Angas Bremer Irrigation

On Monday 30 August 1999, sixty of the 126 irrigators in the rapidly expanding Angas Bremer Irrigation Region of South Australia met at Langhorne Creek to compare their irrigation practices.

Every irrigator in the district had invested 30 minutes to complete a simple Irrigation Annual Report form for the irrigation season 1 July 98 to 30 June 99.

The Irrigation Annual Reports had been collated and a summary was presented to the meeting only one month after collection of all the forms.

The summary shows

- the district totals of ALLOCATED Mega Litres and ML USED,
- the number of irrigators growing each crop type
- the division between the crop types of the irrigated 5,733ha and the 16,509ML used, and
- the district average irrigation mm/yr applied to each crop type.

In the Angas Bremer district every irrigator has invested $800 to install at least one 6 metre-deep test-well to monitor the depth to the water table. Each irrigator measures this depth at least once every 3 months and reports the 4 depths for the year on the Irrigation Annual Report form.
A map showing those wells in which the water level has risen and those wells in which the water level has fallen was presented to the meeting.

A separate graph for each crop type shows the irrigation mm/yr applied with each point representing the data from one irrigator.
Each irrigator knows their own point but does not know the name of the person represented by each other point.
Each irrigator can compare their irrigation mm/yr with the irrigation mm/yr applied by every other irrigator growing the same crop type.

The community-elected Angas Bremer Water Management Committee introduced Irrigation Annual Reporting in 1996. Their goal was to encourage irrigators to record irrigation data, compare their data with other irrigators and with basic irrigation principles and hence maximise their return and minimise environmental damage from use of every kL of irrigation water.

The irrigators heard that their overwhelming support for the committee and their 100% return of Irrigation Annual Report forms has placed the Angas Bremer region at the forefront of responsible irrigation water management.
No other region in Australia can provide comparable, comprehensive, accurate, community-owned data showing how irrigation water is used in the region.

In each of the last 3 years, data has been collected by every irrigator in the region. In each year the irrigators have simplified and improved the layout of the Irrigation Annual Report form. The irrigator's data compares favourably with statistics for 1996-7 (Australian Bureau of Statistics) and with data collected by industry groups e.g. the grape industry Phylloxera Board.

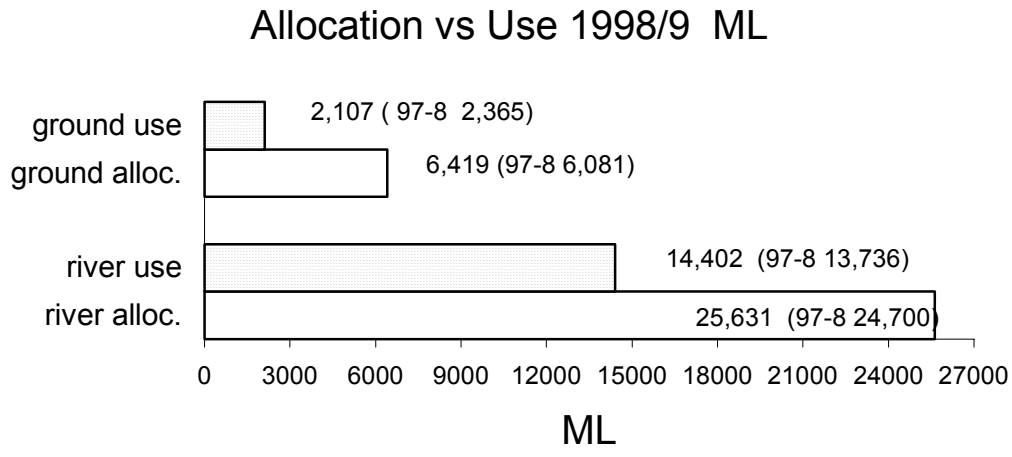
Summary of the 1998-9 Annual Irrigation Reports

The following information has been taken from the Annual Irrigation Reports submitted by Irrigators in the Angas Bremer Proclaimed Wells Area.
129 Irrigating licensees were sent Annual Irrigation Report Forms, all but 5 completed the forms, the 5, are license numbers 2162, 1032, 3257, 3243 & 3279 . As all the meters, both groundwater and river water, were read, near the end of June, the Angas Bremer Project Officer filled in report forms on behalf of those not submitting reports, using information on crop areas and crop types from other years. It was obvious from the meter readings that 2 of the above licenses have either not used any water or their meters are unserviceable.

