

MAP 19 – HYDROGEOLOGICAL INVENTORY



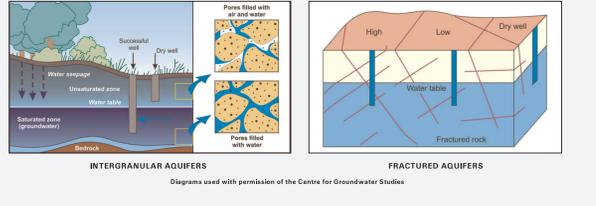
These maps are complementary to the 1:250 000 scale hydrogeological maps which use as a basis, a compiled 1:250 000 scale geology layer (derived from 1:25 000, 1:50 000, 1:63 360 scale geological maps together with some areas where only reconnaissance mapping is available). These 1:100 000 scale maps 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 priority 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 drillers and from location in the field by MRT staff. There are many open boreholes installed for investigation and production purposes in coastal basins in Tasmania that may not be shown on these maps at this stage. Boreholes with yields <math>< 0.01 \text{ L/s}</math> have been considered as successful boreholes. Outputs of boreholes are those supplied by drillers 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 (<math>< 0.01 \text{ L/s}</math>).

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 table data (e.g. Southern 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 properties and prospectivity between these units. For example the Upper Triassic (i.e. sandstone, mudstone and coal measures) has lower prospectivity and poorer quality groundwater than the Lower Triassic and Permian rocks in most locations. The three dimensional shaded relief enabled users to understand the spatial relationship between adjoining groundwater units shown on the map and in some cases their relative thicknesses.

There is usually a degree of vertical stratification in the groundwater quality with the aquifers and results presented represent a composite value of salinity from drill holes at a particular site. Highest groundwater quality is indicated 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. The geology (including weather prospectivity), groundwater flow and the relationship between surface water, groundwater and rainfall is a particular area are important considerations to resource and other groundwater related water studies. The attached average rainfall map can be used to make the general deductions about the possible link between the above-mentioned water balance factors. Climate has an effect on quantity and quality of both groundwater and surface water. At least low in rainfall areas and spring water is largely. First all groundwater derived under most conditions. In areas with unconfined shallow aquifers groundwater pumping near the rivers may result in the reverse 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 (Value of Terrain)	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, clay, silt, silty deposits and gravel underlying areas near the coast. Includes marine silt.	Moderate to high. Depends on permeability of the material that overlies the aquifer. High where there is no clay.
POROUS (INTERGRANULAR)	LOW - MODERATE	Quaternary alluvium (clay, sand and gravel with varying clay content) and later (boulder deposits), sand, gravel and mud of alluvium, lacustrine and fluvial origin. Minor windblown sands on rising bedrock.	Low to high. Low where clay material overlies aquifer. High where there is no clay.
POROUS (INTERGRANULAR)	LOW - HIGH	Tertiary sedimentary clay sand and gravel of non marine origin (lacustrine alluvial deposits). Minor interstratified marine silt. Variable thickness up to several hundred metres.	Low to high. Low where clay overlies aquifers. High where gravel aquifers come to the surface.
FRACTURED ROCK (intergranular on some horizons)	HIGH	Triassic, quartzite and lithic sandstones, mudstone, minor coal. Tertiary origin (R, Rv, R2).	High - unless a layer of low permeability material overlies the aquifer.
FRACTURED ROCK	MODERATE - HIGH	Permian mudstones, siltstones and sandstones (often pebbly), minor limestone, conglomerate and tillite. Many marine origin (P).	Very high - unless a layer of low permeability material overlies the aquifer.
FRACTURED ROCK	HIGH	Tertiary basalt.	High. Very occasionally deep clay soils may offer some protection and lower vulnerability.
FRACTURED ROCK	MODERATE	Jurassic - Silurian. Tertiary basalt - St Marys. Tertiary basalt - Scottsdale, Ringarooma, Tamar and Brown Creeks.	Moderate. Can be high if fractured zones are not overlain by low permeability material.
FRACTURED ROCK	LOW - MODERATE	Devonian granite rocks. Cambrian mafic ultramafic complexes (pentrite, soapstone, chlorite etc.). Precambrian granite.	Low to moderate. Can be high if highly fractured zones not covered by clay.

GROUNDWATER FEATURE
Feature type — Yield and/or quality — Salinity - TDS

GROUNDWATER FEATURE TYPE AND ACCURACY

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

POTENTIOMETRIC CONTOURS

SALINITY CONTOURS

GEOLOGY (TRIASIC / PERMIAN)

Scale: 1:100000
AGD86 - AMG Zone 55
Contour Interval: 100 metres

MEAN ANNUAL RAINFALL

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

Potential usage of groundwater based on water quality

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MUNICIPAL PLANNING INFORMATION SERIES
MAP 19