Angas Bremer Irrigation Management Zone 2023 – 2024 Annual Report

Project Coordinator: Leah Hunter
Angas Bremer Water Management Committee Inc

Supported by

Government of South Australia
Department for Environment and Water

LANDSCAPE SOUTH AUSTRALIA HILLS AND FLEURIEU

LANDSCAPE SOUTH AUSTRALIA MURRAYLANDS AND RIVERLAND

2023-24 Annual Irrigation Report

Contents

Angas Bremer Water Management Committee Members 2023-2024

Presiding Member – Barry Potts
Treasurer – Justin Cleggett

Committee Members
James Stacey, George Borrett, Michael Clements,
Tim Follett, Trevor McLean, Michael Cutting
and Robyn Grey-Gardner
Non-elected members of the Committee
Secretary – Keren Stagg
Project Coordinator – Leah Hunter

Report of the Activities of the Committee 2023-2024

The Angas Bremer Water Management Committee has focussed on its core duties this year holding four committee meetings and an Annual Public Meeting during August.

Throughout the year the committee have continued to raise their concerns and advocate on behalf of irrigators and residents of the Langhorne Creek area about the flow of the Bremer River and possible impacts the developments in Mount Barker and surrounding areas is having on the quality and quantity of the water in the watercourse.

The committee is still focused on this issue and will continue to pursue the region's concerns and the steps that can be taken to improve knowledge of possible causes, and to help push solutions.

Throughout the 2023 / 2024 season, the committee has kept in contact with the EPA and Mount Barker District Council who have provided updates to the group on volumes of water released and the monitoring of water in the catchment. The committee will continue to work with these agencies to follow the progress of works to the wastewater treatment plant and the new EPA monitoring program.

The committee continued to seek a simplified explanation of the Take Rules and the posting of alerts on the Water Connect / Data SA website to assist irrigators

in determining when they can take water. This will continue to be a focus in 2024 / 2025.

The committee continue to work closely with the staff and Board from both Hills and Fleurieu and Murraylands and Riverland Landscape Boards and are very thankful for the support received so far. The Hills and Fleurieu and Murraylands and Riverland Landscape Boards have committed funding until June 2025.

The other main focus for the committee this year was the annual irrigation reporting for the Angas Bremer Irrigation Management Zone. Please read the following report that summarises the data for the 2023 / 2024 irrigation season.

Irrigation Annual Report Forms: Data Summary and Comment

Irrigation Annual Report forms (IARs) were mailed to 133 irrigators within the Angas Bremer Irrigation Management Zone. The 126 irrigators who returned their completed forms to the Angas Bremer Water Management Committee on time have achieved "Accredited Irrigator" status. Online submissions were up this year with 106 irrigators reporting online, 7 irrigators did not respond/ provide data and did not achieve accreditation. The data from 126 irrigators (95%) have been collated and are presented in the following graphs and tables.

Flooding: Flooding by diversion or pumping was reported by 5 irrigators. Flooding was recorded in July 2023 (2 events), September 2023 (1 event). 52.24 hectares of irrigated land was recorded as being flooded and 8 hectares of non-irrigated land this year.

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: 84 Irrigators reported on the health of the Red Gums on their properties. Health, or otherwise, was rated from 0 to 5, with 0 being dead and 5 being healthy. This year there has been a slight increase in the number of irrigators reporting that their red gums were healthy with 29 irrigators reporting 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 with no changes in health direction, four irrigators listed their red gums as getting worse. Ten irrigators listed their red gums as getting better.

Water Leasing: Table 1 below shows the amount of water leased in 2023-24 compared with water leased in the previous two years. Overall, more water was leased out by irrigators this year than last. The amount of River Murray water leased out to Outside Irrigators increased by 1660ML and the amount leased in from irrigators outside of the Angas Bremer Irrigation Management Zone (ABIMZ) decreased by 3070.77ML. The volume of River Murray water leased to other irrigators within the Angas Bremer Irrigation Management Zone is slightly higher than last year with seven leases reported.

Table 1: Water Leasing

Type of Lease	Megalitres 2021-2022	Megalitres 2022-2023	Megalitres 2023-2024
RM water leased from ABIMZ to outside ABIMZ	3833.50	682.00	2342.00
RM water leased from outside ABIMZ to inside ABIMZ	9974.05	5382	2311.23
RM water leased from inside ABIMZ to inside ABIMZ	484	283.28	293.00

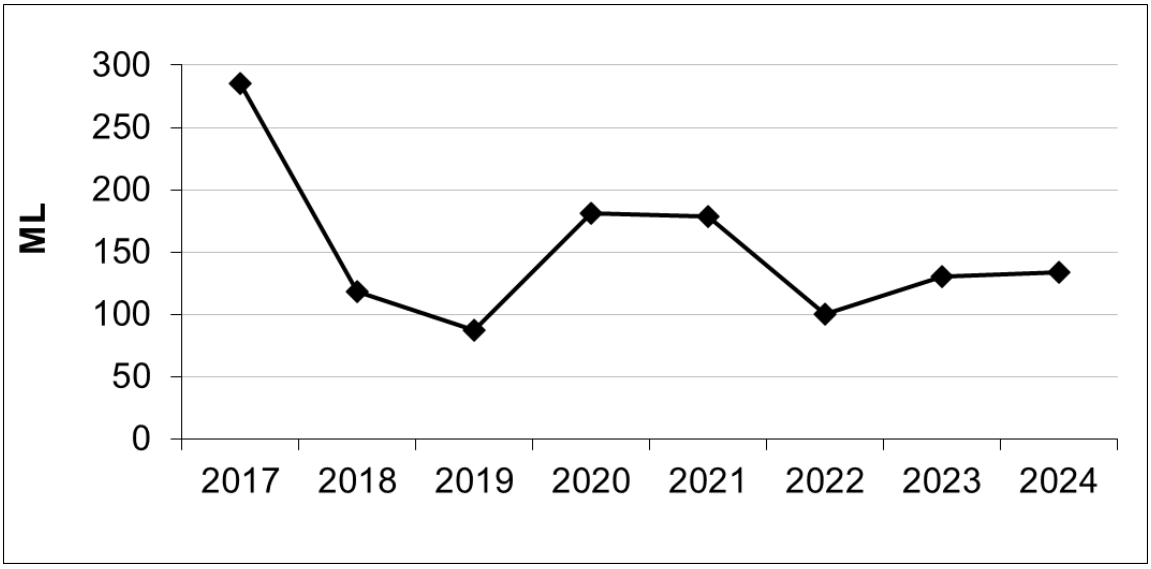


Figure 1: Angas and Bremer Rivers Water Extractions 2017-2024: Not all of the water taken from these rivers, such as the water diverted through weirs and sluices, is accounted for in this chart. The volumes on this graph are metered volumes from irrigators with meters installed, as well as the amount recharged into the aquifer from these rivers, as reported in the Irrigation Annual Reports. The amount of water that was recorded as having been extracted from these rivers is higher than last year with a slight increase of 3.54ML (134.06ML used this year)

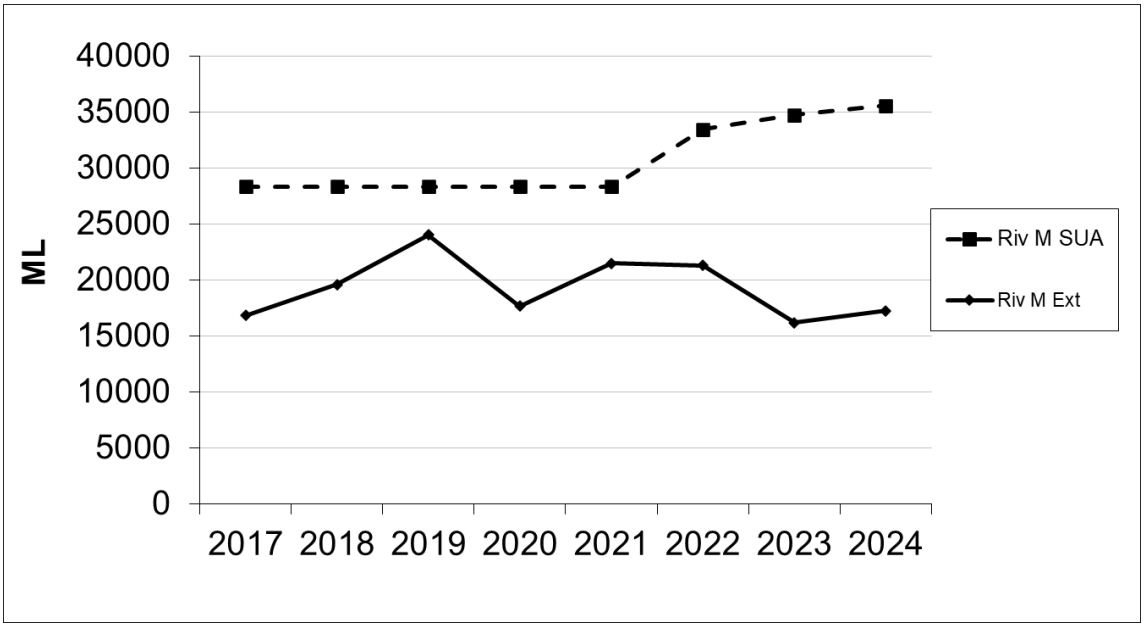


Figure 2: River Murray Water Site Use Approval and Extraction 2017-2024: The River Murray Site Use Approval (RivM SUA) is the maximum quantity of River Murray water that can be used for irrigation on land identified as being in the Angas Bremer Irrigation Management Zone. Extraction (RivM Ext) is the volume of water that was used during the irrigation year. The total Site Use Approval volume for 2023-24 volume has increased to 35549.86ML, and the recorded use was 17238.78, 1046.2ML more than last year.

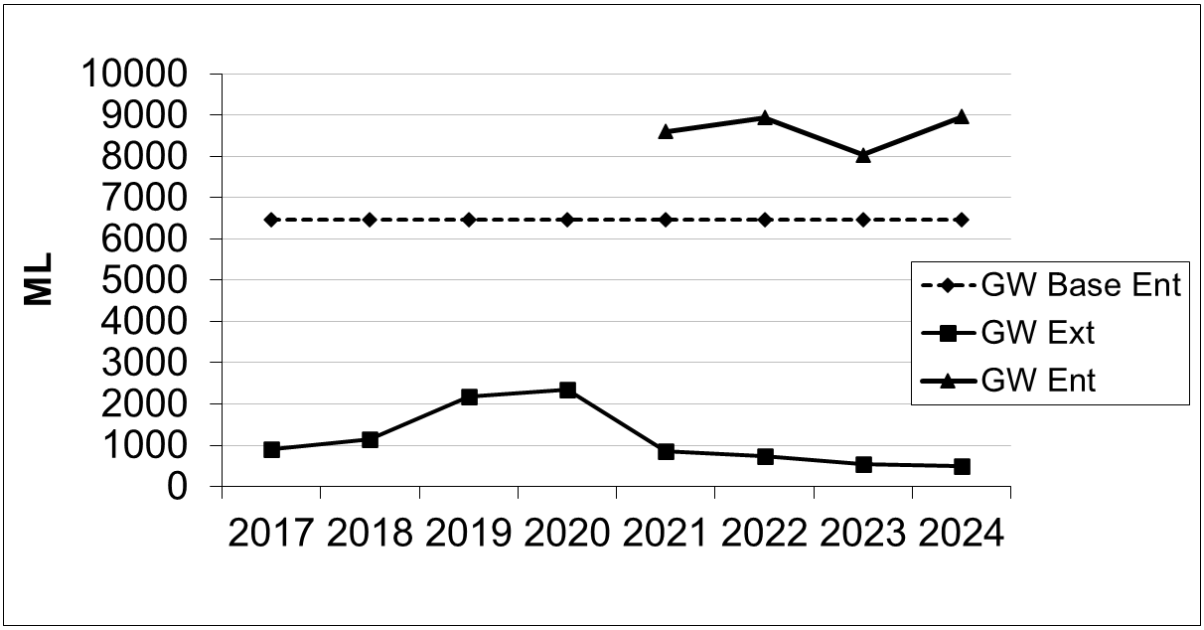


Figure 3: Groundwater Entitlement and Extraction 2017-2024: The maximum entitlement for 2023-24 was 8959ML (Including rollover, drain and discharge volumes on top of the base allocations) and the recorded use was 491.71ML. A decrease of 41.64ML with 533.35ML used in the previous year. This is much lower than the 7,700 ML used during the "Millennium Drought".

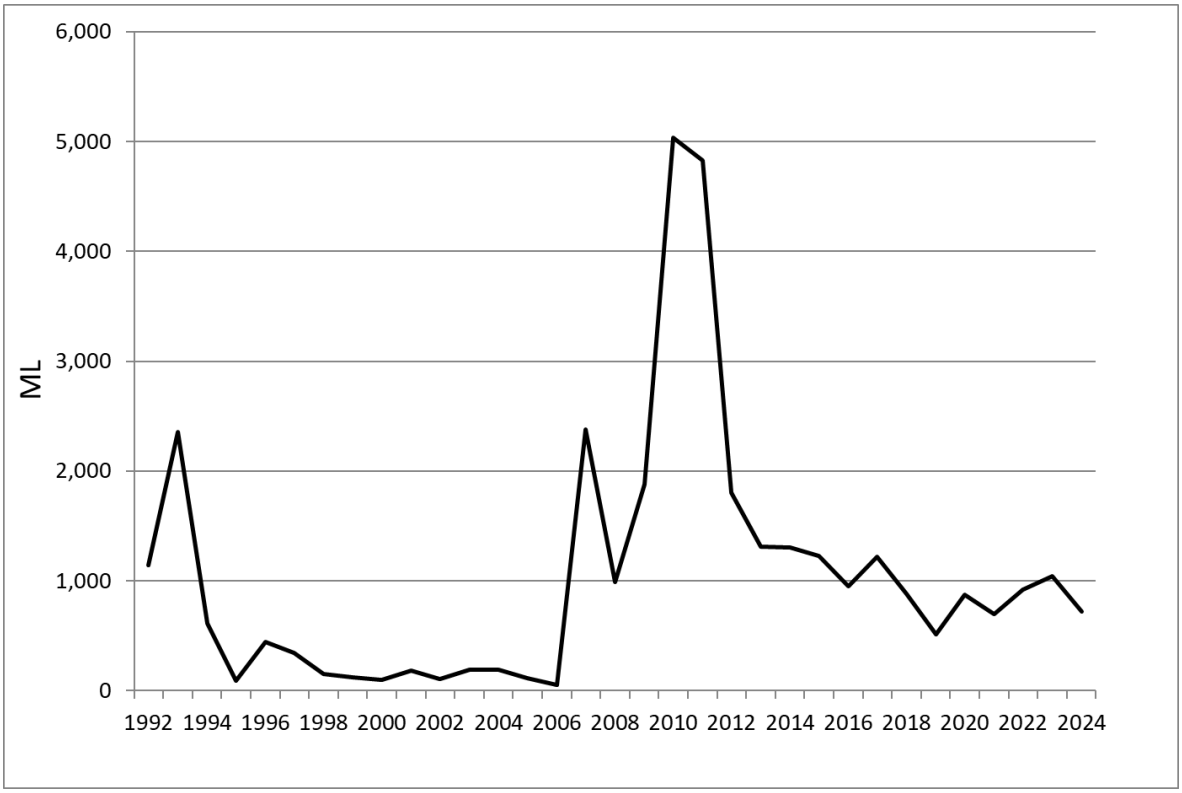


Figure 4: Managed Aquifer Recharge (MAR) (formerly termed Aquifer Storage and Recovery (ASR): This chart shows the total volume of water artificially recharged to the aquifer from 1992 to 2024. The **719 ML** recharged from the Angas, Bremer and Murray Rivers in 2023-2024 was lower than last year's volume but substantially lower than the record levels achieved in 2010.

