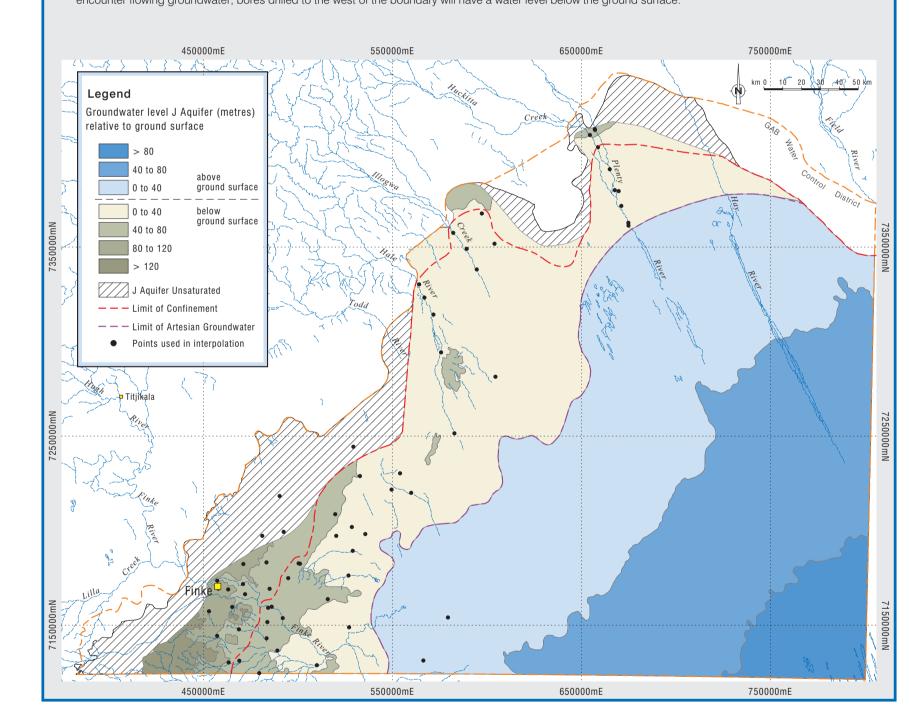
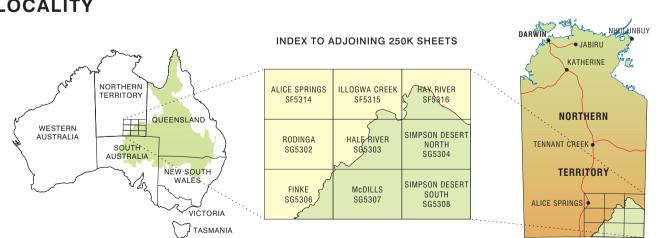
DEPTH TO THE TOP OF J AQUIFER Depth to J Aquifer (metres below ground level) < 50 50 to 100 300 to 500 500 to 1000 1000 to 1500 1500 to 1950 Points used in interpolation

GROUNDWATER LEVEL J AQUIFER This inset represents the groundwater level in the J aquifer relative to ground surface. The black hatch along the northern and western margin of the GAB displays the area where the aquifer is unsaturated or contains no groundwater. Adjacent to this area the aquifer is unconfined and deep groundwater levels are encountered. The depth to water in the southwest corner of the GAB is over 120 metres beneath the surface. Further to the east the J aquifer becomes confined by the Rolling Downs Group and the groundwater is artesian. The water level in an artesian bore is above the land surface and if uncontrolled will flow freely. The purple dashed line shows the approximate location of the artesian limit. Bores drilled into the J aquifer to the east of this line are likely to encounter flowing groundwater, bores drilled to the west of the boundary will have a water level below the ground surface.



MAP LOCALITY



DISCLAIMER

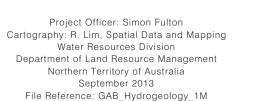
© Northern Territory of Australia

This product and all material forming part of it is copyright belonging to the Northern Territory of Australia. You may use this material for your personal, non-commercial use or use it within your organisation for non-commercial purposes, provided that an appropriate acknowledgement is made and the material is not altered in any way. Subject to the fair dealing provisions of the Copyright Act 1968, you must not make any other use of this product (including copying or reproducing it or part of it in any way) unless you have the written permission of the Northern Territory of Australia to do so.

The Northern Territory of Australia does not warrant that the product or any part of it is correct or complete and will not be liable for any loss damage or injury suffered by any person as a result of its inaccuracy or incompleteness.

