

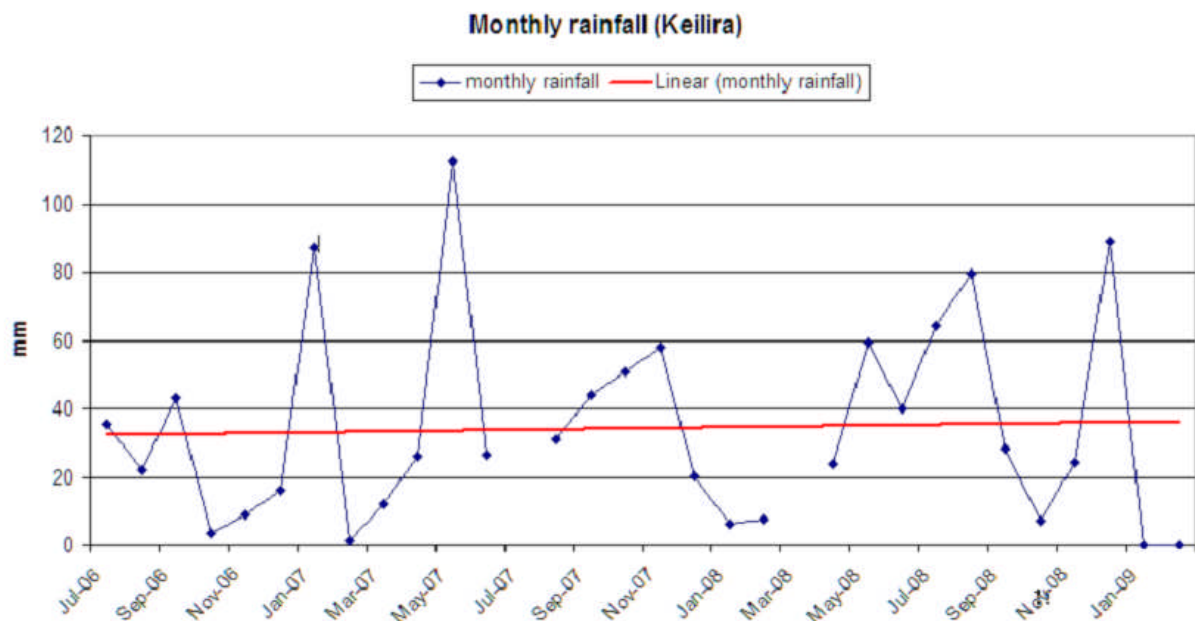
## Misleading claims of rising groundwater in the Upper SE

In recent weeks there has been renewed discussion about watertable trends in the vicinity of the proposed Bald Hill Drain, near Kingston in the state's South East. It seems that at least two Department of Water, Land and Biodiversity Conservation officers have been stating recently that analysis of bore level data provides "proof" that the watertable is rising in the area proposed for drainage, in spite of the current extended drought conditions. This statement is now being repeated frequently by other government officers and members of the community.

Advocates of groundwater drains are seeing this as justification to push ahead with plans to construct the Bald Hill Drain, but the claims are curious given the existence of published evidence of the long-term decline of shallow watertables in the Upper South East and so require further scrutiny. Most telling of all is the fact that the current claims are based on the selective use of only 3 years worth of data (2006-2009) to produce this rising "trend". As you will see, without proper interpretation this claim is at best misleading, and at worst deceptive.

### Why is it misleading?

The shallow unconfined aquifer (watertable) in the Upper SE oscillates seasonally in response to rainfall, usually being at its lowest each autumn and peaking each spring following winter rains. While most of the last decade has been drier than average, 2006 was an exceedingly dry year, when winter rains all but failed in the Upper South East. Although 2007 and 2008 were also below average, they did produce more rainfall than 2006, creating the appearance of an apparent short-term trend of increasing rainfall over that 3 year period.



Hence, it is not at all surprising that if you look this very brief snapshot during the current drought and overlay a computer generated trend-line it indicates a rising trend of rainfall.

### Just plain "bad science"

If you tried to tell people in the South East that we are experiencing a rising trend of rainfall at present they would question how on earth you came to that conclusion – after all everyone knows that rainfall is in long-term decline in this part of the world, and we are in a drought. However, when compared only back 3 years to 2006 this statement is technically true - but without proper explanation, quite misleading and very bad science.

