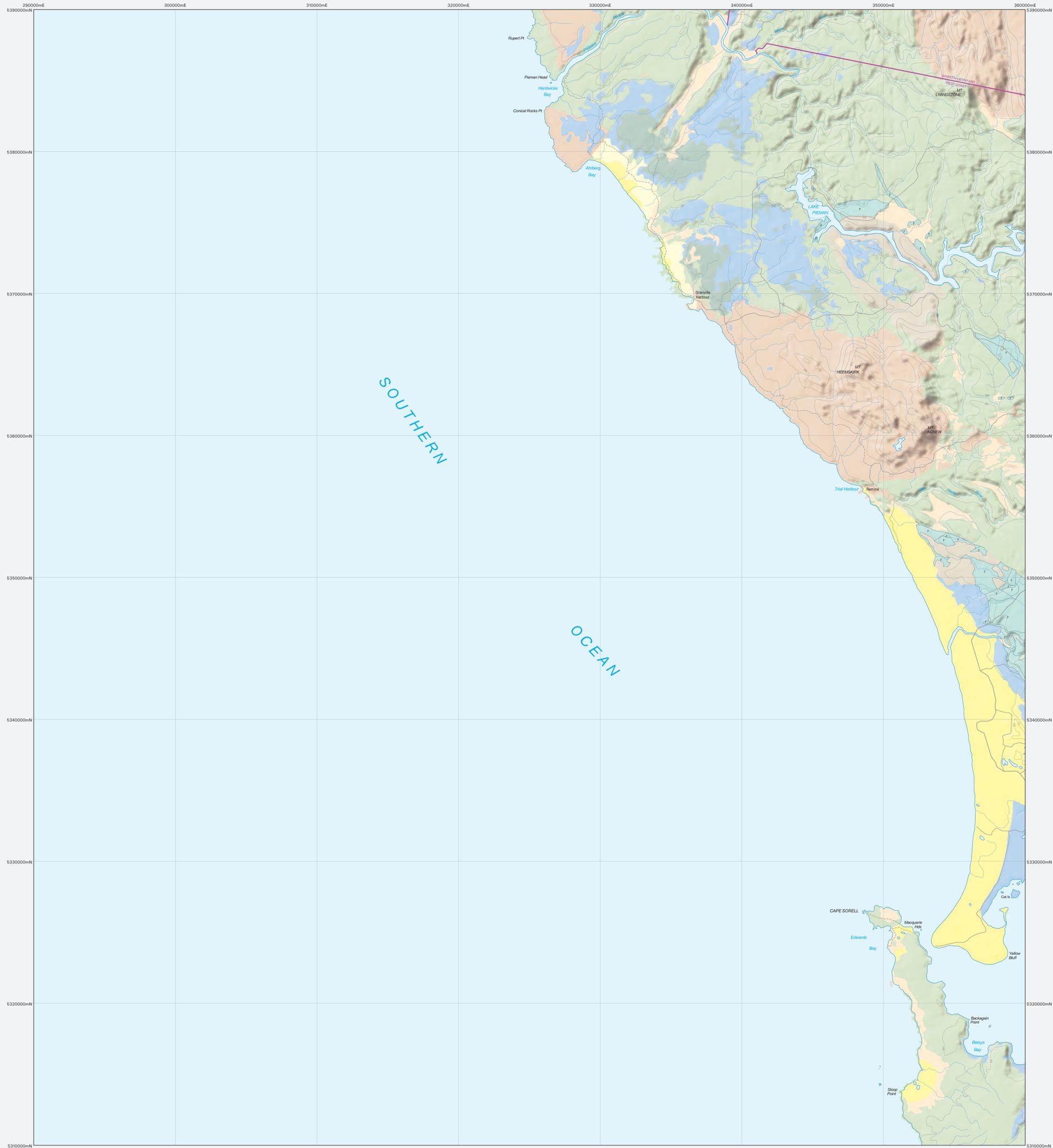


MAP 13 – HYDROGEOLOGICAL INVENTORY

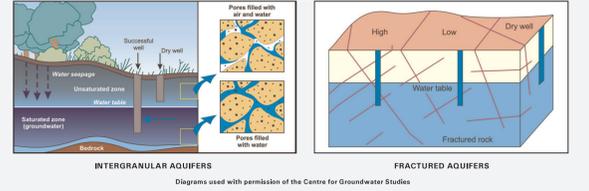


These maps are complementary to the 1:250 000 scale hydrogeological maps which use as a basis, a compiled 1:250 000 scale geology layer (derived from 1:25 000, 1:50 000, 1:63 360 scale geological maps together with some areas where only reconnaissance mapping is available). These 1:100 000 scale maps 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 prioritised 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 locations in the field by MRT staff. There are many spear bores installed for investigation and production purposes in coastal sand deposits in Tasmania that may not be shown on these maps at this stage. Boreholes with yields >0.03 L/s have been considered as successful bores. 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. Boreholes reported as dry holes usually have a small unexpected 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 bore 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 (the 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 shade effect enables users to understand the spatial relationship between adjoining groundwater units. 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 than low rainfall, high evaporation areas). The composition of the rock types through which the groundwater passes and is stored is 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 aquifer prospectivity), geomorphology and the inter-relationship between surface water, groundwater and rainfall is a particularly important consideration in relation to groundwater quality studies. The attached average rainfall map can be used to make some general decisions about the possible links between the above mentioned water balance factors. Climate has an effect on quantity and quality of groundwater. In coastal low rainfall areas and during winter a surplus of groundwater is stored. In all groundwater derived under most conditions, 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 silt, silt, silty sand and gravel underlying areas near the coast.	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 silty (silt) deposits). Sand, gravel and mud of alluvial, lacustrine and fluvial origin. 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 river meanders (locally silty) and alluvial deposits. Minor intertidal (marine origin). 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 (Irregular or some horizons)	HIGH	Triassic quartzite and lithic sandstones, mudstones, minor coal. Tertiary origin (S, Rv, R2).	High - unless a layer of low permeability material overlies the aquifer.