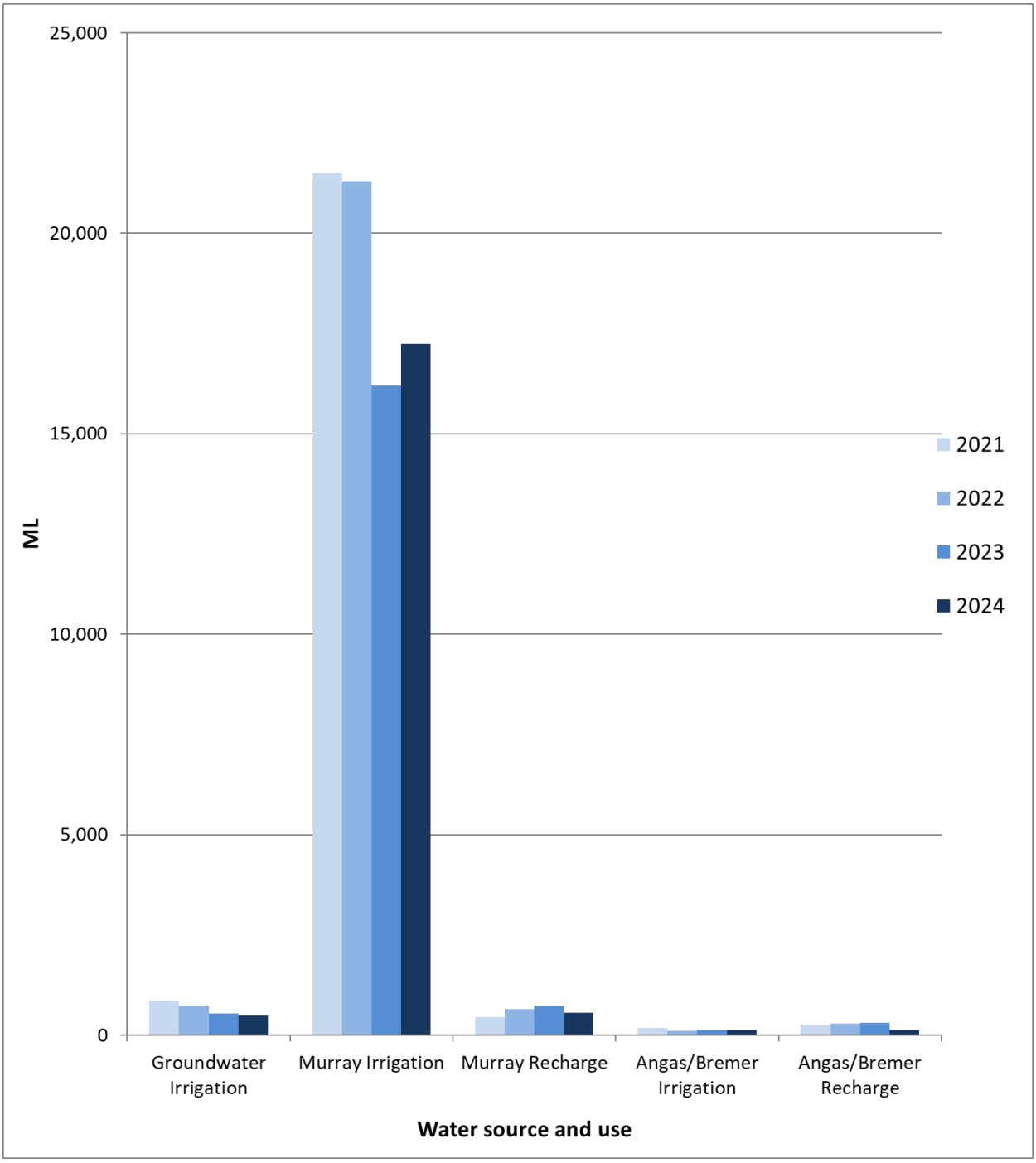


Figure 5: Total volume of water used 2023-2024: The total volume of water extracted from all sources within the region over the 2023-24 year was **18,551ML**, higher than the previous year, 2022-2023 = 17,897ML.

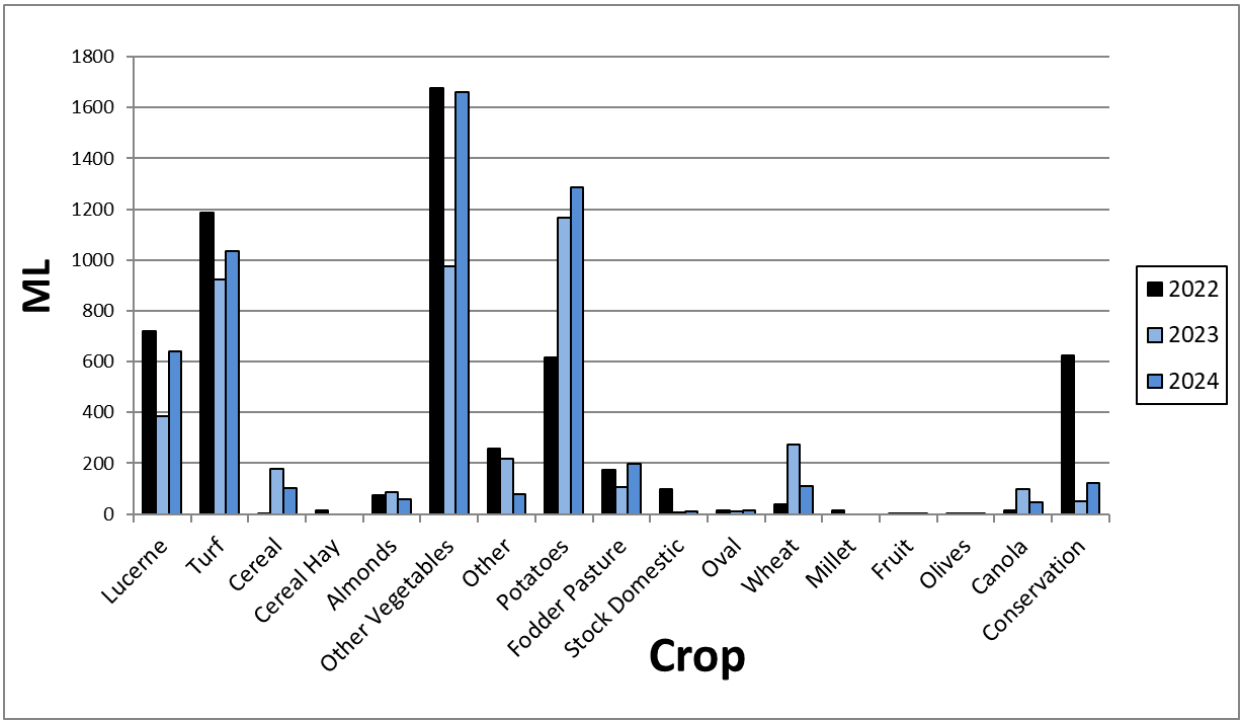


Figure 6: Total volume of water used for each crop type: This volume is the total used from all sources; groundwater, Angas/Bremer water and River Murray water that was applied to each crop type (grapes excluded). **The total volume of water applied to grapes was 11,903ML in 2023-2024, a slight decrease from last year's 11,943ML.**

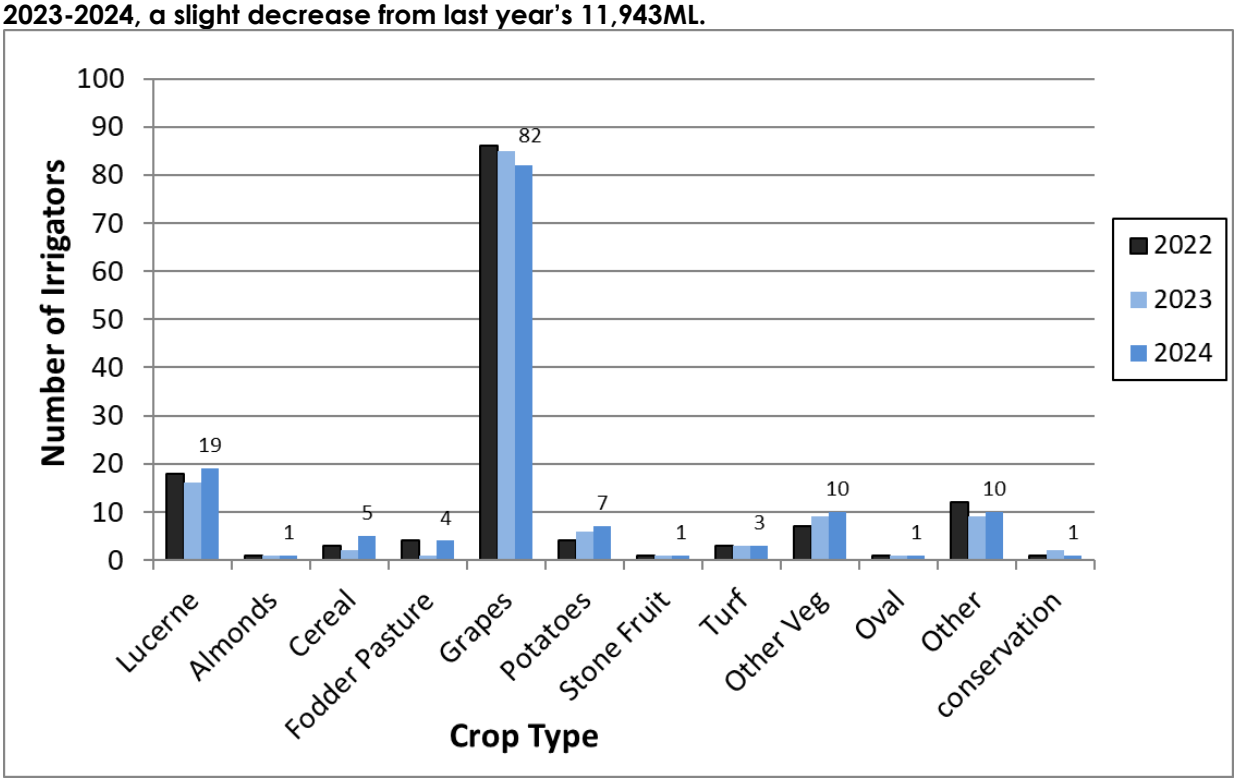


Figure 7: Number of Irrigators for Each Crop Type: The number of irrigators growing each crop type in the region appears to have changed slightly with most crops increasing or staying the same except for grapes, dropping from 85 to 82 growers this year. Lucerne, Cereal and Fodder Pasture all increasing.

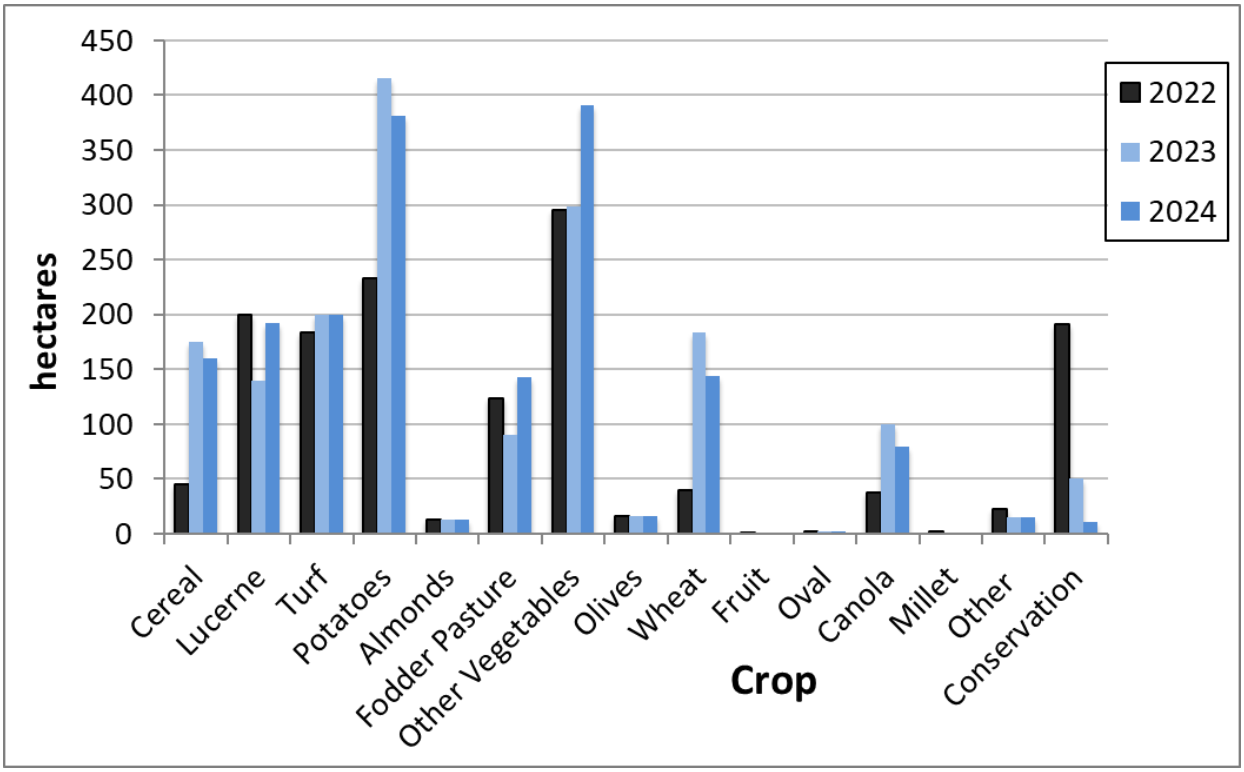


Figure 8: Area Irrigated by Crop Type: The area of each crop irrigated is shown in hectares. The total area represented in the graph is 1749 ha. **The area of grapes irrigated in 2023-24 was 5,443 ha, greater than the 5,195 ha recorded last year (not shown in graph).** The total area under irrigation in 2023-24 was 7,192 ha, which is greater than the 6,894 ha recorded last year. There is a significant increase in other vegetables, and Lucerne and Fodder Pasture have returned to similar numbers as 2022.

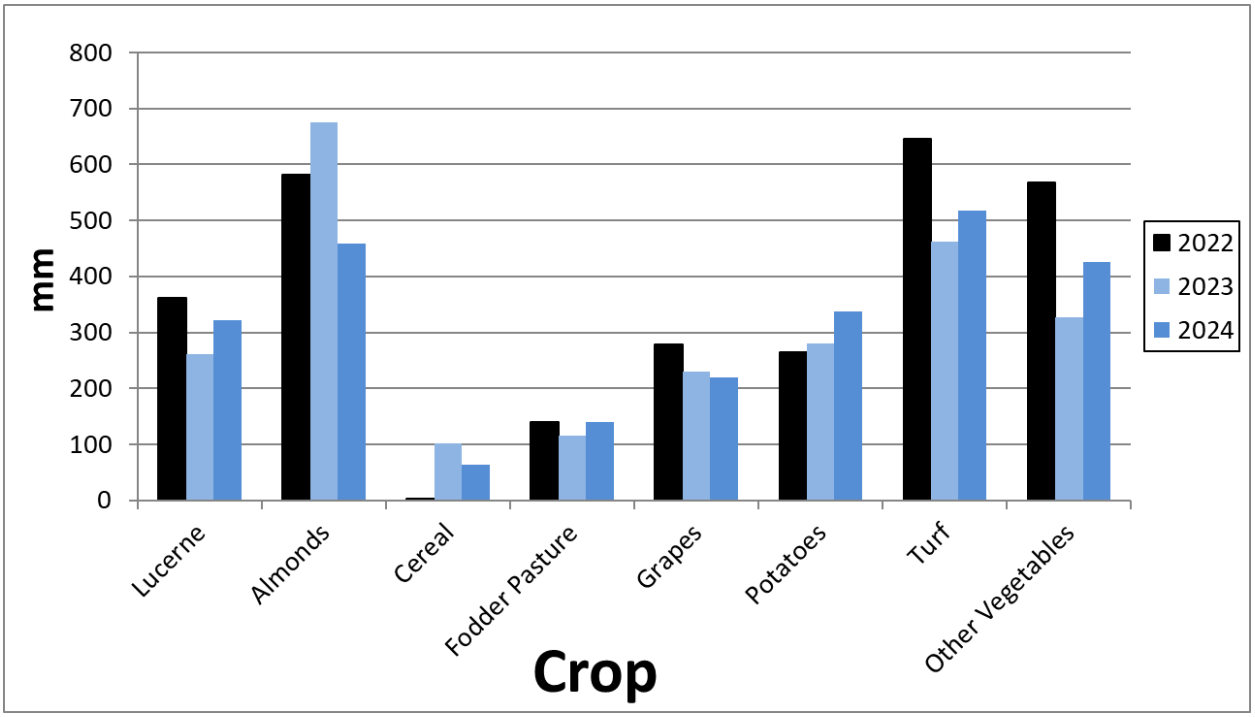


Figure 9: Average total irrigation rate for the year by crop type: Irrigation is shown in mm for 2021-22, 2022-23 and 2023-24.

