



Southern Thomson Drilling Project

Program completion update - November 2017

A collaborative project between the Geological Survey of NSW (GSNSW), Geoscience Australia (GA) and the Geological Survey of Queensland (GSQ)

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23 November 2017

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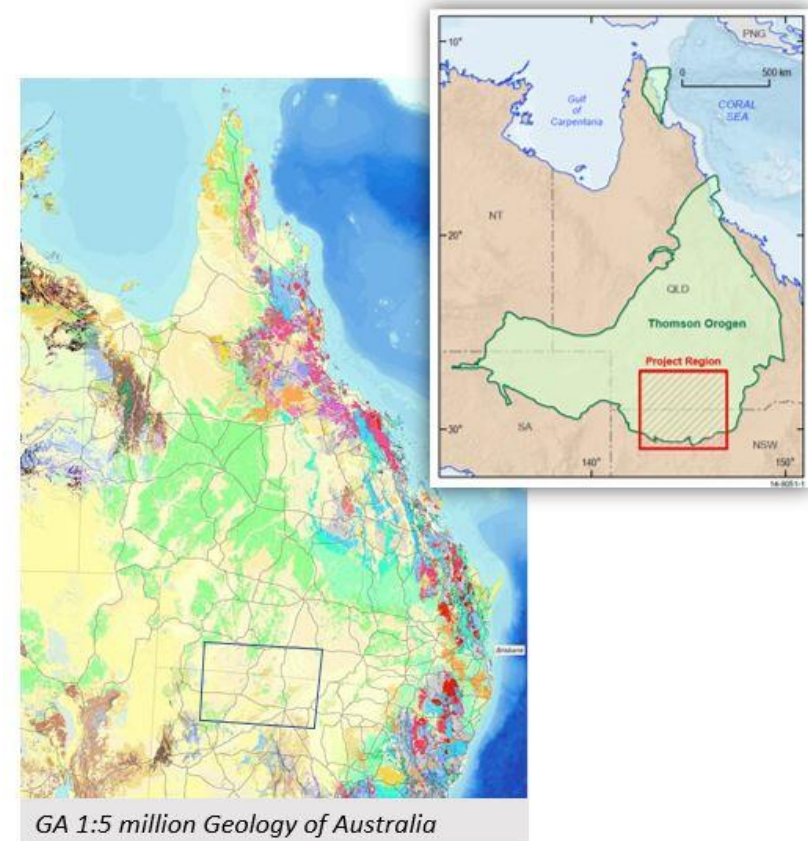
Project purpose & scope

Stratigraphic drilling to improve geoscience understanding in the Tasmanides:

- A cross-border collaboration in covered terrain
- Region identified as having potential for extensions of mineral systems such as the Lachlan Orogen
- Combined activities and budget by the 3 organisations, contract management by GA

Objective 1. Obtain cores to allow age dating and geochemical/isotopic analyses

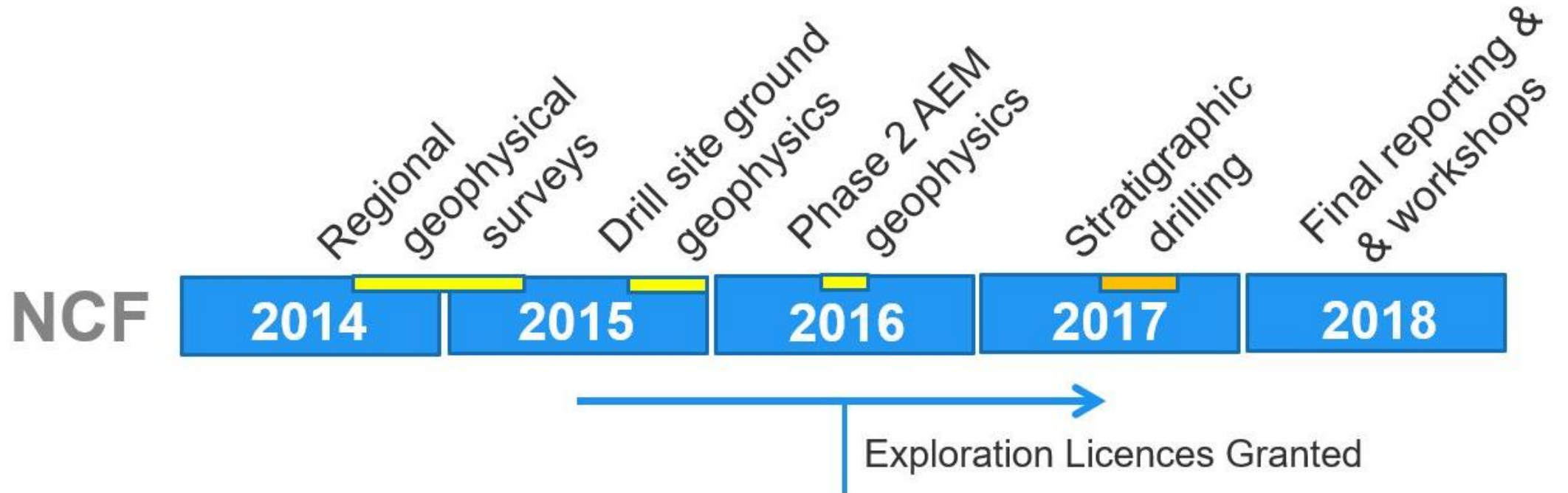
Objective 2. Develop methodology for assessing UNCOVER regions



