COORONG DISTRICT COUNCIL

Coorong Tatiara

Sustainability, Agriculture & the Environment

Tatiara the good country

Groundwater Data Review & Interpretation

This fact sheet covers:

•Background to Local Groundwater Issues, •Local CSIRO Studies, •Coomandook Landcare Groundwater Monitoring Network, •Water Connect Web site, •Obswell Groundwater Monitoring Network, •Groundwater Hydrographs, •Watertable Trends & Graphs, •Reading the Hydrographs

Introduction

The Cooke Plains and Coomandook groundwater recharge studies are among the most extensive conducted in South Australia.

Background

Dryland salinity was a growing concern for agriculture in the Coastal Plain of the Murray Basin during the 1980's and early 1990's. As with other areas of South Australia and the Victorian Mallee, the studies showed that clearing of native vegetation and replacement with shallow rooted crops and pasture species had led to significant increases in recharge rates (Walker et al 1992; Kennett Smith et al 1994).

CSIRO Studies

A five year study (1992 to 1997) into the cause of dryland salinity was conducted between Cooke Plains and Coomandook by CSIRO Division of Water Resources and Department of Mines and Energy (MESA).

The outcomes of these reports have been applied across the Upper South East / Coastal Plains landscape and form the basis for the Coorong Districts Soil Conservation Board District Plan, three editions of the Coorong District Local Action Plan and the dryland salinity components of the Tatiara Local Action Plan, and numerous other salinity studies and publications State wide.

Coomandook Landcare Groundwater Monitoring Network

Following local concern at the amount of valuable cropping land being lost to dryland salinity and also the work being done locally by the CSIRO, funding was obtained to install 25 strategically placed piezometers to aid landholders in monitoring groundwater levels and aid changes in management practices.

The Coomandook Landcare Network comprises 25 shallow wells up to 5.5m deep that were drilled in April 1994.
This network is not part of the official DEW Water Connect network.

Water Connect Web site

Interactive map and search tool for viewing information about the State's wells with access to well details including, graphs showing water salinity and water level. It provides a variety of search methods, including filtering the results. Other features include, downloading data, printing search results summary or map, viewing map layers, e.g. prescribed regions.
https://www.waterconnect.sa.gov.au/Systems/GD/Pages/Default.aspx

Obswell groundwater Monitoring Network

Obswell is the name given to the Department for Environment & Waters groundwater observation wells that have water level records for varying periods of time. These are available on the Water connect web site.
Obswell sites were selected in each focus area based on the reliability of the record. Unfortunately there is very limited data available in the Tintinara West / Colebatch area.

Groundwater hydrographs

Long term records of ground water levels measured in each of the wells in the Obswell network form the database.
Water levels in aquifers fluctuate in both a long and short term sense, primarily in response to changes in precipitation and/or pumping.
A plot of these fluctuations through time is called a hydrograph.
Water level data is available on the Department of Environment and Water (DEW) website.
The address is www.waterconnect.sa.gov.au

Rainfall data can also be added to the hydrograph to plot seasonal variability

Watertable Trends and Graphs

Watertable trends fall into the following categories:

- Continuously rising trends.
- Episodic rise: (rises & falls, but each rise is higher than the previous one)
- Seasonal trend: (strong seasonal peaks and troughs which correlates with winter rainfall and summer evaporative discharge)
- Static / stable: (has rises & falls but no overall change in the longer term)
- Falling trend

Coomandook Landcare Network

Coomandook Landcare Groundwater Monitoring Network

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The depth to water column is the water level measured and recorded from the top of the PVC riser tube

This network is not part of the official DEW Water Connect network.

As indicated in the table opposite, some wells have gone dry and others are missing, presumably destroyed. In these cases, the water level is the last available reading

