

Groundwater Occurrence in the Port Phillip Basin

December 2004

Note Number 8

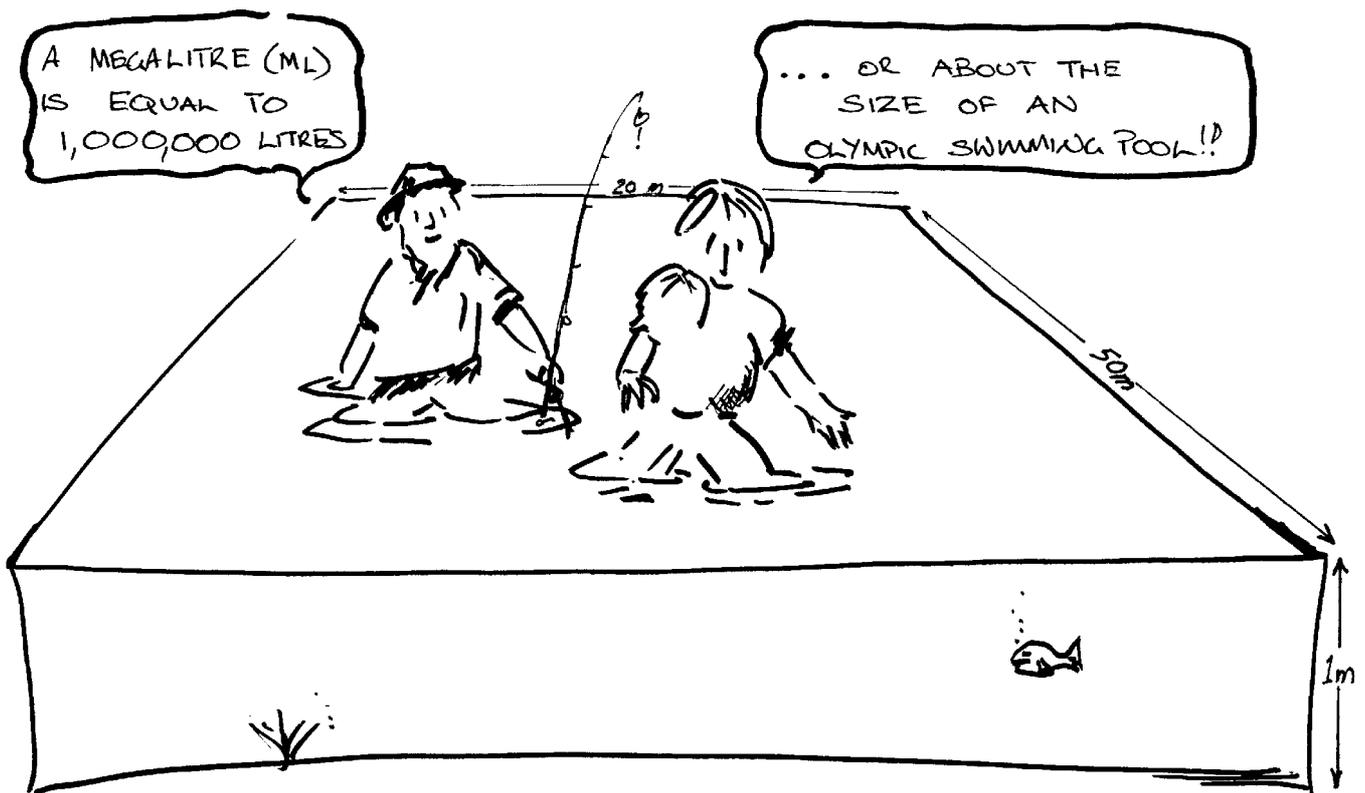
ISSN 1440-2092

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Within the Port Phillip Basin, the groundwater resource is relatively small and some areas are saline. Each year approximately 80 % of the available renewable resource is extracted from the 4000 or so groundwater bores in the region.

The table on the next page contains the general hydrogeological details for the main aquifers in the Port Phillip Basin. It can be used to assess the rock types and aquifer characteristics of a particular area.

Because bore yield, aquifer depth and water quality can vary locally, even on adjacent parcels of land, if you intend to tap groundwater you are advised to obtain more accurate information about the groundwater on your property. See Groundwater Notes Number 17 in this series about where you can get groundwater advice.



