

Angas Bremer Water Management Committee

2000-2001

Irrigation Annual Report

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Produced by Bruce Allnutt for the Angas Bremer Water Management Committee

1. Annual Public Meeting of Angas Bremer Water Management Committee

Held at Langhorne Creek Football Club Monday, 27th August 2001

Presiding member Mr. R. Giles opened the meeting at 7.45 pm

Present: _____ See attached list

Apologies C. Willson, T. Roberts, J. Brown, R. Follett

Presiding Members Report See attached.

Moved A. Benger, seconded G. Adams, that the Presiding Members report be accepted.....CARRIED

Saline Groundwater Management Project

Mr. J. Follett reported that \$15,000 had been contributed by the ABWMC to the Kayinga Drainage and Evaporation Project. (Total cost \$360,000). In return Kayinga have included in the Project some drainage trials and will make available to ABWMC data from their monitoring of the Project. Additionally site inspections will be possible for interested Irrigators.

Water Levels

Mr. S. Howles, DWR. reported on recent monitoring of both the confined and unconfined aquifers. The unconfined aquifer has shown a rise of approximately 2m. since September 2000 but is not as high as after the flooding in December 1992. The north west area has shown a steady rise through the 90's but is still at a fairly deep level – approx. 13 – 15m. The confined aquifer is showing no signs of cones of depression and is maintaining a north to south flow through the system. The surface has risen by .5m. but is still 1m. below the level of the 1950's.

Ground water pumping is down and there are some signs that salinity may be improving.

Irrigation Annual Reports

Project Officer, B. Allnutt provided a summary of the 2000/2001 reports. See attached. Reports have been received from all but 7 irrigators.

Tony Thompson from PIRSA emphasised the value of our data collection and discussed some aspects of the reports in particular mm./ha, mm/irrigation, and amount of water to drainage. Mr. Thompson explained the operation of the Full Stop device that all irrigators must have installed to measure drainage.

Code of Practice

Project Officer, Kerri Muller launched the new Code of Practice document prepared by the ABWMC outlining the responsibilities of Irrigators in the AB Proclaimed Wells area, and explained the process of becoming an 'Accredited Irrigator' and the consequences of not meeting these requirements.

Land and Water Management Plan

Project Office, Kerri Muller outlined the various aspects of this Plan and the investigations that are being carried out to prepare it.

Water Use

Tony Thompson from PIRSA gave a brief talk on the problems being faced by Irrigators in other parts of the World; in particular the U.S., and the ways they were attempting to solve these problems.

RMCWMB

Mr. Graham Broughton, General Manager of RMCWMB spoke briefly on the work being done in the Angas Bremer Area in water resource management, suggesting that some of the ideas for self regulation being developed here might be more broadly applied along the River Murray.

Financial Report

D. Elliott presented the financial report for 2000/2001 - see attached.
Moved V. Newell seconded B. Cleggett that the financial report as presented be accepted
.....CARRIED

Election of Members

The Presiding Member advised that the Members whose 2 year term had expired were R. Giles, D. Elliott, C. Cross and G. Adams.
Nominations had been received from R. Giles, C. Cross, G. Adams and R. McDonald.
Moved J. Pargetter, seconded B. Johnson that the four nominations be accepted.
.....CARRIED

General Business

1. V. Newell asked whether the Annual Reports had shown any differences in irrigation practices between irrigators using soil moisture monitoring equipment and those without such equipment.
Mr. Thompson indicated that no analysis of the reports in this regard had been done. It was suggested that this may be an area warranting further investigation.
2. The question of when the Full Stop devices were to be installed was asked.
The presiding Member explained that it would be as soon as possible. Mr. Rex Jaensch had been contracted to install them and it would cost Irrigators \$130 for the supply and installation of the 2 Full Stops required.

Meeting closed at 9.30 pm

2. Chairman's Report 00 / 01

It is very gratifying for me to be able to start tonight by saying my report this year can be both brief and positive. During the year with the excellent assistance of many people we have finalized and had released the Angus Bremer Water Allocation Plan which sets the frame work for the resource management of our area for the next few years. In addition we have developed locally and released the Revegetation book, which is designed to give you as much assistance as possible to carry out that part of your requirements under the W.A.P. Tonight we are releasing the Code Of Practice document, which will introduce our proposal for Accreditation.