> ttribution-NonCommercial-ShareAlike publication is provided under a Creative mons Attribution 3.0 Australia Licence

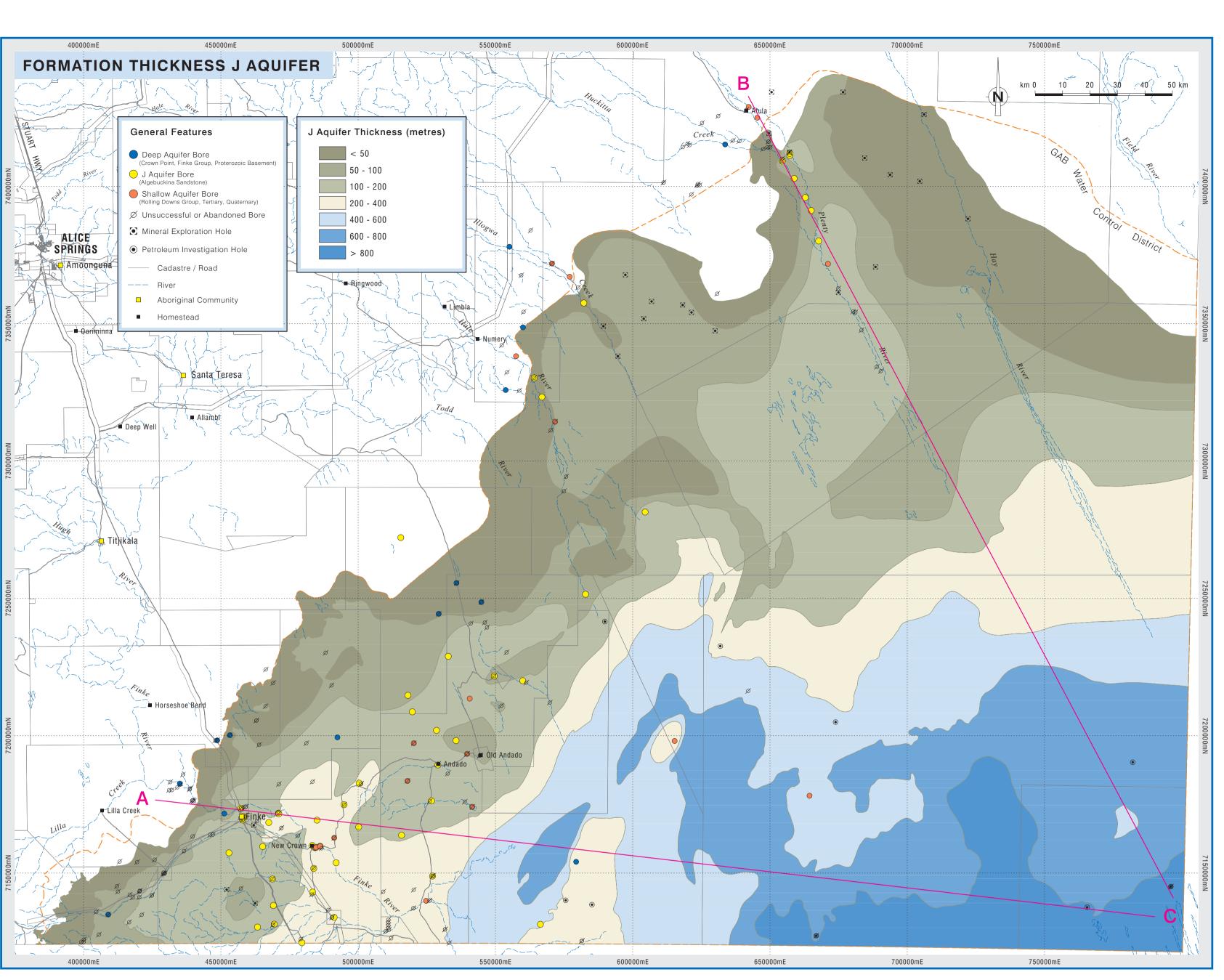
http://creativecommons.org/licenses/by-nc-sa/3.0/au/

