

# MAP 10 – HYDROGEOLOGICAL INVENTORY



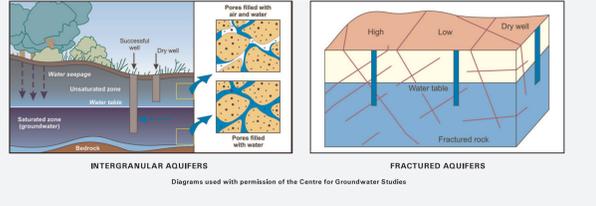
These maps are complementary to the 1:250 000 scale hydrogeological maps which use as a basis, a compiled 1:250 000 scale geology layer (derived from 1:250 000, 1:50 000, 1:63 360 scale geological maps together with some areas where only reconnaissance mapping is available). These 1:100 000 scale maps are easier to read and use the regional groundwater prospectivity boundaries from the 1:250 000 scale maps as background information in the absence of more detailed hydrogeological coverage across the whole State. They should be used in conjunction with the 1:250 000 scale maps and other more detailed hydrogeological maps and site specific reports, if available, as a preliminary to more intensive groundwater studies in a particular area. If additional projects are undertaken in targeted protected areas of the State, these maps can be further developed and made more site specific.

Boreholes shown on the map are those with locations mainly supplied by driller and from location in the field by MRT staff. There are many open boreholes installed for investigation and production purposes in coastal and inland areas in Tasmania that may not be shown on these maps at this stage. Boreholes with yields of 0.01 L/s have been considered as successful yields. Outputs of boreholes are those supplied by driller and are mostly the result of short term pumping measurements. Some boreholes have been successful but outputs have not been reported. Boreholes reported as dry holes usually have a small unreported yield (<0.02 L/s).

Small elevated areas of any hydrogeological unit will usually have lower prospectivity because of limited storage and high drainage rates. In areas where there is little or no water borne data (e.g. Southwest Tasmania), the groundwater prospectivity has been assumed to be similar to that in the areas where data are widely available. In areas of low rainfall, water quality can be poorer and water usage may be limited.

These maps provide some additional information to the 1:250 000 scale hydrogeological maps in that there are some subdivisions of Permian and Triassic age units. There is some difference in hydrogeological units shown on the map and in some cases their relative thickness. There is usually a degree of vertical stratification in the groundwater quality within the aquifers and results presented represent a composite view of salinity from drill holes at a particular time. Natural groundwater quality is influenced by small scale and the regional scale (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 defined 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.

The geology (including scale, prospectivity, groundwater and the relationship between surface water, groundwater and rainfall) is particularly important in coastal areas where sea level rise and saltwater intrusion are a concern. The amount of rainfall may be used to make some general decisions about the possible links between the above-mentioned water balance factors. Current rainfall is not shown on these maps. It is assumed that rainfall is high in the coastal areas and low in the inland areas. If all groundwater is derived from rain, then in areas with unconfined shallow aquifers groundwater pumping near the rivers may result in the reverse water flow from the river towards the groundwater and result in decreased river flow. These maps provide preliminary information for more detailed groundwater and surface water studies.



AQUIFER TYPE	PROSPECTIVITY (Whole of Tasmania)	ROCK GROUPS	VULNERABILITY TO POLLUTION
POROUS (INTERGRANULAR)	HIGH	Quaternary aeolian deposits marginal to the coast consisting of fine to medium grain size sand.	High.
POROUS (INTERGRANULAR)	MODERATE - HIGH	Quaternary coastal plain deposits consisting of sand, clayey sand, silt and gravel underlying areas near the coast. Possible marine origin.	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 tills (siltier deposits). Minor windblown sands on sloping bedrock.	Low to high. Low where clay material overlies aquifer. High where there is no clay.
POROUS (INTERGRANULAR)	LOW - HIGH	Tertiary sandstone: clay sand and gravel of up to 100 metres (regional aquifer) (alluvial deposits). Minor limestone. Tertiary conglomerate. Variable thickness up to several hundred metres.	Low to high. Low where clay overlies aquifer. High where gravel aquifers come to the surface.
FRRACTURED ROCK (intergranular or some horizons)	HIGH	Triassic quartzite and lithic sandstones, mudstones, minor coal, Tertiary origin (R, B, S).	High - unless a layer of low permeability material overlies the aquifer.
FRRACTURED ROCK	MODERATE - HIGH (alluvial and silt, esp. in NE)	Permian mudstone, siltstone and sandstone (often pebbly), minor limestone, conglomerate and tillite. Mainly marine origin (P).	Very high - unless a layer of low permeability material overlies the aquifer.
FRRACTURED ROCK	HIGH	Ordovician to Devonian turbidite sequence of sandstone and mudstone (Mariner Supergroup). Ordovician siltstone, Cambrian volcanics and sediments. Precambrian mudstone, silt, quartzite and dolomite. Neoproterozoic sediments.	High. Very occasionally deep clay soils may offer some protection and lower vulnerability.
FRRACTURED ROCK	MODERATE	Tertiary basalt.	Moderate. Can be high if fractured zones are not overlain by low permeability material.
FRRACTURED ROCK	LOW	Jurassic dolomite, Tertiary basalt - 50 layers, Tertiary basalt - Scottsdale, Ringarooma, Tamar and Brierley Creek.	Low to moderate. Can be high if highly fractured zones are not covered by clay.
FRRACTURED ROCK	MODERATE	Devonian granitic rocks, Cambrian mafic ultramafic complexes (peridotite, serpentinite, olivine gabbro), Precambrian granite.	Low to moderate. Can be high if highly fractured zones are not covered by clay.

**GROUNDWATER FEATURE**  
Feature type - Yield and Borehole  
● Borehole location accuracy  
○ Borehole location accuracy  
● Borehole location accuracy  
○ Borehole location accuracy  
● Borehole location accuracy  
○ Borehole location accuracy

**GROUNDWATER FEATURE TYPE AND ACCURACY**

**BOREHOLE YIELD**  
Litres / second Potential usage of groundwater based on borehole yield

**GROUNDWATER QUALITY**  
Expressed as Total Dissolved Solids (TDS)  
TDS in mg/L

**POTENTIOMETRIC CONTOURS**

**SALINITY - TDS**

**SALINITY CONTOURS**

**GEOLOGY (TRIASIC / PERMIAN)**

**MEAN ANNUAL RAINFALL**

**INDEX TO ADDITIONAL MAP SHEETS**

**WARNING: INKS ARE LIGHT SENSITIVE**

Scale: 1:100000  
AGD66 - AMG Zone 55  
Contour Interval: 100 metres

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 completeness or accuracy of the information. The user should verify the information on the ground. The user should also verify the information on the ground. The user should also verify the information on the ground.

This map is not the result of a complete survey therefore groundwater potential and salinity details are indicative only. This map should not be used to remove the need for site specific investigations. Groundwater potential data compiled by: W.L. Matthews B.Sc. and M.L. Matthews B.Sc. (Hons)

File for this map generated from digital data: September 19, 2008