These things are very innovative and accreditation of irrigators is a first for the irrigation industry and we are hoping that the package that we have put together will achieve the aim that you put forward as a community several years ago when all the public consultation started and that was to ACT NOW WITH PREVENTIVE MEASURES and not wait for our resource to deteriorate and then have to design schemes at high cost to cope with the issues. To develop the strategies that we will give you the detail of later in the meeting, your committee has taken a team approach and we have been very fortunate to find excellent support and expertise from not only the River Murray Catchment Board and agency staff but we have also found several other independent experts who's knowledge we intend to use to help us develop further ideas. In fact several people have pointed out to me that Angus Bremer has more expertise and is getting more service and attention than any other irrigation area but I defend that by saying that we are the community that is moving forward, has identified its issues and has been determined to try and resolve some of them for the benefit of our environment and our future.

I must point out that even though we have taken as much advise as we can find to produce a package that can best deliver what the community wants at an acceptable price we don't profess to have all the answers to our potential problems and only time will tell how close we are, however in the worst case scenario that we have got it all wrong we will end up with irrigators who monitor, collect data and report on their activities more than any others in Australia and a district that has a lot of new vegetation and I think that every body will agree that is still progress.

The thankyou's are many and first of all I need to thank you the community for being patient. This work has taken longer than we would have liked however we are now moving forward with good pace. There have been many questions you have put to us that we have not been able to provide detailed answers to in the past but now as we develop the nuts and bolts of the projects we will be getting you that information as best we can through a series of field days, newsletters and meetings and at all times we ask for your comments and suggestions. The role of the committee in the past has been and it will continue to be to take you suggestions and ideas and develop them as best we can to suit the total resource management of the area ,and in doing that you would recognize I hope ,it is impossible to please everybody all of the time however I can guarantee that the decisions the committee make take into account all of the information available and are made in the best interest of the resource that we are trying to protect.

Thanks also to the committee for their commitment and strength. We have had to make many tough decisions and the work load has been great but so is the progress now.

In summarizing I would say that this community is an excellent model of how resource management should work were the locals who know their area and problems better than anybody are supported and work with Boards and agencies as a team to achieve a common goal.

Rob Giles Chairman

3. Activities of the Committee for 2000-2001

3.1 Saline Water Pumping /Disposal Project

Instead of constructing a temporary trial project the Committee decided to contribute towards the construction of a saline water disposal on a vineyard near Lake Alexandrina. There are 2 sites on the vineyard where saline water is to be disposed of; one of the sites includes the design the Committee approved.

The Committee approved design consists of "Tile" drains between vine rows, at various spacings, connected to drainage sumps, which are in turn connected to a pumping sump. From there the water is pumped into shallow evaporation pans (dams).

An agreement with the vineyard will enable the Committee to access data from the trial site for future use. Preliminary data has been supplied to the Committee, with some promising results.

The Committee can, by arrangement, organise visits to the site, at the convenience of the vineyard Management.

3.2 Flood Plain Study

A Consultant has been engaged to conduct a study of the effects of flooding on the Flood Plain. A report will be prepared for the Committee

The objective of the study is to measure the effects that flooding, natural or otherwise, has on the flood plain and to be able to quantify the amount of water that is applied to the flooded area.

Gypsum Blocks have been installed at three locations, in three different soil types on the flood plain, where data is to be gathered.

One set of Gypsum Blocks has been installed at the same site where a continuous logging Capacitance probe has been installed. As well, a continuous logging device has been installed in an Irrigator 6m monitoring well at another location.

The Consultant, at the three trial sites, has carried out soil density and water soakage rate trials.

3.3 Irrigation Efficiency

To enable irrigators to assess their irrigation efficiency the Committee has decided to adopt a C.S.I.R.O. device known as a "Full Stop". One of the developers of this device (Dr. Richard Stirzaker) has been retained by the Committee to oversee the use of the unit and to evaluate its performance.

The Committee hopes to have 300 of these units in use for this irrigation season. Each irrigator will have 2 units as explained in the Code of Practice. One unit is installed at 50cm and a flag indicates when the water being applied to the crop reaches that depth. Another unit, installed at 100cm, also has a flag to indicate when water reaches that point, as well this 100cm unit has a container at the bottom from which water can be removed to assess the amount of water reaching that point and for testing the water for salinity and nutrients.

3.4 10 meter Monitoring Wells

Four 10m wells were installed in Red Gum swamps along the Bremer River in 1999-00, These wells are measured for water table height once a month and the water salinity is tested on an irregular basis. Data obtained from this trial is being collected to assess the affect the Red Gum swamps have on the water table and on the Red Gums themselves.

4. Summary of Irrigators Annual Report Data for 00/01

Angas Bremer Irrigators completed and returned 134 Irrigation Annual Reports to the Water Management Committee, of these 44 were received after the 31st of July (the date requested) 5 licence holders have not submitted their irrigation reports, of the 5; three have licence in name only. (i.e. no access to water) .

