

Angas Bremer Irrigation Management Zone 2016 – 2017 Annual Report



Project Coordinator: Leah Hunter
Angas Bremer Water Management Committee Inc

Supported by



Government of South Australia
South Australian Murray-Darling Basin
Natural Resources Management Board



Natural Resources
SA Murray-Darling Basin

2016-17 Annual Irrigation Report

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Angas Bremer Water Management Committee

Members 2016-2017

Presiding Member – David Kohl

Treasurer – Michael Clements

Committee Members

Darren Aworth, George Borrett, Mac Cleggett, Loene Furler,
Barry Potts, Ken Follett, Michael Cutting,
Brett Ibbotson and Brenton James

Non-elected members of the Committee

Secretary – Caroline Holloway

Project Coordinator – Leah Hunter

Report of the Activities of the Committee 2016-2017

Natural Resources SA Murray-Darling Basin Volunteer Small Grant -

Angas and Bremer River Water Planning, Implementation, Design and Managing High Demand Tour

The Angas Bremer Water Management Committee Incorporated hosted a 'Day on the bus with the Angas Bremer Water Management Committee' on Tuesday 27th September 2016 with 15 people attending.

During the free bus trip the attendees visited two of the securing low flows trial sites in the Angas Catchment. The tour also included a number of information sessions with speakers discussing;

- the new FrogSpotter app to monitor South Australian frogs
- an update on the latest activity in pest and weed management in the Langhorne Creek area
- information on the progress and content of the revised River Murray Water Allocation Plan.

Two trial sites were visited to look at two different options for returning low flows to the environment. Low flows are naturally occurring, regular, small flow events that are part of the annual water pattern of a catchment. They are a small but essential fraction of water that needs to flow across land through watercourses to maintain natural processes and catchment health.

The first site had a traditional 'bypass' device that diverted water before it entered a 40 megalitre dam.

The second site had a "release" device, a winning design from the Low-Flows Design Competition run by Natural Resources SA Murray-Darling Basin.

The competition asked farmers, inventors, engineers and designers to come up with new ways to secure low flows from dams and watercourse diversions in the Mount Lofty Ranges.

The "release" device installed has a sensor that detects water flow into the dam and calculates the volume of water that should be released as an environmental flow. This volume is then released over the dam wall via a siphon pipe.

The pros and cons of each device at the two sites were discussed. The bypass device is very simple to design, construct and maintain but may require large amounts of trenching and pipe to get the required 2 degrees of fall from the diversion point to downstream of the dam.

The "release" device doesn't require much physical soil disturbance and is able to be set up relatively quickly and easily on the dam wall. However, it contains sensitive electronics that, in most cases, will require technical expertise to fix if any damage or faults occur.

The day was a great opportunity to learn more about activity happening in the Langhorne Creek area and beyond.



Figure 1. Low flow device at site two.



Figure 2. Low flow devices at site one and two.

Irrigation Annual Report Forms Data Summary and Comment

Irrigation Annual Report forms (IARs) were mailed to 134 irrigators. 118 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. 16 irrigators did not respond/ provide data and did not achieve accreditation. The data from 118 irrigators (88 %) 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 35 irrigators. Flooding was recorded in all months from July through to January. 2170 hectares was recorded as being flooded this year, significantly higher than previous years.

Revegetation: The total area of revegetation reported in the Irrigation Annual Reports is around 1,890 ha. This includes 40 hectares revegetated during the Biodiversity Landcare Projects.

Red Gum Health: 109 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. 33 irrigators reported that their red gums were all 100% healthy, while most of the remainder listed the majority of their trees to be in relatively good health. No irrigators listed their red gums as getting worse.

Water Leasing: Table 1 below shows the amount of water leased in 2016-17 compared with water leased in previous years. Overall, less water was leased by irrigators this year than last. The amount of River Murray water leased out to Outside Irrigators decreased by only 93ML and the amount leased in from irrigators outside of the Angas Bremer Irrigation Management Zone significantly decreased by 3,342ML. The volume of River Murray water leased to other irrigators within the Angas Bremer Irrigation Management Zone is much lower than last year with only one lease reported. For the last four years no reports of leased groundwater within the zone were received.

Table 1: Water Leasing

Type of Lease	Megalitres 2014-2015	Megalitres 2015-2016	Megalitres 2016-2017
RM water leased from ABIMZ to outside ABIMZ	3,394.20	2,280.50	2187.00
RM water leased from outside ABIMZ to inside ABIMZ	4,190.90	5,023.90	1681.48
RM water leased from inside ABIMZ to inside ABIMZ	329	192	10.00
Groundwater leased from AB licence to AB licence	0	0	0

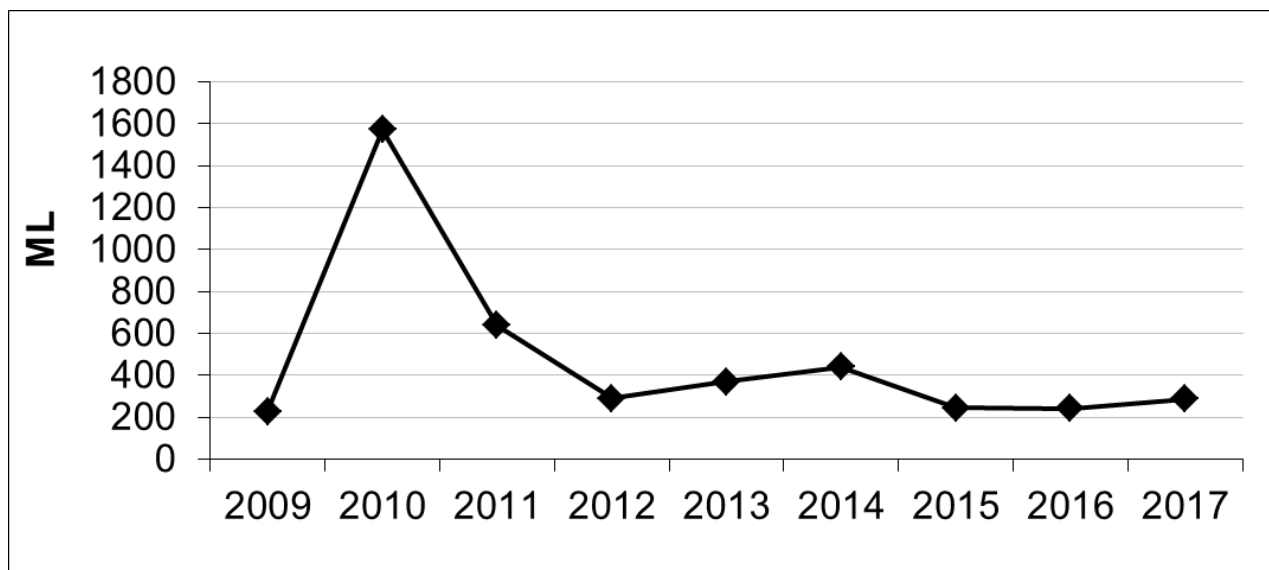


Figure 3: Angas and Bremer Rivers Water Extractions 2009-2016: Not all of the water taken from these rivers, such as the water diverted through weirs and sluices, is accounted for in this chart. The volumes on this graph are metered volumes from irrigators with meters installed, as well as the amount 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 is similar to last year but is very low compared with the extraction levels recorded in 2010.

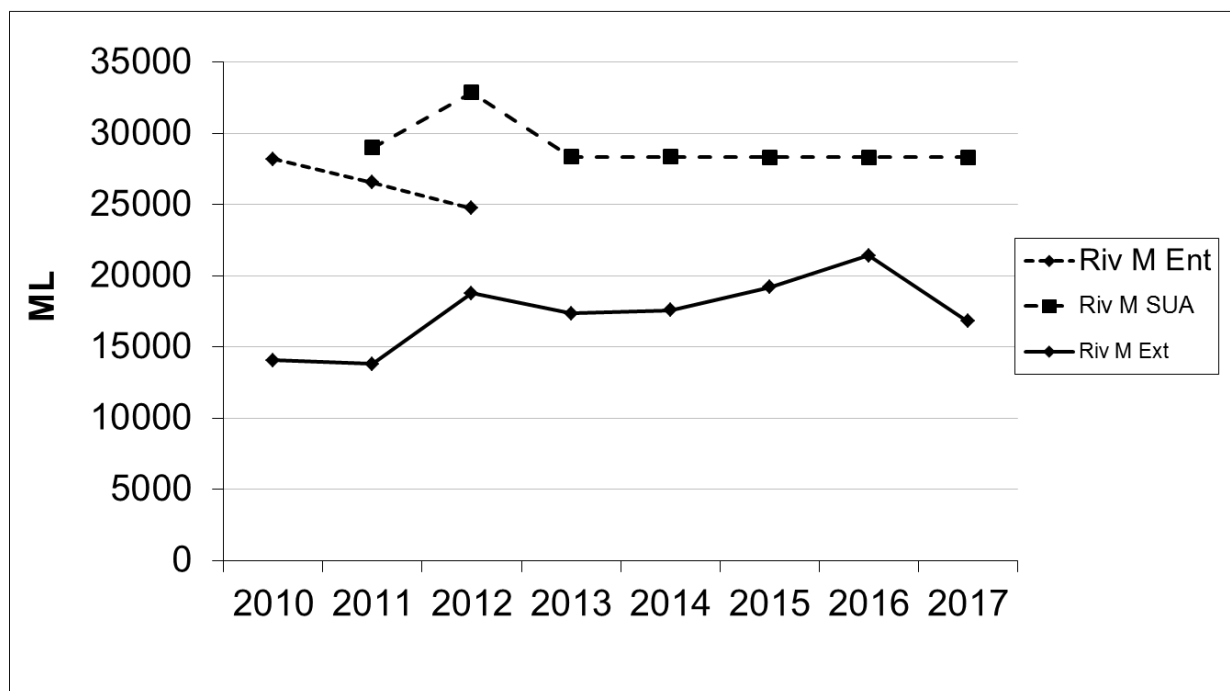


Figure 4: River Murray Water Entitlement, Site Use Approval and Extraction 2010-2017: Entitlement (RivM Ent) is the volume of water endorsed on licenses and does not include any credits for rollover, recharge etc. The River Murray Site Use Approval (RivM SUA) is the maximum quantity of River Murray water that can be used for irrigation on land identified as being in the Angas Bremer Irrigation Management Zone in 2016-2017. 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 2016-17 remained at 28,382 ML, and the recorded use was 16,814.7 ML, lower than the 21,434.35 ML used last year.

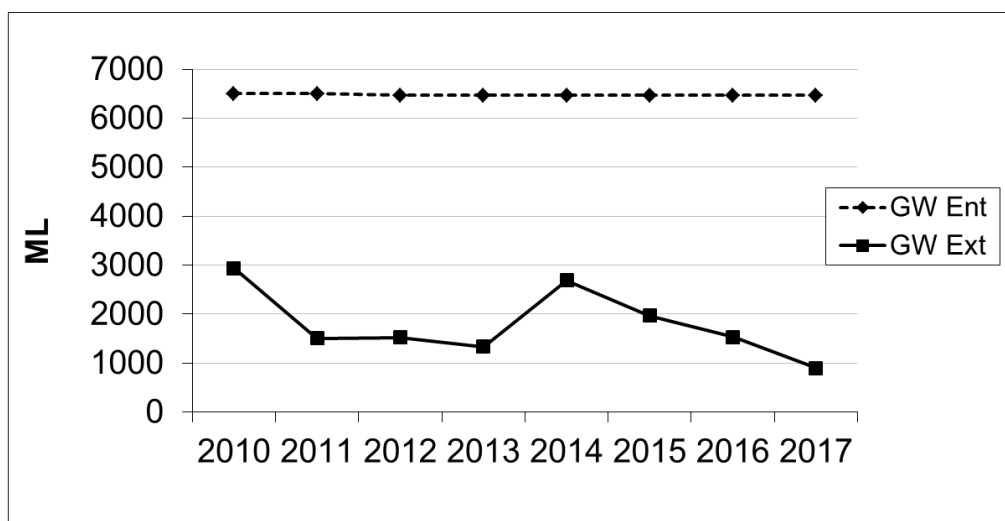


Figure 5: Groundwater Entitlement and Extraction 2010-2017: The maximum entitlement for 2016-17 was 6,500ML and the recorded use was 892.06 ML less than the volume of 1,529.93 ML used in the previous year. This is much lower than the 7,700 ML used during the “Millennium Drought”.

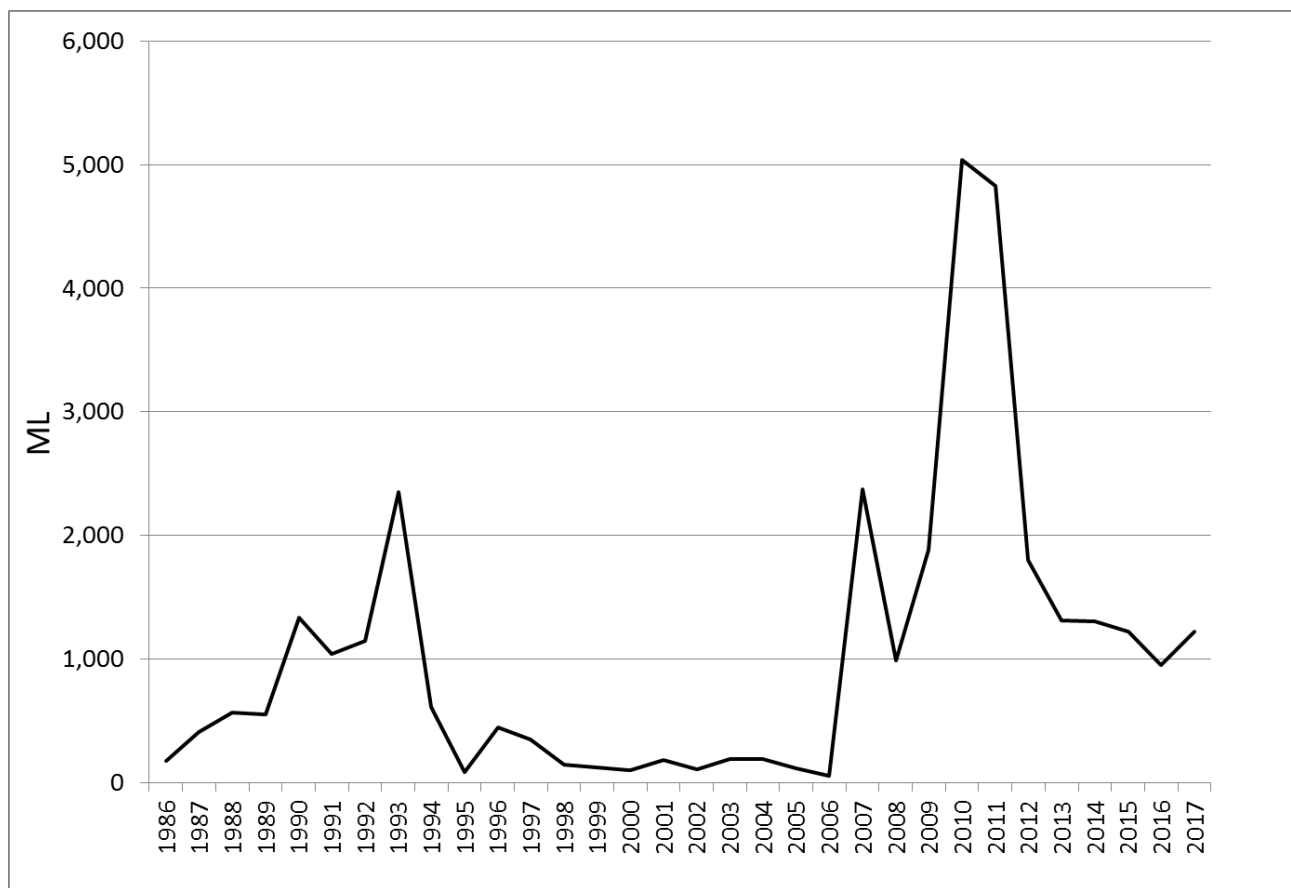


Figure 6: Managed Aquifer Recharge (formally termed Aquifer Storage and Recovery (ASR)) : This chart shows the total volume of water artificially recharged to the aquifer from 1986 to 2017. The **1223 ML** recharged from the Angas, Bremer and Murray rivers in 2016-2017 was slightly higher than last year's volume, but still substantially lower than the record levels achieved in 2010.

