

Next Generation Explorers Award Association

Summary – North West Province, Queensland

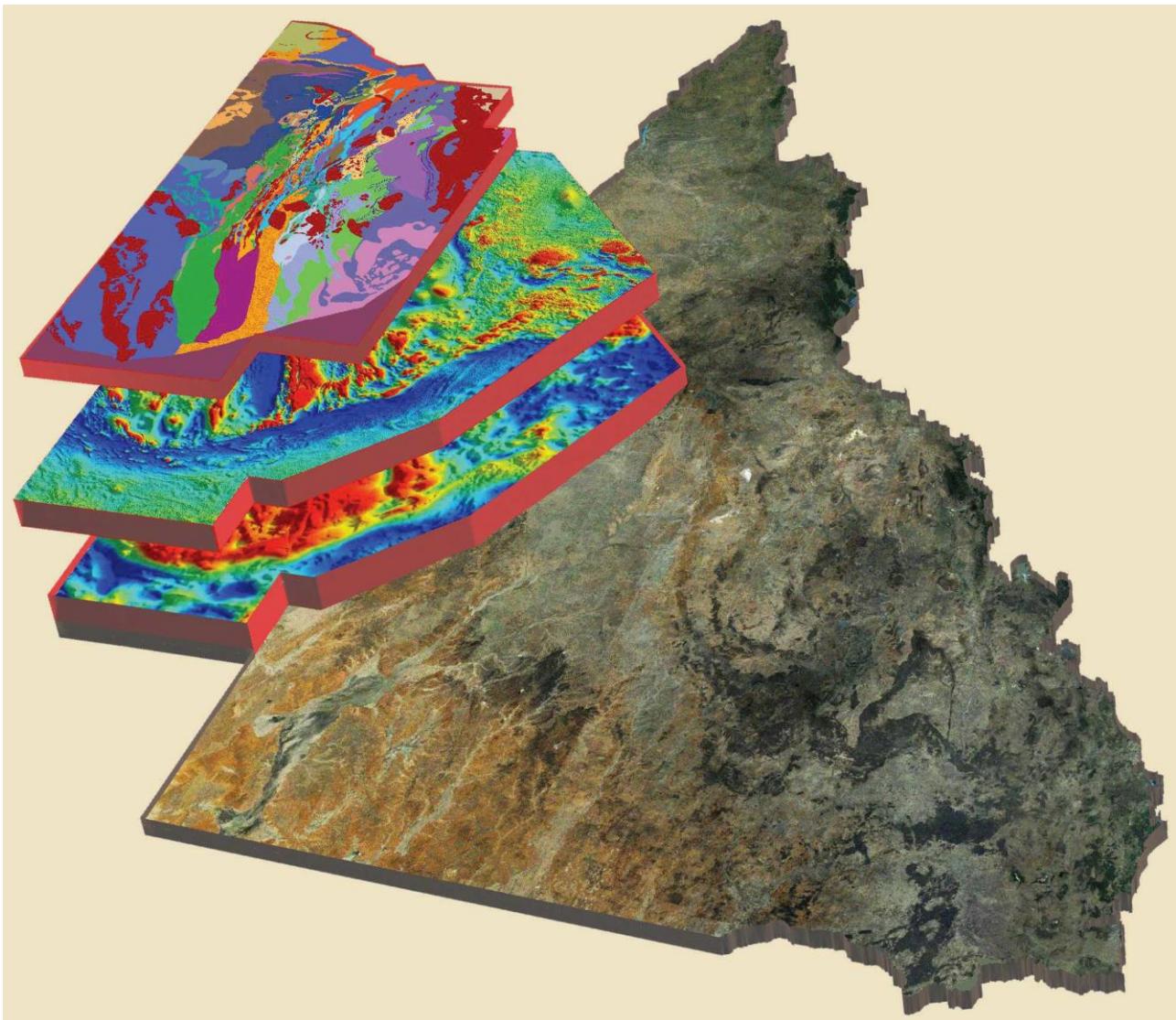
Dataset for Participants in the NGEA™

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Introduction

The Queensland Department of Resources has recently expanded its focus on mineral exploration to bring strong focus to “new economy” mineral commodities in addition to conventional commodities such as copper, lead and zinc. This focus has been driven primarily by the global energy transition, with need to source a suite of minerals for electrification of the modern economy, coupled with rapid advances in technologies used in aerospace, medicine, defence and many other industrial purposes..



