

# *Angas Bremer Irrigation Management Zone 2014 – 2015 Annual Report*

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**Project Coordinator: Leah Hunter**  
Angas Bremer Water Management Committee Inc

*Supported by*



Government  
of South Australia



Natural Resources  
SA Murray-Darling Basin

# 2014-15 Annual Irrigation Report

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# **Angas Bremer Water Management Committee Members 2014-2015**

*Chairman* – James Stacey  
*Vice Chairman* – Nick McDonald  
*Treasurer* – Michael Clements

## *Committee Members*

Darren Aworth, George Borrett, Mac Cleggett, Loene Furler, Barry Potts  
and Dale Wenzel

## *Non-elected members of the Committee*

*Secretary* - Barbara Blaser

*Program/Project Coordinator* – Sylvia Clarke and Leah Hunter

*Natural Resources SA Murray-Darling Basin* - Michael Cutting, Brett  
Ibbotson, James Peters and Lyz Risby

## **Report of the Activities of the Committee 2014-2015**

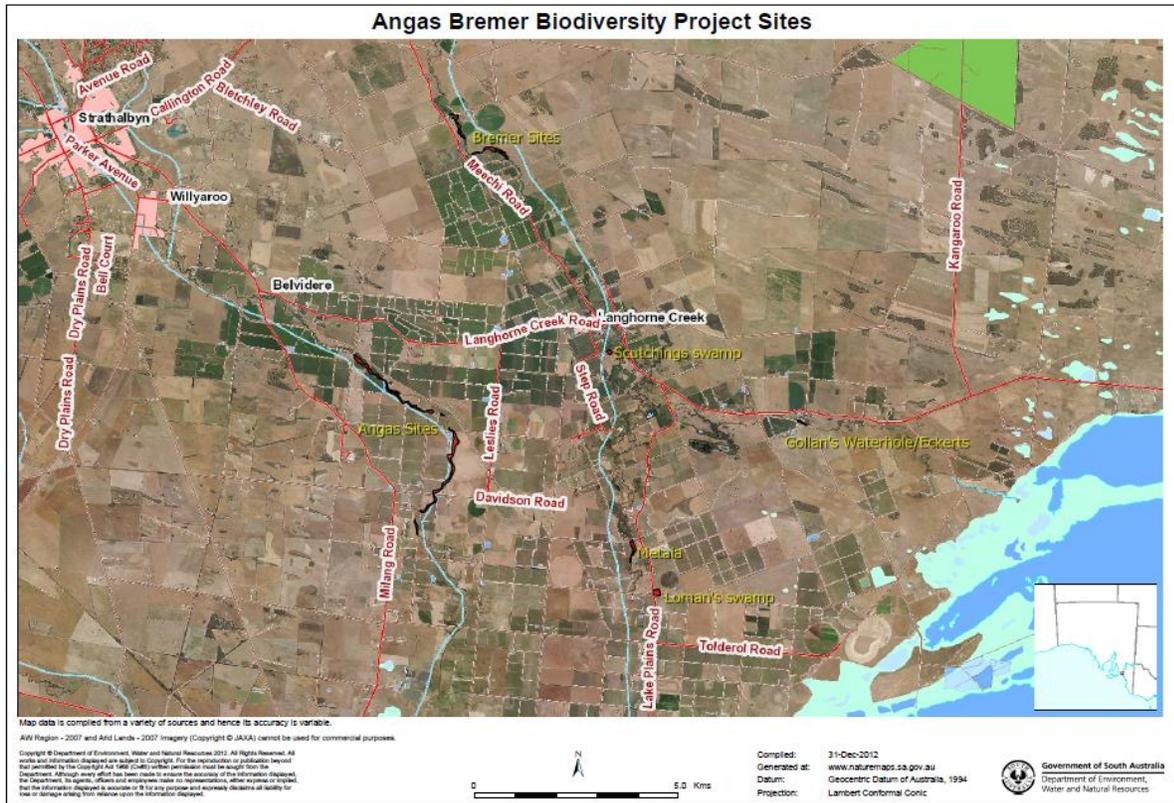
### **1. 25<sup>th</sup> Anniversary Landcare Grant – Angas and Bremer Rivers and Wetlands, Enhancing Corridor Biodiversity.**

The Angas Bremer Water Management Committee was successful in their bid for a 25<sup>th</sup> Anniversary Landcare Grant, receiving funding for the Angas and Bremer Rivers and Wetlands – Enhancing Corridor Biodiversity Project. The aim of this project is to restore vegetation to improve and link biodiversity corridors, along the Angas and Bremer Rivers as well as associated swamps and wetlands within the Langhorne Creek area. The project will focus on the sites already engaged in the Biodiversity Project (see below).

This project will include a seed collection workshop, propagation workshop, propagation and planting of at least 3000 plants and site preparation and maintenance of 40 hectares. The project aims to engage local farmers and landholders to increase community participation in improving the quality of the natural resources of the region. The project will be completed by 30<sup>th</sup> June 2016.

### **2. Biodiversity Project**

The Biodiversity Project, funded by the Australian Government, was carried out between 2012 and 2014. The aim of the project was to restore vegetation to improve and link biodiversity corridors, along the Angas and Bremer Rivers and the shore of Lake Alexandrina as well as associated swamps and wetlands within the Langhorne Creek area. The project involved 15 sites; 6 on the Bremer River, 2 swamps or wetlands associated with the Bremer River, one site neighbouring Gollan's waterhole, and 6 on the Angas River (Figure 3).



**Figure 3.** Biodiversity Project sites, coloured red, with yellow labels.

The landholders of the 15 sites have now taken on the responsibility for the management of these areas with technical support being provided by the Angas Bremer Water Management Committee if needed. The project has shown variable results due to the lack of rain after planting and direct seeding. There were great results shown at several of the sites including Frahn's Property, Rosemount and Loman's Swamp.

On the 28<sup>th</sup> June 2015 Liz Schofield, from Angas River Catchment Group (?) ran a tour visiting several of the Biodiversity Project sites. Although this tour was not well attended, a great day was had by all involved. Thank you to Linley Cleggett for attending and providing much needed history of the restoration efforts in the region.



**Figure 4.** Biodiversity Project site on the Bremer River showing great growth of plants (June 2015).

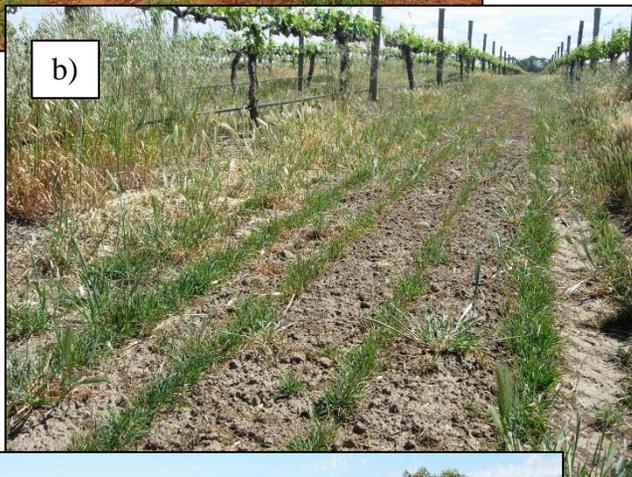
### 3. Cover Crops Trial

In April 2014 the Angas Bremer Water Management Committee was awarded an Alexandrina Council Rural Initiatives grant, which enabled 4 landholders in the district to become part of a Cover Crops project run by Chris Penfold from the University of Adelaide. The grant covered the cost of the seed for the landholders and contributed to the successful Viticulture Innovation Day held at Bleasdale Vineyard in Langhorne Creek on the 16<sup>th</sup> of October 2014.



Unfortunately results were very patchy at best after the 2014 sowing due to lack of rainfall. In 2015 there was sufficient funds to re-sow two of the sites involved in this trial. New seed was sown on the 2 properties (approximately 2ha) in May and June 2015, using 3 different seed mixes –Wallaby grass (*Austrodanthonia geniculata*), fescue and Kasbah cocksfoot.

The results are currently patchy again within and between the sites. The Wallaby grass and fescue have struggled to establish well, particularly on



the lighter textured soils. The seed of these species is very small making it difficult to obtain sufficient moisture for long enough with very shallow sowing. Kasbah by comparison has a larger seed and has established well. Its use in the vineyard is new to South Australia, so it will be viewed with interest to see how it fits within the environment.

The Viticulture Innovation Day will be held again in October 2015 and this will be an opportunity to showcase the results of the trial to other vineyard managers in the region.



**Figure 5 a)** Chris Penfold's seeder in a vineyard, **b)** Emerging cover crop plants (Uplands cocksfoot) in October 2014, **c)** Chris Penfold demonstrating the results of the Undervine Crop Trial at CMV Vineyard, October 2014.

## Irrigation Annual Report Forms Data Summary and Comment

Irrigation Annual Report forms (IAR's) were mailed to 137 irrigators. 133 irrigators who returned their completed forms on time have achieved "Accredited Irrigator" status and have been awarded accreditation certificates. Online submission was again very popular and very successful. Four irrigators did not respond/ provide data and did not achieve accreditation. The data from 133 irrigators (97%) has been collated and that data is presented in the following graphs and tables. Comments are included with each chart or table.

**Flooding:-** Flooding by diversion or pumping was reported by a number of irrigators. The flooding events occurred predominantly during July and August 2014. 293 hectares was recorded as being flooded this year, significantly less than the 554 hectares flooded the year before but still higher than the 150 ha flooded in 2011-12. These figures include some properties that were flooded twice or more over the year.

**Revegetation:** - The total area of re-vegetation reported in the Irrigation Annual Reports is around 1,890 ha. This includes 40 hectares revegetated during the Biodiversity Project.

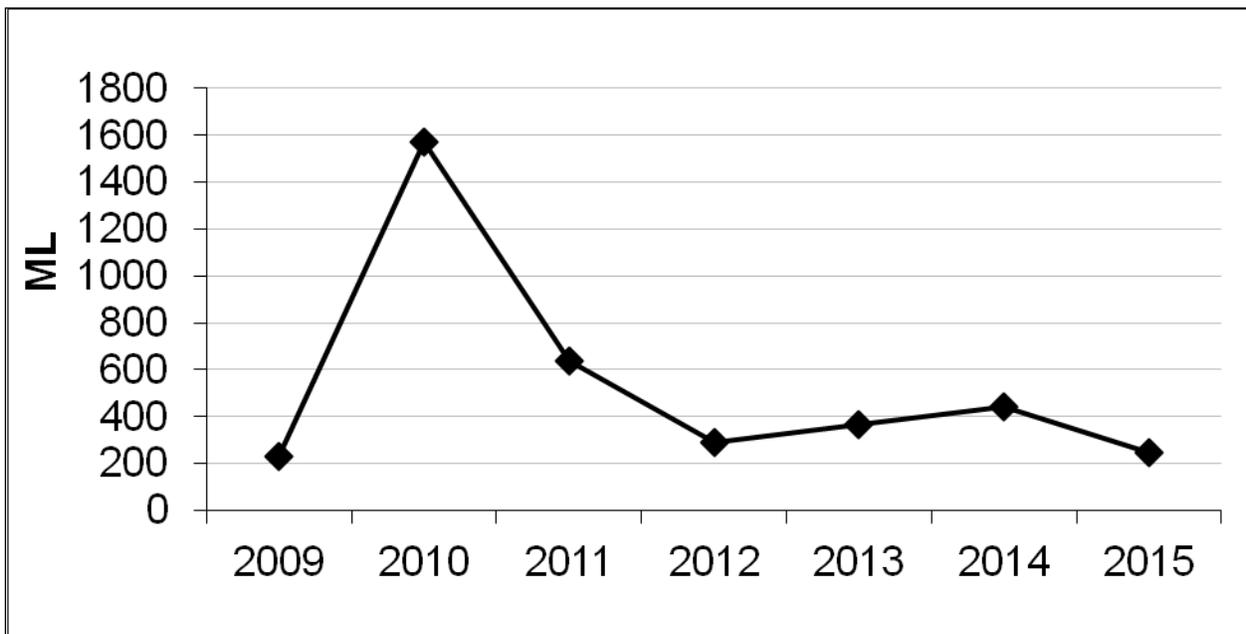
**Red Gum Health:-** 78 Irrigators reported on the health of the red gums on their properties. Health, or otherwise, was rated from 0 to 5, 5 being healthy and 0 being dead. Red gums were generally noted to be once again in relatively good health. 25 irrigators reported that their red gums were all 100% healthy, while the remainder listed the majority of their trees to be in relatively good health. The good health of the trees was attributed to the continuation of reasonable winter rains and in one case a burst pipe.

**Water Leasing:-** Table 1 below shows the amount of water leased in 2014-15 compared with water leased in 2013-14 and 2012 -2013. Overall, more water was leased by irrigators this year than last. The amount of River Murray water leased out to Outside Irrigators increased by over 1065ML and the amount leased in from irrigators outside of the Angas Bremer Irrigation Management Zone increased by 1680ML. The volume of River Murray water leased to other irrigators within the Angas Bremer Irrigation Management Zone is much lower than last year. For the last three years no reports of leased Groundwater within the zone were received. Irrigators still seem to be preferentially irrigating with and leasing, the available River Murray water.

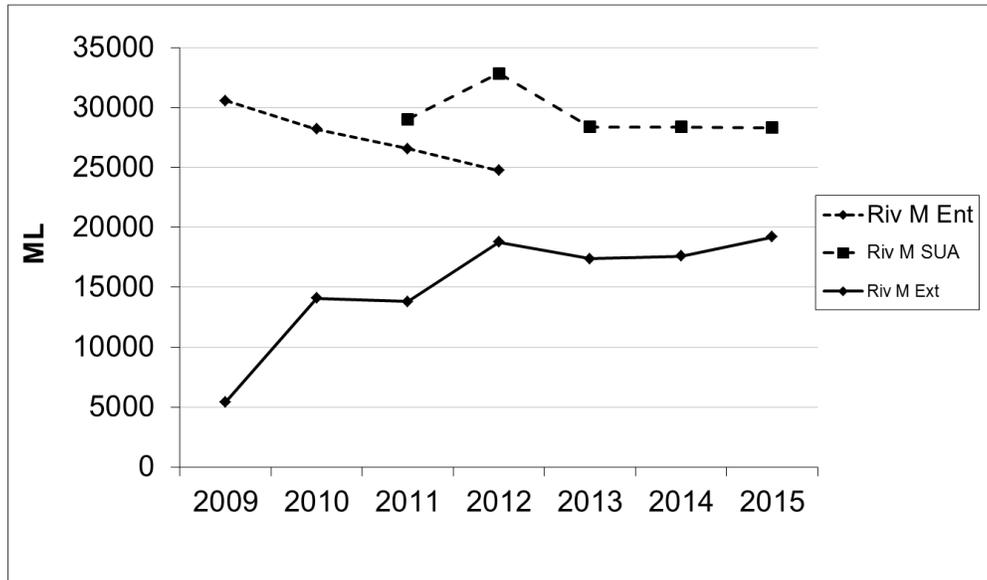
**Table 1: Water Leasing**

Type of Lease	Megalitres 2013-2014	Megalitres 2014-2015	Megalitres 2015-2016
RM water leased from ABIMZ to outside ABIMZ	1070.00	2329.00	3394.20
RM water leased from outside ABIMZ to inside ABIMZ	1563.20	2510.00	4190.90
RM water leased from inside ABIMZ to inside ABIMZ	431.47	651.87	329
Groundwater leased from AB licence to AB licence	0	0	0

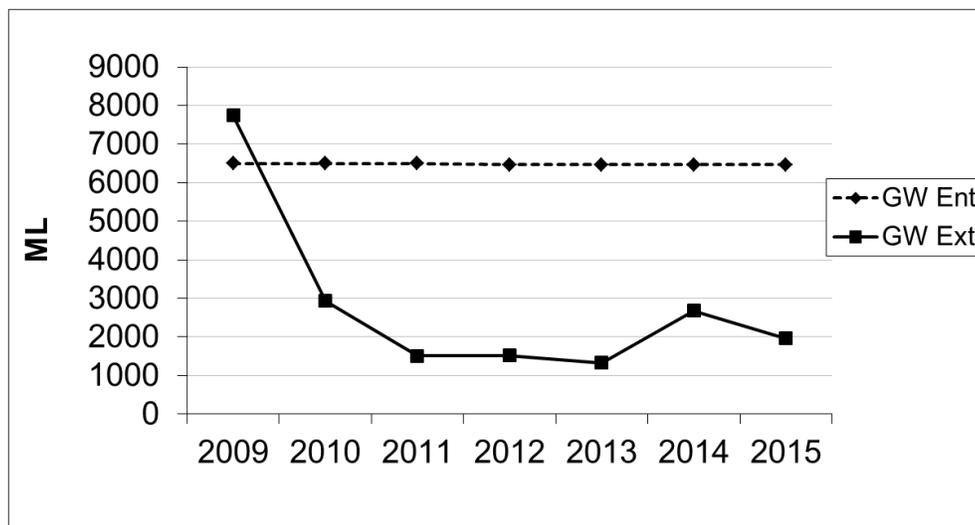
**Figure 6: Angas and Bremer Rivers Water Extractions 2009-2015:-** Not all of the water taken from these rivers, such as the water diverted through weirs and sluices, is accounted for in this chart. The volumes on this graph are metered volumes from irrigators with meters installed, as well as the amount recharged into the aquifer from these rivers, as reported on the Irrigation Annual Reports. The amount of water that was recorded as having been extracted from these rivers has decreased over the last year and is very low compared with the extraction levels recorded in 2010.



