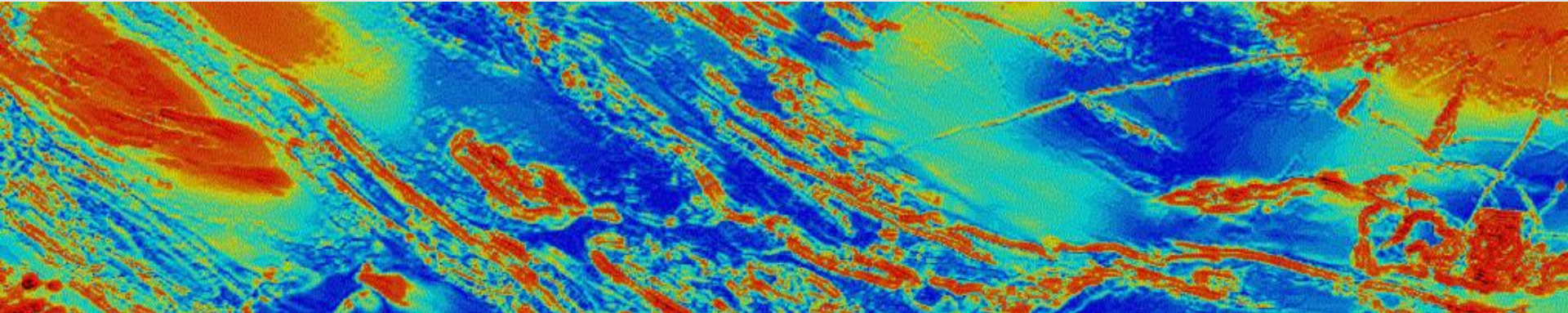




Australian Government

Geoscience Australia

Potential Field Interpretation of the Capricorn Orogen



Worms, forward modelling and 3D inversion

JAMES GOODWIN

Purpose

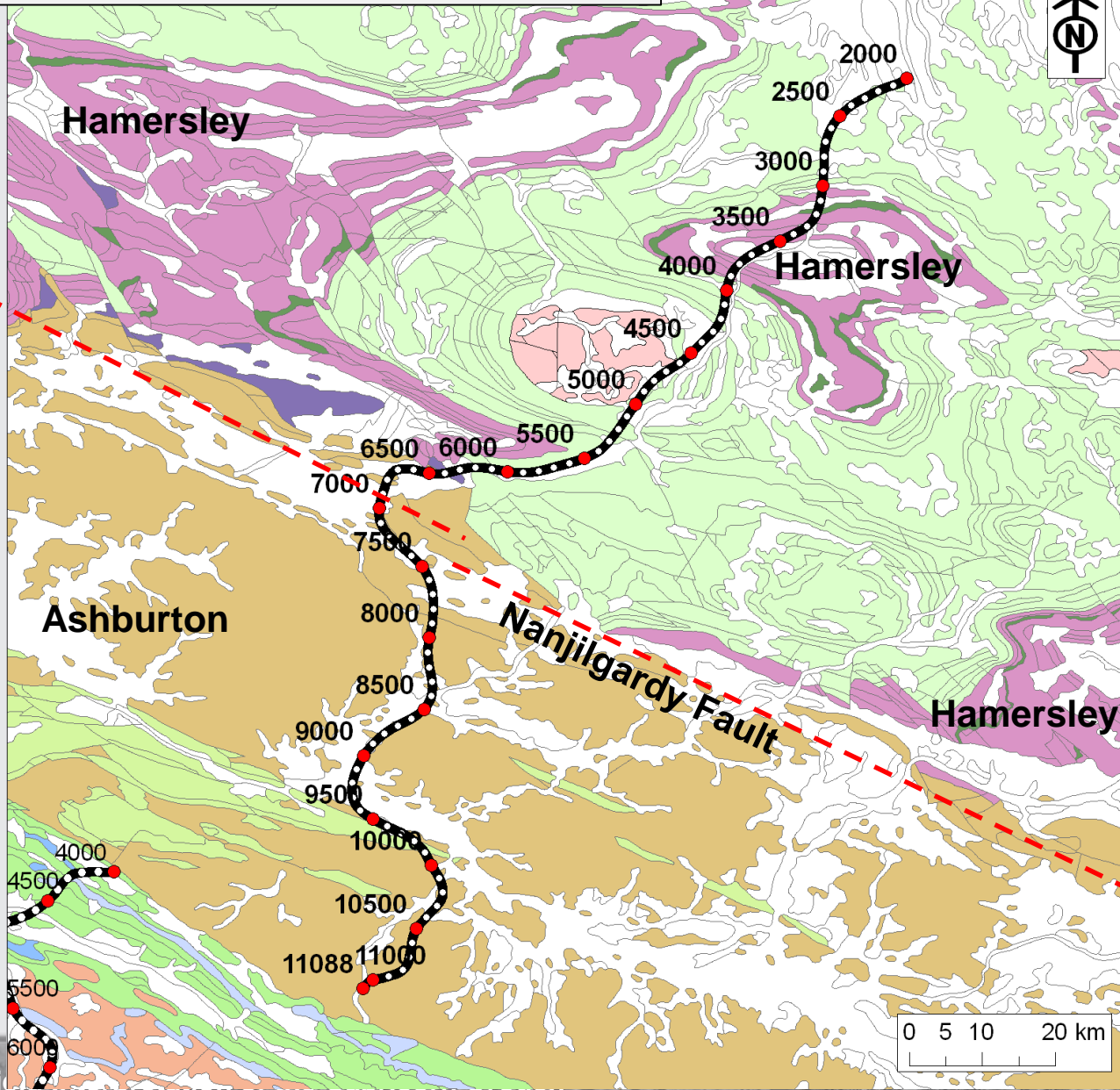
- Investigate regional-scale crustal architecture
- Relationship between Pilbara/Capricorn/Yilgarn
- Compare with seismic line interpretation

Interpretation Techniques

- Image processing
- Multiscale edge detection (worms)
- Forward modelling
- 3D inversion (unconstrained)

