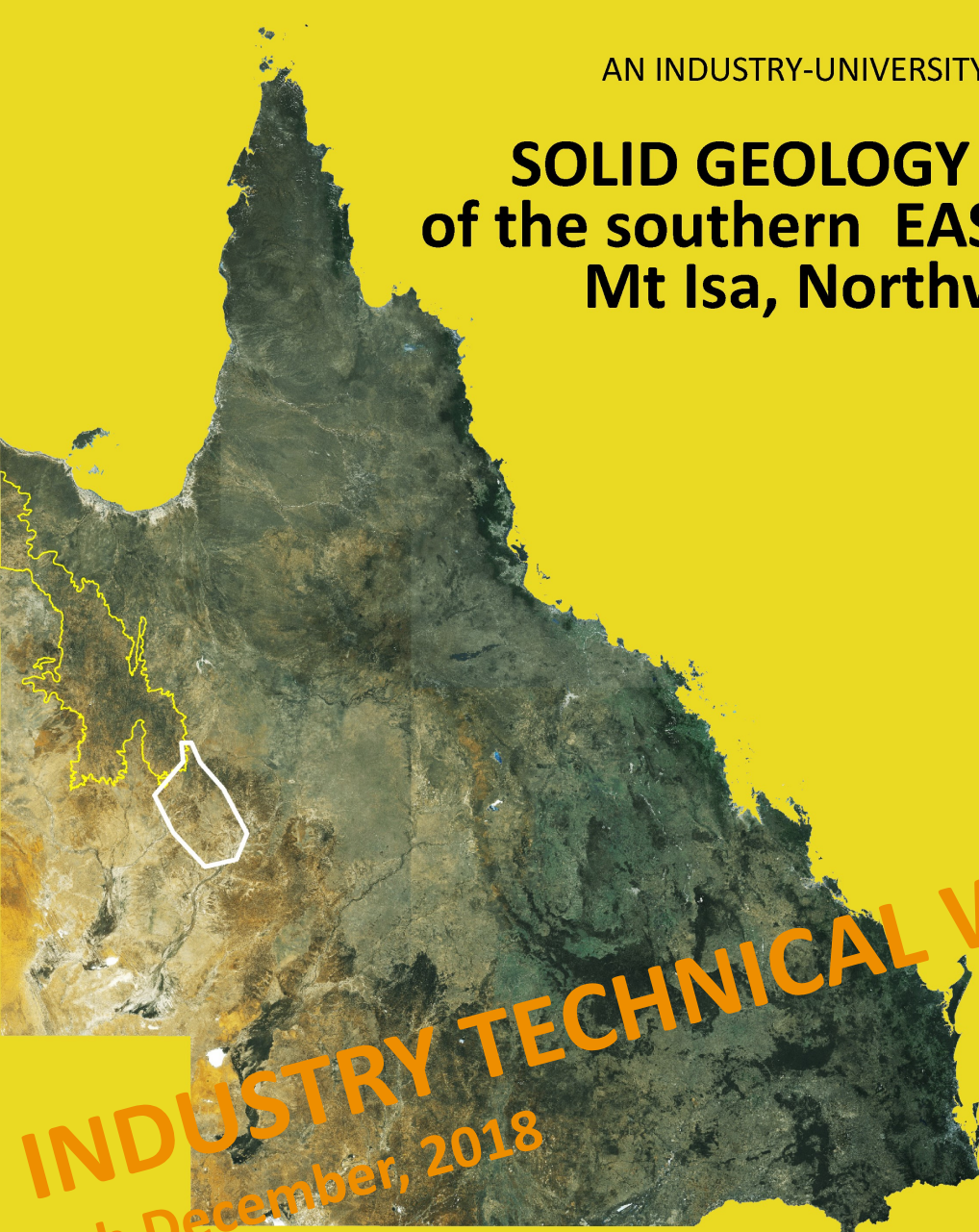
**SMI BRC**

WH Bryan Mining &  
Geology Research Centre

AN INDUSTRY-UNIVERSITY-GOVERNMENT COLLABORATION

# SOLID GEOLOGY INTERPRETATION of the southern EASTERN FOLD BELT, Mt Isa, Northwest Queensland.

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**INDUSTRY TECHNICAL WORKSHOP**  
6th December, 2018



**Queensland  
Government**

## **Cannington South Solid Geology interpretation**

# **Workshop Exercise Options**

Using recently-released, '1370' Cloncurry detailed Magnetics ...

