

**HOLMES JUNGLE**  
Groundwater discharging from a dolomite aquifer maintains the stream flow at Holmes Jungle through the Dry. The lush rainforest is present because of the shallow water table. The springs are located there because it is a low point in the landscape and the stream has cut down to the water table, allowing the aquifer to overflow at that point. The crystal clear spring water seen during the Dry season is typical of water from dolomite. It contains calcium, magnesium and bicarbonate which are dissolved from the rock.

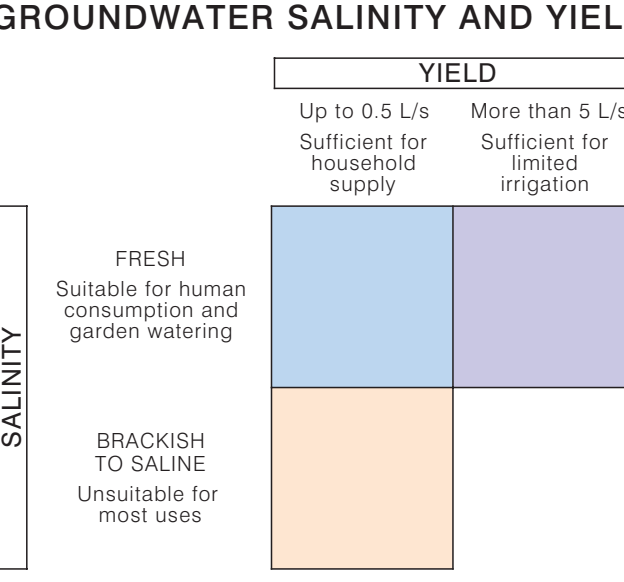
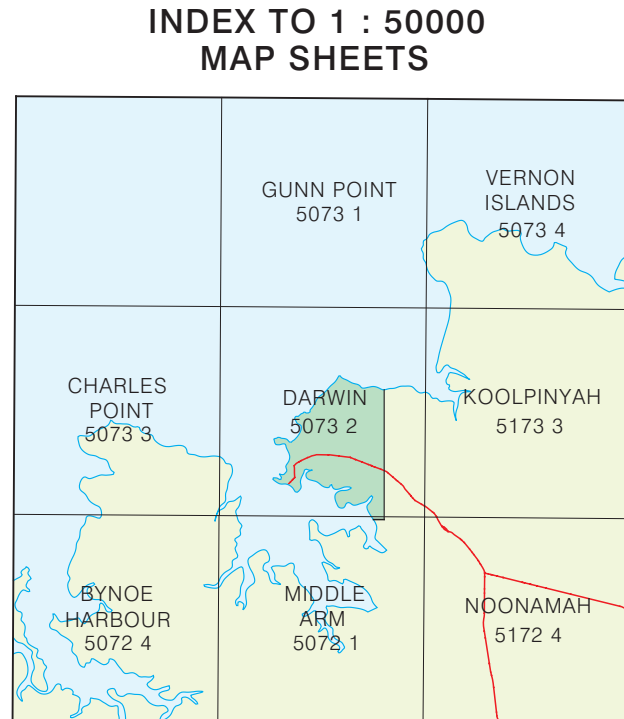
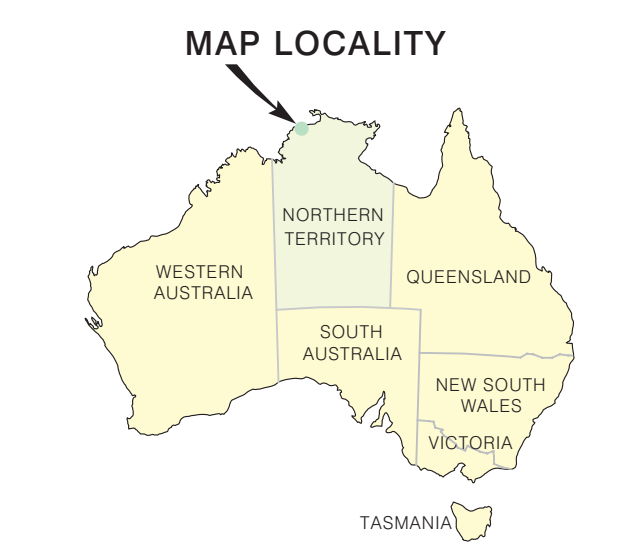
**RAPID CREEK**  
Stream flow in Rapid Creek continues well into the dry season. The source of the water is shallow groundwater which accumulates in the porous laterite profile during the Wet. During the Wet season seepage into the creek extends downstream from its source at Marrara Swamp. As the Dry season progresses the area of seepage retreats downstream as the water table drops. Sections through similar laterite profiles can be seen in road cuttings on Tiger Brennan Drive and in sea cliffs at Nightcliff. The graphs on the left show that the creek flow is maintained at a small and gradually diminishing rate throughout the Dry season by groundwater seepage.