Seismic line 10GA-CP1

Surface
Geology

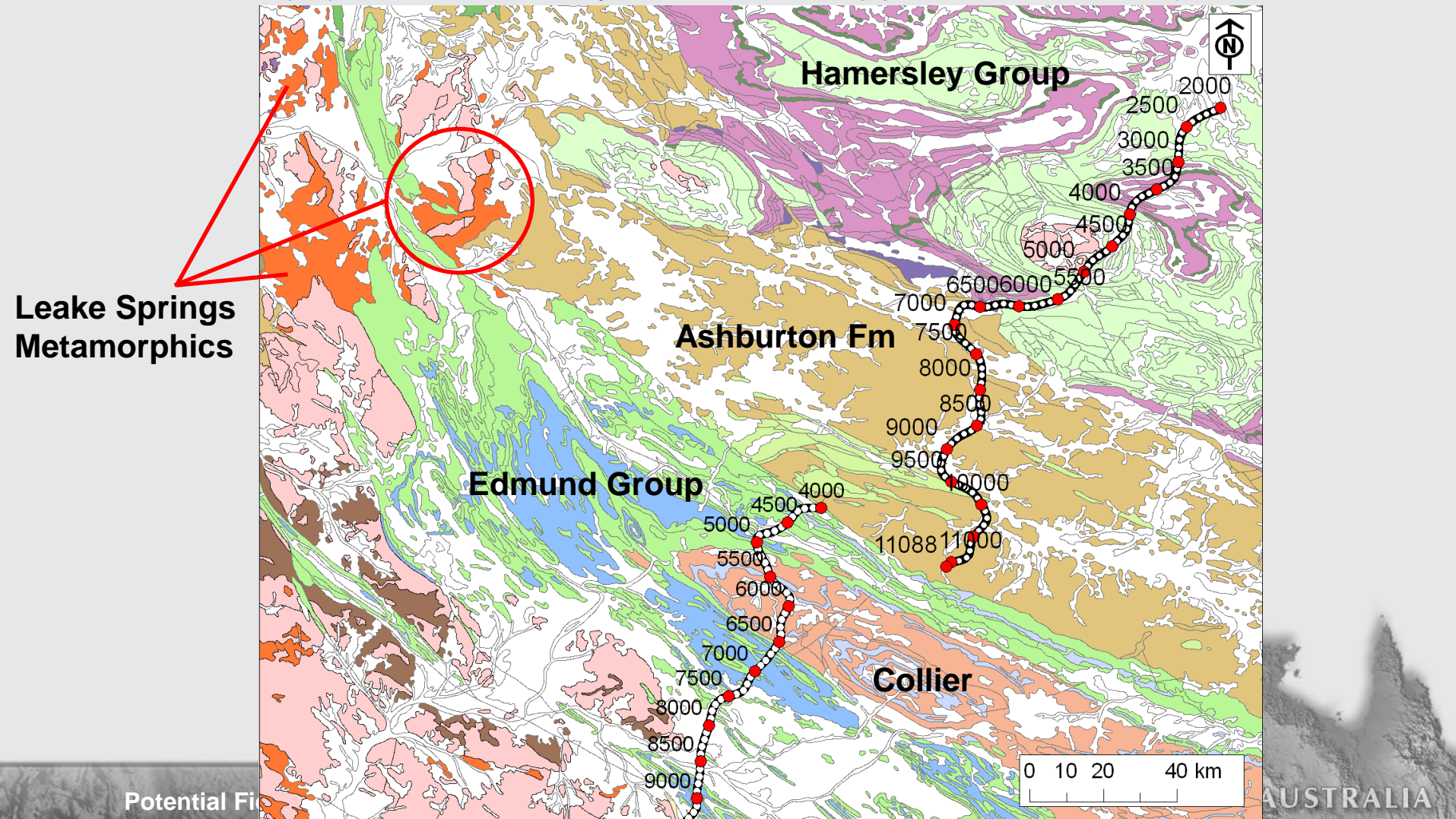


Potential Fi

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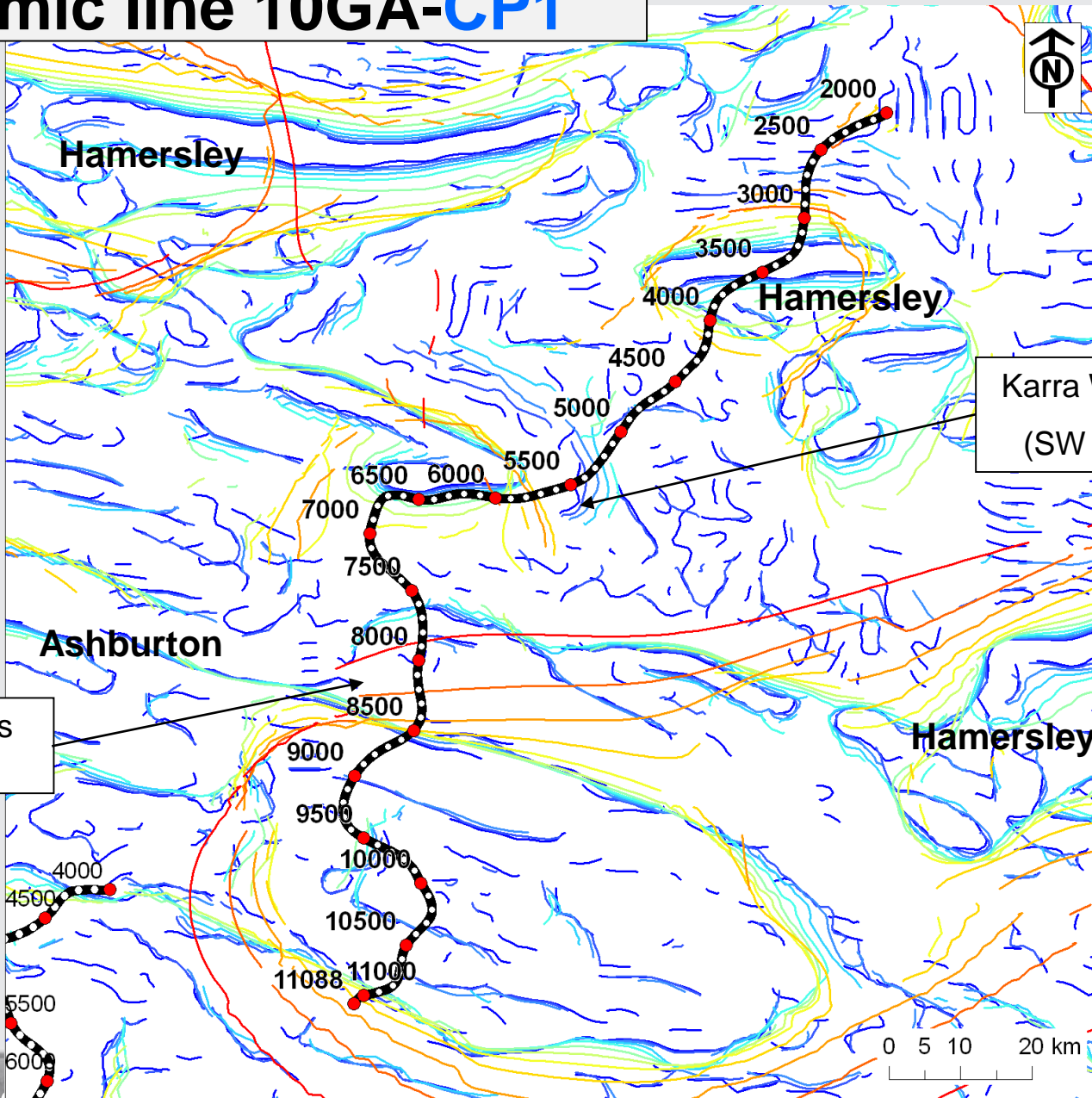
Seismic line 10GA-CP1

