500000mE 550000mE 600000mE 650000mE

5350000mN 5300000mN 5250000mN 5200000mN 5150000mN

SOUTHEAST TASMANIA GROUNDWATER MAP

MINERAL RESOURCES TASMANIA

Tasmania
DEPARTMENT of INFRASTRUCTURE ENERGY and RESOURCES

SCALE 1:250000

0 5 10 15 20 25km

AGD66 - AMG Zone 55.

BOREHOLE YIELD
(See separate map for borehole salinity - TDS)

Bore Location Accuracy - 500 - 2000 m	1 - 500 m	Litres / second	Potential usage of groundwater based on borehole yield
○	•	Yield Unknown	
○	•	0 (Dry borehole)	
○	•	< = 0.05	Limited use for domestic and stock
○	•	0.05 - 0.5	Domestic, stock, garden
○	•	0.5 - 1.5	Domestic, stock, garden, limited irrigation
○	•	1.5 - 5.0	Domestic, stock, garden, small area irrigation
○	•	5.0 - 10.0	Domestic, stock, garden, moderate area irrigation, small communities
○	•	> 10.0	Domestic, stock, garden, larger area irrigation, small towns, supplement to larger towns

Outputs of bores are those supplied by drillers and are mostly the result of short term pumping measurements.
Outputs may not be sustained for long periods of continuous pumping.
Boreholes reported as dry holes usually have small unreported yields e.g. <0.05 L/s.
The bores shown are those recorded in the Mineral Resources Tasmania groundwater database (BORIS).
Conversion factors -
1 litre per second ~ 800 gallons per hour ~ 8.6 millimetres per hectare per day ~ 0.84 acre inches per day.

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.

POTENTIOMETRIC CONTOURS
——— 170 ———
Potentiometric contours of deeper Tertiary Aquifers (5 m contour interval)
Longford Area (Geological Bulletin 59)

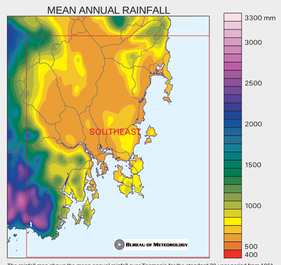
SALINITY CONTOURS
——— 1500 ———
Salinity contours of deeper Tertiary Aquifers (500 mg/L contour interval)
Longford Area (Geological Bulletin 59)