- (1) TRACK Mount Norna Quartzite-Toole Creek Volcanics (MNQ -TCV) contact south from OUTCROP to UNDERCOVER**
- (2) EXPLORE architecture around Cannington Mine. DISCOVER next domain of MNQ-TCV**
- (3) IS THERE ANY syn-mineral ARCHITECTURE around Cannington to AID TARGETING?**
- (4) WHERE is the IMMEDIATE BROWNFIELDS potential at Cannington?**

### **Materials/Data Provided:**

MapInfo GIS Workspace

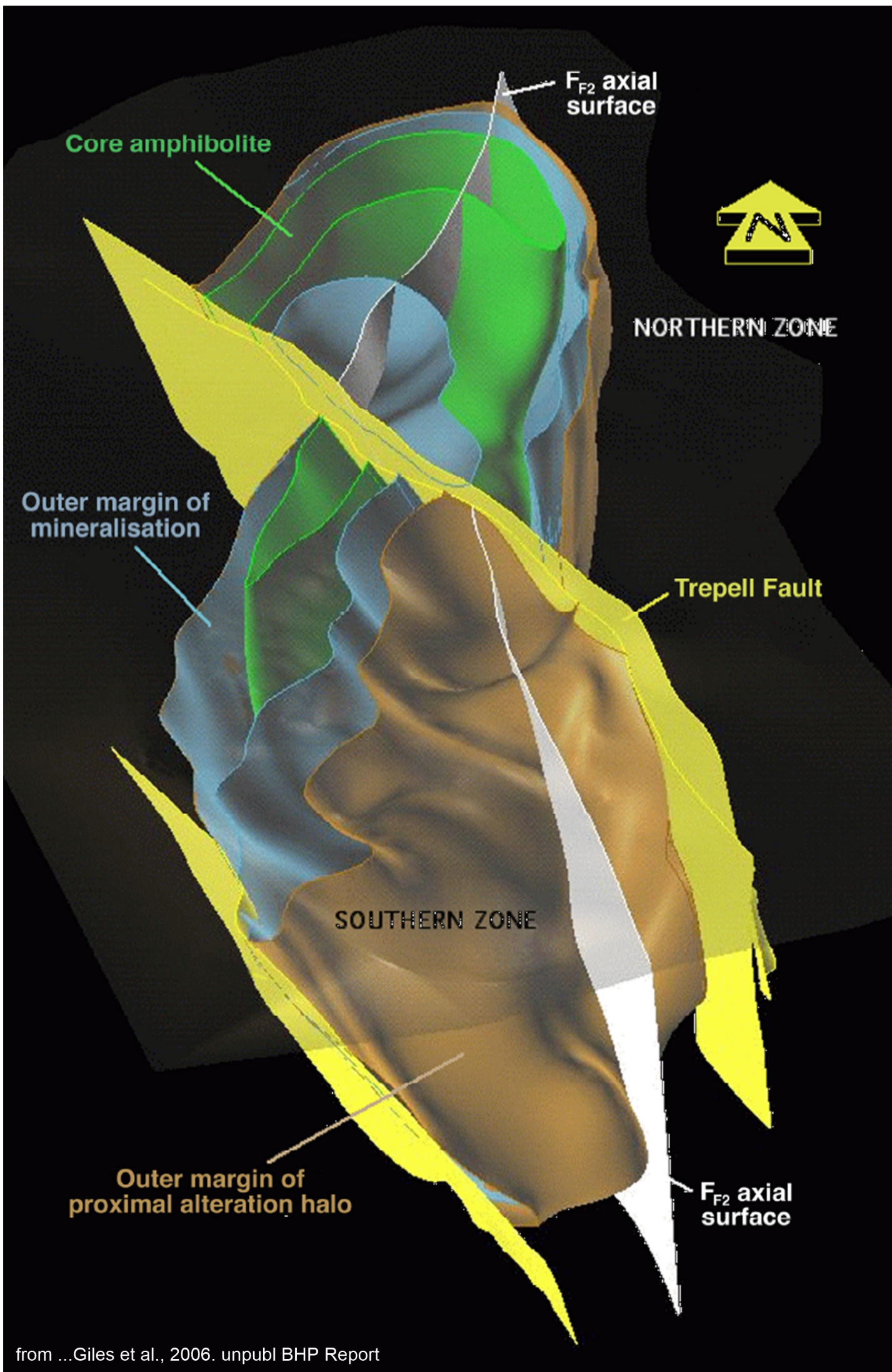
ESRI ArcMap mxd Project

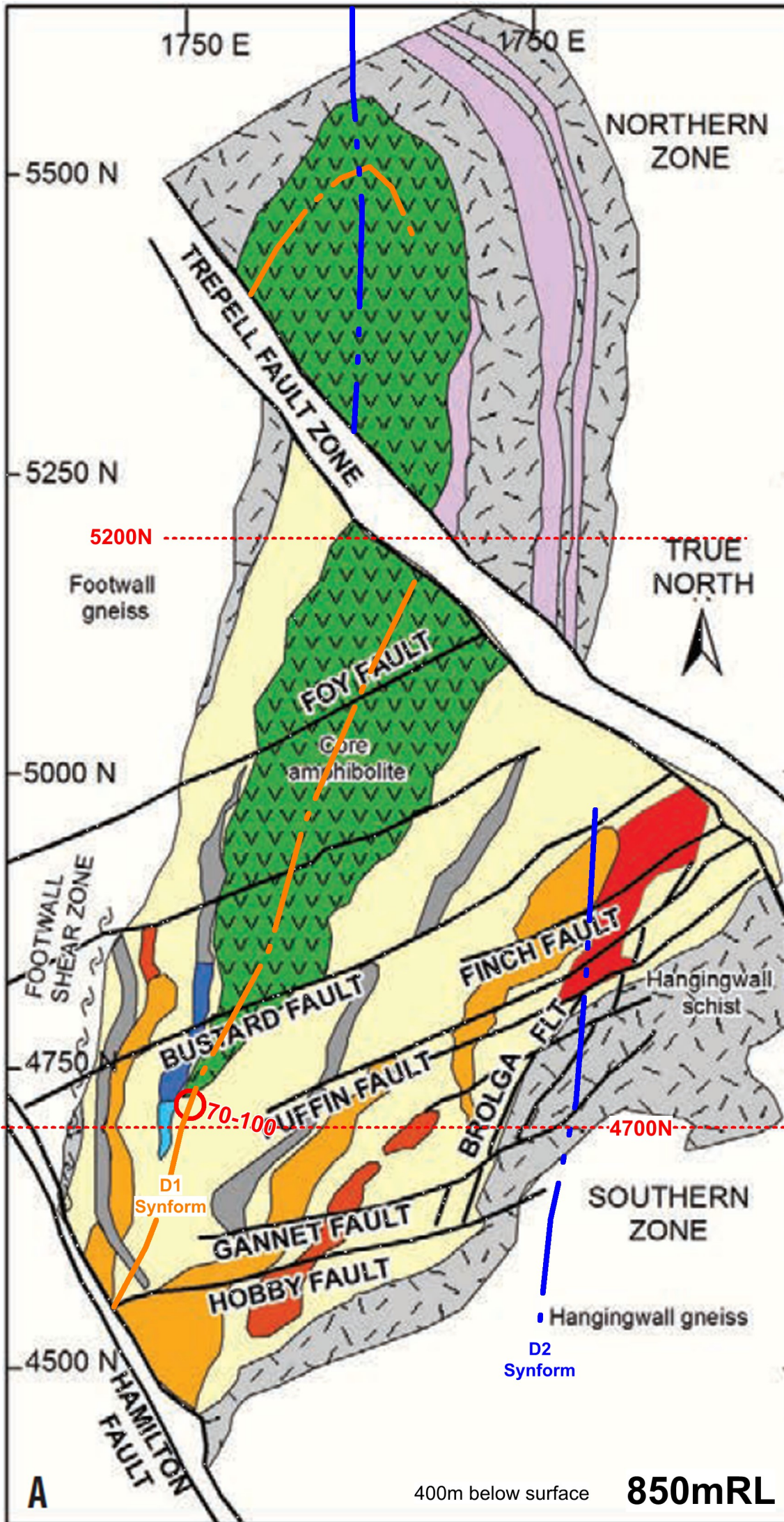
Recently-released, '1370' Cloncurry detailed Magnetics (& clips)

Selwyn & Mount Angelay 100K Geology Rasters (& Legend)

Cannington Geology figures

Schematic Stratigraphies: East and West of Cloncurry Fault





from ... Wright et al., 2017 Cannington Ag-Pb-Zn deposit, in Australian Ore Deposits (ed. G.N. Phillips) AUSIMM