1. Water Allocation and Water Use.

1.1 Groundwater : Groundwater allocation increased 338 ML from the information received in 97-8, while the amount of groundwater used in 98-9 fell 258 ML from the 97-8 figure. The increase in allocation is thought to be due to Irrigators correcting their allocation, not extra groundwater coming into the area.

1.2 River Murray Water : There was an increase in the area allocation of 931 ML, and a increase in usage of 666 ML, when compared to 97-8. Since the Annual Irrigation Reports have been received the Committee is aware of a further 517 ML irrigation water coming into the area.

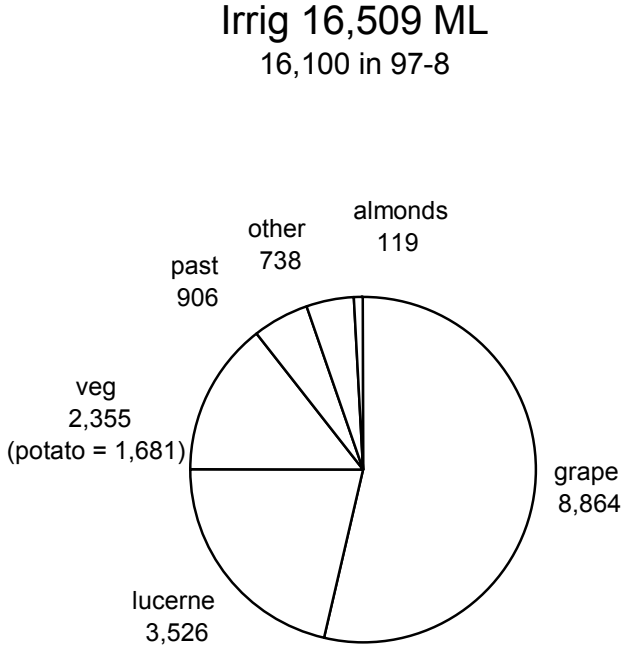


2. Irrigated Area : The total irrigated area in the A.B.P.W.A. increased by 420 ha, vineyards being the area of increase, the chart beneath shows the comparisons from the past 3 years Annual Irrigation Report data. Area is shown in Hectares.

Year	Total area	Grapes	Lucerne	Other	Vegetables	Pasture	Almonds
1996-7	3,836	2,132	741	189	358	328	88
1997-8	5,733	3,604	866	942	679	369	85
1998-9	6,153	4,084	698	555	518	241	61

note: “Other” includes, turf, ovals, cereal crops, seed crops, fruit trees, conservation, hay and a woodlot

3. Use of Irrigation Water : The water usage in the following data is a combination of both ground and river water.
The increase of irrigation water used in 98-9 is just over 400 ML. The biggest usage in vineyards, all other crops, usage less than 1997-8.
The chart following, shows the water used in each crop type, while the table, at the bottom of the page shows the comparisons with the other years data has been collected.