**Figure 7: River Murray Water Entitlement, Site Use Approval and Extraction 2009-2014:-** Entitlement (RivM Ent) is the volume of water endorsed on licenses and does not include any credits for rollover, recharge etc. The River Murray Site Use Approval (RivM SUA) is the maximum quantity of River Murray water that can be used for irrigation on land identified as being in the Angas Bremer Irrigation Management Zone in 2014-2015. Extraction (RivM Ext) is the volume of water that was used during the irrigation year. As Site Use Approval volumes give a more accurate description of the amount of water that could potentially be used in the region, it is now being recorded on the charts instead of the Entitlement volume. The total Site Use Approval volume for 2014-15 remained at 28,382 ML, and the recorded use was 19200.86 ML, slightly higher to the 17,598.41 ML used last year.



**Figure 8: Groundwater Entitlement and Extraction 2009-2015:-** The maximum entitlement for 2014-15 was 6,500ML and the recorded use was 1963.1ML, less than the volume of 2684.88ML used in the previous year. This is much lower than the 7,700 ML used during the “Millennium Drought”.

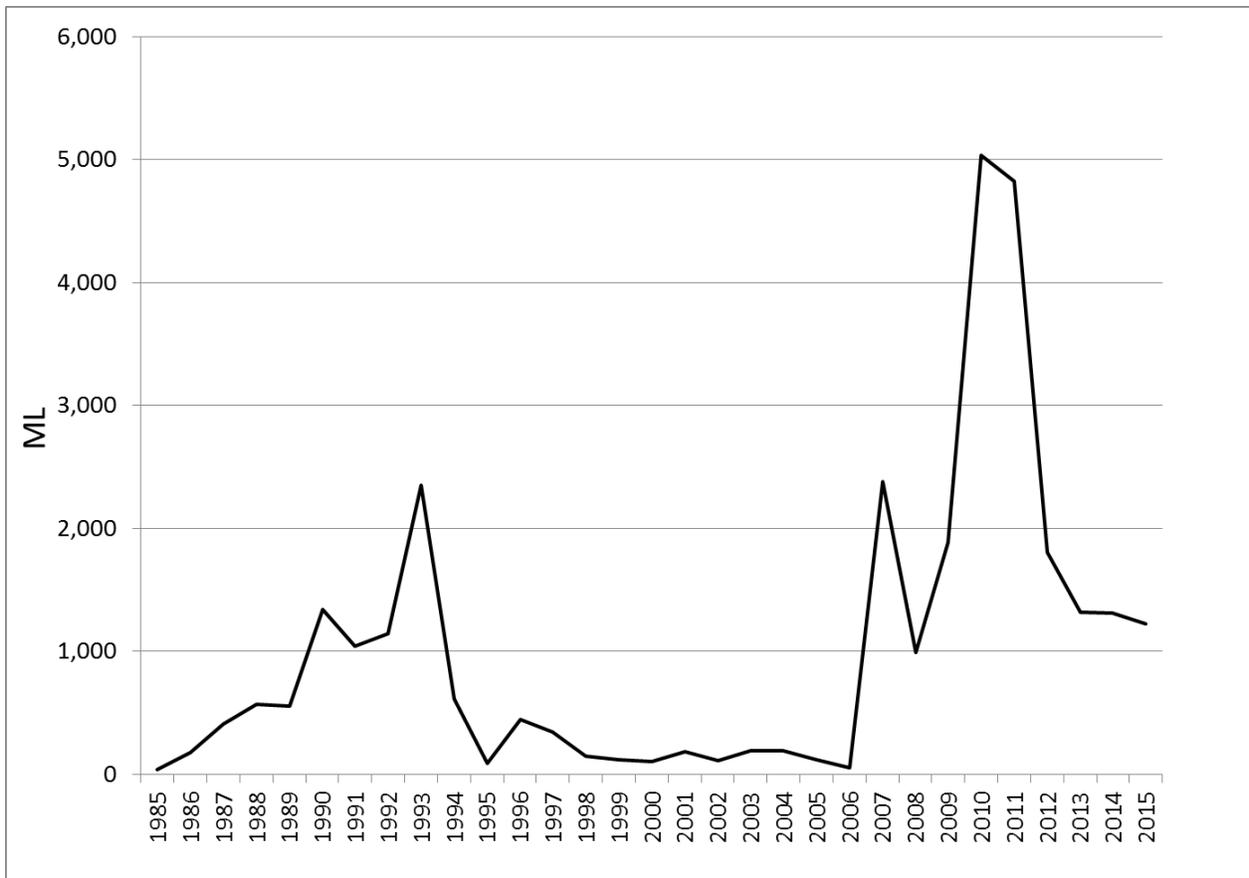


**Figure 9: Managed Aquifer Recharge (formally termed Aquifer Storage and Recovery (ASR))** :- This chart shows the total volume of water artificially recharged to the aquifer from 1985 to 2015. The **1,228 ML** recharged from the Angas, Bremer and Murray rivers in 2014-2015 was slightly lower than last year's volume, and still substantially lower than the record levels achieved in 2010.

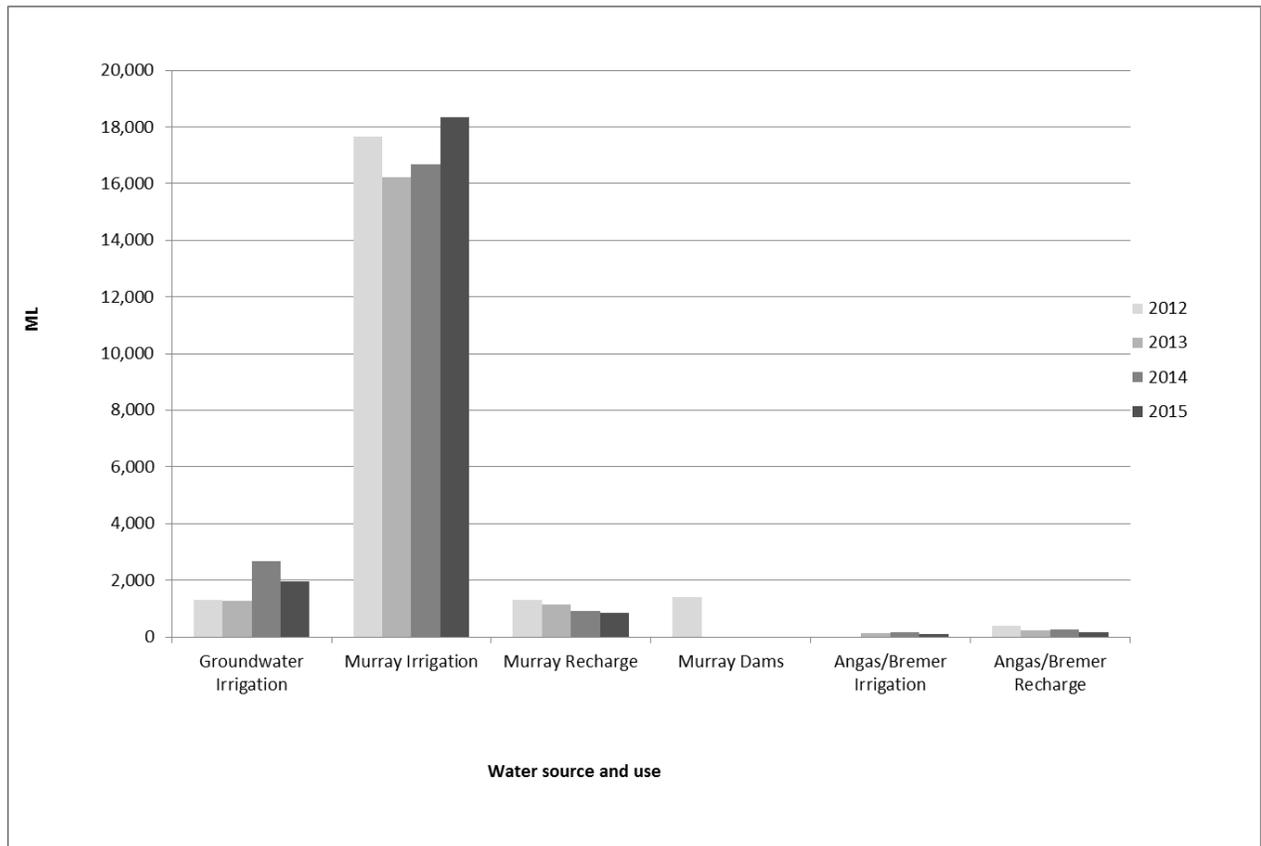
Note on recharge: This year only two thirds of the volume was recharged which is better than last year when only half was recharged. In the few years prior to this the amounts were equal or greater volumes were recharged than extracted.

No information on the salinity of recharge water was received from irrigators this year through the Annual Reports but as most of the water recharged this year was from the River Murray it is likely that salinities were low and if not all recharge was extracted again from all wells this should have contributed to localised improvement of the water quality in the aquifer.

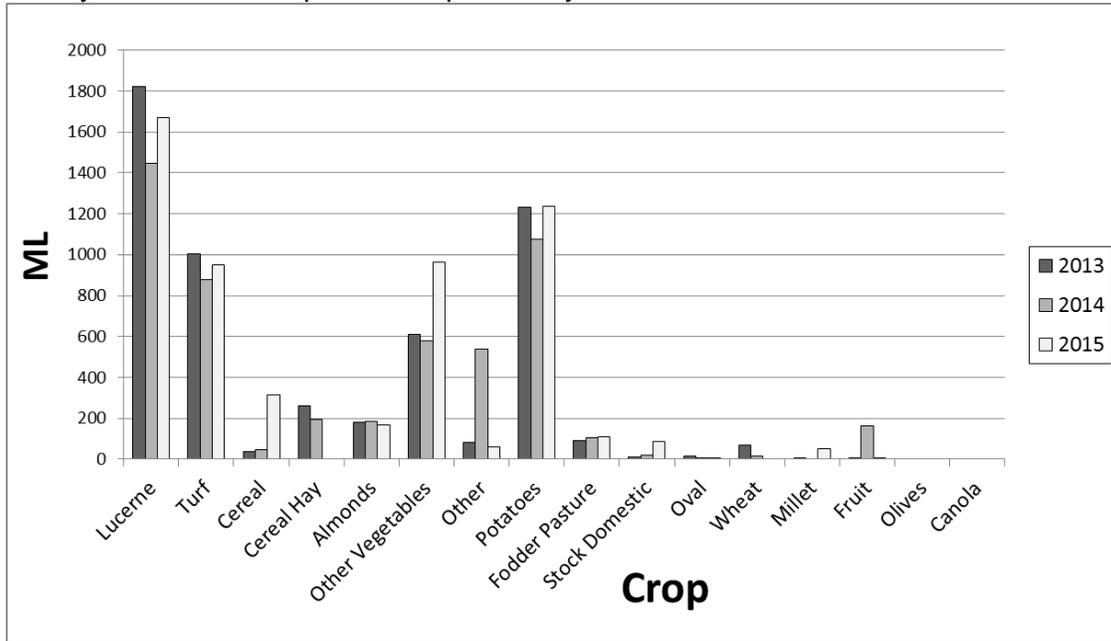
Refer to Steve Barnett's slides in Appendix A for more information on Managed Aquifer Recharge.



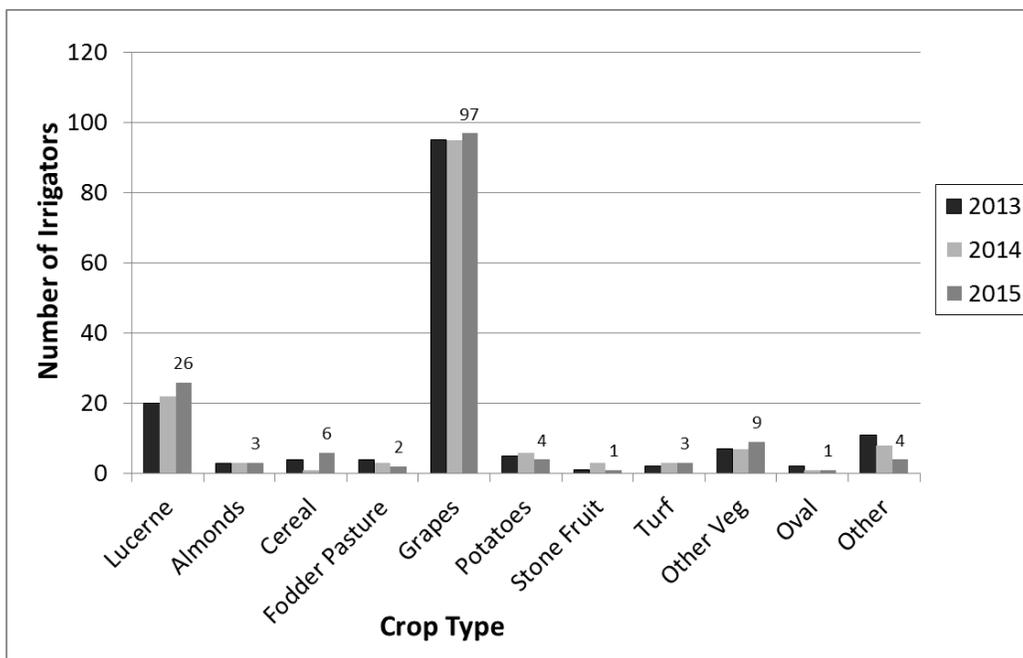
**Figure 10: Total volume of water used 2014-2015:** - The total volume of water extracted from all sources within the region over the 2014-15 year was **21,409 ML**, which is higher than the previous year (20,723 ML) but lower than three years ago (22,108 ML). The increase from the 2013-14 year appears to be due to the increase in River Murray used for irrigation in the last year. When looking over the last 4 years of water use, there has been a steady decline in the volume of water used for recharge.



