

NORTHERN ECONOMIC REGION

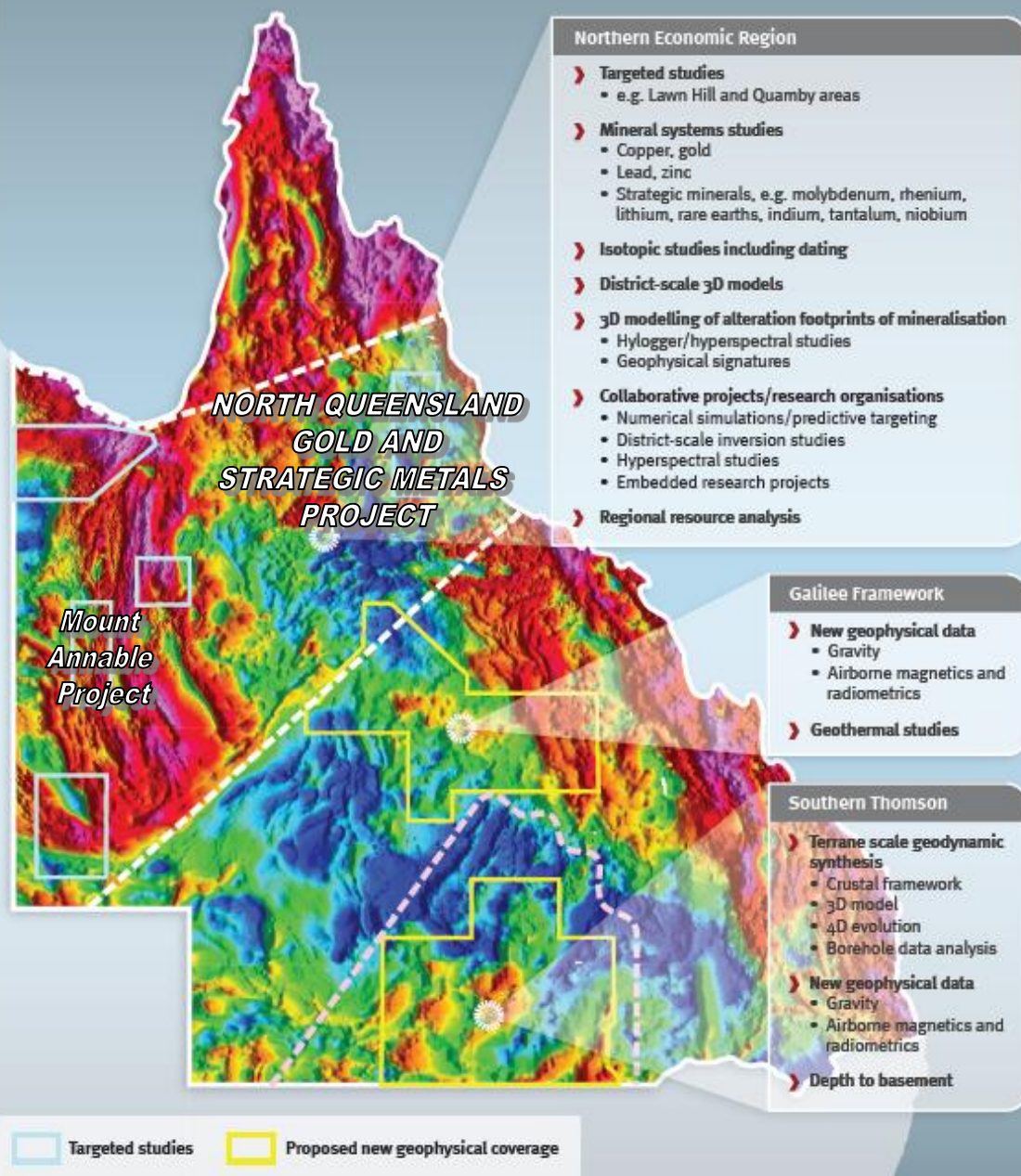
- North Queensland Gold and Strategic Metals Project**
- Mount Annable Project**

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Department of Employment, Economic Development and
Innovation



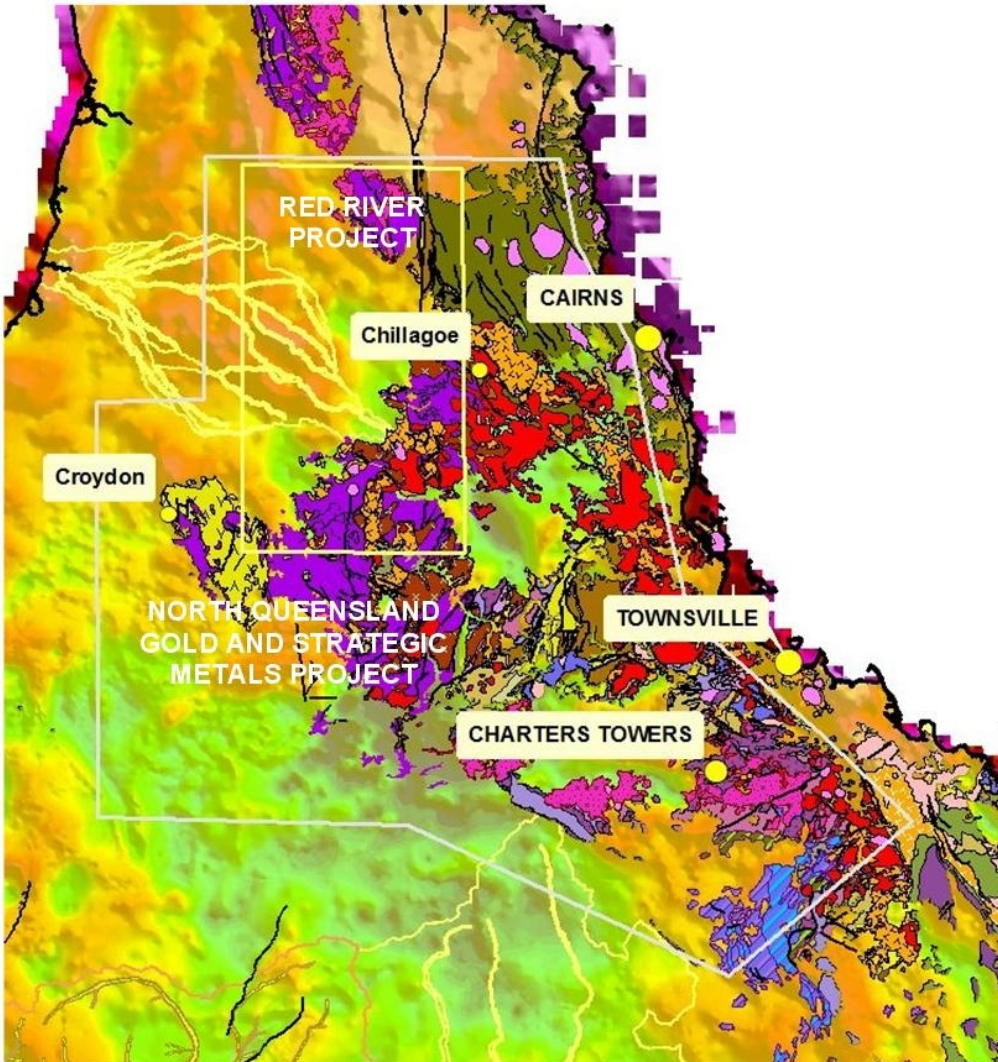
NORTHERN ECONOMIC REGION

Queensland's premier metalliferous region

- North-West Queensland Mineral and Energy Province Report (including Mount Dore 3D resource assessment) released in early 2011.
- Current Lawn Hill and Quamby Projects
- Current North Queensland Gold and Strategic Metals (and Red River) Projects
- Proposed Mount Annable Project



