GROUNDWATER TRENDS MENINGIE – COOMANDOOK *Chris Henschke – Rural Solutions*

Background

There are two groundwater flow systems occurring in the Upper SE; a local unconfined aquifer and a deeper regional confined aquifer. The regional groundwater flow system has shown a steady rise over many years. The whole area could be likened to a big "bucket" that has now filled up to capacity in low-lying areas of the coastal plain. There is not a lot of scope for the shallow watertable to rise any further. The watertable is highly responsive to seasonal conditions (wet vs. dry).

CSIRO research in the 1990s showed that the source of water causing dryland salinity is derived from local recharge. The local effect is stronger than the regional effect, so adoption of high water use at a large scale can have an impact especially in dune-swale topography where local flow cells overlie the regional flow system. They also indicated that recharge reduction at the paddock scale would not have much of an impact. Saltland agronomy was considered to be the most cost effective solution.

Watertable Trends

All of the shallow wells are completed in the Bridgewater Formation (**Qpcb** unconfined aquifer). Geological description is a bioclastic and aeolian X-bedded calcarenite with palaeosol horizons often capped with calcrete. The watertable (WT) has responded strongly to the seasonal conditions as outlined below:

- Dry periods: 2006-2009, 2017-2018 (this year)
- Wetter periods: 1987-1993, 2003-2005, 2010-2011
- Large episodic rainfall events: Dec1992, July 1995, spring 1996, June 2004, November 2005, April 2007, December 2010, March 2011, February 2014, September 2016.

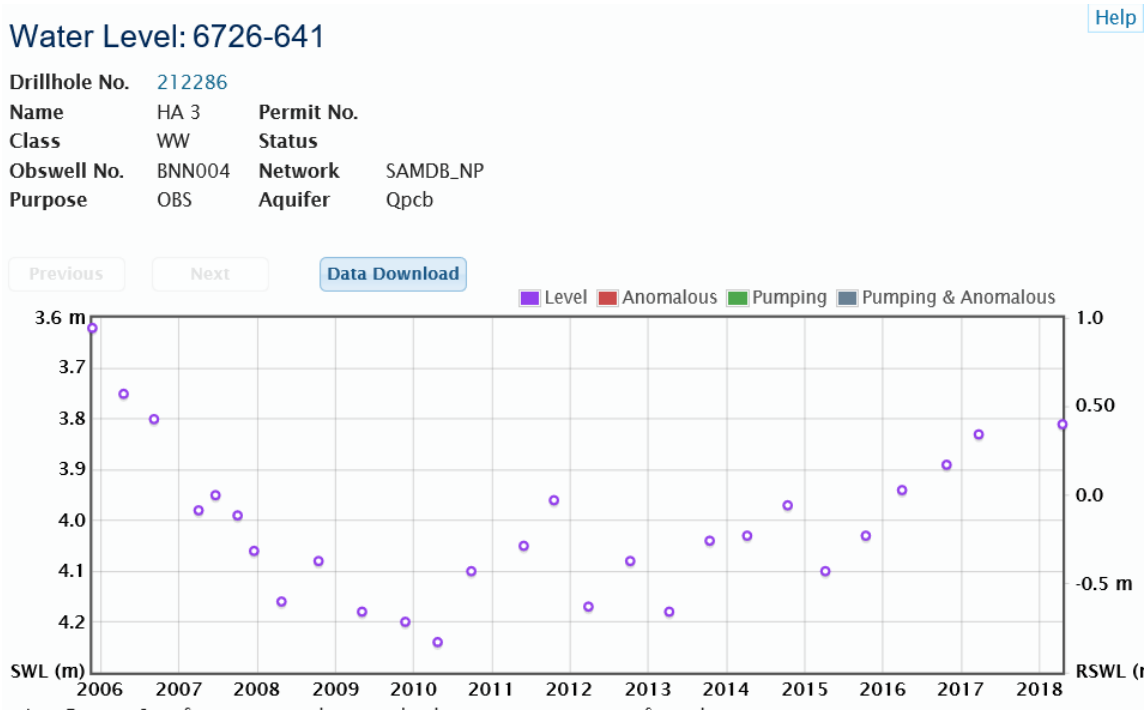
Superimposed on climatic influences is land use change. Significant land use change has included greater areas of perennials in the 1990s. Perennial pastures have since declined due to drought along with more intensive cropping.

