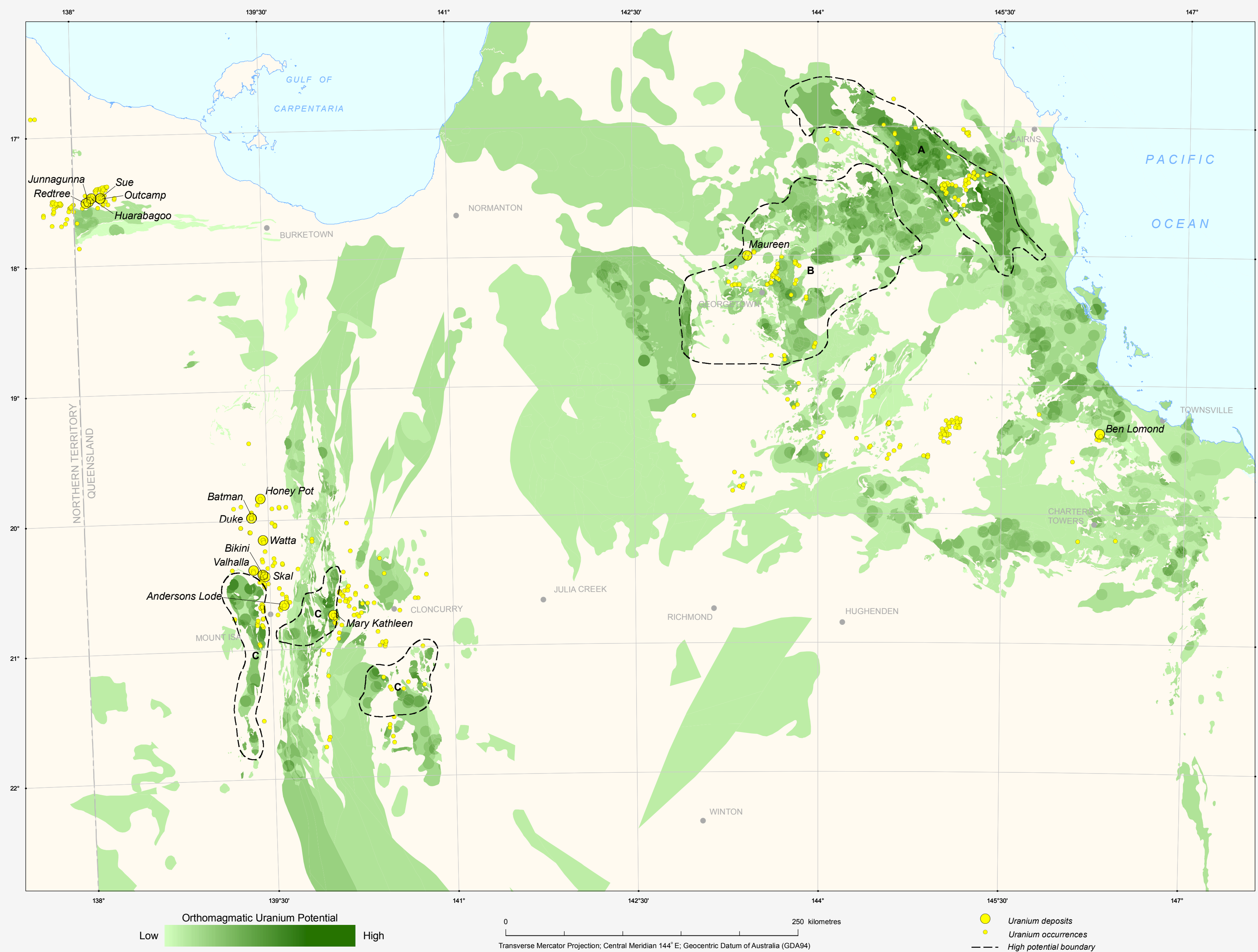