Cover from the “North-West Queensland Mineral and Energy Province Report”

A copy for the report can be found at [North-West Queensland Mineral and Energy Province Report](#). This provides a good starting point for an overview of the geology and resources of the Mt Isa - Cloncurry region of Queensland Australia.

Challenges

The North West Province's mining industry has been the key driver for regional employment and economic growth along with other regional areas and the state economy. In 2014–15, slightly more than one third of Province's workforce were employed directly in the mining and minerals processing industry as well as over 11,000 direct and indirect jobs and the mining and minerals processing industry accounted for two thirds of the Province's economy. The city of Mount Isa is the administrative, commercial, industrial and service centre for North West Queensland and is the regional hub for the delivery of critical health, community and educational services.

The Province has recently faced some economic challenges with several larger mines maturing or closing along with declining ore grades and exploration and investment activity negatively impacted by fluctuating commodity prices. In addition, the Province has a young population, mainly families, along with a significant population of Aboriginal and Torres Strait Islander people. Based on 2011 Census data, the mining industry was the Province's largest employer for the Aboriginal and Torres Strait Islander people.

The Queensland government sees exploration to be critical to the future economic success of the Province. Finding and developing new major mineral deposits is needed to continue to support the economic and social sustainability of the mining industry and communities in the Province. For further information, please refer to the [Strategic Blueprint for Queensland's North West Minerals Province](#).

Innovation Opportunities

Think about the problems of deep exploration under cover and the development of new economy minerals.

Deep Exploration

Exploration for hidden deposits in heavily explored outcrop terranes is a challenging topic and is well positioned to fit the categories of innovation and cross-discipline collaboration. How do we find deposits at depths greater than 100 metres that have not been detected at the surface?

There are many areas in Australia where exploration beneath cover becomes a challenge until there are sufficient drillholes to establish the prospectivity of an area. Mt Isa has many mineral deposits with extensive geological information that have been discovered through near surface exploration or outcrop investigation. These deposits become models for exploration at greater depth where you can model their geophysical responses or develop enhancement processing techniques that will highlight the target features.

New Economy Metals and Motivating Next Generation Students

What are new economy minerals and where are they found?

'New economy minerals' is an umbrella term for a range of metals and mineral elements used in many emerging technologies including electric vehicles, renewable energy products, low-emission power sources, consumer devices, and products for the medical, defence and scientific research sectors.'

[New economy minerals | Department of Natural Resources, Mines and Energy \(dnrme.qld.gov.au\)](#)

In order to develop a sustainable pipeline of ‘new economy minerals’ projects into the future, the Queensland Government is investing in exploration activities to improve scientific understanding and supply the valuable geoscience data needed by industry to help locate and define deposits for future production.

The term ‘new economy minerals’ refers to market conditions created by the fast-changing nature of emerging technologies. Demand for the materials used in their production can exceed existing global resource production, causing manufacturers and industries to seek secure, predictable supplies into the future. In turn, this increases trading prices, creating a ‘new economy’ for the metal or mineral element.

Queensland has a rich endowment of many new economy minerals, including:

Bauxite
Cadmium
Cobalt
Copper
Gold
Graphite
Indium
Magnesite
Molybdenum
Niobium
Nickel

Rare earth elements (Cerium, Dysprosium, Erbium, Europium, Gadolinium, Holmium, Lanthanum, Lutetium, Neodymium, Praseodymium, Promethium, Samarium, Scandium, Terbium, Thulium, Ytterbium, Yttrium)

Rhenium

Selenium

Silica (Lump silica, Silica Sand)

Silver

Tantalum

Tellurium

Tungsten

Tin

Titanium

Vanadium

Zinc

Zirconium

New economy minerals, while found across Queensland, are mostly concentrated in the state's North West and North East mineral provinces. Some new economy minerals are found in association with other traditionally mined resources, sometimes called primary ores or base metals.