Based on the length of record, the WT aquifer is showing a rising trend at some sites and this may reflect significant land use change (i.e. decline of Lucerne). The shorter-term trend is that wells have risen by ~1m since the drought broke in 2010 (range is +0.5m to +1.5m). In the longer term (since 1987) there is a small rising trend of +0.002 to +0.015m/year (i.e. 2 to 15mm/yr).

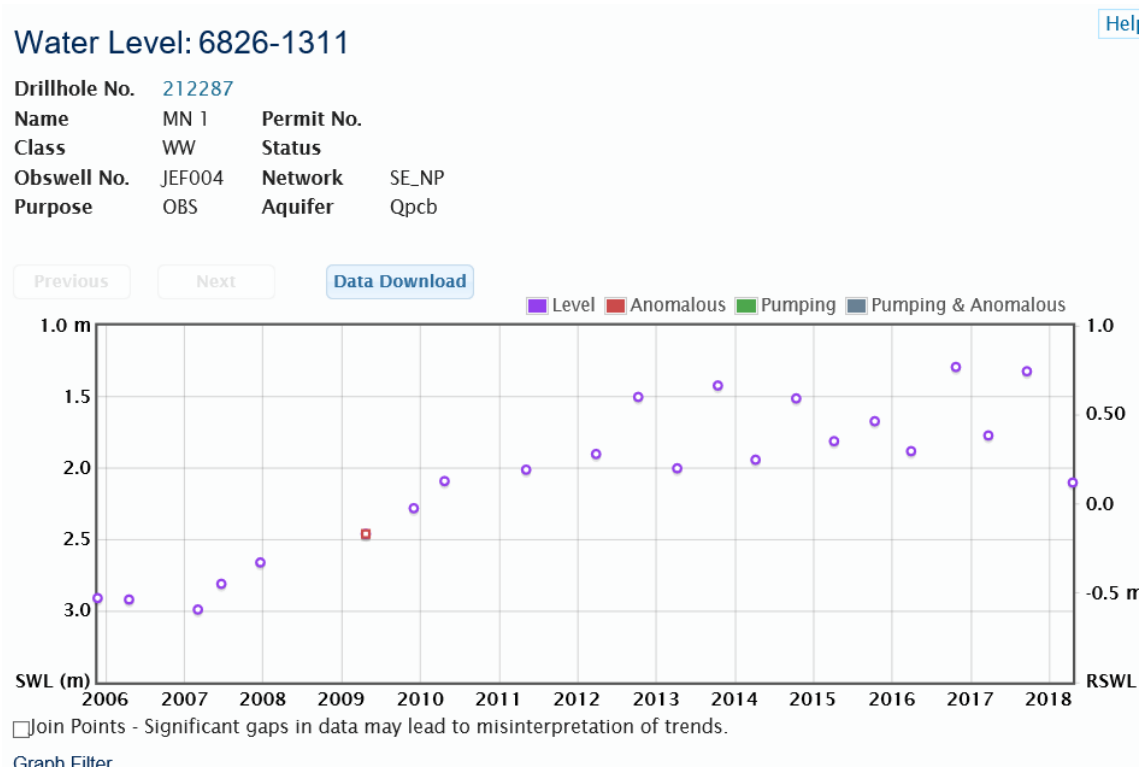
Of interest is the rapidly rising trend noted in most wells in the past two or three years from either 2015 or 2016 until late spring of 2017. This has brought water levels to their highest level in their recorded history. This could be due to large episodic rainfall events in 2014 and 2016 and appears to coincide with the sudden increase in salinity in 2018. Future monitoring will show what the impact of the current very dry spell is having on WT trends and salinity.

