

Introduction

In East Melbourne the subject of groundwater is developing into a community issue as residential developments within the precinct trend towards deeper excavations on residential blocks. Presentations to the Future Melbourne Committee have communicated that groundwater should be a Planning rather than Building issue as isolated developments can lead to foreseeable impacts outside of individual property boundaries. Acting proactively the East Melbourne Group committee recently initiated the collection of information from the community, aimed at developing a better understanding of groundwater related issues within

Geology, Topography and Groundwater

In a groundwater context East Melbourne is located within the East Port Phillip Bay Groundwater Catchment, an area outside of the state's major groundwater basins. This does not mean there is no groundwater, but high volume aquifers are absent. In practical terms this means that water conservation measures relating to public parklands in the precinct have focussed on surface water harvesting and recycling (eg Darling Square, Fitzroy Gardens and Yarra Park) as water bores with sufficient production are not a viable option.

The rocks immediately below the soil within the majority of the precinct are ancient Silurian (~420 million years old) marine sedimentary rocks that were folded and metamorphosed during a Devonian (~380 million years ago) mountain building event. Weathering and erosion then acted to reduce the land surface to its current level. Some of these features can be seen by viewing the railway cutting to the east of Jolimont Station where the original sedimentary beds are now on an angle of 45 degrees (folding) and the originally solid rocks are crumbling, clay-rich and rusting (weathering). In local areas in the extreme NE and SW of the precinct thin basalt flows overlie the Silurian basement. In the SE of the Jolimont residential area a thin colluvium cap is present.

In the precinct, groundwater at depths of <5 to 20 metres is contained within the weathered and fractured basement rocks due to contained porosity (holes) and permeability (connection between holes). The depth to groundwater is not exclusively controlled by the underlying weathered rocks. Topographic variation such as relative height, slope and position within surface catchments has a significant influence on depth to groundwater. The Department of Environment and Primary Industry has provided an online map of depth to groundwater and a website where individuals can assess the depth to groundwater for their residence. A summary table has been created from this source.

Landscape, Groundwater and Heritage Protection

The impact of residential development has substantially modified the natural environment of East Melbourne in the relatively short time of European settlement. An undulating landscape of open woodland through to ephemeral wetlands has been substantially cleared, trenched, paved and drained. Rainwater infiltration has been massively reduced and substantial re-routing of groundwater has occurred. Historical buildings on insubstantial foundations have largely survived these changes to the groundwater-regolith-soil moisture balance to the present time. The impact of widespread excavations below the known groundwater levels in East Melbourne should be assessed in advance of possible negative heritage and community outcomes.

Groundwater depth East Melbourne & Jolimont

Setting	Location	Height	Groundwater depth
Ridges	Crn Gisbourne & Albert St	43m	10-20m
	Crn Clarendon & Grey St	34m	10-20m
	Crn George & Powlett St	31m	10-20m
	Crn Vale & Berry St	23m	10-20m
Slopes	Crn Hotham & Powlett St	30m	5-10m
	Crn Agnes & Palmer St	15m	5-10m
Valleys	Crn Hotham & Simpson St	21m	<5m
	Darling Square	18m	<5m
	Crn Jolimont Rd & St	6m	<5m

Eastern end of Jolimont Station railway cutting, from Wellington Parade looking south.



Websites containing information on topographic and groundwater mapping in East Melbourne.

<http://services.land.vic.gov.au/maps/interactive.jsp>

<http://www.depi.vic.gov.au/water/groundwater/groundwater-resource-reports>

<http://maps.cerdi.com.au/vvg.php?>