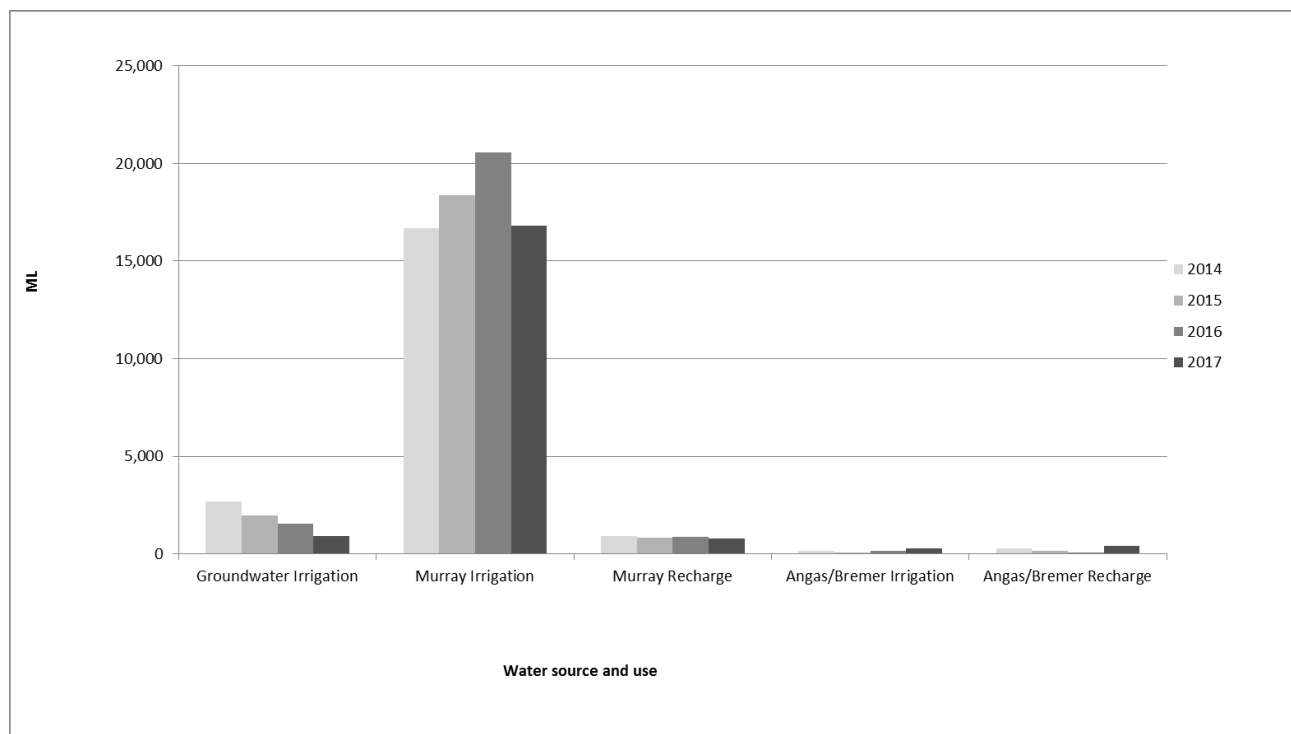


Figure 7: Total volume of water used 2016-2017: The total volume of water extracted from all sources within the region over the 2016-17 year was **19,216 ML**, which is lower than the previous two years, 2015-16 = 23,205 ML and 2014-15 = 21,409 ML.

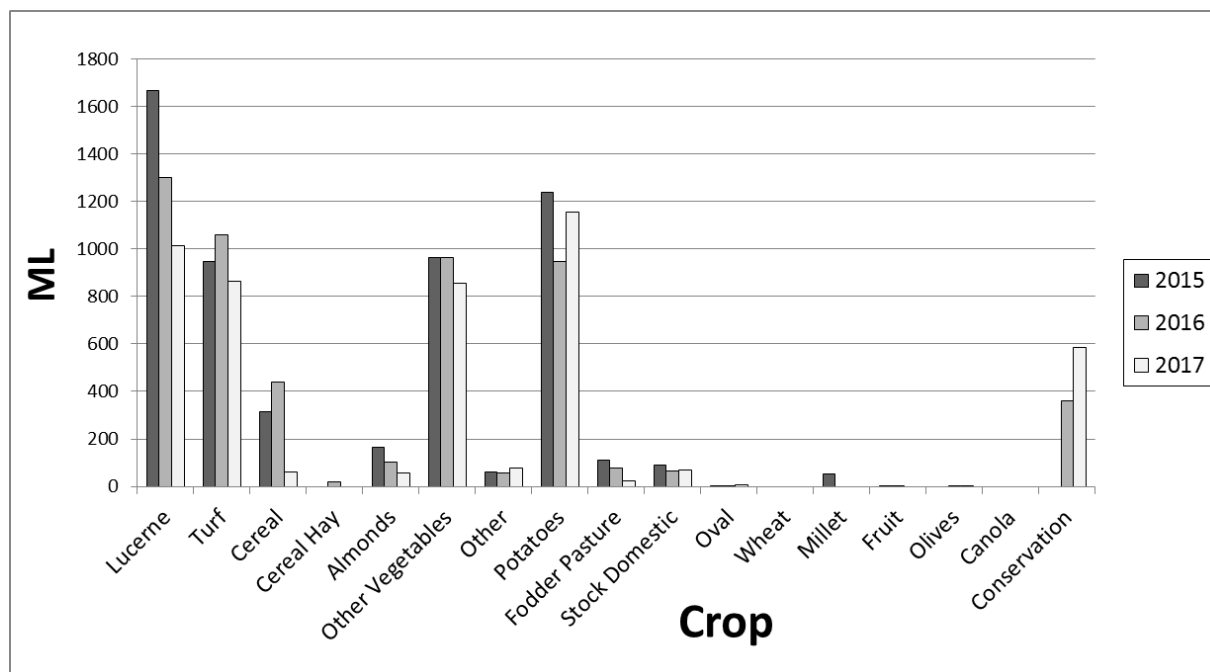


Figure 8: Total volume of water used for each crop type: This volume is the total used from all sources; groundwater, Angas/Bremer water and River Murray water that was applied to each crop type (grapes excluded). **The total volume of water applied to grapes was 9,998 ML in 2016-17 with a significant drop from 15,961 ML in 2015-16.**

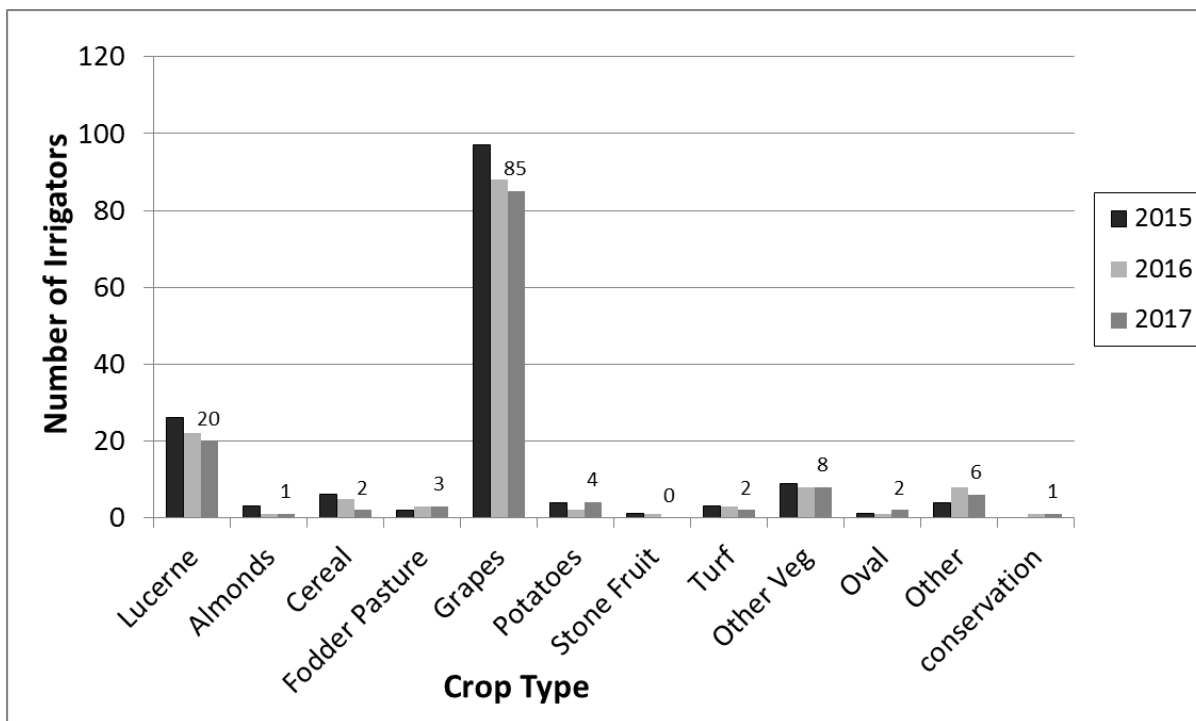


Figure 9: Number of Irrigators for Each Crop Type: The number of irrigators growing each crop type in the region appears to have remained relatively stable except for Lucerne and Grapes which have decreased.

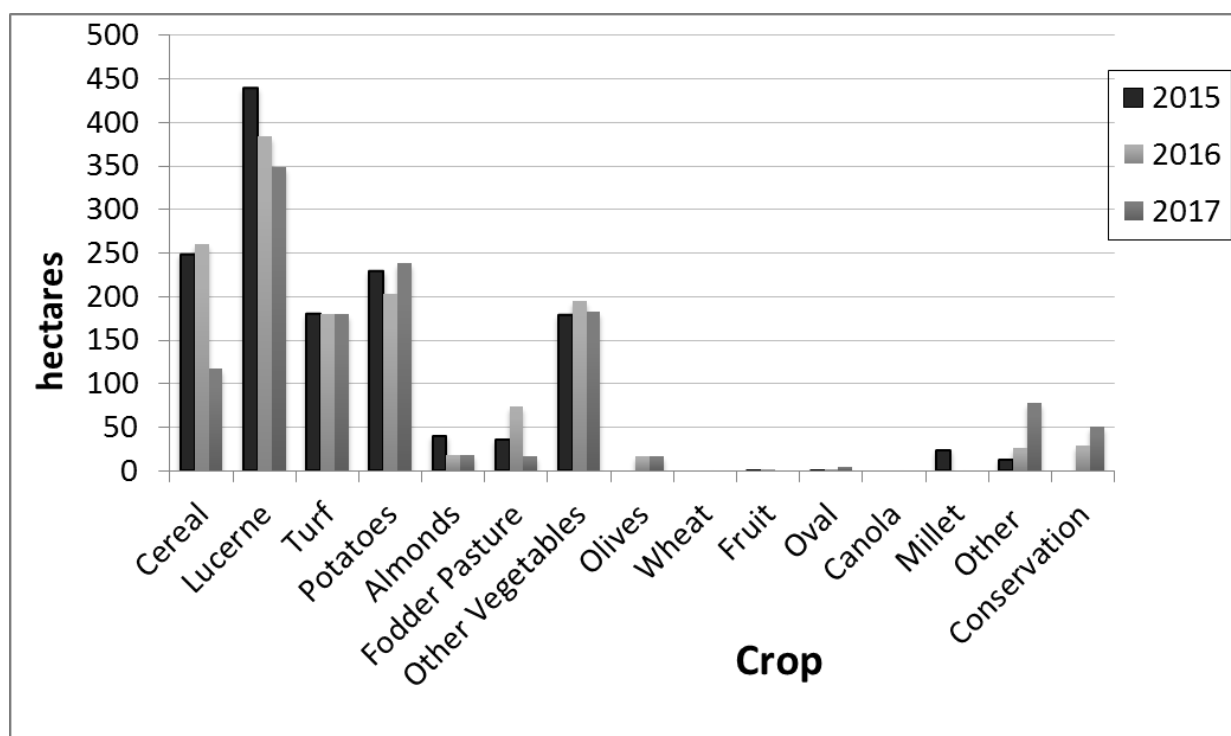


Figure 10: Area Irrigated by Crop Type: The area of each crop irrigated is shown in hectares. **The area of grapes irrigated in 2016-17 was 5,391 ha, a decrease compared with the 5,658 Ha recorded in 2015-16.** The total area under irrigation in 2015-16 was 6,638 ha, which is lower than last year's total of 7,043 ha.

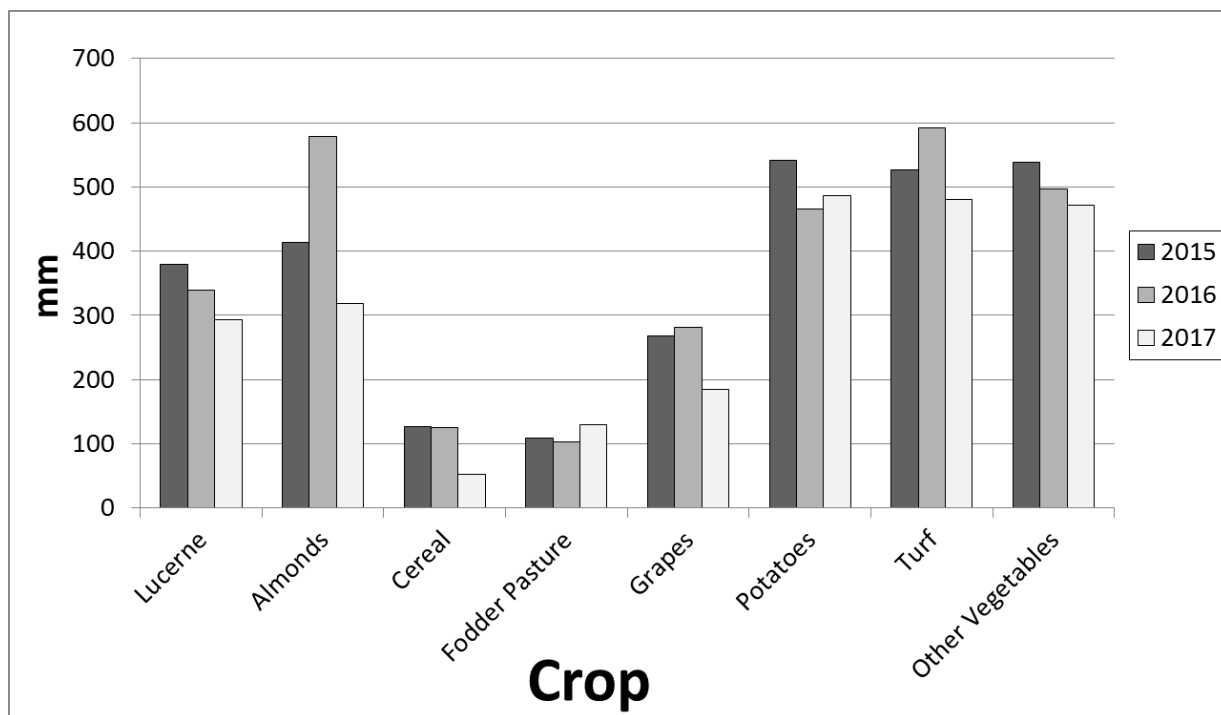


Figure 11: Average total irrigation for the year by crop type: Irrigation is shown in mm for 2014-15, 2015-16 and 2016-17.

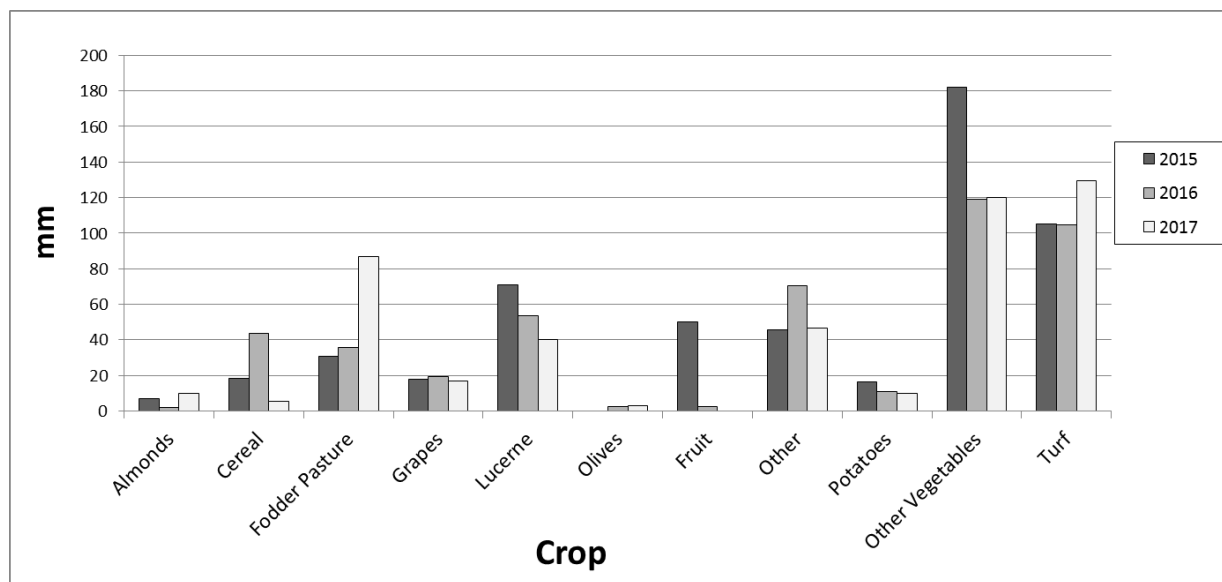
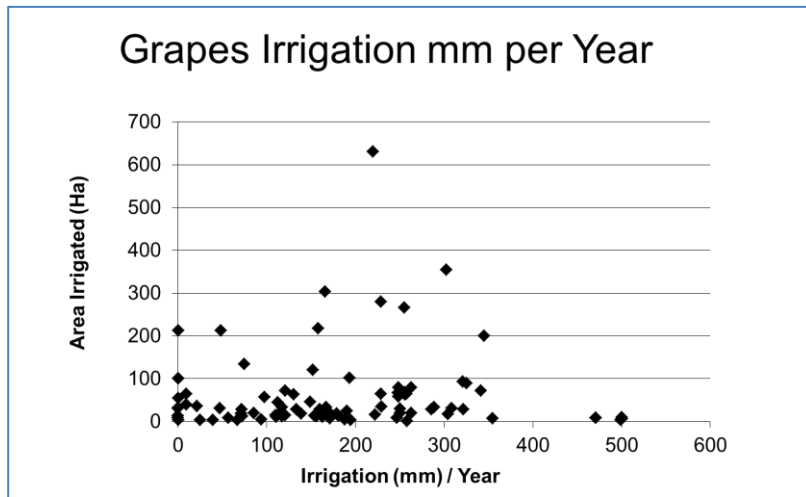
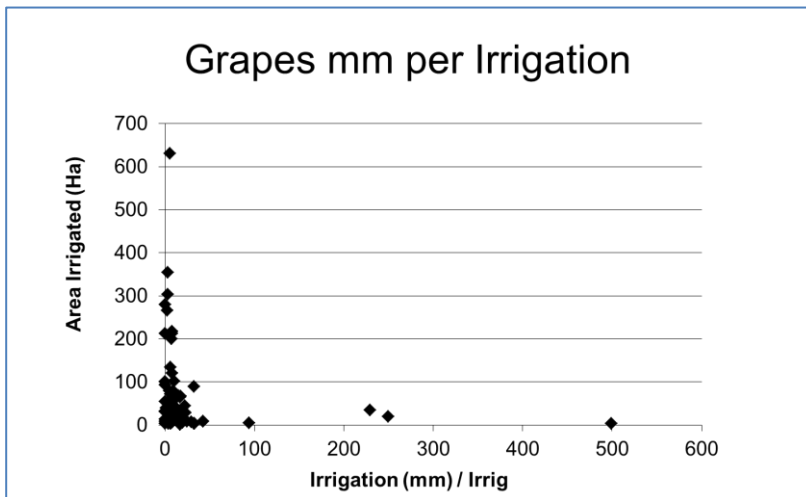


Figure 12: Average mm of water applied per irrigation for each crop type for the last three years.