AQUIFER TYPE	PROSPECTIVITY (Whole of Tasmania)	ROCK GROUPS	NUMBER OF BORES	PERCENTAGE SUCCESSFUL (YIELD >0.03)	AVERAGE YIELD (L/s) #	MAXIMUM YIELD (L/s)	PERCENT IRRIGATION SUCCESSFUL (YIELD >=1.5)	SALINITY RANGE (mg/L) ✱	GENERAL AQUIFER CHARACTERISTICS	VULNERABILITY TO POLLUTION
POROUS (INTERGRANULAR)	HIGH	Quaternary aeolian deposits marginal to the coast consisting of fine to medium grain size sand.	20	75	0.52 (12)	3.78	8.3	210 - 5000 ✱	These aquifers are contained in surface deposits of limited thickness up to a maximum of about 12 metres but usually less. Yield depends on grain size and thickness of saturated sand and decreases as the clay content of the sand increases. Groundwater is often extracted from these aquifers using spear bores installed to depths of up to 7-8 metres. A single spear in some prospective areas may yield 0.5 L/s or more i.e. sufficient for domestic, garden, stock. A nest of 10-20 spears using a central pump may yield small irrigation quantities (5-10 L/s). Quality is often good enough for the water to be used for a wide range of purposes. Major resources occur in sand deposits behind Nine Mile Beach north of Swansea and at Seven Mile Beach. Significant resources occur at other locations e.g. Safety Cove, South Arm peninsula, Bruny Is. Aquifers are mostly unconfined.	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	43.5	0.31 (17)	0.63		1840 - 11200 ✱	These aquifers are contained in surface deposits of limited thickness. Yields depend on grain size, clay content and saturated thickness. There are few known high yielding zones in the region but it is often possible to extract small quantities of groundwater using spear bores e.g. South Arm peninsula. Quality is variable and salt content may limit uses in some areas. Aquifers are unconfined to confined.	Moderate to high. Depends on whether low permeability material overlies the aquifer.
POROUS (INTERGRANULAR)	LOW - MODERATE	Quaternary, alluvium talus and till deposits. The alluvium consists of clay, together with sand and gravel deposits with varying clay content. The talus consists of boulders with a moderate to high clay content. Minor windblown sand on sloping bedrock. Terrestrial origin.	34	61.8	0.77 (18)	5.05	5.5	210 - 8290 ✱	These aquifers are contained in surface deposits of limited thickness. Yields in alluvium are variable and often low due to a relatively high clay content. However, where the sediments are coarse grained and free of clay, yields can be appreciable e.g. Melrose Road, Tunbridge where the reported output of a bore is 5.1 L/s. Talus and windblown sand are often in elevated locations on the side of steep slopes and prospects of appreciable quantities of groundwater in such situations are usually poor. In the areas where these units are present, there are often good prospects of obtaining groundwater from underlying materials. Many successful bores penetrate these surface deposits and obtain water from underlying rocks. In many cases the underlying rock will be that which surrounds these deposits at the surface. Water quality in the coarser sediments is often good. Nearby surface streams may recharge them. Aquifers are unconfined to confined.	Low to high. Clayey material at the surface will aid in protecting groundwater at depth including underlying rocks. Coarse-grained aquifers without such protection are vulnerable as are aquifers underlying them.
POROUS (INTERGRANULAR)	LOW - HIGH	Tertiary sediments consisting of clay, sand and gravel. Variable thickness up to several hundred metres. Lacustrine and alluvial sediments.	138	52.9	1.56 (60)	15.17	43.3	535 - 5800	The major areas where these sediments occur are the southern part of the Launceston Tertiary Basin from Campbell Town to Epping and the Coal River Valley region where prospectivity is high and groundwater is stored in fine to medium grained sand, coarse sand and gravel. Water quality is variable in these deposits and salinity often reaches levels that seriously limit use. The high average yield of successful bores reflects the results from the Campbell Town - Epping area. Smaller areas of Tertiary sediments have provided very mixed results from water boring operations. Particularly low prospective areas include the Penna area, Cranbrook (where 11 bores failed to obtain useful water in clay sediments to 200 metres depth) and Little Swanport (4 bores obtained no useful supplies in clay sediments). Development of bores in these sediments, particularly where the aquifers are fine to medium grained sand require specialist drilling skills to establish reliable operating bores. Aquifers are often confined and occasionally unconfined.	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 marine origin, glacial conditions, minor zones of terrestrial origin.	*1215* *572* 1787	*77.2* *79.6* 78	*0.93 (877)* *1.7 (439)* 1.23 (1316)	*18.95* *25.30* 25.3	*15.4* *26.4* 19.1	*716 - 13225* *145 - 13790* 116 - 13790	Triassic and Permian rocks are mainly regarded as fractured rock aquifers although there is likely to be some intergranular storage and flow in the coarser grained units (sandstone, conglomerate). Transmission of water to bores is probably largely via joints and bedding planes. These rocks are the most commonly drilled in the region. Yields range up to irrigation quantities and groundwater is used for domestic, garden, stock and irrigation purposes. Quality is variable and salinity restricts use at many locations. Near surface lower yielding zones often have poorer quality groundwater than deeper higher yielding zones. High sulphate groundwater occurs in the Permian at some locations e.g. just north of central Tunnack. Triassic rocks at Dodges Ferry are particularly prospective but water quality limits use in some locations. Elevated and / or steeply sloping areas are likely to be less prospective than lower lying locations in most cases. Aquifers are mainly unconfined to confined locally.	High. Low permeability material at the surface will offer some protection and vulnerability may be reduced to low to moderate.
