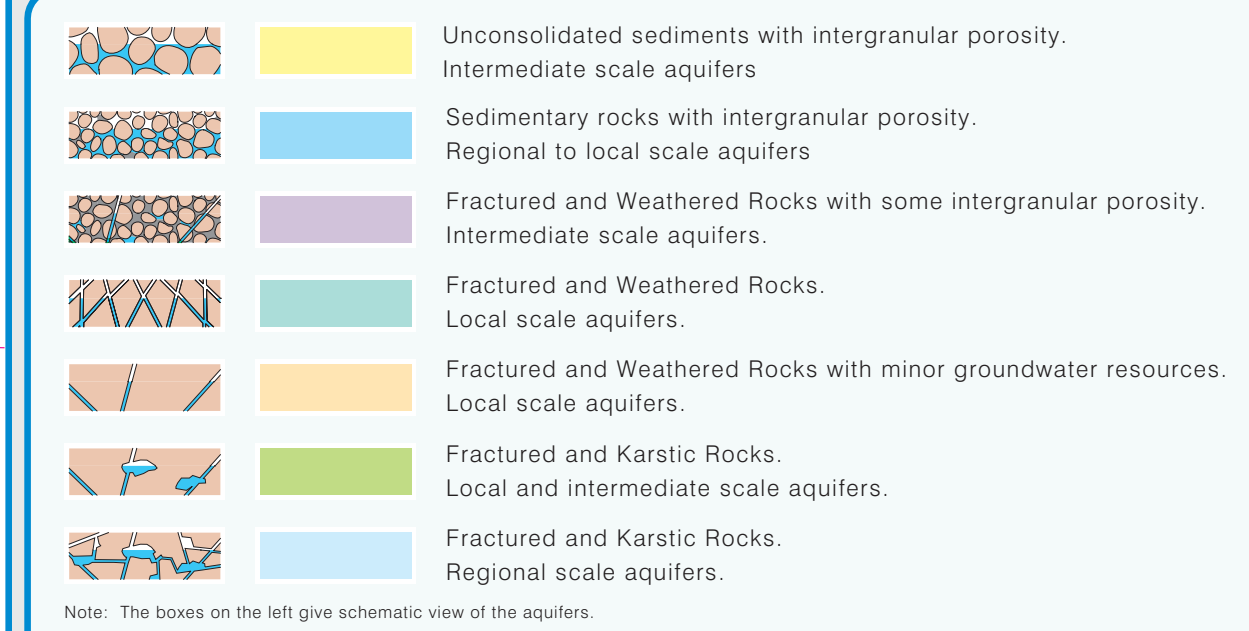


GROUNDWATER of the NORTHERN TERRITORY

AQUIFER TYPES



Note: The boxes on the left give schematic view of the aquifers.
Source: Hydro Database and existing hydrogeological mapping. Northern Territory Department of Environment and Natural Resources. 1:2 500 000 scale digital geology. 1:2 500 000 scale digital geology. Geological Survey, Northern Territory Department of Mines and Energy.