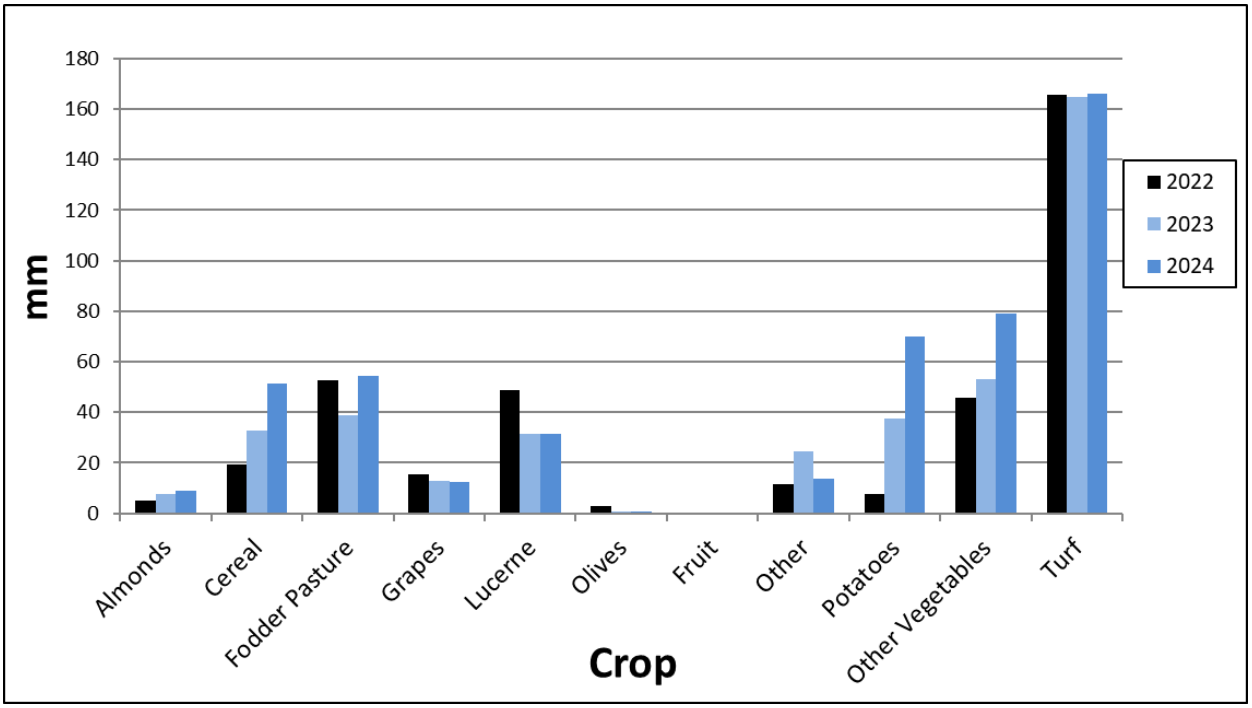
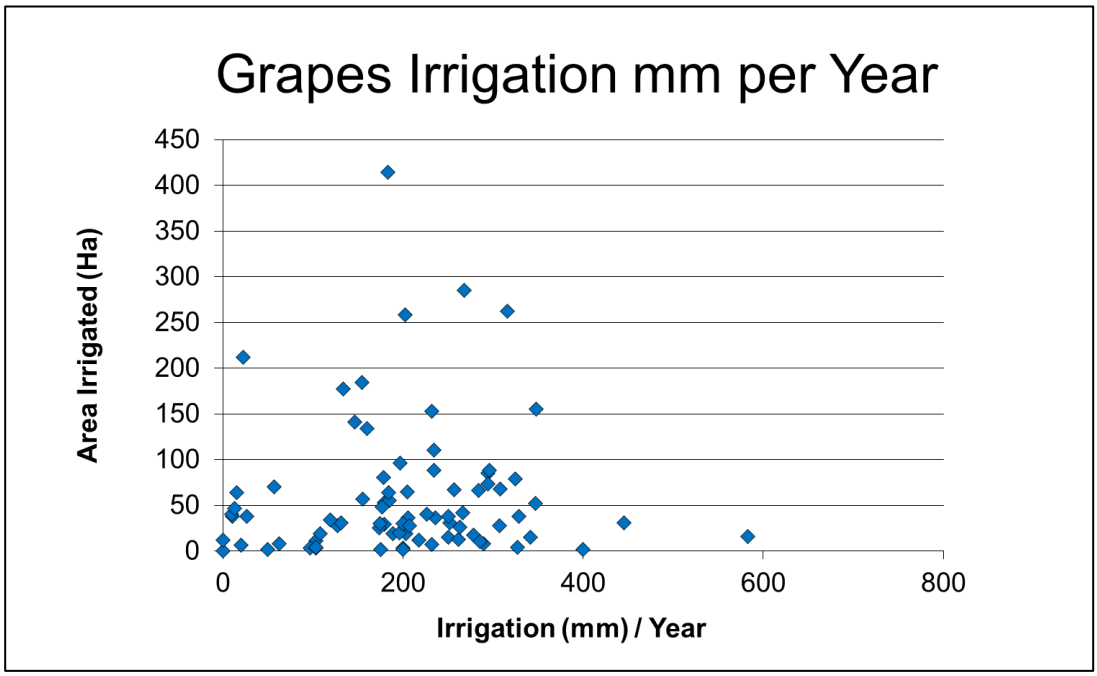


Figure 10: Average mm of water applied per irrigation for each crop type for the last three years.

Figures 11-15: These charts show the irrigation rate per property for the more common crops. **For each crop one chart shows (a) the mm per year and (b) the mm per irrigation**.



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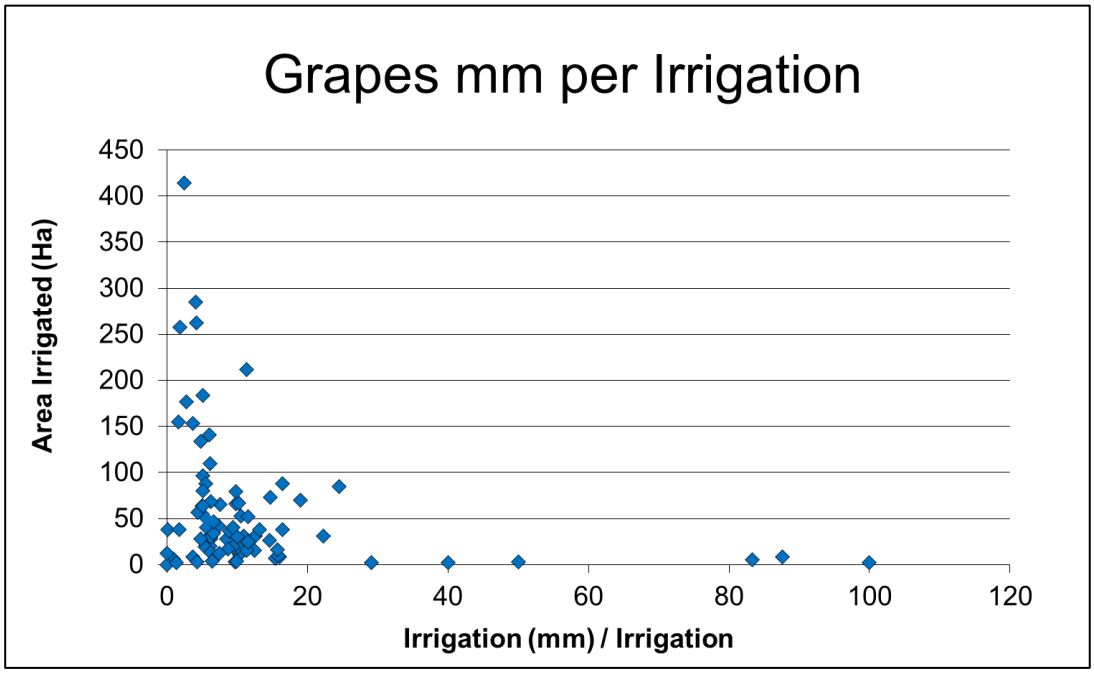

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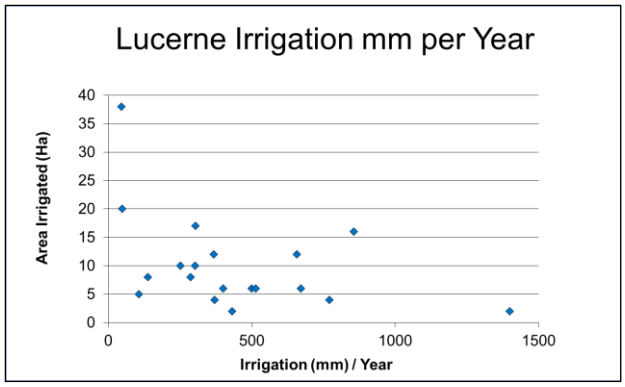

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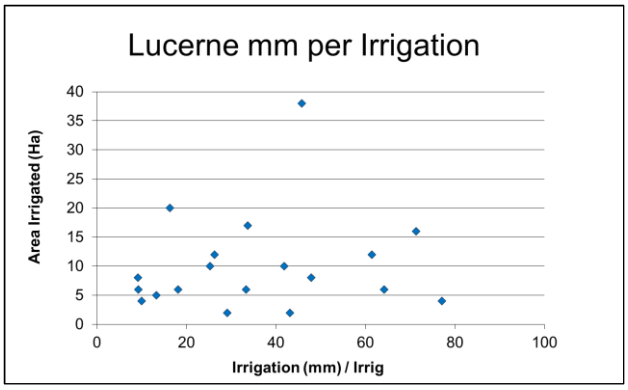

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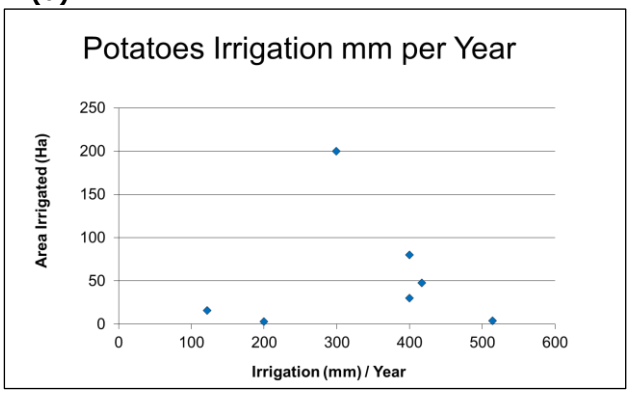

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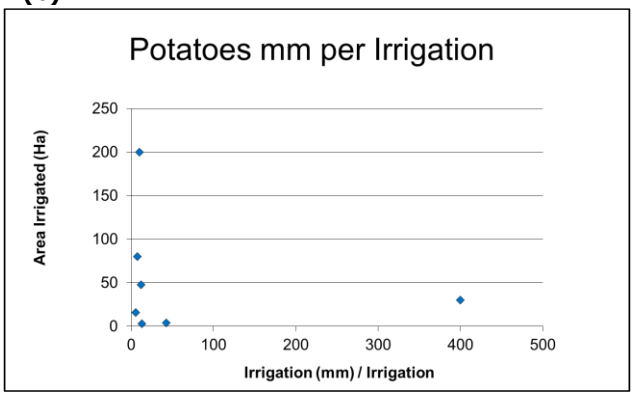

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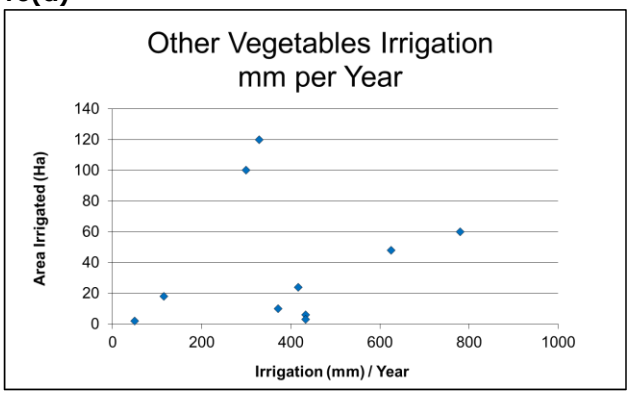

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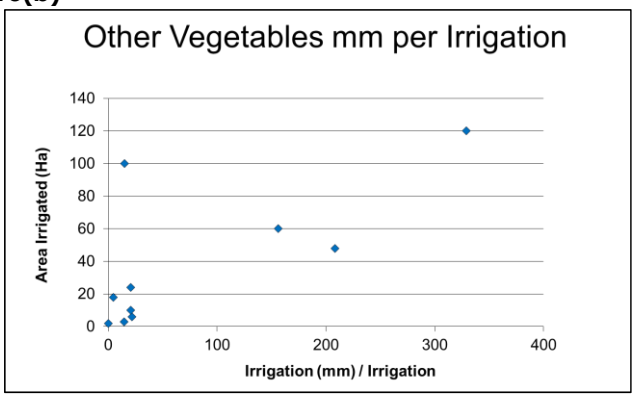

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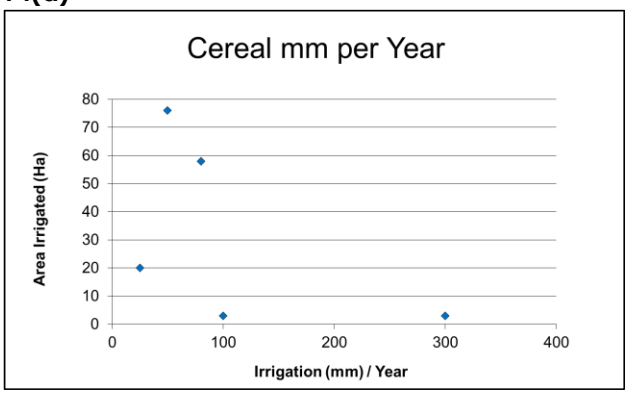

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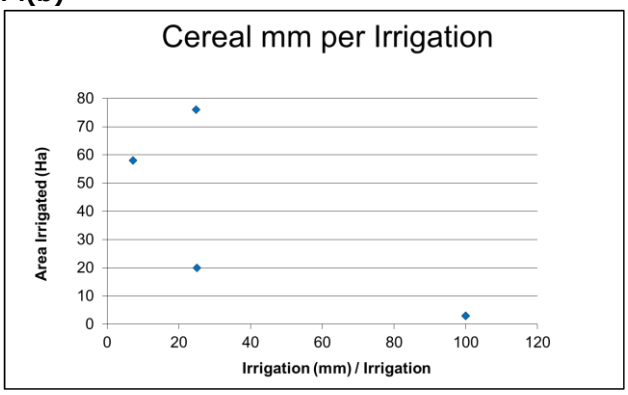

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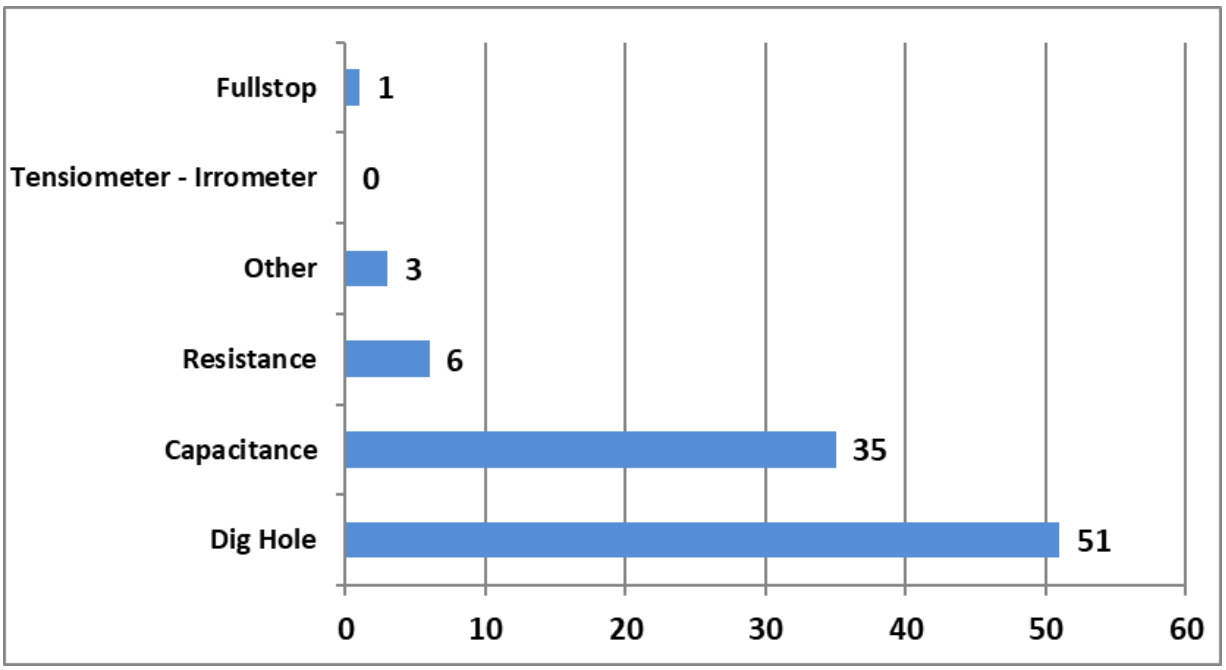


Figure 16: Number of growers using Soil Moisture Monitoring devices in 2023-24: "Resistance" includes Gypsum Blocks. "Capacitance" includes Agwise soil moisture probes, Agrilink C probe, Dataflow Gopher, Sentek Diviner and Sentek EnviroSCAN. "Dig hole" includes Dig stick, spade, auger and post hole digger.