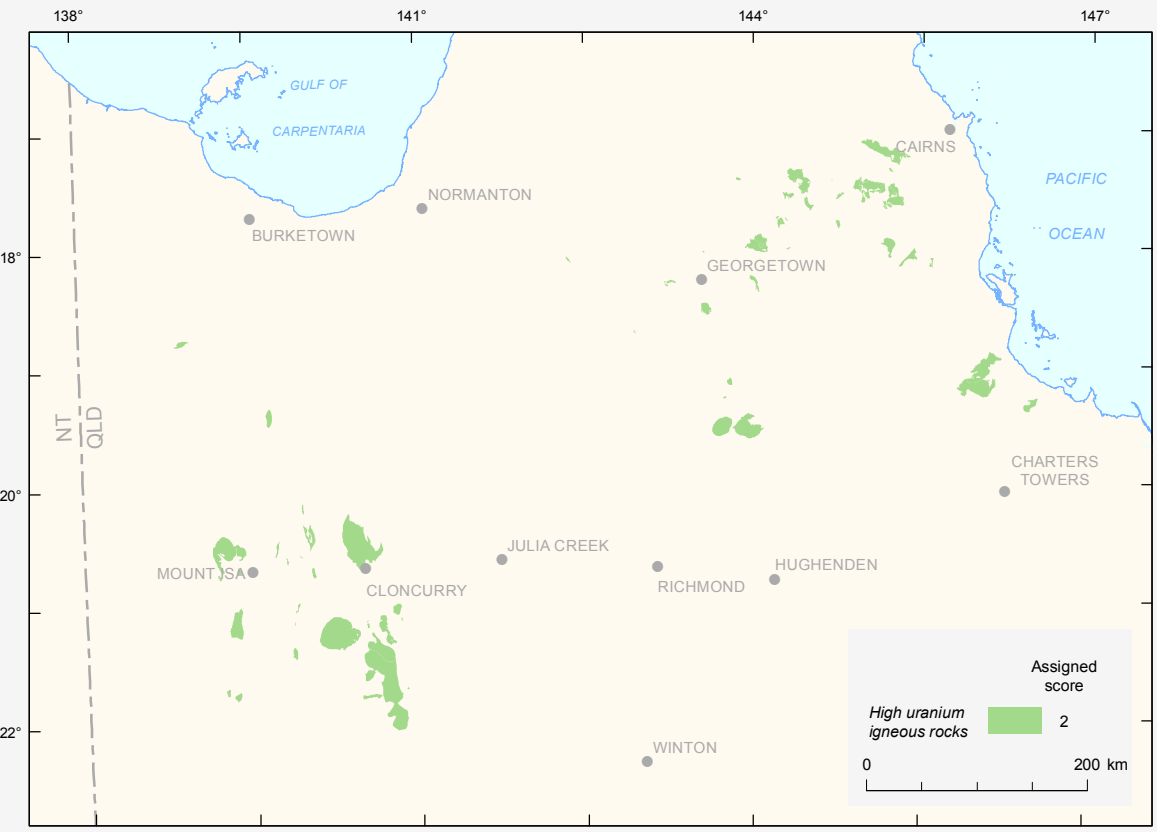