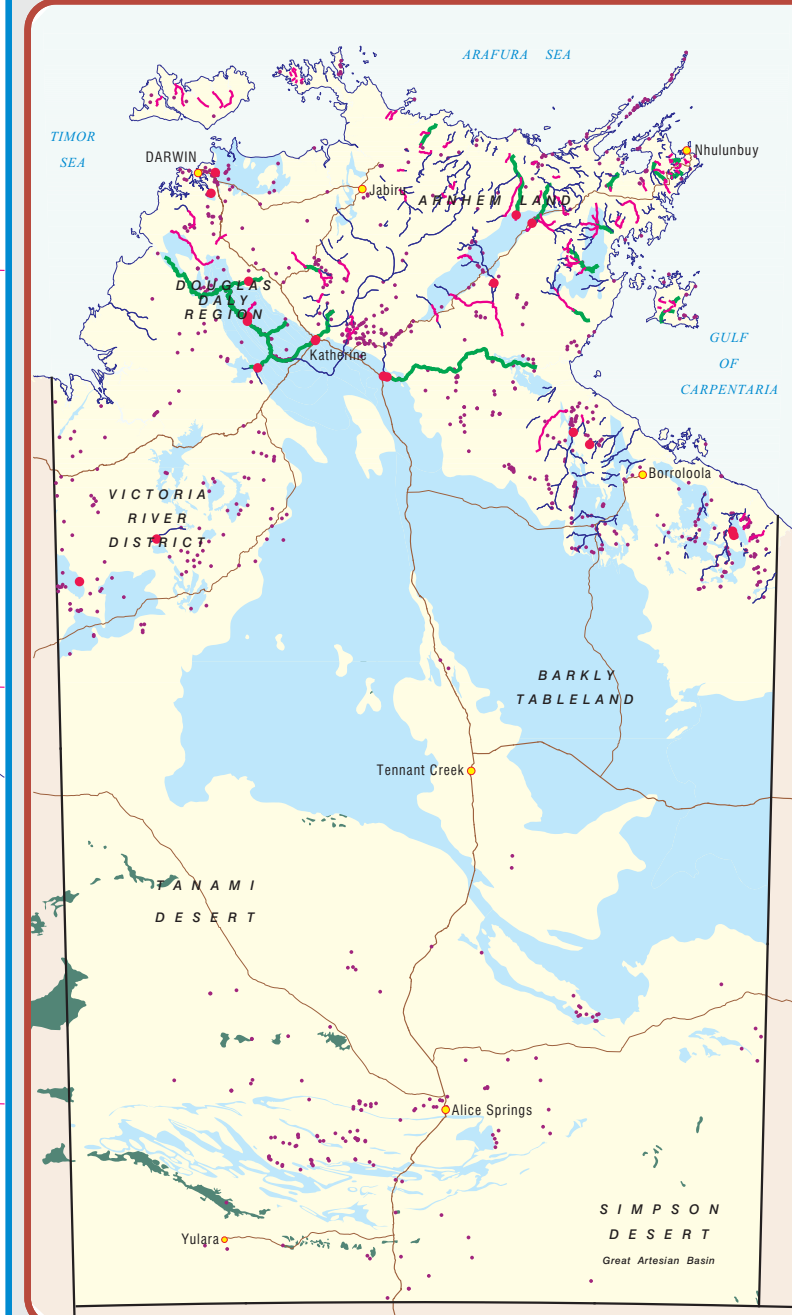
AQUIFERS

The majority of aquifers in the Northern Territory are developed in networks of fractures (cracks) in hard rocks. Their extent depends on the intensity of fracturing and the degree to which fractures are connected with each other. Fractures are more commonly open in weathered rock and so more capable of storing and transmitting groundwater. The highest yielding zones are often situated at the base of weathered rock. This typically varies between 30 and 80 metres, depending on the region. Extensive sedimentary basins containing limestone and dolomite support 'karstic' aquifers formed both by fractures and also by solution cavities varying up to the size of caves. Aquifers that have primary intergranular porosity are formed in soft unconsolidated sediments (e.g. fine grained sand and silt) and carbonates. The extent of the former is poorly known. The Ti-Tree Basin and an alluvial aquifer in the Keap River area are the only 'unconsolidated sediment' aquifers shown on the main map. Others are shown on the Palaeovalley side map.

AQUIFER SCALE

This refers to the distance over which groundwater flows through the aquifer from recharge to discharge areas.
Local: less than 5 kilometres. Intermediate: 5 to 50 kilometres. Regional: more than 50 kilometres.

GROUNDWATER DISCHARGE



DISCHARGE
Unconsolidated sediments discharge at low lying points in the landscape. It can take the form of individual springs or as diffuse seepage into stream beds. Fractured and weathered rocks discharge groundwater through fractures. Many streams in the north maintain a flow for at least part of the long dry season because of groundwater discharge. Some streams, particularly those with major banks or ground rock aquifers in their catchments, flow throughout the dry season. Springs with significant discharge flow over 100 L/d only occur in karstic aquifers.

