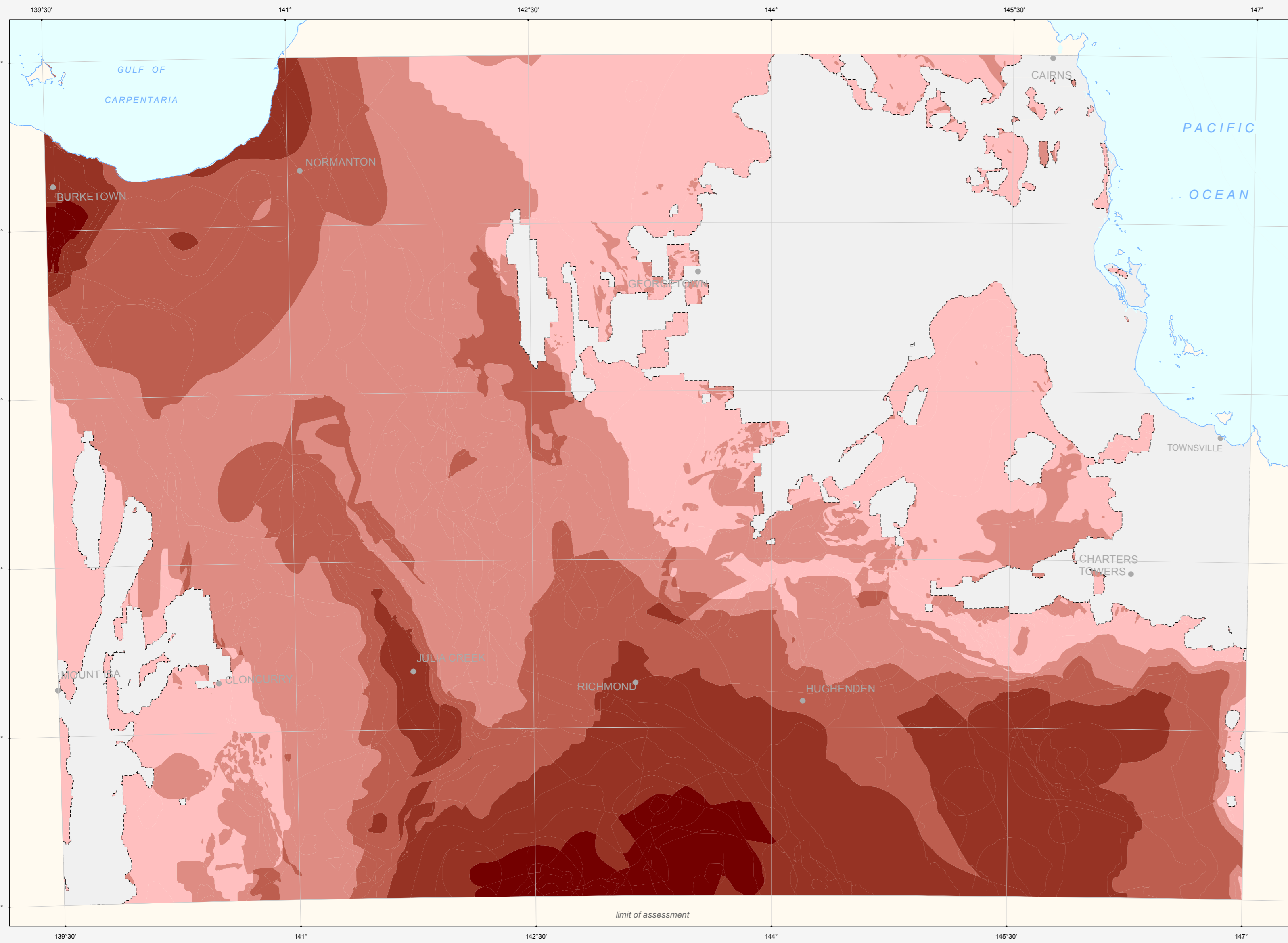


NORTH QUEENSLAND ENERGY SYSTEMS ASSESSMENT HOT SEDIMENTARY AQUIFER POTENTIAL

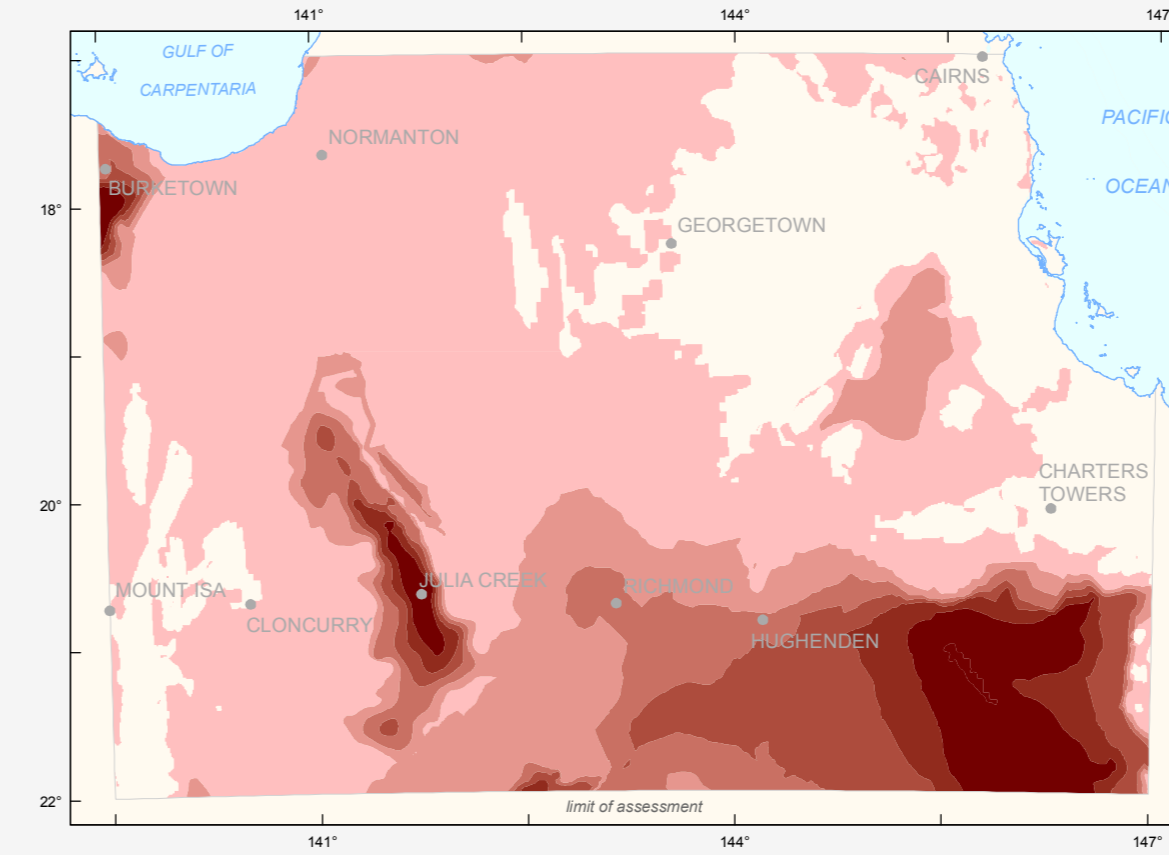


Hot Sedimentary Aquifer Potential
Low High

Potential for hot sedimentary aquifer (HSA) geothermal resources based on weighted summation of input datasets (shown in insets). Areas of zero sediment thickness (basement exposed at surface) have been excluded from the overall assessment of HSA potential as by definition pure HSA systems must be sediment hosted. White frame delineates the spatial extent of the area assessed. See text (Huston, 2010) for more information and references.

0 200 kilometres
Transverse Mercator Projection: Central Meridian 144° E; Geocentric Datum of Australia (GDA94)
Zero sediment thickness