NORTH QUEENSLAND ENERGY SYSTEMS ASSESSMENT

ORTHOMAGMATIC POTENTIAL

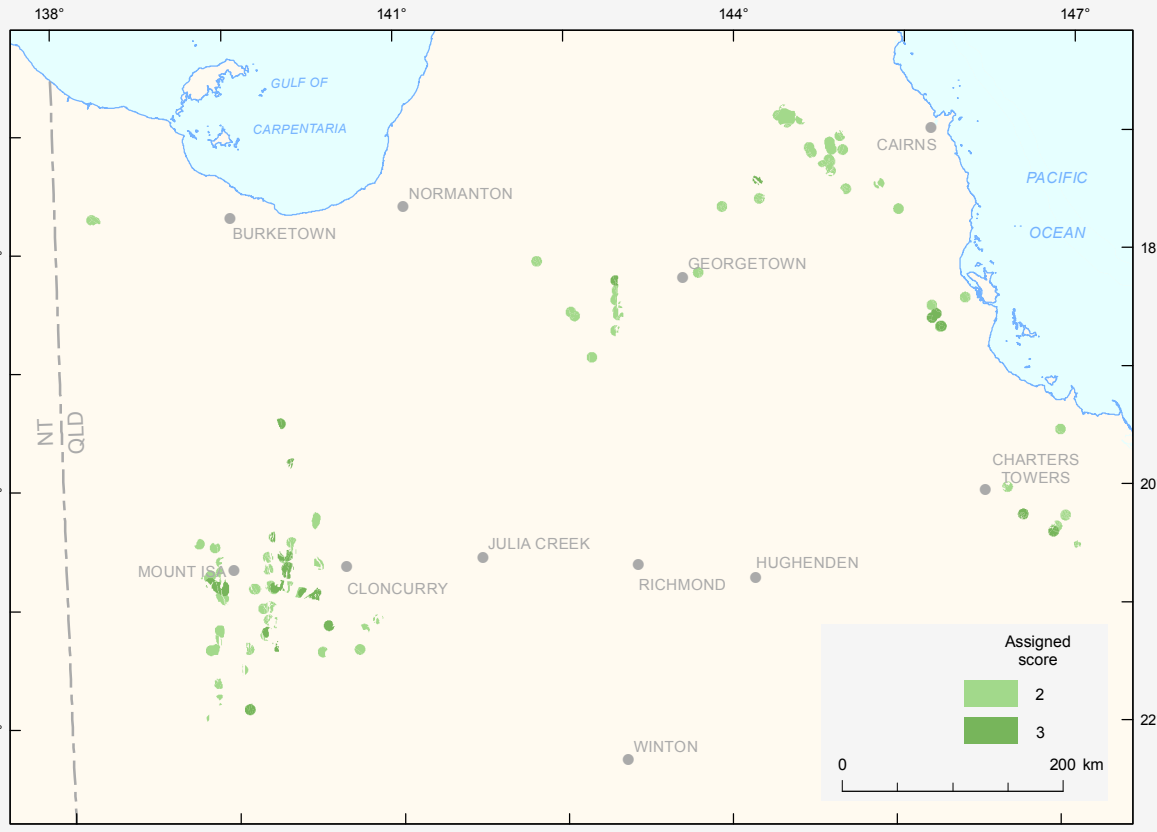


High uranium igneous rocks



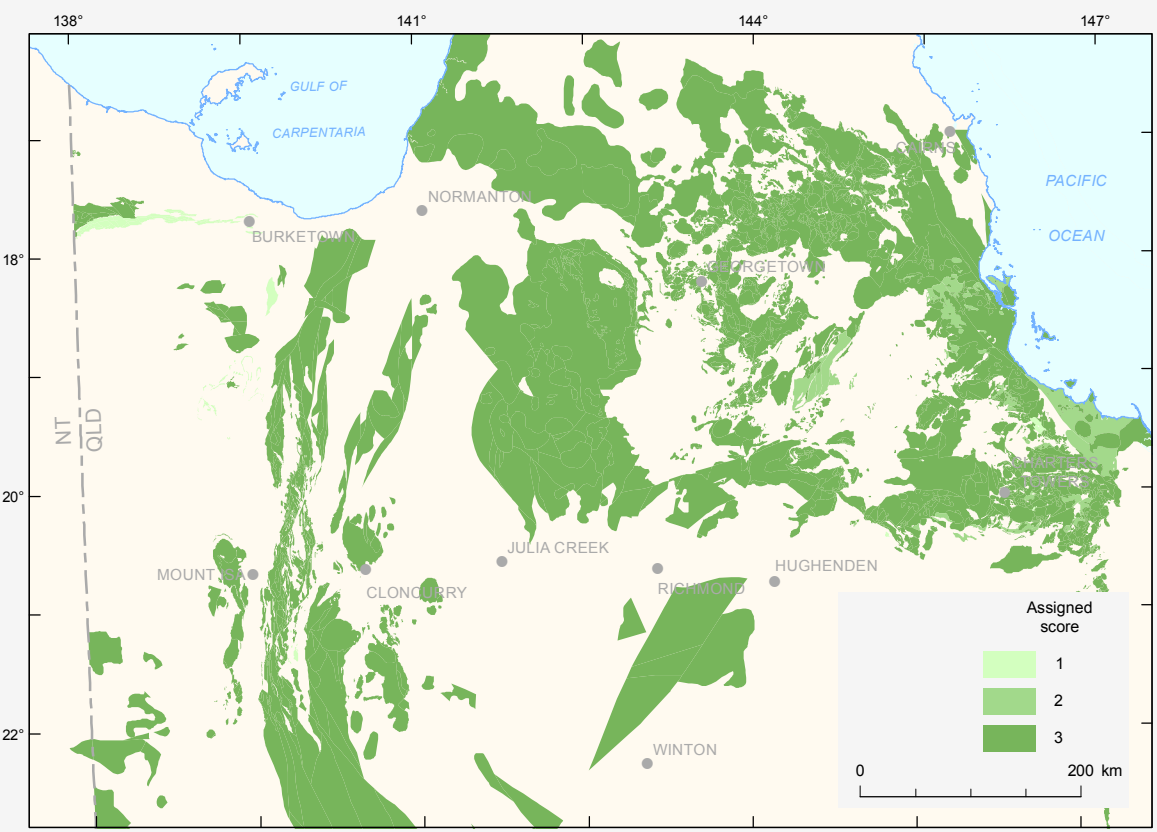
Igneous units extracted from solid geology which have an average uranium content of greater than 10 ppm (calculated from geochemistry).