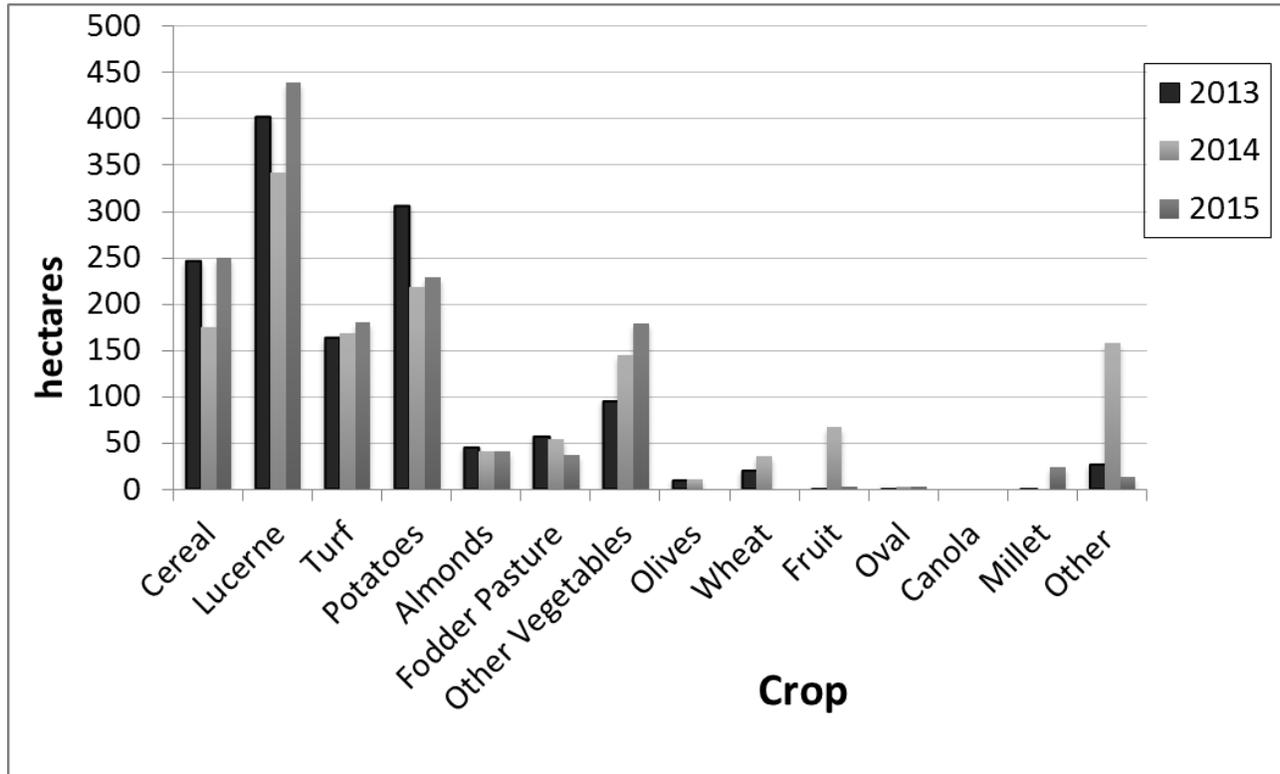
**Figure 11: Total volume of water used for each crop type:** - This volume is the total used from all sources; groundwater, Angas/Bremer water and River Murray water that was applied to each crop type (grapes excluded). **The total volume of water applied to grapes was 15,972 ML in 2014-15 compared with 13,230 ML in 2013-14, and 13,128 ML in 2012-13.** The volume of water used on some other crops including cereal and vegetable crops has increased significantly in 2014-15 compared with previous years.



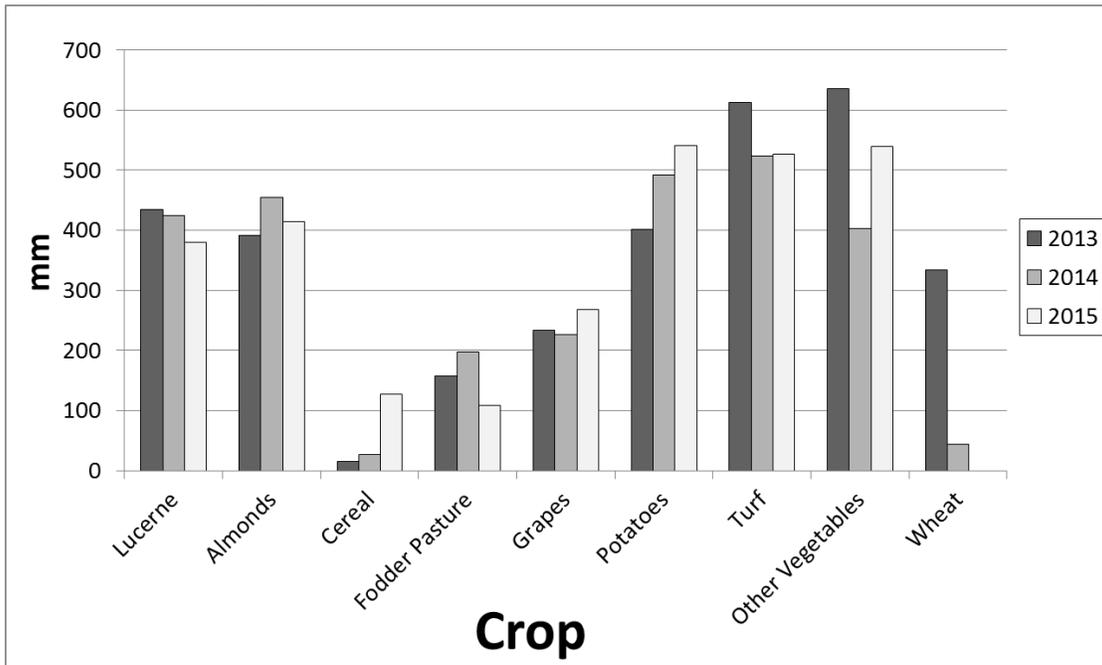
**Figure 12: Number of Irrigators for Each Crop Type:** - The number of irrigators growing each crop type in the region appears to have remained relatively stable over the last 3 years, with grapes and lucerne remaining as the most widely grown crop types.



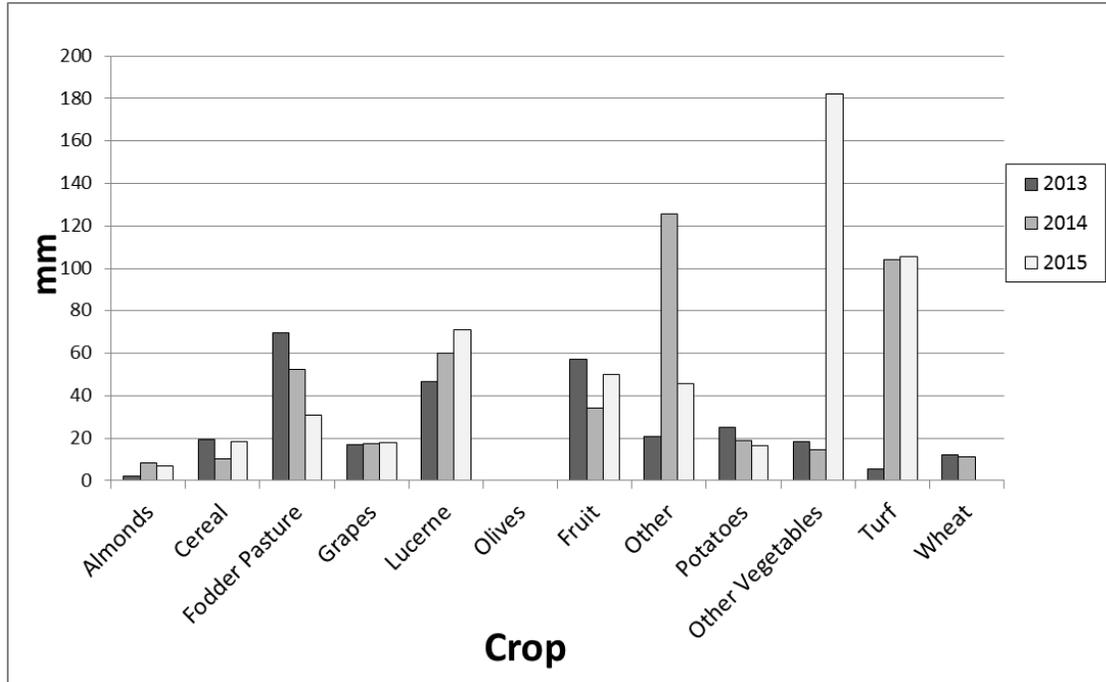
**Figure 13: Area Irrigated by Crop Type:** - The area of each crop irrigated is shown in hectares. **The area of grapes irrigated in 2014-15 was 5954 ha, a slight increase compared with the 5850 ha recorded in 2013-14.** The total area under irrigation in 2104-15 was 7380 ha, which is higher than last year's total of 7,262 ha. There was a decrease in the area of fruit, wheat and fodder pastures irrigated in 2014-15, but increases in cereal, lucerne and other vegetables. Only four irrigators selected the 'other' option for their crop type, with 13 hectares irrigated, significantly down from last year.



**Figure 14: Average total irrigation for the year by crop type:-** Irrigation is shown in mm for 2012-13, 2013-14 and 2014-15.

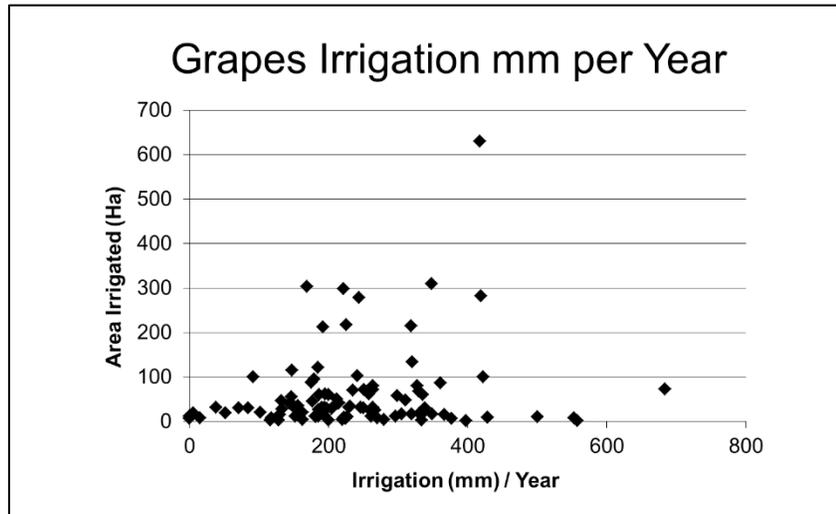


**Figure 15: Average mm of water applied per irrigation for each crop type for the last three years.**

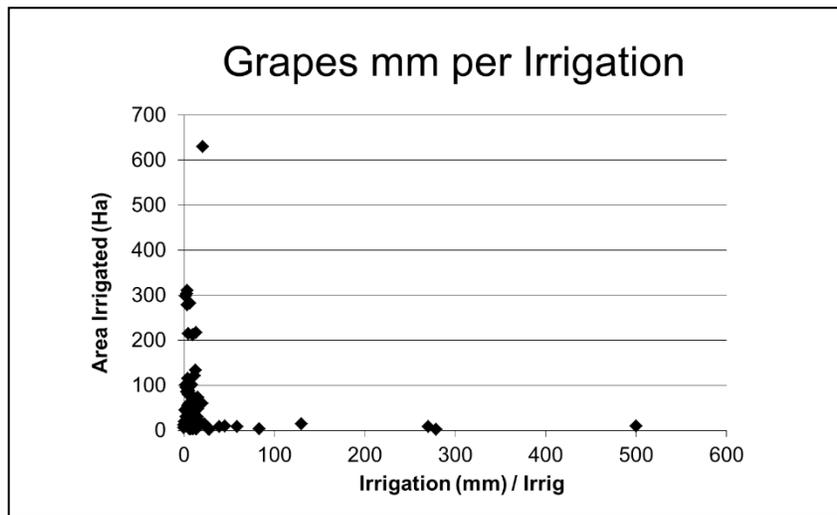


Figures 16-19: These charts are for the more common crops. For each crop one chart shows (a) the mm per year and (b) the mm per irrigation. For grapes an additional chart (16c) has been included. It excludes those irrigators who applied a large volume of water in a single irrigation or flood event.

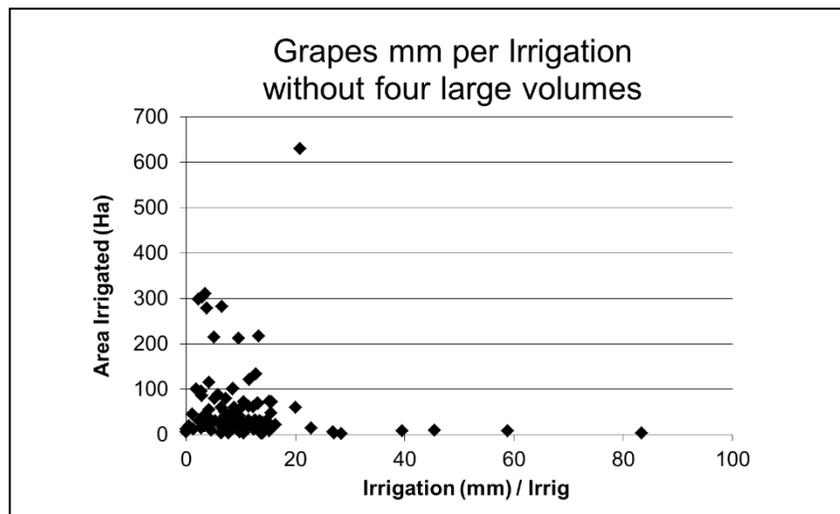
16a)



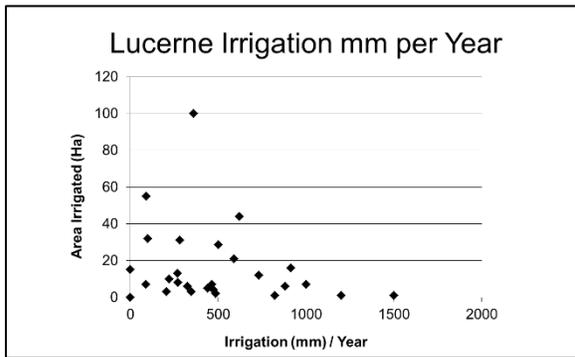
16b)



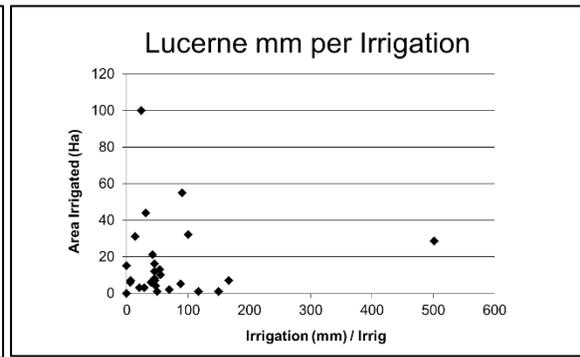
16c)



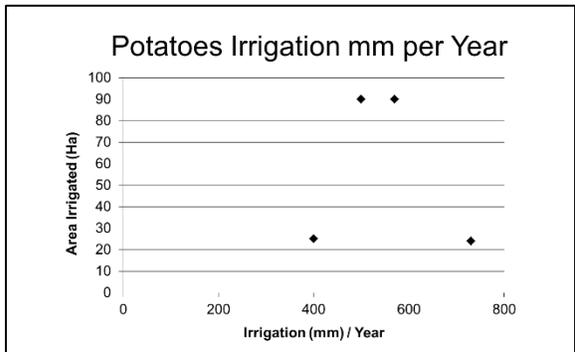
17(a)



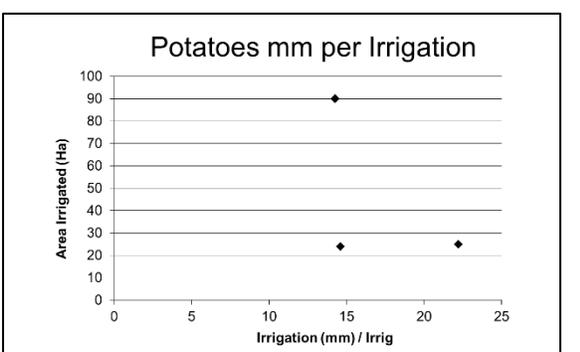
17(b)