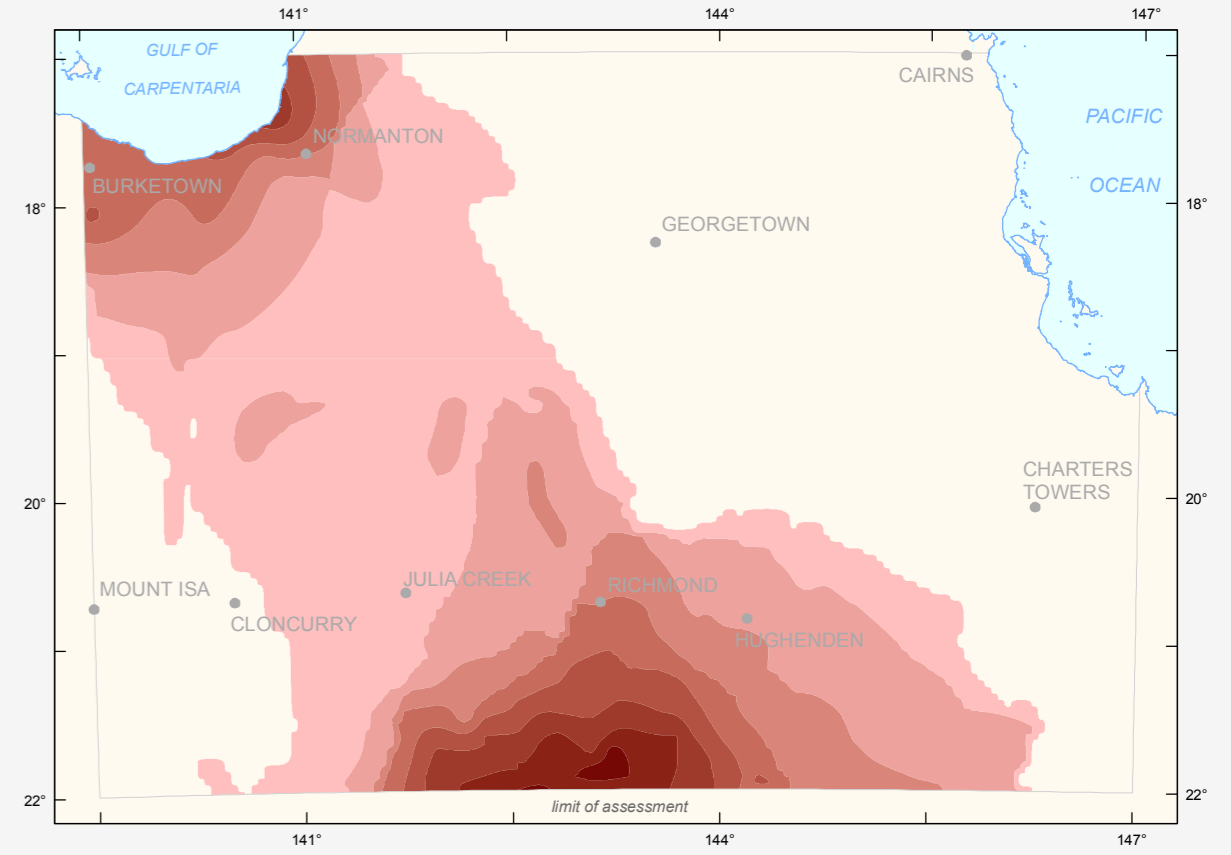
Modelled total sediment thickness



Total thickness of sedimentary basins estimated from drill hole data, potential field geophysical data, seismic data and the SEEBASE dataset.