Southern Thomson Project Timeline

PHASE 1 - ACQUISITION & SYNTHESIS

PHASE 2 - STRATIGRAPHIC DRILLING

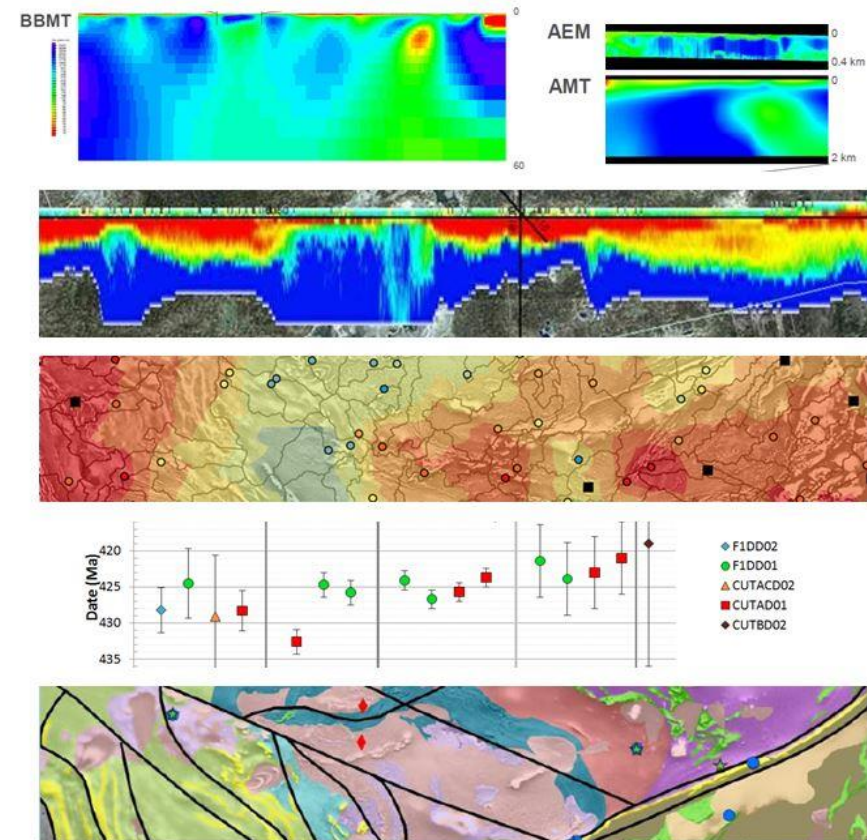


Interim results

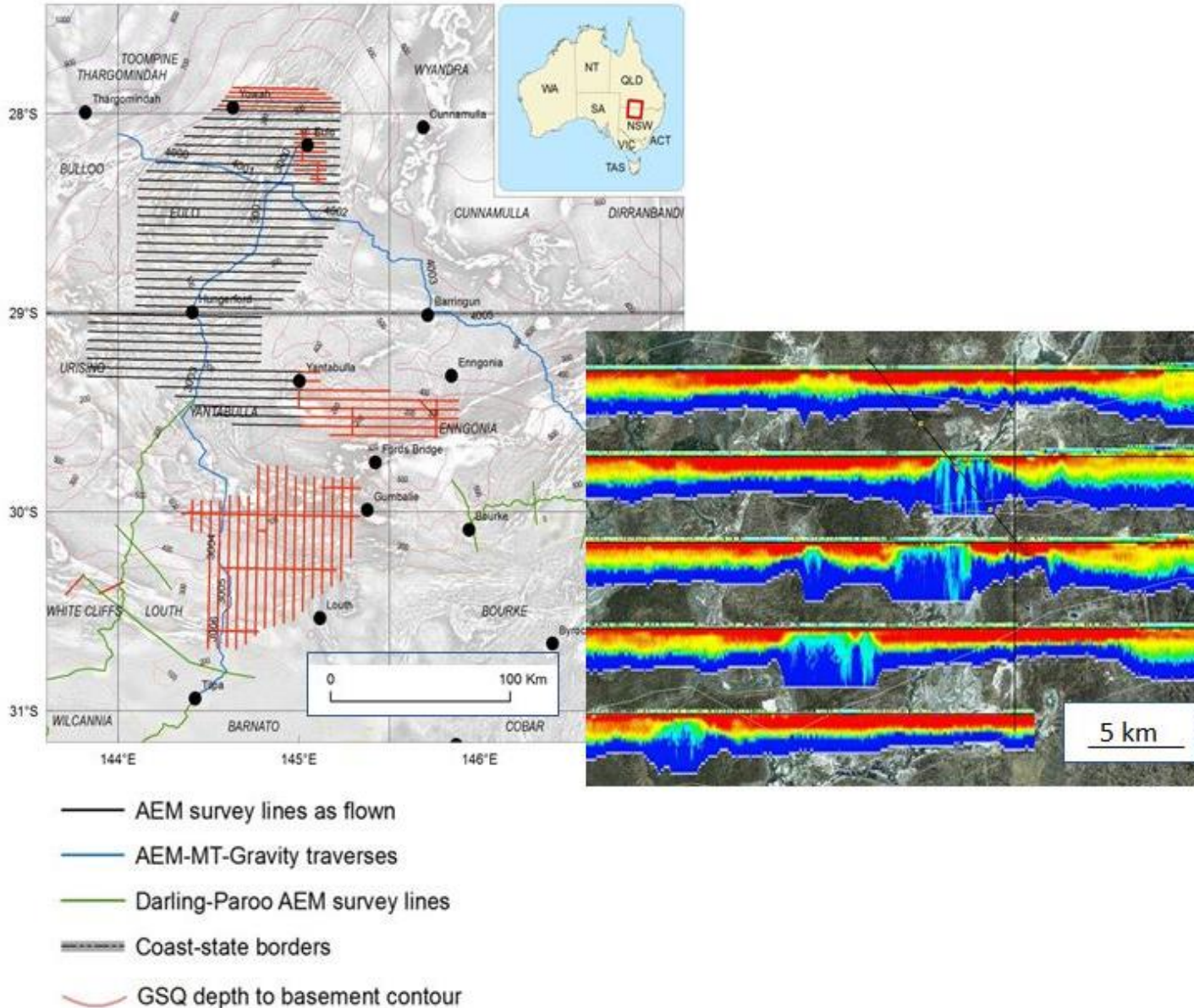
Reports and data released so far..

- Regional MT data and inversion models; coordinated AEM, AMT and BBMT; high-density ground gravity
- AEM data, models and report