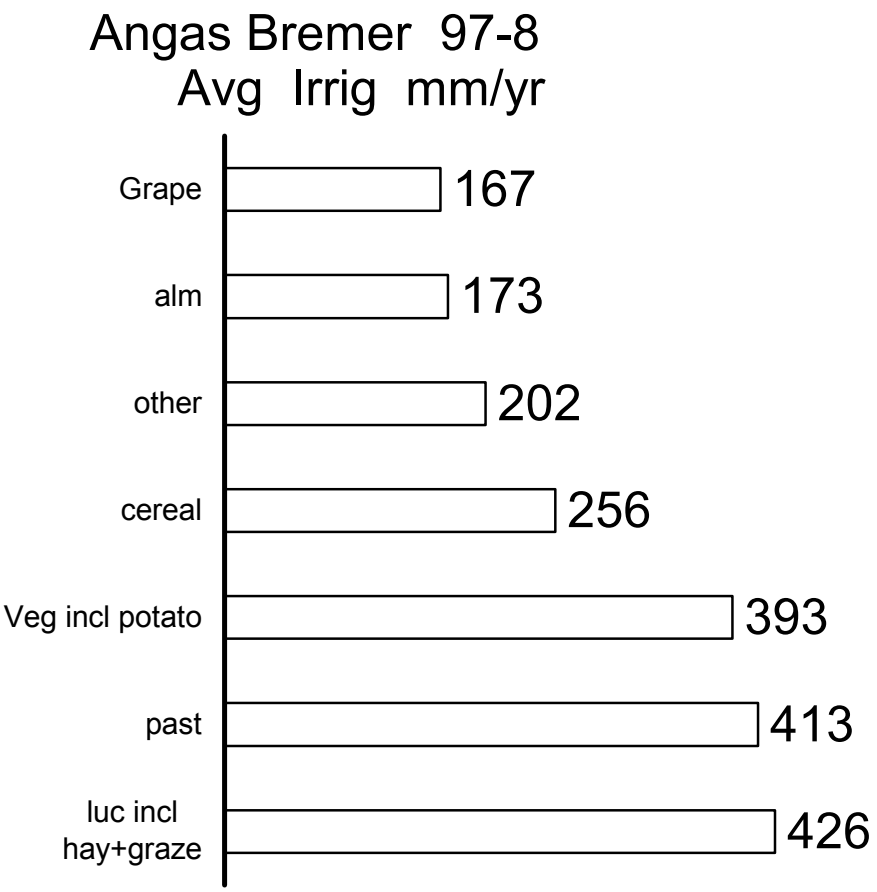


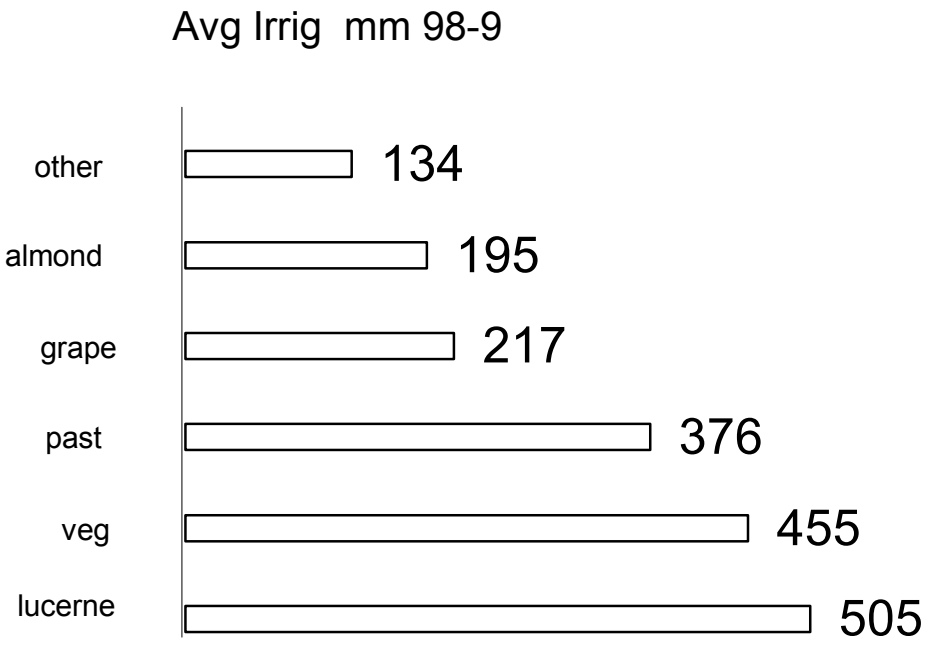
Comparison with other Years :

Year	Total ML	Grapes	Lucerne	Other	Vegetables	Pasture	Almonds
1996-7	11,348	4,332	2,490	3,081	1,446	?	?
1997-8	16,100	6,221	3,807	1,637	2,751	1,541	147
1998-9	16,509	8,864	3,526	738	2,355	906	119

note: “Other” includes, turf, ovals, cereal crops, seed crops, fruit trees, conservation, hay and a woodlot