Sediment thickness (km)	Assigned score
<1	1
1-2	2
2-3	3
3-4	4
4-5	5
>5	6

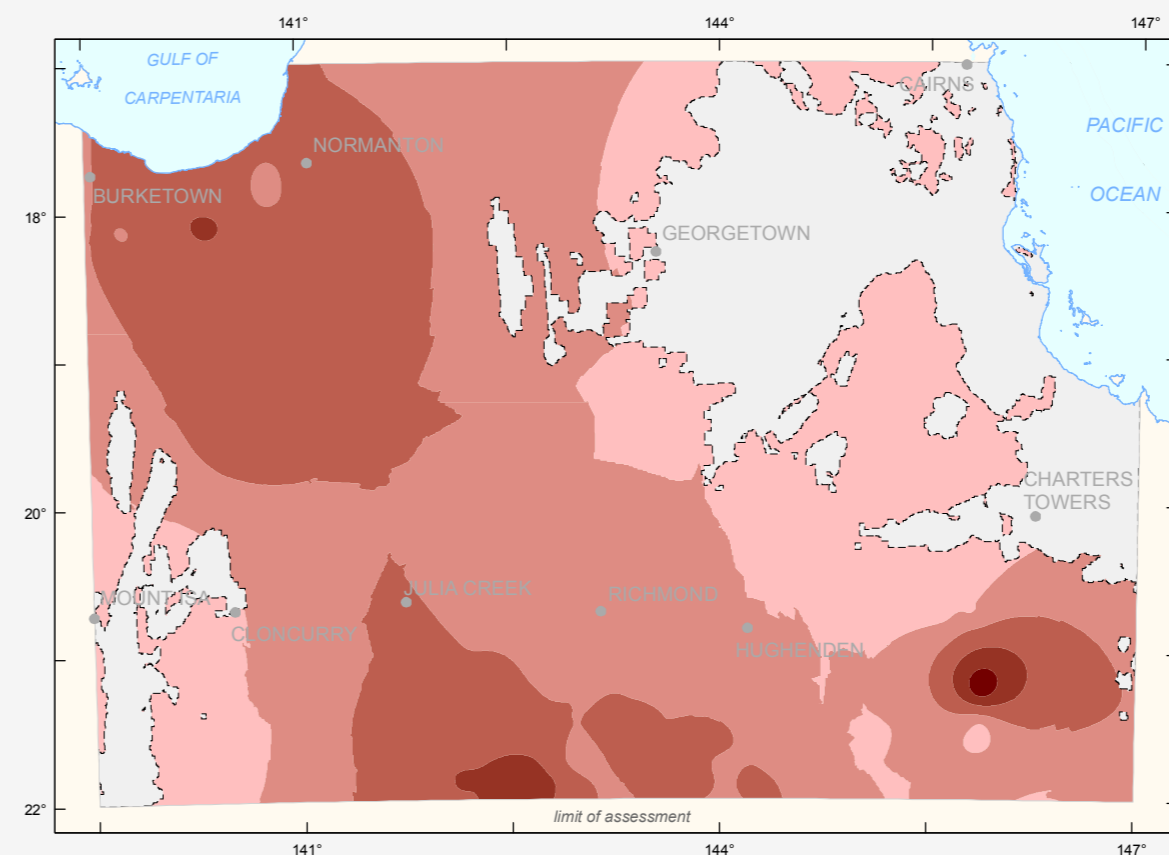
Modelled total aquifer thickness



Total aquifer thickness estimated from drill hole data in GABLOG dataset.

Aquifer thickness (m)	Assigned score
<100	1
100-200	2
200-300	3
300-400	4
400-500	5
500-600	6
600-700	7
>700	8

