500000mE 550000mE 600000mE 650000mE

5350000mN 5300000mN 5250000mN 5200000mN 5150000mN

MINERAL RESOURCES TASMANIA

Tasmania

DEPARTMENT of INFRASTRUCTURE ENERGY and RESOURCES

SOUTHEAST TASMANIA GROUNDWATER QUALITY MAP

SCALE 1:250000

0 5 10 15 20 25km

AGD66 - AMG Zone 55.

This map is complimentary to the main 1: 250 000 SE 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 then 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.

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

Bore 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.

SALINITY CONTOURS

1500 — Salinity contours of deeper Tertiary Aquifers (500 mg/L contour interval) Longford Area (Geological Bulletin 59)

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.

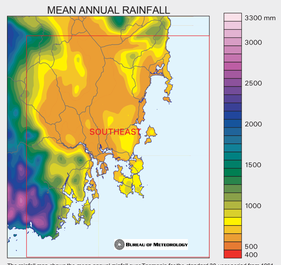
These are general limits for the use of groundwater. The use of water for irrigation with the higher levels of salinity in the above table should only be considered on particularly suitable soil types with the adoption of specific management practices, or if the bore water is mixed with fresh water.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

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.	20	210 - 5000 *	Quality is good enough for the water to be used for a wide range of purposes. Extensive pumping can result in a reduction of quality due to seawater intrusion or lateral movement of salty water from sediments in adjacent areas, for example at Seven Mile Beach, Nine Mile Beach, South Arm, Bruny Island.	High.
POROUS (INTERGRANULAR)	MODERATE - HIGH	Quaternary coastal plain deposits consisting of sand, clayey sand, and gravel, underlying areas near the coast. Probable marine origin.	46	1840 - 112000 *	Quality is variable and salt content may limit uses in some areas. This aquifer often occurs in low rainfall/high evaporation areas and this can have a major affect on quality, for example at South Arm Peninsula.	Moderate to high. Depends on whether low permeability material overlies the aquifer.
POROUS (INTERGRANULAR)	LOW - MODERATE	Quaternary, alluvium and talus deposits. The alluvium usually consists of clay, together with sand and gravel deposits with varying clay content. The talus consists of boulders and usually has a moderate to high clay content. Minor windblown sand on sloping bedrock. Terrestrial origin.	34	210 - 8290 *	Water quality in the coarser sediments is often good. Nearby surface streams may recharge them.	Low to high. Clayey material at the surface will aid in protecting groundwater at depth including underlying aquifers. Coarse-grained aquifers without such protection are vulnerable as are aquifers underlying these materials.
POROUS (INTERGRANULAR)	LOW - HIGH	Tertiary sediments consisting of clay, sand and gravel.Variable thickness up to several hundred metres. Lacustrine and alluvial sediments.	138	535 - 5800	Water quality is variable in these sediments and salinity often reaches levels that seriously limit use, for example at Coal River Valley and parts of the Launceston Tertiary Basin around Campbell Town. Near-surface, lower yielding zones often contain water with elevated salinity levels.	Low. (generally clay layers overlie the aquifers in most cases).
FRACTURED ROCK (Intergranular on some horizons)	HIGH	Triassic sandstone (lithic and quartz), mudstone, minor coal, terrestrial origin. Permian mudstone, siltstone, sandstone (often pebbly), minor limestone and conglomerate. Mainly of marine origin, glacial conditions, minor zones of terrestrial origin.	1215 572 1787	116 - 13228 145 - 13790 116 - 13790	Quality is variable and salinity restricts use at many locations. Near-surface, lower yielding zones often have poorer quality groundwater than deeper high yielding zones. Low rainfall/high evaporation is likely to have a major contribution to this. High sulphate groundwater occurs in the Permian rocks at some locations, for example just north of Tunnack. Triassic rocks at Dodges Ferry are particularly prospective but water quality limits use at some locations. Upper Triassic mudstone and associated carbonaceous zones (including coal) tend to have poorer quality water.	High. Low permeability material at the surface will offer some protection and vulnerability may be reduced to low to moderate.
FRACTURED ROCK	MODERATE-HIGH (High on this map)	Ordovician to Devonian turbidite sequence of sandstone and mudstone (Mathinna Supergroup). Cambrian and Precambrian rocks in the southwest.	6		Groundwater quality is likely to be similar to that in similar rocks to the north where salinity is mostly low, allowing for a wide range of uses.	High. A thick layer of low permeability material covering the aquifer will reduce vulnerability.
FRACTURED ROCK	HIGH	Tertiary basalt.	181	560 - 8390	Quality is variable and salinity is often moderate to high which restricts use. This applies to the Screll area particularly, and some areas around Campbell Town and Ross. Low rainfall/high evaporation is likely to be a major cause of higher salinity values.	High. Very occasionally deep clay soils may offer some protection and lower vulnerability.
FRACTURED ROCK	MODERATE	Jurassic dolerite. Minor Cretaceous syenite and Cambrian and Precambrian rocks and Tertiary basalts (Bream Creek area).	480	70 - 11200	Quality is variable and salinity in low rainfall areas is often at levels that restrict use. The high value of 11,200mg/L was taken from a bore just north of Sorell. Higher rainfall areas commonly have much better quality groundwater, for example on the Tasman Peninsula.	Moderate. Can be high if highly fractured zones are not covered by low permeability material.
FRACTURED ROCK	LOW - MODERATE (Low on this map)	Devonian granitic rocks.	4	1700	Groundwater quality data for granites are sparse in this region. Similar granitic rocks from other locations in the Northeast Tasmania have moderate salinity levels which restrict groundwater use.	Low to moderate. Can be higher if localised highly fractured zones are not covered by a layer of lower permeability material.

1. 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 from location in the field by MRT staff.
2. * There are many spear bores installed for investigation and production purposes in coastal sand deposits in Tasmania. Salinity ranges for some of the Quaternary aquifers in south-east Tasmania have been obtained from these borehole records and included in the legend (marked with a star *).
3. Small elevated areas of any hydrogeological unit will usually have lower prospectivity because of limited storage and high drainage rates.
4. 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.
5. The southeast part of the state that this map covers includes a major portion of the State that has low rainfall / high evaporation and which is subject to soil salinity problems. Low rainfall / high evaporation is also probably the cause of the relatively poor quality of groundwater at many locations in the region.

LOCATION DIAGRAM

MEAN ANNUAL RAINFALL



The rainfall map shows the mean annual rainfall over Tasmania for the standard 30-year period from 1961 to 1990. It was derived by the Climate and Consultancy Section in the Tasmania and Antarctica Regional Office of the Bureau of Meteorology, from a gridded analysis prepared by the Bureau's National Climate Centre. The analysis system blends measured rainfall with topography to give estimates of rainfall for each area. The results will be less accurate in mountainous or data-sparse regions, and may differ from the observations at individual locations.

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 upon the potential for groundwater within broad rock groups. Plotted borehole data as 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.

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Map first published July 2006

Base data from the LIST, © State of Tasmania

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WARNING: INKS ARE LIGHT SENSITIVE

Plotfile for this map generated from digital data: 05-OCT-2006

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