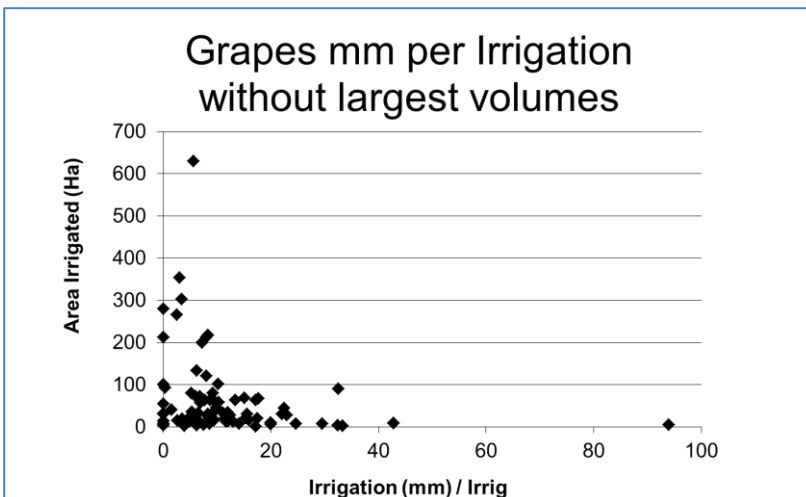
Figures 13-16: These charts are for the more common crops. **For each crop one chart shows (a) the mm per year and (b) the mm per irrigation.** For grapes, an additional chart (16c) has been included. It excludes those irrigators who applied a large volume of water in a single irrigation or flood event.



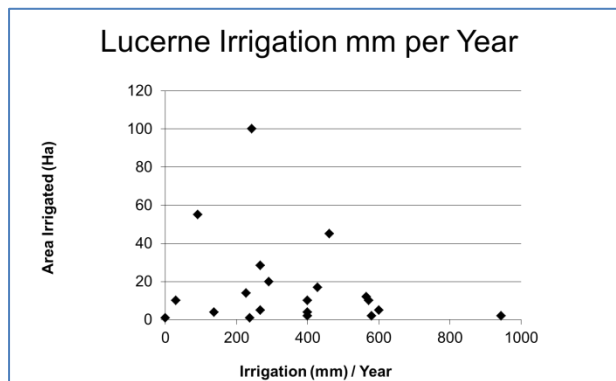
13a)



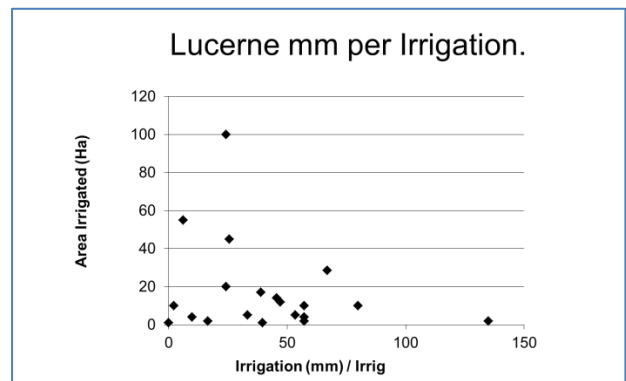
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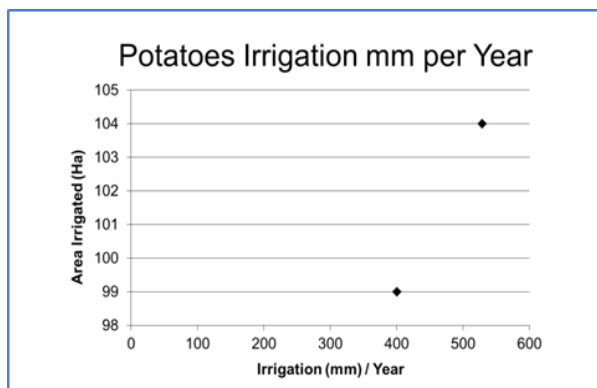
13c)



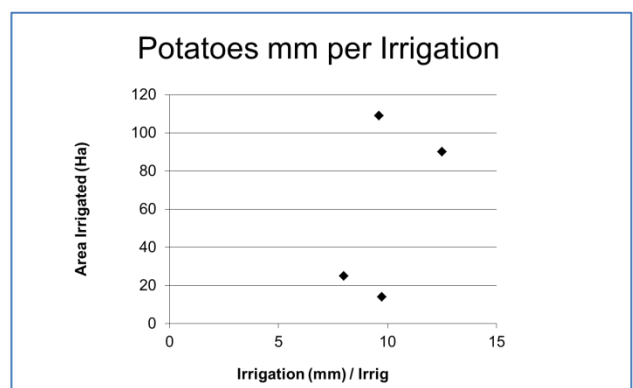
14(a)



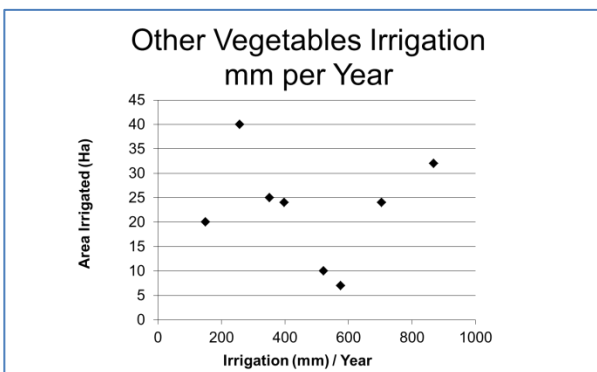
14(b)



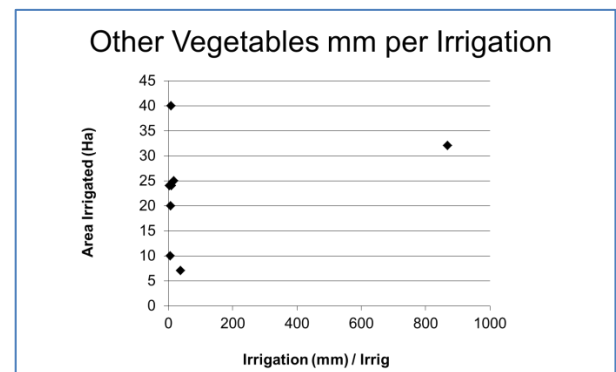
15(a)



15(b)



16(a)



16(b)

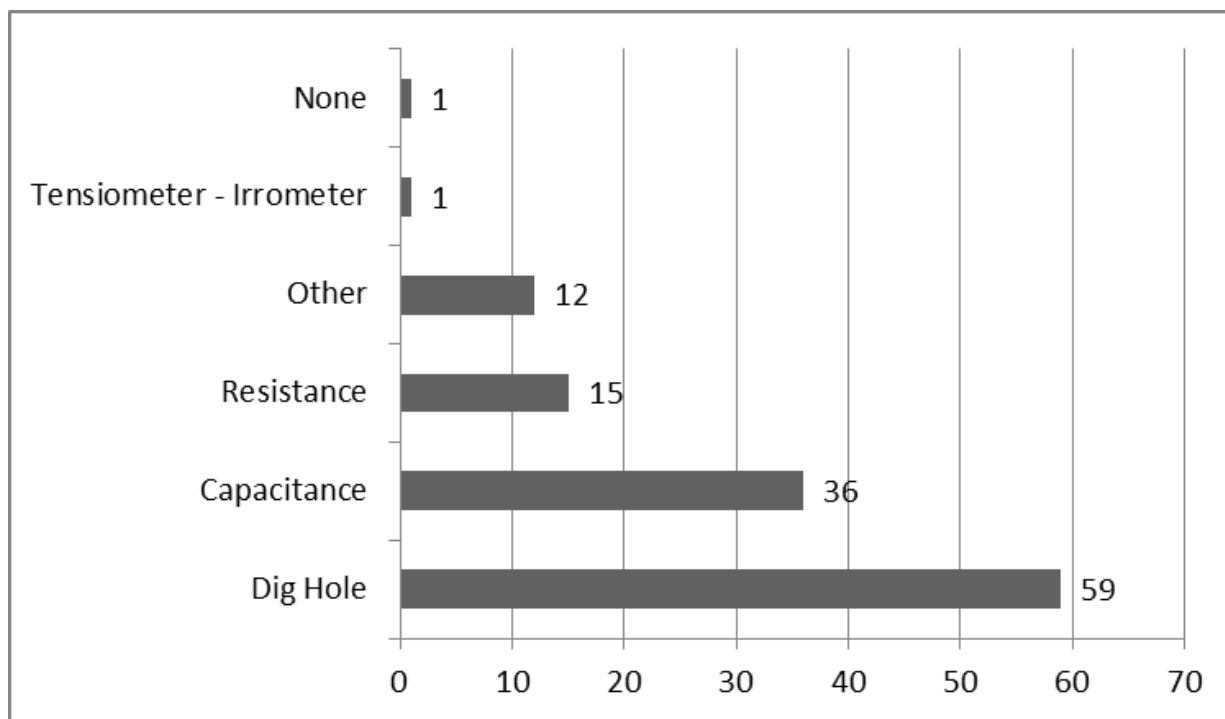


Figure 17: Number of growers using Soil Moisture Monitoring devices in 2016-17: "Resistance" includes Gypsum Blocks. "Capacitance" includes Agwise soil moisture probes, Agrilink C probe, Dataflow Gopher, Sentek Diviner and Sentek EnviroSCAN. "Dig hole" includes Dig stick, spade, auger and post hole digger.

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 2017 with previous years. This information is also displayed in the following Figure 18.

Year	Grape	Lucerne	Vegetable	Potatoe	Fodder	Almond	All Crops
2016-2017	1.85	2.92	4.71	4.86	1.3	3.18	2.14
2015-2016	2.82	3.38	4.96	4.66	1.02	5.79	2.99
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

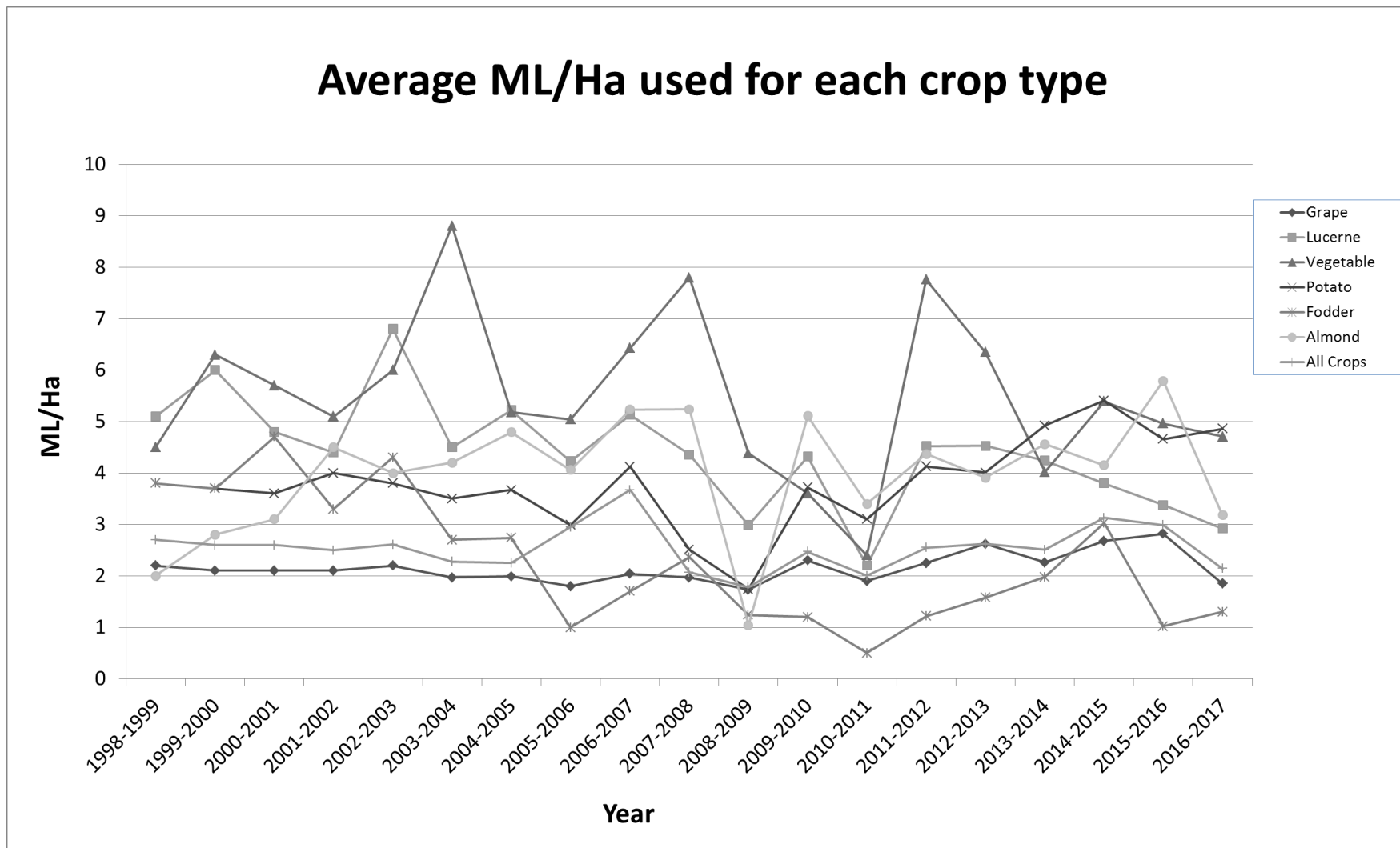


Figure 18: Average ML / Ha used for each crop type

Table 3: ML used and Ha irrigated comparison chart:

	2016- 2017	2015- 2016	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
Total ML	14,772	20,932	20,408	18,605	18,617	17,056	13,346	16,241	12,001	14,743	20,911	15,811	17,719	17,154	20,715	17,428	17,467	16,961
Total ha	6,637	7,011	7,380	7,406	7,107	6,687	6,687	6,578	6,748	7,049	8,370	7,739	7,869	7,509	7,934	7,089	6,788	6,625
Grape ML	9,998	15,961	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	5,391	5,658	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	1,013	1,300	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	348	384	439	341	402	327	170	152	109	155	280	325	343	354	376	471	429	418
Veg ML	856	963	964	580	610	877	193	36	57	179	373	363	638	605	647	651	769	761
Veg ha	182	194	179	144	96	113	81	10	13	23	58	72	123	69	108	103	134	121
Potato ML	1,156	947	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	238	203	229	218	307	311	179	86	75	54	291	392	348	360	394	425	490	485
Fodder ML	21	76	109	107	90	78	22	47	32	53	222	144	505	399	752	316	742	358
Fodder ha	16	74	36	54	57	64	43	39	26	23	130	144	184	146	173	97	157	96
Almond ML	57	104	166	187	180	188	148	225	193	231	251	195	230	203	188	246	172	164
Almond ha	18	18	40	41	46	43	43	44	44	44	48	48	48	48	47	55	55	58
Other crops ML	1,671	1,581	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	444	480	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) 19 a, b + c (Pg. 21-23): These and the following charts were produced by the Department of Environment, Water and Natural Resources. These first three charts are contour maps of the Quaternary (Q) unconfined aquifer. The first **a)** is from the 2016-17 water use year (March 2017), the second **b)** from 2016-2017 (September 2016) and the third **c)** from 2015-2016 (June 2016). 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). 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 comparing the charts from all three dates it appears that the watertable is rising following the path of the Bremer River from Lake Alexandrina back up to the Langhorne Creek township. The watertable in the Angas River region seems to be more stable. It is hard to make a good comparison due to the change in months of data and also the unusual season the region experienced during the 2016-2017 season.

Figure 20a, b + c (Pg. 24-26): The next 3 charts show the potentiometric surface elevation contours of the Tertiary (T) confined aquifer in **a)** March 2017, **b)** September 2016 and **c)** April 2016, using data from the State Government's Angas Bremer groundwater observation network only. March / April data (post irrigation season) has previously been chosen as it shows the greatest level of impact due to extraction from the aquifer. In this season the watertable depth is much shallower across the prescribed wells area compared to April 2016 possibly due to reduced irrigation requirements. The depth to groundwater in September 2016 compared to March 2017 is very similar.

Figure 21 a, b, c + d (Pg. 27-30): These charts display the salinity of the confined aquifer using **a + c)** data collected in April 2017 and April 2016 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 + d)** groundwater observation network and irrigator's samples from September 2016 and October 2015. The salinity is displayed in mg/litre (equivalent to ppm). When April 2017 data is compared to data from April 2016, there is a substantial decrease in salinity over the whole Angas Bremer Prescribed Wells Area. When comparing the September 2016 data to October 2015, again salinity is decreased across the area but not quite as dramatic as the April data.