- Regional geochemistry report on drainage outlet sediment samples and partial leach
- Geochronology reports on new age dates and mineral systems analysis for Cuttaburra and F1 prospects
- 2016 AEGC presentations on structure & geodynamics, and Hf & O isotopes

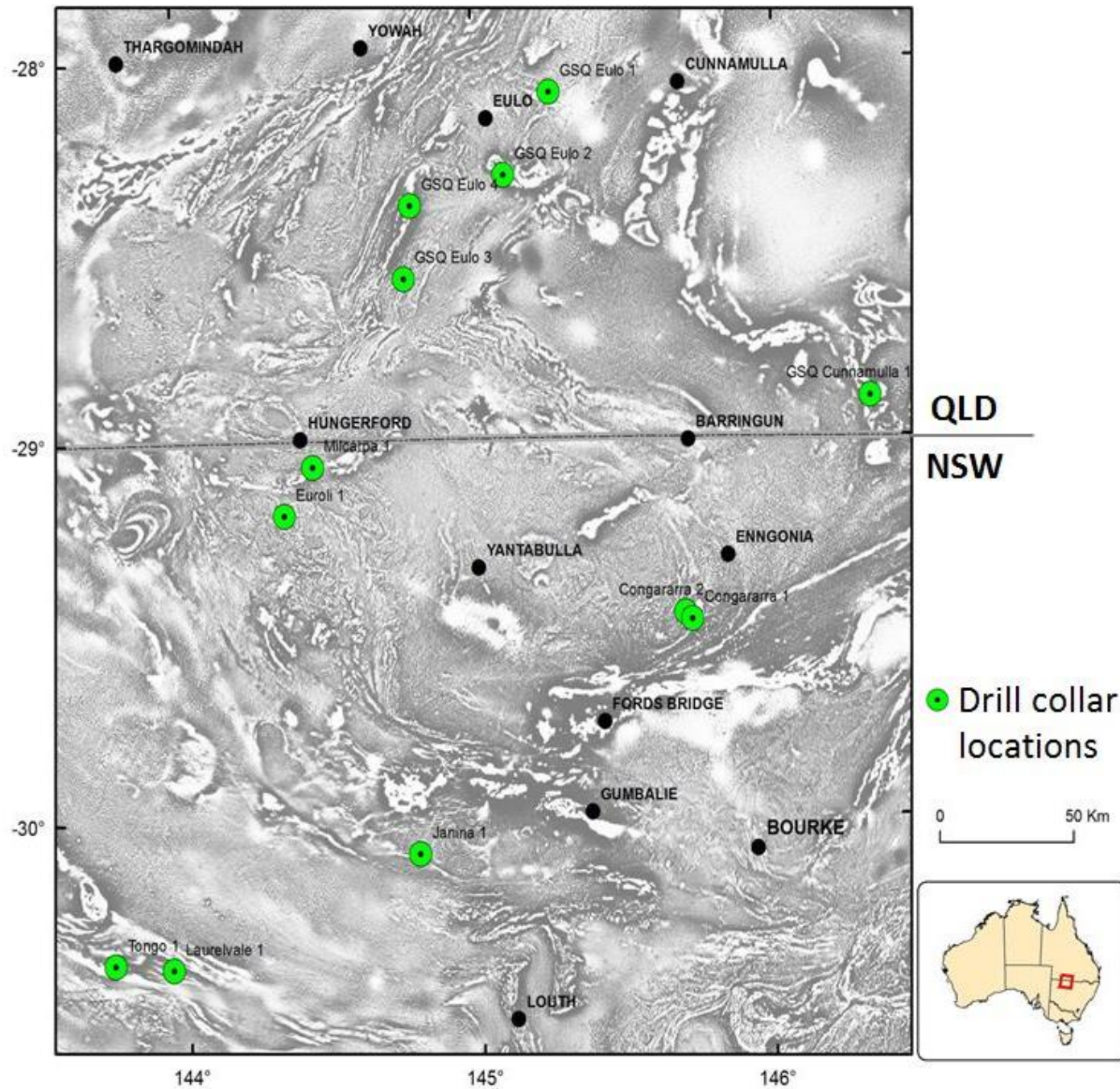
* All reports linked through GSNSW and GA Southern Thomson Project webpages



