

NORTHWEST TASMANIA GROUNDWATER QUALITY MAP

SCALE 1:250000
 0 5 10 15 20 25km
 AGD86 - AMG Zone 55

This map is complementary to the main 1:250,000 NW groundwater map. There is usually a degree of vertical stratification in the groundwater quality within the aquifers and results presented represent a composite value of salinity from drill holes at a particular time. Natural groundwater quality is influenced by annual rainfall and the evaporation (e.g. high rainfall, low evaporation areas tend to have better quality groundwater than low rainfall, high evaporation areas), the composition of the rock types through which the groundwater passes and is stored in and by physical properties of the rocks such as permeability and porosity. Human activities such as extensive groundwater pumping, pollution from various waste disposal activities and use of chemicals (agriculture, forestry, industry etc.) also may have negative effects on groundwater quality.

AQUIFER TYPE	PROSPECTIVITY (Whole of Tasmania)	ROCK GROUPS	NUMBER OF BORES	SALINITY RANGE (mg/L)	GROUNDWATER QUALITY COMMENTS	VULNERABILITY TO POLLUTION
POROUS (INTERGRANULAR)	HIGH	Quaternary aeolian deposits marginal to the coast consisting of fine to medium grain size sand.	60	270 - 880	Quality of the water in these aquifers is usually good enough for a wide range of uses. Composition of the sand may influence the level of some constituents, for example groundwater in dunes with a high carbonate content on the west side of King Island has elevated levels of carbonate ions.	High.
POROUS (INTERGRANULAR)	MODERATE-HIGH	Quaternary coastal plain deposits consisting of sand, clayey sand, gravel and silt deposits. Probable marine origin.	54		In the far northwest, coastal influences appear to sometimes have a bearing on the slightly increased salinity near the shoreline compared to bores remote from the coastline. Limited groundwater quality data is available. Localised areas (e.g. Mabley) have sulphate rich sediments resulting in shallow acid groundwater discharging into streams.	Moderate to high. Depends on whether low permeability material (e.g. clay) overlies the aquifer.
POROUS (INTERGRANULAR)	LOW-MODERATE	Quaternary alluvium, talus and silt. The alluvium consists of clay, sand and gravel with variable clay content. The talus consists of boulders, usually with a moderate to high clay content. The silt comprises boulders with a higher content of fine-grained material. Minor windblown sand on sloping bedrock.	40		Water quality in coarse grained sediments will usually be good. Recharge to aquifers in alluvium may take place from surface streams in some cases.	Low to high. Clayey material overlying aquifers will offer protection to groundwater at depth. Coarse grained aquifers without such protection are highly vulnerable, as are aquifers underlying such materials.
POROUS (INTERGRANULAR)	LOW-HIGH (High on the map)	Tertiary sediments consisting of clay, sand and gravel of non marine origin. Usually interbedded with or underlying basal Tertiary limestone, often loose to semi-consolidated (Redpa). Marine origin.	122	65 - 1000	Water quality is usually good resulting in a wide range of possible uses. At Berrington - Sheffield, groundwater in this unit is in the lower part of the salinity range while at some locations near Port Sorell salinity is near 1,000 mg/L. A localised very saline zone (~17,500 mg/L) occurs in limestone in a low-lying area at Woodnorth.	Low to high. Clayey material overlying aquifers will give some protection to underlying aquifers, e.g. Sheffield - Devonport area. Tertiary limestone in the Redpa - Woodnorth area occurs at the surface at some locations and in these situations, vulnerability is high.
FRACTURED ROCK (Integrular on some horizons)	HIGH	Permian mudstone, siltstone, sandstone and siltite. Mainly marine origin, deposited under epeiric conditions. Triassic sediments (no bores in this unit).	207	82 - 1000	In the northwest, quality is almost always very good and a wide range of uses is possible.	High. Low permeability layers at the surface - clay and silt clay, will give some protection and vulnerability may be reduced to low to moderate if these overlying materials are thick.
FRACTURED ROCK	MODERATE-HIGH	Ordovician sediments. Ordovician limestone. Cambrian sediments and Neoproterozoic sediments. Devonian. Precambrian mudstone slate and quartzite.	21	67 - 870 100 - 178 85 - 1430 222 105 - 272 422 61 - 3700	Quality is generally very good and a wide range of uses is often possible. Near-coastal areas may have groundwater with slightly higher salinity levels. Groundwater contained in limestone, dolomite and sometimes Cambrian sedimentary rocks has a high proportion of carbonate / bicarbonate anions.	High. Vulnerability can be very high in karst areas. Where thick clayey soil overlies these aquifers vulnerability will be reduced.
FRACTURED ROCK	HIGH	Tertiary basalt.	1700	80 - 900	Quality of groundwater in the basalt is generally very good. Slightly higher salinity is possible in water from bores near the coastline. Groundwater pH values are very variable and in a range from 4.6 - 8.5, the lower range being potentially corrosive to metals.	High. Deep clay soils may give some protection e.g. at Northdown.
FRACTURED ROCK	MODERATE	Jurassic oolite.	16	187 - 2420	Water quality is likely to be good at most locations in northwest Tasmania because of the higher rainfall. Degree of weathering can be a factor in some higher values.	Moderate. As a result of the probable lower intensity of fracturing at most locations and higher rainfall, vulnerability at most locations will be only moderate. The development of clay soils will aid in protection.
FRACTURED ROCK	LOW-MODERATE (Low on the map)	Devonian and Precambrian granite. Peridotite (no bores in this unit).	31	770	Limited quality information is available but it is expected to be moderate to good in this region.	Low to moderate. This unit has low prospectivity and as a result vulnerability to pollution can be expected to be low to moderate. Deep clayey soils developed on the granite will add to this protection.