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

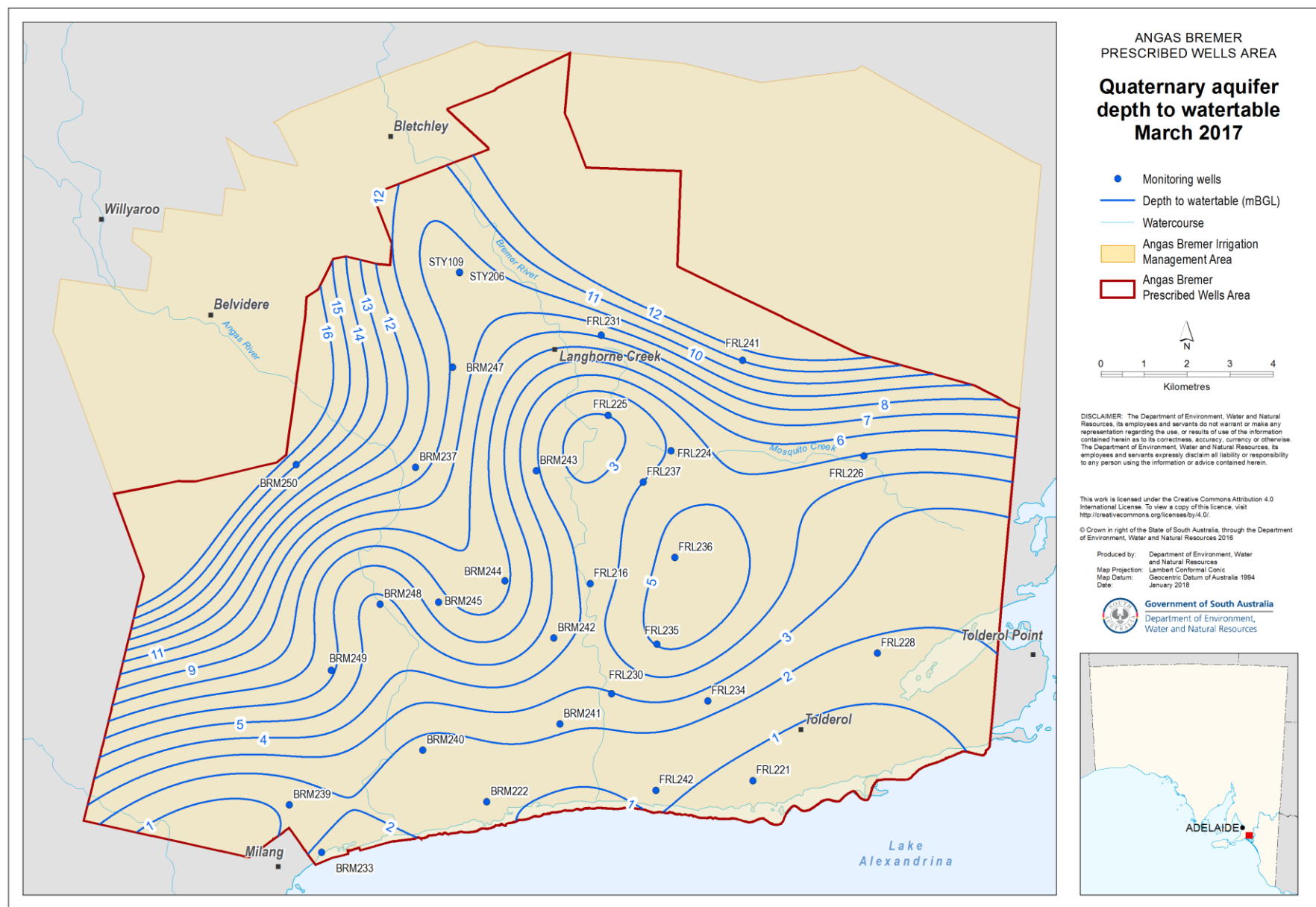


Figure 19a Standing Water Level in Quaternary Unconfined Aquifer March 2017

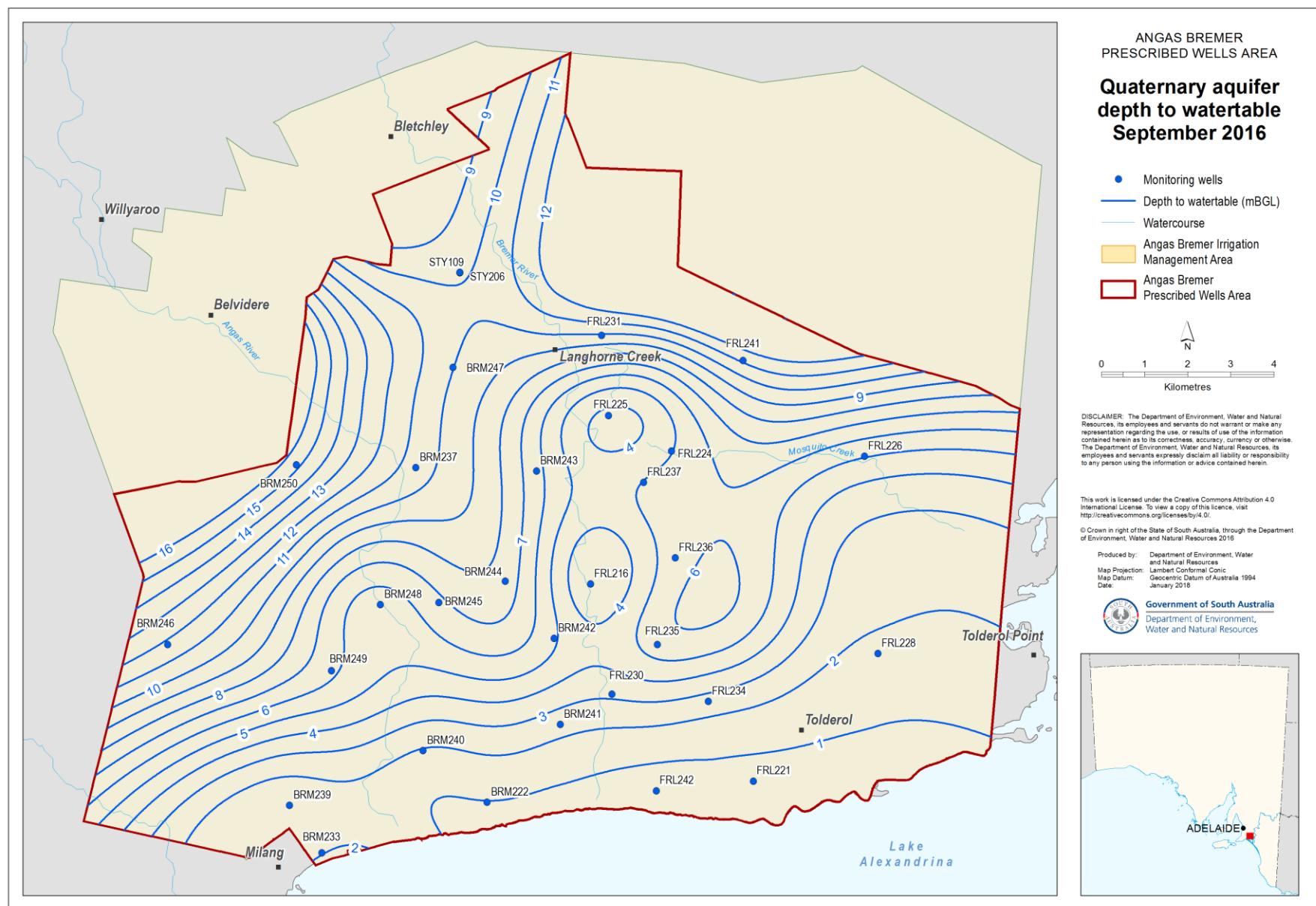


Figure 19b Standing Water Level in Quaternary Unconfined Aquifer September 2016

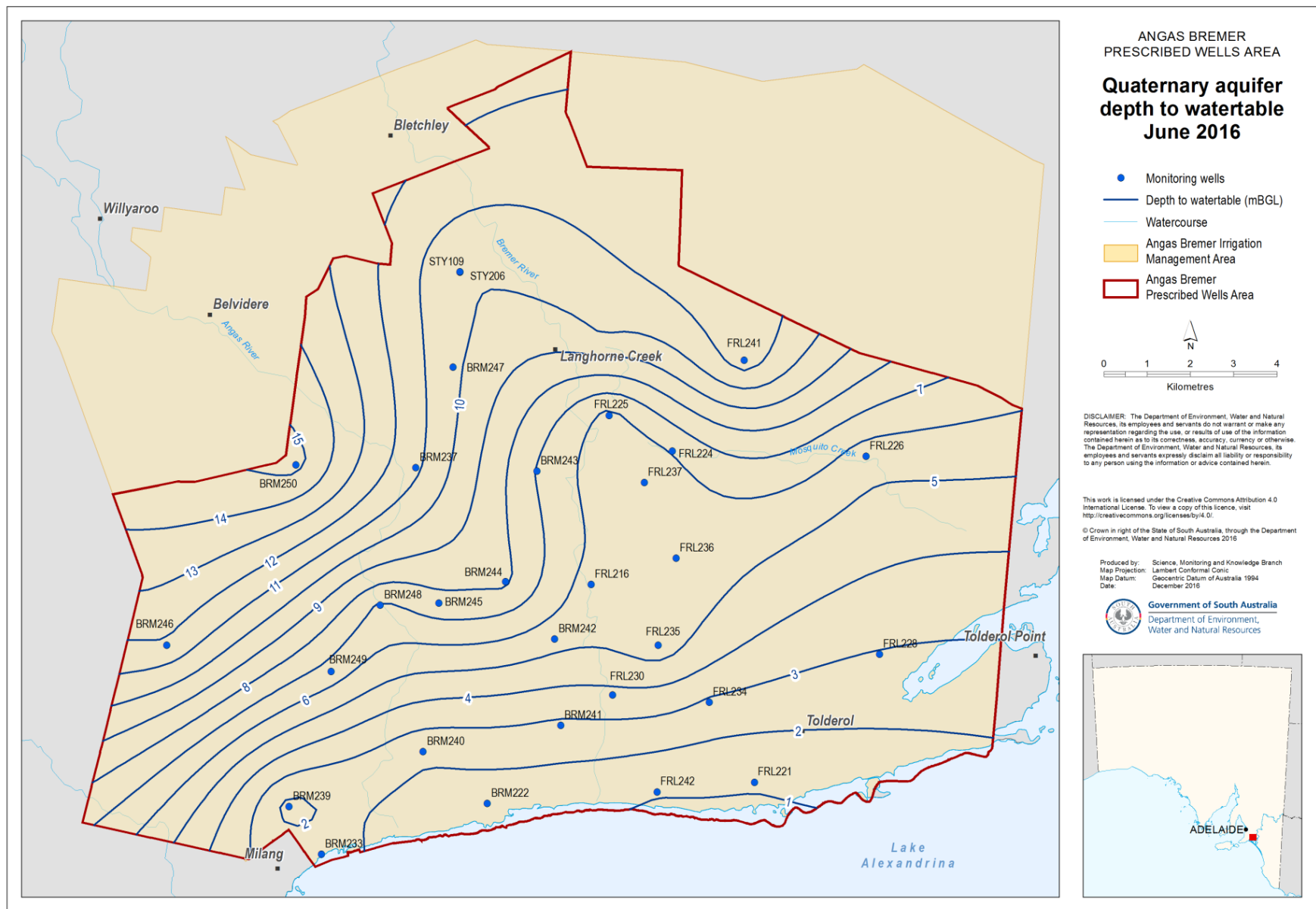


Figure 19c Standing Water Level in Quaternary Unconfined Aquifer June 2016

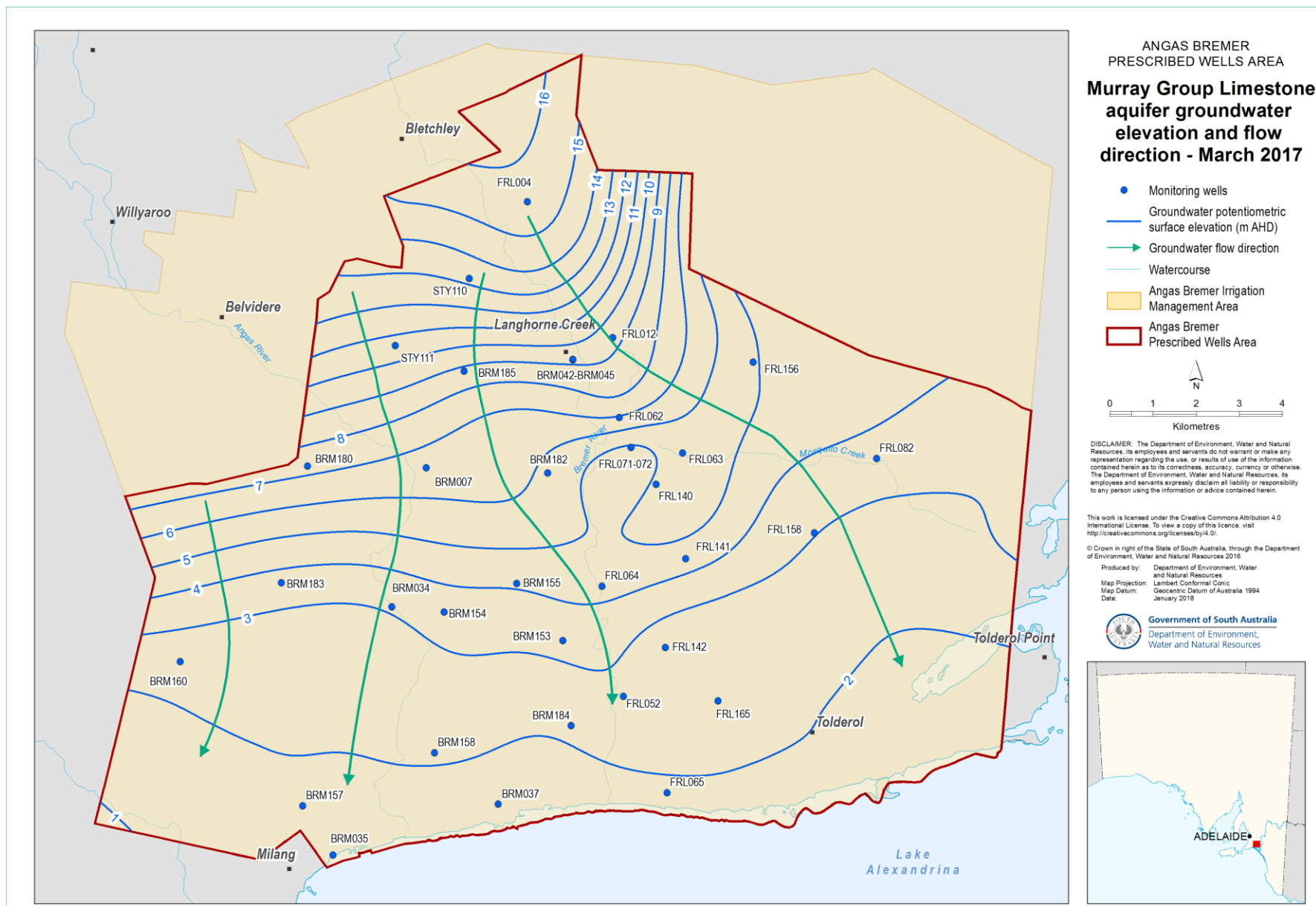


Figure 20a Water Level Elevation (m AHD in Tertiary Confined Aquifer March 2017, Post Irrigation, (Obs. Well data))

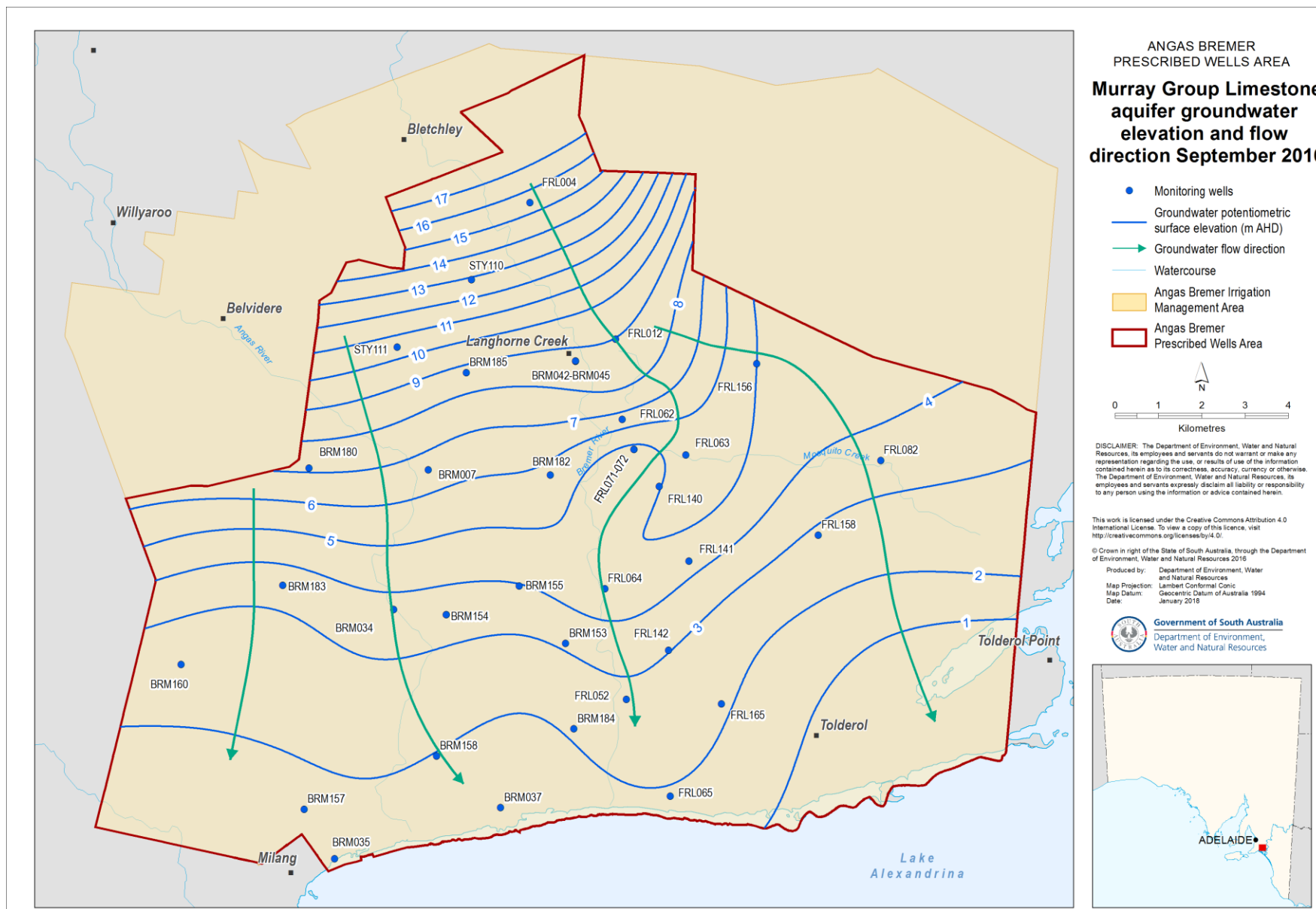


Figure 20b Water Level Elevation (m AHD in Tertiary Confined Aquifer September 2017, Pre Irrigation, (Obs. Well data))