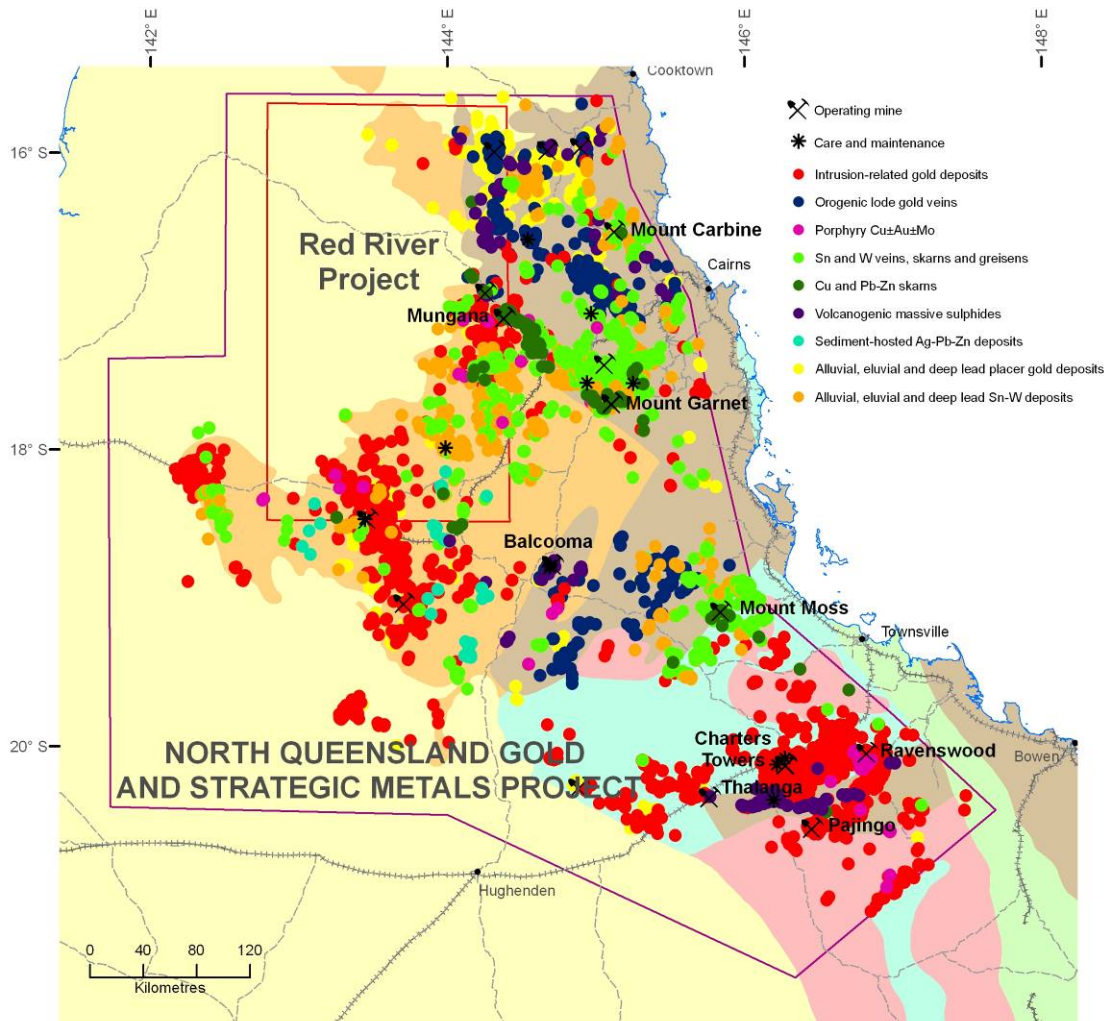
North Queensland Gold and Strategic Metals Project



- Region has been selected recognising that levels of exploration for gold have declined from a high of 30% of total exploration expenditure in 1994 through 12% in early 2001 to around 5% in September 2010.
- This is in spite of current historical high gold prices.



North Queensland Gold and Strategic Metals Project

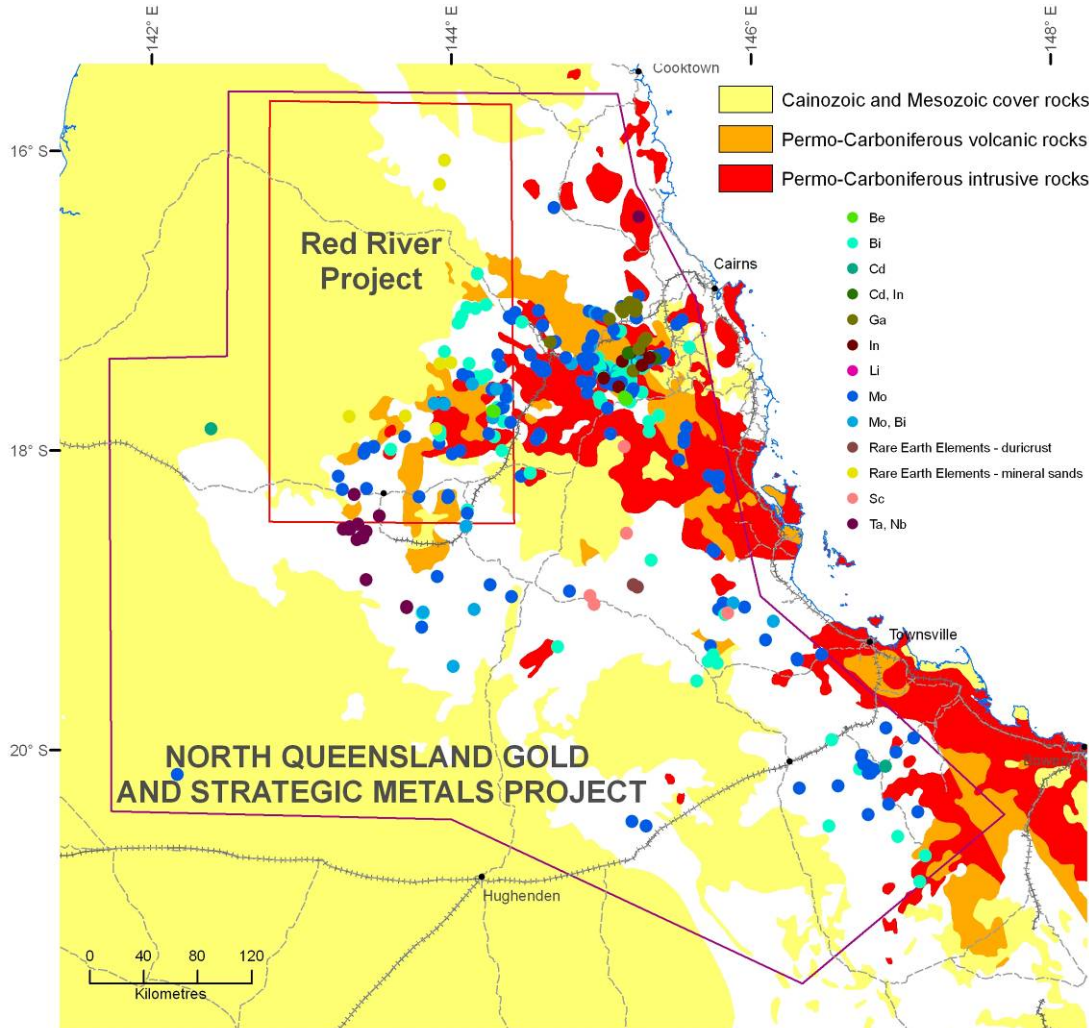


Region has potential for:

- intrusion-related (veins, porphyry, breccia, skarn, epithermal) and orogenic lode gold deposits
- volcanogenic massive sulphides
- hydrothermal tin and tungsten veins and greisens
- porphyry Mo-Cu-Au
- sediment-hosted Zn-Pb-Ag



North Queensland Gold and Strategic Metals Project



- Strategic elements – Be, Bi, Cd, Ga, Ge, In, Li, Mo, Re, REE, Y, Sc, Ta, Nb

- Growing demand for these metals for specialty alloys, electronic and communications devices, fibre optics and green energy (batteries and solar cells).

- Occurrences and deposits of these metals are known within the study area, but there is no current production.

- The study area is highly prospective for these strategic elements, particularly in polymetallic deposits associated with fractionated Permo-Carboniferous intrusives and extrusives.