- Leake Springs Metamorphics = correlative of Upper Wyloo Group (Cawood and Tyler 2004; Sheppard et al., 2007)



Seismic line 10GA-CP1

Magnetics
Worms

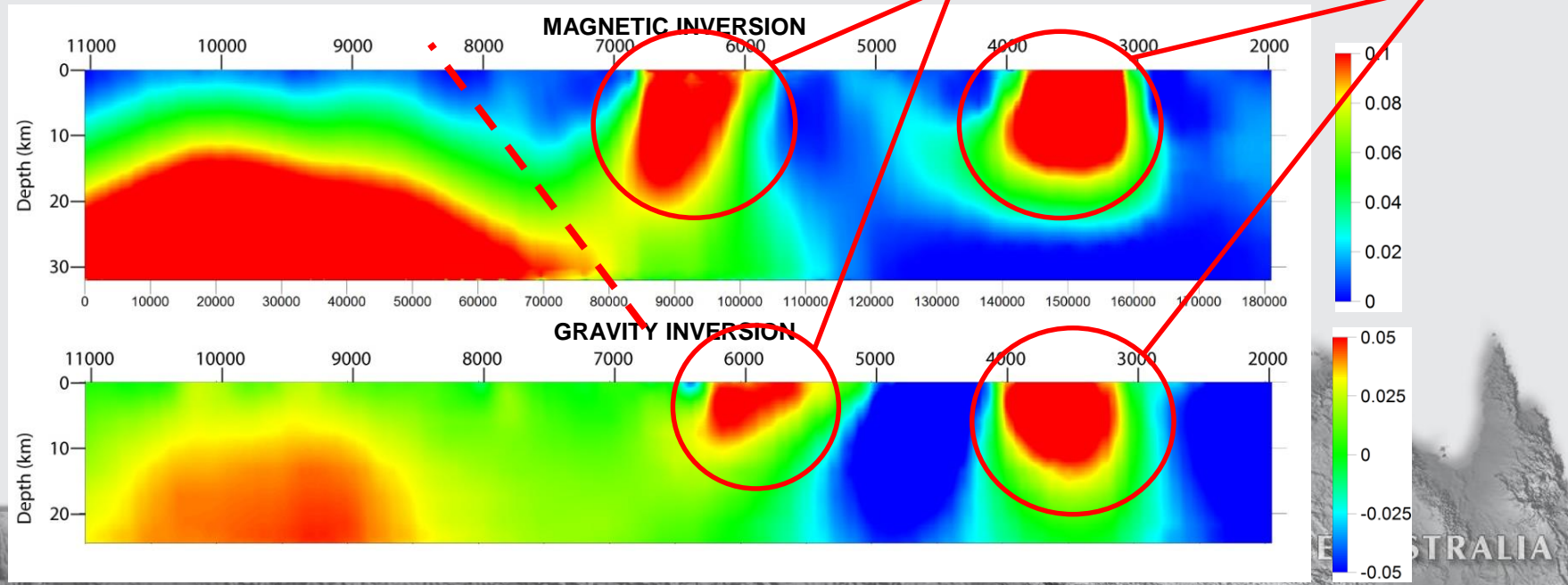
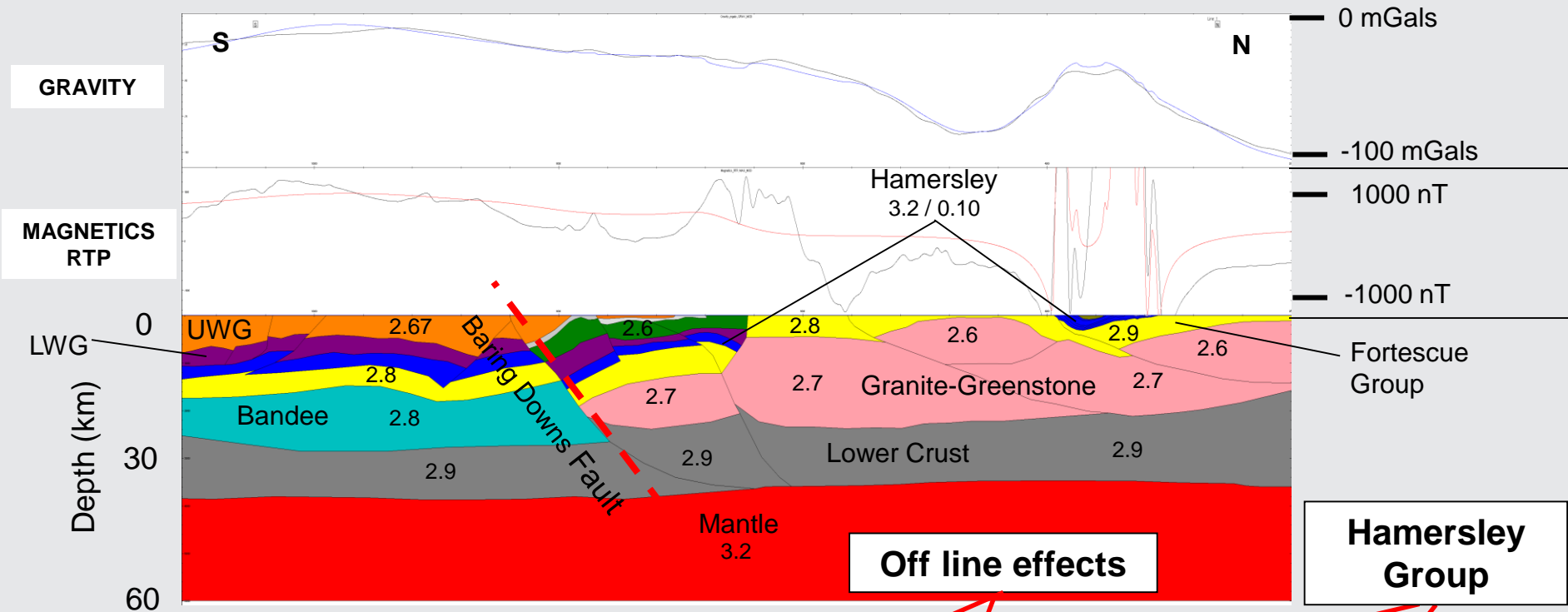