Basement definition from AEM Surveys



- 2 phases of regional VTEM Plus® in 2014 (black flight lines) & 2016 (GA – red flight lines)
- Astounding “reveals” of resistive basement topography beneath cover
- Laterally constrained “all-in-one” inversion algorithm developed by GA
- Induction tool results will constrain AEM conductivity sections

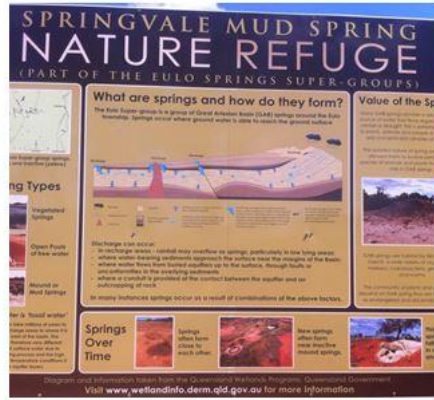


UNCOVER challenge

Geoscience factors for site selection:

- Geological questions identified in workshop events
- Interpreted units having no information & sample available
- Testing of resistive features in AEM
- Understanding of cover thickness
- Sites with least cover to minimise meterage to obtain basement
- Ground geophysical survey results

Preparations – site selection



Other factors

- Supportive land owners
- Land without special environmental sensitivity
- Appropriate cultural suitability and status
- Hydrogeological conditions and aquifers
- Easiest accessibility to achieve result
- Grouping of sites if possible
- Minimal environmental impact
- and more....



Drilling method

Combined rotary mud and diamond drilling to obtain 50m of basement core.

Equipment:

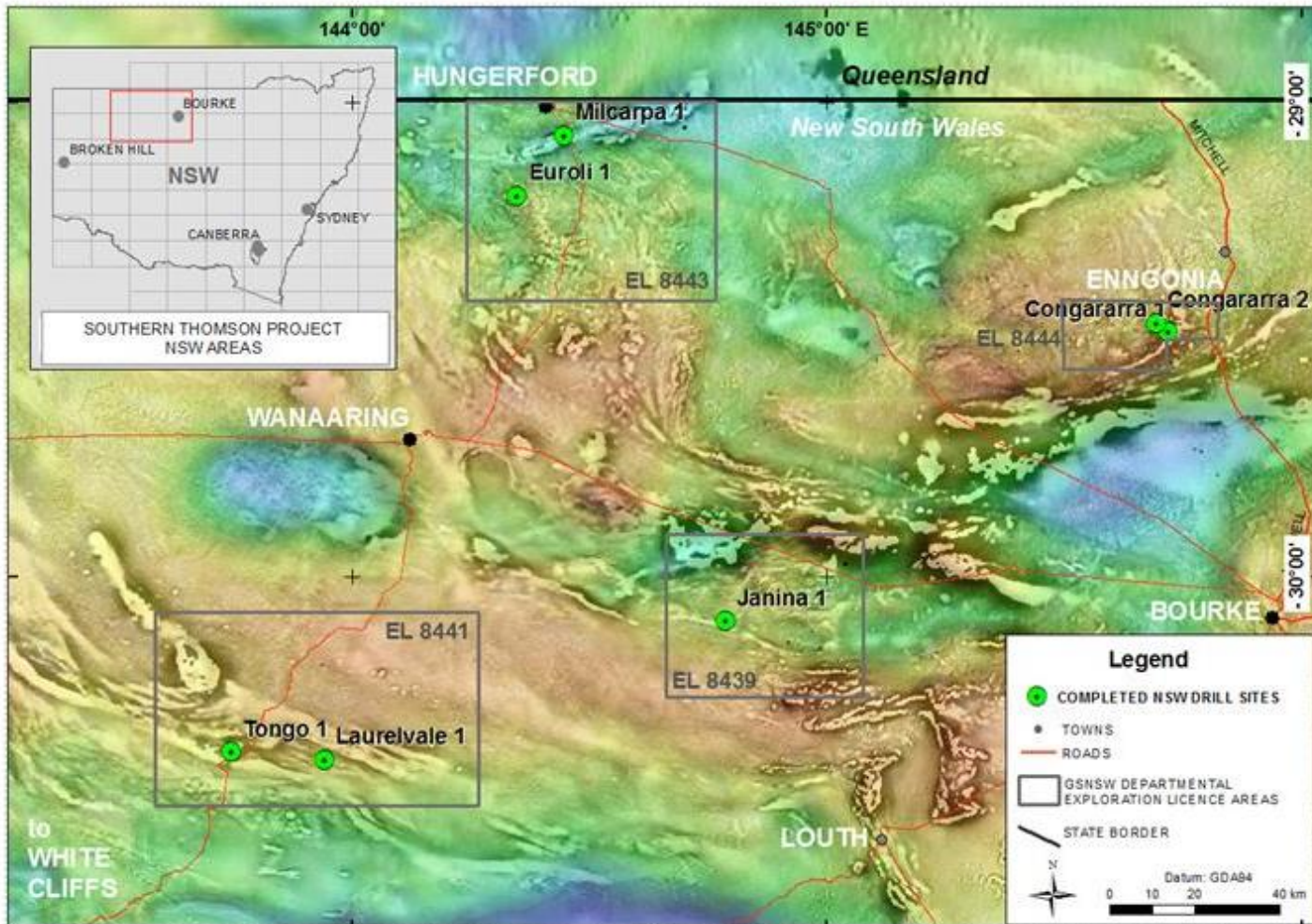
- Rig DE880 Sandvik - 2 x 12 hour shifts
- Solids recovery unit (SRU)

Downhole logging by GA:

- Induction and natural gamma
- Magnetic susceptibility

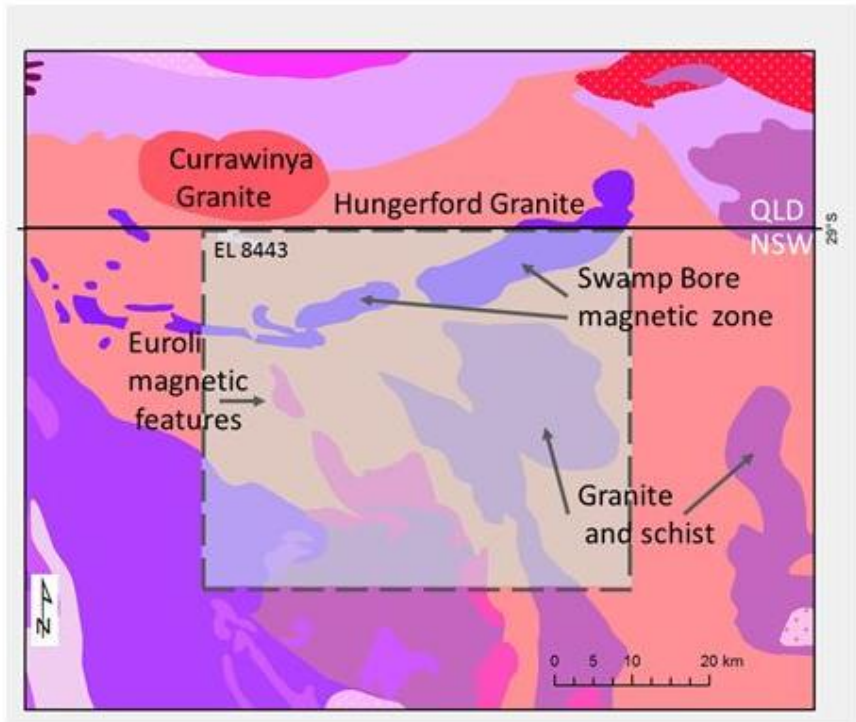
Mobile camp for 16–20 workers





Completed NSW holes

Hole Name	Total Depth (m)	Days	Angle
Milcarpa 1	290.9	7	vertical
Euroli 1	153.7	7	wedge
Tongo 1	312.8	5	75°
Laurelvale 1	386.8	5	75°
Janina 1	222.2	3	75°
Congararra 1	119.6	2	80°
Congararra 2	317.8	5	80°