High temperature melts



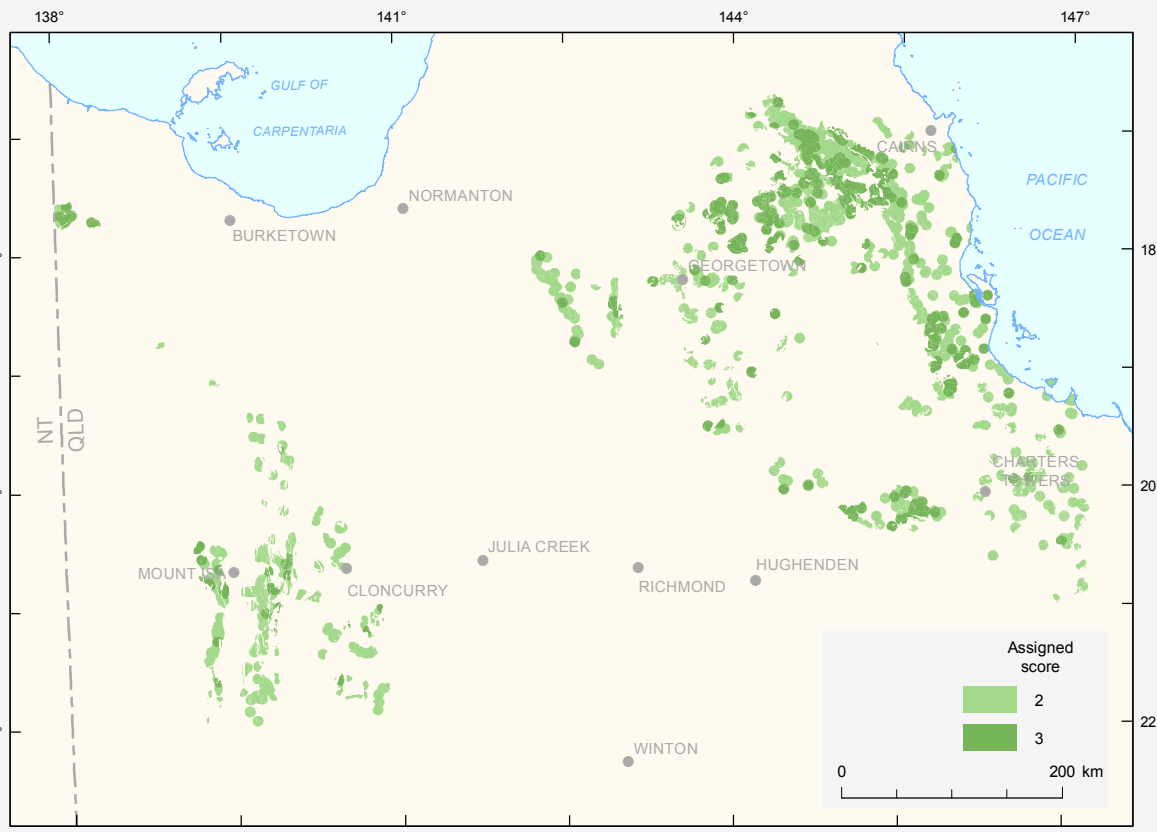
Melt temperature is determined by calculating the zircon saturation temperature. Temperatures between 850 and 900°C are assigned a score of 2, while those with temperatures >900°C are assigned a score of 3. The zircon saturation temperature is calculated on point geochemical data and is buffered to 5 km.