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 2024 with previous years. This information is also displayed in the following Figure 17. Note: 1ML/ha is equivalent to 100mm of irrigation.

Year	Grape	Lucerne	Vegetable	Potato	Fodder	Almond	All Crops
2023-2024	2.19	6.42	4.25	3.37	1.39	4.58	2.40
2022-2023	2.30	2.75	3.27	2.81	1.16	6.76	2.38
2021-2022	2.78	3.62	5.68	2.65	1.4	5.81	2.98
2020-2021	2.88	1.96	4.25	4.35	1.6	3.88	3
2019-2020	2.82	2.43	2.84	3.51	1.8	5.56	2.8
2018-2019	2.79	2.9	6.46	3.4	1.3	5.33	2.95
2017-2018	2.74	3.14	4.78	4.33	0.9	3.61	2.99
2016-2017	1.85	2.92	4.71	4.86	1.3	3.18	2.23
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

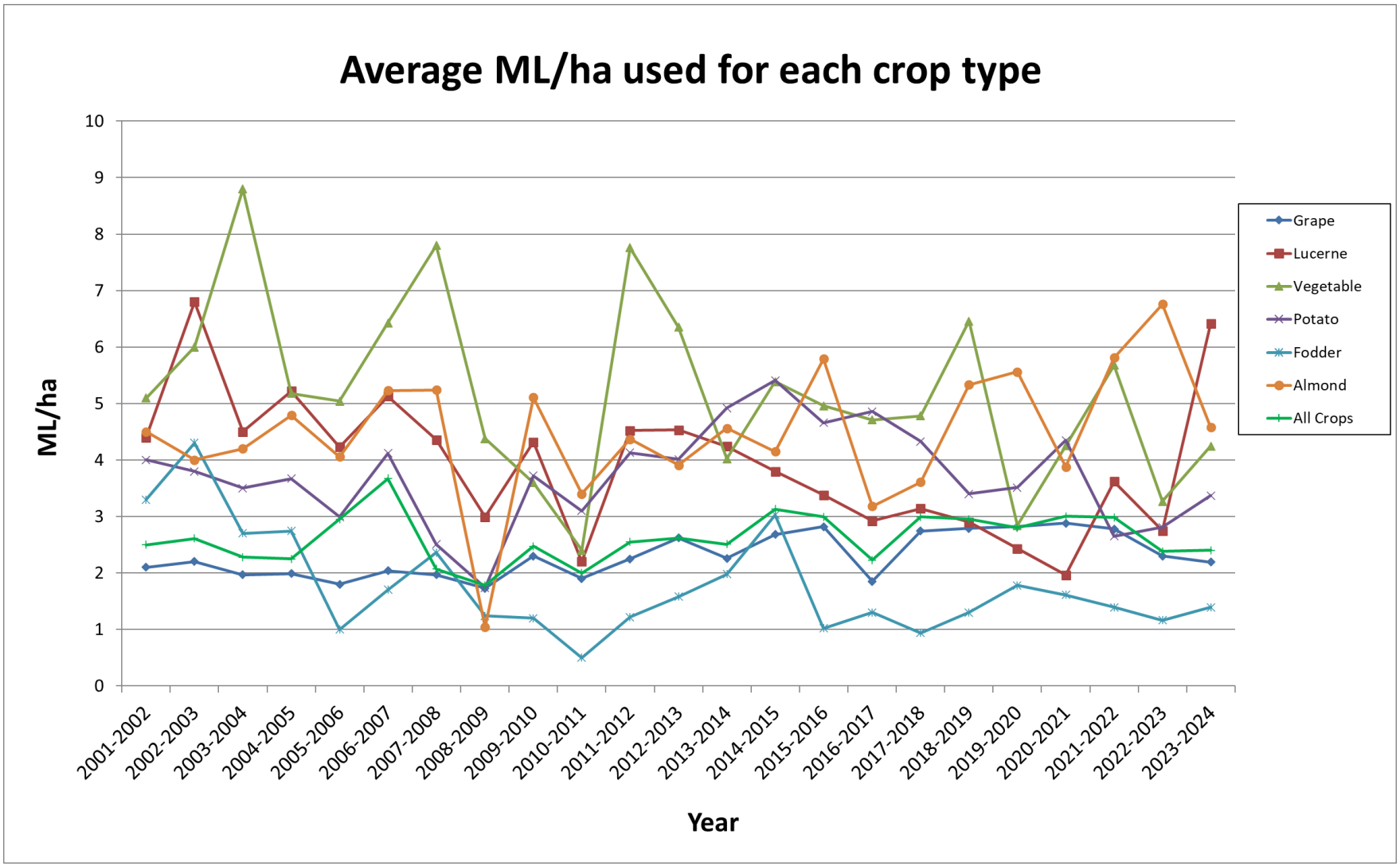


Figure 17: Average ML / ha used for each crop type

Table 3: ML used and ha irrigated comparison chart:

	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	2016-2017	2015-2016	2014-2015	2013-2014	2012-2013	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2004-2005	2003-2004	2002-2003
Total ML	**17,267**	**16,419**	**21,652**	**22,456**	**19,839**	**22,125**	**20,279**	**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**
Total ha	**7,191**	**6,894**	**7,212**	**7,479**	**7,085**	**7,489**	**6,792**	**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**
Grape ML	11,903	11,943	16,118	16,767	16,702	16,418	14,819	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
Grape ha	5,443	5,195	5,799	5,821	5,920	5,892	5,407	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
Lucerne ML	641	384	719	751	608	1,352	1,236	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
Lucerne ha	192	140	200	383	251	466	393	348	384	439	341	402	327	170	152	109	155	280	325	343	354	376
Veg ML	1,661	975	1,679	1,161	468	1,194	559	856	963	964	580	610	877	193	36	57	179	373	363	638	605	647
Veg ha	391	298	296	273	165	185	117	182	194	179	144	96	113	81	10	13	23	58	72	123	69	108
Potato ML	1,285	1,167	617	1,079	485	717	758	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
Potato ha	381	415	233	248	138	211	175	238	203	229	218	307	311	179	86	75	54	291	392	348	360	394
Fodder ML	199	105	173	165	120	141	79	21	76	109	107	90	78	22	47	32	53	222	144	505	399	752
Fodder ha	143	90	124	103	67	108	84	16	74	36	54	57	64	43	39	26	23	130	144	184	146	173
Almond ML	60	88	75	136	195	202	65	57	104	166	187	180	188	148	225	193	231	251	195	230	203	188
Almond ha	13	13	13	35	35	38	18	18	18	40	41	46	43	43	44	44	44	48	48	48	48	47
Other crops ML	1,518	1,757	2,271	2,397	1,261	2,100	2,763	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
Other crops ha	628	743	547	616	509	589	598	444	480	503	573	558.5	501	206	276	282	505	906	588	936	443	777

Angas Bremer Groundwater Resources 2024
Current status and historical trends

December 2024

Murray Group Limestone aquifer water levels (2020–2024)

The main aquifer used in the Angas Bremer PWA is the confined Murray Group Limestone (MGL) aquifer which is up to 100 m thickness. For the period 2020–24, 28 out of 32 monitoring wells show five-year trends of rising groundwater pressure levels, at rates between 0.03–0.67 m/year (median rise of 0.12 m/year).

DEW uses a ranking system as a way of evaluating current groundwater levels in comparison to historic data. In 2024, seasonally recovered pressure levels are classified 'Above average' or higher in 88% of wells.

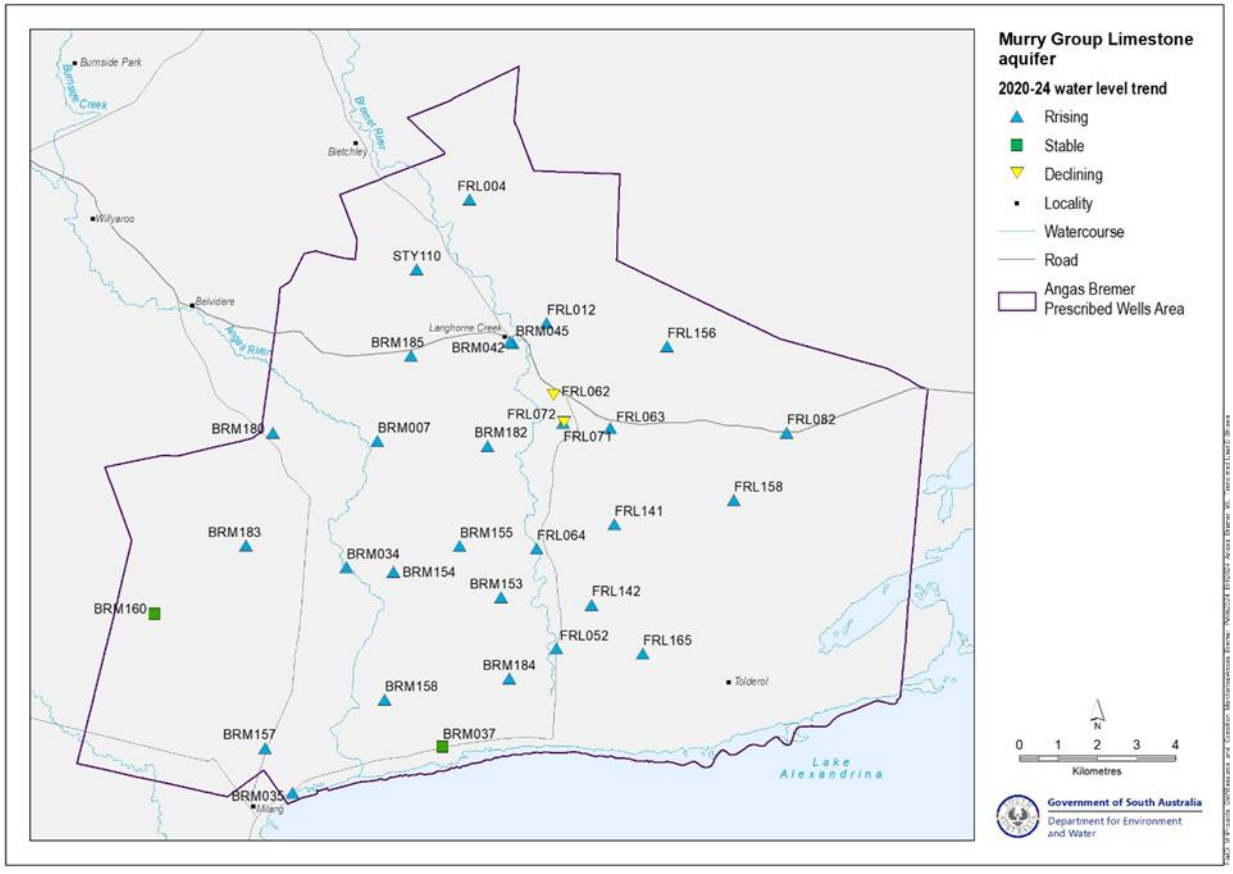


Figure 18: Murray Group Limestone aquifer water level trend 2020 to 2024

The hydrographs presented below were selected to illustrate important and/or representative trends. Hydrographs show a long-term rising trend across the region – groundwater pressure levels are currently close to the highest levels recorded since monitoring began in the 1970s. The increases in pressure levels that occurred during the 1990s are mainly attributed to a reduction in groundwater extraction resulting from increased availability of River Murray water for irrigation. In more recent years, managed aquifer recharge schemes that inject River Murray and ephemeral surface water flows into the MGL aquifer have also contributed to rising pressure levels.

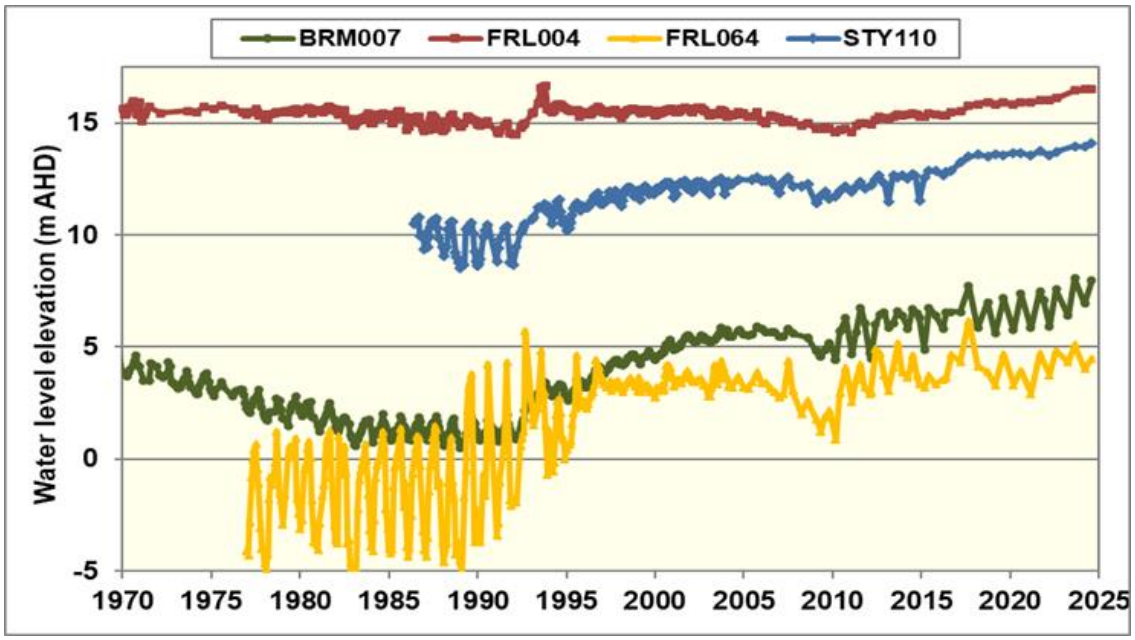


Figure 19: Selected hydrographs for the Murray Group Limestone aquifer

Quaternary aquifer water levels (current)

The shallow Quaternary aquifer consists of a sequence of clays, silts and sands of around 10–20 m thickness. This aquifer is generally highly saline with low yields and, consequently has limited use. Groundwater level monitoring in August and September 2024 shows that the water table is deeper than 3 metres across most of the area, with the exception of adjacent Lake Alexandrina, where the water table is naturally shallower than 3 metres.

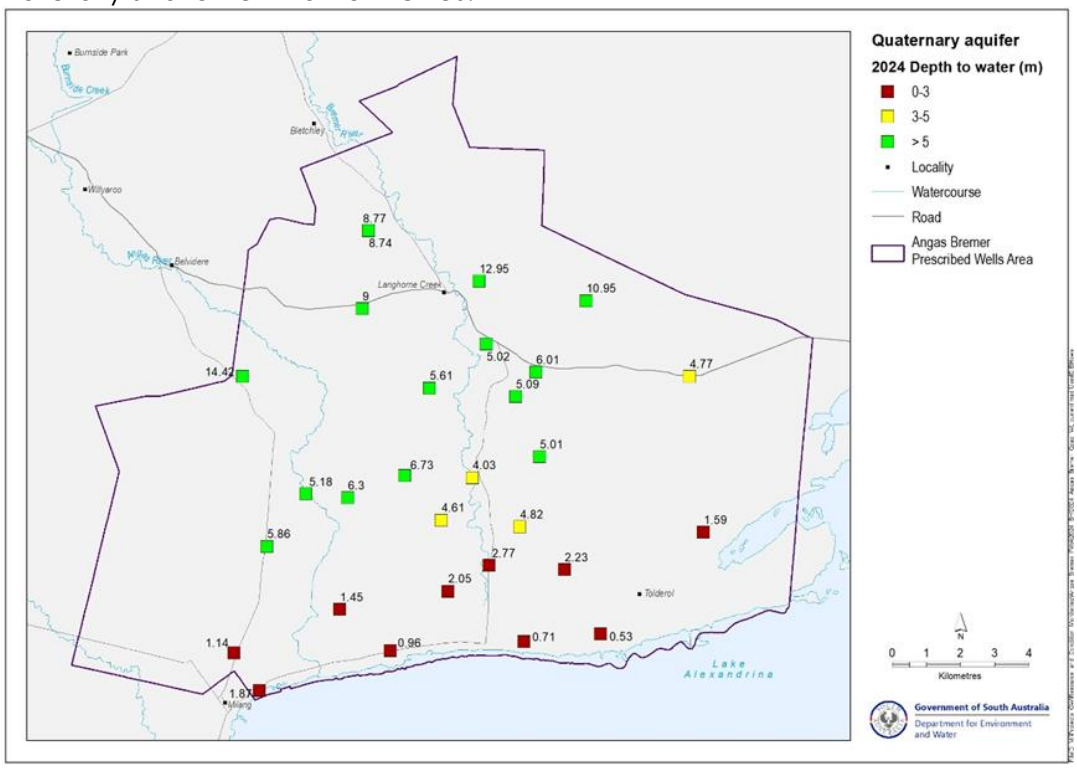


Figure 20: Quaternary aquifer water levels 2024

MGL aquifer salinity (current)

In 2024, irrigators provided groundwater samples from 28 wells. Of these, 54% of wells have salinity in the range 1,500–3,000 mg/L while 28% of wells have salinity less than 1,500 mg/L. The salinity distribution in the MGL aquifer shows low-salinity groundwater is available in limited areas, traditionally within narrow zones parallel the Angas and Bremer Rivers. Groundwater salinity greater than 1,500 mg/L is typical of the MGL aquifer, which is generally greater than the salinity tolerance threshold for wine grapes.