Another mechanism for groundwater discharge is where flows in the riparian zone emerge on the bank. This occurs throughout the dry season. The riparian zone has been classified according to flow rate at the end of the dry season. The classification only extends to the total flow. An area where flows are high throughout the dry season are shown on the map. An area where flows are high throughout the dry season are shown on the map. An area where flows are high throughout the dry season are shown on the map.

This map shows recorded springs and streams that flow throughout the dry season. The riparian zone has been classified according to flow rate at the end of the dry season. The classification only extends to the total flow. An area where flows are high throughout the dry season are shown on the map. An area where flows are high throughout the dry season are shown on the map. An area where flows are high throughout the dry season are shown on the map.

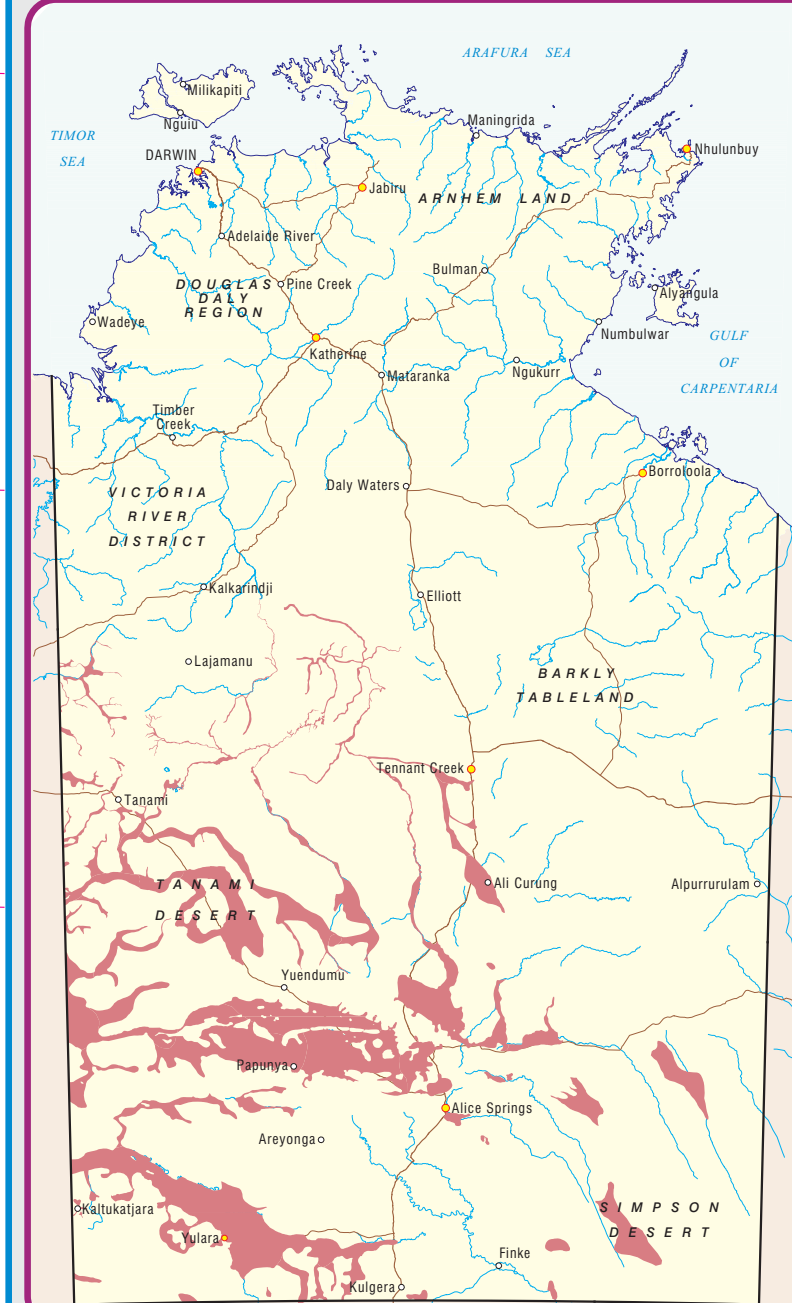
SPRINGS
Major Springs

END OF DRY SEASON FLOWS
Greater than 100 Litres/second
10 to 100 Litres/second
Up to 10 Litres/second

AQUIFER
Karstic Aquifers

Source: Hydro Database and existing hydrogeological maps Northern Territory Department of Environment and Natural Resources.