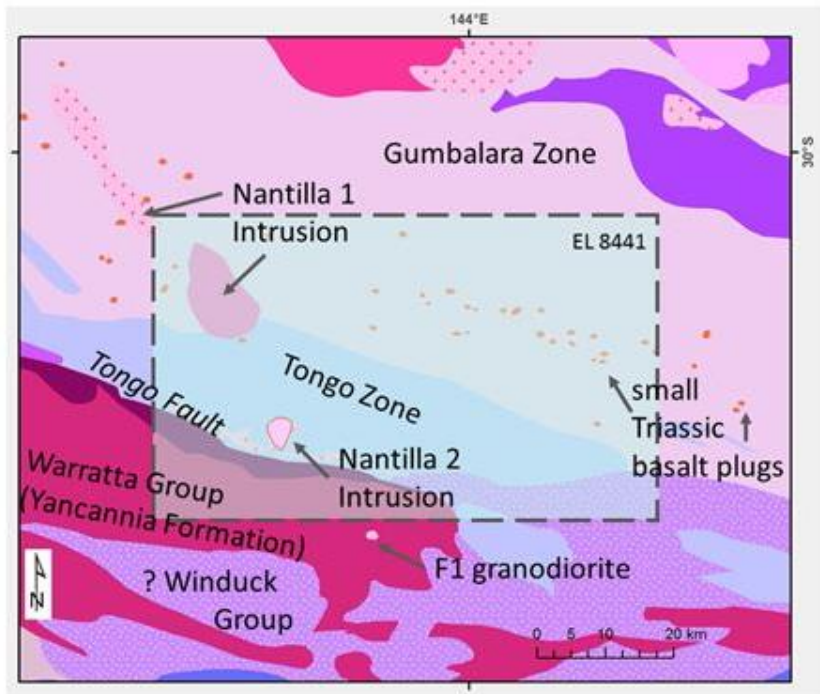


Hungerford area – EL 8443

- Granites crop out between Hungerford and Eulo in Queensland
 - no samples of other lithologies available.
- Swamp bore magnetic feature was tested by Milcarpa 1
- Subtle magnetic banding patterns tested by Euroli 1
- Will constrain basement age and lithology over broad areas and should provide correlations



EUROLI 1 (NSW) HUNGERFORD AREA EL 8443: Metased. schist



TONGO 1 (NSW) WILCANNIA AREA EL 8441: Granodiorite



Tilpa area – EL 8441

Previous company drilling further south, but not north of the Tongo Fault

Nantilla igneous magnetic feature was tested by Tongo 1 as proxy for the main intrusion

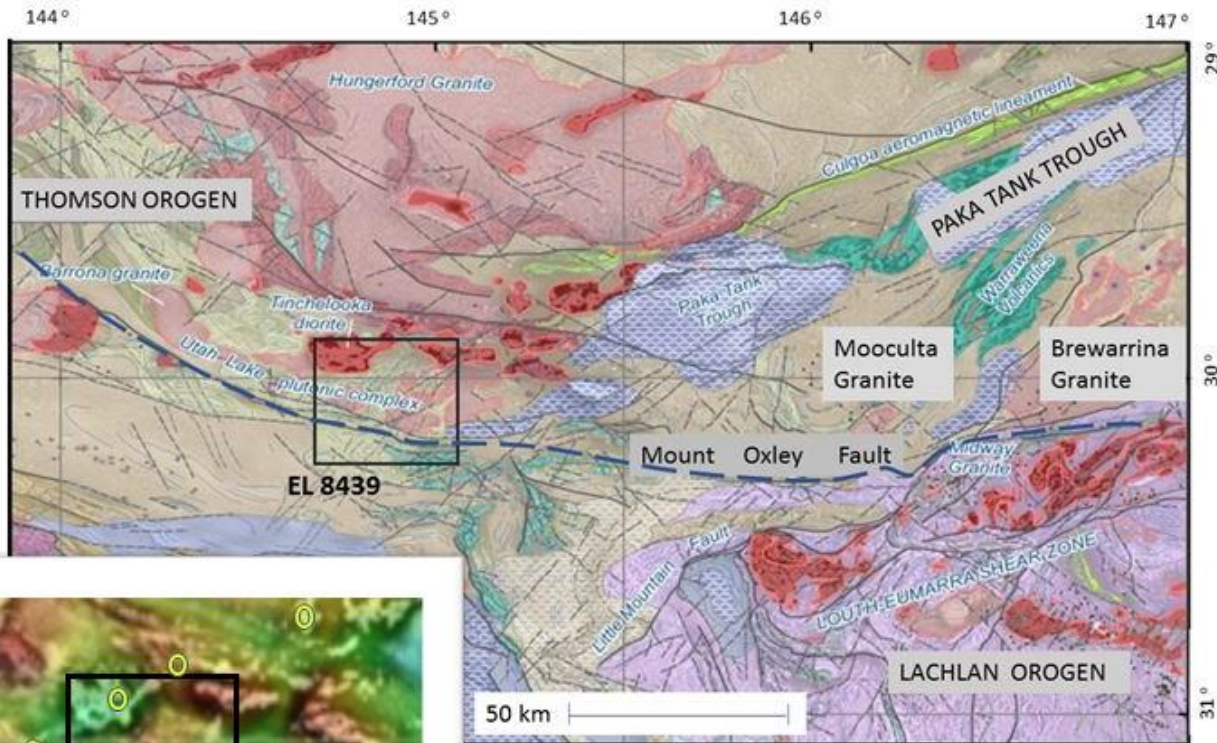
- Magnetic source confirmed and preliminary similarity to F1 prospect