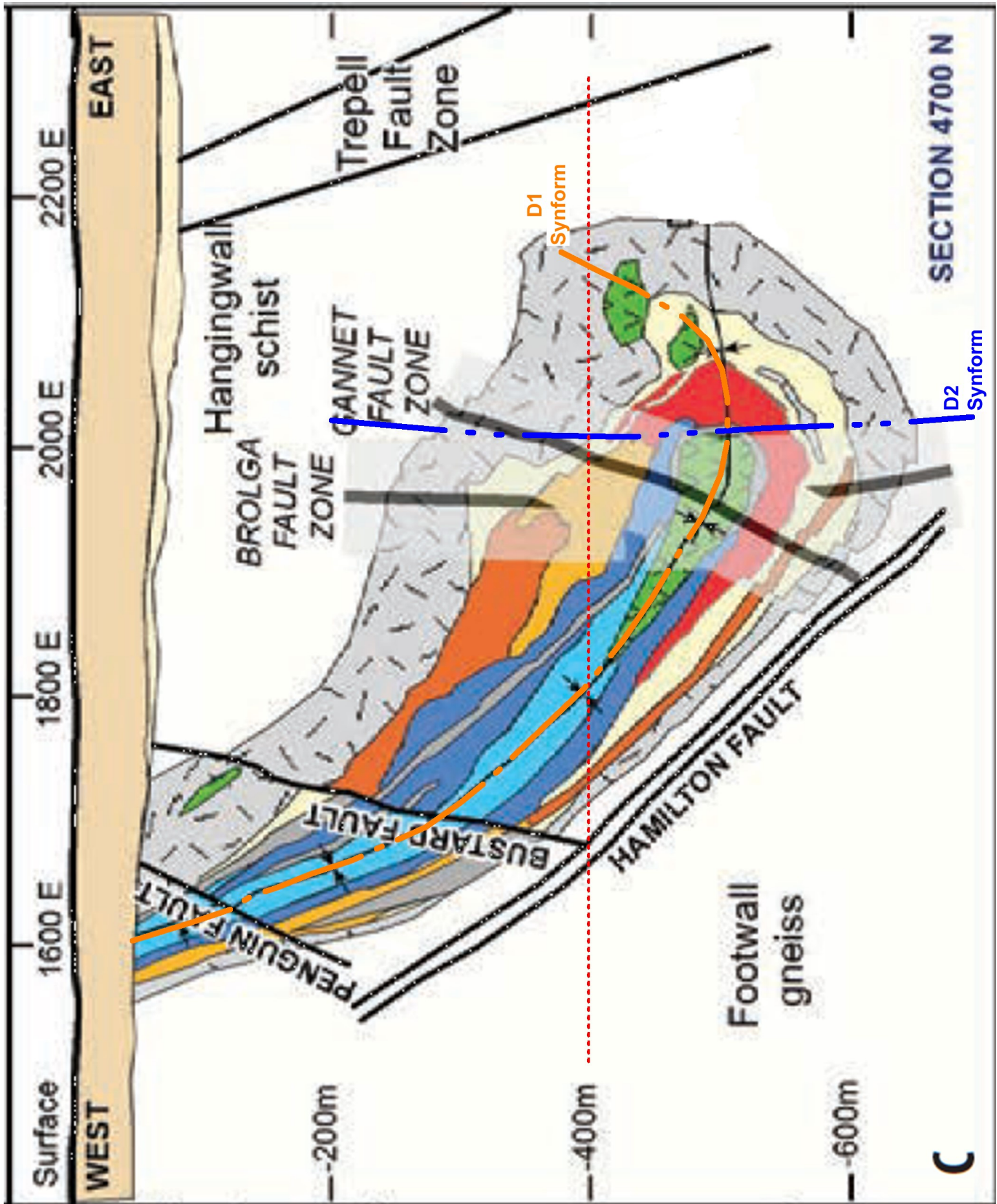
**Legend**

|  |                      |  |                                   |
|--|----------------------|--|-----------------------------------|
|  | Fault                |  | Quartzite/Garnetiferous quartzite |
|  | Amphibolite          |  | Siliceous Zn-Pb                   |
|  | Cretaceous Sediment  |  | Siliceous Zn-Pb - Inveravon       |
|  | Cretaceous sandstone |  | Siliceous Zn/silicified quartzite |
|  | Gneiss               |  | Muscovite Sillimanite Schist      |
|  | Mafic Pb             |  | Siliceous/Mafic Pb                |
|  | Mafic Zn             |  | Pegmatite                         |

Wright et al., 2017 Cannington Ag-Pb-Zn Deposit, in Australian Ore Deposits (ed. G.N. Phillips) AUSIMM