PALAEOVALEYS

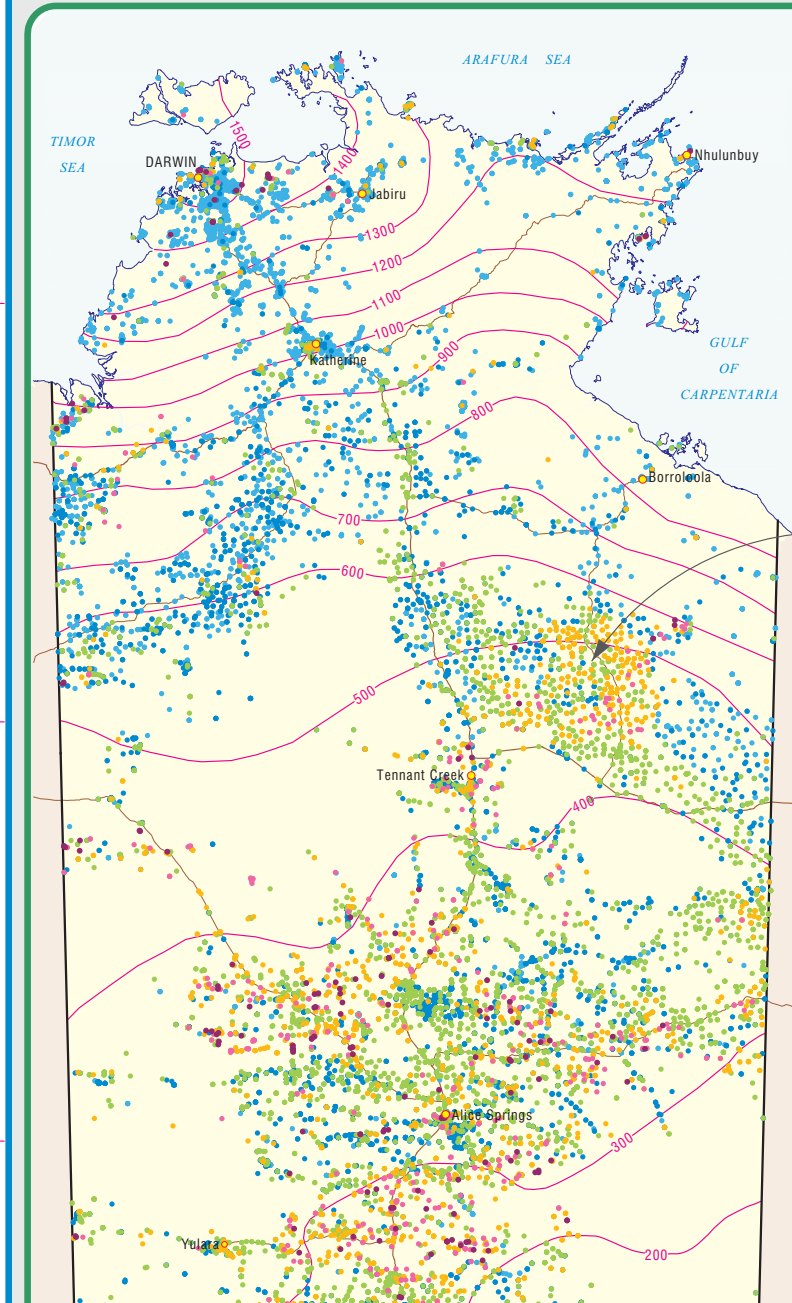


A river drainage system that formed in the Territory area between 2 and 65 million years ago is preserved in the north western part of the Territory. It comprises small sedimentary basins and narrow palaeovalleys. Aquifers are developed in fine sands and gravels that form part of the channel and basin fill. Shallow unconsolidated layers can host fractured and karstic aquifers. Apart from the Ti-Tree Basin and some palaeovalleys in the Territory, most low of these basins have been investigated for their groundwater potential. This map has been compiled from geological maps, satellite imagery and water bore data. In many places it is highly speculative due to the sparse drilling in these areas.