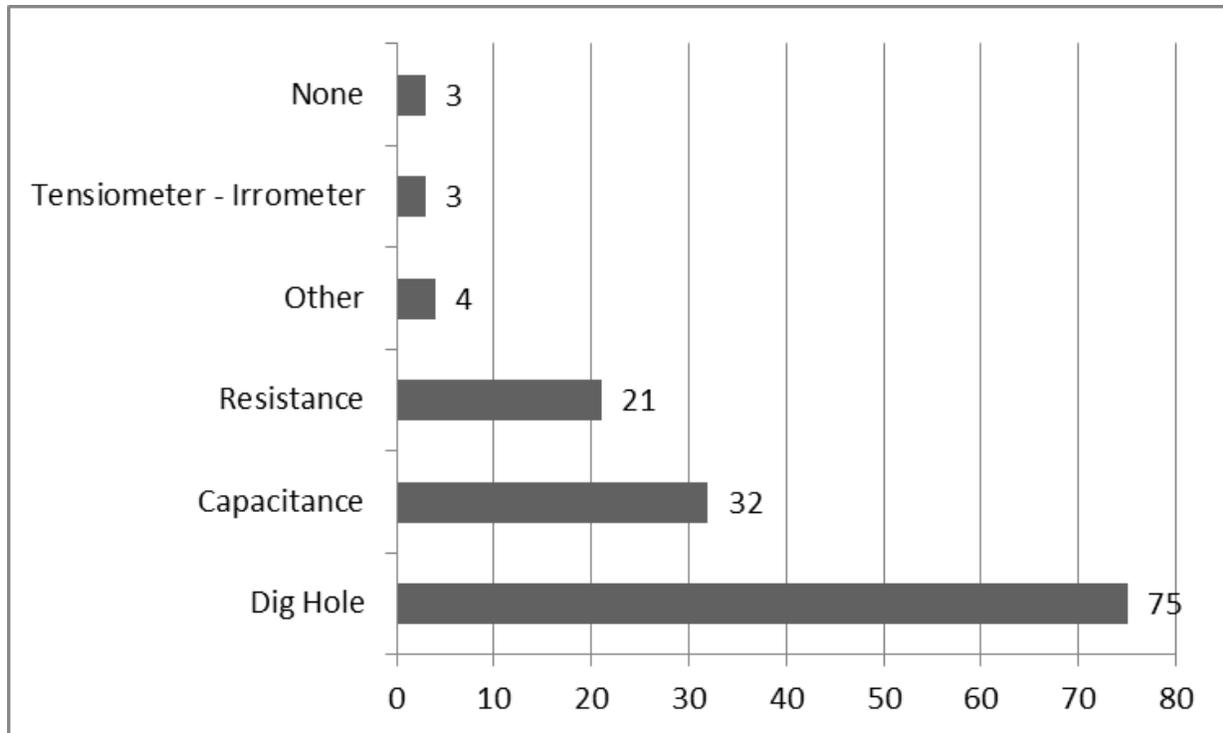
18(a)



18(b)



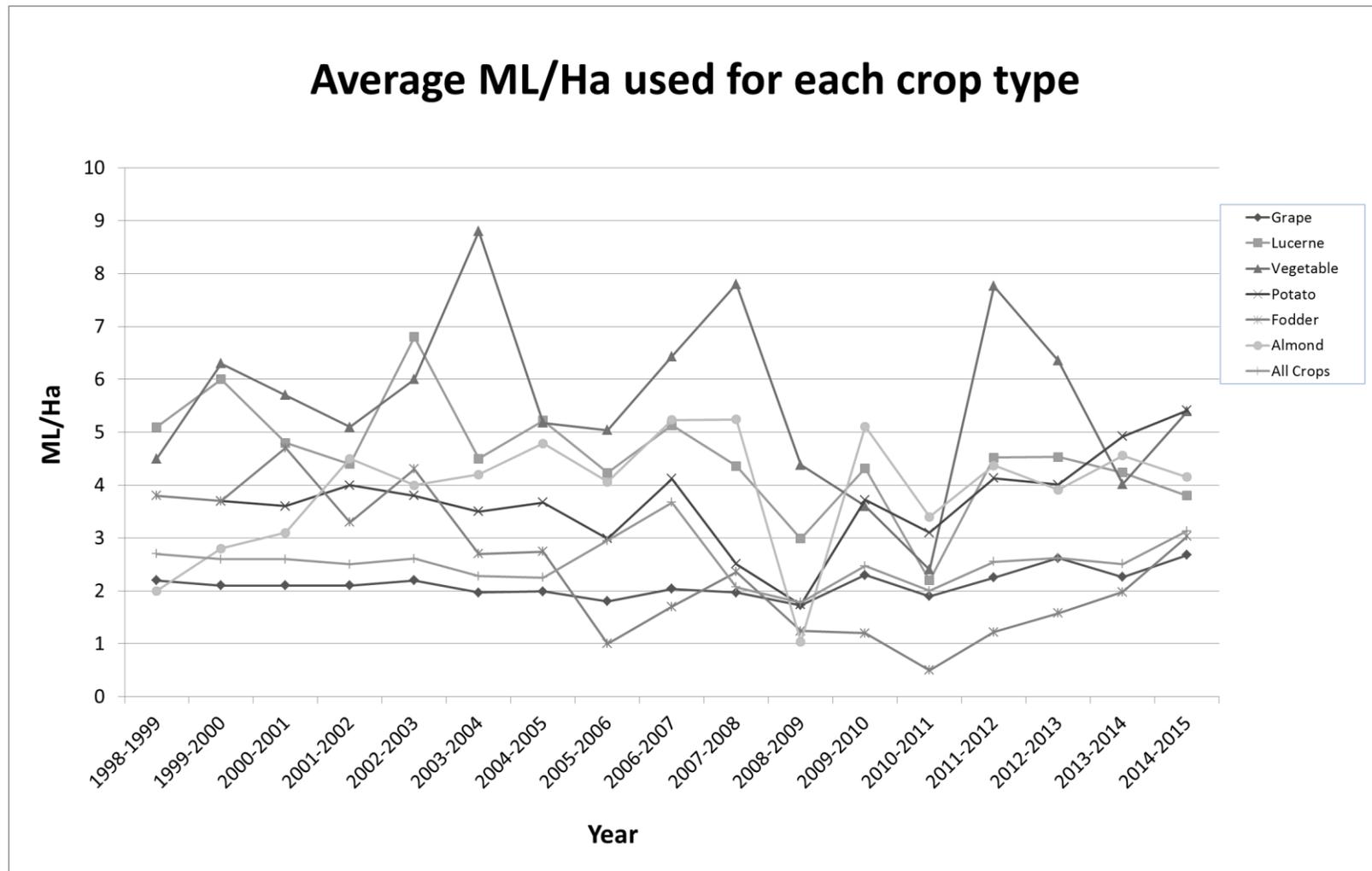
**Figure 20: Number of growers using Soil Moisture Monitoring devices in 2014-15:-** “Resistance” includes Gypsum Blocks. “Capacitance” includes Agwise soil moisture probes, Agrilink C probe, Dataflow Gopher, Sentek Diviner and Sentek EnviroSCAN. “Dig hole” includes Dig stick, spade, auger and post hole digger.



**Table 2: Average ML/ha per crop per year:-** This table shows the average ML/ha of irrigation water applied to different crop types and compares 2015 with previous years. This information is also displayed in the following Figure 21.

Year	Grape	Lucerne	Vegetable	Potato	Fodder	Almond	All Crops
2014-2015	2.68	3.8	5.39	5.41	3.03	4.15	3.13
2013-2014	2.26	4.24	4.02	4.92	1.98	4.56	2.51
2012-2013	2.62	4.53	6.35	4.01	1.58	3.91	2.62
2011-2012	2.25	4.52	7.76	4.13	1.22	4.37	2.55
2010-2011	1.9	2.2	2.4	3.1	0.5	3.4	2
2009-2010	2.3	4.32	3.6	3.72	1.2	5.11	2.47
2008-2009	1.73	2.99	4.38	1.74	1.24	1.04	1.78
2007-2008	1.97	4.36	7.8	2.51	2.36	5.24	2.07
2006-2007	2.04	5.13	6.43	4.12	1.7	5.23	3.67
2005-2006	1.8	4.23	5.04	2.99	1	4.06	2.95
2004-2005	1.99	5.22	5.18	3.67	2.74	4.79	2.25
2003-2004	1.97	4.5	8.8	3.5	2.7	4.2	2.28
2002-2003	2.2	6.8	6	3.8	4.3	4	2.61
2001-2002	2.1	4.4	5.1	4	3.3	4.5	2.5
2000-2001	2.1	4.8	5.7	3.6	4.7	3.1	2.6
1999-2000	2.1	6	6.3	3.7	3.7	2.8	2.6
1998-1999	2.2	5.1	4.5		3.8	2	2.7

Figure 21



**Table 3: ML used and ha irrigated comparison chart:-**

	2014-2015	2013-2014	2012-2013	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-07	2005-06	2004-05	2003-04	2002-03	2001-02	2000-01	1999-2000
<b>Total ML</b>	<b>20,408</b>	<b>18,605</b>	<b>18,617</b>	<b>17,056</b>	<b>13,346</b>	<b>16,241</b>	<b>12,001</b>	<b>14,743</b>	<b>20,911</b>	<b>15,811</b>	<b>17,719</b>	<b>17,154</b>	<b>20,715</b>	<b>17,428</b>	<b>17,467</b>	<b>16,961</b>
<b>Total ha</b>	<b>7,380</b>	<b>7,406</b>	<b>7,107</b>	<b>6,687</b>	<b>6,687</b>	<b>6,578</b>	<b>6,748</b>	<b>7,049</b>	<b>8,370</b>	<b>7,739</b>	<b>7,869</b>	<b>7,509</b>	<b>7,934</b>	<b>7,089</b>	<b>6,788</b>	<b>6,625</b>
Grape ML	15,972	13,230	13,129	11,990	11,275	13,718	10,738	12,330	12,827	11,293	11,688	11,927	13,165	11,159	10,626	10,021
Grape ha	5,954	5,850	5,641	5,323	5,965	5,971	6,199	6,245	6,271	6,170	5,876	6,059	6,059	5,357	4,991	4,665
Lucerne ML	1,668	1,446	1,820	1,477	376	657	326	675	1,437	1,378	1,791	1,608	2,560	2,051	2,040	2,491
Lucerne ha	439	341	402	327	170	152	109	155	280	325	343	354	376	471	429	418
Veg ML	964	580	610	877	193	36	57	179	373	363	638	605	647	651	769	761
Veg ha	179	144	96	113	81	10	13	23	58	72	123	69	108	103	134	121
Potato ML	1,238	1,073	1,232	1,283	555	320	131	136	1,200	1,171	1,278	1,280	1,504	1,719	1,773	1,812
Potato ha	229	218	307	311	179	86	75	54	291	392	348	360	394	425	490	485
Fodder ML	109	107	90	78	22	47	32	53	222	144	505	399	752	316	742	358
Fodder ha	36	54	57	64	43	39	26	23	130	144	184	146	173	97	157	96
Almond ML	166	187	180	188	148	225	193	231	251	195	230	203	188	246	172	164
Almond ha	40	41	46	43	43	44	44	44	48	48	48	48	47	55	55	58
Other crops ML	2,069	1,935	1,556	1,094	777	1,238	524	795	2,004	900	1,589	1,132	1,899	1,286	1,259	1,354
Other crops ha	503	573	558.5	501	206	276	282	505	906	588	936	443	777	583	533	777

## Charts of Standing Water Level and Salinity in Unconfined and Confined Aquifers

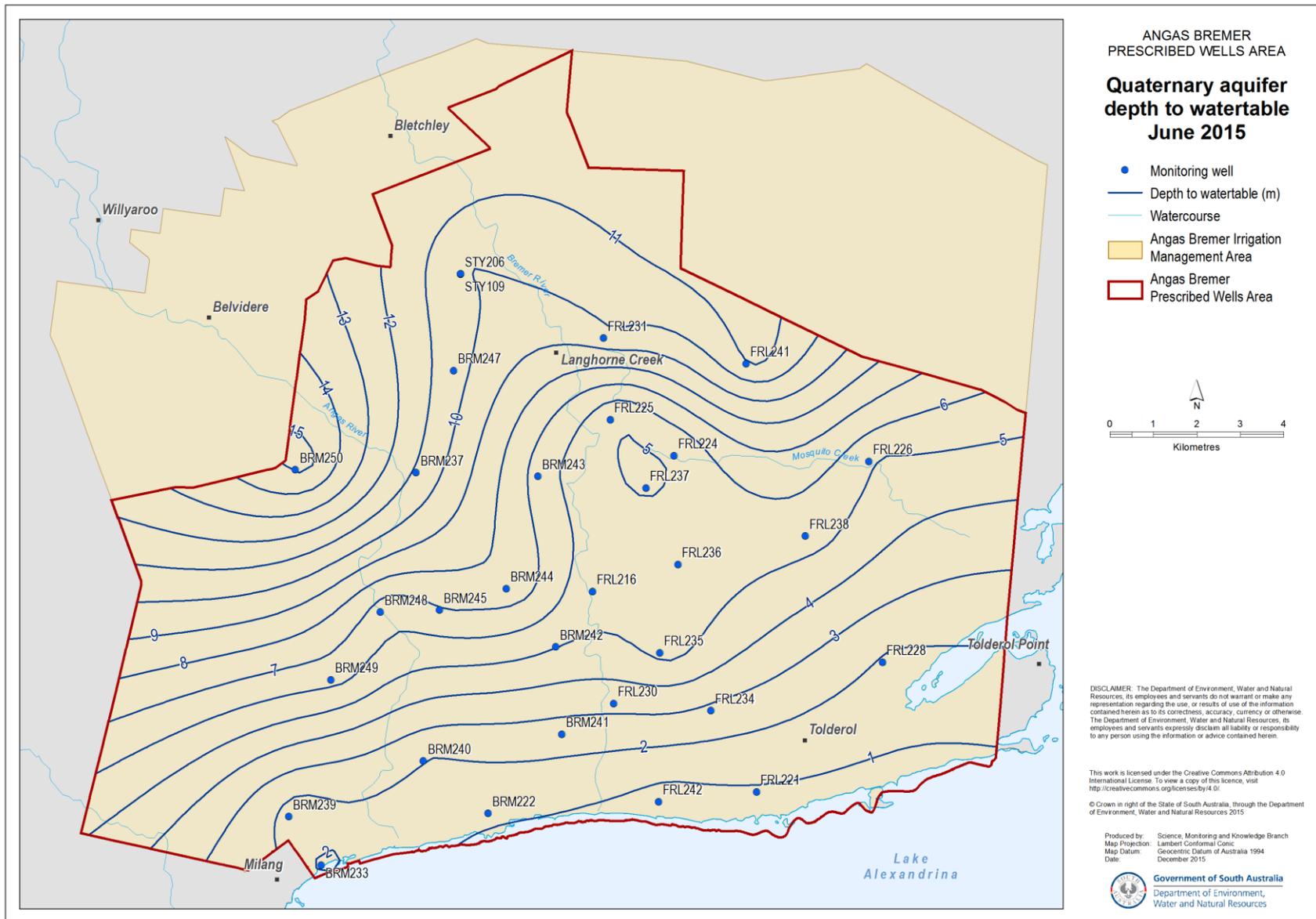
**Figures (s) 22 a + b (Pg 21-22):** These and the following charts were produced by the Department of Environment, Water and Natural Resources. These first two charts are contour maps of the Quaternary (Q) unconfined aquifer. The first **a**) is from the 2014-15 water use year (June 2015), the second **b**) from 2013-2014 (June 2014). The data for each map came from the State Government's Angas Bremer groundwater observation network. This data is available to the public on the Groundwater Data application of the WaterConnect website ([www.waterconnect.sa.gov.au](http://www.waterconnect.sa.gov.au)). The numbers on the maps are metres below ground level of the standing water table. Winter was selected as it is the time of greatest risk of shallow watertables. When compared with last year the picture was fairly similar towards the lake but lowered by about 1m around Langhorne Creek. It should be noted that some of the bores included in 2014 were omitted in 2015 (eg STY 207 and BRM 246) which makes it difficult to interpret differences in the contour lines in some areas on the maps.