Felsic igneous distribution



Felsic igneous rocks extracted from solid geology. Mafic to felsic compositions are assigned a score of 1, intermediate to felsic compositions are assigned a score of 2, and purely felsic compositions are assigned a score of 3.

Highly fractionated



Fractionated igneous rocks. The degree of fractionation is determined on point geochemical data from the Rb/Sr ratio. A score of 2 indicates fractionated rocks (Rb/Sr between 1 and 10), while a score of 3 is assigned to samples which are highly fractionated (Rb/Sr > 10). A 5 km buffer is applied to the point data.

MAP LOCALITY



Compiled by A. Schofield, Geoscience Australia
Data analysis by A. Schofield and D.P. Connolly
Cartography by D.P. Connolly
Produced by GIS Services Group, Onshore Energy and Minerals,
Geoscience Australia using ESRI ArcGIS 9.3 software

This map forms part of Geoscience Australia's Onshore Energy Security Program

It is recommended that this map be referred to as:
Schofield A., Connolly D.P., 2010.
Orthomagmatic Potential. In: Huston D.L. (editor), 2010.
North Queensland, Energy Assessment.
Geoscience Australia, Canberra, GA Record, in prep.

© Commonwealth of Australia (Geoscience Australia) 2010.
This material is released under the Creative Commons Attribution 2.5 Australia Licence

This work is copyright. Apart from any fair dealings for the purpose of study, research, criticism, or review, as permitted under the Copyright Act 1968, no part may be reproduced by any process without written permission. Copyright is the responsibility of the Chief Executive Officer, Geoscience Australia. Requests and enquiries should be directed to the Chief Executive Officer, Geoscience Australia, GPO Box 378 Canberra ACT 2601

Geoscience Australia has tried to make the information in this product as accurate as possible. However, it does not guarantee that the information is totally accurate or complete. THEREFORE YOU SHOULD NOT RELY SOLELY ON THIS INFORMATION WHEN MAKING A COMMERCIAL DECISION

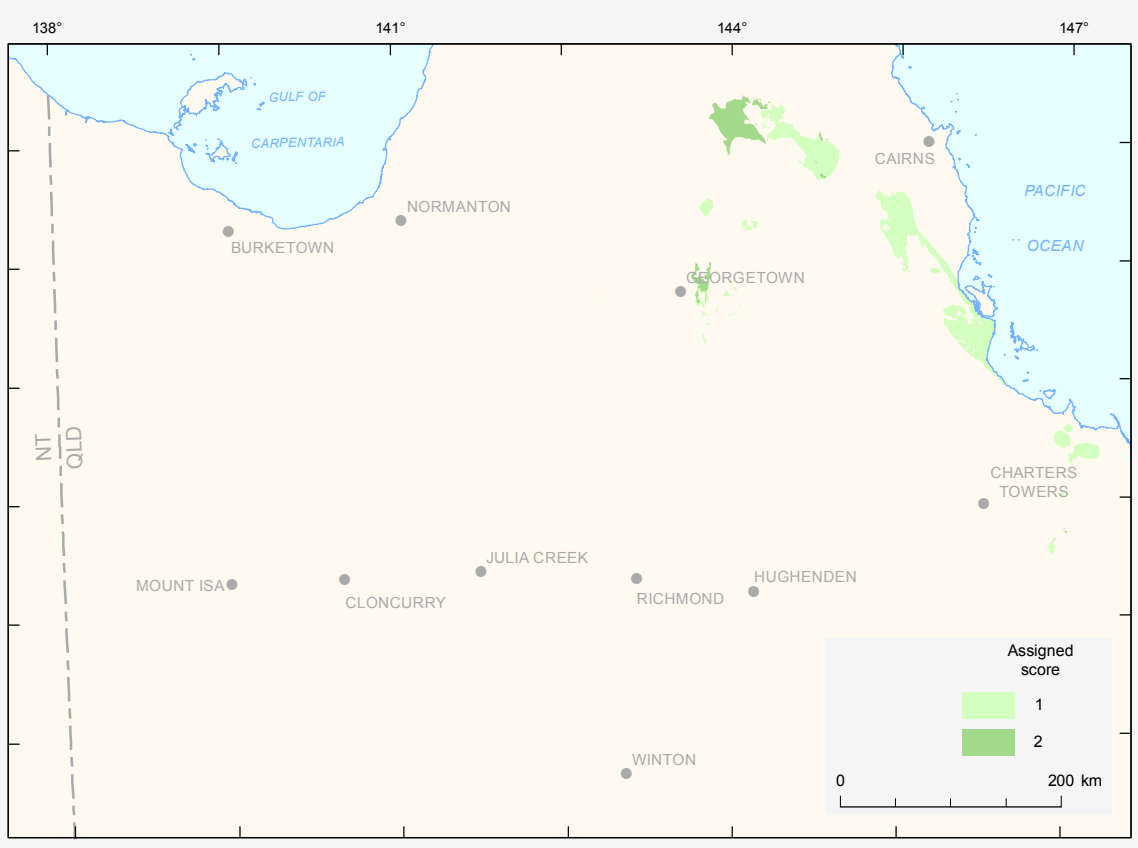
Published by Geoscience Australia, Department of Resources, Energy and Tourism, Canberra, Australia. Issued under the authority of the Minister for Resources, Energy and Tourism