North Queensland Gold and Strategic Metals Project

The lack of exploration momentum and discoveries since 2000 is a result of several factors, including geological barriers such as:

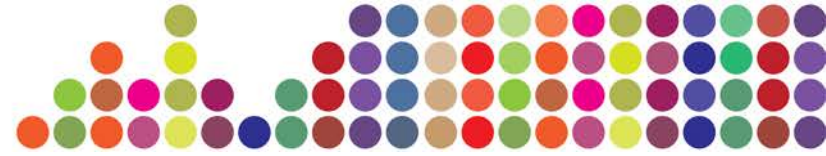
- areal extent and depth of cover units
- geological complexity
- patchy understanding of the tectonic framework
- limited geochemical data
- restricted predictive capability of exploration models due to insufficient understanding of mineral systems and structural controls and variances between different domains/provinces
- absence of catalyst research to stimulate exploration for new deposit types and to revitalise exploration thinking that is applied to this region.



North Queensland Gold and Strategic Metals Project

In order to address these limitations and to stimulate exploration within the region, the Greenfields Prospectivity Unit has commenced the North Queensland Gold and Strategic Metals Project, which has a three year format and consists of five integrated phases:

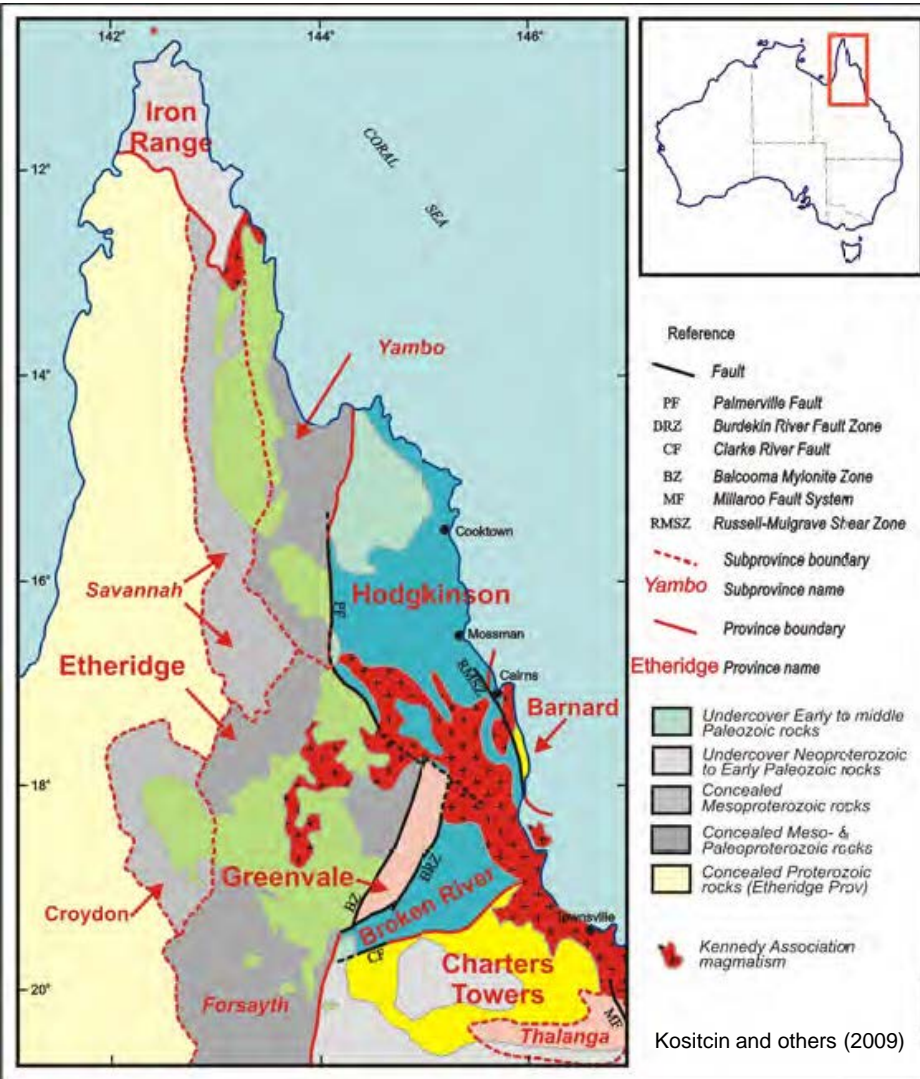
- 1.Synthesis of current tectonic understanding for this region to provide a framework for discovery.
- 2.Literature review of the regional and district controls on known gold and strategic metal systems
- 3.Regional 3D modelling
- 4.Targeted studies
- 5.Assessment of the resource potential for gold and strategic metals in the region



North Queensland Gold and Strategic Metals Project

1. Synthesis of current tectonic understanding for this region to provide a framework for discovery

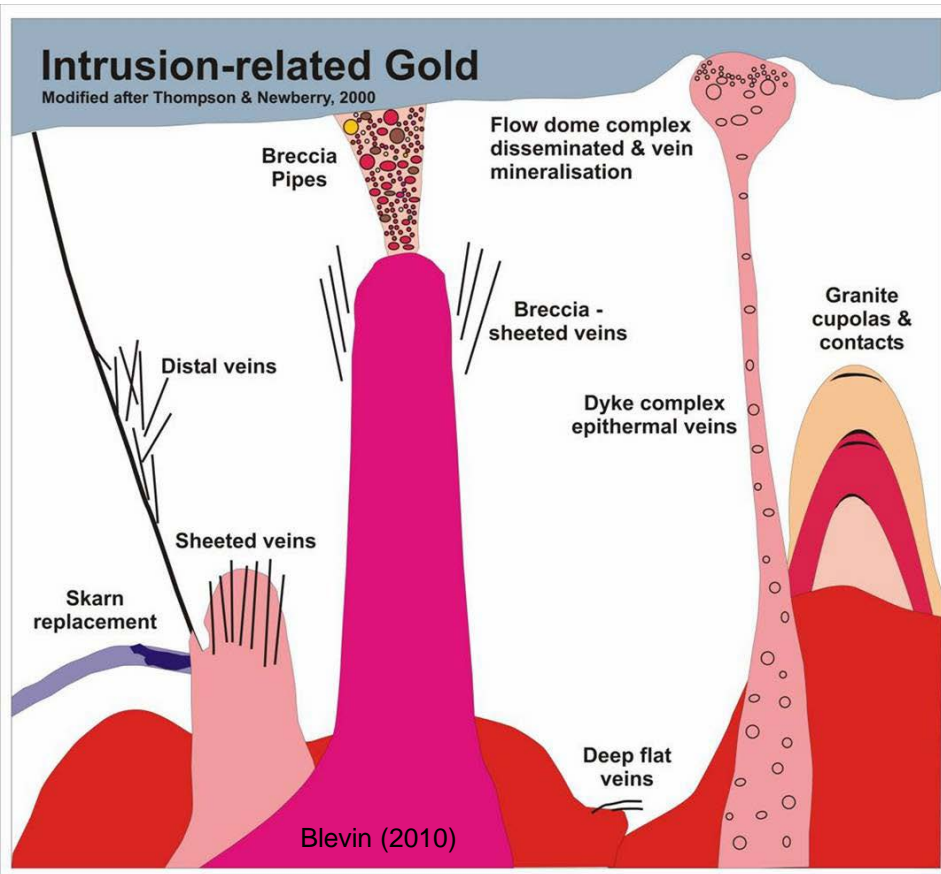
- A literature review of papers dealing with the structural/tectonic and stratigraphic evolution of the North Queensland region to provide a synthesis of the tectonic evolution of the region from the Proterozoic to Recent.
- A time-space chart correlating major stratigraphic groupings, igneous episodes and deformation events.
- This component of the project commenced in October 2011 and is expected to be completed in May 2012.