**Figure 23a + b (Pg 23-24):** The next 2 charts show the potentiometric surface elevation contours of the Tertiary (T) confined aquifer in **a**) March 2015 and **b**) March 2014 (this also contains salinity data), using data from the State Government's Angas Bremer groundwater observation network only. The salinity is displayed in mg/litre (equivalent to ppm). The March data (post irrigation season) was selected as it shows the greatest level of impact due to extraction from the aquifer. The water level in 2015 was similar to most of the region in 2014.

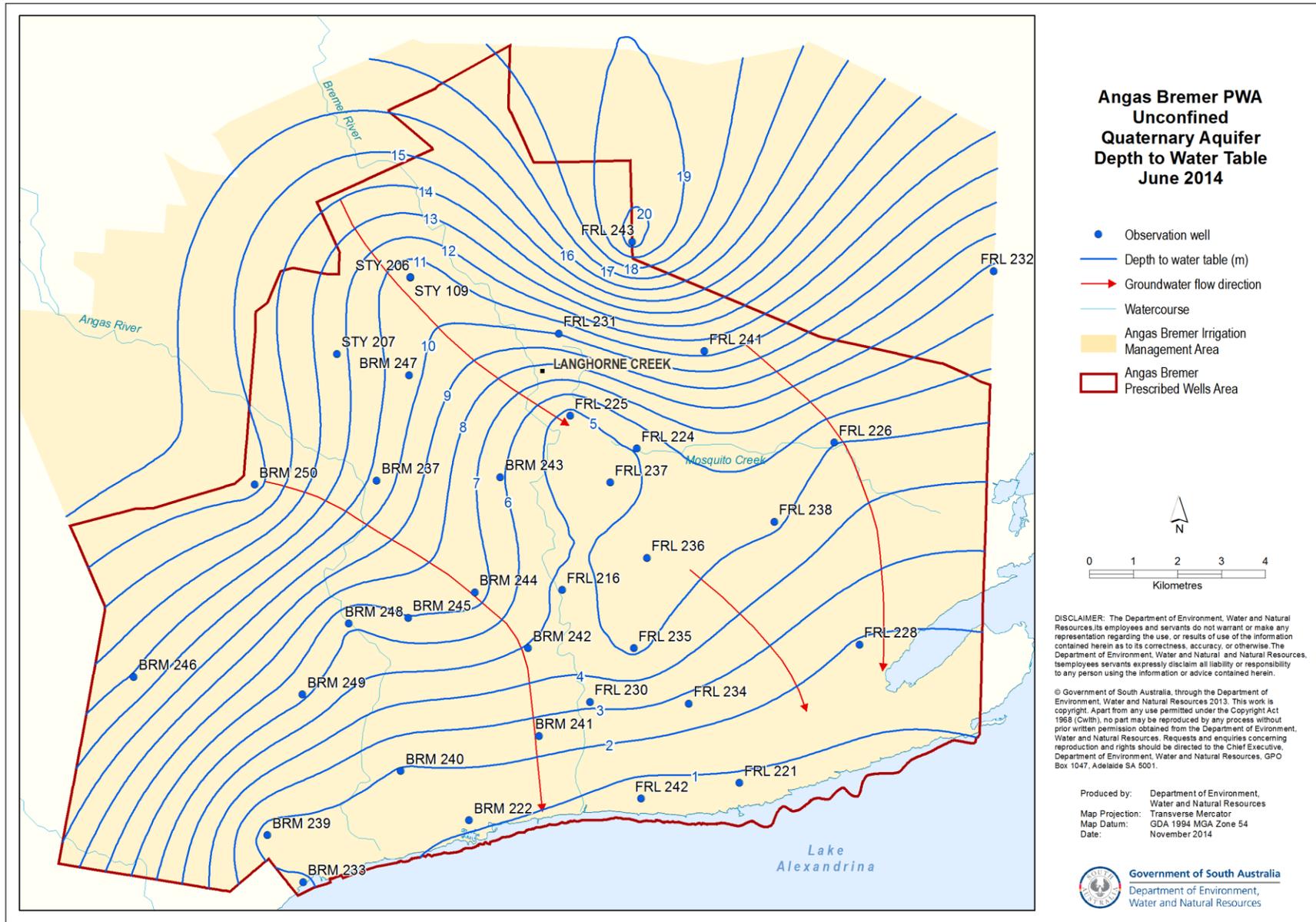
**Figure 24 a + b (Pg 25-26):** These charts display the salinity of the confined aquifer using **a**) data collected in October 2014 from the State Government's Angas Bremer groundwater observation network as well as the samples supplied by the irrigators to the NRM Board and **b**) groundwater observation network and irrigator's samples from March 2014. When October data is compared to data from the previous March, there appears to be more fresh water along the rivers and towards the lake in October; however, it is difficult to compare as there are fewer irrigator samples and observation wells included in the March chart.

This report does not include March 2015 salinity monitoring data due to a lack of data collected for that period. The lack of data is due to a temporary pause in monitoring because of staff and budget issues within the Department of Environment, Water and Natural Resources (DEWNR). Optimisation of the network to be more targeted and more efficient is underway by the department and this may result in less wells being monitored (). DEWNR encourages landholders/ irrigators to submit their samples twice a year to help provide a good spatial distribution of data.

Ground water data can also be accessed via the WaterConnect website located at [www.waterconnect.sa.gov.au](http://www.waterconnect.sa.gov.au). This website will let you view and download groundwater level and salinity data in the Angas Bremer area.

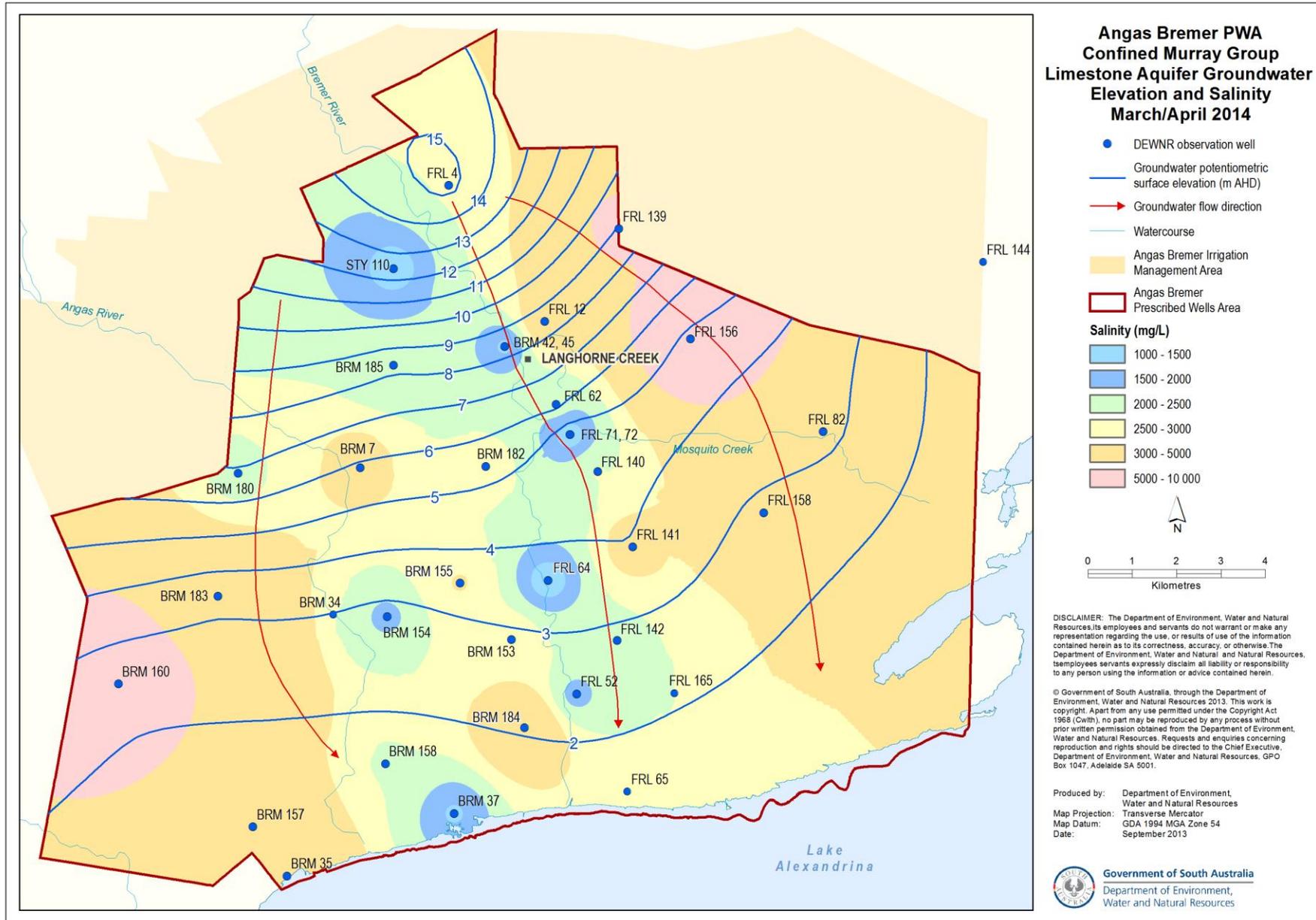


**Figure 22a** Standing Water Level in Quaternary Unconfined Aquifer June 2015

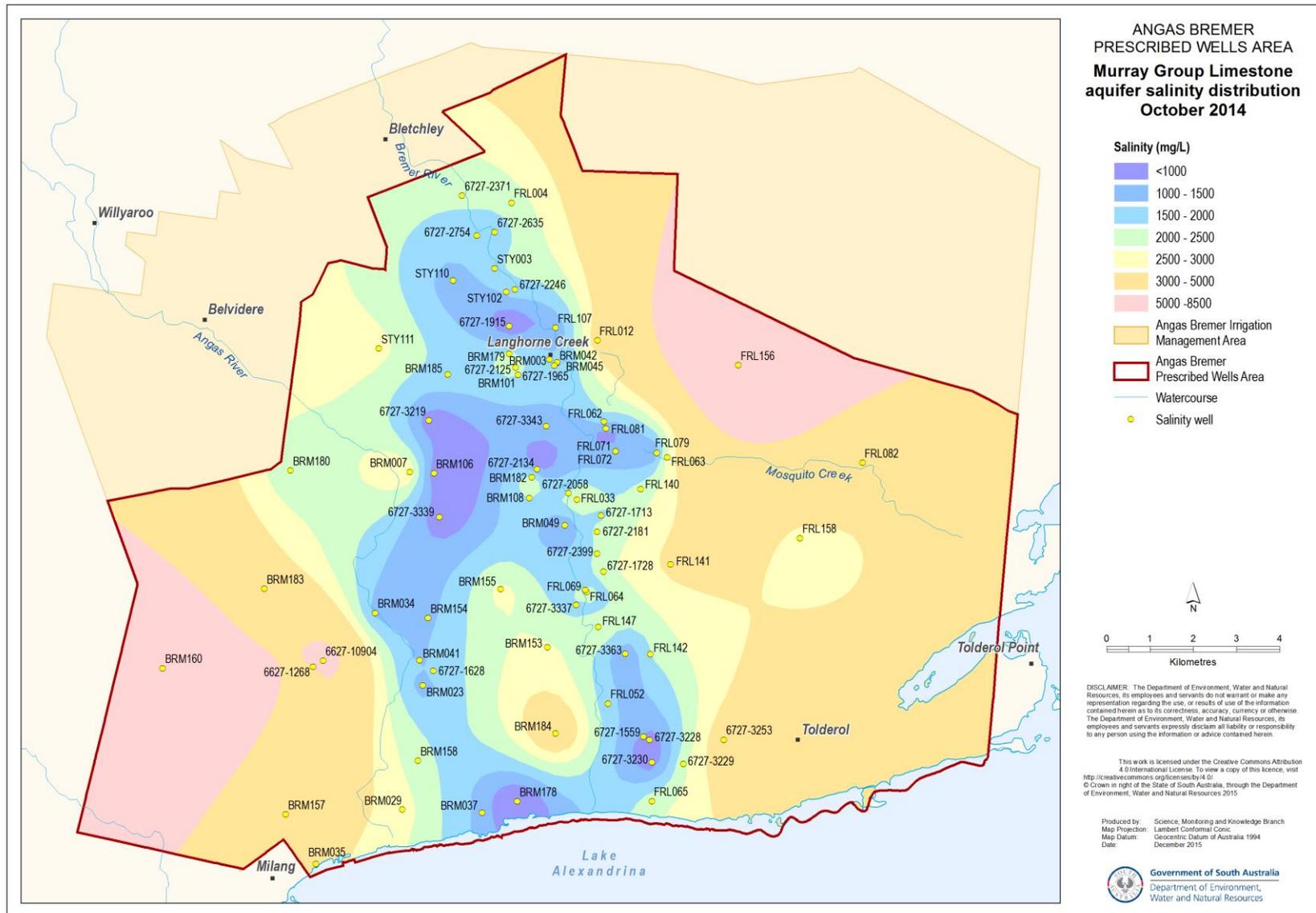


**Figure 22b** Standing Water Level in Quaternary Unconfined Aquifer June 2014

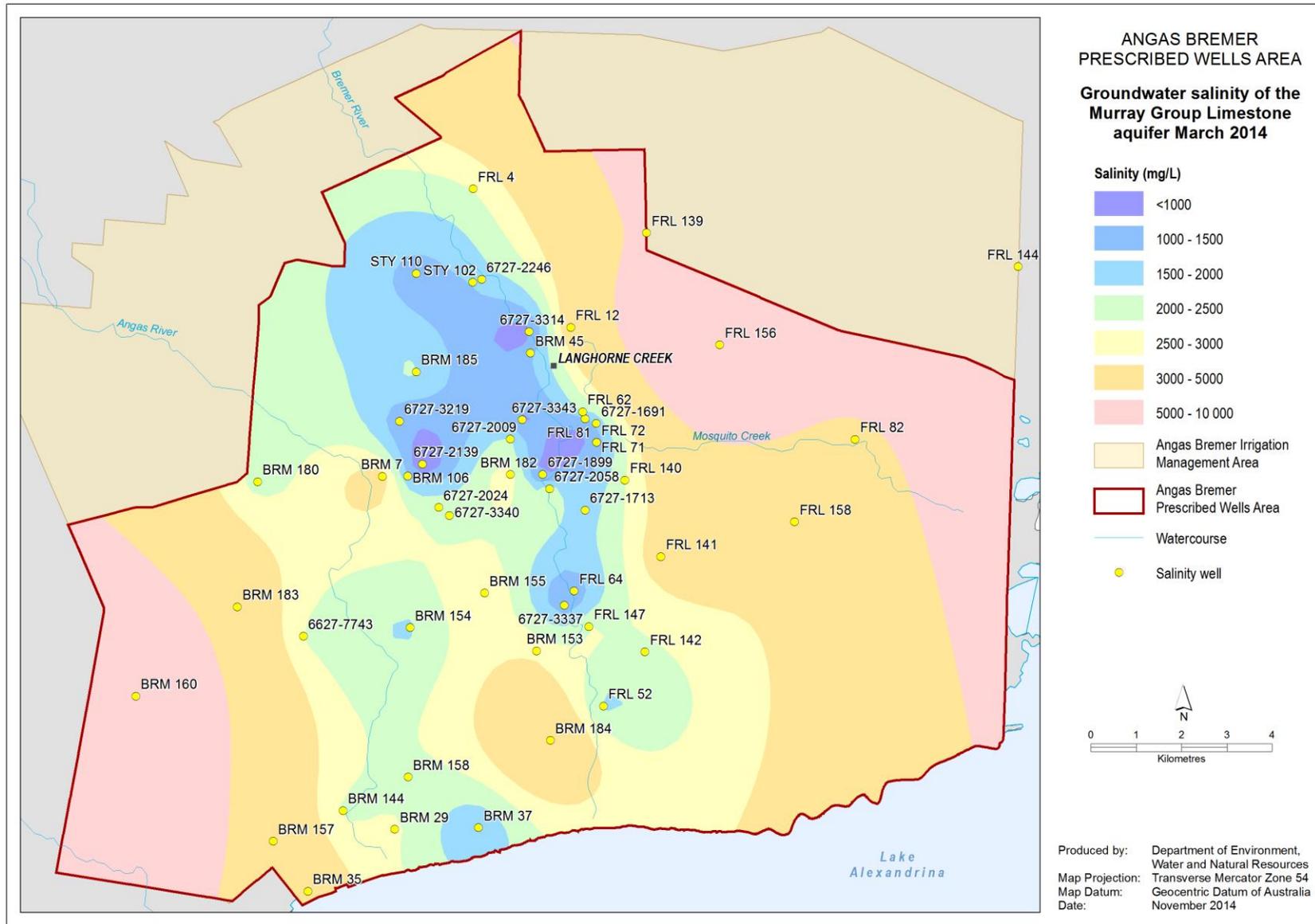




**Figure 23b** Water Level Elevation (m AHD) and salinity in Tertiary Confined Aquifer March 2014, Post Irrigation, (Obs. Well data)



