MINERAL RESOURCES TASMANIA

Tasmania

DEPARTMENT of INFRASTRUCTURE ENERGY and RESOURCES

SOUTHWEST TASMANIA
INFERRED GROUNDWATER MAP

SCALE 1:250000

0 5 10 15 20 25km

AGD66 - AMG Zone 55.

NOTE: - There are very few water bores in this region due to its remoteness, high rainfall and availability of the surface water. The best known aquifers are those in the Tertiary and Quaternary sediments near Strahan. Similar rock types occur to those in other parts of Tasmania and groundwater prospectivity in these other areas has been used to predict the groundwater prospectivity in Southwest Tasmania. Groundwater quality (expressed as Total Dissolved Solids mg/L) may be better than in the some other parts of Tasmania due to the generally higher rainfall and higher recharge potential. In mineralised areas where acidic conditions prevail, heavy metal concentrations may be significant. Higher rainfall can also change groundwater protection (compared to low rainfall areas in other parts of Tasmania) as a result of greater weathering potential, increased erosion on the sloping land an accumulation of the weathered material on the lowlands.
The groundwater prospectivity legend shown on this map is a state wide legend which contains data on generalised aquifer characteristics that may not be directly relevant to this map. Statistical data and aquifer characteristics provided should be used only as a guide to conditions that may prevail on this map.

BOREHOLE YIELD
(Map for borehole salinity - TDS not produced)

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 eg. <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.