Data Portals

There is an excellent summary page of all forms of data access.

[Geoscience Information and Data](#)

The left-hand bar navigates through a range of data and information sites that helps focus a new user access the right and current areas.



GSQ Open Data Portal

Use this site for text-based search and download of complete datasets.

[Welcome - GSQ Open Data Portal](#)

GeoResGlobe

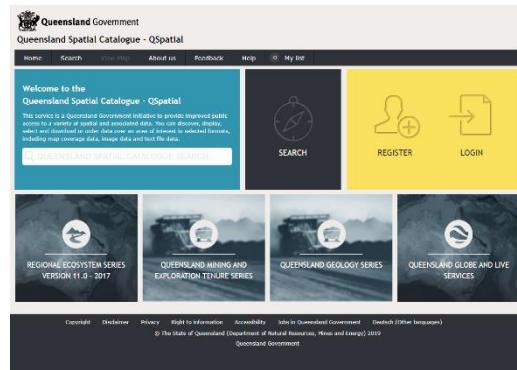
Use this site for spatial search, viewing and download of specific subsets (it is fully linked to the GSQ Open Data Portal)

[GeoResGlobe \(information.qld.gov.au\)](#)

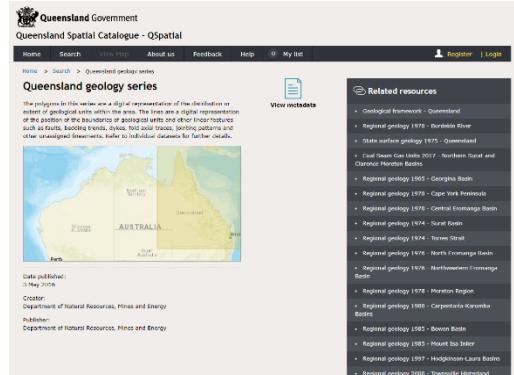
Queensland Spatial Catalog – Qspatial

Easier access point for GIS datasets of QLD, especially the geology. Also integrates some QLD services in a spatial context.

[Queensland Spatial Catalogue -QSpatial: Queensland Government \(information.qld.gov.au\)](https://information.qld.gov.au/)



Use this section to access geological maps.



WMS/WFS for GIS web services

<https://gisservices.information.qld.gov.au/arcgis/rest/services/GeoscientificInformation>

Mineral Deposit Atlas

For those wanting to explore specific deposits in the Mt Isa/Cloncurry region, the Atlas provides access to comprehensive summaries of the major mineral deposits along with detailed 3D models compatible with the free software viewer called Geoscience Analyst.

[North West Mineral Province Deposit Atlas - North West Mineral Province Deposit Atlas - Datasets - GSQ Open Data Portal](https://gsq.qld.gov.au/minerals/mineral-deposit-atlas)

As part of the New Discovery Program, the [W.H. Bryan Mining & Geology Research Centre \(BRC\)](#) compiled an atlas of the major deposits in the Northwest Mineral Province. This atlas serves as a resource for explorers to help recognise the signatures and haloes of major deposits in the region, and to provide material which is complementary to the core collections being assembled in the Mount Isa Core Library.

This Atlas details 28 mineral deposits in 20 chapters (plus an introductory chapter). The deposits span a range of commodities including copper, zinc, lead, silver, gold, uranium, rhenium, molybdenum, cobalt, and phosphate. A set of deposit atlases for North East Queensland Mineral Province was created as part of the New Economy Minerals Initiative and can be found [here](#)

Each Deposit Atlas contains a pdf document describing the deposit system, discovery history, geophysical and geochemical signatures and alteration of the system as well as a 3D Atlas datasets of all publicly available data. The 3D Atlases were compiled in Geoscience Analyst, a free 3D visualisation and communication software for integrated, multi-disciplinary earth models and data. Download it [here](#).