**Figure 24a** Salinity in Confined Aquifer samples from Govt Observation Wells and Irrigator's Water Samples Oct 2014



**Figure 24b** Salinity in Confined Aquifer samples from Govt Observation Wells and Irrigator’s Water Samples March 2014

## Langhorne Creek Weather Station Statistics *Michael Cutting, Natural Resources SA Murray Darling Basin*

### Background:

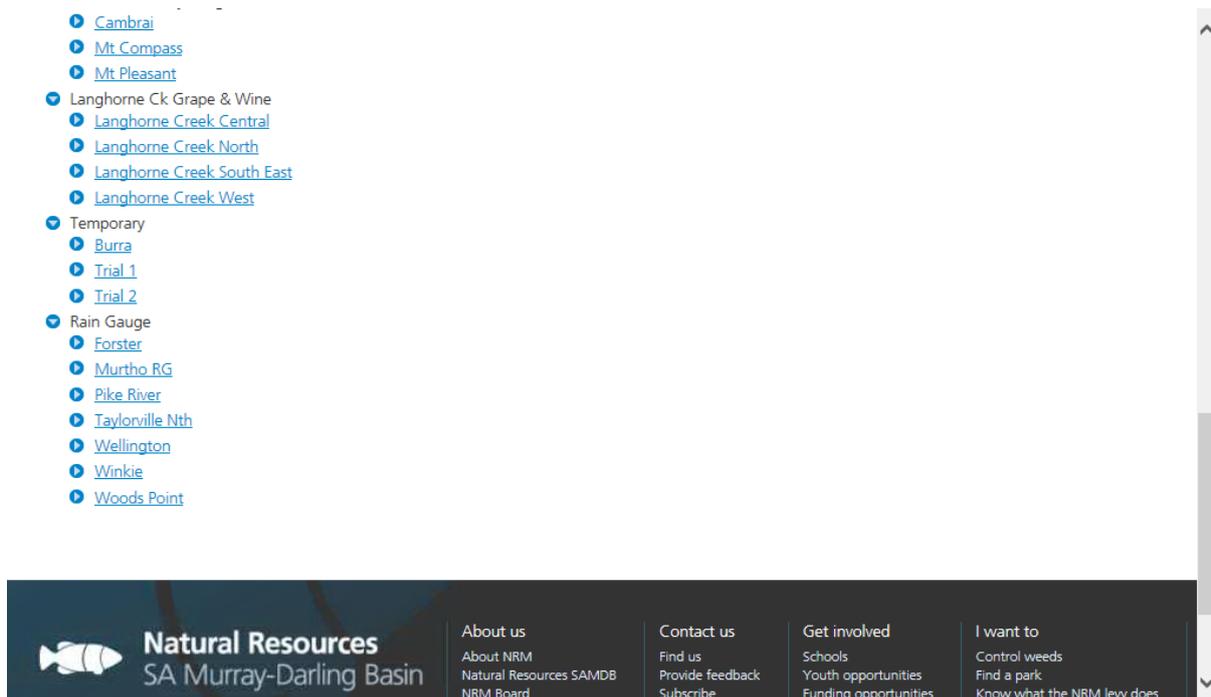
In October 2015 three new automatic weather stations were installed within the Angas Bremer Irrigation Management Area as part of a Langhorne Creek Grape and Wine Inc initiative. The three new stations are named Langhorne Creek South East, West and North and have been fully integrated into the SA MDB NRM Board's regional weather station network and report data to the web on an hourly basis.

As a result of the new stations being added the weather station website has also been updated so that all four Langhorne Creek stations can now be found under the **Langhorne Creek Grape and Wine** banner – see **Figure 25** below. The original weather station installed at Lake Breeze and on which the seasonal statistics are based has been renamed **Langhorne Creek Central**.

The website address is:

<http://aws.naturalresources.sa.gov.au/samurraydarlingbasin/?main=map> or by navigating via the SA MDB NRM Board home page:

<http://www.naturalresources.sa.gov.au/samurraydarlingbasin/home>



**Figure 25**

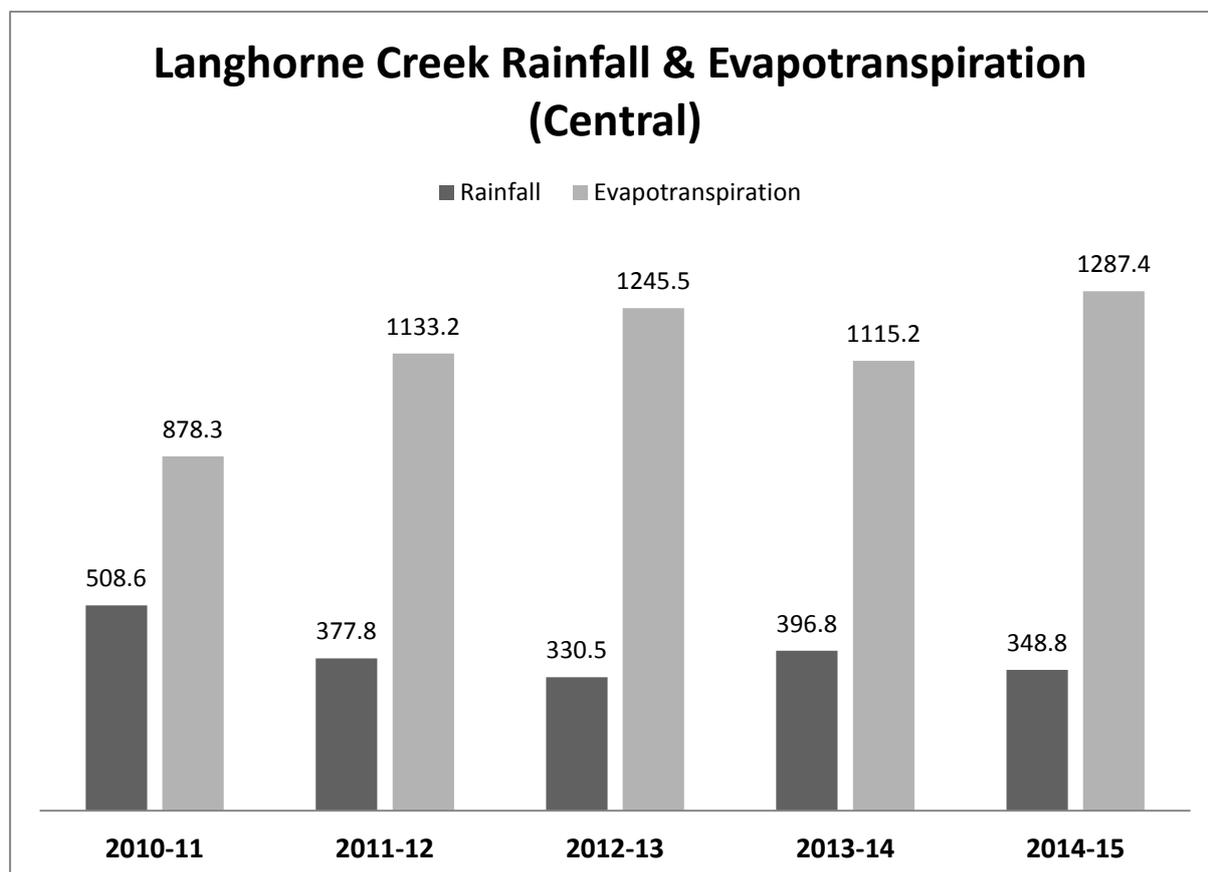
A mobile friendly website is currently being developed and is expected to be fully operational in March 2016.

A 6 day evapotranspiration forecast service is also now available for the Langhorne Creek region through a partnership between the Bureau of Meteorology and the SA MDB NRM Board. This service requires a username and password to access the data via the BoM Commercial Weather Services site and login details are available from Michael Cutting by emailing - [michael.cutting@sa.gov.au](mailto:michael.cutting@sa.gov.au)

### 2014/15 Seasonal Summary

All illustrated in **Figure 26** 348.8mm of rainfall was recorded during 2014/15 (July – June) at the Lake Breeze (Central) weather station site. This was approximately 50mm less than what was recorded in the 2013/14 season.

The 2014/15 evapotranspiration (ET) figure of 1,287.4mm was less than the previous season (1,115.2mm) however there were data gaps in the 2013/14 records meaning the actual difference in ET would not have been as great as the figure indicates.



**Figure 26**

The warmest day for 2014/15 was recorded on the 2<sup>nd</sup> January 2015 with 43.2C while the coldest was -1.8C on the 21<sup>st</sup> June 2015. Interestingly the highest daily evapotranspiration figure of 12.5mm was recorded on 28<sup>th</sup> September 2014 despite the maximum temperature for the day being only 29.2C however strong winds including a 66km/hr gust recorded have contributed to the elevated ET.

# **Angas Bremer Water Management Committee Inc Annual Public Meeting Minutes**

**7th September 2015  
Langhorne Creek Bowling Club Rooms**

**Attendees:** Mac Cleggett, Matt Henderson, Geoff Warren, Bill Potts, David Hender, John Borrett, George Borrett, Brett Ibbotson, Steve Barnett, Ray McDonald, Trevor McLean, Brett Cleggett, Barry Potts, James Stacey, Sylvia Clarke, Leah Hunter

**Apologies:** Dale Wenzel, Mark Cleggett, Brett Phillips, Phil Riley, David Kohl, Nick McDonald, Michael Cutting, Michael Clements, Darren Aworth.

Meeting open: 7:10pm

## **Opening address by Chairman James Stacey:**

The chairman welcomed Leah Hunter who has taken over the role of Project Officer from Sylvia Clarke. Sylvia Clarke was thanked for her time with the ABWMC.

A replacement Project Officer had been found earlier but did not stay long in the role. The decision was made to hand over the role to the Goolwa to Wellington Local Action Planning Association to administer the role. Their staff members Leah Hunter and Caroline Holloway have been managing this year's reporting.

The ABWMC has a \$20,000 25th Anniversary Landcare Grant that will be used for revegetation and maintenance on sites previously worked on through other revegetation projects and \$50,000 from the SA Murray-Darling Basin NRM Board to cover reporting and other costs for 14/15 and 15/16 reporting years. Funding remains an on-going issue and as water use reporting is now being done more broadly across the Eastern Mt Lofty Ranges the future is uncertain.

In regards to the Eastern Mt Lofty Ranges Water Allocation Plan, the decision was made to charge flood diverters 25% of the levy charged to all other EMLR water users. The ABWMC had put a recommendation in to DEWNR & Natural Resources SAMDB but the final decision was made by the SA Murray-Darling Basin NRM Board. It was unfortunate that some backlash has been received from the community because of the ABWMC's involvement in this process, even though they had managed to reduce the levy to 25% for the flood diverters.

Rob Giles had previously brought up the issue of banking water across the district and Steve Barnett from DEWNR was going to address this in his presentation later in the meeting.

The chair has been in the position for 6 years and suggested it was time for someone else to take over the role.

**Matt Henderson (DEWNR Water Licensing):** Delivered a talk on the new licensing process for recharging water

Matt mentioned that there is a lack of awareness among irrigators about the new changes and they are trying to rectify this.

He stated that in order to extract your recharge again at a later date you will need to have an Angas Bremer Water License with recharge as an allocation purpose, if you don't have this you will need to vary your license to get it on there. The water also needs to be extracted within 500m of where it is recharged.

You also need a permit to take the water out of the bore. In the EMLR WAP it states that a hydrogeological assessment needs to be done by a 'suitably qualified person', although it remains unclear exactly what this means. This will probably involve pump tests to make sure that the recharge is not going to detriment the aquifer. Information will be sent out outlining what needs to be done.

There are exceptions; if you previously held a permit, your allocation is less than 20ML or you only recharge under gravity not pumping. Licensing Officers will be talking to people at the time of renewal. Permits will be for 5 years. It was reduced to 1 year in the drought but it is safe to have 5 year permits again.

The permit and the licence will now be linked together for when the readings come in. This will then allow for increases in allocation the following year to take account of recharge. The water is put down one year and will show up on the allocation for the following year. If you need to extract it in the same year you will need to contact the department and provide a meter reading to get authorisation to extract it.

The recharge will remain on top of the allocation and be able to be kept for 4 years. The allocation will be used first, then rollover, then recharge. Recharge permits are not transferrable but new owners can apply for a permit. They can be transferred if the license is sold with the property.

Geoff Warren queried why the current recharge permits don't allow pressure recharge only gravity fed.

Matt replied that this was so that the permits could be re-issued without the need for a hydrogeological assessment. Next time the assessment will need to be done. But that they were happy to speak to irrigators on a case by case basis.

Geoff Warren pointed out that this was causing some angst in the region as recharging under pressure had been done previously.

Brett Ibbotson (Natural Resources SAMDB) pointed out that the reason for the assessments was to make sure the recharge was not going to impact other users.

Steve Barnett (DEWNR) explained that if there was a structural issue, the pumping could lead to a rupture in the confining clays and the salt water from the overlying aquifer could come down. The testing ensures that the rate is sustainable into the future and won't cause a rupture. Some existing ones may be too high. There will be a fact sheet coming out that will outline the process.

Mr Warren queried what would happen in an irrigator wanted to recharge under pressure tomorrow?

Mr Henderson did not have the answer at present but pointed out that recharging could currently be done under gravity. He would like to know if there was angst in the community about this.

Mr Barnett suggested people start applying to speed up the process of working out how it was going to happen.

Ray McDonald suggested the status quo should have remained until the process was sorted out.

Mac Cleggett asked what would happen if floods coming through weirs and sluices were more than was allocated.

Brett Ibbotson said this would qualify as a natural event and the WAP would not apply.

Barry Potts asked whether it was possible to recharge just to improve the aquifer and not accumulate a credit?

Mr Henderson replied that in that case you would not need a licence just the recharge permit.

**James Stacey: Presented the ABWMC Financial Report on behalf of the Treasurer**

See attached audit report.

\$56,000 currently in the bank to pay for reporting for 2 years, insurance and the cost for Barb Blaser to do administration. After this it will all be used up.

**Official Business:**

In the constitution the ABWMC is meant to have 9 meetings a year but has only been meeting 6 times. He put forward a motion:

To amend the constitution to: the committee must meet at least 5 times per year.

**Moved** : Barry Potts

**Seconded** : George Borrett.

**The meeting was unanimously in favour of this.**

**Election of Members:**

Current members required for renomination: George Borrett, James Stacey, Mac Cleggett and Barry Potts.

Nominations received for George Borrett, Mac Cleggett and Barry Potts to stand again.

**No formal nominations for other committee members had been received prior to the meeting.**

Nominations were called from the floor: Geoff Warren nominated David Kohl, vineyard manager for Casella.

***The Chair moved that the renominating members be accepted for positions on the committee.***

***All were in favour***

Dale Wenzel, Michael Clements, Nick McDonald and Darren Aworth each have another term of appointment.

**(Note:** Since the Annual Public Meeting in September, James Stacey the chair, has stood down from the Committee. Thank you James for your contribution over the last six years. It has been greatly appreciated.)