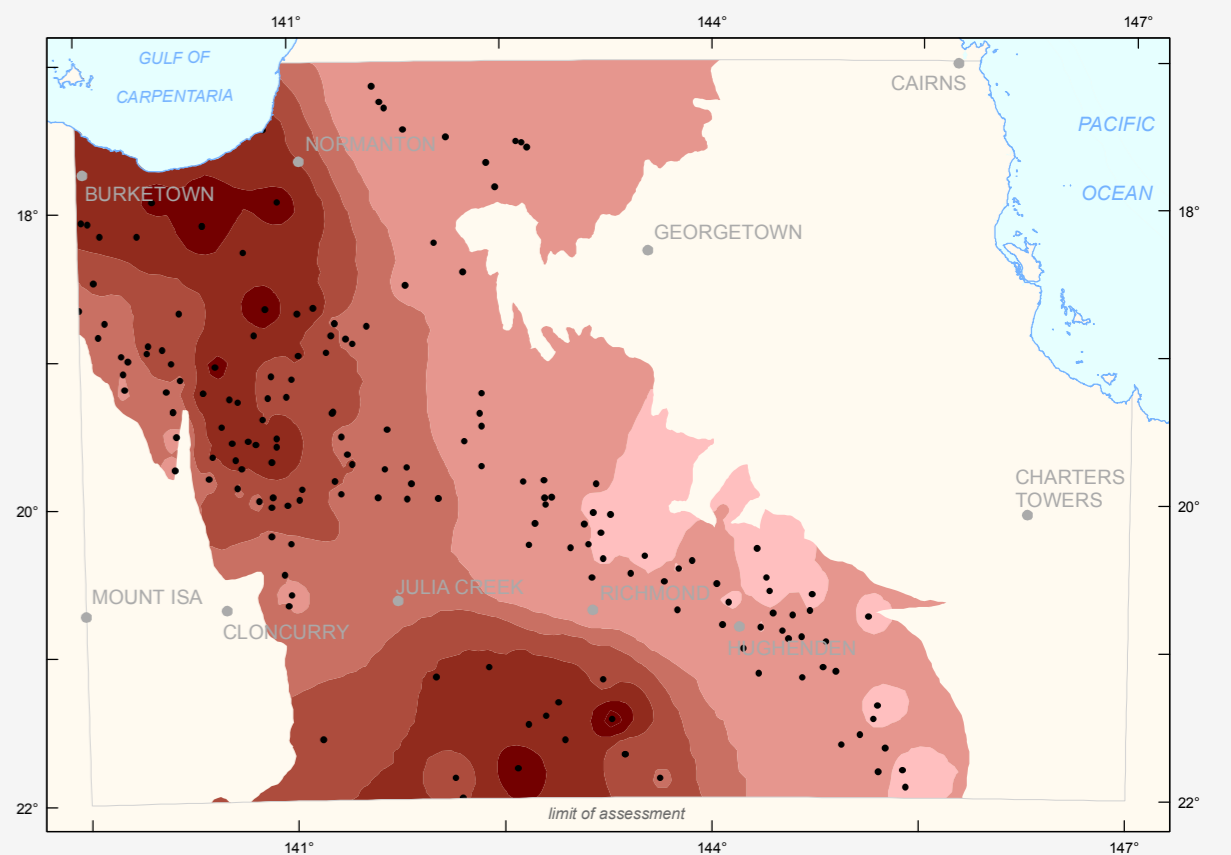
Predicted temperature at 5 km



Predicted temperature at 5 km using AUSTHERM07 database. Grey polygon denotes area of zero sediment thickness. This map has been partially derived from proprietary information owned by Earth Energy Pty Ltd ACN 078 964 735.

Temperature (°C)	Assigned score
140-154	1
154-168	2
168-182	3
182-196	4
196-210	5

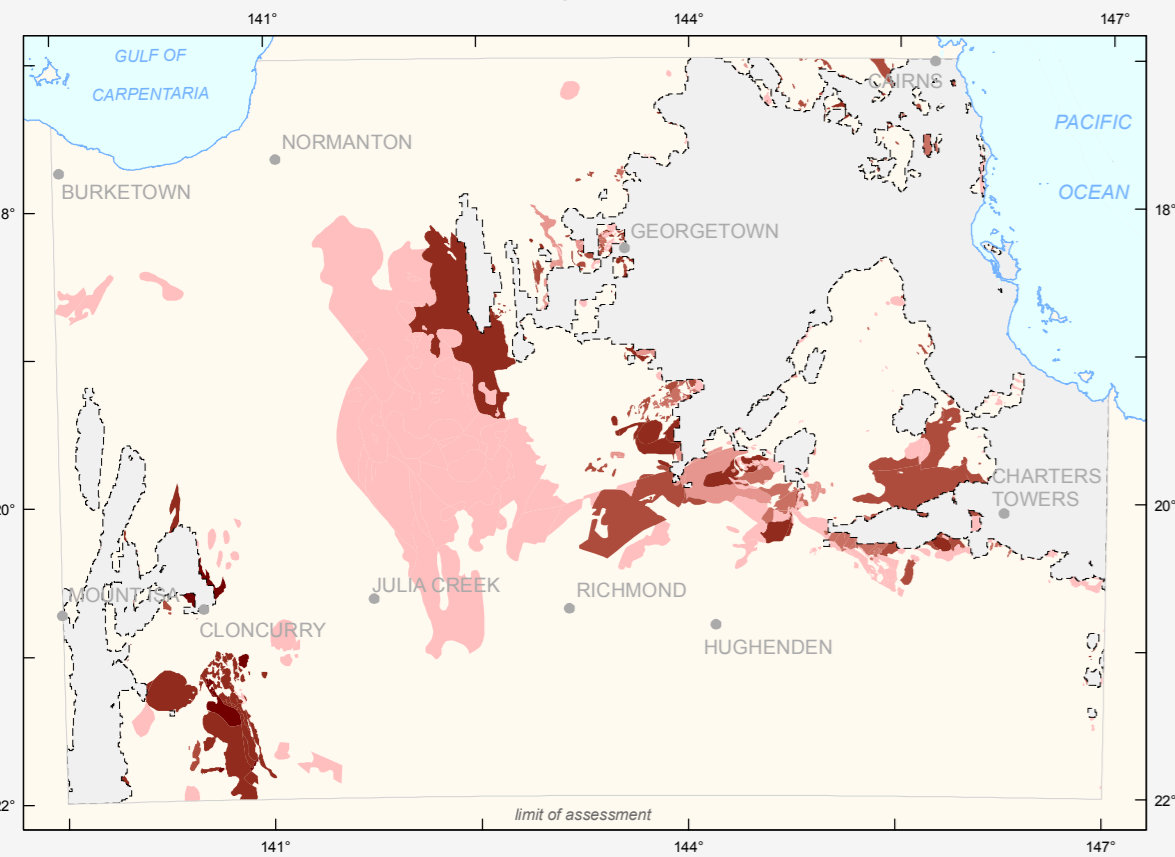
GAB downhole water temperatures



Water temperatures predicted from GAB downhole data. Data has been interpolated and then contours were derived at 10°C intervals.