FRACTURED ROCK	MODERATE - HIGH	Permian mudstone, siltstone and sandstones (often pebbly), minor limestone, conglomerate and tillite. Mainly marine origin (P).	Very high - unless a layer of low permeability material overlies the aquifer.
FRACTURED ROCK	HIGH	Tertiary basalt.	High - unless a layer of low permeability material overlies the aquifer.
FRACTURED ROCK	MODERATE	Jurassic dolomite, Triassic basalt, Devonian sandstone, Tertiary basalt - Scottsdale, Ringarooma, Tamar and Bass Coast.	Moderate. Can be high if fractured zones are not covered by low permeability material.
FRACTURED ROCK	LOW	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 accuracy — Salinity - TDS

GROUNDWATER FEATURE TYPE AND ACCURACY

- Borehole location accuracy: 1-500 metres
- Spear point location accuracy: 1-500 metres
- Well, dug well location accuracy: 1-500 metres
- Borehole location accuracy: 500 - 2000 metres
- Spear point location accuracy: 500 - 2000 metres
- Well, dug well location accuracy: 500 - 2000 metres

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

- Unknown
- 0 (Dry)
- < 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, large area irrigation, small towns, supplement to larger towns

SALINITY - TDS
Milligrams / litre

- Unknown
- < 500
- 500 - 1000
- 1000 - 1500
- 1500 - 3000
- 3000 - 7000
- > 7000

POTENTIOMETRIC CONTOURS

- 100m contour interval
- 50m contour interval
- 20m contour interval
- 10m contour interval
- 5m contour interval
- 2m contour interval
- 1m contour interval

SALINITY CONTOURS
500 mg/L contour interval

GEOLOGY (TRASSIC / PERMIAN)

- Unconformity
- Lower Triassic sandstone - generally mudstone and siltstone with variable thickness
- Lower Triassic sandstone - generally quartz
- Permian sandstone (P)

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 All purposes, upper limit for drinking, limited irrigation
- 1500 - 3000 Most livestock, very limited irrigation
- 3000 - 7000 Most livestock (not pigs or horses)
- > 7000 Limited stock use (beef cattle, sheep)

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

MEAN ANNUAL RAINFALL
3300 mm
3000
2500
2000
1500
1000
500
500

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 contained herein. The user of this data is advised to verify the information with the appropriate authorities. The user of this data is advised to verify the information with the appropriate authorities. The user of this data is advised to verify the information with the appropriate authorities.

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 complete survey therefore groundwater potential and salinity shades are indicative only. This map does not remove the need for site specific investigations.

Groundwater potential data compiled by: W.L. Matthews B.Sc. and M.L. Strain B.Sc. (Hons)