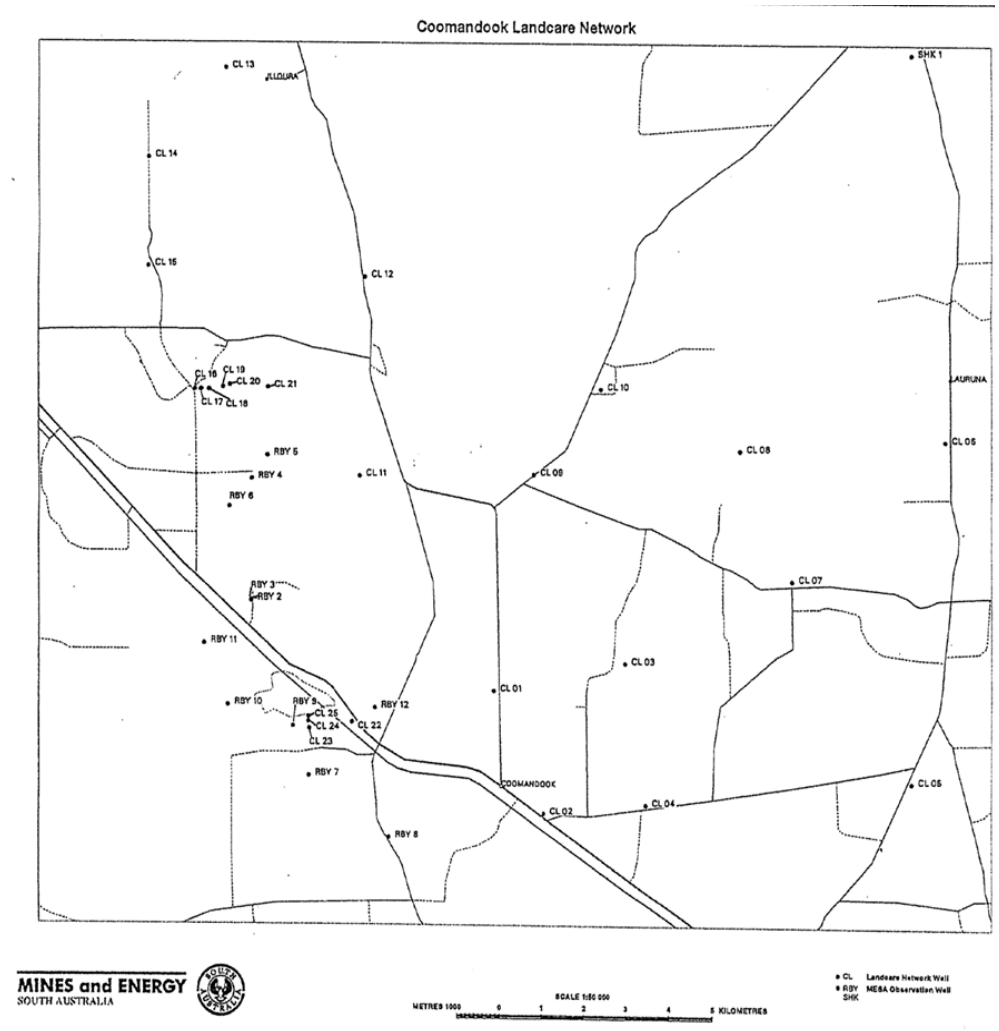
Of some concern is the number of sites that have been removed from the monitoring network in recent years. This has contributed to wells becoming lost or destroyed due to the vulnerability of PVC riser tubes not being adequately protected, or new landholders being aware of their significance.

For a larger map, go to:
https://www.coorong.sa.gov.au/council-services/coorong-tatiara-local-action-plan/water-security/groundwater-resources
How to access groundwater data from the Department for Environment and Water Web Site Fact Sheet

Hydrology and recharge workshops

- 35 people attended a Meningie East Healthy Soils Farm Walk held on Wednesday 5th of August 2020
- 24 producers attended a Meningie East Healthy Soils Farm Walk held on Thursday the 23rd of September 2021
- 55 people attended the Soils, Carbon & Productivity, Mt Charles & Keith - Farm Walk and Workshop held on Friday 29th October 2021
- 25 people attended a Carbon on your Farm - Soil Health & Salinity Update held on Wednesday 6th of April 2022