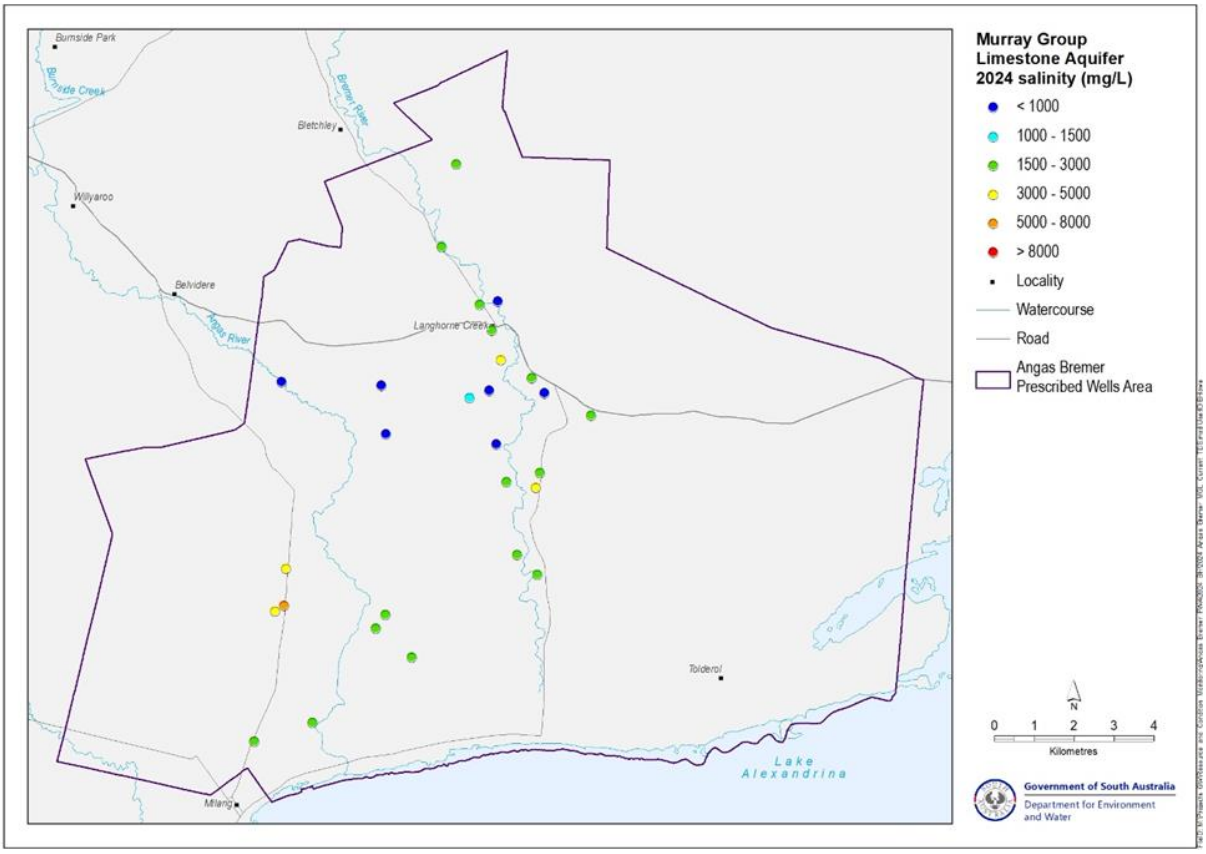


Figure 21: Murray Group Limestone aquifer salinity 2024

MGL aquifer salinity (2020–2024)

Salinity monitoring for the period 2020–24 shows variable 5-year trends – 6 wells have an increasing trend; 9 wells have a stable trend and 2 wells have a decreasing trend. Wells with a salinity record of at least five years' length are generally located adjacent to the Bremer River where most of the groundwater extraction occurs. Short-term fluctuations in groundwater salinity are mainly due to managed aquifer recharge operations.

Irrigators from across the area are actively encouraged to participate in the Department for Environment and Water's (DEW's) annual groundwater sampling program. Groundwater data submitted by irrigators helps to augment data from DEW's groundwater monitoring network, enabling a more informative presentation of salinity trends to support planning and management of the region's water resources.

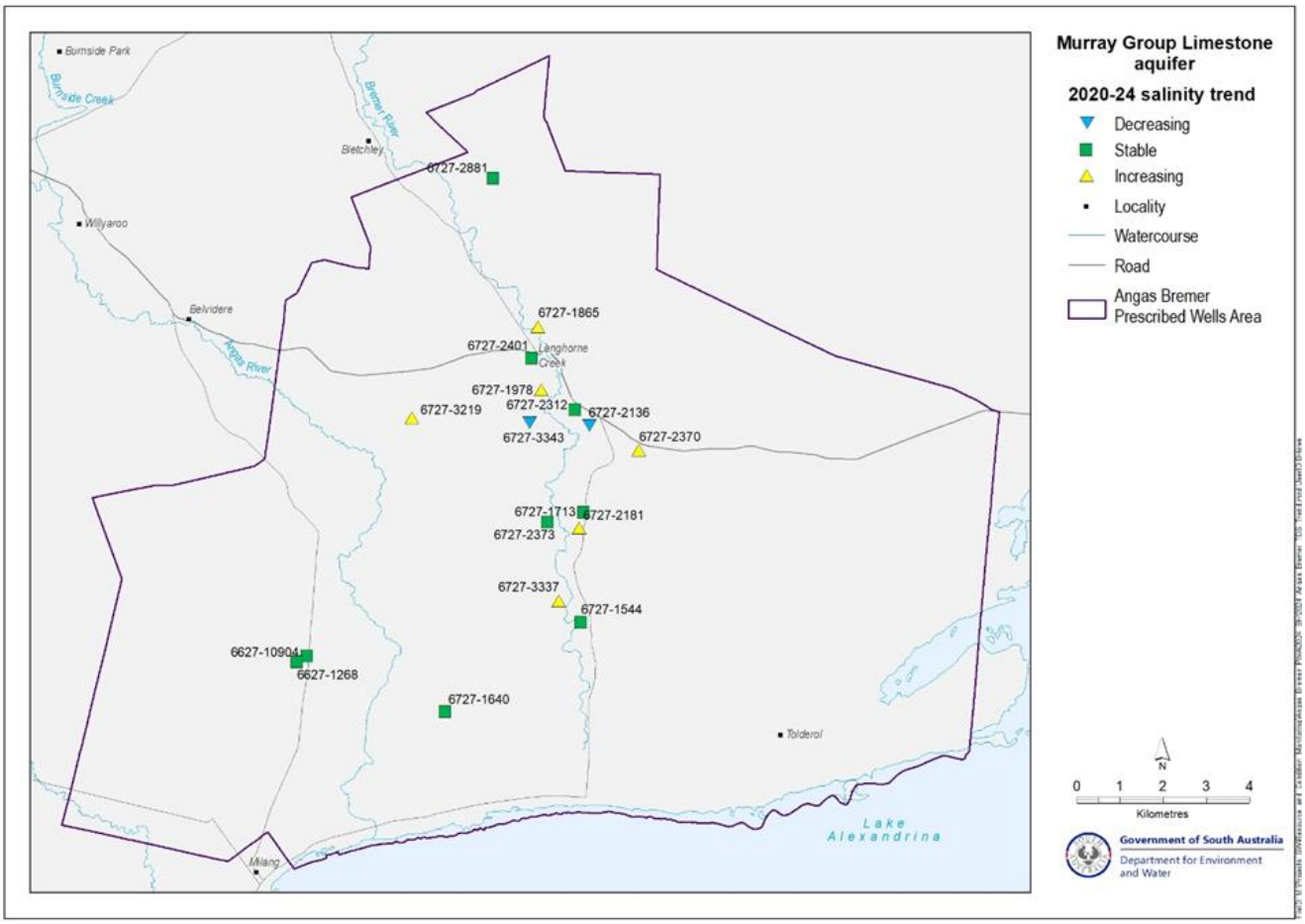


Figure 22: Murray Group Limestone aquifer salinity trend 2020 to 2024

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

Wednesday 28th August, 2024 at 7:00pm.

The Langhorne Creek Bowling Club, Langhorne Creek.

Attendees: Barry Potts, Justin Cleggett, James Stacey, Tim Follett, Trevor McClean, George Borrett, Andrew Smith, Sam Borrett, Paul Wainwright, Robyn Grey-Gardiner, Lauren Nicholson (Guest Speaker), Dr Tiffany Nay (Guest Speaker), Tim Gubbin (Guest Speaker) Leah Hunter, Keren Stagg

Apologies: Sarah Keough, Jenny Venus, Rob Cranwell, Nick Whiterod, Michael Cutting, Nicole Clarke.

1. Opening Address

The meeting was opened at 7:17pm by Barry Potts, Presiding Member who welcomed all attendees and guest speakers Dr Tiffany Nay, Tim Gubbin and Lauren Nicholson to the meeting.

Barry then thanked the Committee for their contribution over the past year.

2. Minutes of the last Annual Public Meeting

A motion was raised that the minutes from the 2023 APM be accepted.

Moved: George Borrett Seconded: Trevor McLean
All were in favour.

3. Presiding Member Annual Report

The 2023-24 Annual Presiding Member Report was presented by Barry Potts which included the following:

- Landscape Hills & Fleurieu and the Murraylands & Riverland Landscape Board continued to support the ABWMC and IAR with a combined total of $64,518 in funding ($29,324 for 2023-24 and $30,194 for 2024-25). The Murraylands & Riverland Landscape Board also offered an additional $5,000 for future website and IAR database upgrades. Barry thanked both Landscape Boards for their ongoing support.
- Several ABWMC members met with Lian Jaensch, Tom Mowbray, and Warren Jacobs to discuss the EMLR WAP review. The consultation and community engagement phase took place in early 2024, and the WAP amendment process

commenced in March 2024. The ABWMC has requested continued involvement in the WAP amendment process.

- Throughout 2023-24, the ABWMC also continued their work on the following:
    - Liaising with the EPA and Mt Barker Council regarding concerns about water quality from the Mt Barker WTP and the timing and capacity of its proposed upgrade.
    - Seeking a simplified explanation of the Take Rules, including an alert system for when water can be taken.
    - Continuing to monitor revegetation requirements for the ABIRA landholders until the EMLR WAP review is complete.

4. Summary of 2023/2024 Irrigation Annual Report - Leah Hunter

Leah Hunter presented a summary of the 2023/2024 IAR data received to date, noting that reports were still being submitted in both online and paper formats. She also highlighted that the graphs shown during her presentation were based on the online reporting data received so far.

Reported data as of 28 August 2024 showed:

- 126 reports (95% of the total reports due) had been received. Of these, 106 reports (80% of the total reports due) were submitted online vs 103 online reports last year. Leah thanked everyone who submitted their reports online and on time and mentioned that she will be following up on any outstanding reports.
- Interim data showed a slight drop in total water use which was the lowest since 2017. Ground water dropped by 67ML, Surface water dropped by 118ML and recharge dropped by 357ML. River Murray water increased by 494ML.
- There were 3 records of flooding during 2023-24, 2 in July 2023, 1 in September 2023, with a total of 48 Ha flooded.
- Data received so far is showing an increase in the number of people irrigating lucerne, cereal, and fodder pasture, as well as an increase in those irrigating grapes. However, the numbers have not yet returned to the levels seen in 2022. The area of grapes under irrigation is currently 5,339 hectares, which is an increase from 4,969 hectares at the same time last year.

The final IAR is due for completion in December 2024. Once finalised it will be posted on the ABWMC website, and a link will be sent to all irrigators.

Leah thanked all members for their contribution and for staying on the committee. She also thanked Landscape Hills and Fleurieu and Murraylands and Riverland Landscape Board for continuing to fund the group.

Barry thanked Leah for her presentation.

5. Financial Report – Justin Cleggett, Treasurer

The Annual Financial Report of the ABWMC Committee 2023-24 was presented by Justin Cleggett.

Moved: George Borrett Seconded: Barry Potts
All were in favour.
Justin thanked Keren and Leah for their efforts.
Barry thanked Justin for delivering the Treasurer's report.

6. Introducing the CLLMM Research Centre, Dr Tiffany Nay, Communication and Engagement Coordinator, CLLMM research centre

Barry introduced Dr Tiffany Nay who delivered a presentation on the new CLLMM Research Centre which opened in July 2023.

Barry thanked Tiffany for her presentation.

7. EPA Monitoring Presentation, Tim Gubbin, Senior Environment Protection Officer, Environment Protection Authority

Barry introduced Tim Gubbin who delivered a presentation on Ammonia Toxicity Testing on behalf of Peter Goonan, Principal Scientific Officer, Aquatic Biology, EPA.

Bivalves will be introduced into the Mt Barker Creek during 2024-25 to monitor the effects of high ammonia levels upstream and downstream from the Mt Barker Council Wastewater Treatment Plant.

Barry thanked Tim for his presentation.

8. Review of the Eastern Mount Lofty Ranges Water Allocation Plan, Lauren Nicholson, Senior Water Planner, Landscapes Hills & Fleurieu

Barry introduced Lauren Nicholson who delivered a presentation on the EMLR WAP review.

The EMLR WAP review will include specific issues such as Angas Bremer Flood Take Rules, ABIRA policies, Redgum swamp health and salinity management.

There will be a staged amendment approach with Stage 1 due 2027 and Stage 2 due 2029. An EMLR WAP review advisory committee will be set up some time during 2025 and the ABWMC has indicated that they would like to have a seat on this committee.

Barry thanked Lauren for her presentation.

9. Election of ABWMC members

The Angas Bremer Water Management Committee constitution requires 5 to 10 elected members. Three positions were carried over from the previous committee, and nominations were called for up to six positions.

Members mid-way through their term and continuing are: Barry Potts, George Borrett and Tim Follett.

Members renominating are: Michael Clements, Trevor McLean, Justin Cleggett, Robyn Grey-Gardiner (HFLB representative).

A motion was raised to accept the renominating members.

Moved: Barry Potts Seconded: George Borrett

All were in favour.

Retiring committee members James Stacey and Michael Cutting were thanked by Barry for their service.

No new written nominations were received prior to the APM.

Two nominations were received from the floor: Sam Borrett (nominated by James Stacey, seconded by Justin Cleggett) and Andrew Smith (nominated by Barry Potts, seconded by George Borrett). Both were accepted unanimously.

Barry congratulated both Sam and Andrew and welcomed them to the committee.

10. General Business

None recorded.

11. Meeting Close

Barry thanked all for attending the meeting which closed at 9:46pm. All who were present were invited to stay for a light supper.

