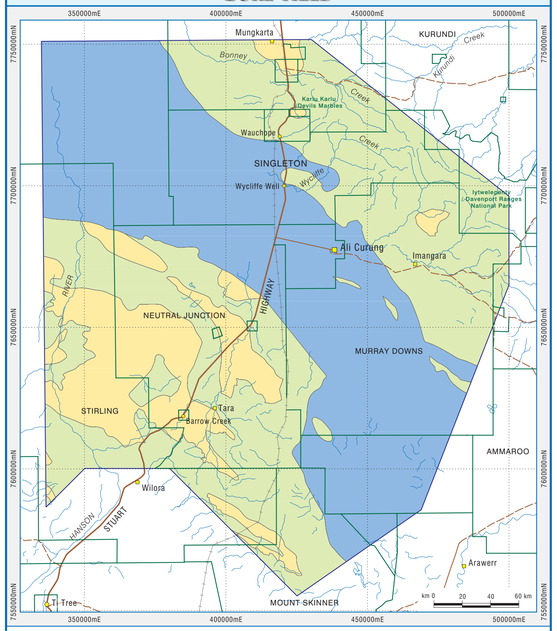
GROUNDWATER in the WESTERN DAVENPORT WATER CONTROL DISTRICT

Northern Territory Government

BORE YIELD

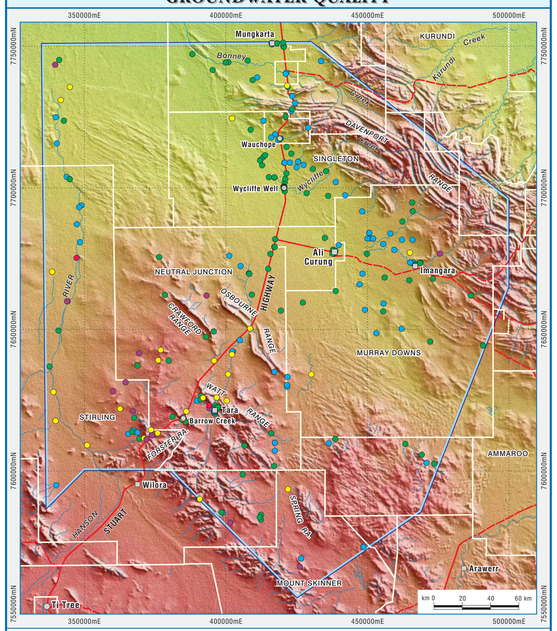


0.05 - 0.5 L/s — Small stock and domestic supplies

0.5 - 2.5 L/s — Stock and domestic supplies.

5.0 - 20.0 L/s — Small irrigation supplies.

GROUNDWATER QUALITY



TDS (Total dissolved Solids) is a measure of the salinity of the water. It gives a general guide to the usability of the water.

		Human Consumption	Domestic	Irrigation	Stock
0 - 1000 mg/L	Fresh				
1000 - 3000 mg/L	Brackish				
3000 - 7000 mg/L	Saline				
7000 - 14000 mg/L	Saline				
14000 - 59000 mg/L	Saline, unsuitable for most purposes				

All groundwater contains dissolved salts derived from either weathering of the host rock or from minute amounts contained in rainfall and gradually concentrated by evaporation. The map above depicts groundwater salinities measured from individual bores, superimposed on the topography. Total Dissolved Solids is a measure of salinity and gives a guide to the suitability of the water for different uses.