4.1 Water Allocation v Water use for 2000/2001

4.1.1. River Murray Water

RM water allocation increased by approx. 5% from 99/00,
RM water usage increased by 4.7% from 99/00.

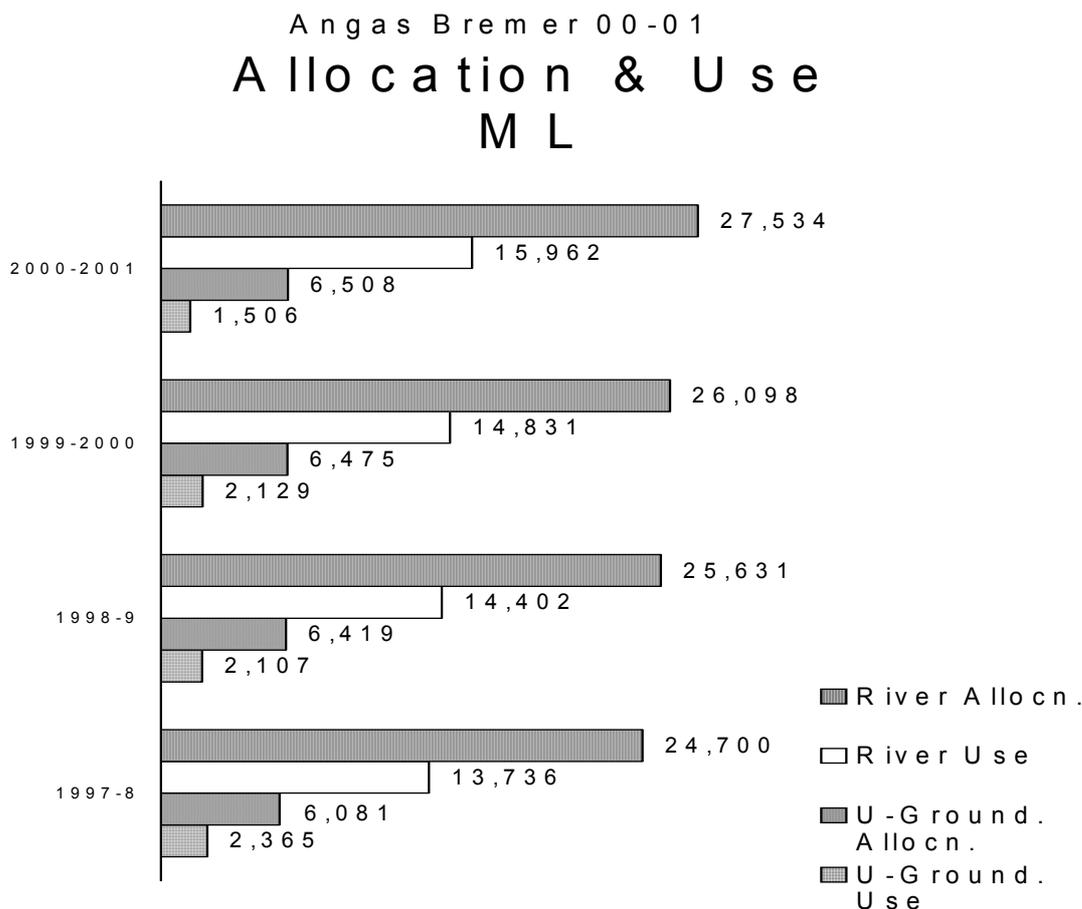
The water allocation and water use figures now include irrigators (2) outside the ABPWA but inside the AB Irrigation Management Zone.

4.1.2. Ground Water

Ground Water allocation showed an increase of 0.5% (33ML), this is thought to be due to errors in reporting.

There was a 29% decrease in groundwater usage from 99/00.

Chart 1



ANREP00-01 Chart 1
by Bruce Allnutt (08) 85 360 114

4.2 Distribution of Water Used

Total Water used in 2000-2001 was 17,467 ML, an increase of 7% from 99/00

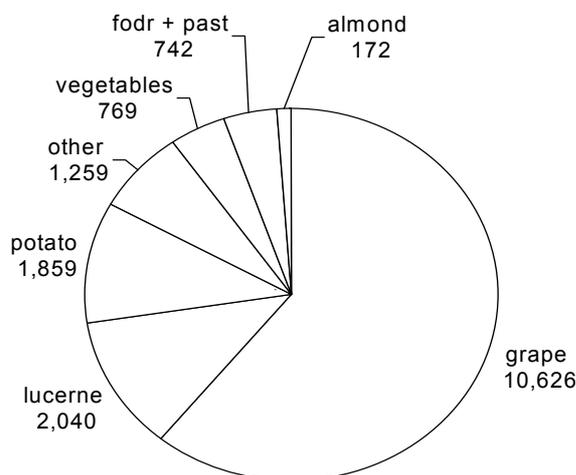
Chart 2 (below) shows the quantity of water used on each crop type