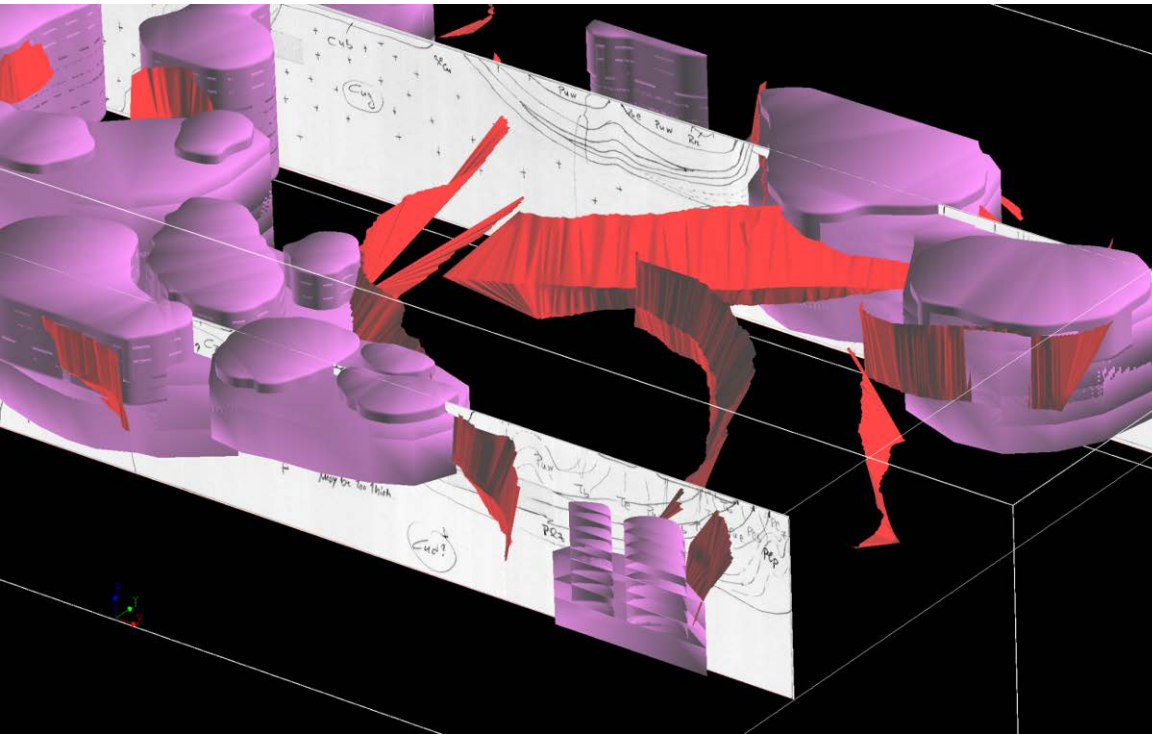
North Queensland Gold and Strategic Metals Project

2. Literature review of the regional and district controls on known gold and strategic metal systems



- Focus on porphyry and intrusion-related gold and polymetallic mineral styles of the Drummond, Charters Towers -Thalanga, Etheridge and Cairns regions.
- Potential for intrusive-related strategic metals based on examples from deposits world-wide.
- Compilation of whole rock geochemical data to identify granite types and fractionation trends, and to highlight intrusives with potential to generate gold and/or strategic metals.
- The results of the National Geochemical Survey of Australia will be reviewed to highlight catchment areas requiring further analysis.

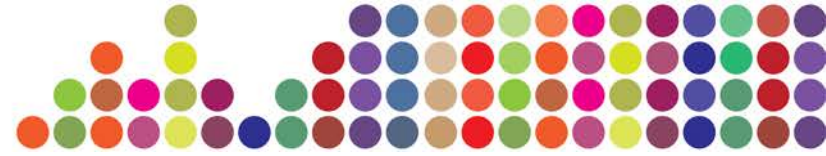
North Queensland Gold and Strategic Metals Project



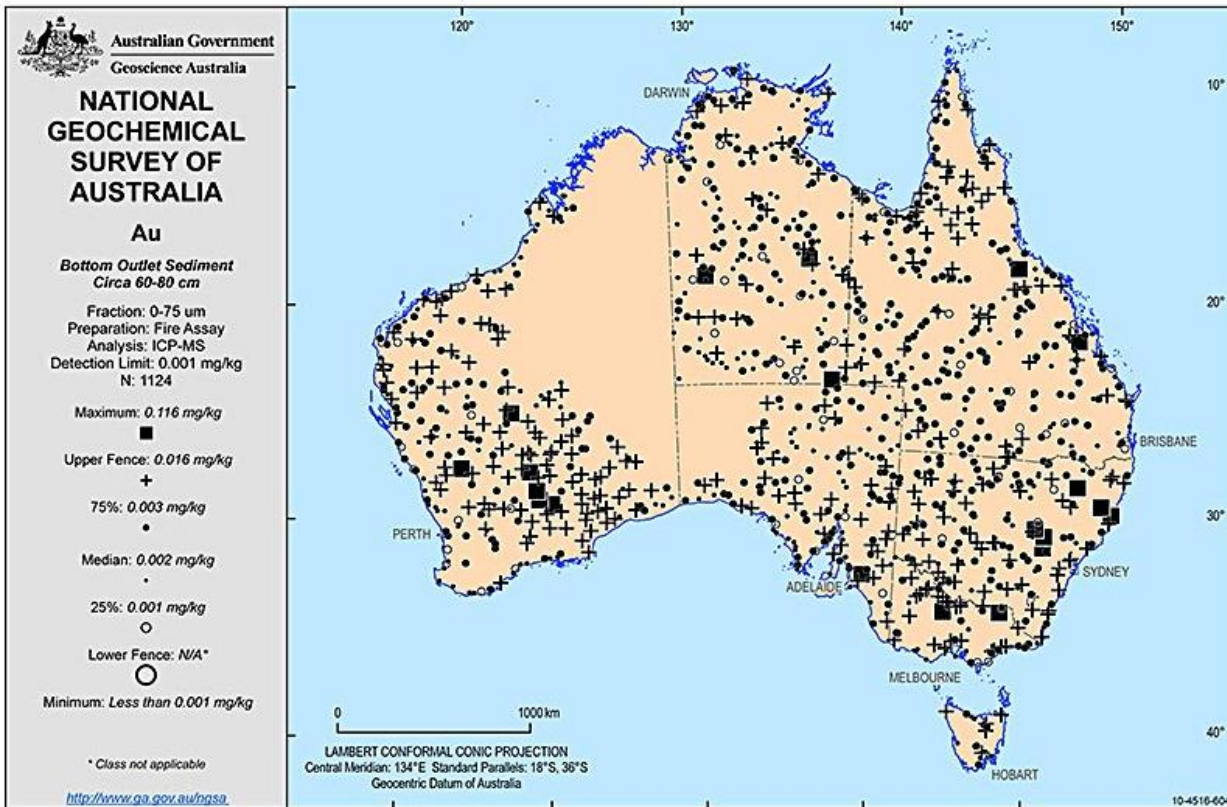
3. Regional 3D modelling

- The development of a regional 3D model will focus on reconciling and visualising the internal structure and relationships between the geological elements within the region.

3D intrusive architecture of part of the Drummond Basin (Feltrin and others)