Palaeovalleys and Sedimentary Basins

Source: Palaeovalley Groundwater Project. Northern Territory Department of Environment and Natural Resources and Geoscience Australia, Australian Government.

SALINITY and RAINFALL



GROUNDWATER SALINITY
All groundwater contains dissolved salts. Salts differ from weathering of the rock from the minute amounts contained in water or from marine deposits. The latter are salt deposits formed at the same time as the surrounding sedimentary rocks. The map depicts groundwater salinities measured from individual water bores.

It shows generally low salinities in the north. In those areas, high rainfall, higher recharge rates and a faster through-flow of groundwater leads to less opportunity for salts to concentrate by evaporation in the soil before they are flushed down to the aquifer.

The western side of the Territory and the south western side are highly variable and range up to 1000 mg/L or more. Low salinities are also reflected in localized areas of enhanced recharge such as along rivers and floodplains.

A continental area of saline groundwater to the south east of Tennant Creek reflects extensive evaporation within the Simpson Desert. Salt grain (sodium chloride) and lake bottom deposits occur in the south of the area.

TOTAL DISSOLVED SOLIDS (TDS)
0 - 500 mg/L - Fresh
500 - 1000 mg/L - Fresh
1000 - 3000 mg/L - Brackish
3000 - 7000 mg/L - Saline
7000 - 14000 mg/L - Saline
14000 - 18000 mg/L - Saline, unsuitable for most purposes

Source: Hydro Database. Northern Territory Department of Environment and Natural Resources. Median Annual Rainfall, 2005. Bureau of Meteorology, Australian Government.