AQUIFER TYPE	PROSPECTIVITY (Whole of Tasmania)	ROCK GROUPS	REGION (1:250 000 map area - see map index)	NUMBER OF BORES	PERCENTAGE SUCCESSFUL (YIELD >0.03)	AVERAGE YIELD (L/s) #	MAXIMUM YIELD (L/s)	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.	SE NE NW SW	20 5 60	75 100 95	0.52 (12) 0.65 (11)	3.78 1.3	210 - 5000 * 270 - 980	Aquifers are contained in surface deposits up to about 15 metres thick. Yields depend on grain size and thickness of saturated sand and yields reduce as clay content of sand increases. Groundwater is usually extracted using shallow spear bores installed to depths of up to 7 m. A single spear in a prospective area usually yields 0.5-1 L/s; a nest of 10-20 spears bores may yield 5-15 L/s. Quality is usually suitable for most purposes. Aquifers are mostly unconfined.	High.
POROUS (INTERGRANULAR)	MODERATE-HIGH	Quaternary coastal plain deposits consisting of sand, clayey sand, shelly deposits and gravel underlying areas near the coast. Probable marine origin.	SE NE NW SW	46 101 54	43.5 86.1 51.9	0.31 (17) 0.61 (61) 2.19 (24)	0.63 6.33 15.2	1840 - 11200 * 57 - 2550	There are a few known high yielding areas (Devonport, Burnie, Flinders Island etc.) where water is extracted using spear bores. Aquifers are contained in surface deposits of limited thickness (10 - 15 m). Yields depend on grain size, clay content and thickness of saturated sand. Yields reduce as clay content of sand increases (large volume excavations are used for water extraction in this case). Quality is variable and in some areas high groundwater salinity is causing development of dryland salinity. Aquifers are unconfined and semi-confined.	Moderate to high. Depends on permeability of the material that overlies the aquifer.
POROUS (INTERGRANULAR)	LOW - MODERATE	Quaternary alluvium (clay, sand and gravel with varying clay content) and talus (boulder deposits). Sand, gravel and mud of alluvial, lacustrine and littoral origin. Minor windblown sands on sloping bedrock.	SE NE NW SW	34 25 40	61.8 96 35	0.77 (18) 1.26 (24) 2.06 (14)	5.05 4.55 7.6	210 - 8290 * 2160	Yields in alluvium are variable and often low due to relatively high clay content. Useful yields are obtainable in areas with low clay content. Talus and windblown sands on sides of steep slopes usually contain limited quantities of groundwater. The main targets in all areas are aquifers underlying these materials. Water quality is variable, usually good in high rainfall areas and in the vicinity of the streams. Aquifers are unconfined to confined.	Low to high. Low where clay material overlies aquifer. High where there is no clay.
POROUS (INTERGRANULAR)	LOW - HIGH (High in NW Moderate - high in NE Low - high in SE)	Tertiary sediments: clay, sand and gravel of non marine origin (lacustrine alluvial deposits). Minor limestone (marine origin). Variable thickness up to several hundred metres.	SE NE NW SW	138 452 122	52.9 70.4 70.5	1.56 (60) 1.96 (282) 2.43 (80)	15.17 15.17 30.3	535 - 5800 28 - 2160 65 - 1000	Yields are variable, usually high in the areas where clean sand and gravel layers are about 5 m or greater in thickness (Scottsdale, Sheffield, Devonport, Campbell Town, Epping and Coal River area). Low yields are linked to sections of Tertiary sediments with increased clay content (Port Sorell, Penna and Cranbrook). Development of bores in these fine grained sediments generally requires specialist drilling skills. Water quality is good in the north and north-east of the state and water is usually suitable for all purposes. In the south eastern part water quality is variable and often reaches salinity levels that seriously limit use of the groundwater. Aquifers are often confined.	Low to high. Low where clay overlies aquifers. High where gravel aquifers come to the surface.
FRACTURED ROCK (Intergranular on some horizons)	HIGH	Triassic, quartzose and lithic sandstones, mudstone, minor coal. Terrestrial origin (R, Rv, Rq). Permian mudstone, siltstone and sandstone (often pebbly), minor limestone, conglomerate and tillite. Mainly marine origin (P).	SE NE NW SW	1787 279 207	78 83.9 88.9	1.23 (1316) 2.88 (231) 2.35 (175)	25.3 25.33 18.95	116 - 13790 97 - 6800 82 - 1100	Yields suitable for most domestic and livestock purposes; in some cases sufficient for irrigation (up to 25 L/s). Quality is good in the north and the northeast where water is usually suitable for a wide range of purposes. In the southeast water salinity restricts use in many locations. Here near surface small yielding zones often yield poorer quality groundwater than deeper higher yielding zones. Aquifers are mainly unconfined to confined locally.	High - unless a layer of low permeability material overlies the aquifer.
FRACTURED ROCK	MODERATE-HIGH (Moderate - high in NW and SE. High in NE)	Ordovician to Devonian turbidite sequence of sandstone and mudstone (Mathinna Supergroup); Ordovician limestone, Cambrian volcanics and sediments. Precambrian mudstone, slate, quartzite and dolomite. Neoproterozoic sediments.	SE NE NW SW	6 349 1086	16.7 85.2 82.7	3.78 (1) 2.20 (267) 2.75 (834)	3.78 30.40 25.33	 64 - 3330 61 - 3700	Yields of up to 25 L/s are adequate for crop irrigation in some areas; domestic and stock yields more common. The Mathinna Supergroup is one of the more prospective units in the state. Quality is generally suitable for a variety of purposes, although water can be more saline especially near coastal areas (Bridport, Weymouth etc.). Aquifers are semiconfined to confined and occasionally unconfined.	Very high - unless a layer of low permeability material overlies the aquifer.
FRACTURED ROCK	HIGH	Tertiary basalt.	SE NE NW SW	181 557 1700	81.8 84.7 87.2	3.25 (140) 3.25 (437) 1.90 (1417)	25.25 37.83 25.27	560 - 8390 45 - 2760 80 - 950	Usually highly prospective, yields mostly sufficient for domestic and stock purposes; small to moderate irrigation quantities are often obtained (yields up to 38 L/s). Aquifers often intensely fractured and vesicular. Yields are generally higher than for other fractured rock aquifers. Prone to overuse in low rainfall areas (Pawleena Road near Sorell and Campbell Town). Quality usually suitable for most purposes in the north and northeast. In the low rainfall southeastern part of the state salinity is moderate to high and restricts water use. Aquifers can be unconfined to confined.	High. Very occasional deep clay soils may offer some protection and lower vulnerability
FRACTURED ROCK	MODERATE	Jurassic dolerite. Triassic basalt - St Marys. Tertiary basalt - Scottsdale, Ringarooma, Tamar and Bream Creek.	SE NE NW SW	480 146 16	63.1 56.2 56.3	1.24 (293) 0.73 (67) 1.12 (9)	18.95 8.85 1.52	70 - 11200 85 - 1470 187 - 2420	Yields often suitable for domestic/stock purposes; less commonly irrigation quantities (up to 20 L/s) have been found. Dolerite is usually less fractured than basalts and in most locations is of lower prospectivity. Quality is variable and water salinity in the low rainfall areas often restricts its use (water quality is expected to be mainly good in the north and northeast parts of Tasmania, as well as the Central Plateau). Aquifers are often unconfined, semiconfined to confined.	Moderate. Can be high if fractured zones are not overlain by low permeability material.
FRACTURED ROCK	LOW - MODERATE (Mainly Low Low - Moderate in NE)	Devonian granitic rocks. Cambrian mafic ultramafic complexes (peridotite, serpentinite, dolerite dykes). Precambrian granite.	SE NE NW SW	4 60 31	100 51.7 38.7	0.60 (4) 0.61 (21) 0.50 (11)	1.01 1.88 1.01	1700 240 - 1950 770	The granitic rocks are often sparsely jointed and generally have a lower prospectivity than other rock types. Yields are usually in the range suited to stock, domestic uses, although occasionally higher yields are obtained. Large areas of granitic rocks are untested. Quality is variable; salinity sometimes restricts use. Peridotite and serpentinite outside the agricultural areas are untested and little is known of their potential. Aquifers are unconfined to confined.	Low to moderate. Can be high if highly fractured zones not covered by clay.

1. This is a state wide legend which contains data on generalised aquifer characteristics that may not be directly relevant to this map.
2. 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.
3. # Boreholes with yields >0.03 L/s have been considered as successful bores. Yield related statistics (average and maximum yield) are based on the number of successful bores (number 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 small unreported yield (<0.05 L/s).
4. Successful bores with a reported yield >= 1.5 L/s have potential for small irrigation purposes in Tasmania. Very limited irrigation is possible with lower yields.
5. * 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)*
6. Small elevated areas of any hydrogeological unit will usually have lower prospectivity because of limited storage and high drainage rates.
7. In areas where there is little or no water bore data (Southwest Tasmania), the groundwater prospectivity has been assumed to be similar to that in areas where data are widely available.
8. In areas of low rainfall water quality can be degraded and usage may be limited.

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 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.

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Base data from the LIST, © State of Tasmania

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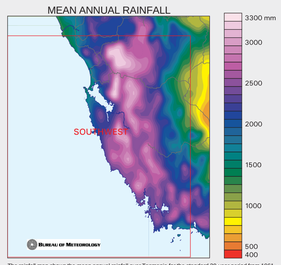
MEAN ANNUAL RAINFALL



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.

LOCATION DIAGRAM

WARNING: INKS ARE LIGHT SENSITIVE

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

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