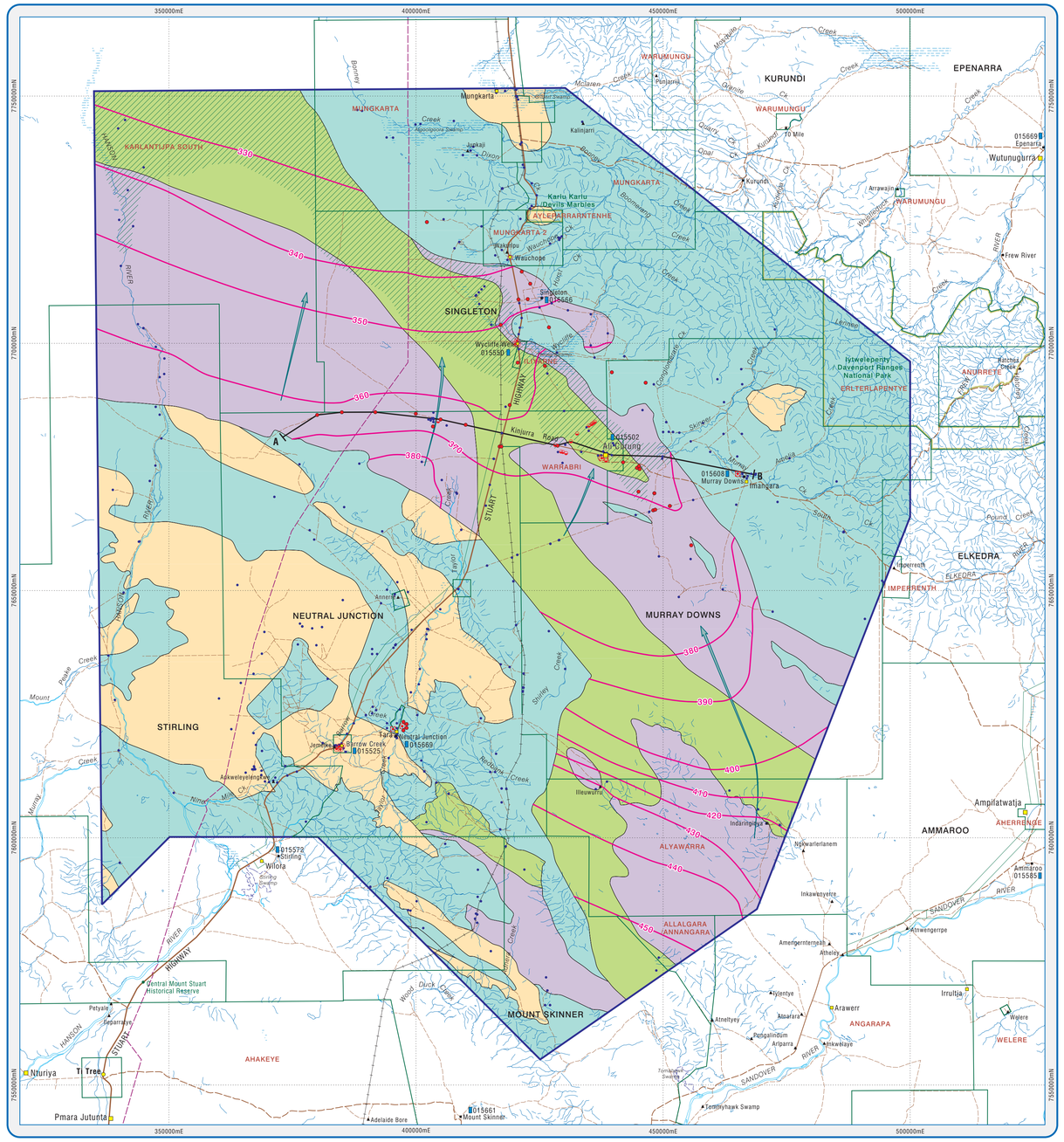
Groundwaters are fresh to brackish beneath the plains and adjacent to streams in the ranges. Saline waters are more common in the ranges, particularly in the south-west of the map area.

Topography source: NT Department of Mines & Energy digital terrain model of ground elevation

GENERAL FEATURES

Note: for clarity, not all features are shown

- STIRLING — Property boundary
- Property name
- AHAKEYE — Aboriginal Land Trust / Corporation
- Karlu Karlu /Devils Marbles — National Park or reserve
- Ti-Tree — Minor town
- Ali Curung — Major aboriginal community
- Imangara — Minor aboriginal community
- Annerre — Family outstation
- Singleton — Pastoral homestead
- Wauchope — Roadhouse
- Highway
- Minor road; sealed / unsealed
- Local road / track
- Railway
- Gas pipeline
- Drainage Line



Hydrogeologist: S. Tickell JANAURY 2014

Water Resources Division,

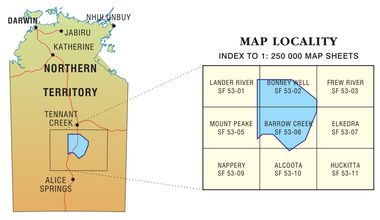
Department of Land Resource Management, Northern Territory.