North Queensland Gold and Strategic Metals Project

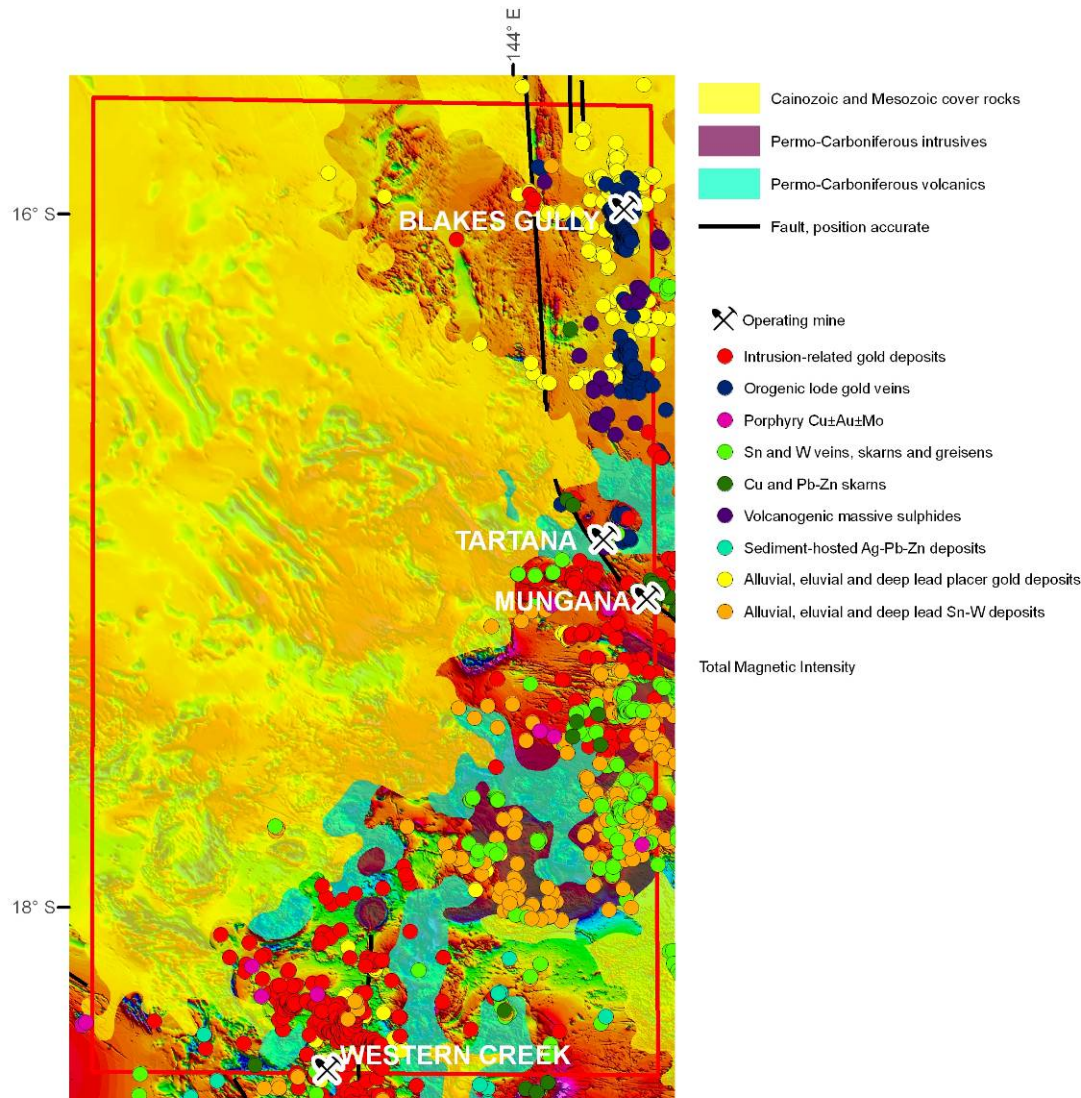


4. Targeted studies

- Targeted studies will be carried out to address gaps identified in the earlier review stages in terms of mapping, geochronology, geochemistry, stratigraphic interpretation and mineral systems studies.



North Queensland Gold and Strategic Metals Project



5. Assessment of the resource potential for gold and strategic metals in the region

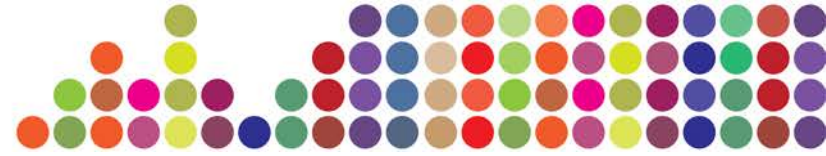
- This stage will involve mineral systems analyses to develop regional- and district-scale criteria for exploration targeting and mineral potential assessment.
- Mineral systems associated with Permo-Carboniferous magmatism are of particular interest.
- The Red River project area has been selected for detailed analysis using the 3D mineral prospectivity modelling methodologies previously developed by GSQ for detailed studies in north-west Queensland.
- This area covers a range of geological environments and mineralisation styles and has both outcropping and undercover areas with good potential for future discoveries.



North Queensland Gold and Strategic Metals Project

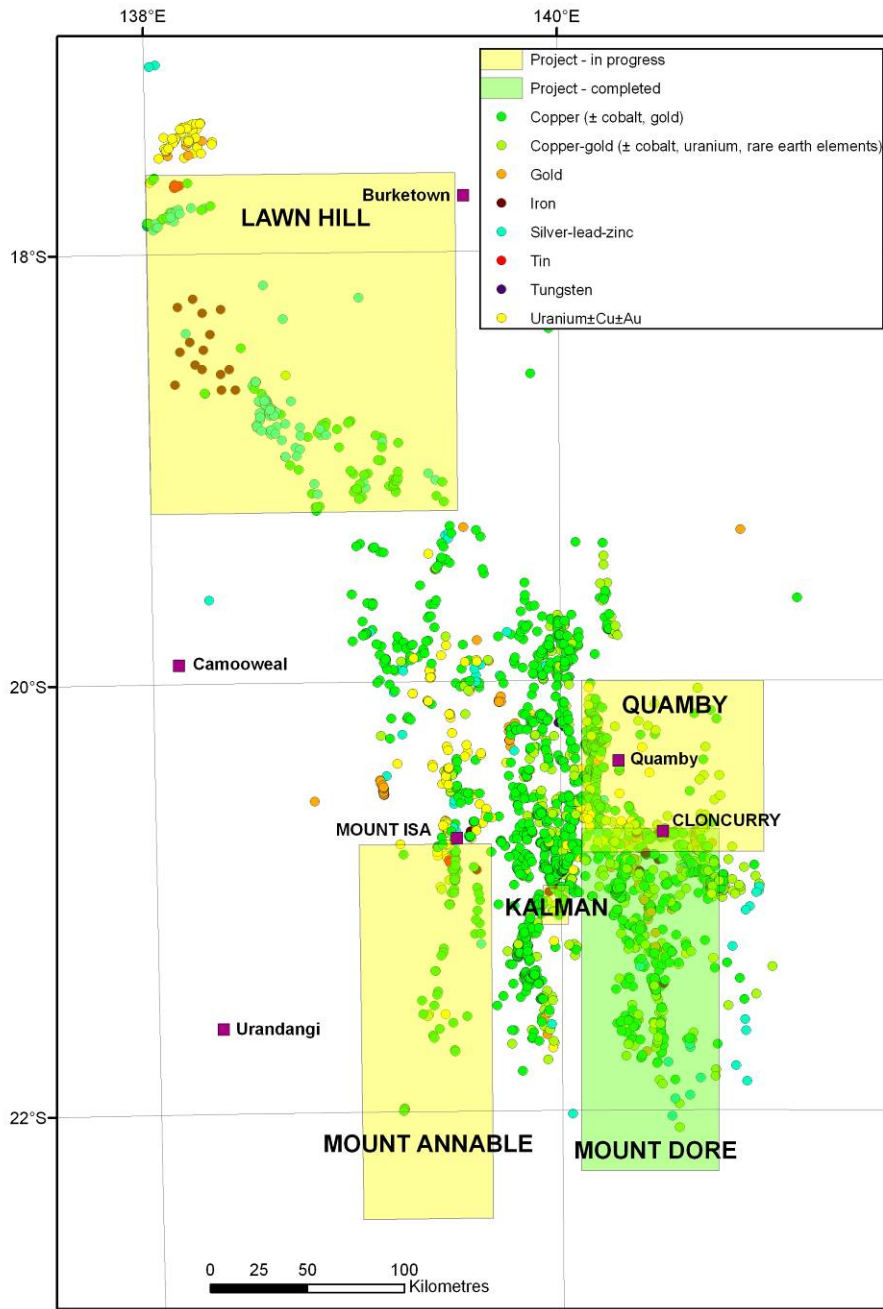
The following products are planned:

- A comprehensive bibliography of relevant papers for the region.
- A report summarising a chronological framework of deformation and metamorphic events affecting the region extending from the Proterozoic to the Palaeozoic. The report will also highlight key areas/structures to focus subsequent data acquisition/analysis phases.
- A report summarising regional and district controls on known/potential gold and strategic metal systems. The report will also highlight key areas/techniques to focus subsequent data acquisition/analysis phases.
- New geological interpretations including:
 - a series of structural thematic maps at 1:500,000 scale outlining the distribution, ambient stress field, and major structures (folds and faults) associated with each of the major deformation events in the context of the deformation event framework;
 - new geoscientific data (mapping/logging, geochronological, geochemical) aimed at developing an improved understanding of the region in terms of the potential for new gold and strategic metal resources;
 - regional and district scale 3D models.
- Quantitative resource assessment and prospectivity studies.



