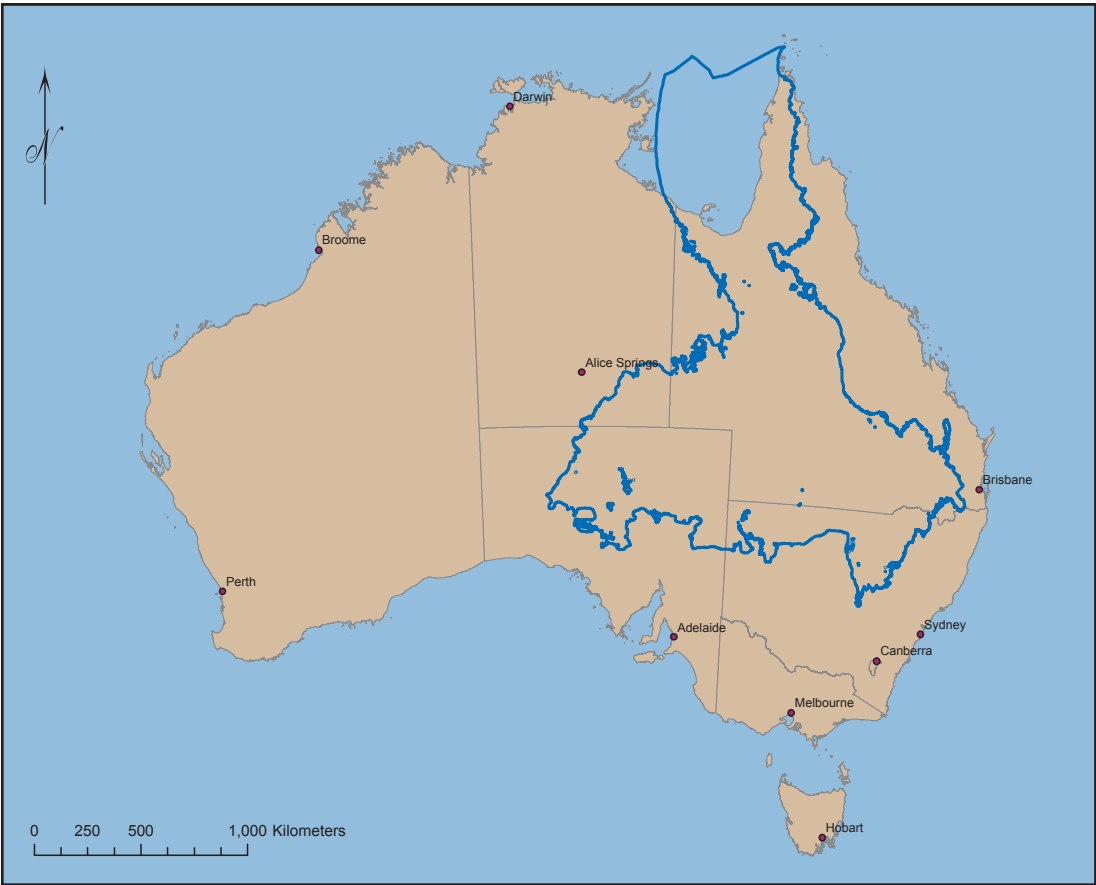


# Great Artesian Basin

## Hydrogeological Composition

The Great Artesian Basin (GAB) is the largest system of fresh water aquifers in Australia. It covers 1.7 million square kilometres and three states and territories: South Australia, Northern Territory, Queensland and New South Wales. The approximately 5000 wells are often the only reliable source of water for communities, stations and companies who operate in the remote parts of Australia. It is comprised of four distinct basins: Eromanga, Carpentaria, Surat and Clarence-Moreton. The Eromanga basin western corner has the deepest point at approximately 3000m. Geosciences Australia and CSIRO along with the relevant State Government Departments have mapped the GAB and separated it into 10 distinct features and descending in depth. The map opposite shows the aquifer locations along with the covering layer, the Paleo-Neogene layer that extends under most of the Gulf of Carpentaria. This layer confines the top of the formations of the aquifers.



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Compiled with data from the Department of Environment and Water South Australia, Geoscience Australia, Natural Earth and the Hydrogeological Atlas of the Great Artesian Basin  
<https://www.naturalearthdata.com/downloads/50m-cultural-vectors/50m-populated-places/>  
[https://d28rz98at9flks.cloudfront.net/79790/79790\\_GAB\\_Atlas.pdf](https://d28rz98at9flks.cloudfront.net/79790/79790_GAB_Atlas.pdf)  
<https://www.ga.gov.au/scientific-topics/water/groundwater/gab/digital-datasets-from-the-gab-atlas>

### Design rational

For our final assignment, I decided to create a map that looked at the Great Artesian Basin (GAB). After investigating what data was available, I decided to base my map on the hydrogeology of the area and the locations of the wells that had been drilled. After obtaining the location data for the wells, I decided to leave them off as it crowded the map too much and I was unable to obtain the data for the rest of the country. I also investigated including the recharge zones but there wasn't enough data to show the recharge area and the approximated internal flow patterns of the aquifers that make up the GAB. I decided to make a general reference map of the GAB following discussions with friends after the media coverage of Adani's Carmichael Mine groundwater approvals. I realised that many people didn't know what it was or how many people relied on the water from it. I included a locator map to give visual reference to the size of the GAB relative to the size of the country along with some basic facts about the GAB.

To create this map, I collected data sets that showed the shape of Australia and the state boundaries, the outline of GAB and the hydrogeological composition of it. I felt that it was important to include the place names on the map so that it was easy for readers to reference where they were looking. I used Lamberts Conformal Conical Projection with GDA94 as this was consistent with the data sourced from Geoscience Australia and the State Government of South Australia. When I came to display the data, it was difficult to find a colour ramp that wasn't visually jarring but also made sense for the data that was being shown. After some further reading on the hydrogeology of the area, I decided to start from the surface and descend using a green to blue colour scheme to create some contrast with the surrounding ocean. After playing around with some other data showing the approximate depth of each of the features, I decided not to include it as the map became difficult to understand. I would have liked to include this data as a cross section of part of the GAB but was unable to create an appropriate 3d model. I also looked at having a terrain model on the surface map but this did not work with the rest of the data that was being shown. By having flat land and ocean areas, the figure of the GAB draws the viewer into investigating this invisible resource.