Chart 2

Angas Bremer 00-01

Irrig. 17,467 ML

was 16,961 ML 99-00



ANREP00-01 Chart 2 (2)
by Bruce Allnutt (08) 85 360 114

Table 1

Year	Total ML	Grape	Lucerne	Other	Vegetables	Potato	Pasture	Almonds
1996-7	11,348	4,332	2,490	3,081	1,446			
1997-8	16,100	6,001	3,700	2,248	2,670		1,526	147
1998-9	16,509	8,864	3,526	738	2,355		906	119
1999-00	16,961	10,021	2,491	1,354	761	1,812	358	164
2000-01	17,467	10,626	2,040	1,259	769	1,773	742	172

Table 1 (above) shows the comparison of water use, total and for each crop, since 1996-7. Previous to 99-00 potato was included with other vegetables.

As can be seen from the table, the changes from 99-00 were an increase of 6% for grape, a decrease in lucerne of 18%, other showed a decrease of 7% while pasture increased by 51%. The water usage on the remaining crops (i.e. veg, pot and almond) showed a difference of 4% or less.

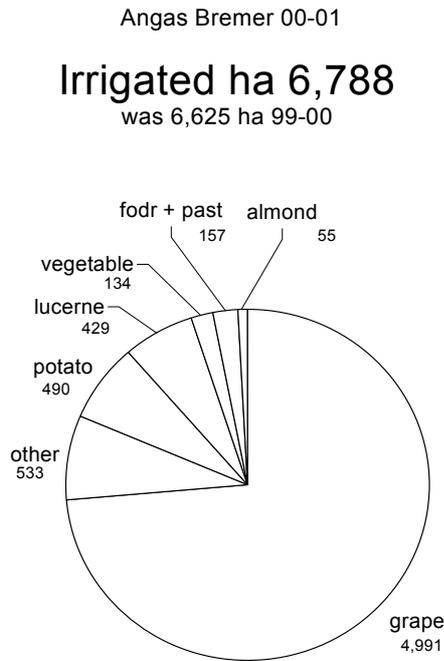
“Other” Crops include turf, ovals, cereal, seed, fruit trees (including olives), stock and domestic and conservation.

4.3. Irrigated Land use.

Total area irrigated in 2000-01 was 6,716 ha, a 1.5 % (86ha) increase from the 99-00.

Grape area increased by 6.5 % (319ha) whilst Fodder and Pasture increased by 18% (21ha) from the areas in 99-00. A large part of the Grape area increase would be attributed to a grower outside the ABPWA but in the AB Irrigation Management Zone
 All the other crops decreased in area from 99-00. Other Crops by 30 % (232ha), Almond by 5% (3ha), Lucerne by 1.7% (7ha) and Vegetables by 1 % (6ha)
 Chart 3 below shows the areas of each crop type irrigated in 2000-01

Chart 3



ANREP00-01 Chart 3
by Bruce Allnutt (08) 85 360 114

Table 2

Table 2 shows a comparison with other years data for the area of each crop type.

Year	Total ha	Grape	Other	Potato	Lucerne	Vegetable	Ford. & Past.	Almond
1996-7	4,156	2,134	189		741	358	328	88
1997-8	6,545	3,645	872		876	679	369	61
1998-9	6,153	4,084	555		698	518	241	61
1999-00	6,625	4,665	777	485	418	121	96	58
2000-01	6,788	4,991	533	490	429	134	157	55

Note: Vegetable previous to 99-00 included potato.

4.3 Average Irrigation in mm per year per Crop type

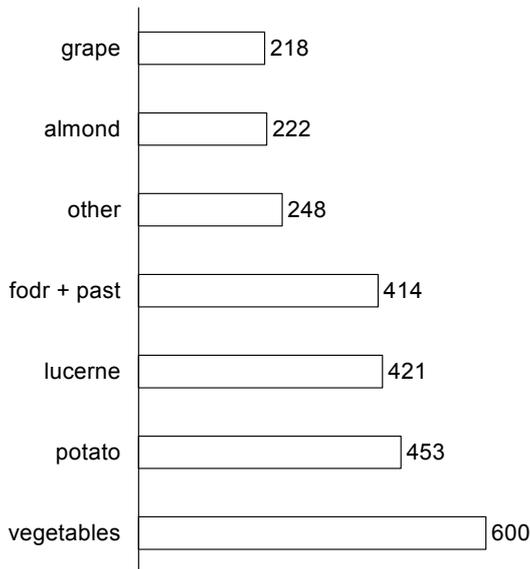
Chart 4 (below, left) is the average irrigation (in mm) applied to each crop type in 2000-01.