**A**

400m below surface **850mRL**



### Legend

— Fault

#### Lithology

Amphibolite

Cretaceous Sediment

Cretaceous sandstone

Gneiss

Mafic Pb

Mafic Zn

Muscovite Sillimanite Schist

Pegmatite

Quartzite/Garnetiferous quartzite

Siliceous Zn-Pb

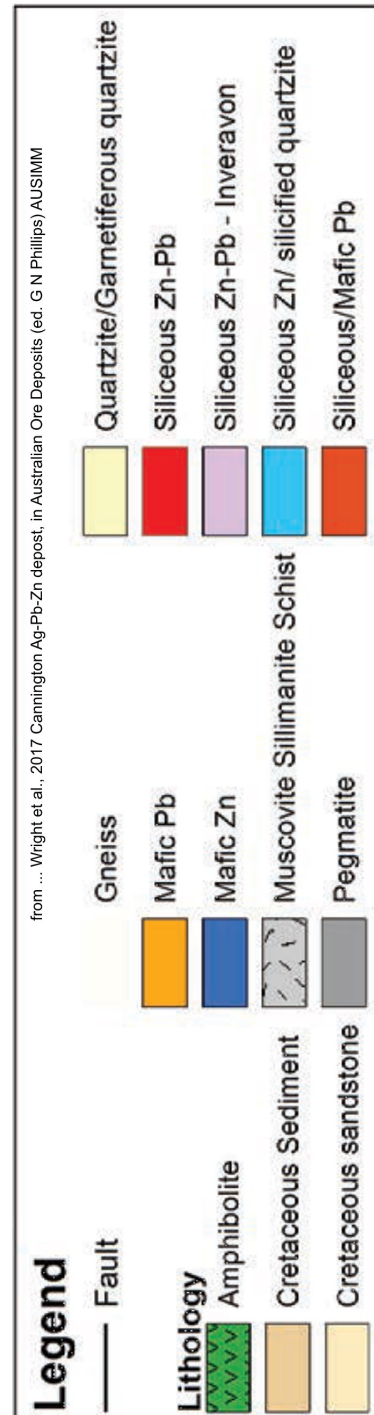
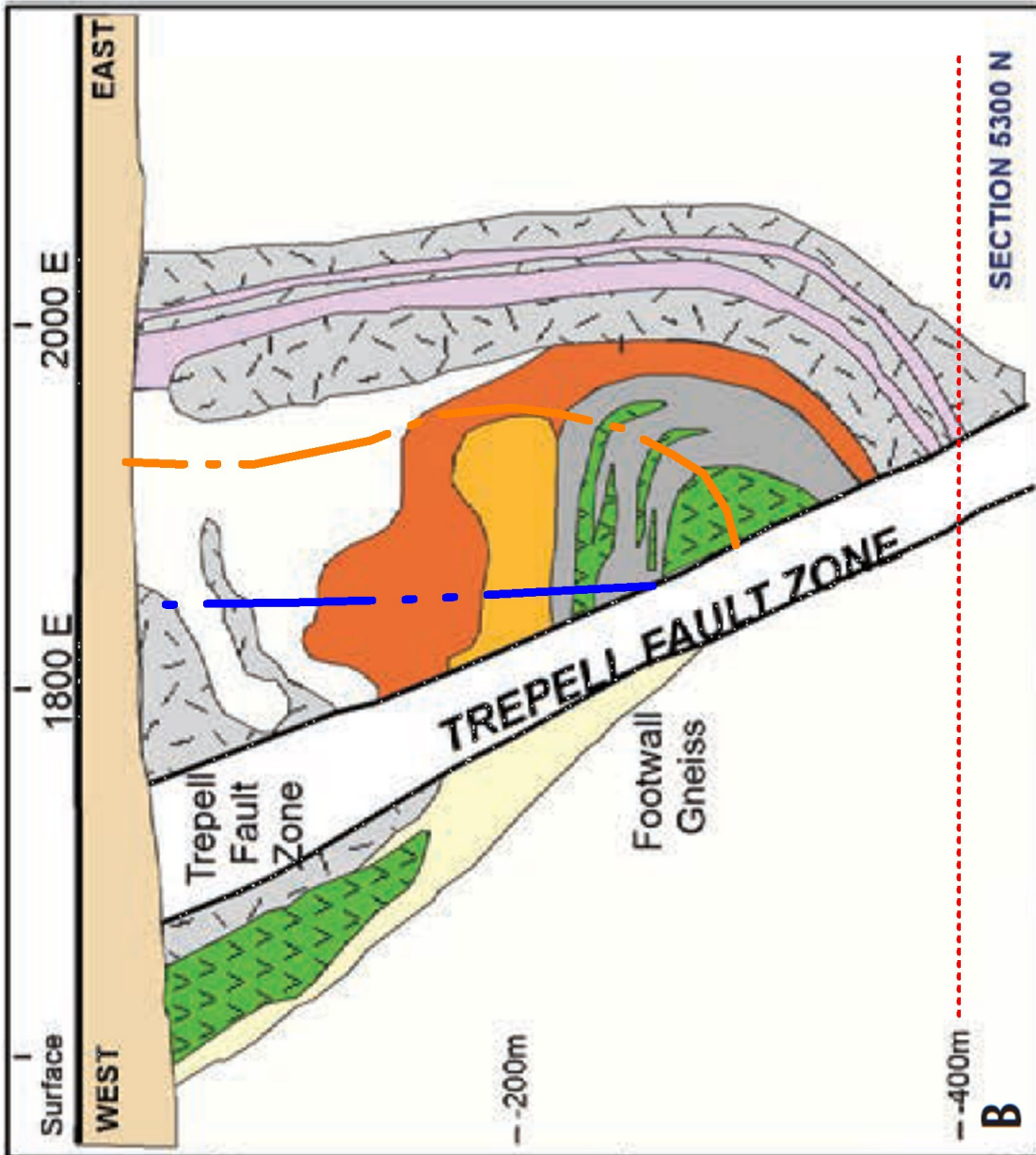
Siliceous Zn-Pb - Inveravon