Karra Well Fault
(SW dipping)

Baring Downs
Fault

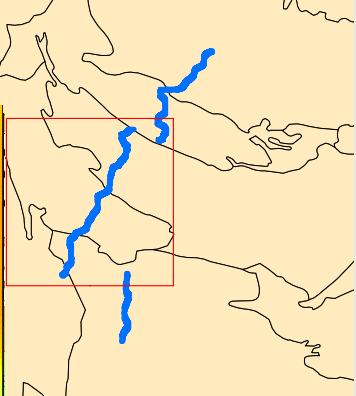
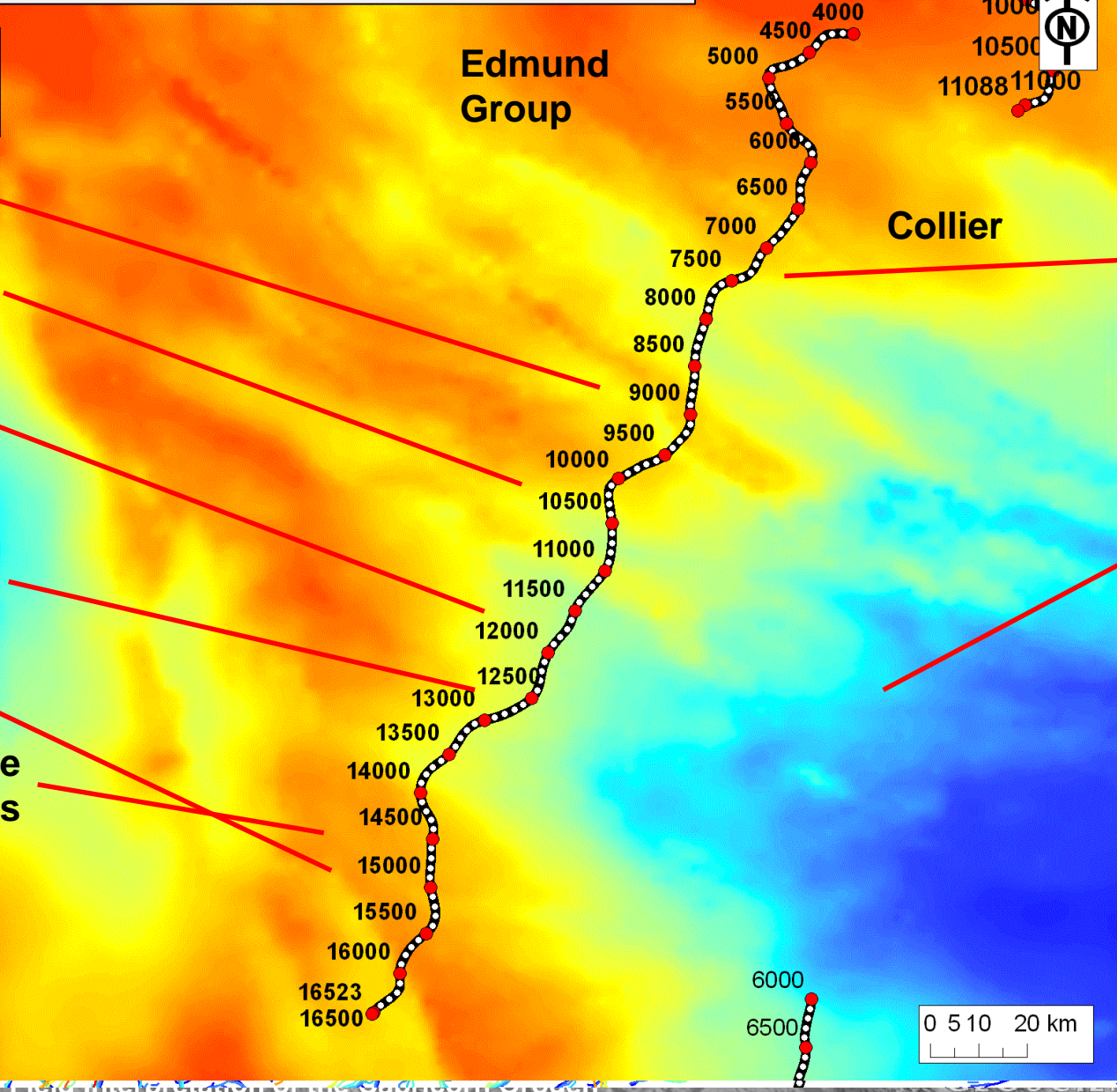
Continuation Height