The Tongo Zone was tested by Laurelvale 1

- Zircon provenance age should be obtained from medium-bedded sandstone beds



Laurelvale 1 (NSW) TILPA AREA EL 8441: Siliciclastic turbidites

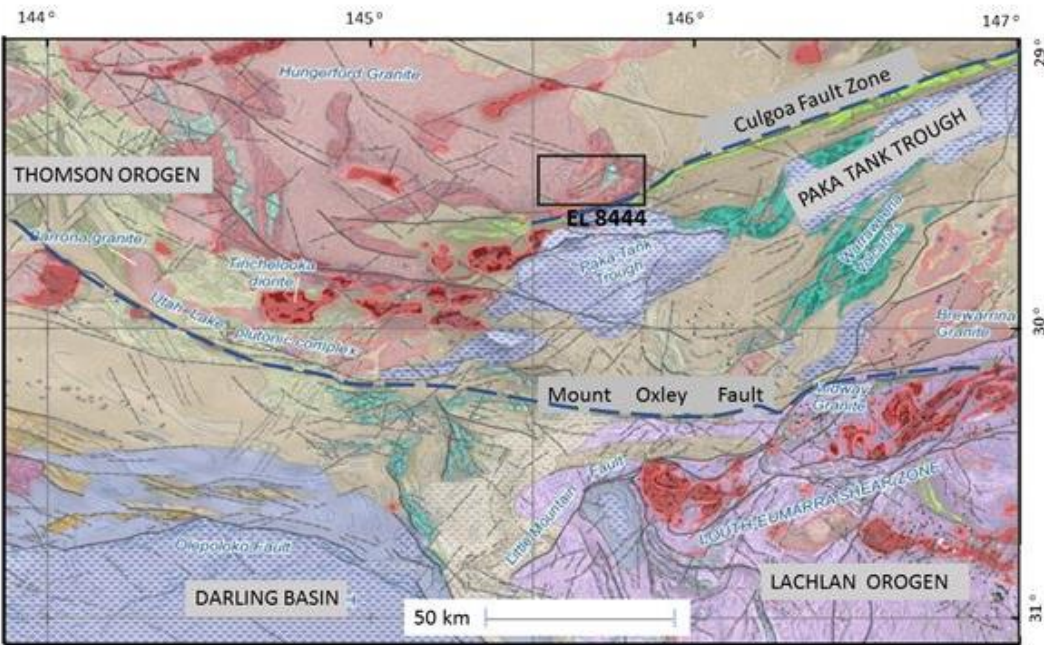


Louth area - EL 8439

- Previous company drilled magnetic highs and sampled quartz diorite and quartz-feldspar porphyry
- Tinchelooka Igneous Suite dated at ~400 Ma
- No host units defined yet
- Utah Lake low magnetic area tested by Janina 1
- Shallow resistive basement in AEM
- Seeking correlations with other granites