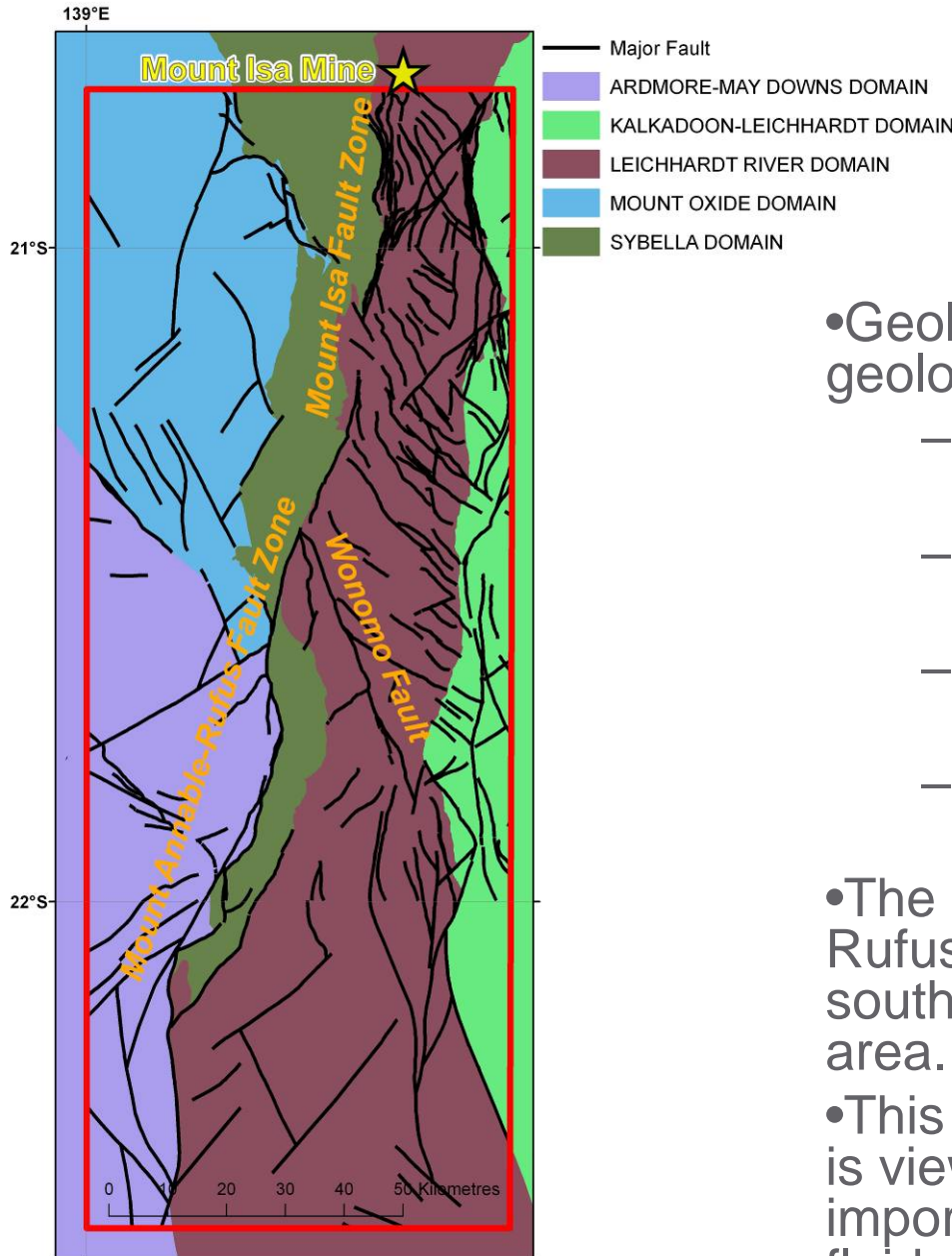
Mount Annable Project

- Following on from GSQ's successful Mount Dore district-scale 3D prospectivity modeling study, which was included in the North-West Queensland Mineral and Energy Province Report, the Greenfields Prospectivity Unit has been working on similar studies in the Quamby and Lawn Hill areas, as well as a hylogger study at Kalman. These studies have already been described in presentations given today.
- An additional study of this type is planned for the Mount Annable region, which covers an area ~200km long by 70km wide extending south from the Mount Isa mine. Proterozoic outcrop varies from good to poor in the north to concealed in the west and south. Cover rocks include Mesozoic sediments and the Cambrian Georgina Basin, with interpreted cover depths of >500m in the south and west.
- Consequently, much of the area has been poorly explored.





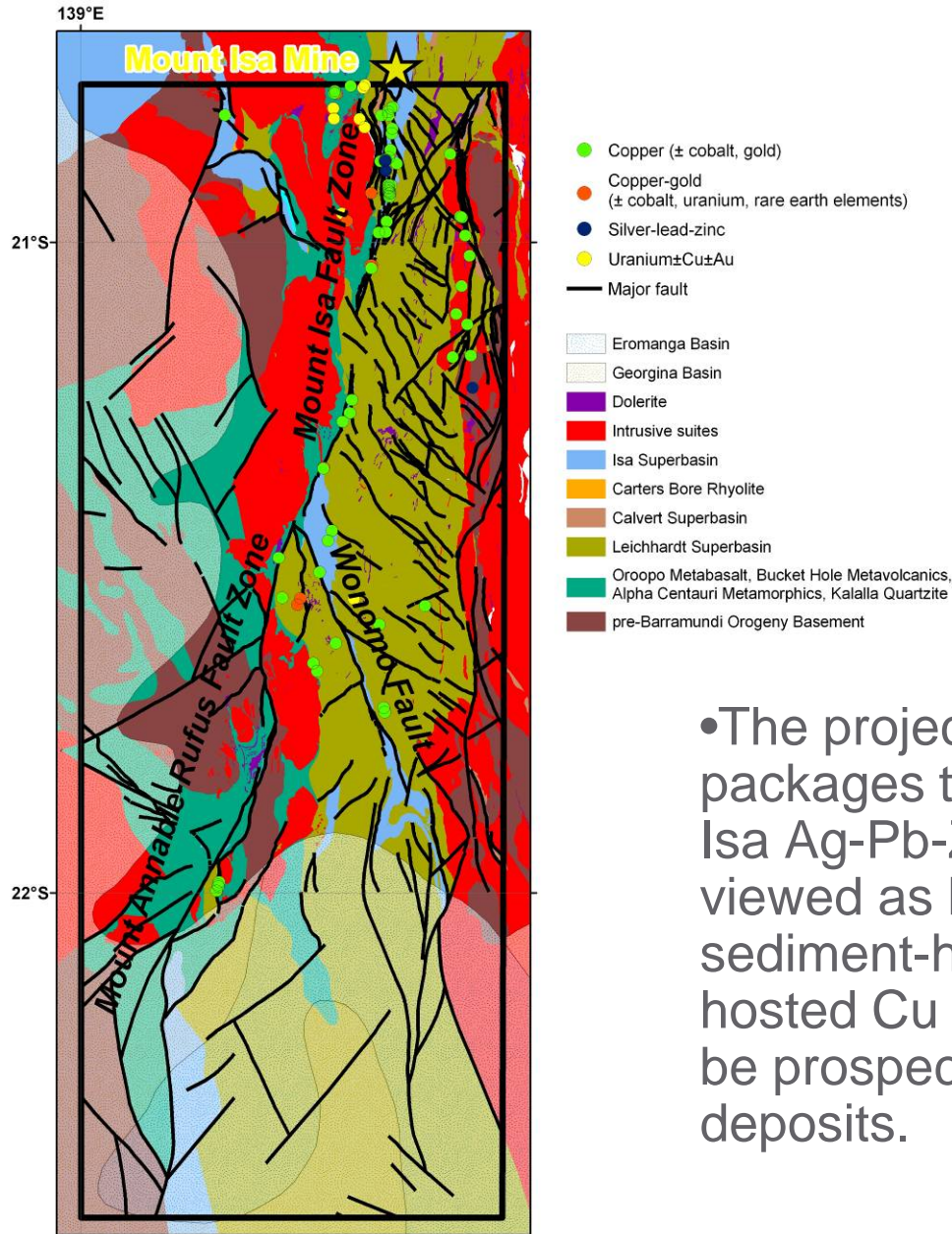
Mount Annable Project



- Geologically, the region comprises five geological/geophysical domains
 - the Ardmore-May Downs Domain in the south-west;
 - the Mount Oxide Domain in the north-west
 - the Sybella Domain in the centre; and
 - the Leichhardt River and Kalkadoon-Leichhardt Domains in the east.
- The major Mount Isa–Mount Annable–Rufus Fault Zone extends south to south-south-west down the centre of the project area.
- This major crustal penetrating fault system is viewed by many explorers as highly important for the transport of mineralising fluids and deposition of significant mineralisation.