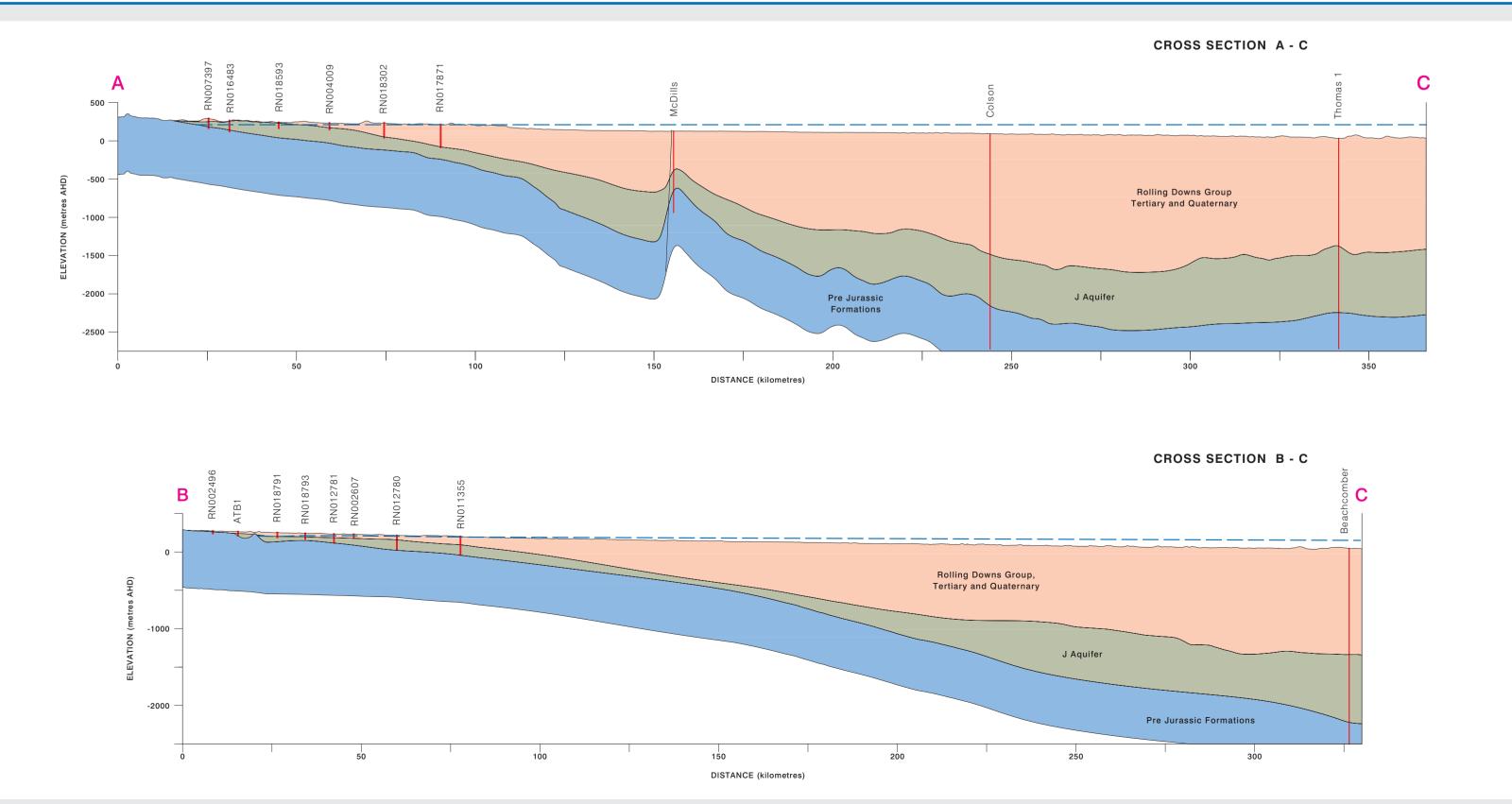


File Reference: GAB_Hydrogeology_1M This map was produced on the Geocentric Datum of Australia 1994 (GDA 94)

Map Grid of Australia (MGA) Zone 53 Universal Transverse Mercator Projection Horizontal Datum GDA 94