Meningie Hydrographs

SITE HA3 / BNN004: Drilled to 9.8m depth (collapsed back to 6.71m) on property of Henry Angas, Meningie on 17/10/2005. Site is on a raceway adjacent to Lucerne paddocks. Original DTW on 23/11/05 was 3.62m TOC (SWL=2.82m bgl). The latest reading is SWL=3.81m on 18/04/18 with TOC at 0.69m. Falling trend (-0.6m) 2006 to 2010. Rising trend (+0.4m) 2015 to 2018.



SITE MN1 / JEF004: Drilled to 6.2m on property of Tim Carteledge, Menalpyn 18/10/2005. Base of sand dune surrounded by Lucerne. Rising trend (+1.3m) since 2006.



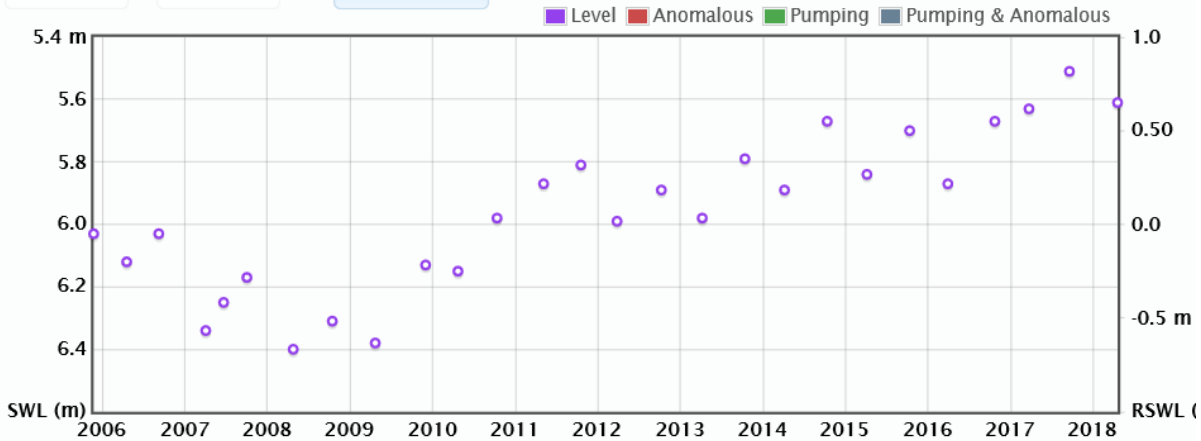
SITE MN5 / JEF008: Drilled 18/10/2005 in the middle of large remnant scrub patch west of Menalpyn. Drilled to almost 10m. In Nov 2005 DTW=6.03m, SWL=5.23m. Falling trend (-0.4m) from 2006 to 2009. Rising trend (+0.8m) 2009 to 2018.

Help

Water Level: 6826-1315

Drillhole No.	212292		
Name	MN 5	**Permit No.**	
Class	WW	**Status**	
Obswell No.	JEF008	**Network**	SE_NP
Purpose	OBS	**Aquifer**	Qpcb