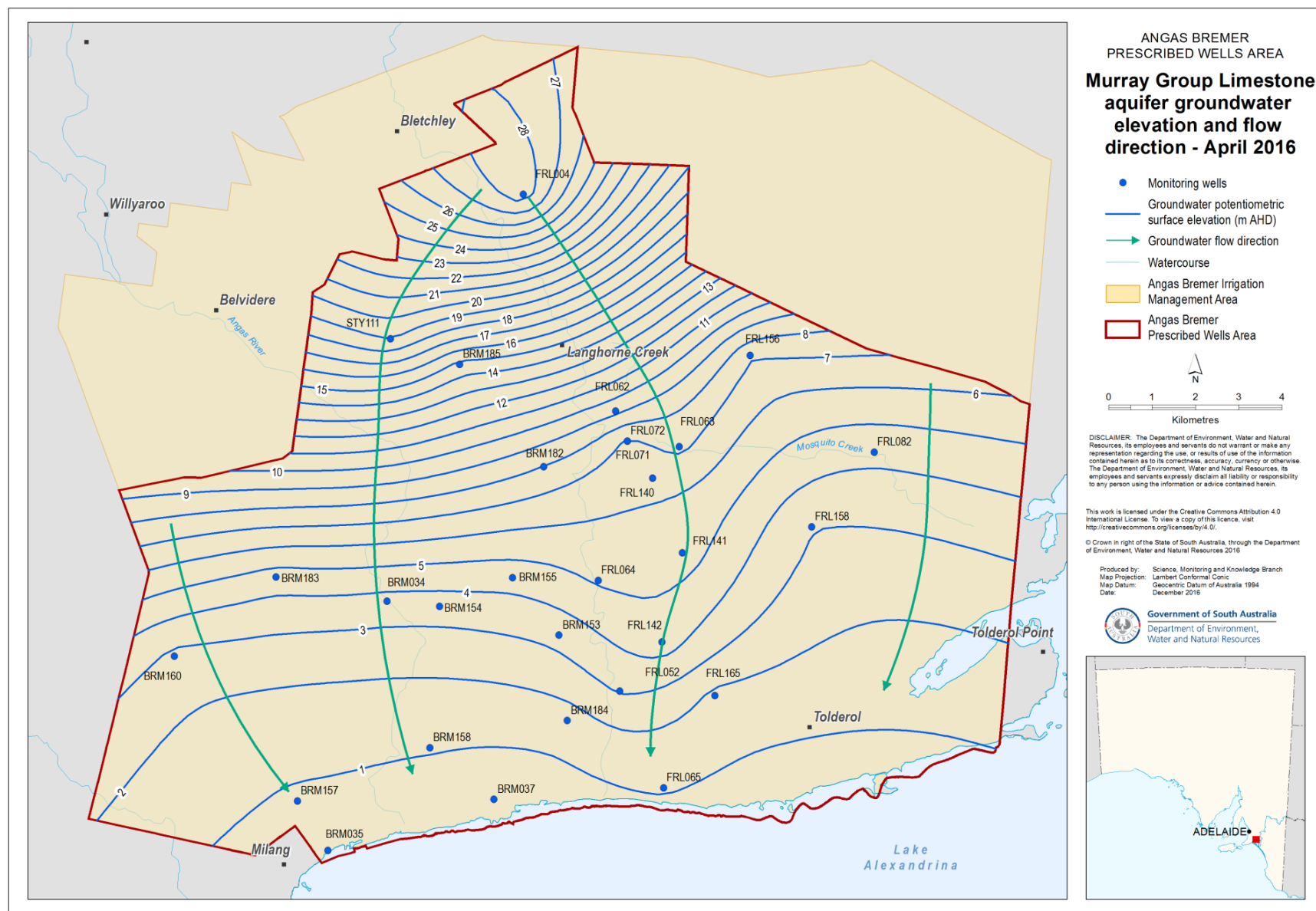


Figure 20c Water Level Elevation (m AHD in Tertiary Confined Aquifer April 2016, Post Irrigation, (Obs. Well data))

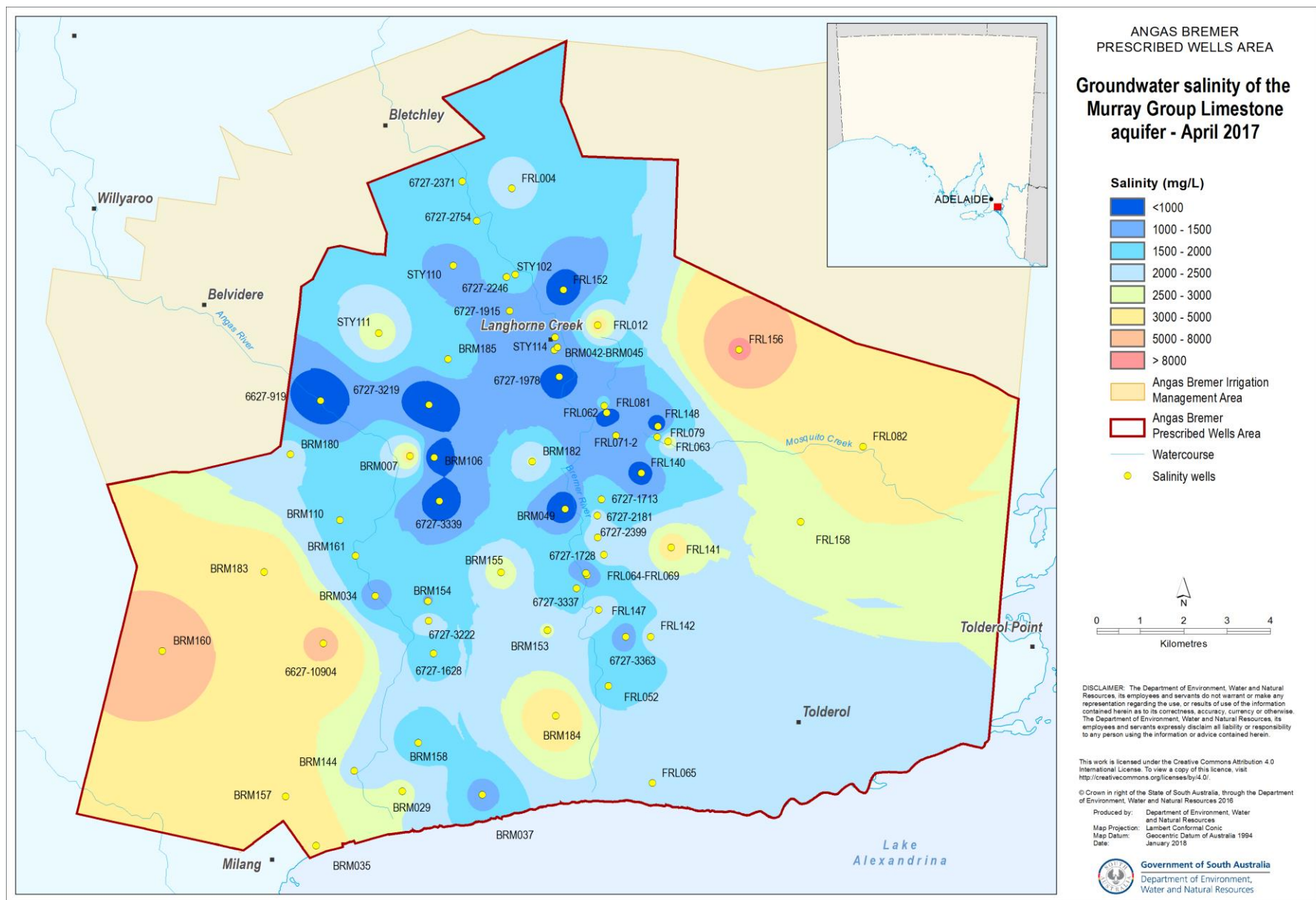


Figure 21a Salinity in Confined Aquifer samples from Government Observation Wells and Irrigators' Water Samples April 2017

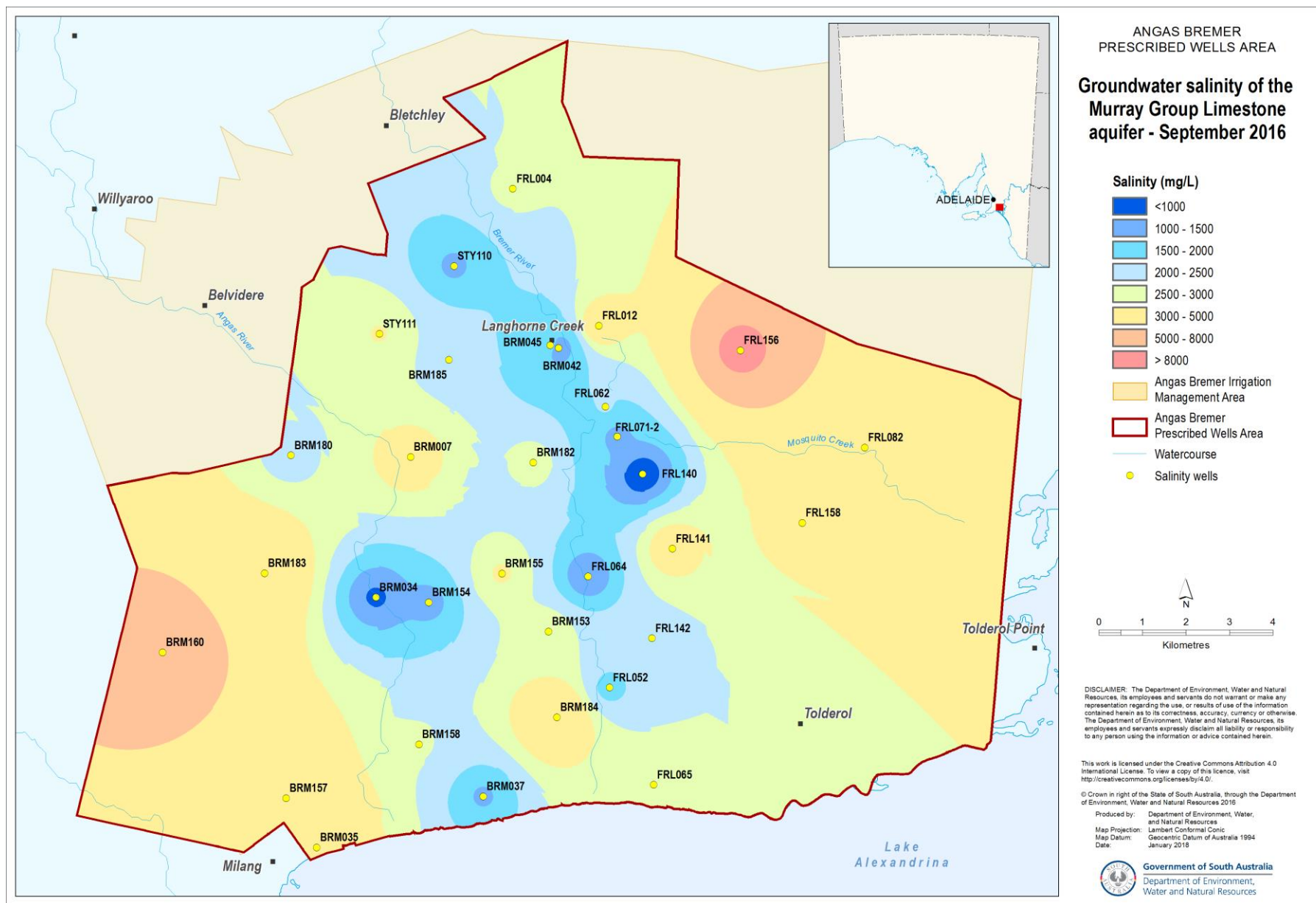


Figure 21b Salinity in Confined Aquifer samples from Government Observation Wells and Irrigators' Water Samples September 2016

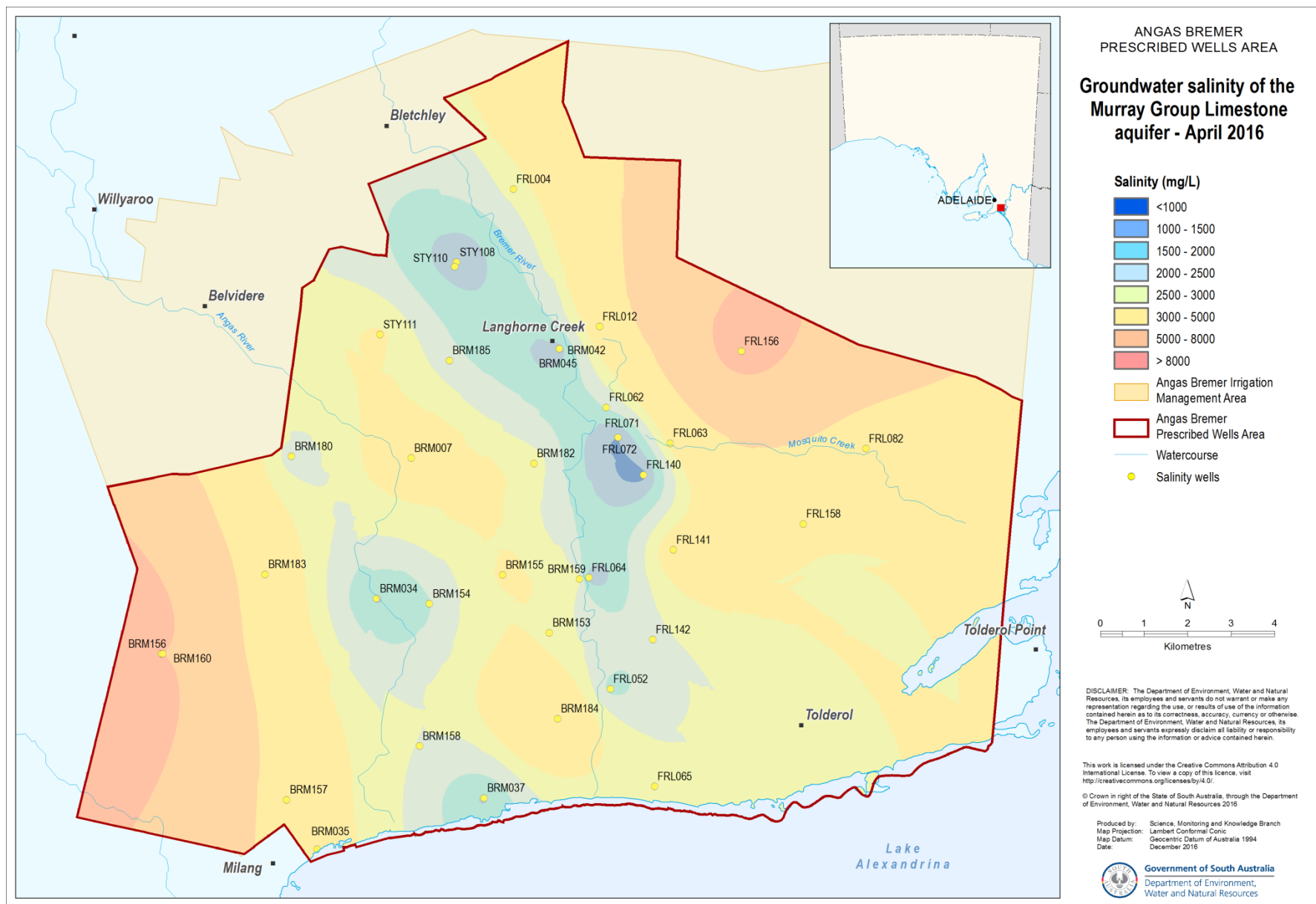


Figure 21C Salinity in Confined Aquifer samples from Government Observation Wells and Irrigators' Water Samples April 2016