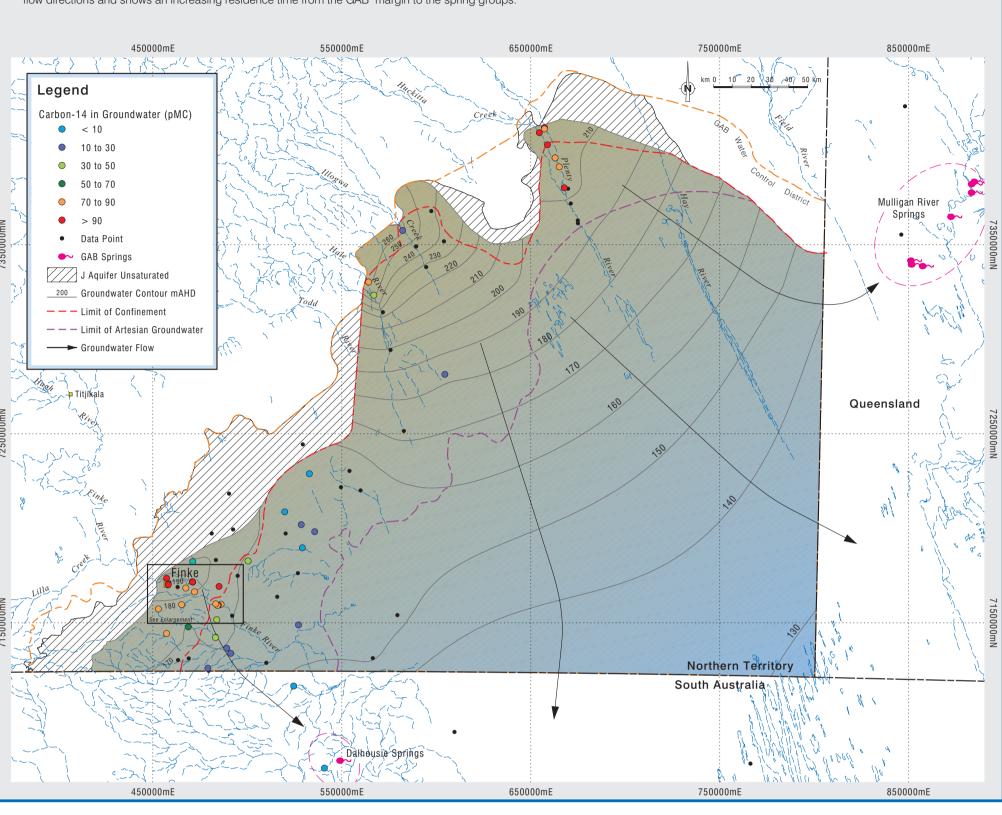
HYDROGEOLOGICAL MAP OF THE NORTHERN TERRITORY GREAT ARTESIAN BASIN

The Great Artesian Basin (GAB) is an extensive Cretaceous to Jurassic aged groundwater system which underlies over a fifth of the Australian continent. Around 5% of this resource is located in the Northern Territory underlying an area of 84,500 square kilometres or 6% of the Northern Territory landmass. Located in the southeast corner of the Northern Territory, the GAB comprises a massive quartz sandstone aquifer (J aquifer) underlying a thick sequence of low permeability mudstone and shale (Rolling Downs Group). The first recorded bore in the J aquifer in the Northern Territory was drilled in 1894 as a water supply for the Charlotte Waters telegraph station. This was followed shortly after in 1898 by the completion of the first flowing well, Anacoora Bore. Over the last 110 years around another 80 bores have been drilled and constructed in the J aquifer in the Northern Territory, the vast majority of these are located along the basin margin and are predominantly used to provide stock and domestic water supply.

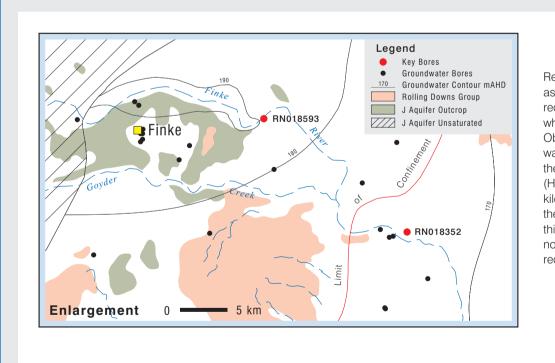
> For further information contact - Water Resources Division, Department of Land Resource Management Goyder Centre, 25 Chung Wah Terrace, Palmerston, Northern Territory of Australia. Phone (08) 8999 4455, email WaterResources.DLRM@nt.gov.au



This inset shows the direction of groundwater flow within the J aquifer. Groundwater enters the aquifer on the margin of the GAB around the Finke and Plenty Rivers. Groundwater flows east and south, discharging in Queensland at the Mulligan River Springs and in South Australia at Dalhousie Springs. The coloured dots show the Carbon-14 concentrations of groundwater in the J aquifer. Carbon-14 is a radionuclide that is commonly used to investigate groundwater residence time in aquifers. The red dots show high Carbon-14 values and modern groundwater while the blue dots represent low Carbon-14 concentrations and suggest groundwater residence times of 10000's years. The distribution of Carbon-14 concentrations supports the groundwater flow directions and shows an increasing residence time from the GAB margin to the spring groups.



RECHARGE AND SURFACE WATER INTERACTION



Recharge to the J aquifer occurs when flooding in ephemeral water courses, such as the Finke River, leads to the infiltration of water directly into the aquifer. This recharge mechanism is restricted to a discrete zone along the edge of the GAB where the surface drainage is in direct connection with outcropping J aquifer. Observation bore RN018593 is located in the Finke River recharge zone - the water level in this bore shows a lagged response to major rainfall events both from the immediate area (New Crown rainfall station) and the greater catchment (Hermannsburg rainfall station located in the headwaters of the catchment 300 kilometres to the northeast). Observation bore RN018352 is located on the edge of the Finke River 20 kilometres to the southeast of observation bore RN018593. In this area the J aquifer is confined, the water level in RN018352 is static and does not show a correlation with the rainfall records indicating the ephemeral river recharge mechanism is not operating along this section of the Finke River.