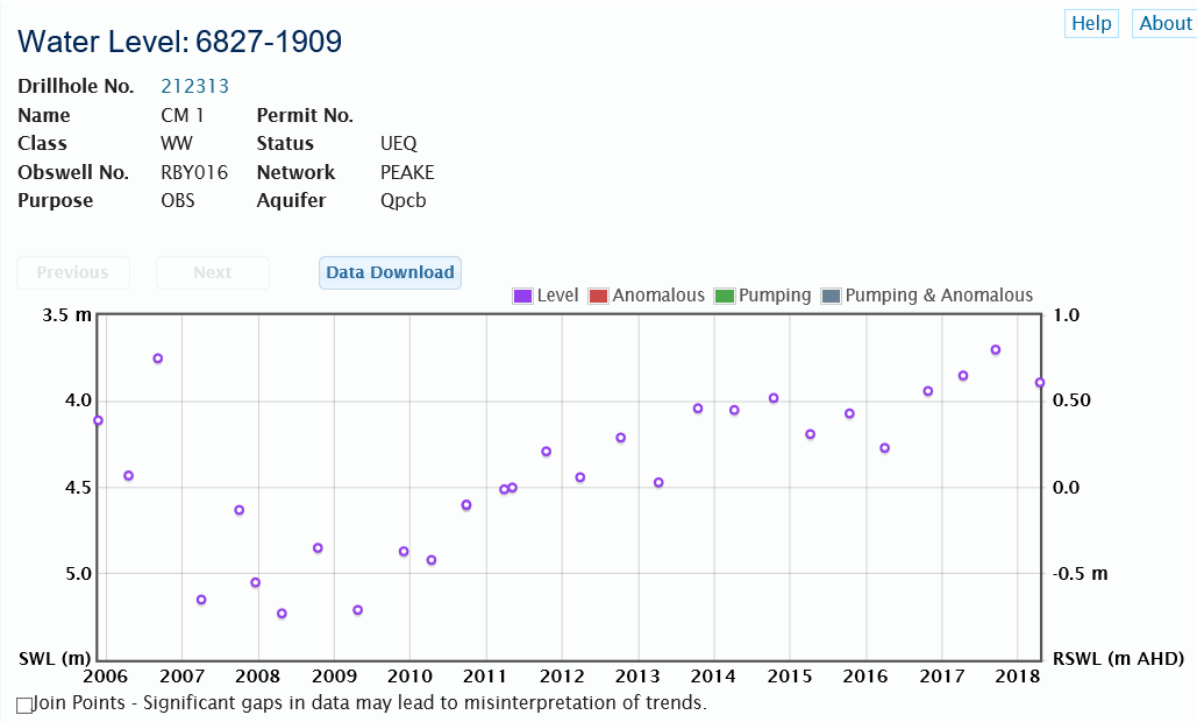
Previous Next Data Download



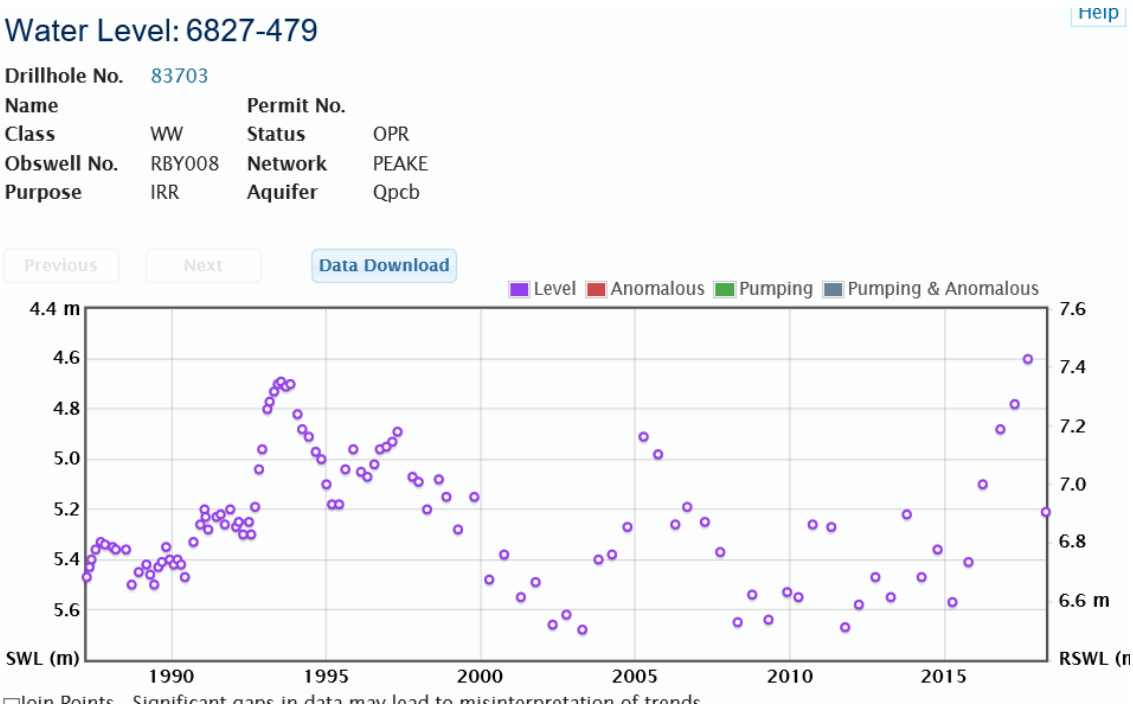
Join Points - Significant gaps in data may lead to misinterpretation of trends.