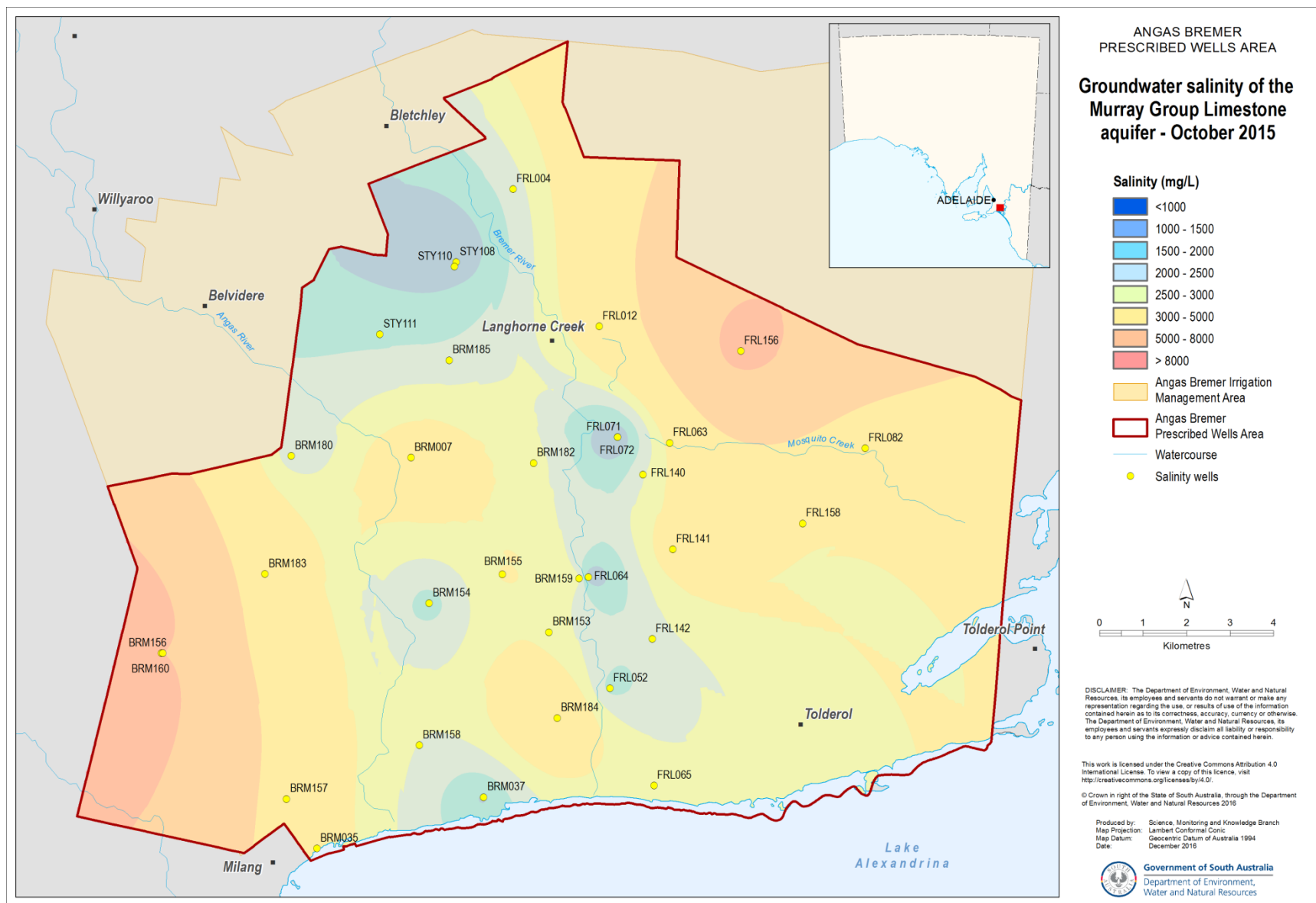


Figure 21d Salinity in Confined Aquifer samples from Government Observation Wells and Irrigators' Water Samples October 2015

Langhorne Creek Weather Station Statistics

Michael Cutting, Natural Resources SA Murray Darling Basin

2016/17 Seasonal Summary

As shown in Figure 22 464.6 of **rainfall** was recorded during 2016/17 (July – June) at the Langhorne Creek Central (Lake Breeze) weather station site which was a significant increase on the 266.0mm that was recorded in the 2015/16 season.

The 2016/17 **evapotranspiration (ET)** figure of 1,183.5mm was less than the 2015/16 total of 1,262.2mm. Together the increased rainfall and reduced evapotranspiration totals resulted in an evaporative deficit (ET-rainfall) of 718.9mm for the 2016/17 season. In 2015/16 the evaporative deficit was 996.6mm which is equivalent to approximately an additional 2.8ML/ha (100mm = 1ML/ha).

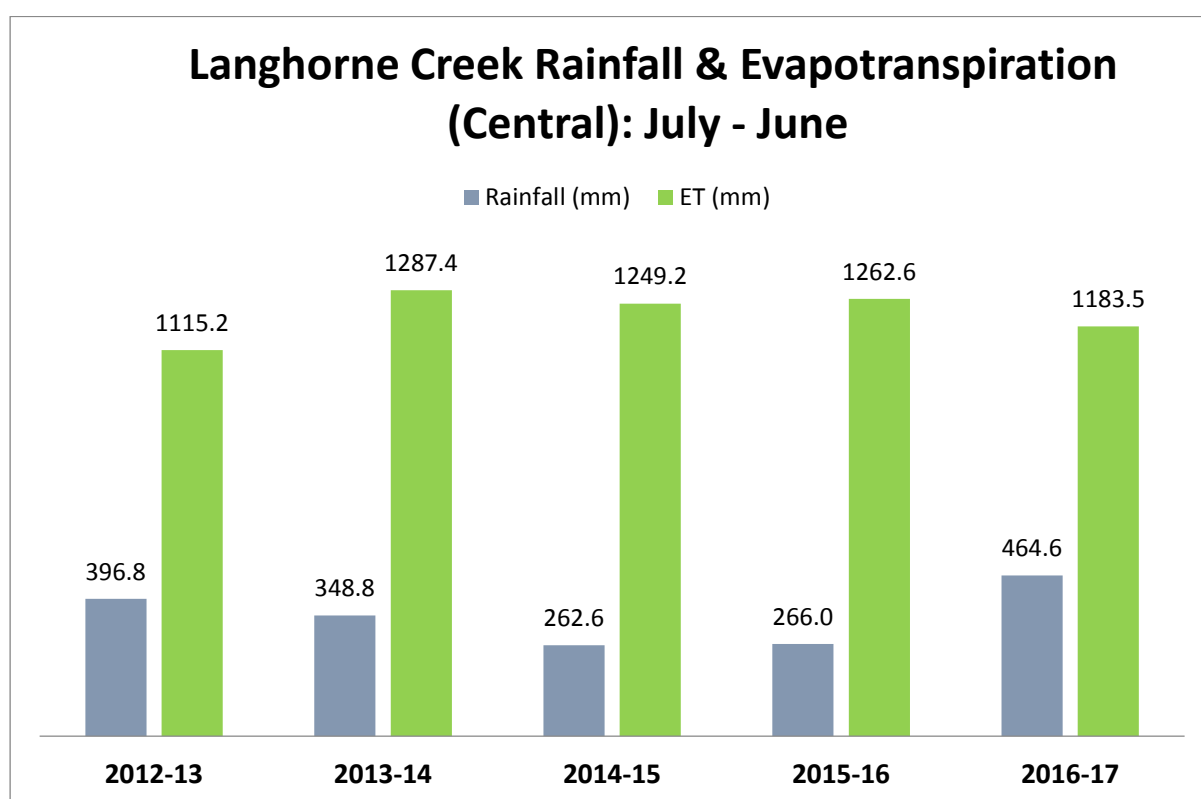


Figure 22: 2016/17 Rainfall and Evapotranspiration – Langhorne Creek

The highest **daily maximum temperature** for 2016/17 of 41.9C was observed on the 8th February 2017 while the **minimum daily temperature** of -1.5C was recorded on the 16th July 2016.

The highest **daily evapotranspiration** figure occurred on the 22nd February 2017 when a total of 8.8mm was recorded.

Interestingly the highest **daily rainfall** total was registered in the significant rainfall event between Christmas and New Year when 34.6mm was recorded on the 28th December 2016.

Monthly rainfall distribution for the 2016/17 season are shown below in Figure 23.

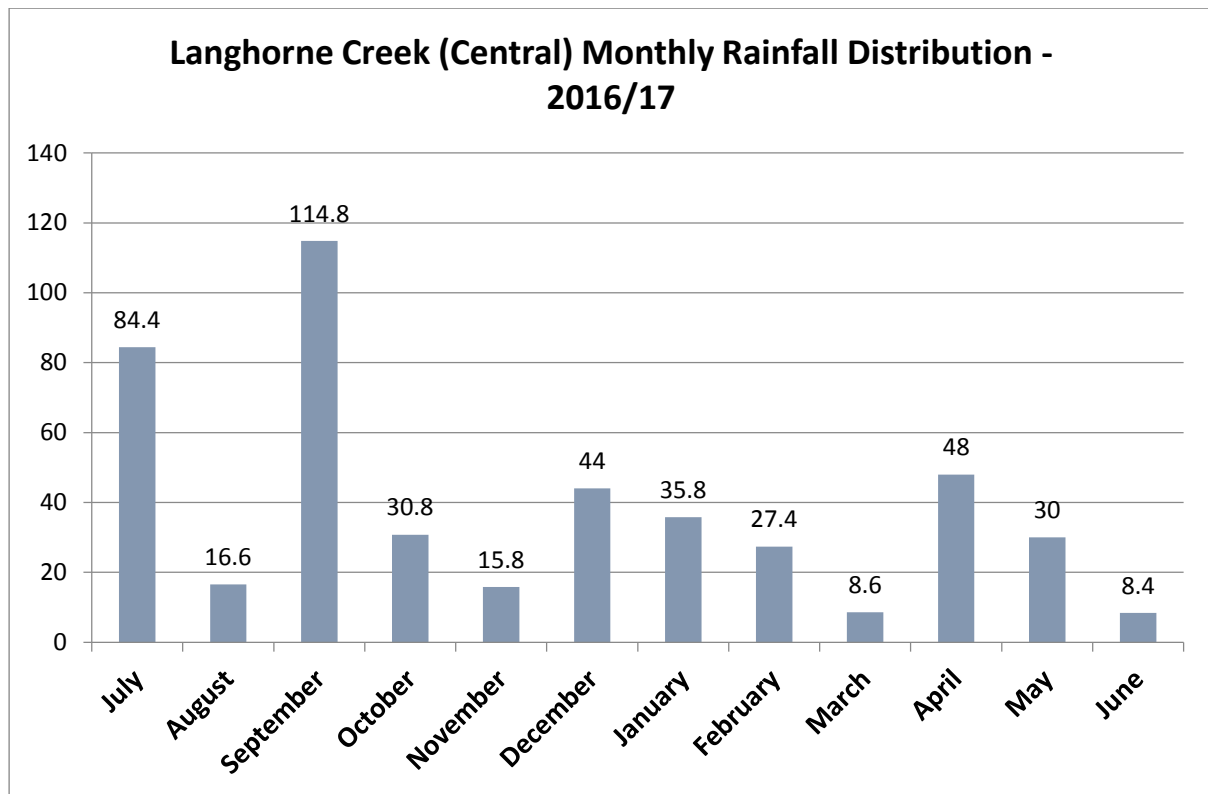


Figure 23: Monthly Rainfall Totals within the Langhorne Creek District

The Nineteenth Annual Public Meeting of the Angas Bremer Water Management Committee Incorporated

Monday 28th August, 2017 at 7:00pm.

Bowling Clubrooms, Langhorne Creek.

Attendees: Mike Reynolds, Michael Cutting, Caroline Holloway, Slavica Miskovich, Mardi Van Der Wielen, Dave Hemmings, Brett Ibbotson, David Hender, George Borrett, Wayne Sutton, Nicole Clark, Bazz Potts, Lian Jaensch, Trevor McLean, Geoff Warren, David Kohl, Mac Cleggett.

Apologies: Ken Follett, Loene Furler, Philip Reilly, Brenton James, Michael Clements, Leah Hunter.

1. Opening Address

The meeting was opened at 7:10 by David Kohl, Presiding Member.

David welcomed all attendees and guest speakers. David thanked all the committee for their contribution this year. Leah Hunter is an apology for today due to ill health. David encouraged attendees to provide any suggestions regarding the future direction for the Committee and what they expect from the Committee throughout the meeting and at any time.

2. Minutes of the last Annual Public Meeting

A motion was raised that the minutes from last year's APM be accepted.

Moved: George Borrett

Seconded: Geoff Warren

3. Annual Report

The Annual Report was presented by David Kohl.

David commented that irrigators have enjoyed 18 months of full entitlements and that the Committee continues to be the voice for irrigators. David encouraged people to become involved.

Annual irrigation reporting is currently the largest component of the Committee's activities and funding is becoming harder to obtain. The Committee needs the support of irrigators to ensure this important information continues to be gathered.

Information through the Friday newsletter through Lian has been successful in providing communication between the committee and irrigators.

4. Flows for the Future – Slavi Miskovich – Natural Resources, SAMDB (Appendix A)

Slavi gave a presentation on the Flows for the Future Program in the Eastern Mount Lofty Ranges and how it relates to ensuring healthy catchments which are crucial for the sustainability and productivity of the region's communities.

A question was asked about whether or not the Department are funding the reduction of dam sizes and/or removal of dams in the region. Brett Ibbotson, Natural Resources, SAMDB, mentioned that the Flows for the Future project can pay for the removal of dams as a solution to returning low flows. He also spoke about the High demand project that the Department is also running which is aimed at voluntary reduction in the size of dams or removal of dams as requested by landholders through funding and implementation to improve water availability. A trial site has been established outside of Strathalbyn.

David thanked Slavi for her presentation and Brett for his input in answering questions.

5. CPC History of water usage – Mike Reynolds (Appendix B)

Mike gave a presentation on the history of water delivery and usage in the region. Mike is the General Manager of the Langhorne Creek Pipeline Company which has been in existence for eight irrigation seasons; the company started in October 2009/10.

David thanked Mike for his presentation and acknowledged the complexities around irrigation.

6. Update on current projects – Michael Cutting, Natural Resources, SAMDB (Appendix C)

Michael gave an overview of current projects including: Heritage Irrigation Structure Nomination through Irrigation Australia Ltd; Green Trail/'Blue Net' Concept Plan project to promote sustainability credentials of the region; COFFIE 'Pilot' Programme which commenced in September 2016 and has an irrigation efficiency focus; Daily Forecast Weather Service in partnership with the Bureau of Meteorology; Pre Season Irrigation Field Day on September 14th.

David thanked Michael for his presentation.

7. Summary of 2016/2017 Irrigation Annual Report & Angas and Bremer Rivers and Wetlands Project – David Kohl on behalf of Leah Hunter, Project Officer, ABWMC. (Appendix D)

David presented a summary of the Irrigation Annual reporting for the 2016/17 irrigation year and the Angas and Bremer Rivers and Wetlands project which will be represented in the Angas Bremer Water Management Committee Annual Report at the end of this year.

David thanked Leah for her hard work throughout the year.

8. Financial Report – David Kohl, Presiding Member

The Audited Financial Report of the Angas Bremer Water Management Board 2016-17 was presented by David.

9. Election of members

The constitution of the Angas Bremer Water Management Committee requires that a minimum of 5 members and a maximum of 10 members be elected. Four positions have been carried over from the previous committee, and nominations were called for up to six positions. Loene Furler declined to re-stand.

Members mid-way through their term and continuing are: Michael Clements, Michael Cutting and Ken Follett; Dave Hemmings will be replacing Brett Ibbotson and Brenton James on the Committee

Members electing to renominate included: David Kohl, Barry Potts, George Borrett and Mac Cleggett

A motion was raised to accept the nominations of the above Committee members and welcome them to the Committee.

Moved: Geoff Warren Seconded: Michael Cutting

10. General Business

a. Changes made to the constitution

David advised the committee of the changes made to the constitution made earlier this year which mostly consisted of changes to terminology and the following item:

7.1 The committee shall meet together for the dispatch of business at least **two** times per calendar year and in such a place and at such a time that is convenient to a majority of committee members.

b. Other business

A question was raised regarding sustainable diversion limits established to maintain compliance with Murray Darling Basin Plan; what is the process, timeframe and when will information be provided?

Brett Ibbotson responded saying that there won't be any changes to irrigators' diversion limits to what is detailed in the EMLR WAP. No change in water volumes will occur as a result of the Basin Plan. Some reductions in water diversion needs to occur as part of the EMLR WAP which is currently looking at returning low flows and other voluntary mechanisms in the short term and high demand management over multiple years.

A question was raised about policy regarding unmetered water usage in the northern areas of the Murray Darling Basin. There are reports of water licences having been transferred upstream. Has there been policy regarding transfers upstream?

Mardi van der Wielen responded by explaining that the EMLR WAP allows transfer within the rules of the plan. One of the key parts is that the EMLR region has been divided into multiple irrigation zones with their own individual limits. Transfers can happen upstream but can't exceed the limit for any particular zone.

A question was raised regarding the water samples taken and when results are available.

Brett Ibbotson explained that turn-around time is a number of months but they are working on an email system to notify that the results are available.

Flow monitoring station at Mount Barker is not working.

David thanked everyone for attending tonight and thanked all the Committee members and guest speaker and looks forward to what the Committee in conjunction with all Irrigators can achieve in the year ahead.

The meeting was closed at 9.00 pm.

Audited Accounts 2016-17

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, 2017.