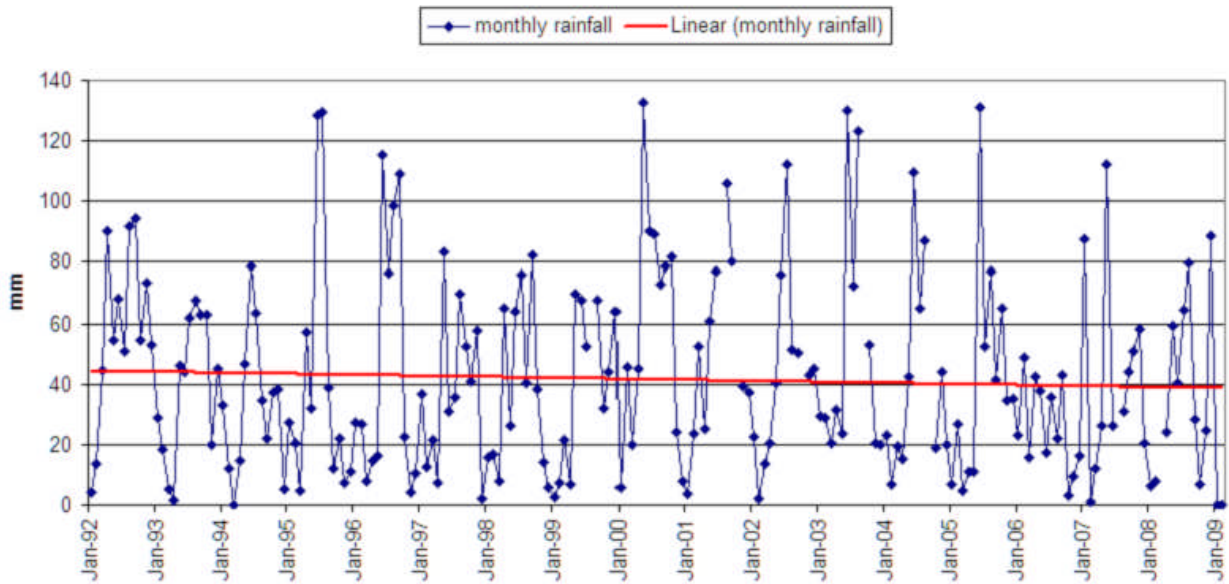
Trends are normally assessed over much longer time-frames, and for a very good reason – they eliminate much of the short term biases that can easily skew data collected over very short time frames.

For government scientists to choose to overlay a computer generated trend-line over bore data collected over such a short period is inexcusable. To then claim that this constitutes proof of rising groundwater levels raises questions of, at best, scientific incompetence or, at worst, deliberate political interference in the current debate about the need for drainage.

It is a shame that people aren't inclined to question what they have been told about groundwater levels, just as they would if the same statement has been made about rainfall. And yet the two are intimately connected.

For the record, long-term government collected rainfall data and bore level data also agree on one more important fact – both rainfall and groundwater levels in the Bald Hill area show long-term evidence of decline – in spite of occasional short term deviations from this overall trend.

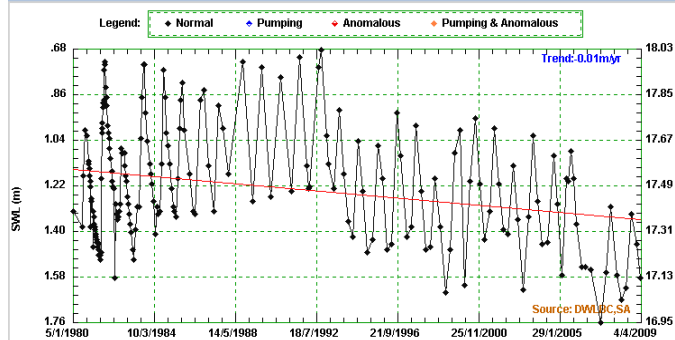
Monthly rainfall (Keilira)



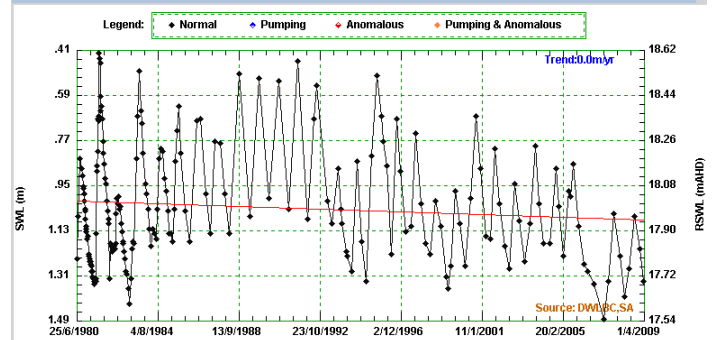
**Hydrographs: Long-term observation wells on the Bald Hill Flat**

Indicating long-term declining trends of up to 5cm/year.

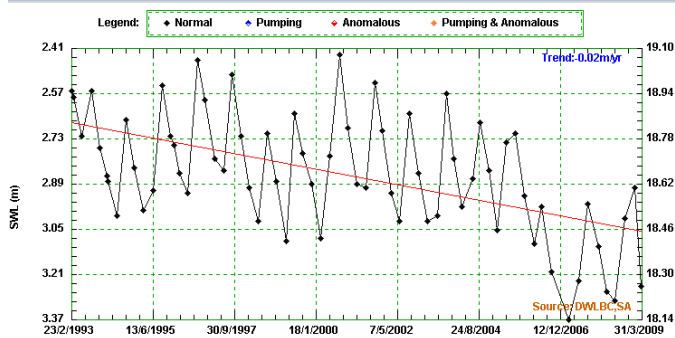
WATER LEVEL GRAPH: Unit No:6924-2545 - Obs No:LAN011 - Network:LACKON NTH - Class:WELL



WATER LEVEL GRAPH: Unit No:6924-2547 - Obs No:PEC004 - Network:LACKON NTH - Class:WELL



WATER LEVEL GRAPH: Unit No:6924-3200 - Obs No:PEC069 - Network:LACKON NTH - Class:WELL



WATER LEVEL GRAPH: Unit No:6924-3118 - Obs No:PEC032 - Network:LACKON NTH - Class:WELL