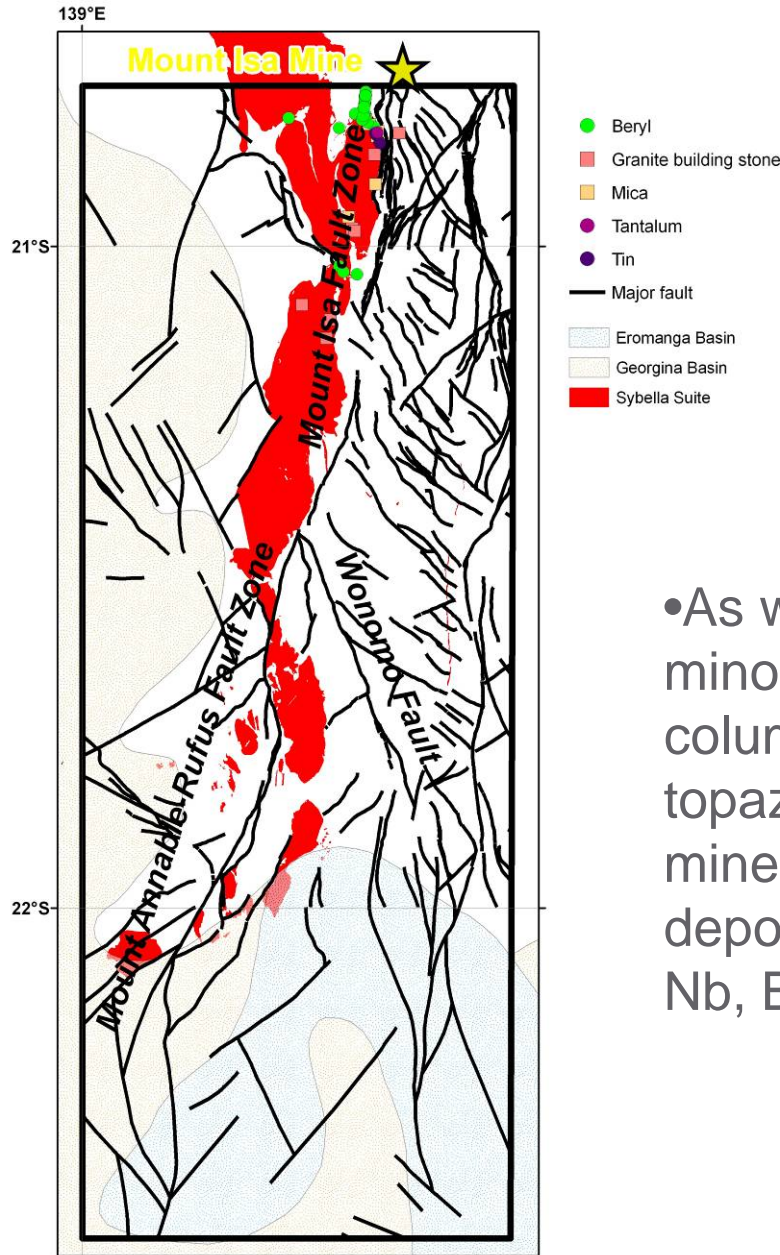
Mount Annable Project



- The project area contains the same rock packages that host the world-class Mount Isa Ag-Pb-Zn and Cu deposits. It is viewed as highly prospective for sediment-hosted Ag-Pb-Zn, breccia-hosted Cu and metasomatic U and may be prospective for iron-oxide Cu-Au deposits.



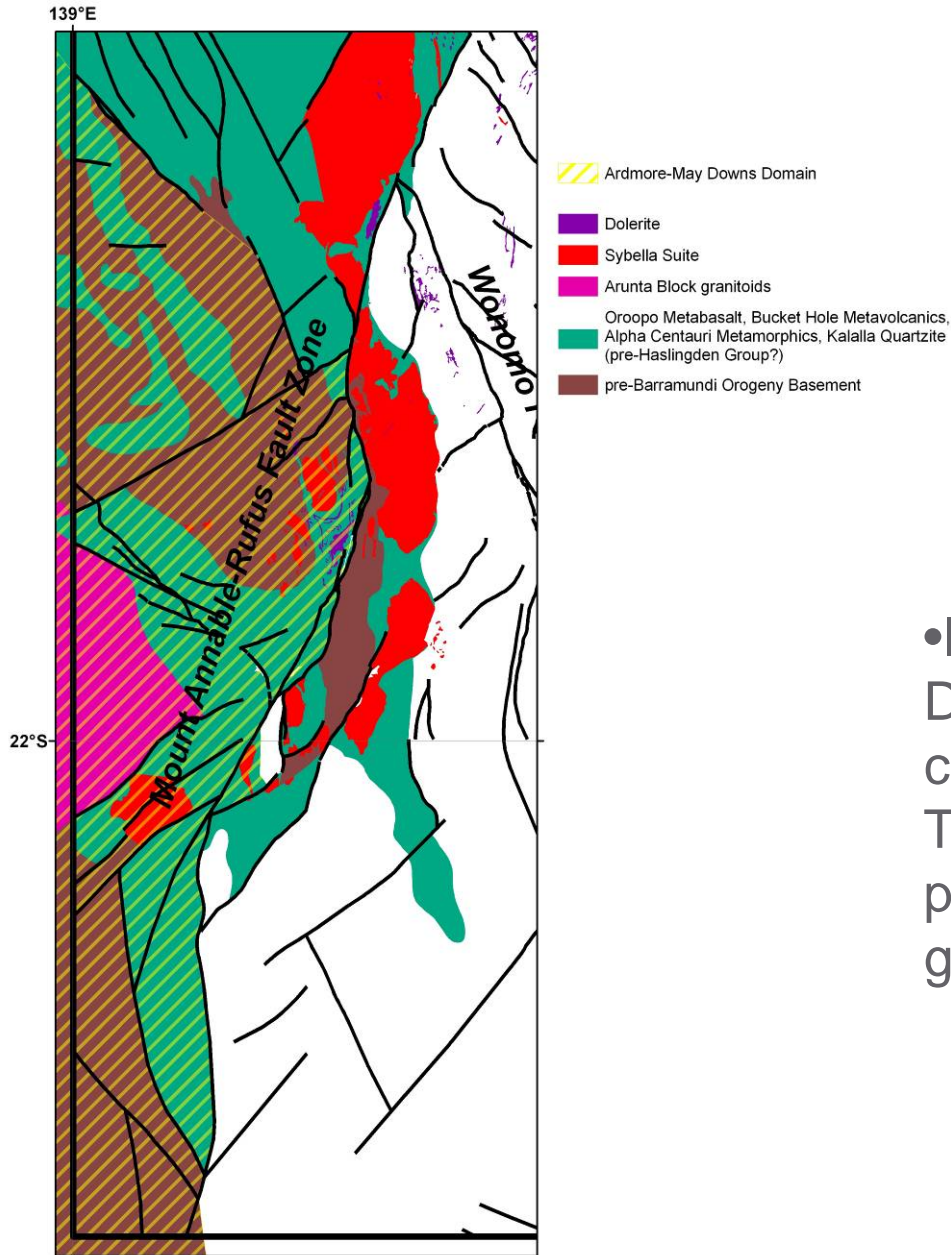
Mount Annable Project



- As well, the Sybella Granite has known minor cassiterite, beryl, monazite, tantalite-columbite, ilmenite, rutile, bismuth, fluorite, topaz and mica mineralisation. This mineralogy indicates a potential to host deposits of strategic elements such as Ta, Nb, Be, Li and REEs.