**Steve Barnett (Principal hydrogeologist, Department of Environment, Water and Natural Resources.): Presented on the Potential to bank water for future drought**

Steve Barnett was going to demonstrate this using a computer model but unfortunately the presentation would not display through the laptop and projector.

See attached slides (Appendix A).

From the monitoring of bores it can be seen that there is a gradual rise in pressure in the aquifer throughout the region. Recharge going in increases the pressure, while pumping reduces it.

The amount of recharge going in last year (2013-14) was 1500-2000 ML which is higher than before the drought. Pumping is also higher than before the drought and people are taking a lot of the recharge back out.

The salinity from last year shows that the areas with salinity below 1500EC is greater than before the drought because of recharge. Using the model they tested injecting 13GL into the aquifer and taking out 100%. Because the water is always moving North to South you will never extract all of the recharged water as it will have moved away from the bore. It might be 90% with 10% native groundwater. The longer it is left in, the less you will get back. If you have a neighbour to the North you may get some of theirs.

If a lot was taken from someone to the South you will suck it out from your neighbour, that is why there are buffers around new bores going in and why it is best to take out your recharge within 500m and to the South.

High pumping will cause saline water to come down from above aquifer but if you have recharged you will be starting at a better base.

James Stacey asked if the 4 years on recharge rollover was feasible. Steve said he could run the model to find out and this wouldn't cost too much to do.

The relative values of recharge vs extraction was queried. For this in 2014-15 about 2000ML was extracted and 1000ML recharged.

For more detail see attached slides and report from Steve Barnett.

Brett Ibbotson mentioned that Michael Cutting was going to present on the Green Trail idea but was an apology. The Green Trail is a marketing idea for the region, to spruce the credentials and good practices of the region and promote tourism. This project idea has been put together by Kerri Muller with the idea that it would be funded by Tourism Commission and the Council, not the ABWMC.

**Leah Hunter:** Presented the 2014 – 2015 Interim District Irrigation Annual Report.

**Other Business:**

Geoff Warren asked if it would be appropriate to have the constitution on the website. It was agreed that this would be a good idea and would be done by the project officer.

David Hender asked if there was any issue of gas in the aquifer from pressurized recharge. Steve Barnett was satisfied that if fracking was to occur it would be ok.

Geoff Warren asked about the Sustainable Diversion Limits in the Murray Darling Basin Plan. Will extractions of surface and Ground Water be cut in the Angas Bremer irrigation management zone? He suggested more people should join the committee if this was going to happen.

Steve Barnett said there was not technical justification for them to be cut and would be asking for evidence if they were.

Brett Ibbotson said that some areas were over allocated but they were waiting on the licensing process to be completed. All licences should be out now. He pointed out that the Angas Bremer irrigation management zone was 'at risk' but that was because too much was being taken out higher in the catchment. But nothing had been decided at this stage.

James Stacey suggested the community should keep an eye on the MDB Plan.

The chair thanked everyone for coming to the APM, thanked Leah and the other speakers for presenting and thanked Sylvia Clarke for taking the minutes.

Meeting closed at 8:30pm

# Audited Accounts 2014-15

## ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

### AUDITOR'S REPORT

#### Scope

I have audited the accounts of the Angas Bremer Water Management Committee Incorporated for the period ended 30th June, 2015 as set out on pages 1 to 3.

The accounts are a special purpose report and have been prepared on the basis explained in the Notes to the accounts. The Committee is responsible for the preparation and presentation of the accounts and the information they contain. I have conducted an independent audit of the 2014/2015 figures as shown in the accounts in order to express an opinion on them to the Committee members.

My audit has been conducted in accordance with the Australian auditing standards to provide reasonable assurance as to whether the accounts are free of material misstatement. My procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the accounts, and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken by me to form an opinion as to whether, in all respects, the accounts are presented fairly in accordance with the accounting policies as described in the Notes to the accounts.

The audit opinion expressed in this report has been formed on the above basis.

#### Audit Opinion

In my opinion, the accounts of the Angas Bremer Water Management Committee Incorporated are properly drawn up: (i) So as to give a true and fair view of the state of affairs of the Association as at 30th June, 2015 and the operations of the Association for the period ended on that date; and (ii) are in accordance with accounting standards that are applicable to the Association as a non-reporting entity.



.....  
Michael W. J. Perrey  
Certified Practising Accountant

127 Swanport Road,  
Murray Bridge  
SA 5253

Signed at Murray Bridge this 4<sup>th</sup> day of August, 2015

**ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.**

**INCOME & EXPENDITURE STATEMENT**

**FOR THE YEAR ENDED 30TH JUNE 2015**

		<u>2014</u>		<u>2015</u>
<b><u>INCOME</u></b>				
AB Business Plan	20,000.00		10,150.00	
AB Rivers & Wetland	-		18,500.00	
Cover Crops II Grant	-		800.00	
SEWPAC	81,500.00		8,150.00	
Irrigation Annual Reporting	-		20,000.00	
Interest	27.06		2.83	
Newsletter	545.45		-	
Rural Incentives Grant Cover Crops	6,636.36		663.64	
Web Upgrade	<u>1,000.00</u>	109,708.87	<u>-</u>	58,266.47
<b><u>EXPENDITURE</u></b>				
2012 Salinity Man Promo		750.00		-
2012 Salinity Man Promo - Other		8,145.44		-
<b><u>AB Business Plan exp</u></b>				
Advertising & Promotion	221.67		163.82	
Audit	548.00		660.00	
Insurance	2,574.92		-	
Meeting Costs	4,737.93		1,984.91	
Postage & Stationery	1,379.92		511.37	
Printing	1,378.64		836.55	
Project Coordinator	17,880.42		13,857.98	
Project Officer	-		1,805.60	
Travelling	388.50		525.98	
Windows 7 Upgrade	<u>200.00</u>	29,310.00	<u>-</u>	20,346.21
Retained Funds expense		306.30		1.10
<b><u>IAR Expense</u></b>				
Domain Reg	-		21.90	
Insurance	-		2,864.46	
Postage	-		6.36	
Secretary	<u>-</u>	-	<u>1,200.32</u>	4,093.04
<b><u>Biodiversity Project</u></b>				
Contractor	57,972.75		330.00	
Equipment	9,794.41		-	
Postage	16.36		-	
Project Coordinator	18,449.60		-	
Seeds	12,952.86		-	
Stationery	123.81		-	
Travelling	<u>1,132.88</u>	100,442.67	<u>-</u>	330.00
Building on Water Quality		1,050.00		-
Cover Crops		3,111.82		1,374.92
LC Rootzone Salinity		88.50		-
Website upgrade		-		<u>550.00</u>
<b>TOTAL EXPENDITURE</b>		<u>143,204.73</u>		26,695.27
<b>NET INCOME/(DEFICIT)</b>		\$ ( <u>33,495.86</u> )		\$ <u>31,571.20</u>

ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

BALANCE SHEET

AS AT 30TH JUNE 2015

	<u>2014</u>	<u>2015</u>
<b>ASSOCIATION FUNDS</b>		
Balance 1/07/14	59,242.82	25,746.96
<i>plus</i> Net Income/(Deficit)	( <u>33,495.86</u> )	<u>31,571.20</u>
Balance 30/06/15	\$ <u>25,746.96</u>	\$ <u>57,318.16</u>
Represented by:		
<b>ASSETS</b>		
<b>Current Assets</b>		
Cash & Bank Accounts	19,679.48	61,248.16
Tax Control	<u>6,067.48</u>	<u>-</u>
<b>TOTAL ASSETS</b>	25,746.96	61,248.16
<b>less LIABILITIES</b>		
<b>Current Liabilities</b>		
ABN Withholding	-	-
Tax Control	<u>-</u>	<u>3,930.00</u>
<b>Total Current Liabilities</b>	<u>-</u>	<u>3,930.00</u>
<b>TOTAL LIABILITIES</b>	<u>-</u>	<u>3,930.00</u>
<b>NET ASSETS</b>	\$ <u>25,746.96</u>	\$ <u>57,318.16</u>

**ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.**

**NOTES TO AND FORMING PART OF THE ACCOUNTS**

**FOR THE YEAR ENDED 30TH JUNE 2015**

**Note 1.** These financial statements are a special purpose financial report prepared in order to satisfy the financial reporting requirements of the Associations Incorporation Act (SA) 1985. The Committee has determined that the association is not a reporting entity.

The Accounts have been prepared in accordance with the requirements of the Associations Incorporation Act(SA) 1985, Statements of Accounting Concepts, the Accounting Standards and other mandatory professional reporting requirements as issued by the Australian accounting bodies where considered by the Committee.

The accounts have been prepared on the basis of historical costs and do not take into account changing money values or current valuations of non-current assets.

Significant accounting policies that have been involved in the preparation and presentation of the accounts are:

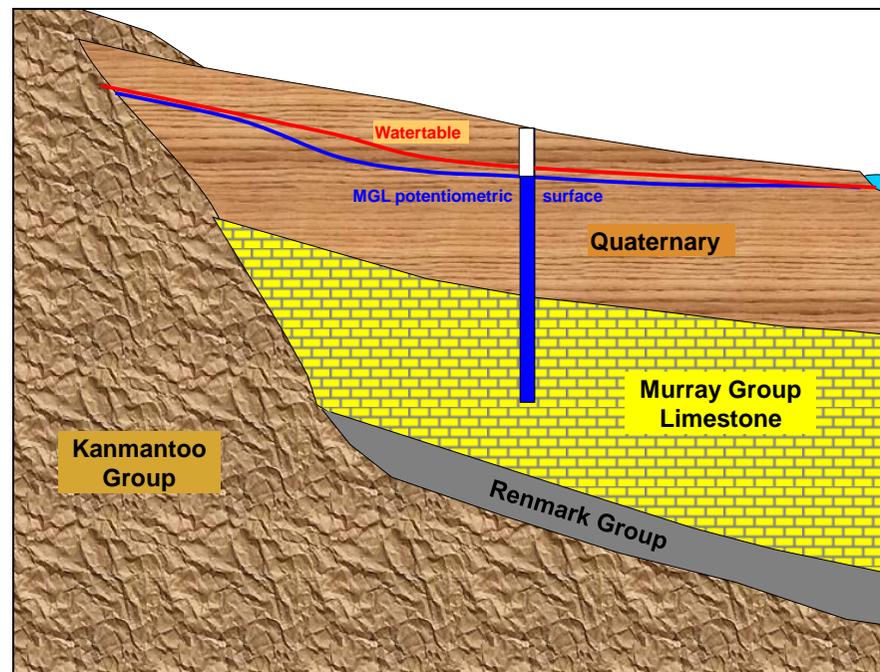
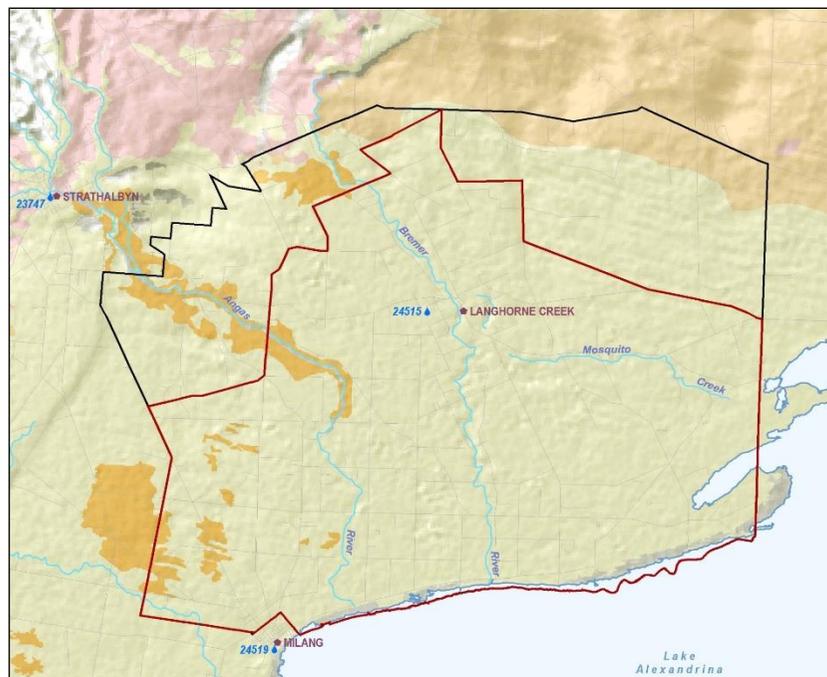
(a) Plant and Equipment

Plant and equipment is recorded as an expense for the period.

(b) Accounting Method:

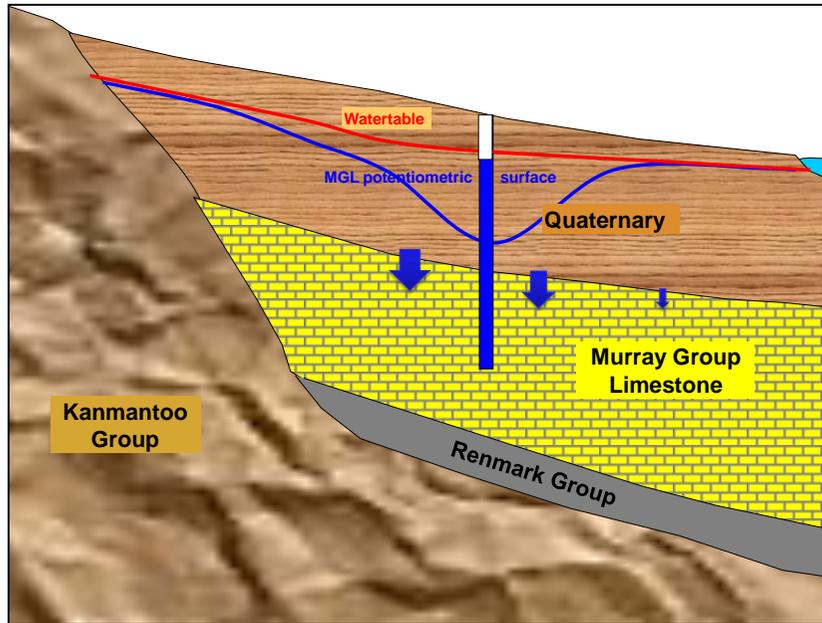
The cash basis of accounting is adopted by the group.

Appendix A – Steve Barnett (Principal hydrogeologist, DEWNR.): Potential for Banking Water for future drought

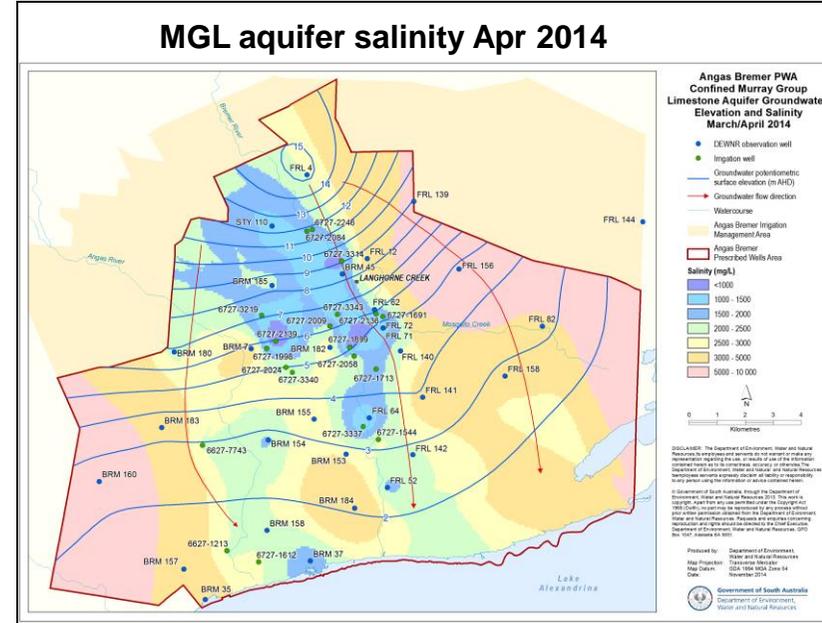


This is the outline of the Angas Bremer PWA in red.