Temperature (°C)	Assigned score
<40	1
40-50	2
50-60	3
60-70	4
70-80	5
>80	6

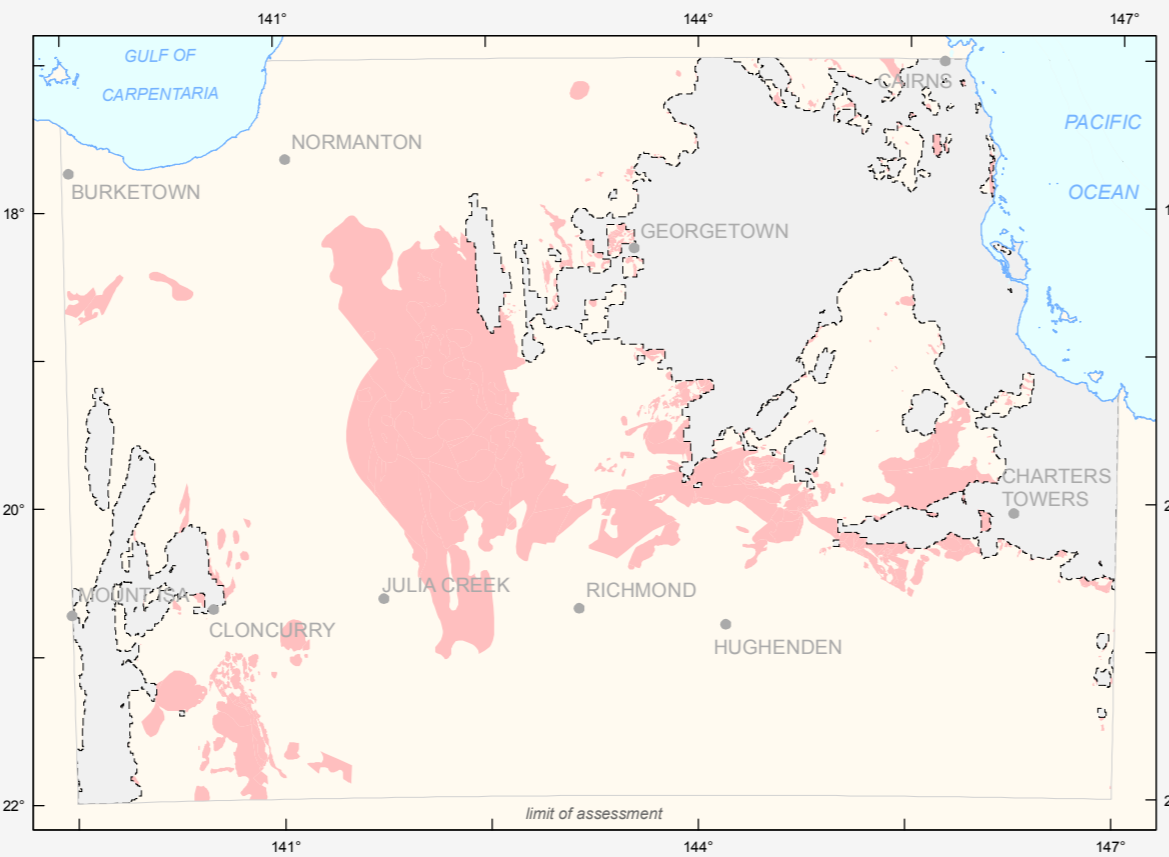
Calculated heat generation potential



Heat generation values calculated using OZCHEM data and attributed to the felsic intrusive units. Grey polygon denotes area of zero sediment thickness.