Coomy Landcare network	Unit number	location	Piezometer status
CL01	6827-1703	Simmons	Operational
CL02	6827-1704	Teusner	Operational
CL03	6827-1705	Ballard	Operational
CL04	6827-1706	Hansen	Operational
CL05	6827-1707	Murray	Dry at 3.4m, repairable
CL06	6827-1708	Poole	Operational
CL07	6827-1709	Freak	Operational
CL08	6827-1710	Freak	Operational
CL09	6827-1711	Freak	Operational
CL10	6827-1712	Freak	Broken off at ground level, repairable
CL11	6827-1713	Patterson	Operational
CL12	6827-1714	Crouch	Operational
CL13	6827-1717	Piggott	Broken off at ground level, repairable
CL14	6827-1716	Williams	Operational
CL15	6827-1715	Kleinig	Operational
CL16	6827-1693	Roberts	Missing, location not known
CL17	6827-1694	Roberts	Missing, location not known
CL18	6827-1695	Roberts	Missing, location not known
CL19	6827-1696	Roberts	Missing, location not known
CL20	6827-1697	Roberts	Missing, location not known
CL21	6827-1698	Roberts	Missing, location not known
CL22	6827-1699	Hansen	Operational
CL23	6827-1700	Hansen	Operational
CL24	6827-1701	Hansen	Operational
CL25	6827-1702	Hansen	Blocked at 0.9m, needs lean out



OBSWELL

Water Connect / Obswell Data has information on over 240,000 registered wells across South Australia. It is easy to browse for wells using the Google Maps platform, including satellite imagery. Other search options include: by property, well construction permit number, and GPS co-ordinates.

Trends in groundwater and salinity levels are monitored over time using data from both private and government wells, assisting in groundwater resource management.

Coomandook – Cooke Plains Site Location Information

The table opposite shows a list of 12 wells (from the DEW Water Connect groundwater network) that are currently being monitored in the Coomandook – Cooke Plains focus area.
These are displayed in the Water Connect website in the following Obswell networks: Peake, Roby & Sherlock PWA (PEAKE), SAMDB Non-prescribed area (SAMDB_NP) and Tintinara Coonalpyn PWA (TINT_COON).
All of the wells listed are completed in the unconfined aquifer.

Many of the piezometers installed for the CSIRO studies in 1992-1997 are still being monitored twice yearly.
Some of these are included in the Coomandook/ Cooke Plains Landcare Monitoring Network. The 25 piezometers in the network were established in April 1994. These are currently monitored twice yearly by staff from the Coorong Tatiara LAP.

Groundwater monitoring Information is available on Water Connect web site. This information includes water levels, salinity levels (some) bore/piezometer and construction details.

Meningie East Site Location Information

The table opposite shows a list of eight wells (from the DEW Water Connect groundwater network) that are currently being monitored in the Meningie east focus area. These are displayed in the Water Connect website in the following Obswell networks: SAMDB Non-prescribed area (SAMDB_NP), South East Non-prescribed area (SE_NP) and Tintinara Coonalpyn PWA (TINT_COON).

Tintinara West Site Location

The is a single well that is being monitored in the Tintinara focus area.
There are no other suitable sRIC015 on the property of R Doecke was drilled on 19/19/2005 to a depth of 6.82m and is operational.
hallow wells for trend analysis in this area.

Recommendation siting of additional piezometers in the Colebatch area west of Tintinara.

Obswell No.	Location / Property / Landholder	Date Drilled / dug	Total Depth (m)	Status
SHK003	Sherlock	08/04/1987	10.50	Operational
SHK005	Moorlands	14/02/1991	11.00	Operational
SHK006	Buccleuch	07/08/1992	5.50	Operational
RBY003	White, Coomandook	14/03/1987	20.00	Operational
RBY004	Roberts, Cooke Plains	unknown	2.14	Operational
RBY008	Hanna Well Rd	06/05/1949	13.72	Operational
RBY015	Coomandook town	12/04/2003	6.59	Operational
RBY01	Gas Pipeline Lane	19/10/2005	9.0	Operational
PEK003	Peake	08/08/1992	11.00	Operational
MAL002	Ashville	26/09/1989	30.00	Operational
CLN001	Malinong	04/12/1951	37.49	Operational
LVG001	Netherton Road	09/04/1987	16.5	Operational

Coomandook – Cooke Plains Site Location Information

Obswell No.	Property /Landholder Location	Date Drilled	Total Depth (m)	Status
BNN004	H Angas, Meningie	17/10/2005	6.71	Operational
JEF002	Settlers Road	03/10/1951	5.63	Operational
JEF004	T Carteledge, 'Menalpyn'	18/10/2005	6.18	Operational
JEF005	T Carteledge, 'Menalpyn'	18/10/2005	8.14	Operational
JEF007	T Carteledge, 'Menalpyn'	18/10/2005	12.00	Operational
JEF008	Scrub land	18/10/2005	9.76	Operational
STB001	Coonalpyn	22/11/1955	15.85	Operational
STB003	'Alpine Downs'	16/02/1945	17.37	Operational
FID002	'Naranga'	11/08/1954	7.0	Operational
CNB002	Mt Boothby Cons. Park	09/04/1987	16.5	Dry
BNN001	Meningie	?		Destroyed by stock
BNN002	H Angas, Meningie	17/10/2005		Destroyed by stock
BNN003	H Angas, Meningie	17/10/2005		

How To Access Groundwater Data From the Department for Environment & Water Website.