Cartography by L. J. Fritz, Spatial Data & Mapping, Water Resources Division
Department of Land Resource Management, Northern Territory of Australia

File Reference: Westen-Davenport-WCD_Groundwater
Web: www.lrm.nt.gov.au/nrmapsnt

MAP LOCALITY

INDEX TO 1: 250 000 MAP SHEETS



LANDER RIVER SF 53-01	BONNEY WELL SF 53-02	FREW RIVER SF 53-03
MOUNT PEAKE SF 53-05	BARROW CREEK SF 53-06	ELKEDRA SF 53-07
NAPPERY SF 53-09	ALCOOTA SF 53-10	HUCKITTA SF 53-11

Western Davenport Water Control District

AQUIFER TYPES

- Unconsolidated sediments with intergranular porosity. Intermediate scale aquifers (cross section only)
- Fractured and Karstic Rocks. Local to intermediate scale aquifers.
- Sedimentary rocks with intergranular porosity. Regional to local scale aquifers
- Fractured and Weathered Rocks. Local scale aquifers.
- Fractured and Weathered Rocks with minor groundwater resources. Local scale aquifers.

Aquifer Scale
This refers to the distance over which groundwater flows through the aquifers from recharge to discharge areas. Local: less than 5 kilometres, Intermediate: 5 to 50 kilometres

kilometres 0 10 20 30 40 50 kilometres

Black numbered lines are 50 000 metre intervals of the Map Grid of Australia (MGA) Zone 53 Transverse Mercator Projection Horizontal Datum: GDA 94

This map was produced on the Geocentric Datum of Australia 1994 (GDA 94)

WATER RESOURCES FEATURES

- 380 — Groundwater level (metres above sea level)
- Standing water level <10 metres below ground level
- Groundwater flow direction
- 015502 — Rainfall station (Bureau of Meteorology)

Bore Use (within the Water Control District)

- Public water supply
- Agriculture
- Industry
- Monitoring Bore with registered number
- Stock or investigation

For further information contact:

Water Resources Division, Department of Land Resource Management

Tel: (08) 8999 4455 **Fax:** (08) 8999 3666

Email: waterresources@nt.gov.au **Web:** www.lrm.nt.gov.au

Level 4, Goyder Building, 25 Chung Wah Terrace,

Palmerston, Northern Territory of Australia.

AQUIFERS

Groundwater occurs throughout the area but the nature of the aquifers varies markedly. The underlying geology is the main factor controlling the distribution of aquifers and their properties. The main map shows aquifers in the hard bedrock formations. A 50 km wide zone trending north west to south east across the map contains two types of aquifer that are highly productive and are thought to be interconnected with each other. These include "fractured and weathered rocks with some intergranular porosity" and "fractured and karstic rocks". The first category includes the Lake Surprise Sandstone, Dulcie Sandstone and the Chabalowie Formation, all sandstones. The latter category includes the Arinthungwa Formation which consists of dolomite and shale.

In some areas these are overlain by aquifers in younger sedimentary deposits. These are shown on the side map "Cenozoic Aquifers"and they are also hydraulically connected to the underlying aquifers. The fractured and weathered rocks lying in the north eastern and south western sectors of the map are the oldest rocks in the area and the least prospective for groundwater. They comprise sandstone, shale, granite and volcanic rocks. Unlike the younger sandstones mentioned above, these older ones have no open pore spaces between the sand grains and so groundwater is restricted to fractures.

GROUNDWATER FLOW

Groundwater flows through the aquifers from recharge areas to places lower in the landscape where it can discharge back to the surface. The watertable contours shown on the main map relate to the central zone of more productive aquifers including the Lake Surprise and Dulcie Sandstones and the Arrinthunga and Chabalowie Sandstones. The contours were constructed from measurements made over a wide range of times so only serve to give a generalised picture of groundwater flow.