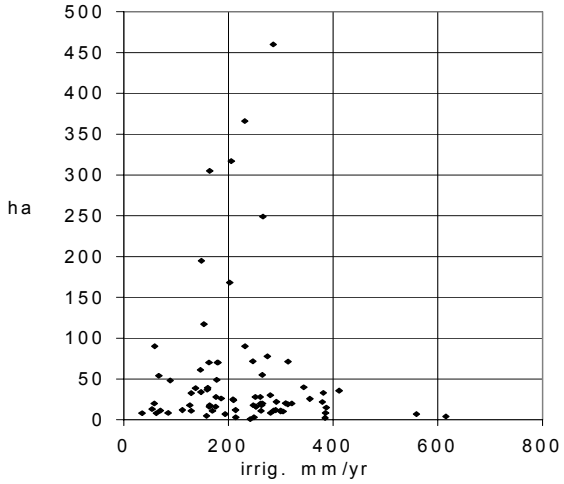
4. The next charts shows the average irrigation, in mm/yr, for each crop type, for the years 1998-9 and 1997-8



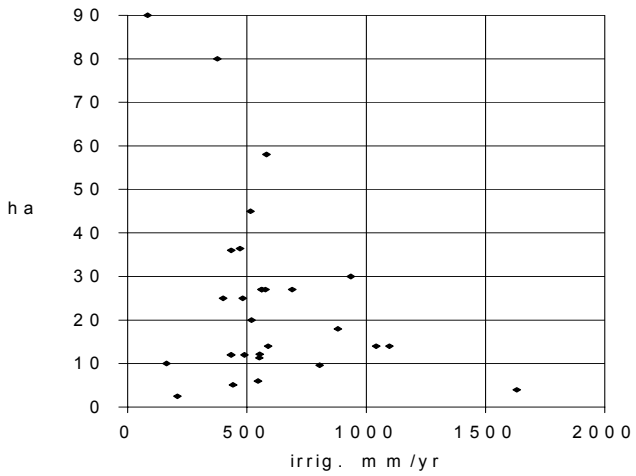


5. The next 6 graphs show the irrigation in mm per year for each crop type. Each dot on the graph represents an irrigator and the amount of water, in mm per year, applied to each crop.