Janina 1 (NSW) WANAARING AREA EL 8439: Granite

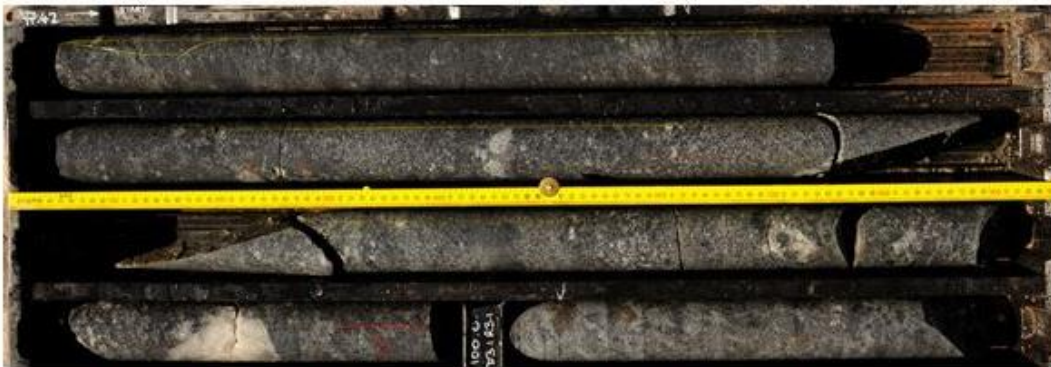


CONGARARRA 2 (NSW) ENNGONIA AREA EL8444: Granite/diorite



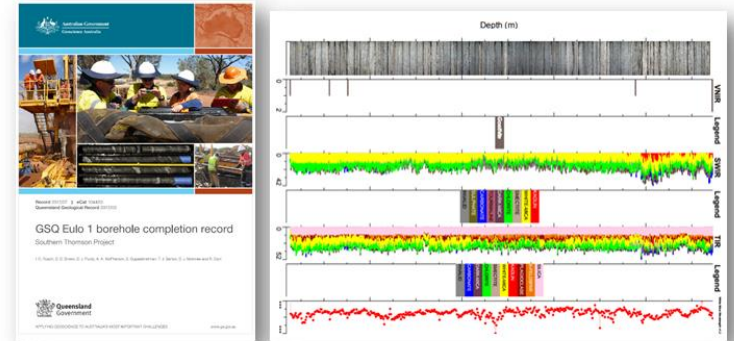
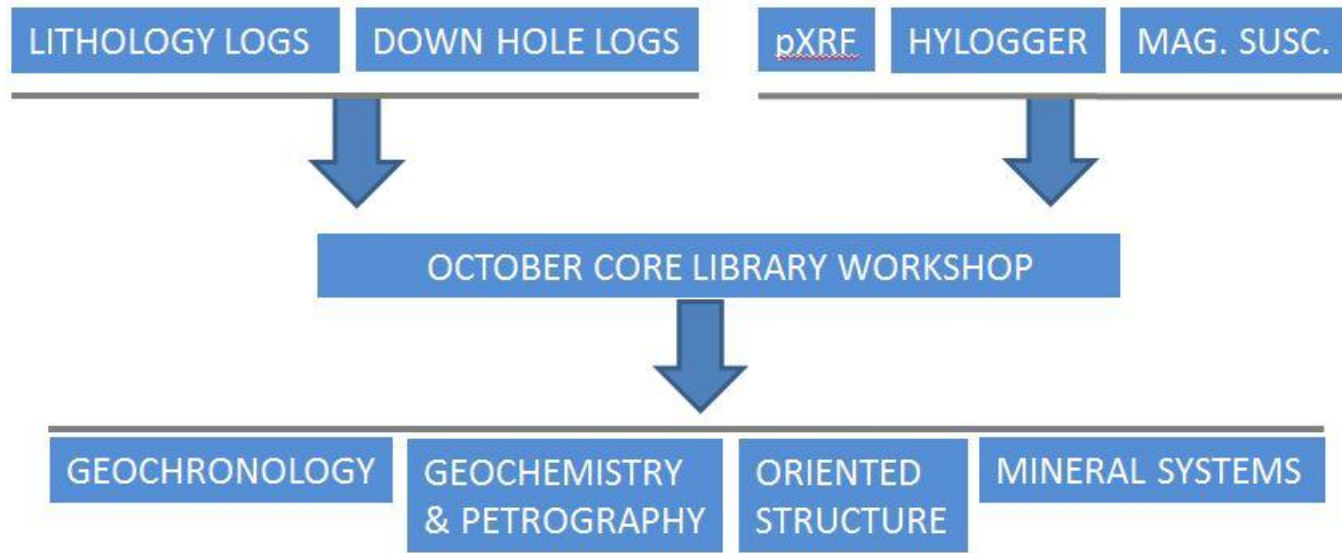
Enngonia area - EL 8444

- Zone of high strain between interpreted Hungerford Granite batholith and Culgoa Fault Zone
- Sillimanite-bearing granite described from base of water bore (Byrnes) at <100 m depth
- Congararra 1 tested narrow magnetic zone within an extensive basement ridge (indicated by AEM)
- Congararra 2 tested non-magnetic zone on western side



CONGARARRA 1 (NSW) ENNGONIA AREA EL8444: Gneiss

Sampling & analytical program



Conclusions

Main Challenges:

- Untested areas - drilling methodology developed for individual sites & aquifer conditions
- Coordination of WHS for several PCUB
- Road travel and frequent camp shifts
- Fatigue and personnel changes

Impact: To deliver value, to add geoscientific information and data, to inform industry on operations in NSW.



Efficient drilling in 2017 resulting from:

- Significant preparations for aquifer conditions and review of local drilling techniques
- Drilling contractor with local experience
- Cooperation from GA on NSW legislated requirements to operate within EL
- Commenced mid-winter (July–September)
- Dedication of party leader Ian Roach (GA)
- Fortunate spell of extreme dry weather



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THANK YOU TO PROJECT PARTIES...

AND FOR YOUR ATTENTION TODAY