Financial Accounts 2023-24

ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

FINANCIAL STATEMENTS

FOR THE YEAR ENDED JUNE 30, 2024

"STATEMENT OF PROFIT OR LOSS"

STATEMENT OF FINANCIAL POSITION

NOTES TO THE FINANCIAL STATEMENTS

STATEMENT BY THE MANAGEMENT COMMITTEE

REPORT BY THE MANAGEMENT COMMITTEE

SUMMARY OF PROJECT FINANCIAL PERFORMANCE

ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

STATEMENT OF PROFIT OR LOSS

FOR THE YEAR ENDED JUNE 30, 2024

	2024		2023	
INCOME	**$**	**$**	**$**	**$**
Grants				
Grants (State) Op-Non Rec	29,324.01		27,609.00	
Total Grants		29,324.01		27,609.00
Interest-Unrestricted		225.08		98.84
Total Income		**29,549.09**		**27,707.84**
EXPENSES				
Advertising & Promotion		232.91		263.64
Assets Purchased		0.00		0.00
Client Support Services				
CSS Project Co-ord/Manag	26,993.66		25,783.25	
Total Client Support Services		26,993.66		25,783.25
Computer Expenses		546.49		327.45
Insurance		699.37		623.41
Meetings Expense		390.72		349.54
Postage, Freight & Courier		233.82		97.68
Printing & Stationery		0.00		12.27
Telephone, Fax & Internet Exp		227.04		151.76
Total Expenses		**29,324.01**		**27,609.00**
Net Surplus / (Deficit)		**225.08**		**98.84**

ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

STATEMENT OF FINANCIAL POSITION

FOR THE YEAR ENDED JUNE 30, 2024

	2024	2023
CURRENT ASSETS	**$**	**$**
Cash at Bank (Unrestricted)	12,810.08	10,345.38
Accounts Receivable	3,225.64	25,616.48
Prepayments	421.86	196.76
TOTAL CURRENT ASSETS	16,457.58	36,158.62
TOTAL ASSETS	**16,457.58**	**36,158.62**
CURRENT LIABILITIES		
Accounts Payable	8,857.19	6,024.55
Deferred Revenue	0.00	20,526.81
Accrued Expenses	30.00	60.00
GST Payable	293.24	2,329.00
Less GST Receivable	(805.87)	(547.68)
GST Clearing	(793.00)	(885.00)
TOTAL CURRENT LIABILITES	**7,581.56**	**27,507.68**
NET ASSETS	**8,876.02**	**8,650.94**
EQUITY		
Unexpended Funds as at July 1, 2023	8,650.94	8,552.10
Current Year Surplus (Deficit)	225.08	98.84
Unexpended Funds as at June 30, 2024	**8,876.02**	**8,650.94**

ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

NOTES TO THE FINANCIAL STATEMENTS

FOR THE YEAR ENDED JUNE 30, 2024

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 107 - Statement of Cash Flows

AASB 108 - Accounting Policies, changes in accounting estimates and errors

AASB 1048 - Interpretation and application of Standards

AASB 1058 - Income of Not for profit entities

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.

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 30/6/24;

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 30/6/24;

(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: ..... Signed: .....

Barry Potts, Chairperson Justin Cleggett, Treasurer

Date: 22/7/24 Date: 22/7/24

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, 2024:

(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: .....

Barry Potts, Chairperson

Date: 22/7/24

Signed: .....

Justin Cleggett, Treasurer

Date: 22/7/24

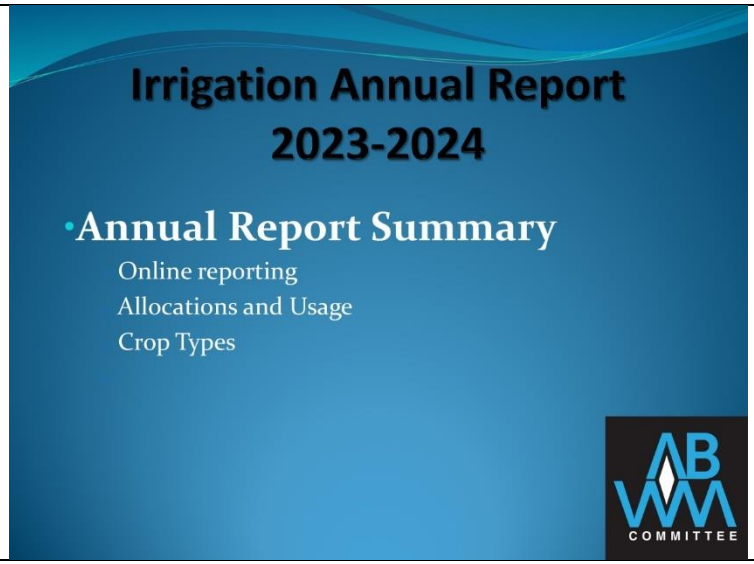
ANGAS BREMER WATER MANAGEMENT COMMITTEE INC.

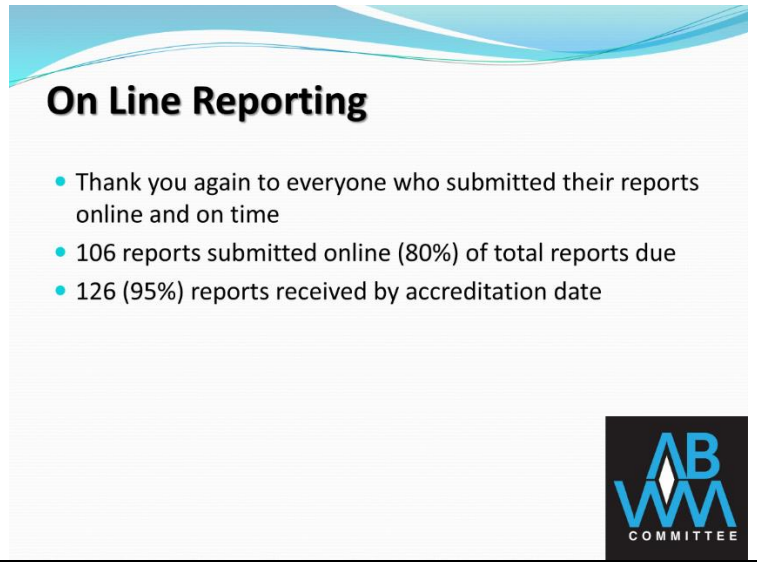
PROJECT INCOME, EXPENDITURE AND BALANCES

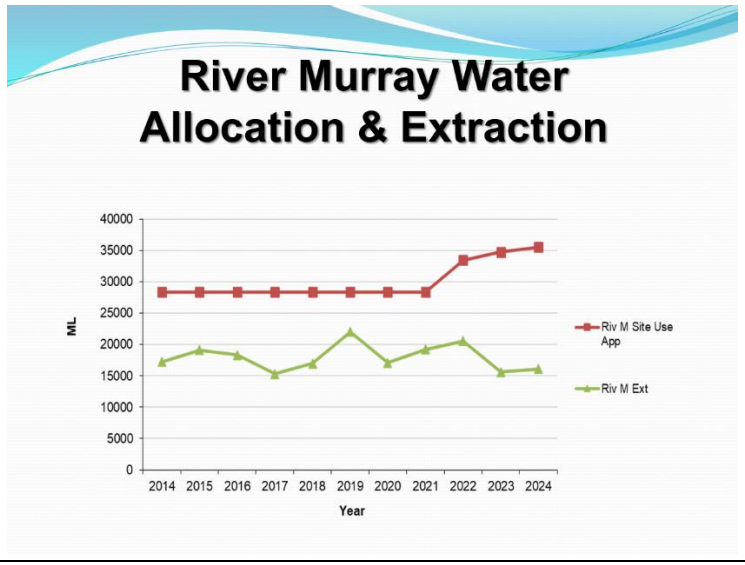
FOR THE YEAR ENDED JUNE 30, 2024

Project Name	Balance at June 30, 2022	Total Income	Total Expenses	Balance at June 30, 2023
ABIRA funds	7,570.30	0.00	0.00	7,570.30
Angas Bremer Water Management Committee Funds	1,080.64	225.08	0.00	1,305.72
Irrigation Annual Reporting Project - 2023-24 funding	0.00	29,324.01	29,324.01	0.00
Totals	**8,650.94**	**29,549.09**	**29,324.01**	**8,876.02**

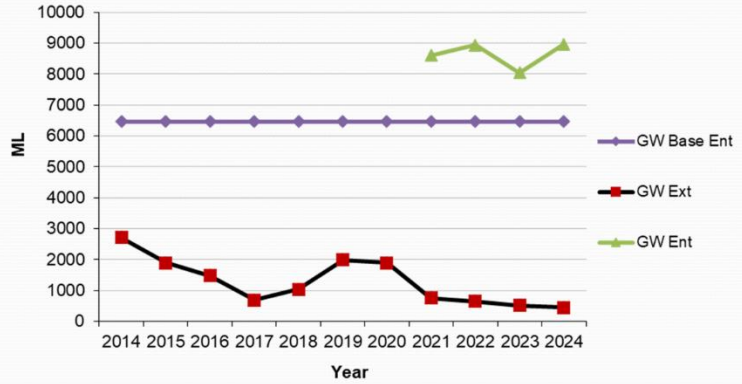
Appendix A – **Angas Bremer Irrigation Management Zone 2023-2024 Interim Annual Report,** Leah Hunter.



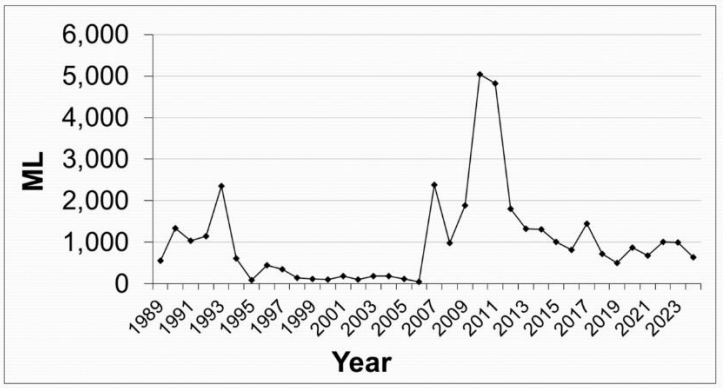




Groundwater Allocation & Extraction

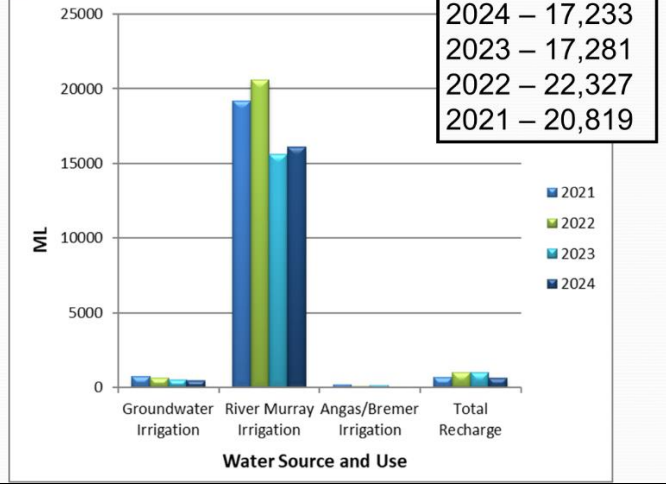


Volume Recharged to Aquifer 1989-2024

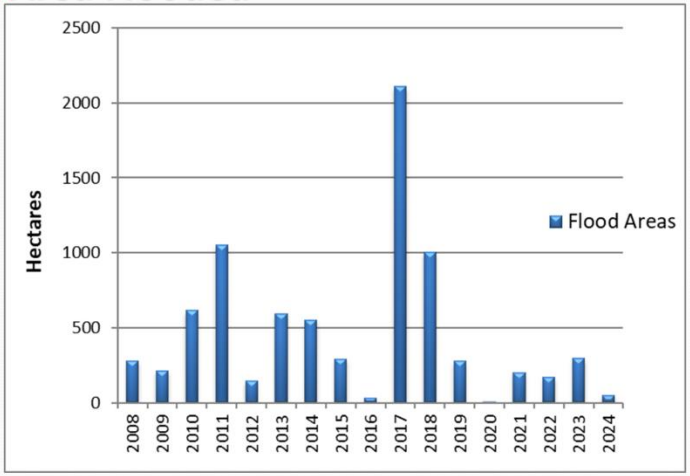


Total Water Use

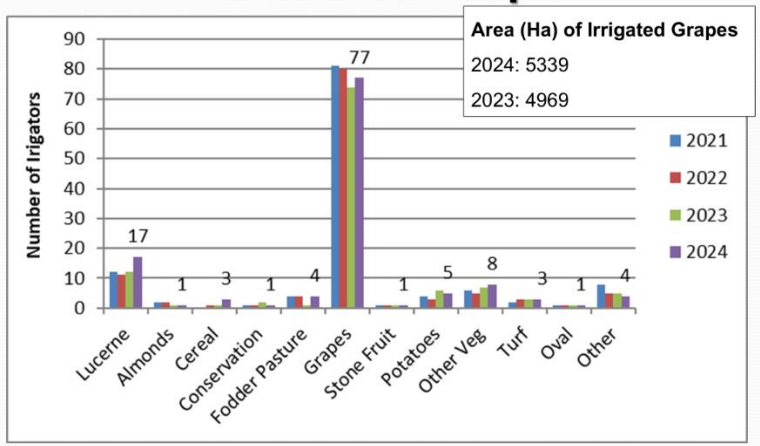
Total use: (ML)
2024 – 17,233
2023 – 17,281
2022 – 22,327
2021 – 20,819



Area Flooded



Number of Irrigators for Different Crops



Full Annual Report

- All final graphs and further explanation in Annual Report due December.
- Email will be sent out with a link to the report on the Angas Bremer Water Management Committee Website angasbremerwater.org.au

- Thank you to all the Angas Bremer Water Management Committee members.
- Thank you to both the Hills and Fleurieu and the Murraylands and Riverland Landscape Boards for continuing to fund the Annual Irrigation reporting process and for providing technical information to the committee.

Appendix B — **Introducing the CLLMM Research Centre, Dr Tiffany Nay,** Communication and Engagement Coordinator, CLLMM research centre

CLLMM RESEARCH CENTRE

Acknowledgementof Country

Aboriginal people are the First Peoples and Nations of South Australia. The Coorong, connected waters and surrounding lands have sustained unique First Nations cultures since time immemorial.

The Goyder Institute for Water Research acknowledges the range of First Nations' rights, interests and obligations for the Coorong and connected waterways and the cultural connections that exist between Ngarrindjeri Nations and First Nations of the South-East peoples across the region and seeks to support their equitable engagement.

Aboriginal peoples' spiritual, social, cultural and economic practices come from their lands and waters, and they continue to maintain their cultural heritage, economies, languages and laws which are of ongoing importance.

www.cllmmresearchcentre.org

GOYDER INSTITUTE FOR WATER RESEARCH

The Goyder Institute for Water Research is a research partnership of the South Australian Government through the Department for Environment and Water, CSIRO, Flinders University, the University of Adelaide and the University of South Australia

The Institute facilitates governments, industries, and leading researchers to collaboratively identify, develop and adopt innovative solutions for complex water management challenges to ensure a sustainable future

Government of South Australia, Department for Environment and Water · CSIRO · Flinders University · The University of Adelaide · University of South Australia

www.cllmmresearchcentre.org

Introducing the CLLMM Research Centre

- The Australian Government has committed $8 million over 4 years from 2022–23 to work with communities to investigate the impacts of climate change on the Coorong, Lower Lakes and Murray Mouth (CLLMM) region.
- Announced by Federal Minister for the Environment and Water, the Honourable Tanya Plibersek, in October 2022, following the advocacy of Rebekha Sharkie MP, Deputy Premier Susan Close and local community.
- The CLLMM Research Centre entered its establishment phase on 1st July 2023

Government of South Australia, Department for Environment and Water · CSIRO · Flinders University · The University of Adelaide · University of South Australia

www.cllmmresearchcentre.org

CLLMM Research Centre Purpose and Vision

"An important part of the Goyder Institute's work will be to develop relationships with First Nations, communities and industries to harness ideas to improve management of this ecologically important area."