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 2016/2017 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, 2017 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

ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

STATEMENT OF FINANCIAL PERFORMANCE

FOR THE YEAR ENDED JUNE 30, 2017

	2017		2016	
	\$	\$	\$	\$
INCOME				
Grants				
Grants (C'wealth) Op-Non Rec	0.00		950.00	
Grants (State) Op-Non Rec	11,000.00		20,200.00	
Grants (Local) Op-Non Rec	<u>0.00</u>		<u>0.00</u>	
Total Grants		11,000.00		21,150.00
Interest-Unrestricted		<u>2.82</u>		<u>4.53</u>
Total Income		11,002.82		21,154.53
EXPENSES				
Advertising & Promotion		182.40		170.00
Audit Fees		600.00		600.00
Board/Governance Expenses		57.73		0.00
Client Support Services				
CSS Community Engagement	1,296.12		279.55	
CSS Project Co-ord/Manag	23,163.67		19,669.83	
CSS Revegetation	<u>0.00</u>		<u>19,899.49</u>	
Total Client Support Services		24,459.79		39,848.87
Insurance		2,684.92		2,680.43
Meetings Expense		165.08		289.41
Postage, Freight & Courier		0.00		43.09
Printing & Stationery		165.45		0.00
Sundry Expenses		0.00		5.83
Telephone, Fax & Internet Exp		0.00		167.83
Total Expenses		<u>28,315.37</u>		<u>43,805.46</u>
Net Surplus / (Deficit)		<u>(17,312.55)</u>		<u>(22,650.93)</u>

ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

STATEMENT OF FINANCIAL POSITION

FOR THE YEAR ENDED JUNE 30, 2017

	2017	2016
CURRENT ASSETS	\$	\$
Cash at Bank (Unrestricted)	16,284.30	33,277.23
TOTAL CURRENT ASSETS	<u>16,284.30</u>	<u>33,277.23</u>
TOTAL ASSETS	<u>16,284.30</u>	<u>33,277.23</u>
CURRENT LIABILITIES		
GST Payable	100.00	0.00
Less GST Receivable	(1,170.38)	(1,390.00)
TOTAL CURRENT LIABILITIES	<u>(1,070.38)</u>	<u>(1,390.00)</u>
Less TOTAL LIABILITIES	<u>(1,070.38)</u>	<u>(1,390.00)</u>
NET ASSETS	<u>17,354.68</u>	<u>34,667.23</u>
EQUITY		
Unexpended Funds as at July 1, 2016	34,667.23	57,318.16
Current Year Surplus (Deficit)	(17,312.55)	(22,650.93)
Unexpended Funds as at June 30, 2017	<u>17,354.68</u>	<u>34,667.23</u>

ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

NOTES TO THE FINANCIAL STATEMENTS

FOR THE YEAR ENDED JUNE 30, 2017

NOTE 1: STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES

This financial report is a special purpose financial report prepared in order to satisfy the financial reporting requirements of the Associations Incorporation Act 1985 (SA). The Committee have determined that the Association is not a reporting entity.

This financial report has been prepared in accordance with the requirements of the Associations Incorporation Act 1985 (SA) and the following Australian Accounting Standards:

- AASB 101 - Presentation of Financial Statements
- AASB 1031 - Materiality
- AASB 110 - Events after the Reporting Period

No other applicable Accounting Standards, Urgent Issues Group Consensus Views or other authoritative pronouncements of the Australian Accounting Standards Board have been applied.

The following material accounting policies, which are consistent with the previous period unless otherwise stated, have been adopted in the preparation of this financial report.

- a) **Accounting Method** - Accrual Accounting
- b) **Currency** - All values are presented in Australian Dollars
- c) **Measurement Basis** - The financial report is based on historical costs. It does not take into account changing money values, or, except where specifically stated, current valuations of non-current assets
- d) **Goods & Services Tax** - Revenue and expenses are recognised exclusive of the amount of GST
- e) **Plant & Equipment** - Plant and equipment is recorded as an expense for the reporting period.

**REPORT OF THE MANAGEMENT COMMITTEE OF
ANGAS BREMER WATER MANAGEMENT COMMITTEE**

In accordance with section 35 (5) of the Associations Incorporations Act, 1985 the Committee hereby states that during the financial year ended June 30, 2017:

- (a) (1) no officer of the association;
(2) no firm of which an officer is a member; and
(3) no body corporate in which an officer has a substantial interest,

has received or become entitled to receive a benefit as a result of a contract between the officer, firm or body corporate and the association.

- (b) no officer of the association has received directly or indirectly from the association any payment or other benefit of a pecuniary nature.

Signed in accordance with a resolution of the Committee.

Signed: 

David Kohl, Chairperson

Date: 7/7/17

Signed: 

Michael Clements, Treasurer

Date: 7/7/17

**STATEMENT OF THE MANAGEMENT COMMITTEE OF
ANGAS BREMER WATER MANAGEMENT COMMITTEE**

In accordance with Section 35(2)(c) of the Associations Incorporations Act 1985, it is the opinion of the Members of the Committee that,

- (a) The accompanying Statement of Financial Performance is drawn up so as to give a true and fair view of the operations of the Association for the year ended 30/6/17;
- (b) The accompanying Statement of Financial Position is drawn up so as to give a true and fair view of the state of affairs of the Association as at 30/6/17;
- (c) At the date of this Statement there are reasonable grounds to believe that the Association will be able to pay its debts as and when they fall due.

Signed in accordance with a resolution of the Committee

Signed: 
David Kohl, Chairperson

Signed: 
Michael Clements, Treasurer

Date: 7/7/17

Date: 7/7/17

ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

PROJECT INCOME, EXPENDITURE AND BALANCES

FOR THE YEAR ENDED JUNE 30, 2017

Project Name	Balance at June 30, 2016	Total Income	Total Expenses	Balance at June 30, 2017
ABIRA Funds	8,370.30	0.00	0.00	8,370.30
Angas Bremer River Tours	950.00	0.00	950.00	0.00
Angas Bremer Rivers and Wetlands Grant	620.96	0.00	620.96	0.00
Angas Bremer Water Management Committee Funds	10,992.57	2.82	4,524.27	6,471.12
Cover Crops Grant	1,513.26	0.00	0.00	1,513.26
Irrigation Annual Reporting Project	12,220.14	10,000.00	22,220.14	0.00
Volunteer Small Grant	0.00	1,000.00	0.00	1,000.00
Totals	34,667.23	11,002.82	28,315.37	17,354.68

Appendix A – Flows for the Future – Slavica Miskovich & Brett Ibbotson – DEWNR, Natural Resources, SAMDB



Eastern Mount Lofty Ranges

- Healthy catchments are crucial for the sustainability and productivity of the region's communities
- Plans in place to ensure consumptive volumes are sustainable
- The existing user licensing processes and Water Allocation Plans are built on premise that low flows would be secured



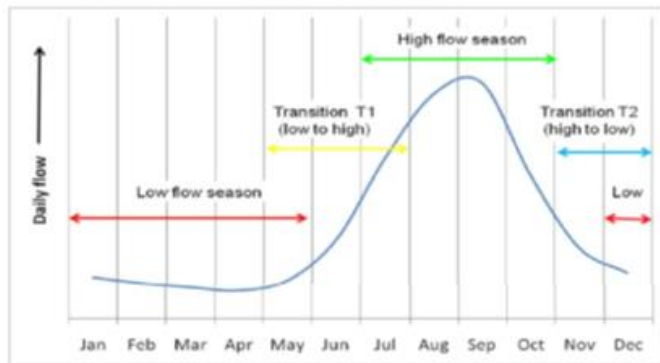
Government of South Australia
Department of Environment,
Water and Natural Resources

The F4F Program aims to:

- Improve catchment health by reinstating more natural flow patterns
- Improve the sustainability of water resources for productive purposes, tourism and other community needs
- Maximise the volume of water that water users can take



What are 'Low Flows'?



Typical range of flow seasons in the MLR against relative daily flow

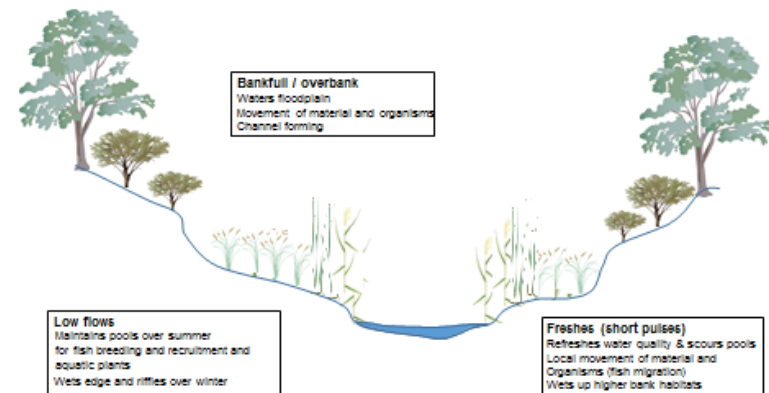


The issue

- Large number of dams and diversions (> 8000) in the Eastern Mount Lofty Ranges - one of the most significant drivers of deteriorating catchment health
- Low flows are essential to maintain connected healthy catchments, improve water quality and to support plant and animal life



Why are 'Low Flows' important?



How?

- Water flow modelling has identified the dams and watercourse diversions that will contribute toward reaching necessary flow outcomes in the most efficient way
- These are 'priority' sites

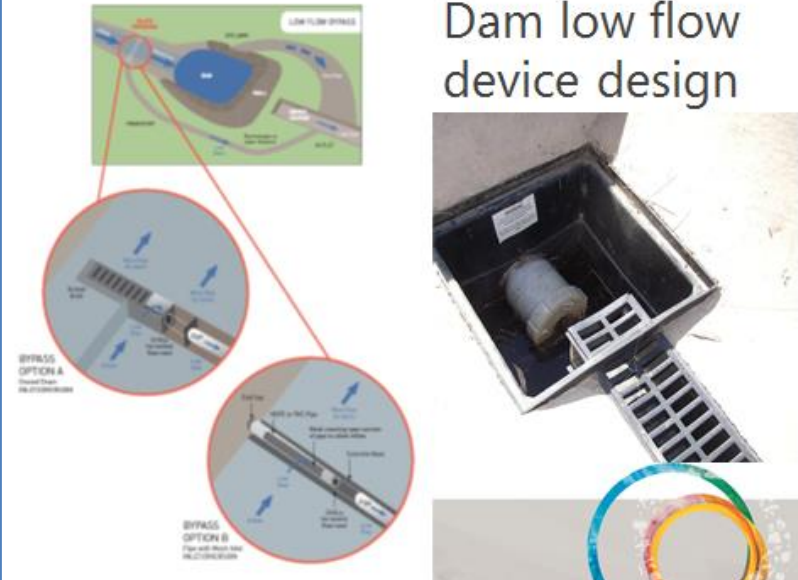
Low flow devices

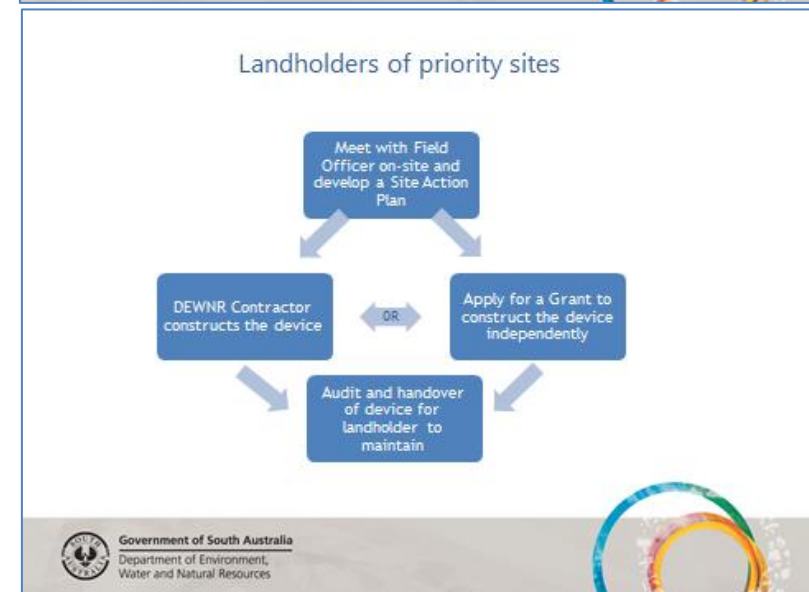
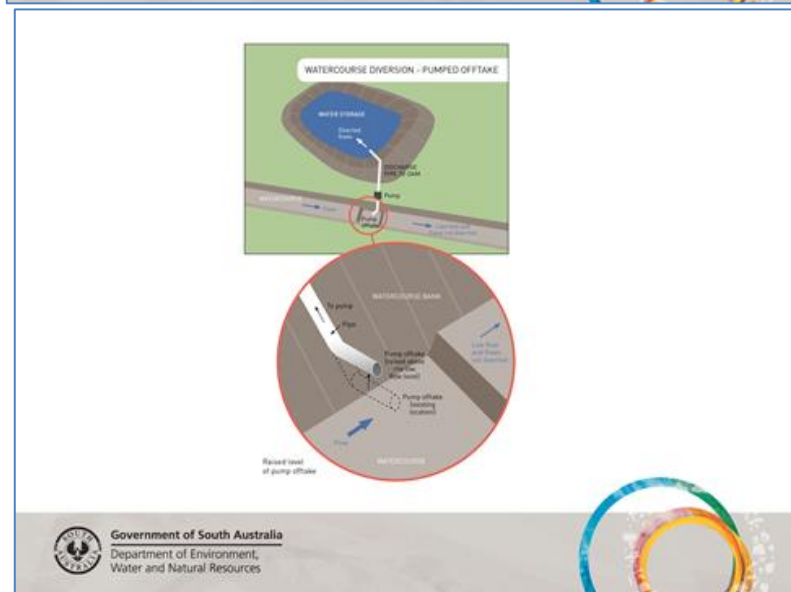
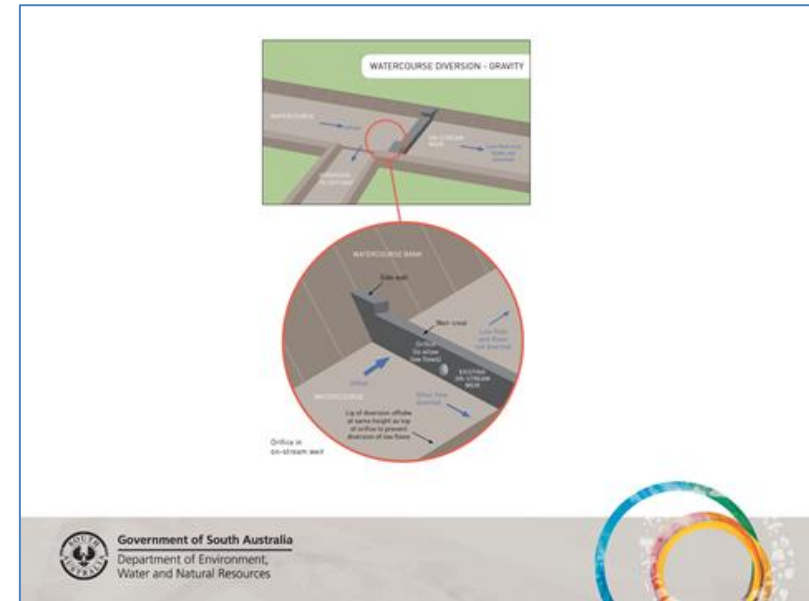
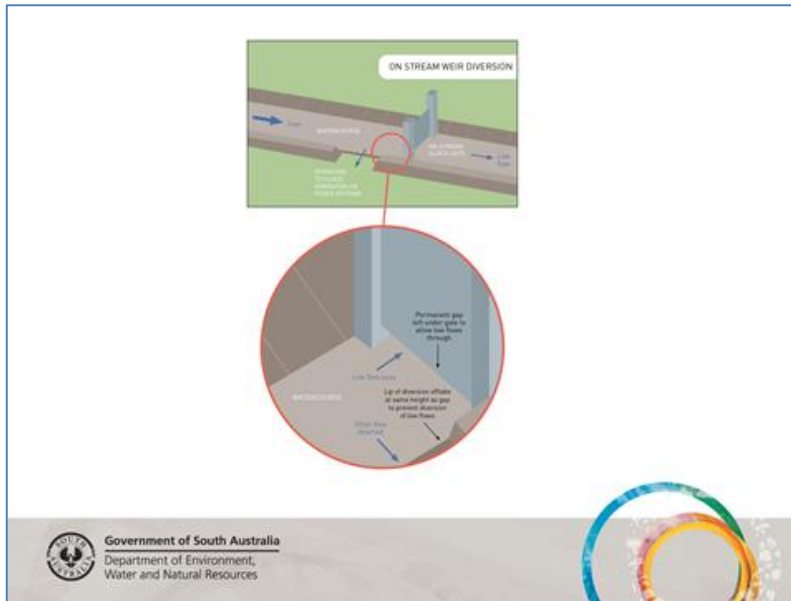
- The method to secure low flows is unique to every property, due to rainfall, topography and catchment area, hence there is no 'one size fits all' approach
- F4F Field Officers will work with landholders to tailor device to each property
- Landholder - operation and maintenance of the device

Flows for the Future

- The F4F Program will provide access to funds and expertise for the supply and installation of low flow devices at up to 500 priority sites
- Two options:
 - Grant
 - DEWNR-led

Dam low flow device design





Steps

- 1 Landholder or Field Officer makes contact and discusses the F4F program
- 2 Field officer visit the landholder to discuss the program further and available options
- 3 Landholders and field officer tailor Site Action Plan (SAP) to the property
- 4 The device design, discussed as part of the SAP is approved by engineers
- 5 Work begins
– either by the landholder or a contractor
- 6 The low flow device is complete – the device is inspected and is handed over to the landholder



Government of South Australia
Department of Environment,
Water and Natural Resources



Eastern Mount Lofty Ranges



Stage 1 – Angas River Catchment + Rodwell Creek (Bremer River Catchment)

Flows for the Future Project Area



Government of South Australia
Department of Environment,
Water and Natural Resources



Appendix B – CPC Water Delivery History – Mike Reynolds– General Manager The Creeks Pipeline Company Limited.

**The Creeks Pipeline Company Limited
CPC**

**Water Delivery History
2009 - 2017**

Pump Station 1 at Jervois



CPC has been delivering irrigation water to its shareholders for eight growing seasons.