μW/m ²	Assigned score
140-154	1
154-168	2
168-182	3
182-196	4
196-210	5

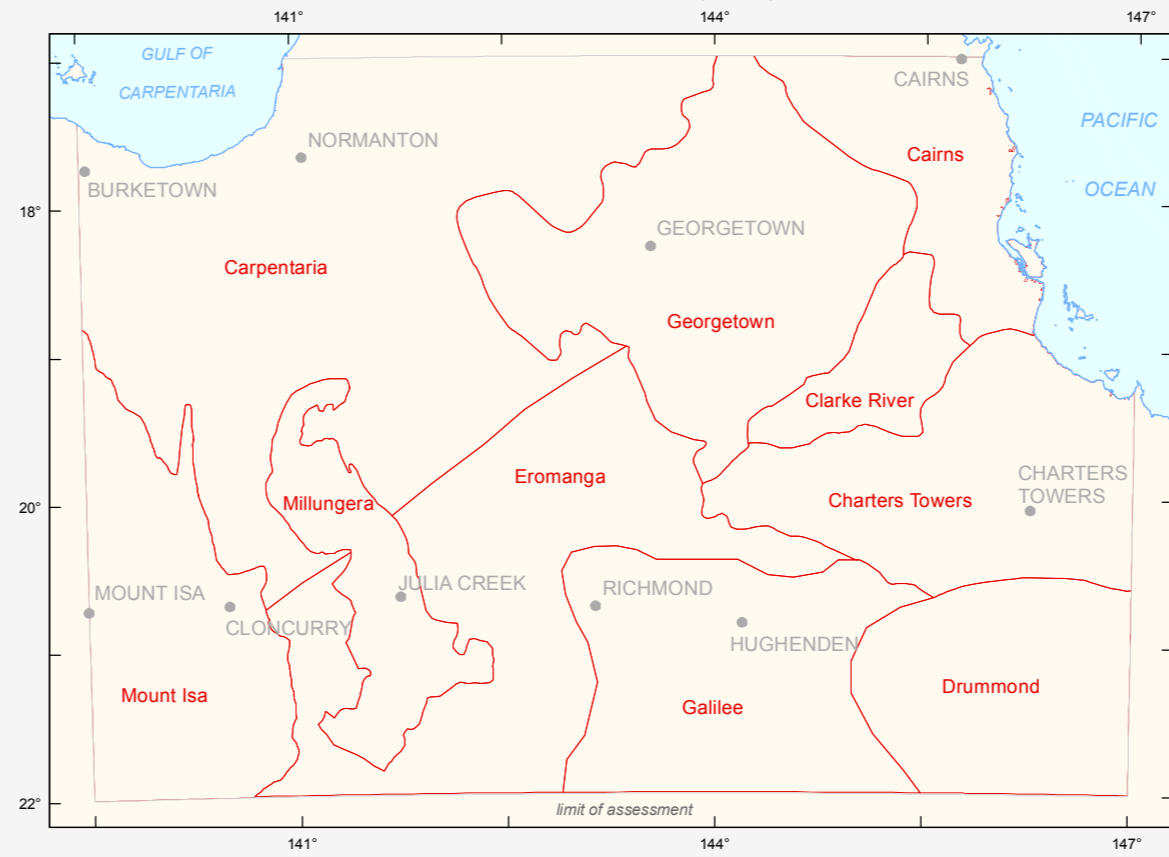
Distribution of felsic intrusive rocks



Distribution of felsic intrusive rocks based on North Queensland solid geology map. Grey polygon denotes area of zero sediment thickness.

Zero sediment thickness Felsic intrusives

Thermal conductivity regions



Broad geological regions defined for calculation of thermal resistance. Each region was assigned thermal conductivity values on the basis of lithology. The boundaries are based on geological provinces. (Bain and Draper, 1997).

Thermal conductivity region boundary

MAP LOCALITY



It is recommended that this map be referred to as:
Ayling B.F., Lewis B.C., Connolly D.P., 2010.
Hot Sedimentary Aquifer Potential. In: Huston D.L. (editor), 2010.
North Queensland, Energy Assessment. Geoscience Australia,
Canberra, GA Record, in prep.

Bain, J.H.C. and Draper, J.J. (eds) 1997. North Queensland Geology. Bulletin of the Australian Geological Survey Organisation 240, and Queensland Department of Mines and Energy Geology 9, 600pp.

© 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

Compiled by B.F. Ayling and B.C. Lewis, Geoscience Australia
Data analysis by B.F. Ayling, B.C. Lewis and D.P. Connolly
Cartography by D.P. Connolly
Produced by GIS Services Group, Onshore Energy and Minerals Division, Geoscience Australia using ESRI ArcGIS 9.3 software

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



NORTH QUEENSLAND ENERGY SYSTEMS ASSESSMENT

HOT SEDIMENTARY AQUIFER POTENTIAL

MAY 2010

PLATE 9