Geological cross section showing the Quaternary sediments (Which contain saline to brackish groundwater) Overlaying the Murray Group Limestone (which contains fresh groundwater). This represents the non – pumping situation where the watertable in the quaternary aquifer is at a similar level to the pressure level in the MGL aquifer.

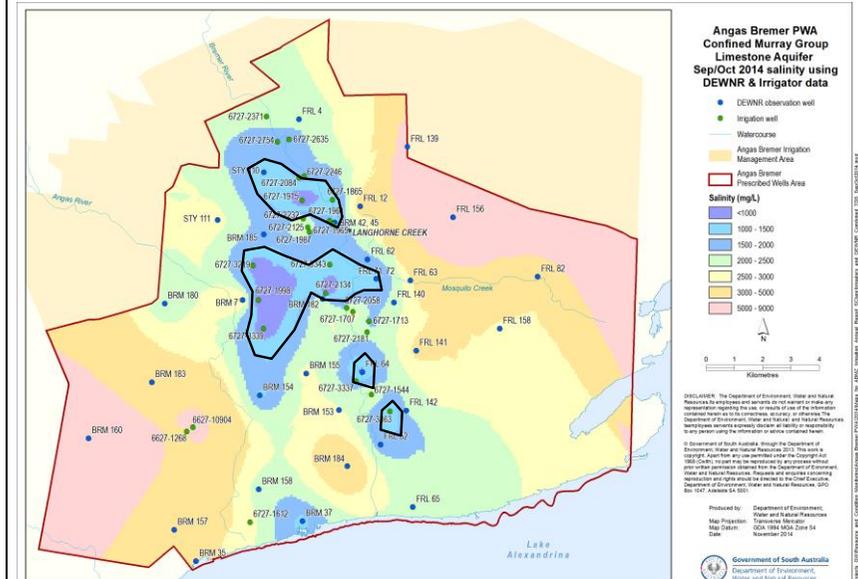


Shows the impact of pumping from the MGL aquifer which lowers the pressure level below the watertable, thereby inducing downward leakage of saline groundwater into the MGL aquifer.

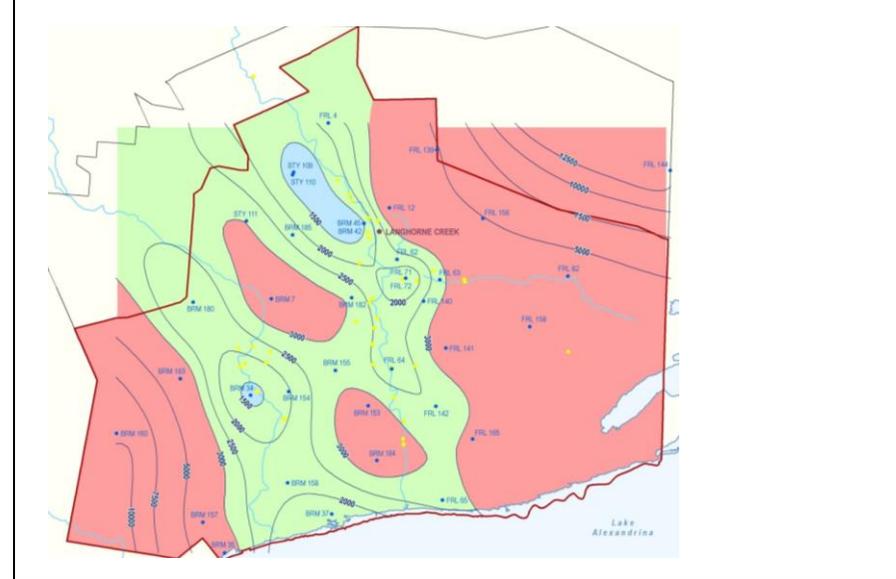


This map shows the pressure level surface of the MGL aquifer and the Movements of groundwater southwards towards the lake. The salinity of the MGL aquifer is also shown from sampling undertaken in April 2014.

### MGL aquifer salinity Sept 2014



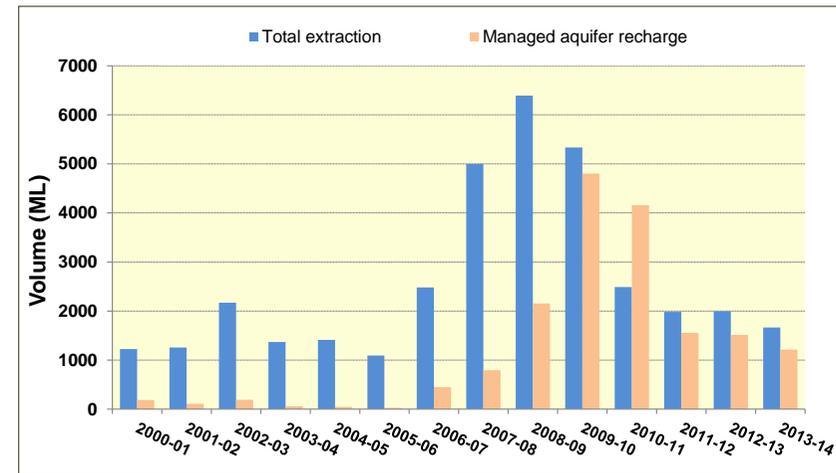
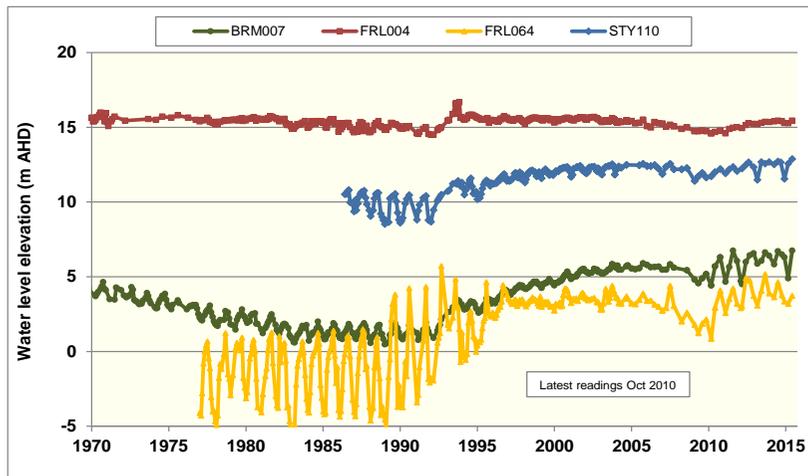
### MGL salinity 2007



Shows the increase in the area of low salinity groundwater in September 2014, most likely as a result of injection of water during the winter months. Note the area below 1500 mg/L (outlined in black) and compare with the next slide.

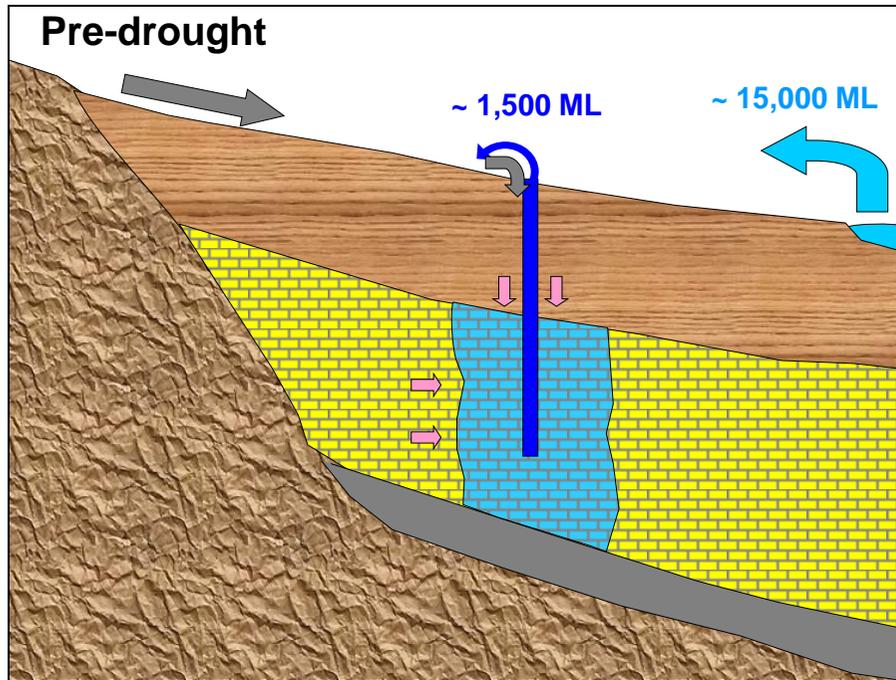
The area below 1500 mg/L is much lower in 2007.

## Water level trends

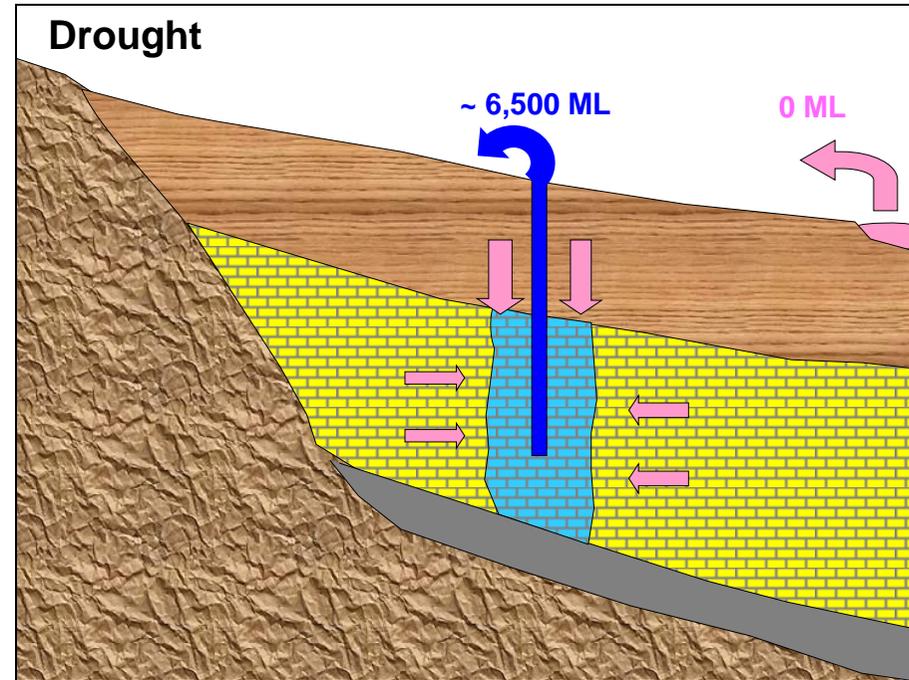


These hydrographs of pressure levels in the MGL aquifer show that recent levels are the highest for over 40 years in most areas, probably as a result of MAR and reduced pumping since the drought.

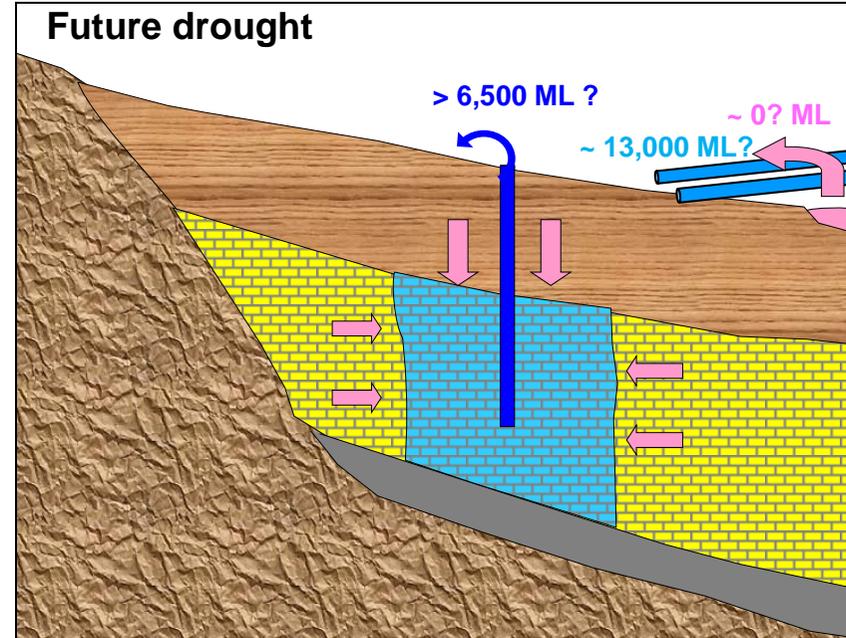
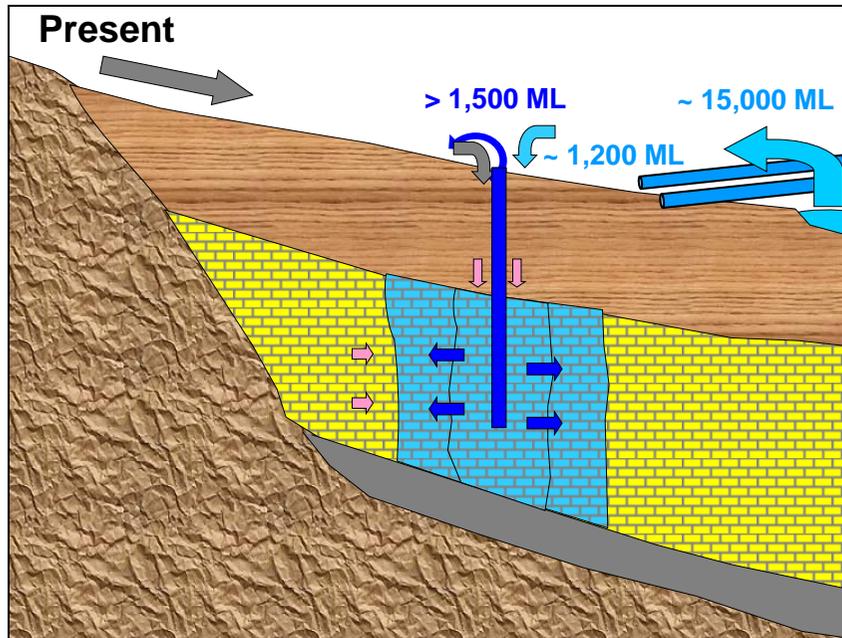
This graph shows the dramatic increase in extraction during the drought which is followed by a decline. The MAR volumes also increased during and have also decreased since.



This is a simplified picture of the pre-drought situation showing groundwater extraction of about 1500ML/yr, surface water use of about 15,000 ML/yr and some recharge from streams.



During the drought, groundwater pumping increased to the allocation limit of 6500 ML/yr, with no water being used from the lake. Groundwater salinities increased due to downward leakage and some lateral inflows. The amount of fresh groundwater in the aquifer declined.



Groundwater extractions have reduced to about 1500ML/yr, with about 1200 ML/yr being recharged from streams, lake and river pipelines. Volume of fresh groundwater has increased due to MAR.

A future drought scenario should not affect river pipelines, but may affect supplies from the lake. Will 6500 ML/yr need to be pumped from groundwater given the river pipelines. The larger fresh groundwater store in the aquifer may limit salinity increases due to pumping.

## Appendix B – Study of Lessons Learnt through Angas Bremer Water Allocation Planning

### **Primary Producers SA (PPSA)**

PPSA received funding from the Department of Environment, Water and Natural Resources to fund a part time NRM liaison officer (approx 1 day per week) for most of 2014/15. The NRM liaison officer works on the implementation of the Agriculture and NRM action plan, as well as working with the PPSA NRM Committee. This work will continue in 2015/16.

As part of an action to review water planning and management from the primary producer's perspective, Catherine Miles attended a meeting of the Angas Bremer Water Management Committee in April 2015. Amy Williams has taken over the NRM liaison role and will continue this review in early 2016.

Other issues being addressed by the PPSA NRM Committee have included water planning and management cost recovery issues, native vegetation clearance regulations and policy, mining and gas issues and general NRM engagement.