56703
40502
28930
20664
14760
10543
7531
5379
3842
2744
1960
1400



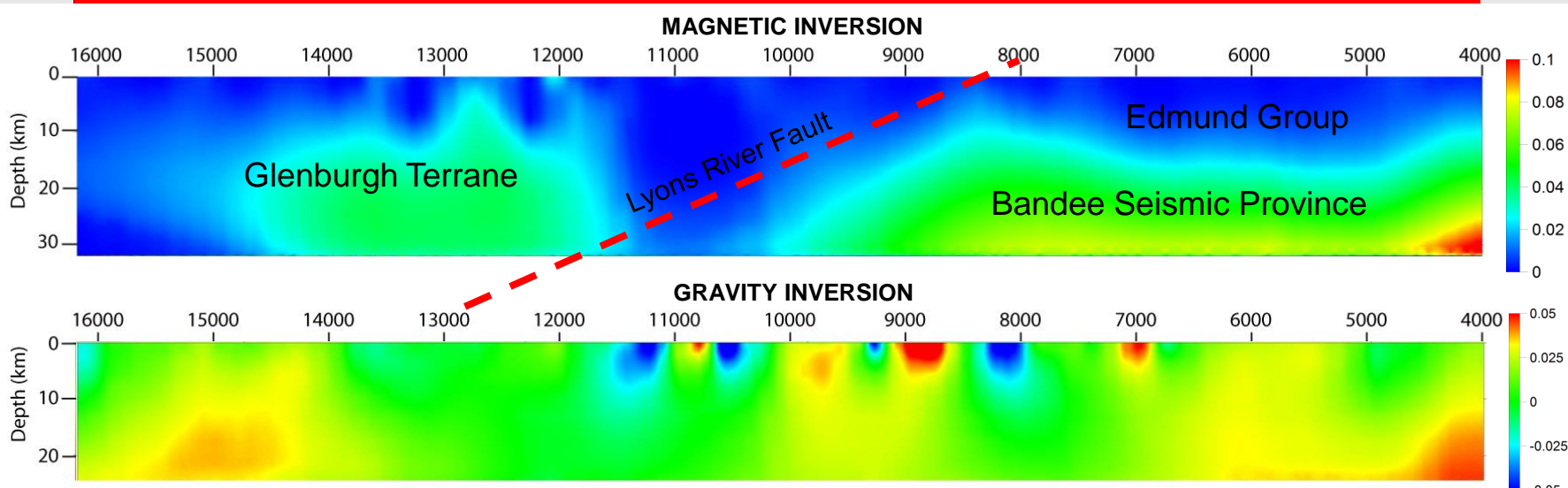
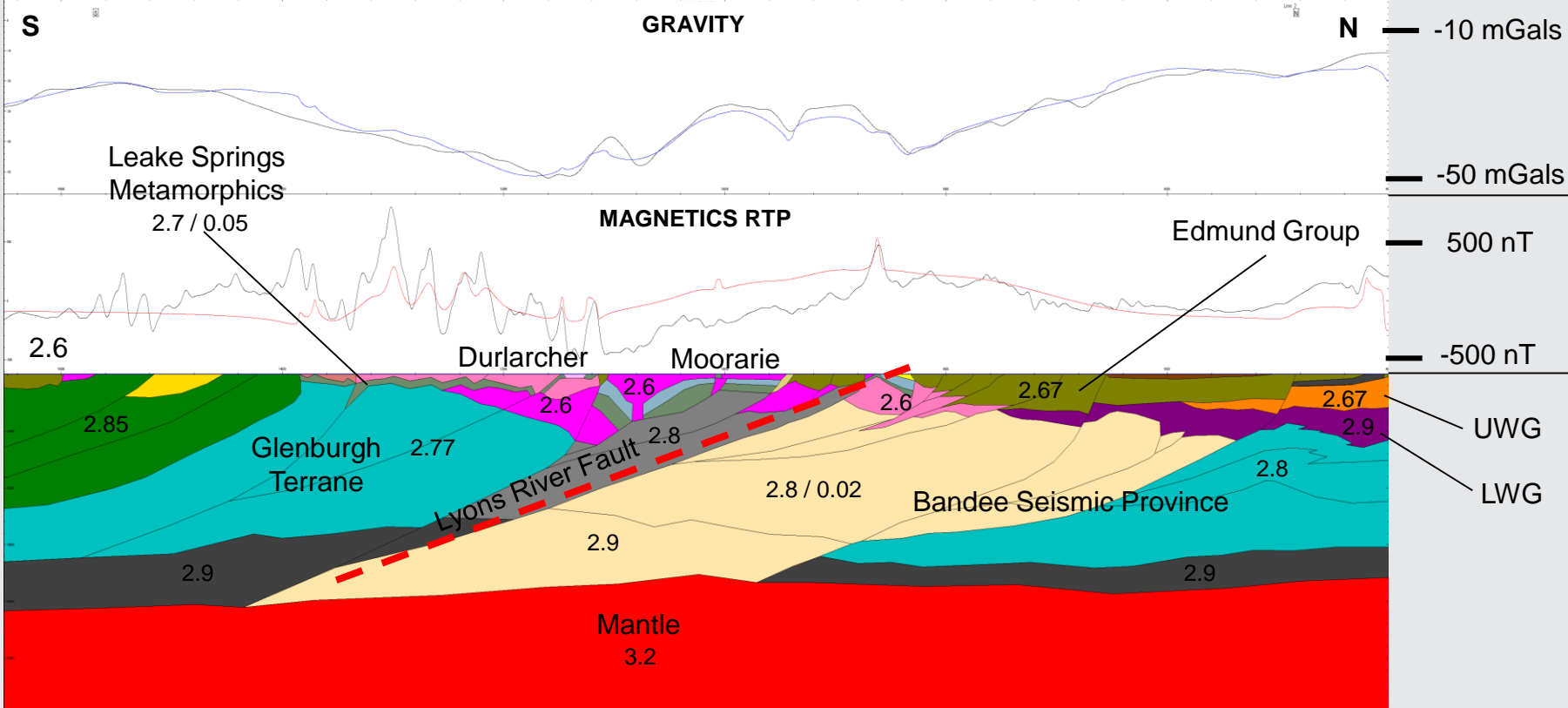
Seismic line 10GA-CP2

- Bouguer Gravity
- Lyons River Fault
- Moorarie Supersuite
- Durlacher Supersuite
- Durlacher Supersuite
- Cardilya Fault
- Moogie Metamorphics