Siliceous Zn/silicified quartzite

Siliceous/Mafic Pb

from ... Wright et al., 2017 Cannington Ag-Pb-Zn deposit, in Australian Ore Deposits (ed. G.N. Phillips) AUSIMM

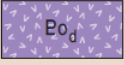
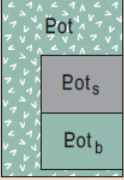
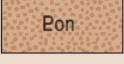
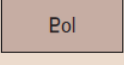
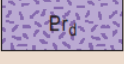
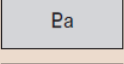
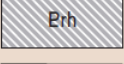
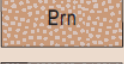
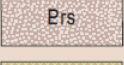
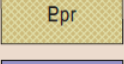
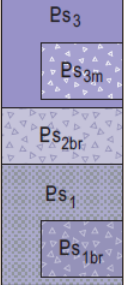
Wright et al., 2017 Cannington Ag-Pb-Zn Deposit, in Australian Ore Deposits (ed. G.N. Phillips) AUSIMM



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Wright et al., 2017 Cannington Ag-Pb-Zn Deposit, in Australian Ore Deposits (ed. G.N.Phillips) AUSIMM

**PALEOPROTEROZOIC**

|                           |   |   |
|---------------------------|---|---|
|                           |    | <b>Po<sub>d</sub></b> <i>Schistose amphibolite, metabasalt and metadolerite; mainly sills, in units of the Soldiers Cap Group</i>   |
| Toole Creek Volcanics     |    | <b>Pot</b> <i>Metabasalt, amphibolite, fine-grained, dark grey metasiltstone, carbonaceous mudstone, chert, and subordinate metasandstone</i>   |
|                           |   | <b>Pot<sub>s</sub></b> <i>Fine-grained, dark grey metasiltstone, carbonaceous mudstone, chert, and subordinate metasandstone; minor metabasalt</i>  |
|                           |   | <b>Pot<sub>b</sub></b> <i>Metabasalt and amphibolite with minor metasedimentary rocks; also common unmapped metadolerite sills and dykes</i>  |
| Mount Norna Quartzite     |    | <b>Pon</b> <i>Fine-grained quartz sandstone, siltstone and mudstone; minor chert, limestone; grades into quartzite and schist</i>   |
| Llewellyn Creek Formation |    | <b>Pol</b> <i>Pelitic schist containing garnet, staurolite and andalusite interbedded with metapsammite and quartzite</i>   |
|                           |    | <b>Pf<sub>d</sub></b> <i>Metadolerite, metabasalt and amphibolite; mainly sills, intruding units of the Kuridala Group</i>  |
| Answer Slate              |    | <b>Ea</b> <i>Dark grey, carbonaceous slate, phyllite and metasiltstone grading into mica schist; minor feldspathic quartzite and chert</i>  |
| Hampden Slate             |   | <b>Erh</b> <i>Dark grey, carbonaceous slate and metasiltstone; minor schist, calcareous and banded calc-silicate rocks</i>  |
| New Hope Sandstone        |  | <b>Ern</b> <i>Bluish grey quartzose to feldspathic metasandstone and mica schist</i>  |
| Starcross Formation       |  | <b>Ers</b> <i>Psammite and pelitic schist containing garnet, staurolite and andalusite</i>  |
| Roxmere Quartzite         |  | <b>Epr</b> <i>Feldspathic sandstone, minor siltstone and rare conglomerate; locally abundant ripple marks and ripple cross lamination</i>   |
| Staveley Formation        |  | <b>Es<sub>3</sub></b> <i>Banded scapolitic calc-silicate granofels and subordinate impure marble; locally abundant breccia and metasomatised rocks; metadolerite and amphibolite bodies common</i>                                  |
|                           |   | <b>Es<sub>3m</sub></b> <i>Metasomatised calc-silicate granofels, commonly brecciated; minor areas of coherent, banded calc-silicate granofels</i>   |
|                           |   | <b>Es<sub>2br</sub></b> <i>Matrix-supported breccia of calcareous sandstone, siltstone and calc-silicate rock in a calcareous/ calc-silicate-bearing matrix; minor coherent bedded calcareous sandstone and calc-silicate rocks</i> |
|                           |   | <b>Es<sub>1</sub></b> <i>Very thinly interbedded sandstone and siltstone, variably calcareous with local impure limestone and calc-silicate rocks; local areas of breccia</i>   |
|                           |   | <b>Es<sub>1br</sub></b> <i>Matrix-supported breccia of calcareous sandstone and siltstone in calcareous matrix; minor coherent bedded calcareous sandstone</i>  |