This Dataset contains the entire Deposit Atlas as a zipped file. Each deposit and their corresponding 3D Atlas can be found per chapter below:

[Chapter 1 - Introduction \(included in this pdf\)](#)

[Chapter 2 - Mount Isa](#)

[Chapter 3 - Ernest Henry](#)

[Chapter 4 - Selwyn Region](#)

[Chapter 5 - Cannington, Pegmont and Maronan](#)

[Chapter 6 - Osborne and Kulthor](#)

[Chapter 7 - Eloise](#)

[Chapter 8 - Lady Loretta and Lady Annie](#)

[Chapter 9 - Gunpowder](#)

[Chapter 10 - Century-Grevillea](#)

[Chapter 11 - George Fisher](#)

[Chapter 12 - El](#)

[Chapter 13 - Rocklands](#)

[Chapter 14 - Tick Hill](#)

[Chapter 15 - Kalman](#)

[Chapter 16 - Dugald River](#)

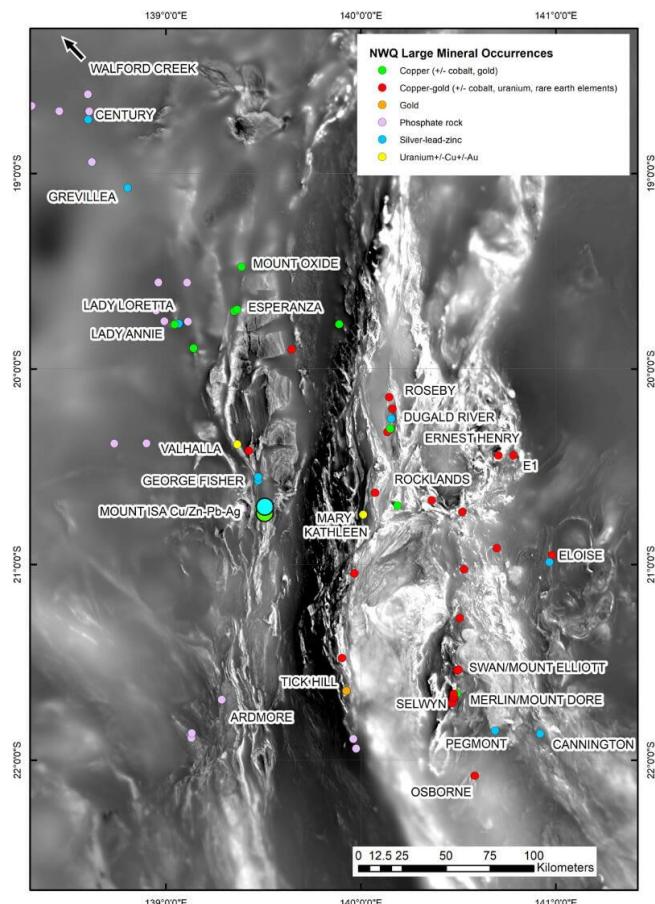
[Chapter 17 - Roseby](#)

[Chapter 18 - Mary Kathleen](#)

[Chapter 19 - Walford Creek](#)

[Chapter 20 - Ardmore](#)

[Chapter 21 - Valhalla](#)



Useful Links to Data

https://www.dnrm.qld.gov.au/_data/assets/pdf_file/0004/366844/qspatial-links.pdf

Australia Wide Data Portals

Other sources of data

[Geoscience Australia Portal \(ga.gov.au\)](#) for geophysical datasets

[Auscope Discovery Portal](#)

[AUSGIN Geoscience Portal](#) from [AUSGIN - Australian Geoscience Information Network](#)