Coomandook Hydrographs

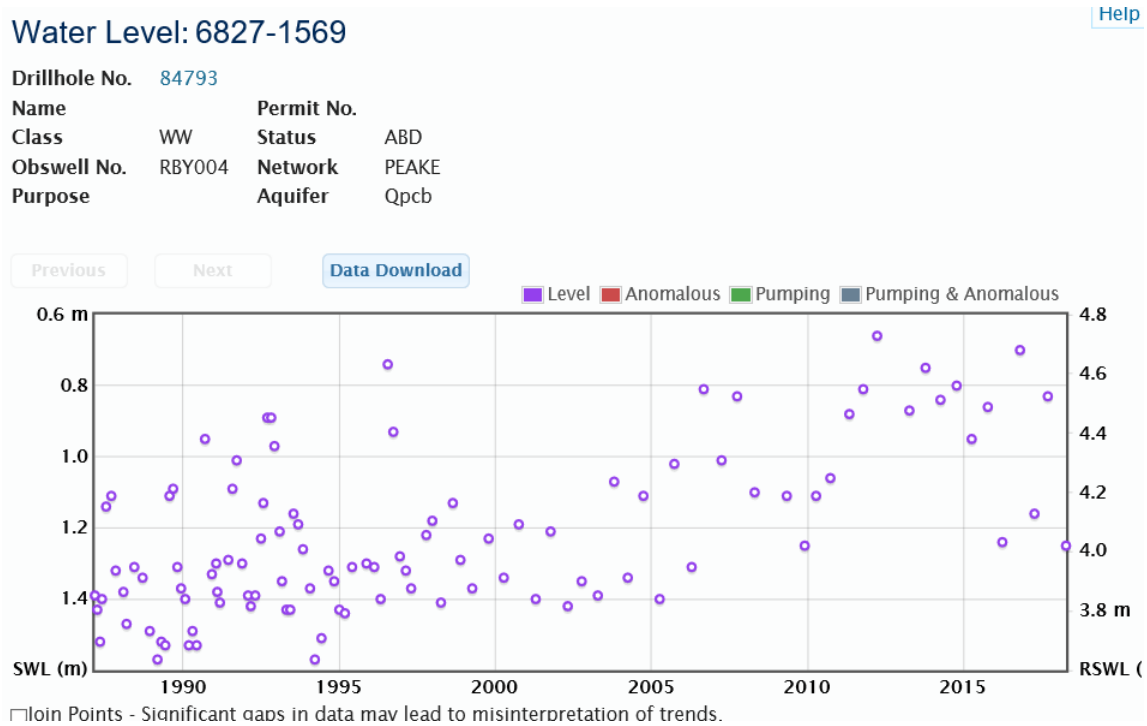
SITE CM1 / RBY016: Drilled 19/10/2005 to 9m depth on Andrew Hansen, Gas Pipeline Road to monitoring a stand of newly established Lucerne. Swale at base of large sand dune. The SWL in Nov 2005 was 3.49m (DTW was 4.11m prior to tube snapping off). Rehabilitated in June 2007 as the 0.62m riser had snapped off at ground level. DEWNR made a new reference point in April 2017 with TOC at 0.80m AGL. Falling trend (-1.3m) from 2006 to 2009. Rising trend (+1.6m) 2009 to 2017.



SITE RBY008: Is located on Wilson Road. Old windmill, hand dug well 1.5m diameter. This well has a longer record going back to 1987. There was a significant rise of +1.0m between 2015 and 2017.



SITE RBY004: A 0.5m dia. hand dug well in calcrete rock to 2.14m. This well has a longer record going back to 1987. It shows strong seasonal fluctuations with an overall rising trend over time.



SITE RBY015: Located in town of Coomandook. TD=6.59m, TOC is 0.48m. Falling trend (-0.8m) from 2004 to 2008. Rising trend (+1.2m) 2010 to 2017. Strong seasonal peaks and troughs 2016-2018.