**BULLOCKY POINT**  
The two main types of rock found around Darwin are exposed in the cliffs at Bullocky Point. An upper claystone layer lies on top of shale. The claystone is horizontal, often with a cobble bed at its base. The shale is much older than the claystone, has been tilted to near vertical and is cut by numerous faults and quartz veins. The extent of these layers is shown on the cross-section. Both types of rocks form aquifers which are capable of yielding small amounts of groundwater. Fractures in the rock are responsible for storing and transmitting the groundwater. For example the water seen draining out of the World War II oil storage tunnels near the wharf is groundwater from this type of aquifer.

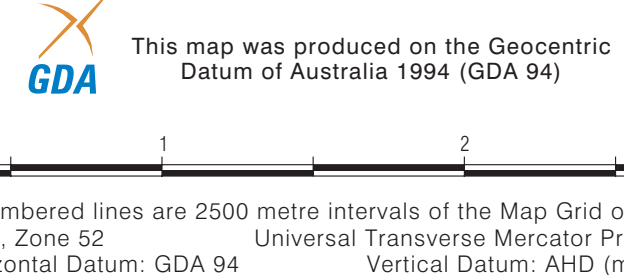
**LATERITE PROFILE**  
This road cutting, located on Tiger Brennan Drive exposes a section through a laterite profile. Laterite is the dark brown rock at the top of the cutting. It has accumulated as an insoluble residue of iron oxides as the underlying white claystone has been slowly dissolved away by chemical weathering. The laterite is relatively porous having both cavities and cracks which can store water. In the wet season water can sometimes be seen seeping or even pouring out of such road cuttings. Laterite is widespread over the Darwin area and soaks up considerable amounts of water during the Wet. It is stored there during the Dry until it is depleted by natural outflows to streams. Trees also tap this water source. Steeply dipping shale strata can be seen at the base of the cutting beneath the claystone.

**PEELS WELL**  
The remains of a well dug in 1869 can be seen in Doctors Gully. Wells and rainwater tanks were Darwin's only sources of water up until just after World War II when a piped water supply was established. The aquifer tapped by Peels Well and most other wells in the city area was fractured shale. Depths ranged between 5 and 20 metres, depending on the elevation of the site. Most wells were subsequently filled in.

**KNUCKEYS LAGOONS**  
Shallow lagoons such as these often indicate that a dolomite aquifer is present beneath. Dolomite (a type of limestone) is prone to dissolve when in contact with acidic rainwater. In the Top End rainwater has natural acidity. This process occurs over tens of thousands of years, gradually removing rock and eventually leading to subsidence of the overlying ground. The lagoons occupy depressions caused by this subsidence. Groundwater occurs in both fractures and solution cavities in dolomite. Darwin's present water supply is supplemented by groundwater pumped from similar but more extensive dolomite near Girraween Lagoon, 30km east of the city. A good view of the lagoons can be obtained from the end of Fiddlers Lane.



Hydrogeology by S. Tickell and H. Qureshi, Cartography by J. Fung, Spatial Data and Mapping, using Microstation graphic applications.  
Design File: Darwin-Area\_GWrs\_52m, Plot File: Darwin-Area\_Groundwater  
Using Topo-250k data supplied through Land Information Services, Department of Infrastructure, Planning and Environment, Darwin, Northern Territory of Australia.  
Minor revisions, corrections and updates to mapping have been made since the initial publication of this map (May 1998). The map has been converted to Geocentric Datum of Australia (GDA94), and Government Department changes updated, August 2003.  
Published and available from:  
Conservation and Natural Resources Group,  
Department of Infrastructure, Planning and Environment,  
Goyder Centre, Chung Wah Terrace, Palmerston,  
Northern Territory of Australia, August 2003.



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 without your organisation for non-commercial purposes, provided that an appropriate acknowledgment 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.

**Northern Territory Government**  
Department of Infrastructure, Planning and Environment  
For further information contact:  
Manager, Water Resources, Natural Systems Division,  
Conservation and Natural Resources Group,  
Department of Infrastructure, Planning and Environment,  
Ph. (08) 8999 3600, Fax. (08) 8999 3666  
Goyder Centre, Chung Wah Terrace, Palmerston,  
Northern Territory of Australia.

# GROUNDWATER RESOURCES of the DARWIN AREA