YIELD

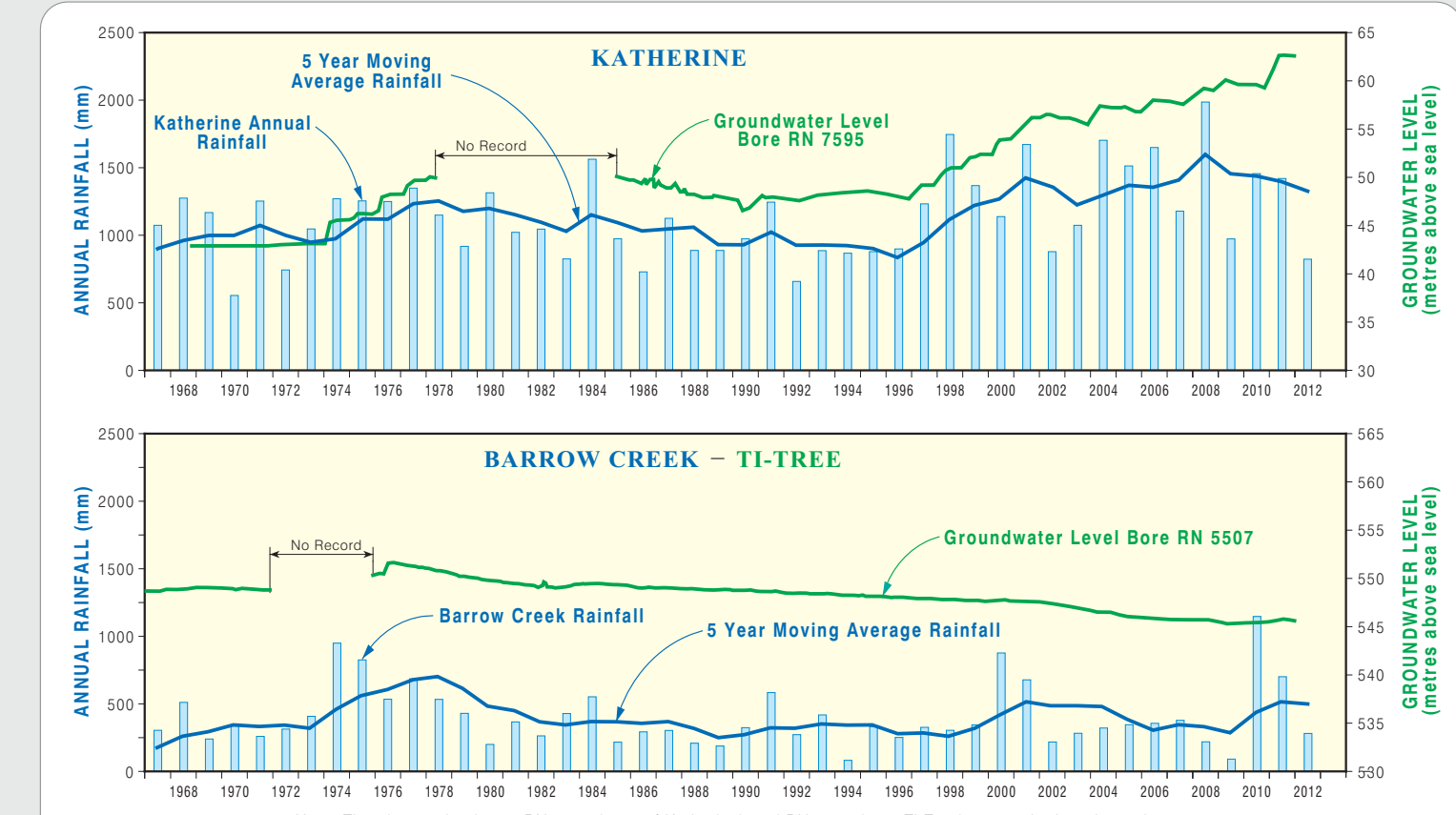
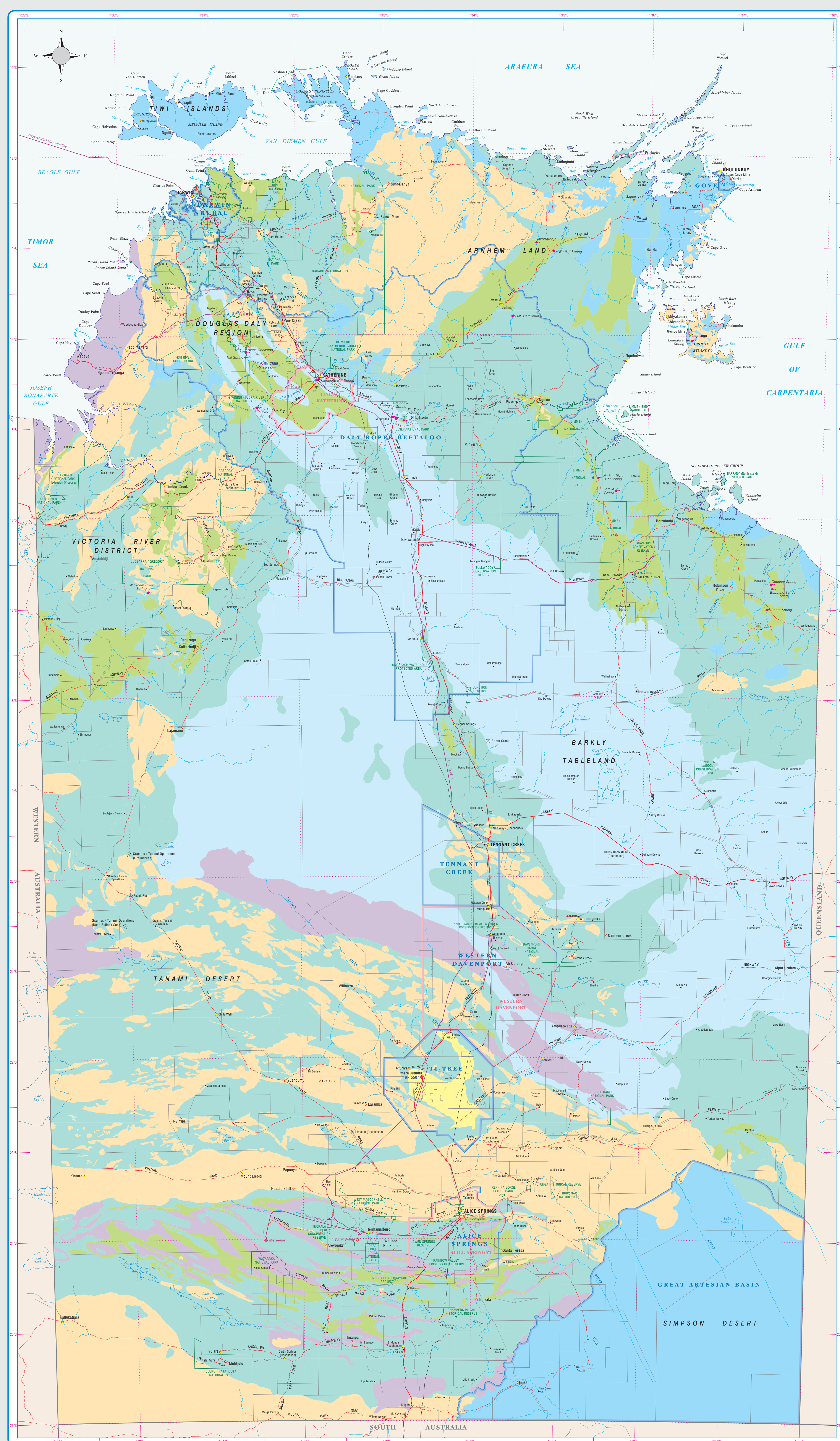