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Generalised hydrogeology of the main aquifers in the Port Phillip Basin

Geological unit forming aquifer	Main occurrence	Depth to aquifer	Aquifer thickness	Rock types	Aquifer type and form	Common salinity range (mg/L TDS)	Range of bore yields (L/sec)	Groundwater uses
Werribee Delta	south of Werribee	Outcropping	up to 30 m	silt, sand, gravel, clay, silty sand in lower part of deposits; minor gravel and sand lenses	unconfined sand and gravel aquifers of shoe-string form, interbedded with clay	500 to 6000	5 to 15	mainly used for irrigation of market gardens, washing dairies and stock watering
dune deposits	south-eastern suburbs of Melbourne between Mordialloc and Frankston and in Beaumaris area	Outcropping	thin, less than 6 m	sand	unconfined sand aquifer, limited areal extent	less than 1000	less than 0.2	garden watering especially during periods of water restrictions
Bridgewater Formation	Nepean Peninsula west of Selwyn Fault	Outcropping	200 m	sand, sandy calcarenite, shelly sand, mud, clay	unconfined sand aquifer, sheet-like form	300 to 1200	up to 25, most recorded yields are less than 1-2	domestic use, garden watering, irrigation in Boneo area, stock watering
Newer Volcanics	Werribee Plains west of Melbourne	Outcropping	generally between 50 and 150 m	basalt, scoria, pyroclastics	multi-layer fractured rock aquifer system with sheet-like basalt aquifers separated by clay layers; uppermost aquifer is unconfined, lower aquifers are confined	100 to less than 6000 mostly greater than 2500	up to 40 but generally less than 1-2	stock water and minor irrigation of salt tolerant crops in rural areas, low grade industrial uses in western suburbs of Melbourne
Moorabool Viaduct Formation	west of Melbourne, Geelong area and Bellarine Peninsula	either outcropping or underlying Newer Volcanic basalts	less than 30 m	sand, clayey sand, sandy clay, gravel, quartzite, sandy limestone	unconfined aquifer in outcrop areas but confined where covered by basalt; sheet-like form	greater than 3000	mostly less than 1.6	small utilisation only; some stock watering, watering of foreshore reserve on the Bellarine Peninsula, salt production at Lara
Fyansford Formation - Brighton Group - Baxter Sandstone	eastern and south-eastern suburbs of Melbourne, and inland to the Dandenong-Cranbourne area	Outcropping	20 to 80 m	sand, gravel, silt, clay, shelly sands, calcarenite, limestone	unconfined to confined sand, gravel and limestone aquifers - coarser sediments tend to be lenticular although deposits as a whole are sheet-like	100 to 6800 average about 1500	up to 18, typically less than 2.6	household garden watering especially during periods of water restrictions, irrigation and stock watering in rural areas, minor industrial and commercial use, diary washing, golf course watering
Older Volcanics	south-east of Melbourne from Cranbourne to Port Phillip Bay	Outcrops in Cranbourne area; up to 90 m deep towards Port Phillip Bay	10 to 40 m	basalt	fractured rock aquifer, unconfined in Cranbourne area, elsewhere confined beneath younger sediments	300 to 8000, average about 2000	up to 15, typically less than 5	stock supplies and irrigation of market gardens and pastures in the Lyndhurst-Cranbourne area, golf course watering at Cranbourne
Werribee Formation	west of Melbourne from Bacchus Marsh to Altona; Melbourne suburbs between Mentone and Frankston; Nepean Peninsula west of Selwyn Fault	Outcrops in Bacchus Marsh area only - up to 400 m deep under Werribee Plains; 40 to 90 m on Mornington Peninsula; 500 to 900 m on Nepean Peninsula	greater than 150 m Bacchus Marsh area; 20 to 80 m under Werribee Plains; 10 to 40 m south-east of Melbourne; 250 m Nepean Peninsula	sand, gravel, clay, lignite	unconfined to confined aquifer of sand and gravel, sheet-like form	2000 to 5000 west of Melbourne and Nepean Peninsula; 1500 to 3000 south-east of Melbourne	up to 50	some industrial use in western suburbs of Melbourne, used to top-up Cherry Lakes at Altona, irrigation of salt-tolerant crops in the Bacchus Marsh area, watering of golf courses in the south-eastern suburbs of Melbourne

Reference source: Introduction to Victorian Geology, 1991. Geological Society of Australia Inc. (Victorian Division).