Minister Plibersek, 6 October 2022

- The Centre will provide a base for the team and researchers, as well as a central point to host community discussions and forums, education events for all ages and provide an immersive experience through virtual and augmented reality to deepen connections with the local environment to create and share knowledge

CLLMM Research Centre Objectives

- Establishing locally-driven, innovative, and impactful knowledge creation and exchange
- Bring together our First Nations, local community, government and scientists
- Support our well-informed and engaged community
- Empower our future generations to be part of the solution
- Showcase the region as a leader of locally driven knowledge creation and exchange that informs management.

www.cllmmresearchcentre.org

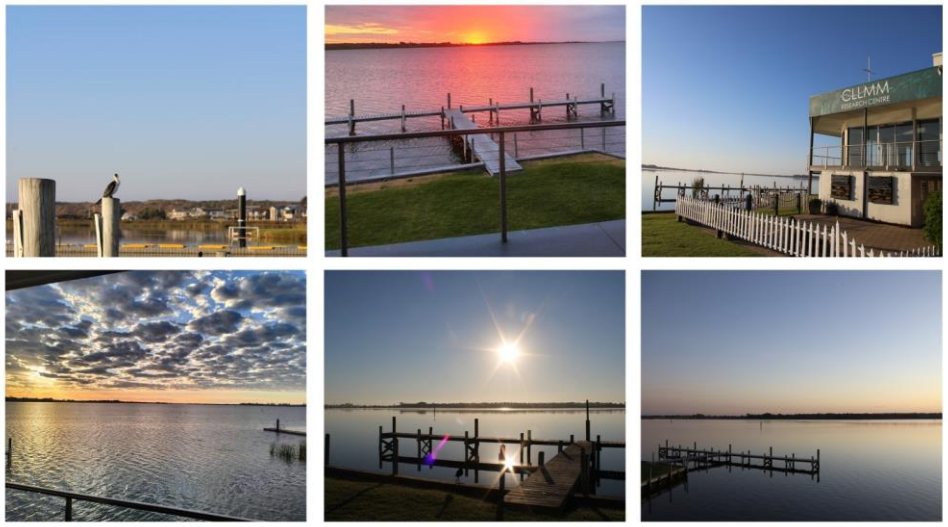
The team

Jane French
Centre Manager

Nick Whiterod
Science Program Manager

Tiffany Nay
Communications & Engagement Coordinator

Kyla McHughes
First Nations Engagement Officer


CLLMM
RESEARCH CENTRE

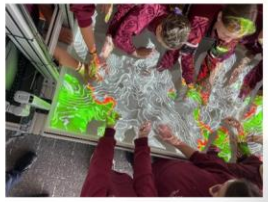

Community even


First Nations
CLLMM
RESEARCH CENTRE


Education

Immersive experience as a platform to convey changes across the region

- Aim: *establishing an immersive platform is a novel way to showcase the region and the research of the CLLMM Research Centre*

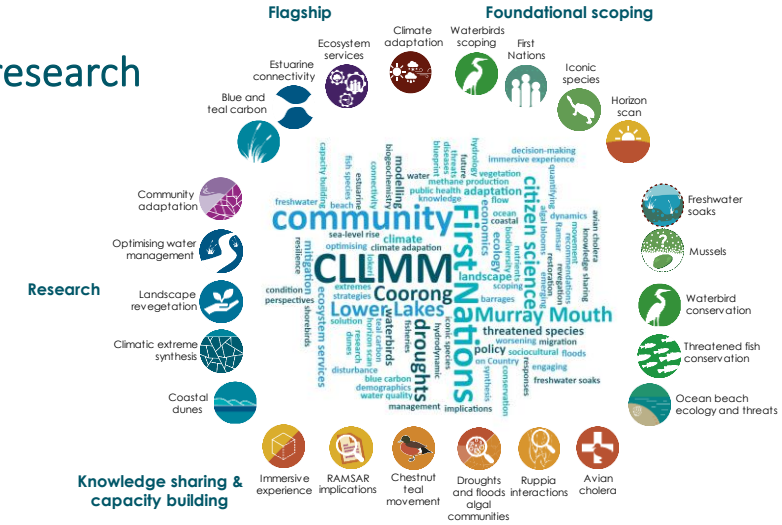




Developing the research

Delivering the research

- Currently, 24 projects with social, ecological, economic and cultural focus
- Collaborative approach by multi-disciplinary teams
  - *96 world-leading & committed scientists (15 from the region)*
  - *More than 10 regional organisations (currently) as partners & 15 regional organisations on Research Centre Advisory Forum*
  - *Embedded community and First Nations expertise*
- Varied opportunities for participation in all projects


The research



CLLMM RESEARCH CENTRE

• Aim
regi

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CLLMM RESEARCH CENTRE

Community adaptation to worsening droughts and floods in the CLLMM

• Aim: *collaborating with communities in planning climate adaptation responses to the impacts of increased drought and flooding*



CLLMM RESEARCH CENTRE

Ecological response to climatic extremes: a review of studies in the CLLMM region

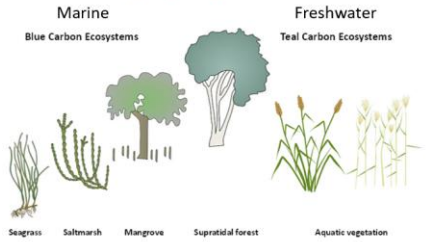
• Aim: *reviewing of ecological responses to climate extremes to guide ecosystem management under future climates*

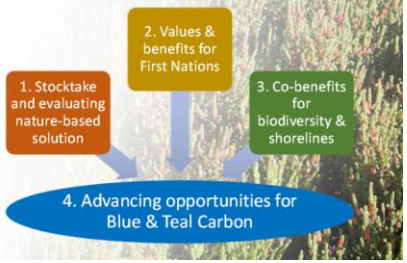


CLLMM RESEARCH CENTRE

Blue and teal carbon potential in the Coorong, Lower Lakes and Murray Mouth

• Aim: *establish the carbon storage potential as a solution to mitigate climate change impacts, and to explore the benefits of wetland restoration for people and nature*





CLLMM RESEARCH CENTRE

Ecosystem responses and sociocultural perspectives on CLLMM landscape revegetation

- Aim: *evaluate the ecosystem responses to historical landscape revegetation, assess the sociocultural perspectives of landscape revegetation and future recommendations*


CLLMM RESEARCH CENTRE

Reconnecting the waters: exploring barrage transparency as a mechanism to improve ecosystem health and climate resilience

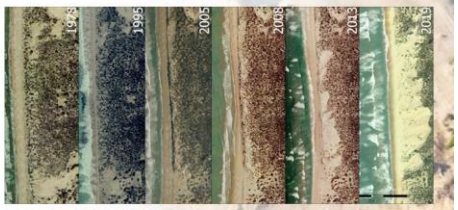
- Aim: *explore benefits and risks associated with more flexible barrage operation to promote improved connection*



CLLMM RESEARCH CENTRE

Coastal beach-dune dynamics and management in the CLLMM under future climate change

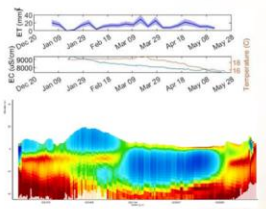
- Aim: *understanding beach-coastal dune conditions, the future rates of dune migration, and the mitigation strategies*

CLLMM RESEARCH CENTRE

Hydrology of freshwater soaks on the Younghusband Peninsula in a changing climate

- Aim: *establishing a water balance for freshwater soaks, and understanding hydrologic change under future climate*

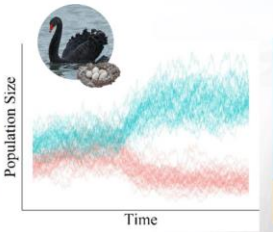

Ocean beach ecology and threats: a stakeholder perspective

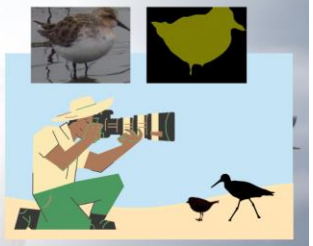
- Aim: *understanding the values & potential conflicts and threats from human activities & climate threats*



Conserving waterbird populations of the CLLMM and broader landscape under climate change

- Aim: *integrating field research of movement, modelling and citizen science to inform the waterbird management under climate change*



Investigation into the outbreak of avian cholera in the Coorong

- Aim: *documenting the outbreak, raising awareness and collectively exploring management responses whilst building research capacity*

Horizon scanning for emerging research topics to guide future management

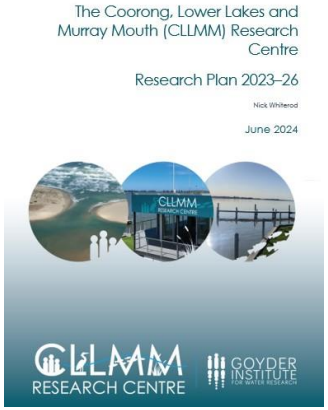
- Aim: *engaging stakeholders to identify emerging challenges, and opportunities that will shape management into the future*

Further Information

info@cllmmresearchcentre.org

www.cllmmresearchcentre.org

Facebook: CLLMMResearchCentre



Appendix C — **EPA Monitoring Presentation - Tim Gubbin,** Senior Environment Protection Officer, Environment Protection Authority

Environment Protection Authority South Australia

Ammonia toxicity testing

Tim Gubbin
Senior Environmental Advisor

Presenting on behalf of
Peter Goonan Principal Scientific Officer
(Aquatic Biology)

www.epa.sa.gov.au

EPA South Australia

Background

- Aim was to identify the ammonia concentration causing 50% mortality (LC50 value) and estimate the concentration that protected 99% of aquatic species.
- Collaboration with Luke Mosley (academic) and Danielle Allen (PhD student) from UoA, Anu Kumar (CSIRO) and Peter Goonan Principal Scientific Officer (Aquatic Biology) of the EPA.
- Project used our joint water quality testing site at the Waite institute.
- Design comprises 6 header tanks, each flow down 3 x 6m long channels into 6 receiver tanks with pumps installed to recirculate water continuously.
- 6 concentrations can be tested using this design.
- Previous successfully completed studies include salinity effects on a type of algae called diatoms (ca 960 mg/L) and the amount of fine sediment causing harm to invertebrates and diatoms (1mm).
- Ammonia toxicity experiments carried out 21-23 March 2023 (2 days) and 13-17 November 2023 (4 days) as part of Danielle's PhD.

Next steps

- EPA currently trying to source a large number of bivalves (*Corbiculina*) to install in cages upstream and downstream from the Mt Barker discharge to assess survival against the ammonia concentration in the creek.
- Plan to assess the responses of this species to ammonia during a summer (2024) and winter exposure period (2025).
- Will continue post Stage 1 upgrade to assess improvement and inform requirements for a Stage 2 upgrade.
- Likely to also include work on stream invertebrate communities in flowing riffles and stillwater pool habitats at the same time, so see what broader responses are evident with varying ammonia concentrations; other water quality and habitat measures will also be assessed.
- Any suggested locations (landowner contact details) to access for sampling upstream and downstream in Mt Barker Creek would be appreciated!

Appendix D — **Review of the Eastern Mount Lofty Ranges Water Allocation Plan - Lauren Nicholson**, Senior Water Planner, Landscapes Hills & Fleurieu

Water Allocation Plan Update

Hills and Fleurieu Landscape Board

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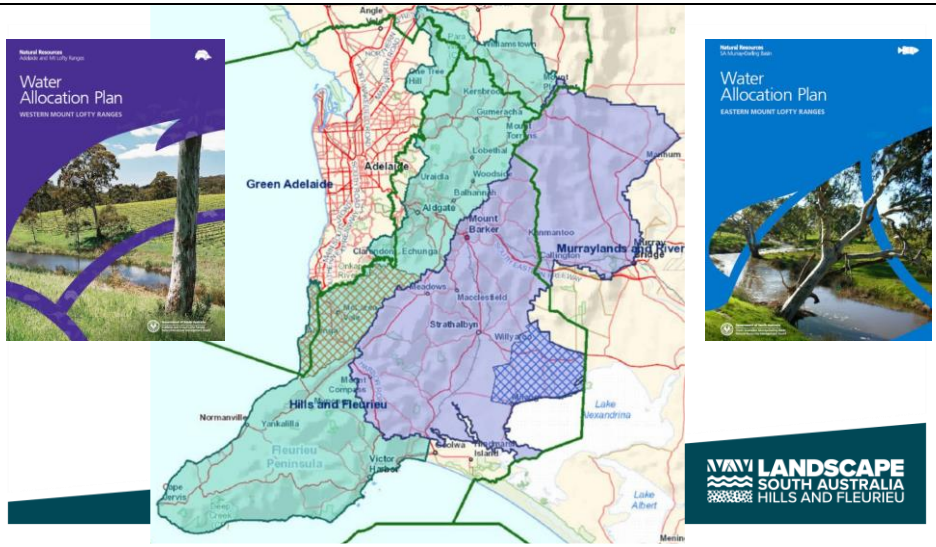
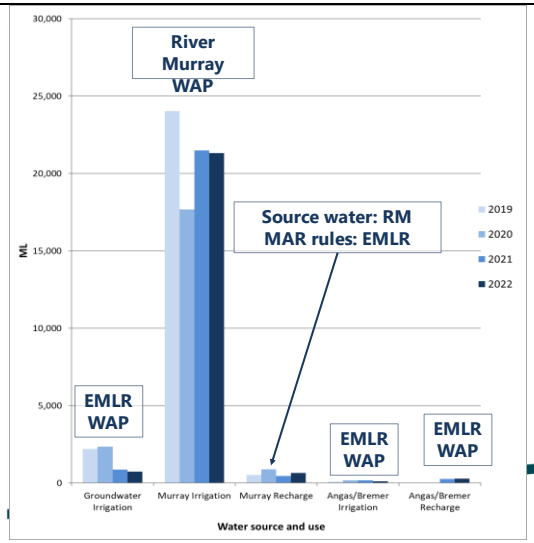


LANDSCAPE SOUTH AUSTRALIA HILLS AND FLEURIEU



Water resources used in the Angas Bremer

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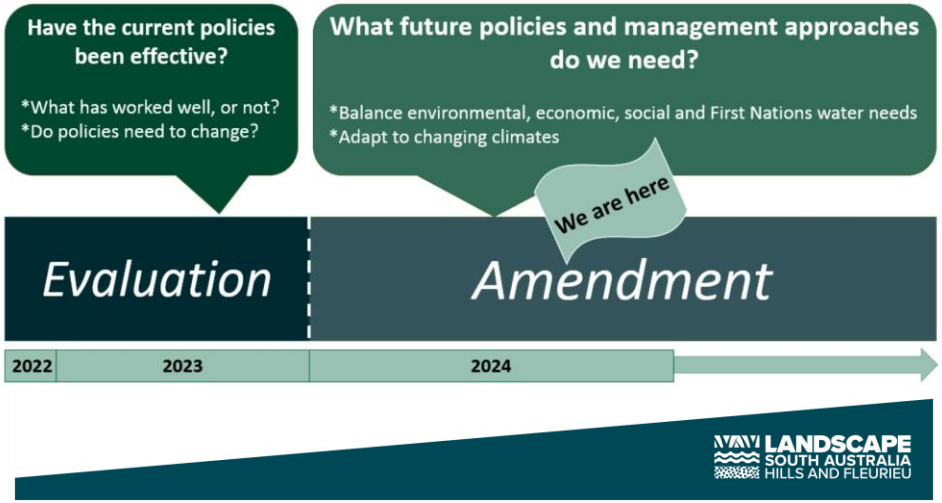

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Purpose of the WAP Evaluation

- **Key question 1:** Has the WAP been successful in achieving the outcomes it set out to achieve?
- **Key question 2:** Does the WAP remain appropriate going forward, or does it require amendment?

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Purpose of the WAP Evaluation

- **Key question 1:** Has the WAP been successful in achieving the outcomes it set out to achieve?

Partly- has not achieved environmental objectives

- **Key question 2:** Does the WAP remain appropriate going forward, or does it require amendment?

Amendments required- address gaps, update science

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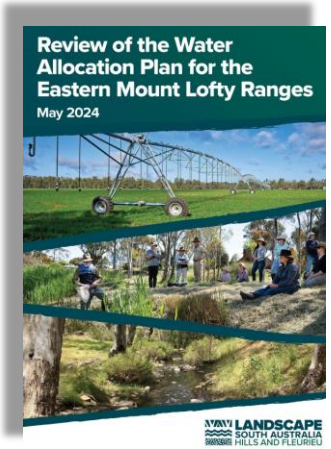

Amendment Focus Areas

- New information, policies, approaches.
- Full report lists ~3 pages of Focus Areas.
- Available on our website

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Amendment Focus Areas

❖Resource Capacity, baseline climate periods

❖Revised environmental objectives

❖First Nations water values

❖Address over-allocation

❖Non-licensed water use (stock and domestic, forestry)

LANDSCAPE SOUTH AUSTRALIA HILLS AND FLEURIEU

Amendment Focus Areas

- ❖Resou
- ❖Revise
- ❖First N
- ❖Addre
- ❖Non-l forestr

PLUS- Region specific issues too

- Angas Bremer Flood Take rules
- ABIRA policies
- Redgum swamp health
- Salinity management

.....And more!

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Timeline from here

*Amendment work underway, scoping key science.