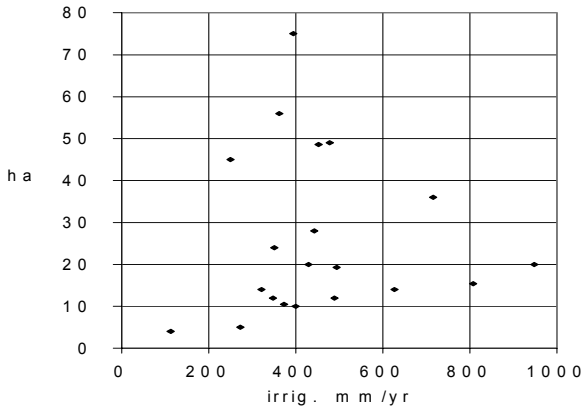
Grape 4,084 ha
3,605 ha 97-8



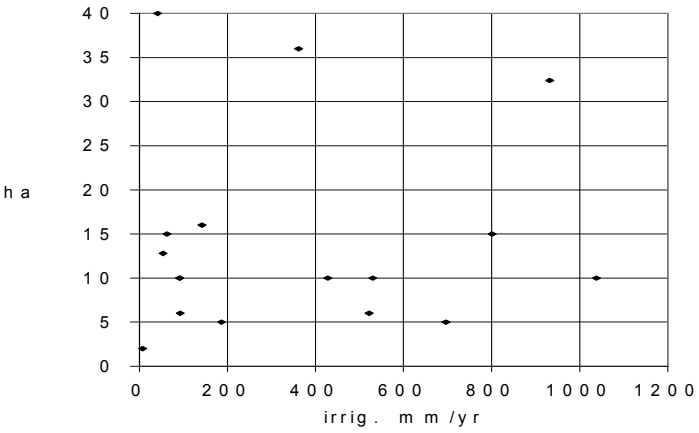
Lucerne 698 ha
866 ha 97-8



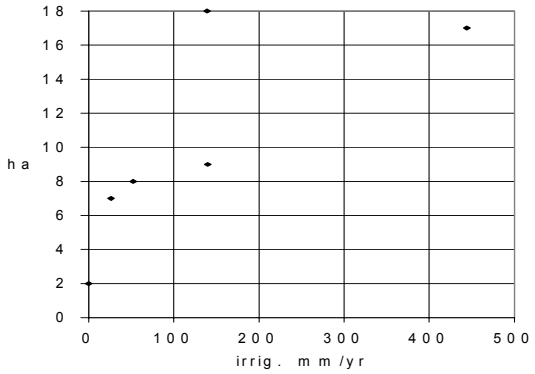
Vegetables 518 ha
679 ha in 97-8



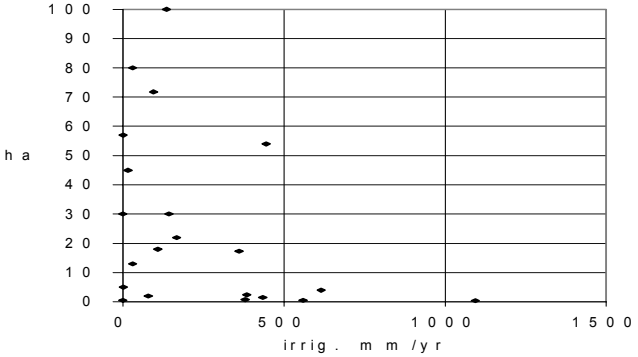
Pasture & Graze 241 ha
369 ha in 97-8



Almonds 61 ha
85 ha in 97-8



Other Crops 552 ha
Cereal, Turf, Ovals, Seed, Fruit Trees
872 ha in 97-8



6. Monitoring Wells : Additional wells have been installed during the year, with another 10 to be installed in the near future.
Of monitoring well measurement information supplied by the Irrigators, a number of Irrigators do not measure the wells every 3 months as required, some are measuring only once a year.

From the information provided by those who did measure their wells on a regular basis, 10 reported rising water, 5 reported static water levels and 52 reported water level dropping. The remainder of the 140 wells reported the wells were dry and remained so.

In January 1999 the wells existing at that time were all mapped and the Australian Height Datum measured on each well. The additional wells will be mapped and the A.H.D. measured in the future.

Appendix 1 shows the change in water level in the monitoring wells that have water in them.

7. Recharge Wells : 19 Recharge wells were reported on in the Irrigation Annual Reports, of the 19 only 6 Irrigators reported recharging, with a total of 120,366 kl being recharged compared to 158,509 kl in 1997-8 and 346,114 kl in 1996-7.

   Some of the recharge wells are not fitted with meters, the recharge figure in those cases were estimates.

8. Flooding : Flooding was reported on 13 properties, mostly at the end of July, beginning of August 1998, with some other properties flooded in September, October and November 1998. The largest crop area flooded was 16 ha for a period of 18 hours, on the same property 25 ha of non crop land was also flooded. One 5 ha property was flooded for a period of 160 hours in July 1998. Other areas flooded ranged from 1.2 ha o 16 ha and the time flooded ranged from 2 hours to 120 hours.

   Appendix 2 shows the areas flooded in 1998-9

9. Salinity : Reports were received on water salinity from 43 groundwater licenses and 31 river water licenses. Salinity of groundwater varied from 1005 to 3900 ppm, while salinity of the river water varied from 255 to 655 ppm. The wide variation in river water salinity could be the standard of equipment being used for measurement, the Committee is considering this aspect.

Appendix 3 shows the bores where the salinity was reported on and gives an indication of the salinity levels.

10. Irrigation Annual Report Forms : Comments received from some of the Irrigators indicated they were of the opinion, the new forms, used this year, were more "user friendly" .

    The Committee will review the form again this year with a view to adding the next most important piece of information to the 1999-2000 report form. This additional information will be determined by the Committee.

11. Other Activities of the Angas Bremer Program / Project Coordinator during 1998-9

11.1 River Water Meters : With the D.E.H.A.A. meter reader, all the River water meters were checked, read and the position of each meter was marked with a G.P.S.

11.2 Groundwater Meters : With the D.E.H.A.A. meter reader, and with assistance from S.A. Water, all the, current, groundwater license meters were located, checked and located with the G.P.S.

The last time the meters were read, officially, was 1994.

