



# Hydraulic connectivity across the base of the Great Artesian Basin

## METADATA

RANSLEY, T., FEITZ, A., RADKE, B., OWENS, R., RANSOM, G., BELL, J., STEWART, G.





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The data referred to in this document can be obtained from Geoscience Australia at [www.ga.gov.au](http://www.ga.gov.au)

Version: 01

# Hydrogeology

## Hydroconnectivity at the base of the Great Artesian Basin

<b>Title</b>	Hydroconnectivity at the base of the Great Artesian Basin
<b>Record Id. in GA</b>	Geocat record number: 81685
<b>Abstract</b>	<p>The regional scale hydraulic interconnection across the base of the Great Artesian Basin data categorises the hydraulic nature of the base the GAB, through properties of rocks in direct contact below and above the base of the GAB. It indicates areas of potential connectivity between aquifers in older basins and the aquifers in the GAB sequence.</p> <p>There are two data layers described as;</p> <p>A: Hydrogeological basement units in contact with the base of the Great Artesian Basin - representing a regional interpretation of basement stratigraphic units as hydrostratigraphic units, in contact with the base of the Jurassic-Cretaceous sequence of the GAB</p> <p>B: Base Great Artesian Basin hydrogeological units directly overlying hydrogeological basement - representing a regional interpretation of the of the Jurassic-Cretaceous stratigraphic units at the base of the GAB, as hydrostratigraphic units.</p> <p>Both represent coverages of hydraulic character, with qualitative categories from Aquiclude, through Tight Aquitard, Leaky Aquitard, to Partial Aquifer and Aquifer.</p> <p>This dataset and associated metadata can be obtained from <a href="http://www.ga.gov.au">www.ga.gov.au</a>, using catalogue number 81685.</p> <p>REFERENCES:</p> <p>Ransley, T., Radke, B., Feitz, A., Kellett, J., Owens, R., Bell, J. and Stewart, G., 2014. <i>Hydrogeological Atlas the Great Artesian Basin</i>. Geoscience Australia. Canberra. [available from <a href="http://www.ga.gov.au">www.ga.gov.au</a> using catalogue number 79790]</p> <p>Stewart, A.J., Raymond, O.L., Totterdell, J.M., Zhang, W. &amp; Gallagher, R., 2013. Australian Geological Provinces, 2013.01 edition. 2013.01 ed. Scale 1:2500000. Geoscience Australia, Canberra, Australia.</p>
<b>Lineage</b>	<p>SOURCE DATA:</p> <p>Data was obtained from a variety of sources, as listed below:</p> <ol style="list-style-type: none"><li>1. Ransley TR and Smerdon BD (eds) (2012) Hydrostratigraphy, hydrogeology and system conceptualisation of the Great Artesian Basin. A technical report to the Australian Government from the CSIRO Great Artesian Basin Water Resource Assessment. CSIRO Water for a Healthy Country Flagship, Australia.</li><li>2. Stewart, A.J., Raymond, O.L., Totterdell, J.M., Zhang, W. &amp; Gallagher, R., 2013. Australian Geological Provinces, 2013.01 edition. 2013.01 ed. Scale 1:2500000. Geoscience Australia, Canberra, Australia.</li><li>3. Unpublished Arkaringa and Pedirka basin boundary data supplied by South Australian Department of Environment, Water and Natural Resources (Pers. Comm. Daniel Wohling 2014)</li></ol> <p>METHOD:</p>

	<p>Data layer 'A' (Hydrogeological basement units in contact with the base of the Great Artesian Basin) is modified from Ransley &amp; Smerdon (2012), Figure 5.8 (12-6563-45), using data from Stewart et.al (2013) and unpublished, revised Arkaringa and Pedirka basin boundaries, supplied by the South Australian Department of Environment, Water and Natural Resources.</p> <p>Polygons representing basement units in contact with base of the Great Artesian Basin. Compiled and used in conjunction with Polygons of Great Artesian Basin units directly overlying hydrogeological basement to represent the hydraulic interconnection between the Great Artesian Basin and basement units.</p> <p>Data Layer 'B' (Base Great Artesian Basin hydrogeological units directly overlying hydrogeological basement) is a composite dataset derived from the following aquifer and aquitard extent layers in the data sources listed below.</p> <ol style="list-style-type: none"> <li>1. Paleogene-Neogene (Geocat No. 81675)</li> <li>2. Winton-Mackunda (Geocat No. 81676)</li> <li>3. Rolling Downs (Geocat No. 81677)</li> <li>4. Cadna-owie Hooray (Geocat No. 81678)</li> <li>5. Westbourne (Geocat No. 81679)</li> <li>6. Adori-Springbok (Geocat No. 81680)</li> <li>7. Birkhead-Walloon (Geocat No. 81681)</li> <li>8. Hutton (Geocat No. 81682)</li> <li>9. Evergreen-Poolowanna (Geocat No. 81683)</li> <li>10. Precipice (Geocat No. 81684)</li> </ol> <p>The Aquifer and Aquitard extents were combined and the area of contact with the base of the GAB was derived for each formation extent layer;</p> <p>This data set is the Aquifer/Aquitard layers at the bottom of the GAB - those in contact with the underlying basins. This data therefore provides information about the hydrological connectivity between the GAB and the basins beneath. The attribute table has been populated with aquifer properties which can be used to map the distribution. Some of the main Aquifers have been split based on the spatial change in aquifer properties.</p> <p>QAQC: Data has undergone a QAQC verification process in order to capture and repair attribute and geometric errors.</p> <p>SOFTWARE: All modifications/edits and geoprocessing were performed using ESRI ArcGIS 10 software.</p>
<b>Use Limitations</b>	<p>These datasets have been compiled or interpreted from existing and new data sets that vary in scale. They are intended to be used for broad, regional understanding of the basin and are not designed to be used at a local scale. Where existing data sets have been used we have attempted to correct any errors, however errors may remain.</p> <p>It has to be stressed that this generalised basin-wide concept is scale dependant, and may exaggerate the distinction between the superposed aquitards and aquifers. Although this hydrostratigraphy offers more accessible comprehension of the regional hydroarchitecture, the generalisation comes with the inherent dangers of simplification and apparent enhanced contrast of a complex system. For local hydrogeological study, such generalisations may not necessarily survive closer scrutiny.</p>
<b>Extent</b>	
<b>Scale</b>	1:9,000,000
<b>Projection</b>	Lambert conformal conic GDA 1994, with central meridian 134 degrees longitude, standard parallels at -18 and -36 degrees latitude.