BORE YIELD
The map shows the most likely range of bore yields that can be expected for a particular area. Note that higher or lower yields can be encountered depending on local conditions. The higher yields (more than 5.0 Litres/second) occur in fractured and karstic aquifers.

Most fractured rock aquifers give intermediate yields (0.5 - 5.0 Litres/second), while low yielding aquifers include gravels and sands.

5.0 - 50.0 Litres/second
0.5 - 5.0 Litres/second
0.5 - 2.5 Litres/second
0.5 - 0.5 Litres/second

Source: Hydro Database. Northern Territory Department of Environment and Natural Resources. 1:2 500 000 scale digital geology. Geological Survey, Northern Territory Department of Mines and Energy.



Legend:
Main Population Centre
Regional Major Population Centre
Intermediate Major Population Centre
Local Major Population Centre
Local
Pastoral property
Project boundary
Water Control District
Water Control District and Water Allocation Plan
Water Allocation Plan
Ti-TREE
National Park, Reserve or managed for conservation

State / Territory border
Road - National Highway
Road - State Arterial
Road - State Arterial
Road - Secondary
Railway
Gas pipeline
Gas Field, Oil & Gas Field
Mine - Open Pit, Underground
Water Allocation Bore Number
Observation Bore Number
Observation Bore Number

Produced by the Department of Environment and Natural Resources (DENR) Palmerston, Northern Territory, Australia.
Original Map July 2013
Updated Water Control District and Allocation Plan August 2018
Hydrogeology: S J Tuckey, July 2013
Water Resources Division, DENR
Cartography: L J Fritz, Geospatial Services, Water Resources Division, DENR

For further information and map availability, contact:
Water Resources Division
Department of Environment and Natural Resources (DENR)
4th floor Guyton Centre, 25 Chung Wah Terrace, Palmerston
T: (08) 8999 4433. Email: waterresources@denr.gov.au
Internet: www.denr.gov.au
Map Reference: Geopointer of the Northern Territory

The recommended reference for this map is:
Tuckey S J, 2013. Groundwater of the Northern Territory. 1:2 500 000 scale. Department of Environment and Natural Resources, Northern Territory.

Warning: Outputs will have a geospatial exposure to light.

Northern Territory Government
© Northern Territory of Australia

This publication is protected by copyright law and remains the property of the Northern Territory of Australia. Apart from any uses as permitted under the Copyright Act 1968 for study research or training purposes, reproduction by whatever means is prohibited, without prior written permission from the copyright owner. The Northern Territory accepts no liability for the accuracy of the information provided.

Furthermore the Northern Territory of Australia does not warrant that this product contains the latest information available nor that the information is free from errors.