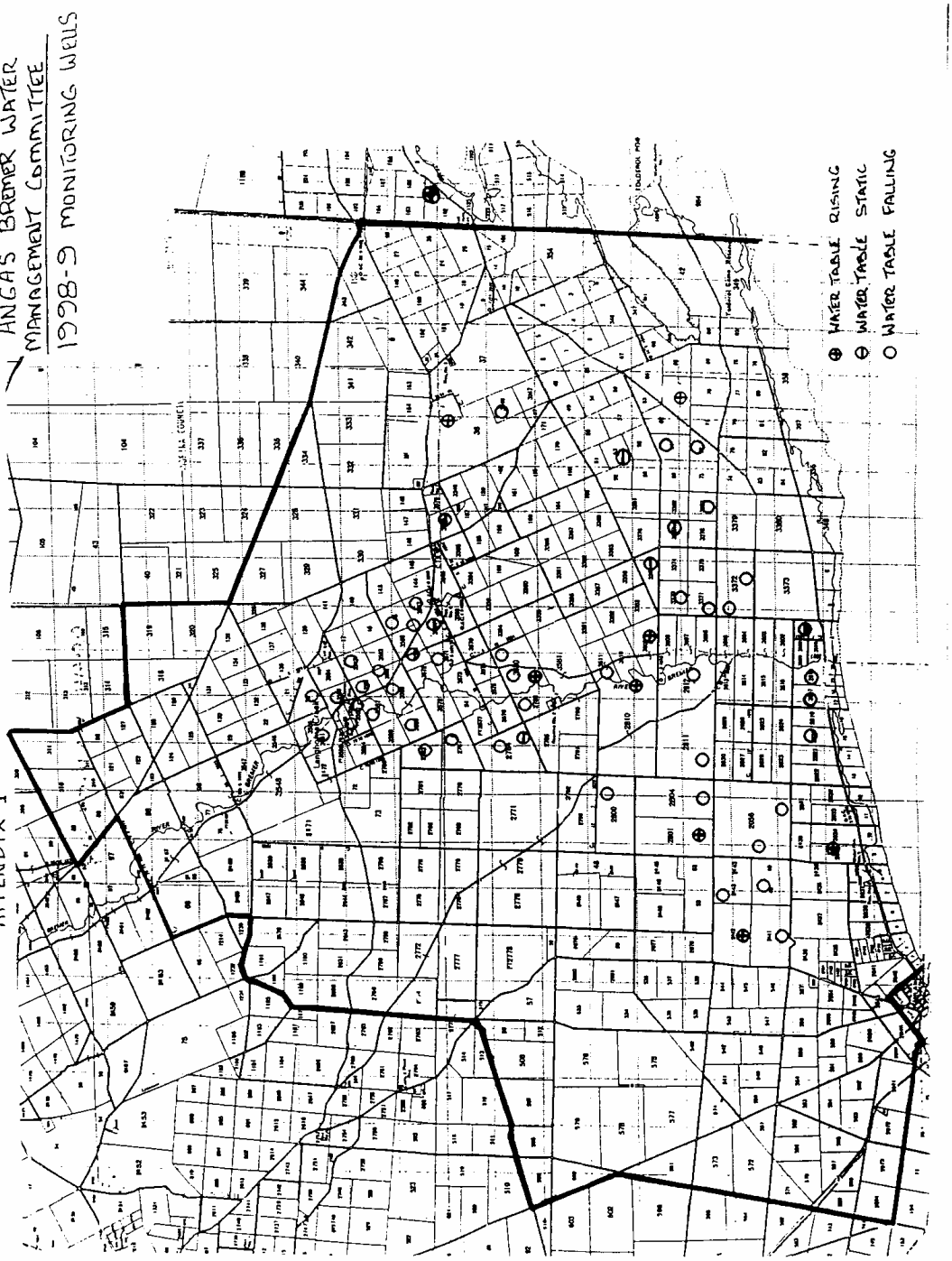
A number of the groundwater meters have been removed from wells / bores, so that a licensee with a groundwater license, with several meters on that licence, may now only have one meter on one well / bore. D.E.H.A.A. was unaware of most of these changes.