- Statistics provided in the legend are based on deep boreholes entered in MRT groundwater database (BORIS) by February 2003. Boreholes shown on the map are those with locations mainly supplied by drillers and location in the field by MRT staff.
- There are many open boreholes installed for investigation and production purposes in coastal sand deposits in Tasmania. Salinity ranges for some of the Quaternary aquifers have been obtained from these borehole records and included in the legend (marked with a star).
- Small elevated areas of any hydrogeological unit will usually have lower prospectivity because of limited storage and high recharge rates.
- In areas where there is little or no water bore data, the groundwater prospectivity has been assumed to be similar to that in areas where data are widely available.

GROUNDWATER QUALITY Expressed as Total Dissolved Solids (TDS)

TDS in mg/L
 Potential usage of groundwater based on water quality
 <= 500 All purposes, domestic and irrigation
 500 - 1000 Most purposes, general upper limit for irrigation
 1000 - 1500 Most purposes, upper limit for drinking, limited irrigation
 1500 - 3000 All livestock, very limited irrigation
 3000 - 7000 Most livestock (not pigs or horses)
 > 7000 Limited stock use (beef cattle, sheep)

Areas of similar groundwater quality across different rock types are shown by shading as above. Solid lines indicate deep aquifers while broken lines - - - - - indicate shallow aquifers. Boundaries are approximate only.

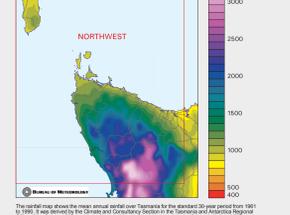
These are general limits for the use of groundwater. The use of water for irrigation with the higher levels of salinity in the above table should only be considered on particularly suitable soil types with the adoption of specific management practices, or if the bore water is mixed with fresh water. For further information see Australian and New Zealand guidelines for fresh and marine water quality.

BOREHOLE QUALITY - TDS (See separate groundwater map for borehole yield)

Scale Location Accuracy: 500 - 2000 m 1 - 500 m
 Milligrams Litre
 Unknown
 <= 500
 500 - 1000
 1000 - 1500
 1500 - 3000
 3000 - 7000
 > 7000

The bores shown are those recorded in the Mineral Resources Tasmania groundwater database (BORIS) with locations mainly supplied by drillers or by location in the field by MRT staff.

MEAN ANNUAL RAINFALL



The rainfall map shows the mean annual rainfall over Tasmania for the standard 30 year period from 1961 to 1990. It has been derived from the rainfall and evaporation data in the Tasmania and Victoria Regional Office of the Bureau of Meteorology. Some updates and analysis provided to the Bureau's National Climate Centre. The primary source for the rainfall records and topography is the Geographical Information System (GIS) data. The rainfall data is presented as a continuous surface and may differ from the observations at individual locations.

LOCATION DIAGRAM



The data for this map were derived from the Tasmanian Geological Atlas 1:250,000 digital series and Mineral Resources Tasmania Groundwater data base (BORIS) and are based on the data for the Northwest Tasmania Groundwater Quality Map first published July 2006. Plotted borehole data as at 05-OCT-2006. Other groundwater and hydrogeology maps and reports are available from Mineral Resources Tasmania. Borehole data is available from the Mineral Resources Tasmania web site - www.mrt.tas.gov.au

This map is not the result of a concise survey therefore groundwater potential and salinity areas are indicative only. This map does not remove the need for site specific investigations. Groundwater potential data compiled by: W.J. Matthews B.Sc. and M.L. Matthews B.Sc.(Hons) Map first published July 2006. Base data from the LIST, © State of Tasmania

While every care has been taken in the preparation of this data, no warranty is given as to the correctness of the information or accuracy of the data. The user of this data is advised to verify the accuracy of the data for their own purposes. The user of this data is advised to verify the accuracy of the data for their own purposes. The user of this data is advised to verify the accuracy of the data for their own purposes.