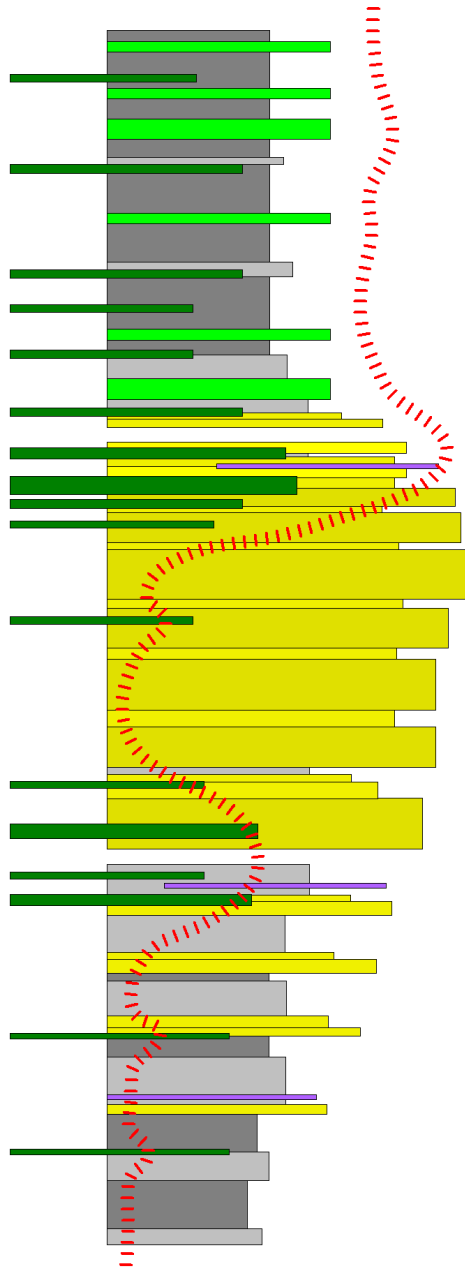
**100K Stratigraphy LEGEND**

Ps-Pol-Pon-Pot

TOOLE CREEK - ANSWER

MOUNT NORNA QUARTZITE

KURIDALA - Starcross-Llewelyn



slate, phyllite, metasiltstone, mica schist, graphitic schist, minor feldspathic quartzite, carbonaceous mudstone, metabasalt, metadolerite, amphibolite, chert

***Fine-grained, carbonaceous siltstone-shale, deep water, turbidites RIFT DROWNING; significant volcanic & sub-volcanic thermal input***  
Significant basin deepening-drowning; organic preservation

**Cannington**

quartzose-feldspathic, fine-medium grained, meta sandstones-siltstones, minor mudstone; schistose to gneissic & migmatitic; metadolerite, amphibolite silling

***Medium-grained, sandstone-dominated, ongoing turbiditic deposition RIFT re-ACTIVATION; Locally significant thermal input***