During this period we have delivered 78,500 ML of River Murray water allocation.

The pipeline is operational 24 hours a day and 365 days a year, only shutting down for routine maintenance and during power outages.

The pipeline is 110 km in length and holds in excess of 50 ML of transfer water.

There are sixteen pumps within the system spread over four pump stations.

We have over 100 irrigators and 100 Restricted Water User as our customers.

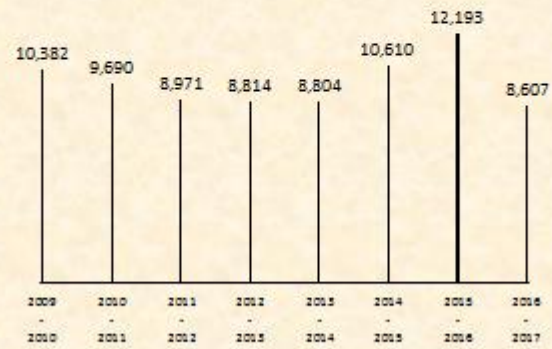
CPC currently has four staff members and is about to recruit a Trainee Pipeline Technician ahead of the coming irrigation season.

CPC has just recently purchased the CPC office alongside the Winehouse in Langhorne Creek .

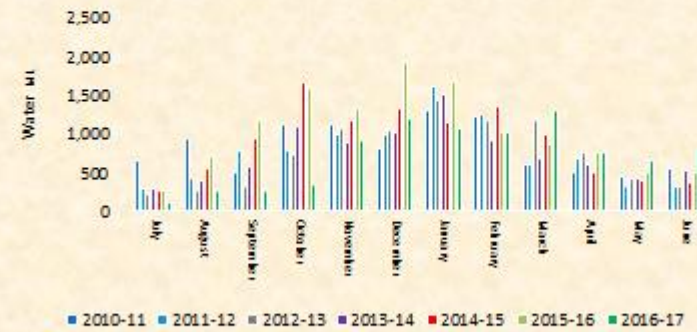
Current Water Delivery Agreements end on 30th June 2019.

The CPC Board will shortly announce the process for renewal of Water Delivery Agreements going beyond June 2019.

CPC Water Delivery Water Year Annual Total ML



CPC Water Delivery ML by Month



CPC Water Delivery ML

Year	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
July	0	645	275	200	259	269	264	105
August	0	929	424	251	357	535	701	254
September	0	491	755	521	575	922	1,155	252
October	500	1,124	764	732	1,090	1,659	1,356	554
November	1,606	1,125	955	1,074	852	1,165	1,352	905
December	1,615	797	957	1,055	995	1,334	1,916	1,192
January	1,955	1,194	1,615	1,419	1,492	1,151	1,657	1,070
February	1,470	1,125	1,234	1,154	909	1,335	1,004	999
March	957	555	555	1,157	667	992	554	1,304
April	591	457	652	754	595	452	747	755
May	751	459	501	409	404	597	452	644
June	300	549	521	510	515	565	496	794
Annual Total ML	10,382	9,590	8,971	8,814	8,804	10,610	12,193	8,607

The Creeks Pipeline Company Limited CPC

Appendix C – Update on Current Projects – Michael Cutting – Natural Resources, SAMDB

Angas Bremer Water Management Committee: Annual Public Meeting

Update on Current Projects
28 August 2017

Michael Cutting
Natural Resources, SA Murray-Darling Basin Region

 Natural Resources
SA Murray-Darling Basin



Heritage Irrigation Structure Nomination: What?

- International Commission on Irrigation & Drainage (ICID) through Irrigation Australia Limited
- Tracing history of and understanding the evolution of irrigation in civilisations across the world
- Initially looked at nominating Angas Bremer floodplain diversion structures but needed a single structure = Bleasdale Flood Diversion Weir shortlisted with Goulburn River Weir (Vic)



Heritage Irrigation Structure Nomination: Why?

- Recognition of the Angas Bremer region
- Production and environmental outcomes
- Long history of innovation
- Link to Green Trail/Blue Net



Green Trail/ 'Blue Net' Concept Plan:

- Slow progress but starting to re-engage with key partners – ABWMC, councils, LCGW, LCPA, NRMB
- Seeking to expand the concept to include broader Lower Murray/Lakes region
- Self drive tour
- Promote the sustainability credentials of the region



COFFIE 'Pilot' Programme – Now Open:

- Commenced September 2016
- Irrigation efficiency focus but with flexibility
- \$5,000/ML – 2ML minimum
- No funding rounds
- Rapid approval process: 4 - 6 weeks



Irrigation Investment Summary:

Project	Date Commenced	Commonwealth Funding (\$M Est.)	No. Irrigator Projects	Total Water Savings (ML) (Entitlement)
On-Farm Irrigation Efficiency Program R1	September 2010	\$1.6m	21	706
On-Farm Irrigation Efficiency Program R2	June 2012	\$12.0m	107	4,445.7
On-Farm Irrigation Efficiency Program R3	November 2013	\$29.1m	163	11,477.2
On-Farm Irrigation Efficiency Program R4	December 2014	\$17.7m	69	9,067.3
Sub Total (OFIEP R1/R2/R3/R4)		\$60.4m	362	25,696.4
Private Irrigation Infrastructure Program for SA – R2	January 2012	\$7.2m	16	1,800.0
SRWUIP Total		\$67.6m	378	27,496.4
Commonwealth On-Farm Further Irrigation Efficiency (Pilot)†	September 2016	\$4.8m	26	888.1
TOTAL		\$72.4m	404	23,384.5

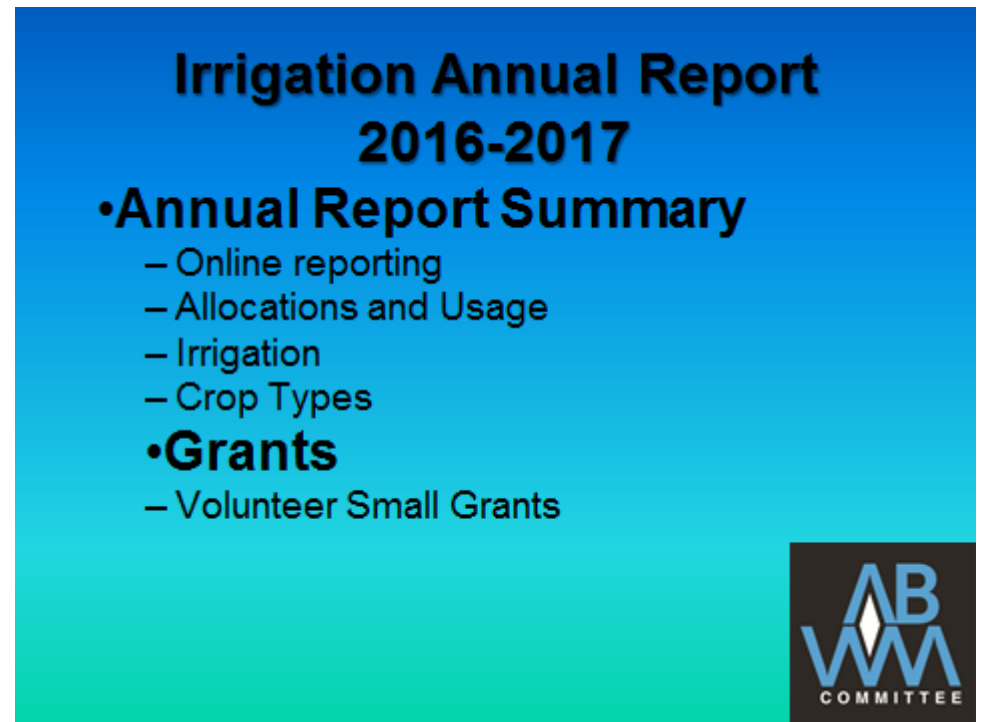
Natural Resources

SA Murray-Darling Basin

thankyou



Appendix D – Update on Angas Bremer Water Management Committee – Leah Hunter – Project Coordinator

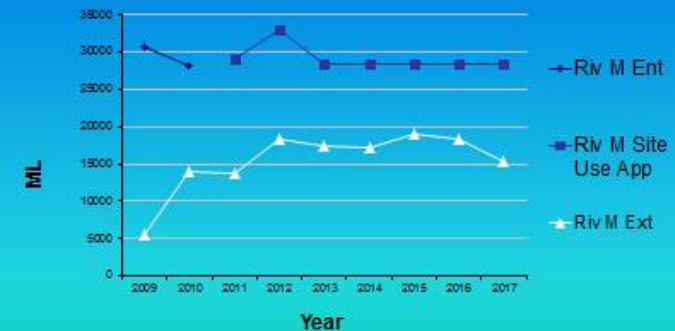


On Line Reporting

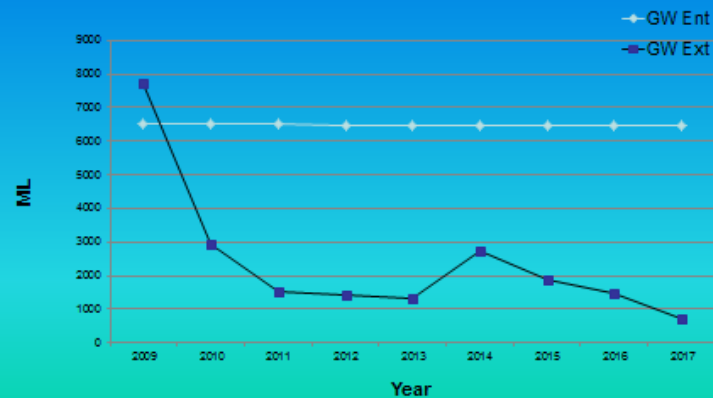
- Thank you again to everyone who submitted their reports online
- Went smoothly again although closing date had to be extended to August 17th
- 94 reports submitted online (73%)
- 110 out of 128 reports received by accreditation date (86%)



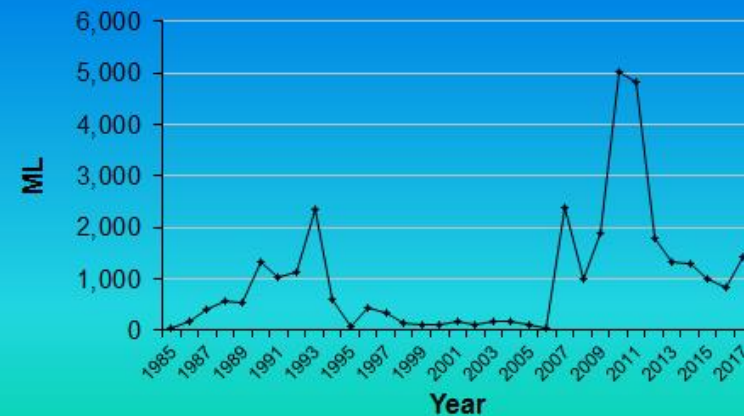
River Murray Water Allocation & Extraction



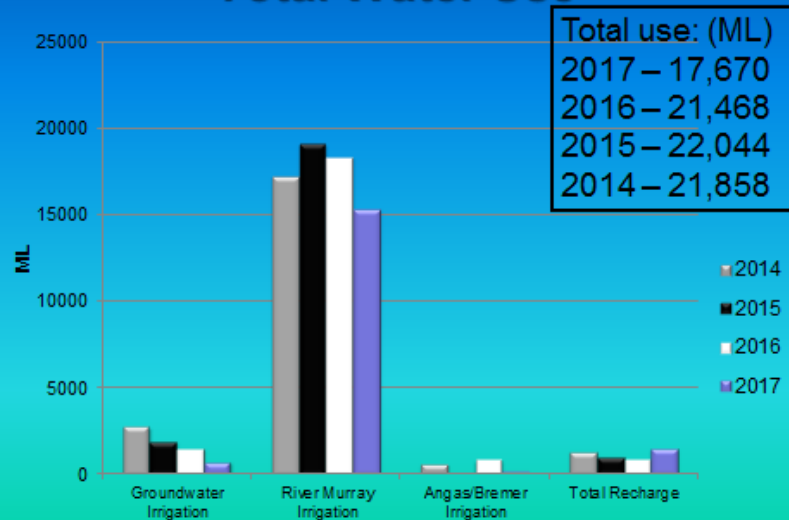
Groundwater Allocation & Extraction



Volume Recharged to Aquifer 1985-2017



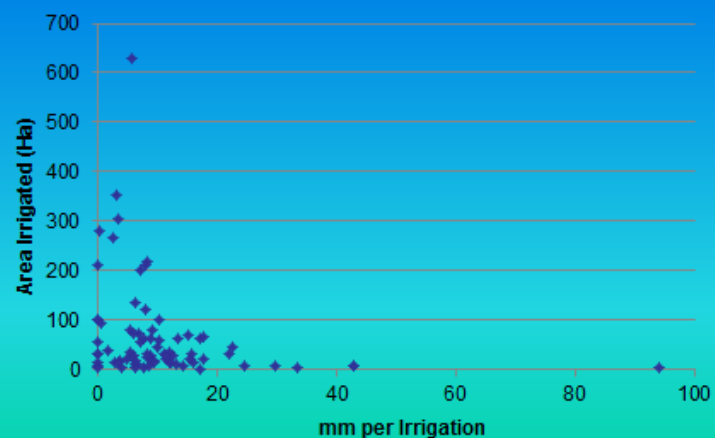
Total Water Use



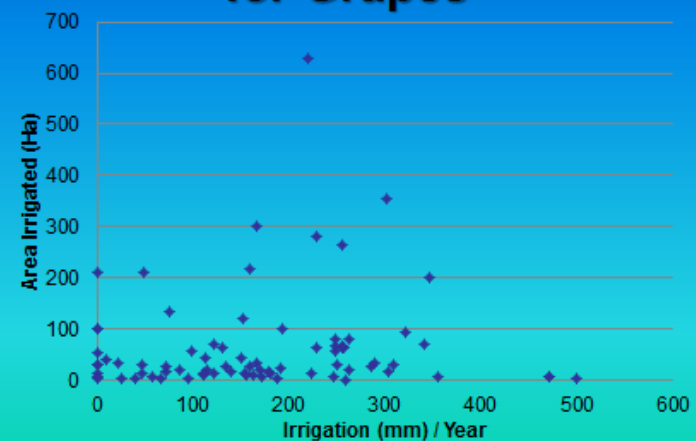
Area Flooded



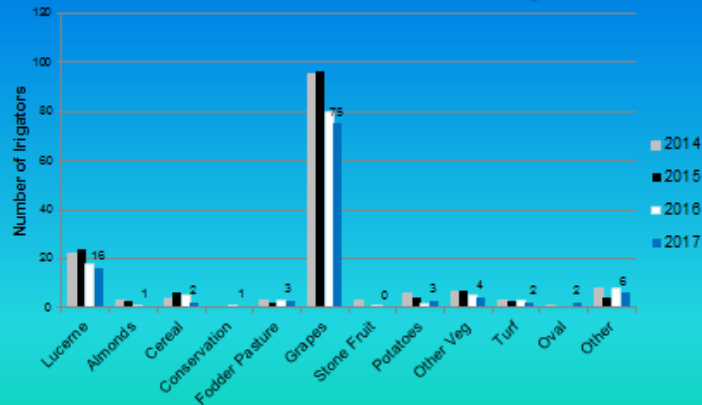
Average mm per Irrigation for Grapes



Total Yearly Irrigation for Grapes



Number of Irrigators for Different Crops



*Area grapes – 5,089; 5,498 ha in 2016; 6,400 in 2007.

Grants

- Volunteer Small Grant – Natural Resources SA Murray-Darling Basin.
 - A day on the bus with the Angas Bremer Water Management Committee.
 - Two Securing low flow devices
 - Guest speakers
- FrogSpotter App, Latest activity in pest and weed management and an Update on the River Murray Water Allocation Plan



Interim Annual Report

- All final graphs and further explanation in Annual Report
- Thank you to those who submitted their reports on time and on line!



Conclusion

- Thank you to Angas Bremer Water Management Committee members
- Thank you to Natural Resources SA Murray Darling Basin staff & Board
- Thank you



Appendix E – Media release

International recognition for heritage irrigation structure in Langhorne Creek

At the International Commission for Irrigation and Drainage (ICID) triennial conference held in Mexico in October 2017 the Bleasdale Vineyards floodgate, nominated by Irrigation Australia Limited, was accepted for inclusion in the ICID heritage irrigation structure register.

Together with a nomination of the Goulburn Weir in Victoria these are the first two structures from the southern hemisphere to be included in the ICID register.

To qualify the structures needed to be more than 100 years old and the system still be in use today.

Bleasdale Vineyards Chairman, Robert Edwards said, Bleasdale is very proud of its heritage, innovation, vision and practical endeavour.

“This floodgate represents the historic and continuing system of irrigation which has been most beneficial to Bleasdale Vineyards over the years,” Mr Edwards said.

“The nomination was proposed by the Angas Bremer Water Management Committee, formed in the 1980’s who still speaks for Langhorne Creek in matters of underground and surface water management given the demonstrated ability to sustainably use both the underground water the floodplain surface water in a sustainable manner.

The floodgates throughout Langhorne Creek are simple and strong examples of the artisanal craftsmanship of the time, being precisely shaped redgum planks that are dropped into grooves in the stone piers.

Individual planks can be removed or replaced to control the level and thus volume of water entering the vineyard.

They bear testament to the capacity of the settlers to utilise existing resources in a sustainable manner upon which has been built one of South-Eastern Australia’s premier viticulture regions.

The construction of such simple yet sound irrigation infrastructure in the form of these wooden diversion weirs has sustained the environmental assets of the region that would have been destroyed by less innovative thinking.

Water that has been used for irrigation or is diverted away from crops, drains into the redgum swamps in the region and into Lake Alexandrina, which are part of the Ramsar-listed Coorong and Lakes Alexandrina and Albert Wetland of International Importance.