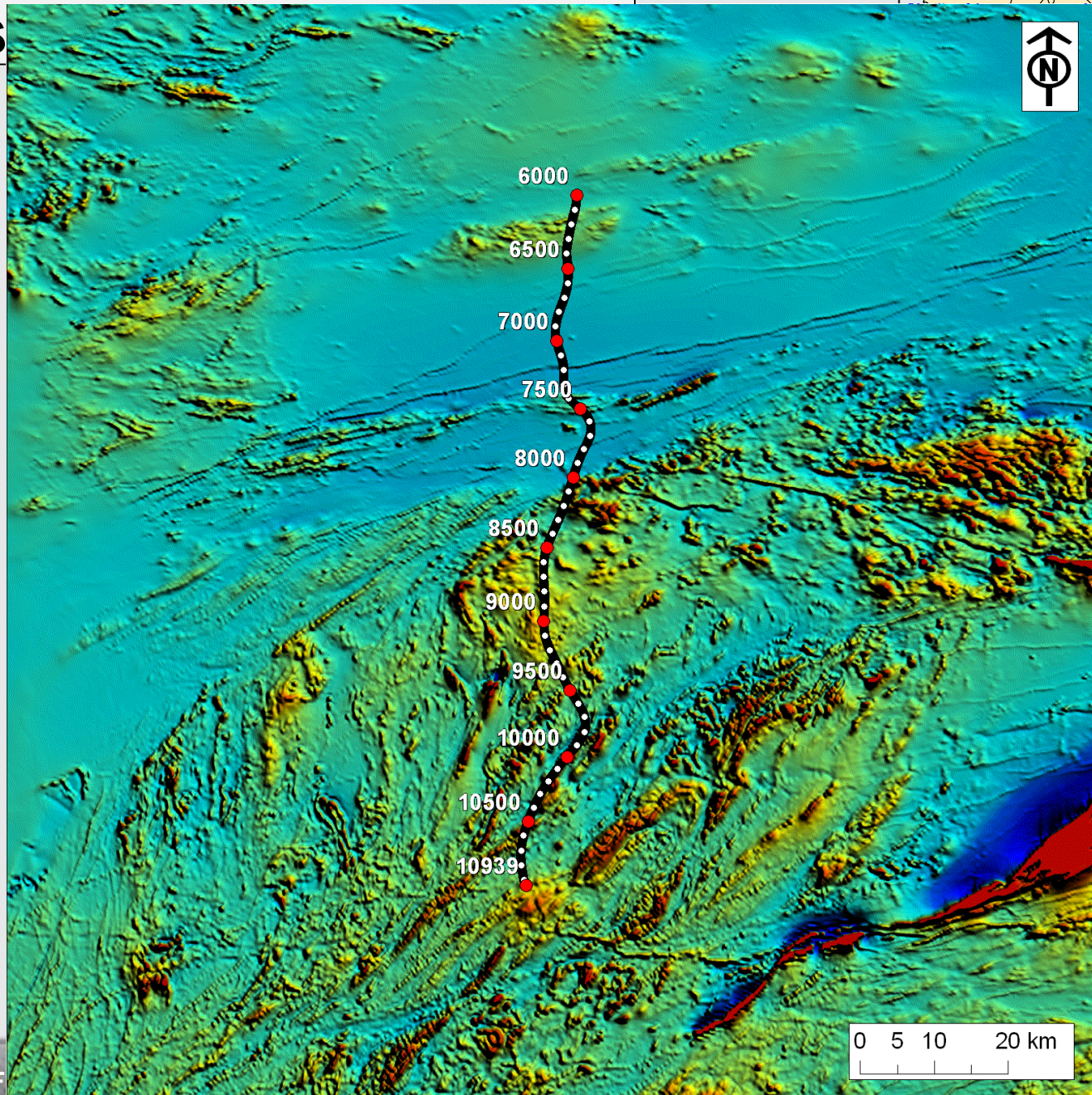
? contact

Leake Springs Metamorphics



Seis

Bouguer
Gravity



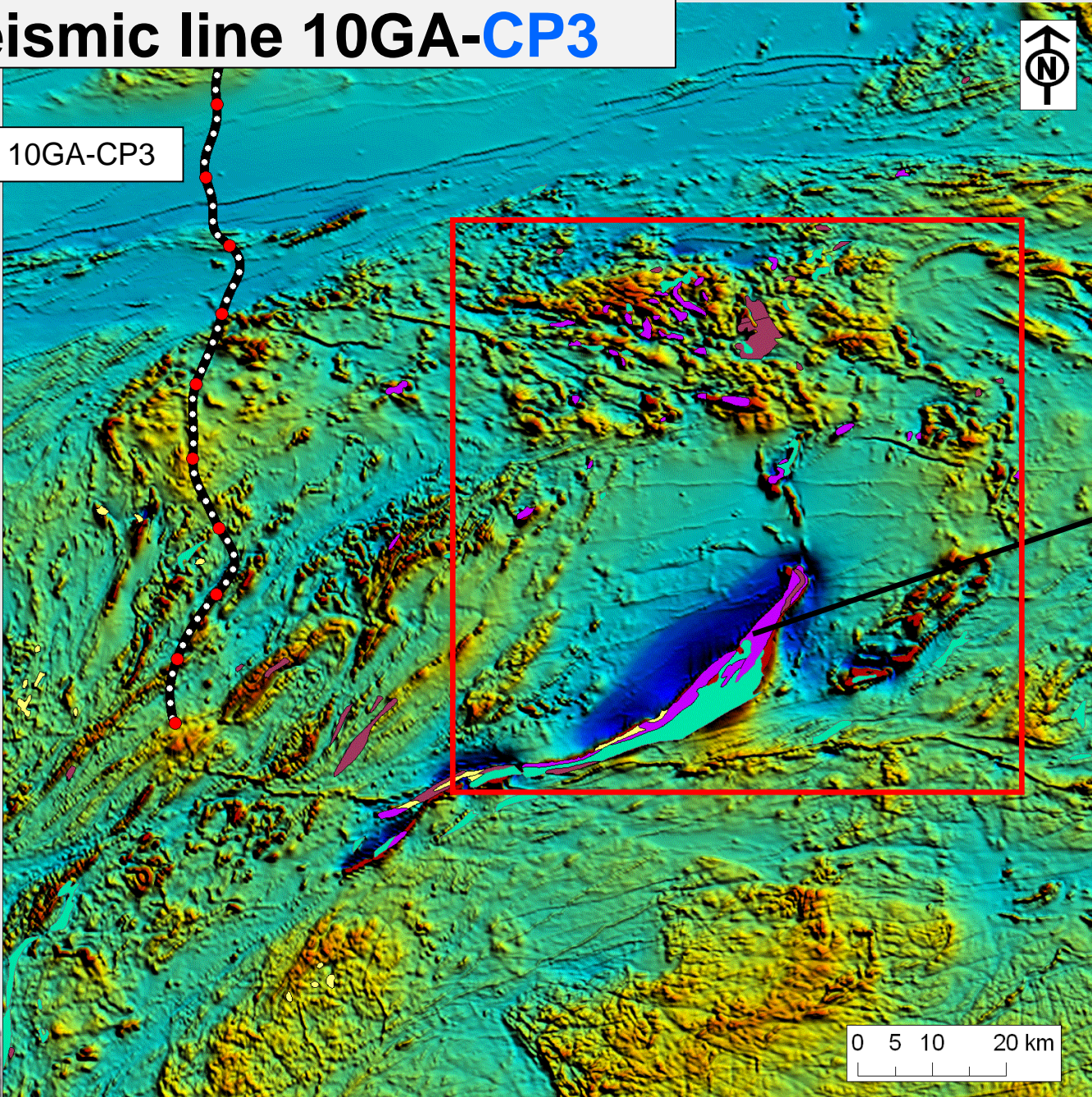
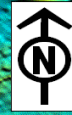
Potential F