Copies of the GA Record containing this map can be downloaded from the Geoscience Australia internet site at: <http://www.ga.gov.au> or by contacting:

Sales Centre, Geoscience Australia
GPO Box 378
Canberra ACT 2601
Phone (02) 6249 9966, Facsimile (02) 6249 9960
Email: sales@ga.gov.au

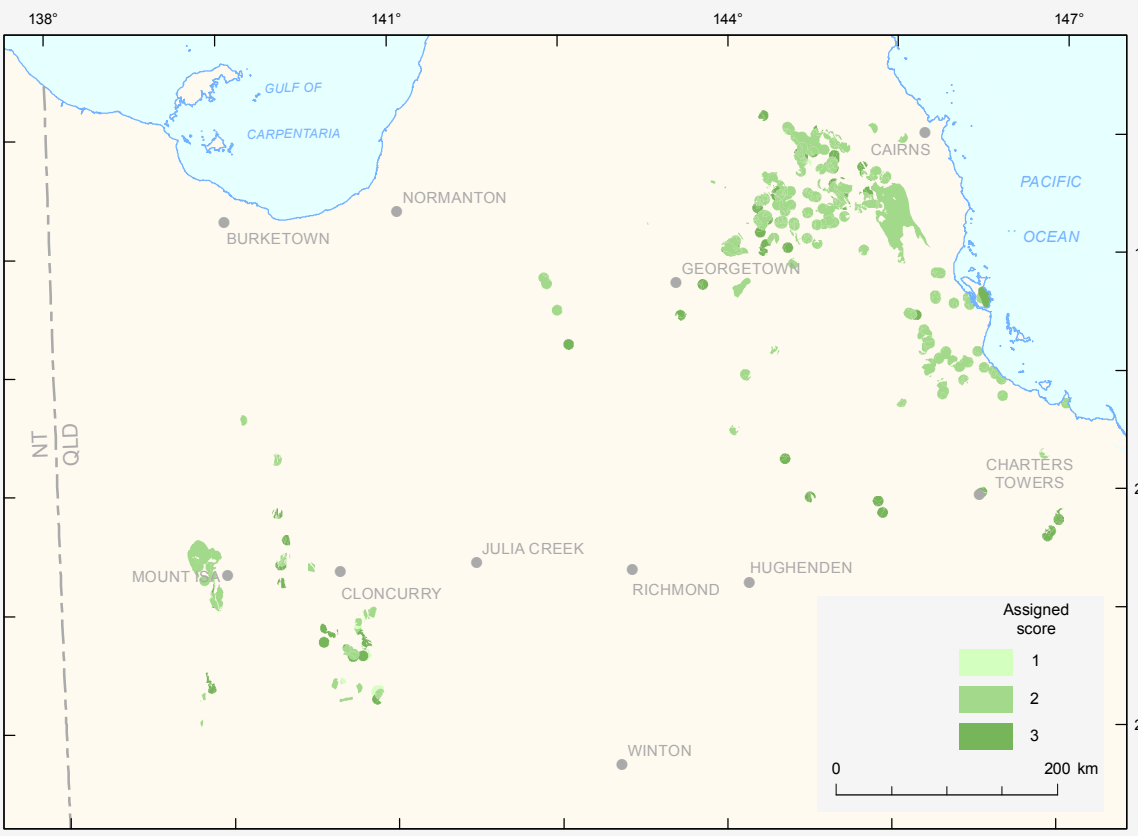


A-type compositions



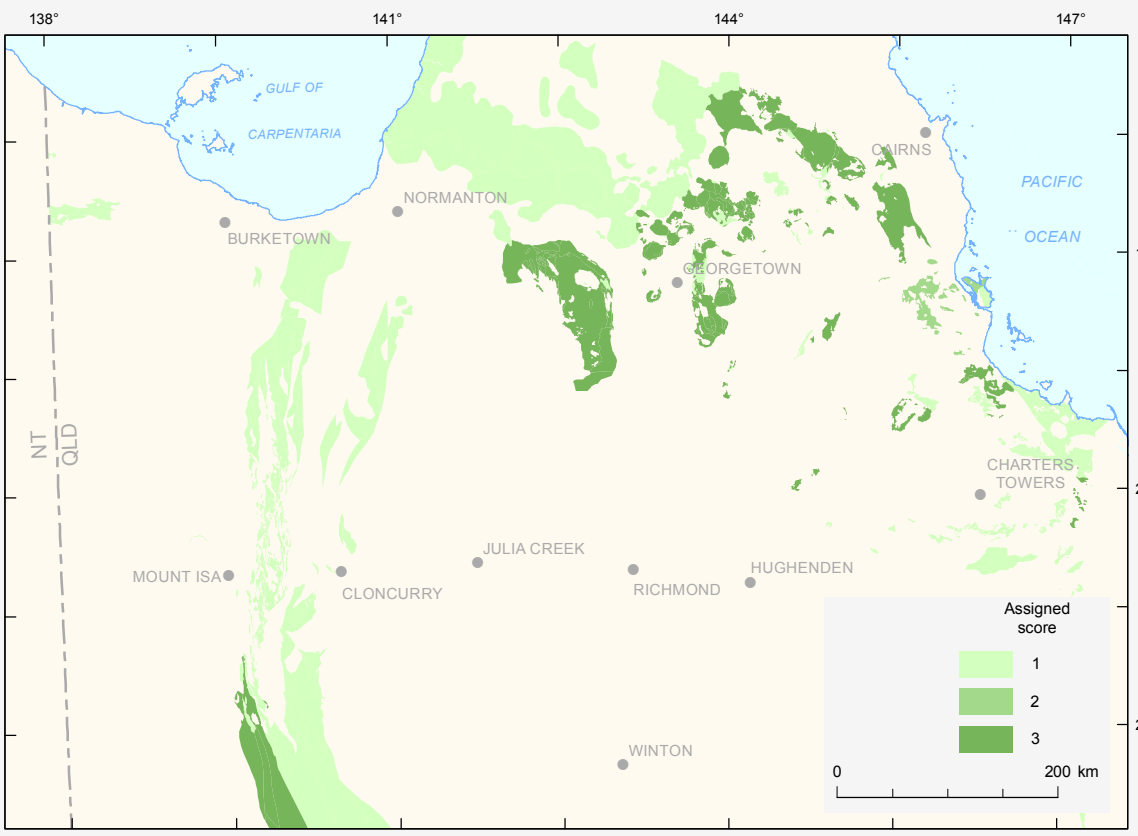
Units with an A-type affinity extracted from solid geology. Units with an A-type description are assigned a score of 2, while units which intersect a geochemical point with an A-type description are assigned a score of 1.