Fining Upwards packages that coarsen upwards to clastic cleaning & starvation

psammo-pelitic schists, phyllite, metagreywacke, carbonaceous siltstones, graphitic slate, minor quartzite; metadolerite, amphibolite

***Deep basin, fine sediment-dominated, turbiditic deposition***

Fining Upwards packages that weakly coarsen upwards

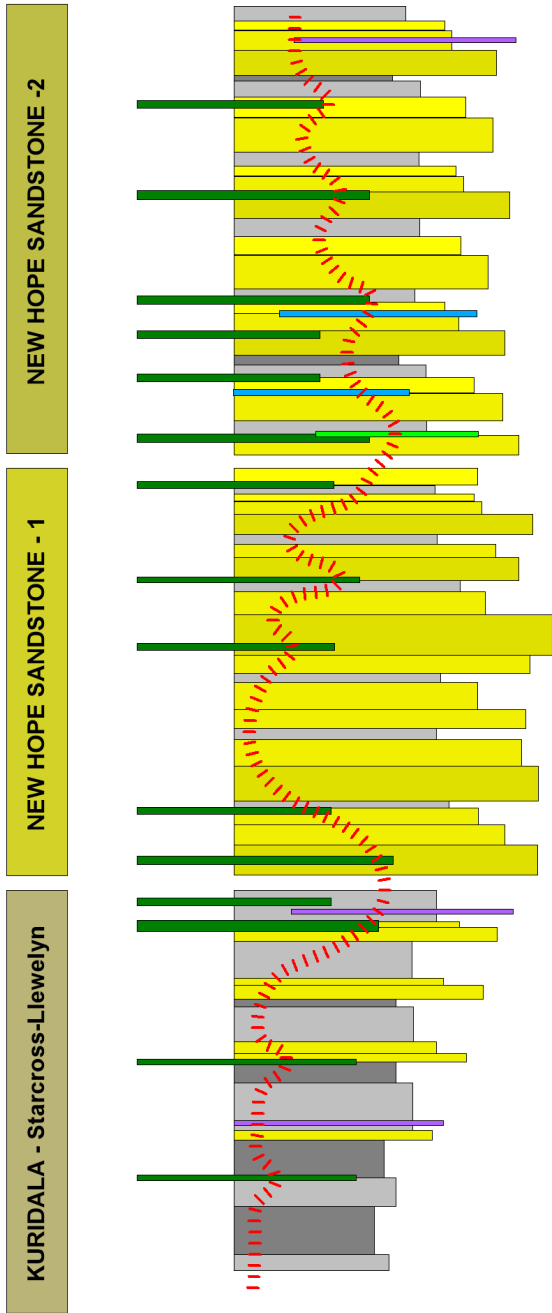
**NOTE: Schematic Stratigraphies ONLY. No bed thickness relationships implied, however, relative lithological proportions INDICATIVE.**

## East of CLONCURRY FAULT

### Depositional LITHOLOGY

- doleritic sills
- basalt
- carbonates
- iron formation
- carbonaceous siltstone-shale
- siltstone-shale
- fine grained arenite
- fine-medium-grained arenite
- medium(-coarse)-grained arenite





quartzose-feldspathic, fine-medium grained psammities, psammo-pelites; increased phyllite, mica schist component; minor graphitic schist; minor calc-silicate; moderate metadolerite, amphibolite silling; very minor metabasalt

**Medium-grained, sandstone, siltstone & mudstone turbidites**  
**Ongoing clastic deposition with increased fine component;**  
**minor carbonate deposition; Moderate sub-volcanic thermal input**  
 No significant basin re-configuration; Moderately increased thermal input

quartzose-feldspathic, fine-medium grained psammities, psammo-pelites, pelites; minor mudstone; meta sandstones-siltstones; lesser schistose to gneissic variants; minor metadolerite, amphibolite silling

**Medium-grained, sandstone-dominated, ongoing turbiditic deposition**  
**Clastic re-activation; Relatively weak thermal input**  
 Fining Upwards clastic packages without discernable trends

● Pegmont

psammo-pelitic schists, phyllite, metagreywacke, carbonaceous siltstones, graphitic slate, minor quartzite; iron formations; metadolerite, amphibolite

**Deep basin, fine sediment-dominated, turbiditic deposition**  
 Fining Upwards packages that weakly coarsen upwards

**NOTE: Schematic Stratigraphies ONLY.**  
**No bed thickness relationships implied,**  
**however, relative lithological proportions INDICATIVE.**

## West of CLONCURRY FAULT