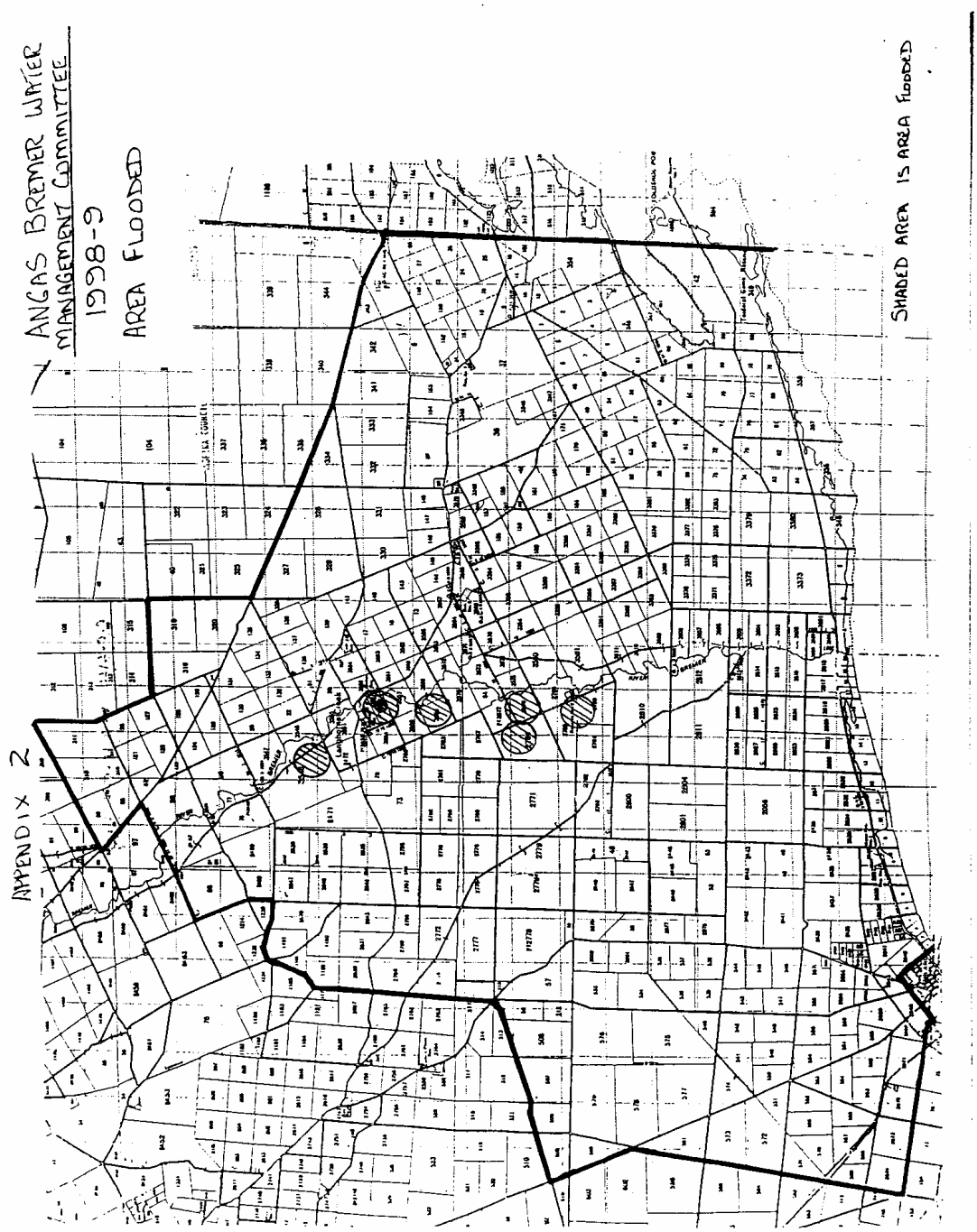
11.3 Water Transfers in the Angas Bremer Area : Information was gathered on water transfers into, out of and within the Angas Bremer Area for the past 5 years, this information was passed on to a Consultant who prepared a report for the A.B.W.M.C. to present to the R.M.W.C.M.B.