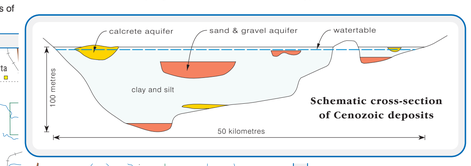
Recharge is likely to occur where the aquifers are close to the ground surface and especially where streams cross those areas for example along the Hanson River and Taylor Creek. Flow is dominantly to the north and north west.

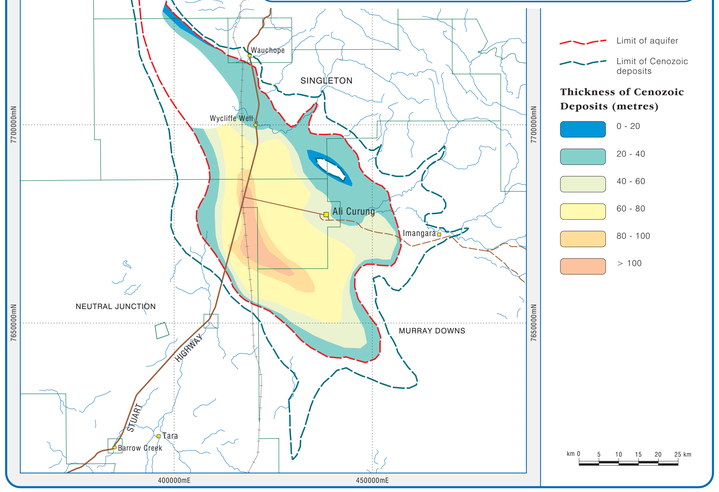
Groundwater discharge occurs via evapotranspiration in lower lying areas where the watertable is within reach of plant roots. At times groundwater may discharge directly into swamps and river beds. The hatched area on the main map indicates where the watertable is within ten metres of the surface. Groundwater discharge can potentially occur within that area. Features such as the bed of the lower section of the Hanson River and Thring Swamp are likely discharge sites.

CENOZOIC AQUIFERS

Alluvial and lacustrine deposits laid down in the Cenozoic era are up to 100 metres thick and underlie the plains between Wycliffe Well and the Osborne Range to the south. Sand, gravel and calcrete beds within these deposits form aquifers that are commonly utilised for stock and domestic water supplies. Bore yields are generally less than 2 litres/sec. but can be locally higher, particularly in calcrete, a type of limestone.

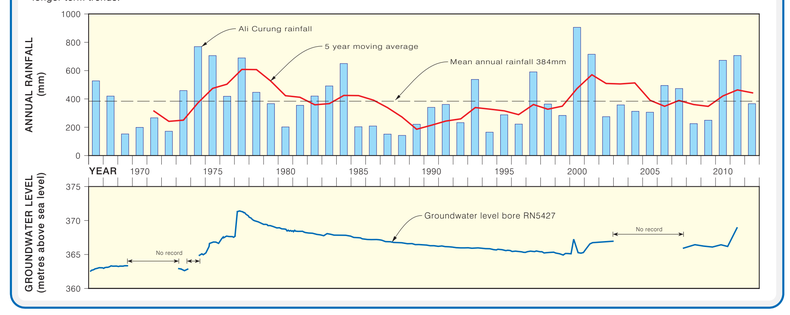
The schematic diagram shows typical occurrences of Cenozoic aquifers.





RAINFALL and GROUNDWATER LEVELS

The Western Davernport area has an arid climate. The annual rainfall recorded at Ali Curung and surrounding localities over the past 45 years has averaged 384mm and has ranged between 187 and 608mm. Groundwater recharge consequently tends to be sporadic only occurring in the infrequent very wet periods. The bore hydrograph shown below is from a Cenozoic aquifer and is typical for the area showing a major recharge event in the mid to late 1970's followed by a gradual decline until the next recharge event in 2000. The 5 year moving average is a technique to smooth out the variations in annual rainfall and show longer term trends.



CROSS SECTION A - B