FRACTURED ROCK	MODERATE-HIGH	Ordovician to Devonian turbidite sequence of sandstone and mudstone (Mathinna Supergroup). Cambrian and Precambrian rocks in southwest.	6	16.7	3.78 (1)	3.78	100		Only a few bores have been drilled in these rock types in the region and results are not regarded as particularly representative. Three bores have been drilled in each rock group on single properties at closely spaced locations. The grading of the prospectivity refers to known results in these rock units outside the area covered by this map where large numbers of bores have been drilled with much better results. Mathinna Supergroup rocks are one of the more prospective units for groundwater in the State. Aquifers are semiconfined to confined and occasionally unconfined.	High. A thick layer of low permeability material covering the aquifer will reduce vulnerability.
FRACTURED ROCK	HIGH	Tertiary basalt.	181	81.8	3.25 (140)	25.25	40.7	560 - 8390	Tertiary basalt is the most prospective rock unit in the region. It has the highest success rate for bores drilled as well as a high proportion of higher yielding bores. Particularly prospective areas are the Campbell Town and Paranena Road (near Sorell) areas. Excessive use in these areas could result in restrictions on use being applied because they are both low rainfall (and hence low recharge) areas. Storage per unit volume can be greater in basalt than some other fractured rock units because of the presence of vesicles (gas holes) and the generally more intense fracturing system. Quality is variable and salinity is often moderate to high which restricts use. Aquifers are mainly confined to unconfined locally.	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	63.1	1.24 (293)	18.95	19.8	70 - 11200	Jurassic dolerite is usually less fractured than Tertiary basalt and as a result has lower prospectivity at most locations. The proportion of successful bores is lower than the Permian / Triassic and Tertiary basalt units but average output of those that are successful is relatively high. Yields of up to about 20 L/s have been obtained (irrigation quantities) and domestic / stock / garden quantities are commonly obtained in the successful bores. Quality is variable and salinity in low rainfall areas is often at levels that restrict use. Aquifers are often unconfined, semiconfined to confined.	Moderate. Can be high if highly fractured zones are not overlain by low permeability material.
FRACTURED ROCK	LOW - MODERATE (Low on this map)	Devonian granitic rocks.	4	100	0.60 (4)	1.01		1700	Only a few bores have been drilled in these rocks in the region and results are not regarded as particularly representative. Although the four bores reported all obtained water, this is a much greater percentage success rate than bores attempted in these rocks outside the area where many more bores have been drilled. Granitic rocks are generally less fractured than most other rock types, resulting in generally lower yields and success rates for water bores. Aquifers are unconfined to confined.	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. # Boreholes with yields >0.03 L/s have been considered as successful bores. Yield related statistics (average, maximum yield and percent irrigation successful) are based on the number of successful bores (numbers in brackets in the average yield column). Outputs of bores are those supplied by drillers and are mostly the result of short term pumping measurements. Some bores have been successful, but outputs have not been reported. These bores are included in the total percentage of successful bores but have not been used for other statistical calculations. Boreholes reported as dry holes usually have a small unreported yield (<0.05 L/s).
3. Successful bores with a reported yield of >= 1.5 L/s have potential for small irrigation purposes. Very limited irrigation is possible with lower yields.
4. ✱ 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 ✱).
5. Small elevated areas of any hydrogeological unit will usually have lower prospectivity because of limited storage and high drainage rates.
6. In areas where there is little or no water bore data, the groundwater prospectivity has been assumed to be similar to that in the areas where data are widely available.
7. 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



3300 mm
3000
2500
2000
1500
1000
500
400

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

/covers/projects/tas_gw_pros/amts/gw250_se_out.yield