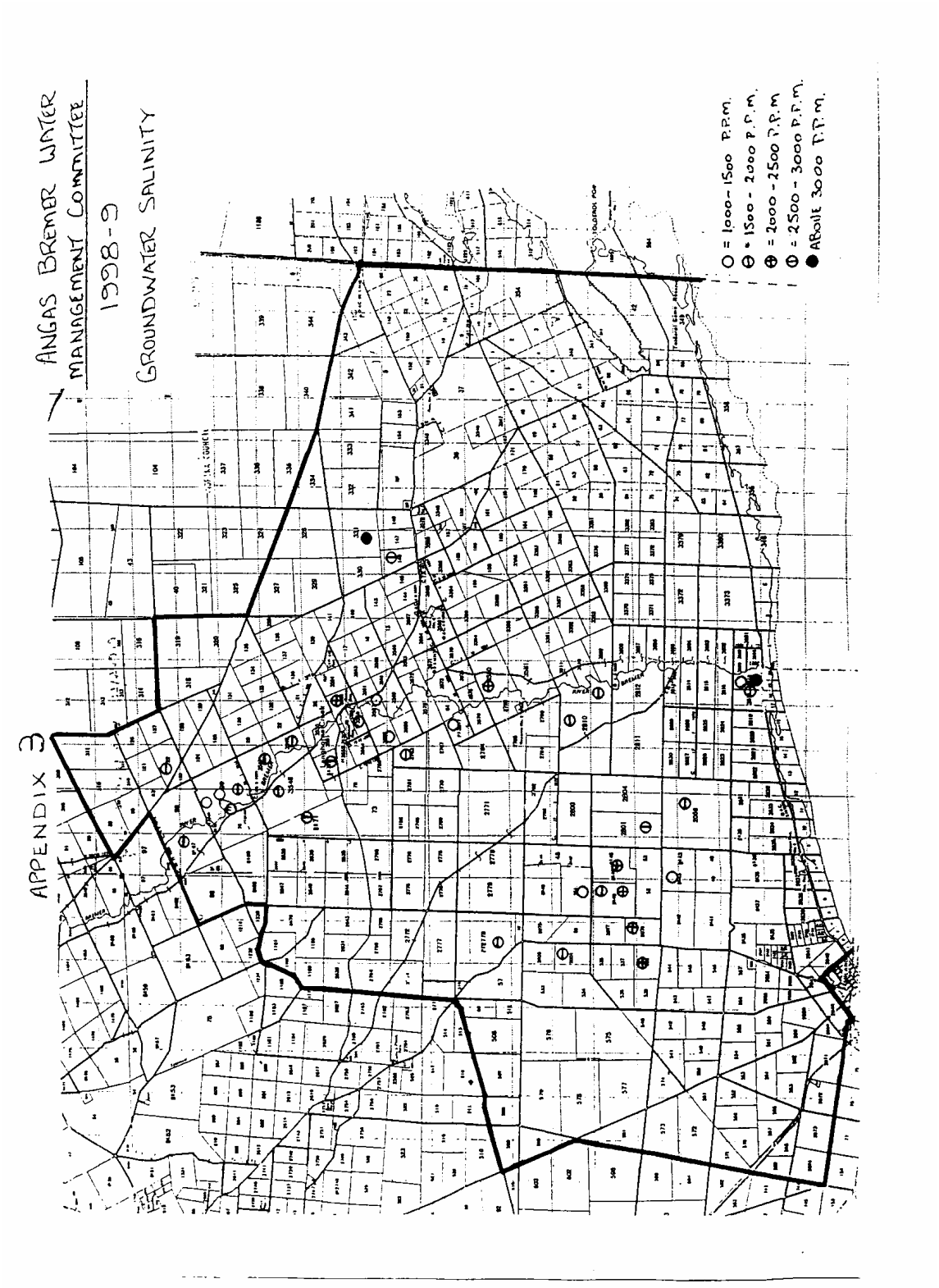
APPENDIX 1

ANGAS BREMER WATER MANAGEMENT COMMITTEE

1998-9 MONITORING WELLS




APPENDIX 2
ANGAS BREMER WATER MANAGEMENT COMMITTEE
1998-9
AREA FLOODED
SHADED AREA IS AREA FLOODED


APPENDIX 3
ANGAS BREMER WATER MANAGEMENT COMMITTEE
1998-9
GROUNDWATER SALINITY
○ = 1000 - 1500 P.P.M.
⊖ = 1500 - 2000 P.P.M.
⊕ = 2000 - 2500 P.P.M.
⊖ = 2500 - 3000 P.P.M.
● About 3000 P.P.M.