High uranium solubility



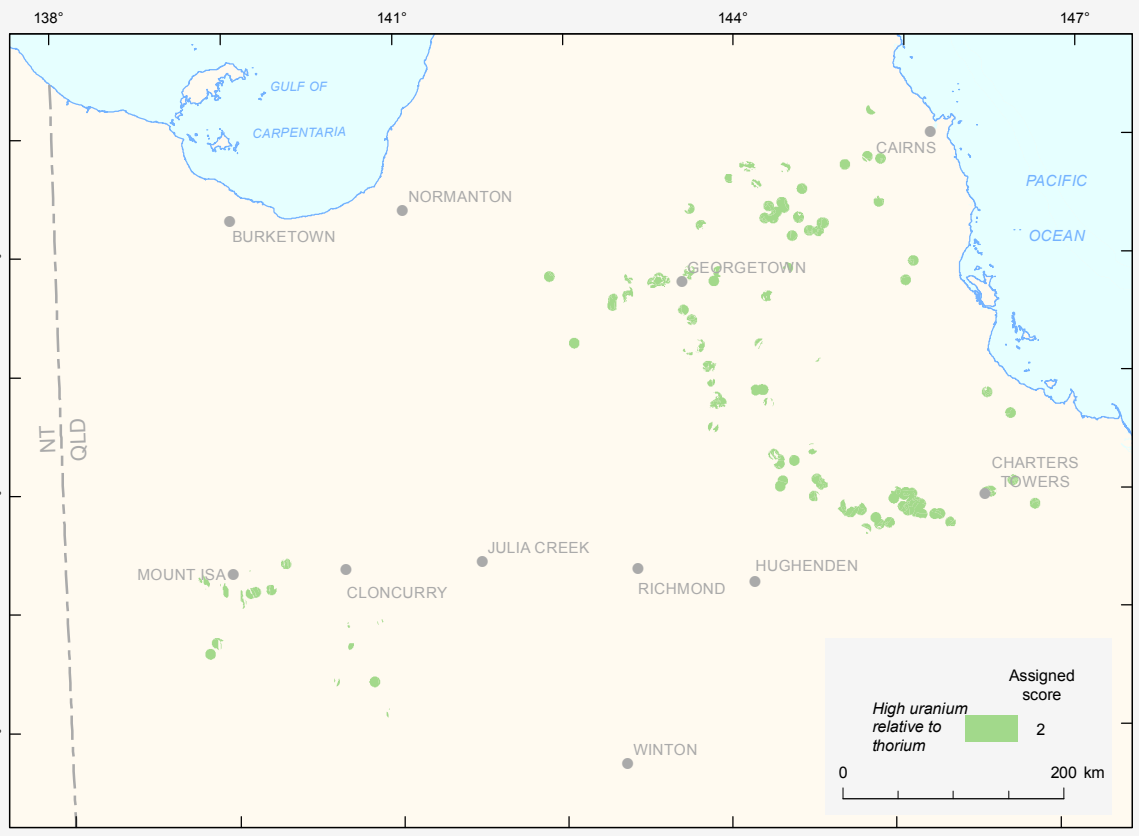
Geochemical data points with high uranium solubility indicated by high fluorine or chlorine. Chlorine content between 500 and 1000 ppm is assigned a score of 1, Fluorine content of 1000 to 3000 ppm or chlorine content >1000 ppm is assigned a score of 2, and fluorine content exceeding 3000 ppm is assigned a score of 3. Also shown are peralkaline solid geology units. Peralkaline units are assigned a score of 3, and units intersecting a geochemical data point with calculated Na/K/Al=1 are assigned a score of 2. All values have a 5 km buffer applied.

High-level intrusives and leachable lithologies



High-level intrusives and units which are easily leachable. High-level intrusive units are assigned a score of 1. Units with a high potential (gmmbrite) for leaching are assigned a score of 2. Units with a very high potential (glassy) for leaching are assigned a score of 3.

Enrichment of uranium relative to thorium



Geochemical point data with a calculated Th/U ratio of less than 2 assigned a score of 2 and a buffer of 5 km has been applied.