0 5 10 20 km

AUSTRALIA

Seismic line 10GA-CP3

10GA-CP3



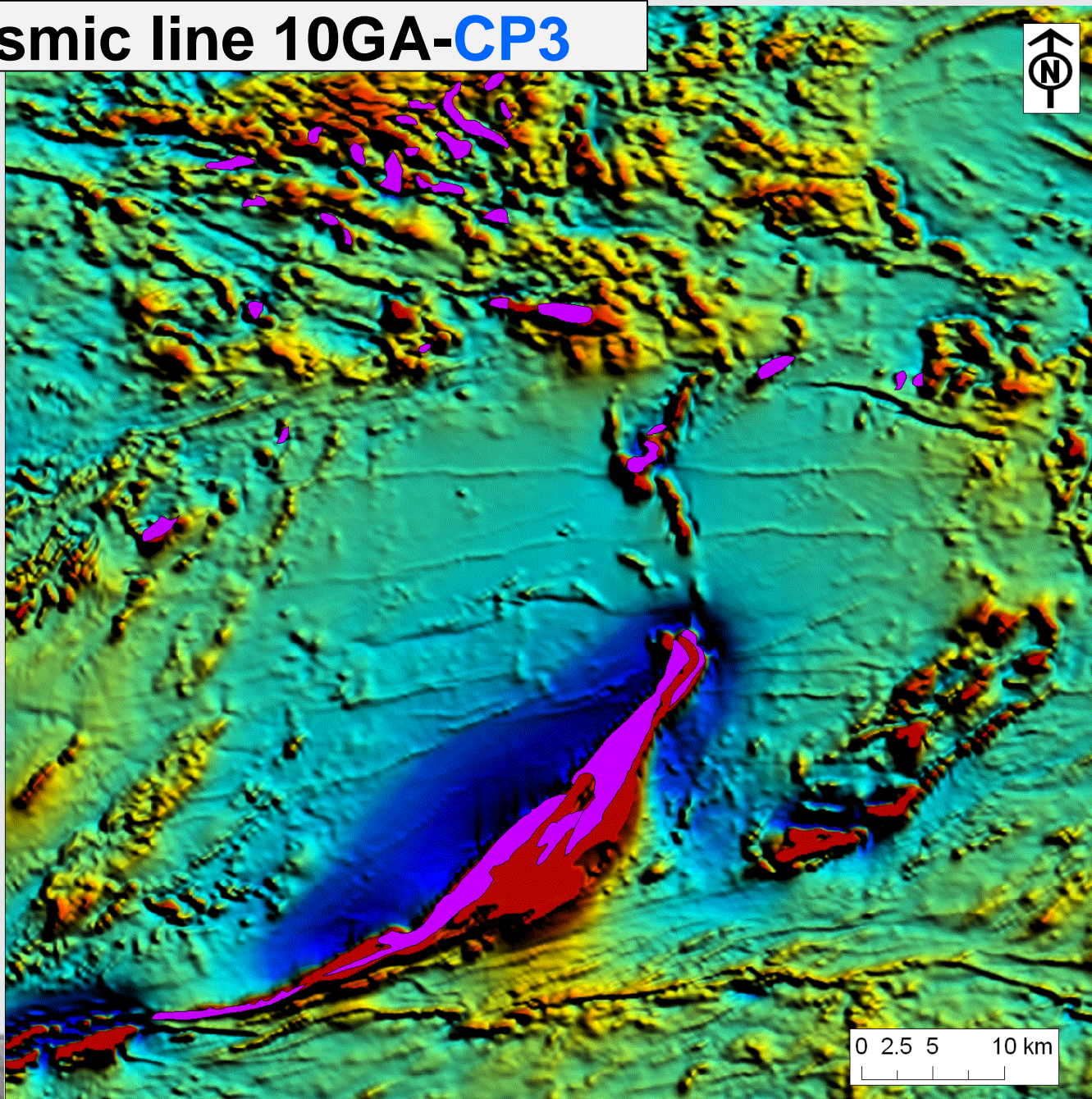
BIF 74257

0 5 10 20 km

Potent

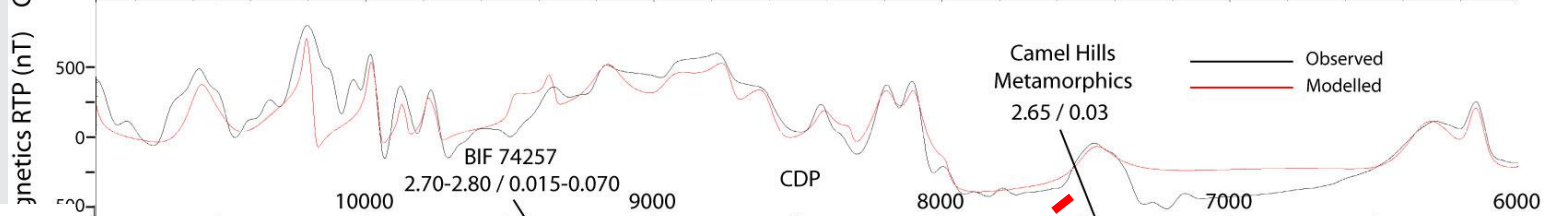
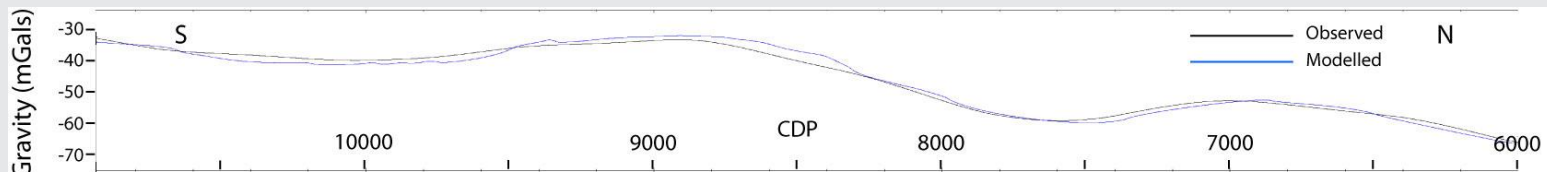
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Seismic line 10GA-CP3

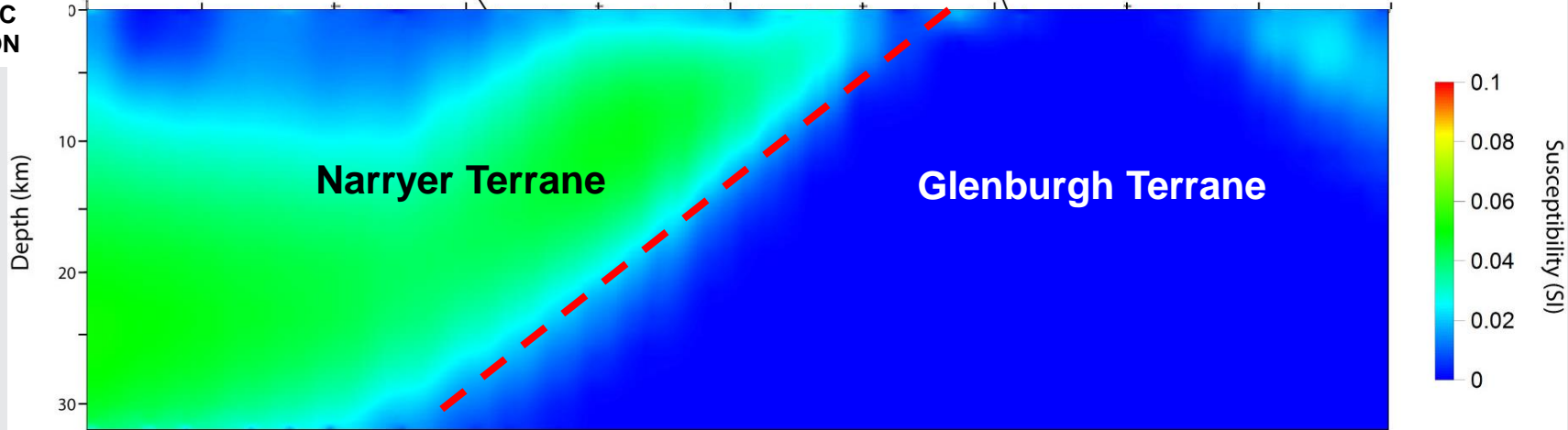


Potential

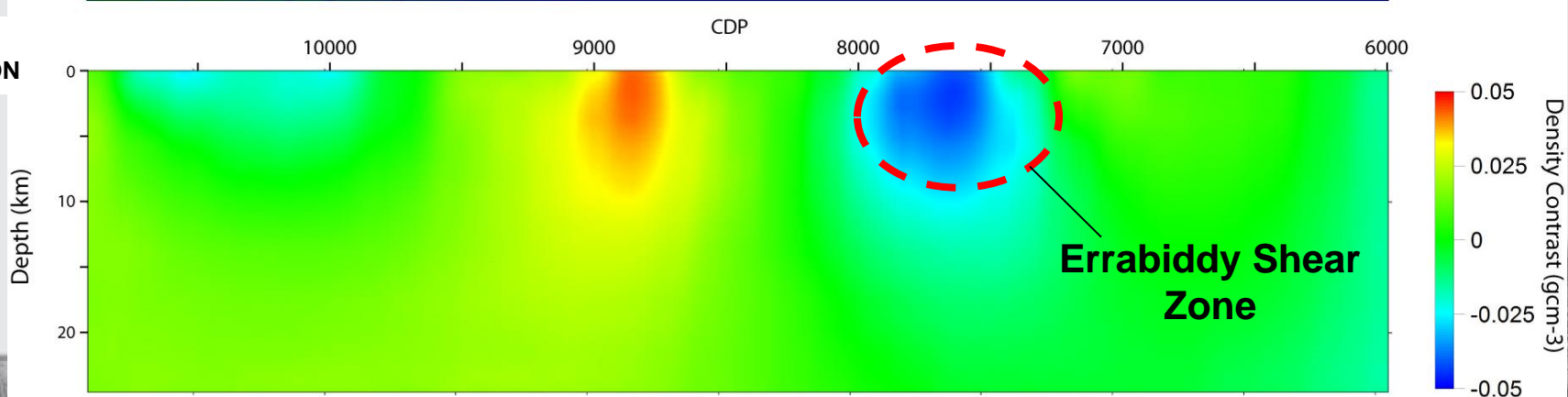
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MAGNETIC INVERSION



GRAVITY INVERSION



Key Findings

- Forward models suggest the seismic line interpretation is consistent with potential field data.
- Hamersley Group has the potential to extend as far south as the Edmund Basin
- Magnetic anomalies attributed mainly to the Hamersley Group, Leake Springs Metamorphics and BIF 74257
- Yilgarn-Capricorn boundary is south-dipping