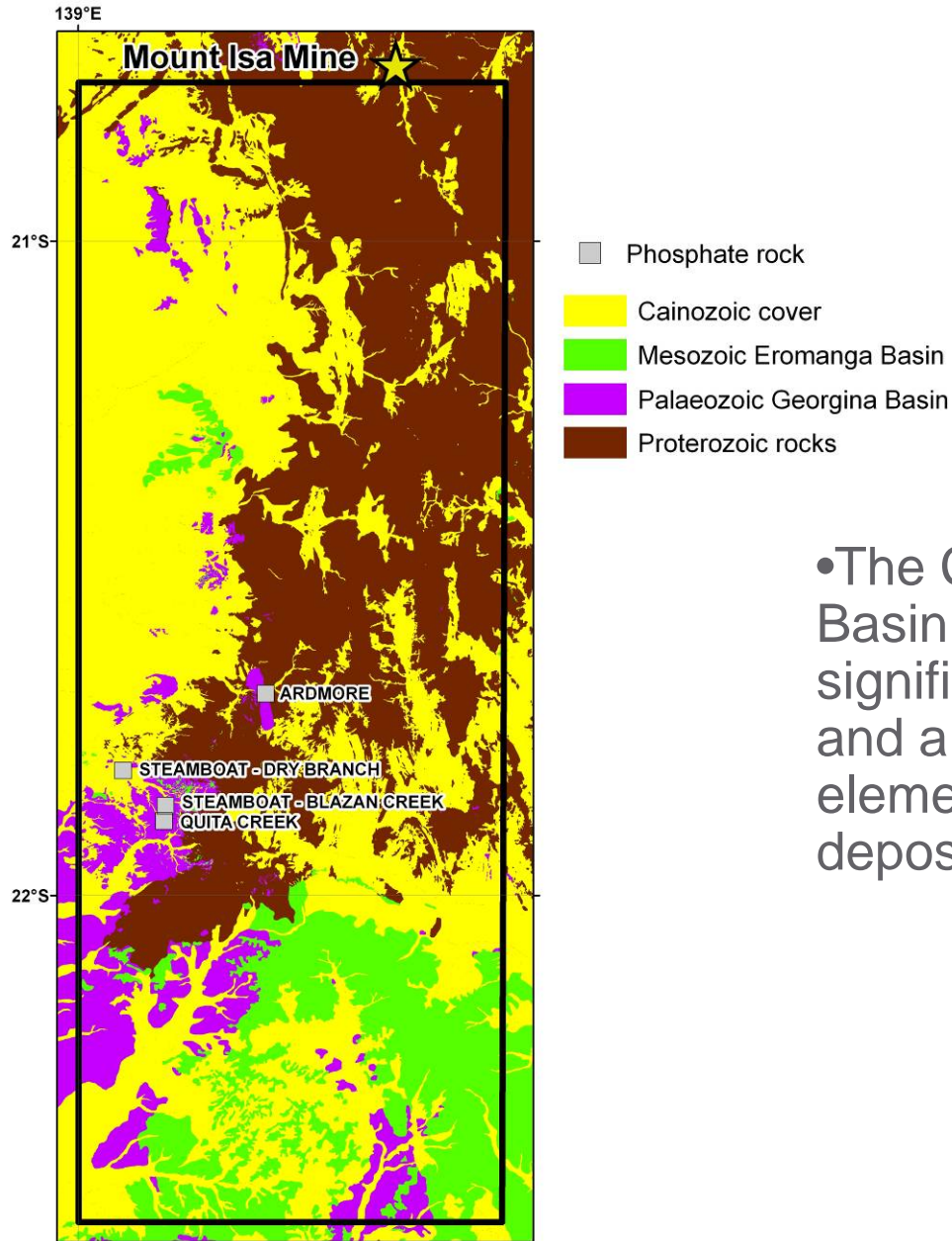
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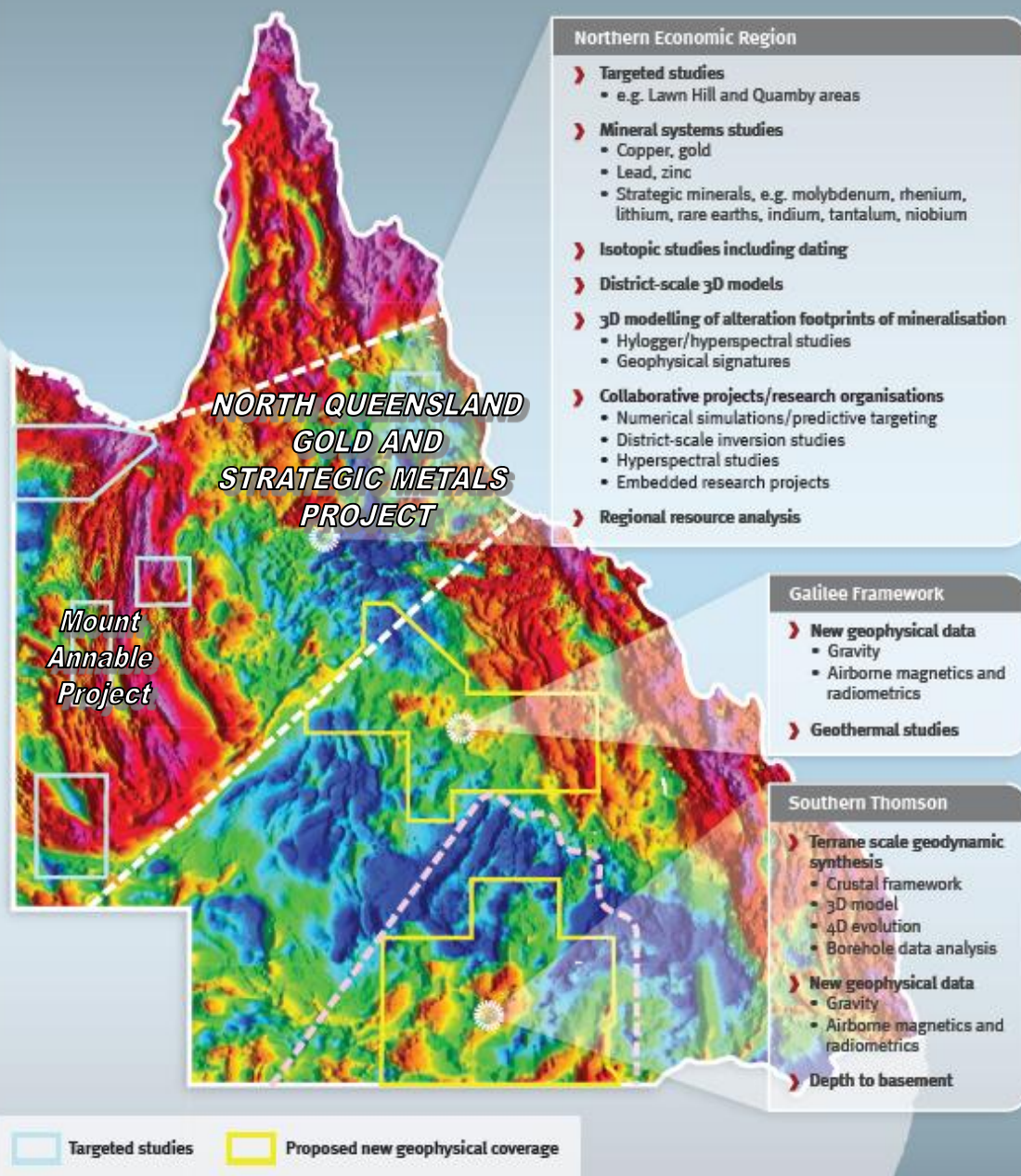
- Interpretation of the Ardmore-May Downs Domain as the eastward continuation of the Arunta and Tennant Creek Provinces indicates potential for Tennant Creek style gold mineralisation.



Mount Annable Project



- The Cambrian rocks of the Georgina Basin in the Ardmore area host significant phosphate rock deposits and are also prospective for rare earth elements and sedimentary uranium deposits.



NORTHERN ECONOMIC REGION - 2012

- Exciting new projects planned
- New data sets, compilations and products to:
 - encourage industry to take up ground in greenfield regions
 - assist industry in exploration targeting in greenfield regions



Thank You