*Targeting a staged amendment approach:
~ Stage one 2027
~ Stage two 2029

**Business as usual until new WAP adopted.*

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How to keep in the loop

Contact us directly–

HFWaterTeam@sa.gov.au

Phone: 8391 7500
Website: www.landscape.sa.gov.au/hf/

Or, liaise through Angas Bremer Water Management Committee

******More information to come as amendment progresses******

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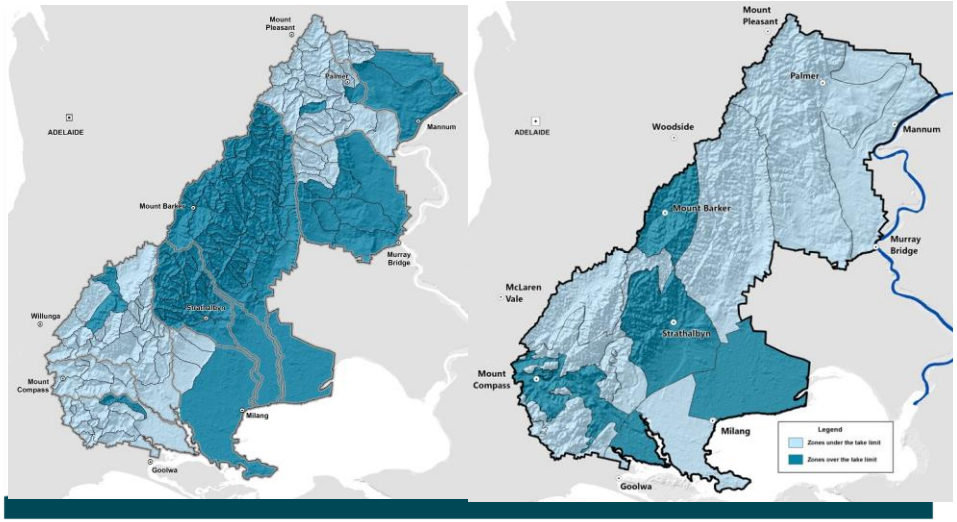
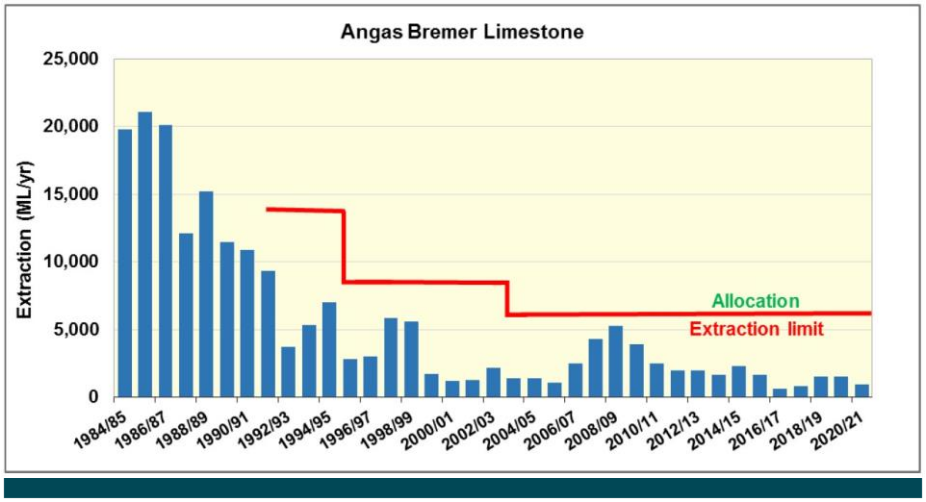
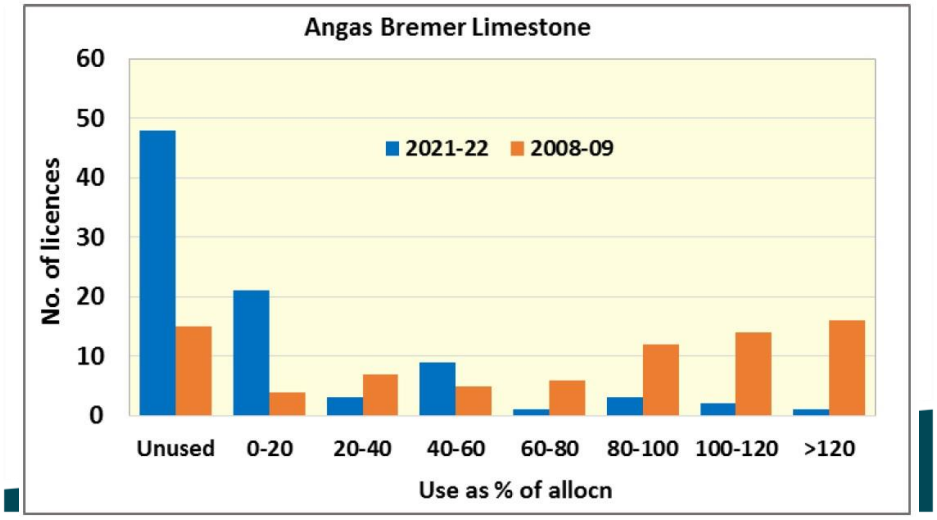
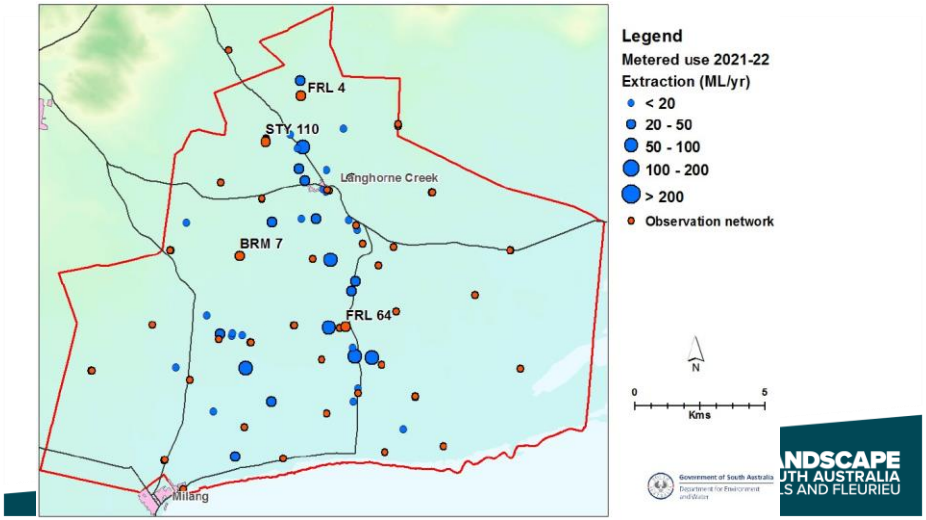
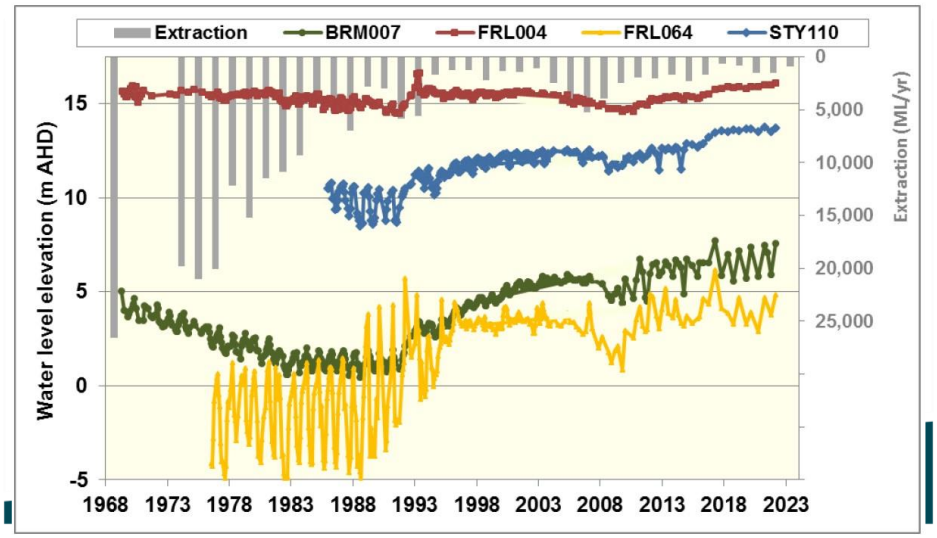
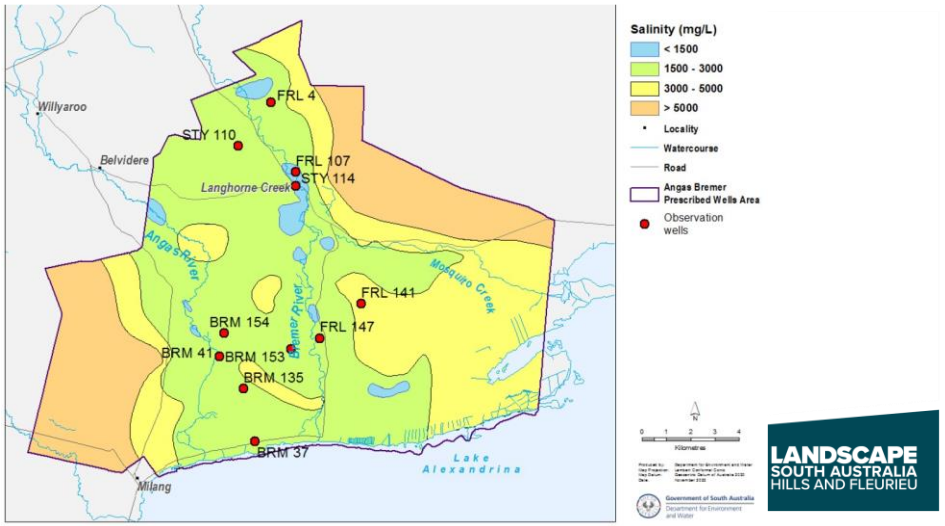

Mount Pleasant
Palmer
Mannum
ADELAIDE
Mount Barker
Murray Bridge
Strathalbyn
Willunga
Mount Compass
Milang
Goolwa
Woodside
McLaren Vale
Legend
Zones under the take limit
Zones over the take limit


Angas Bremer Limestone
Extraction (ML/yr)
25,000
20,000
15,000
10,000
5,000
0
Allocation
Extraction limit
1984/85
1986/87
1988/89
1990/91
1992/93
1994/95
1996/97
1998/99
2000/01
2002/03
2004/05
2006/07
2008/09
2010/11
2012/13
2014/15
2016/17
2018/19
2020/21


Angas Bremer Limestone
No. of licences
60
50
40
30
20
10
0
2021-22
2008-09
Unused
0-20
20-40
40-60
60-80
80-100
100-120
>120
Use as % of allocn


FRL 4
STY 110
Langhorne Creek
BRM 7
FRL 64
Milang
Legend
Metered use 2021-22
Extraction (ML/yr)
< 20
20 - 50
50 - 100
100 - 200
> 200
Observation network
N
0
5
Kms
Government of South Australia


Extraction
BRM007
FRL004
FRL064
STY110
Water level elevation (m AHD)
Extraction (ML/yr)
15
10
5
0
-5
0
5,000
10,000
15,000
20,000
25,000
1968 1973 1978 1983 1988 1993 1998 2003 2008 2013 2018 2023


Salinity (mg/L)
< 1500
1500 - 3000
3000 - 5000
> 5000
Locality
Watercourse
Road
Angas Bremer Prescribed Wells Area
Observation wells
Willyaroo
Belvidere
Langhorne Creek
Angas River
Bremer River
McQuaire Creek
Lake Alexandrina
Milang
FRL 4
STY 110
FRL 107
STY 114
FRL 141
FRL 147
BRM 154
BRM 41
BRM 153
BRM 135
BRM 37
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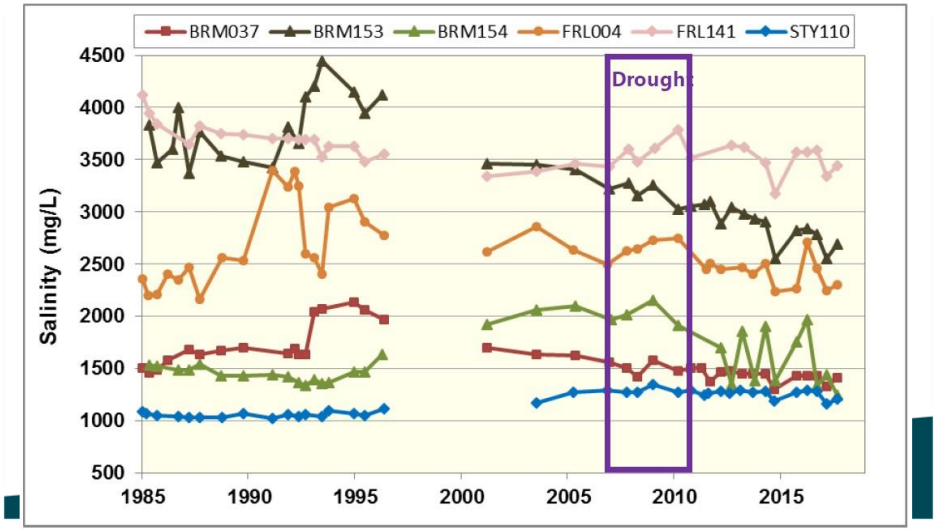
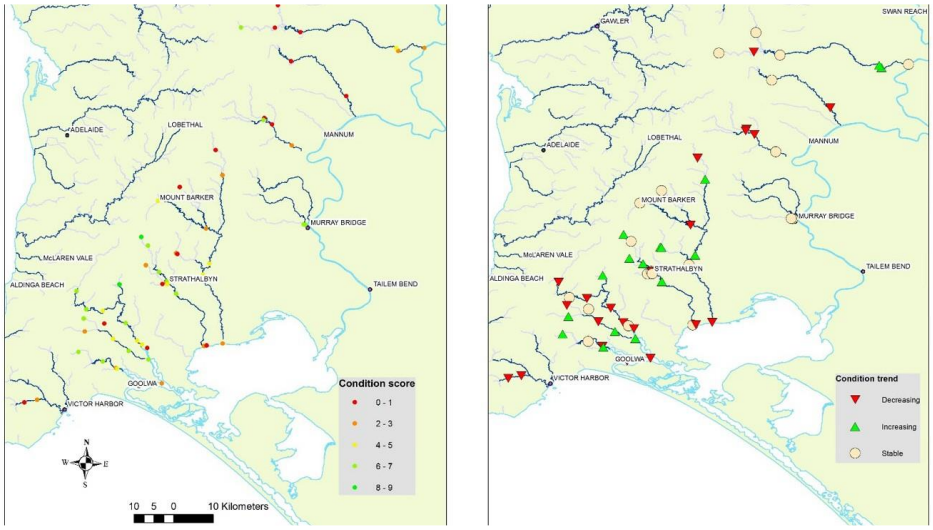
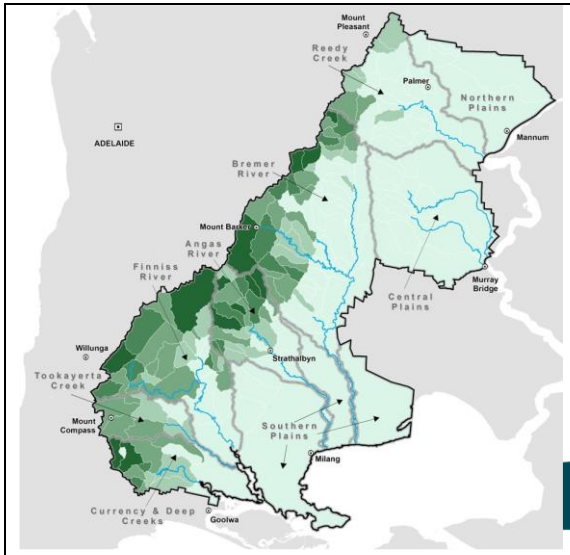

BRM037
BRM153
BRM154
FRL004
FRL141
STY110
Drought
Salinity (mg/L)
4500
4000
3500
3000
2500
2000
1500
1000
500
1985 1990 1995 2000 2005 2010 2015


ADELAIDE
LOBETHAL
MANNUM
MOUNT BARKER
MURRAY BRIDGE
McLAREN VALE
STRATHALBYN
TAILEM BEND
ALDINGA BEACH
GOOLWA
VICTOR HARBOR
Condition score
0 - 1
2 - 3
4 - 5
6 - 7
8 - 9
10 5 0 10 Kilometers
Condition trend
Decreasing
Increasing
Stable



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