Data relating to groundwater resources is available in the following resources and tools, on Water Connect:
Interactive map and search tool for viewing information about the State's wells with access to well details including, graphs showing water salinity and water level. It provides a variety of search methods, including filtering the results. Other features include, downloading data, printing search results summary or map, viewing map layers, e.g. prescribed regions.

Access the Departments water level data, click on this link;
https://www.waterconnect.sa.gov.au/Systems/GD/Pages/Default.aspx

The following is a link to a fact sheet showing how to access Water Connect and how to interpret the data.
https://www.coorong.sa.gov.au/council-services/coorong-tatiara-local-action-plan/water-security/groundwater-resources

The fact sheet contains a map that shows the Department For Environment & Water observation wells (OBSWELL) in the Coomandook, Cooke Plains, Meningie, Coonalpyn and Tintinara areas, and a map that shows the Coomandook Landcare observation wells network.

Water Connect Website Terms & Abbreviations

The Table below explains the information recorded for each well.

Detail	Details	Click on details and it gives all of the bore and drilling information
Unit No	6827-1878	BORE unit Number (bore log number)
Obs No	RBY015	OBBSWELL number
Obs Network	PEAKE	OBBSWELL Network
Permit No	60898	Bore drilling permit number
Date Drilled	12/04/2003	Date bore was drilled
Max Depth (m)	6.00m	Depth the bore was drilled
Latest Depth (m)	6.00	Latest bore depth reading
SWL (m)	2.55m	Static water level. **This is measured to the top of the casing**
SWL Date	05/05/2022	Date last water level was taken
SWL Status	C	C = currently being monitored
Yield (L/sec)	n/a	Pump test at the time of drilling
Yield Date	n/a	Date of the last pump test
TDS (mg/L)	11,312	Salinity in mg/litre when drilled
TDS Date	12/04/2003	Latest salinity reading
Salinity Status	N	No - Not monitored for salinity
Purpose	MON	Monitoring. (Could be irrigation, stock, Mining etc)
Aquifer	Opm	Pleistocene Marine Sediments
Status	UEQ	Unequipped or un equipped

Watertable Trends and Graphs

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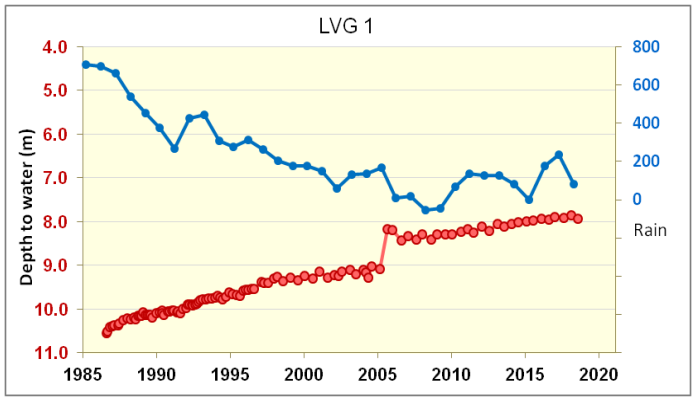
Reading the Hydrographs:

Watertable Trends Analysis Watertable monitoring wells (also called boreholes, observation wells or piezometers) completed in the unconfined limestone aquifer in the Coomandook and Meningie East areas, were selected for trend analysis.
Analysis of watertable data combined with rainfall trend data helps to determine the major driver of groundwater responses and hence the causes of expanding dryland salinity.

Below: example of a rising watertable under elevated land.
The top blue line in the graph is the rainfall trend.
The bottom red line in the graph is the depth to watertable

This hydrograph shows rising groundwater levels (red) despite a long term deficiency in annual rainfall. (blue)



Coorong Tatiara Local Action Plan

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https://www.coorong.sa.gov.au/council-services/coorong-tatiara-local-action-plan/water-security

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