The chart to the right is a comparison of the mm applied each year from 1996-7

Chart 4

Angas Bremer 00-01

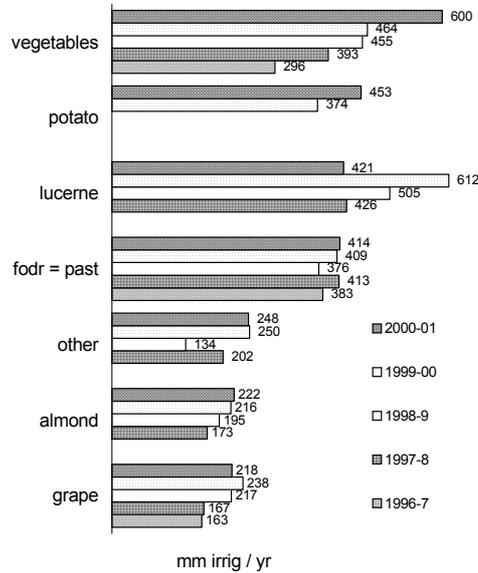
Avg Irrig. mm/yr



Comparison Chart

Angas Bremer 00-01

Avg. Irrig mm/yr



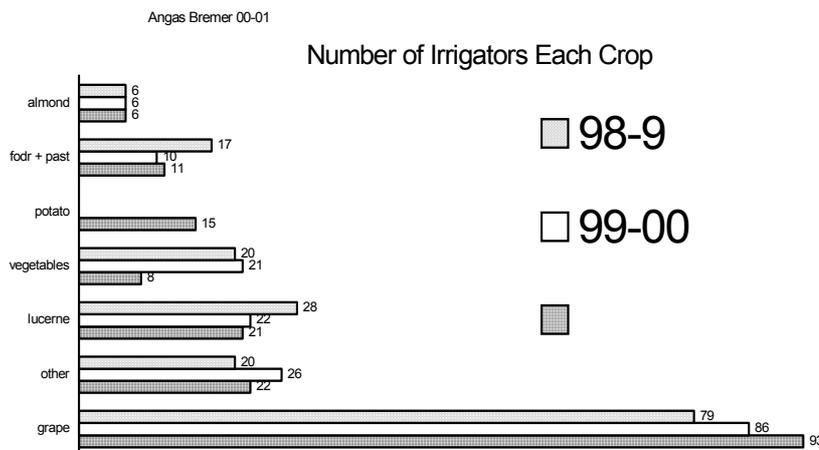
ANREP00-01 Chart 4
by Bruce Allnutt (08) 85 360 114

ANREP00-01 Chart 20
by Bruce Allnutt (08) 85 360 114

4.4 Number of Irrigators each Crop

The bar Graph below (Chart 5) shows the number of irrigators for each crop in the AB area in 2000-01, as compared with 98-9, 99-00

Chart 5



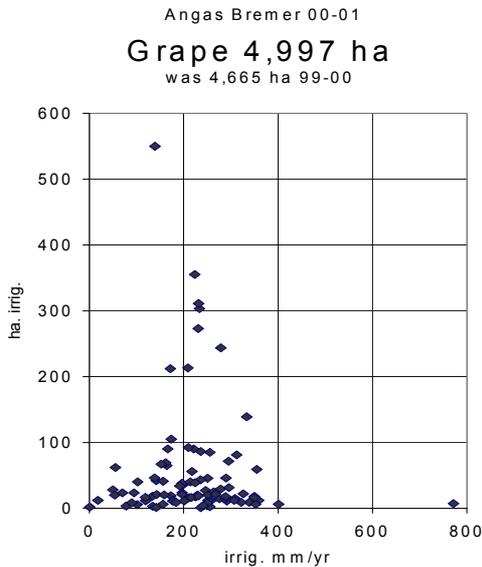
ANREP00-01 Chart 5
by Bruce Allnutt (08) 85 360 114

4.5 Amount of Irrigation Water Applied to Each Crop type.

The following 12 charts show the amount of irrigation water applied to each crop type; the first chart shows the mm per year and the second chart, in each set, the mm per irrigation.

Each dot on the charts represents an irrigator and the quantity of irrigation water applied to the crop.

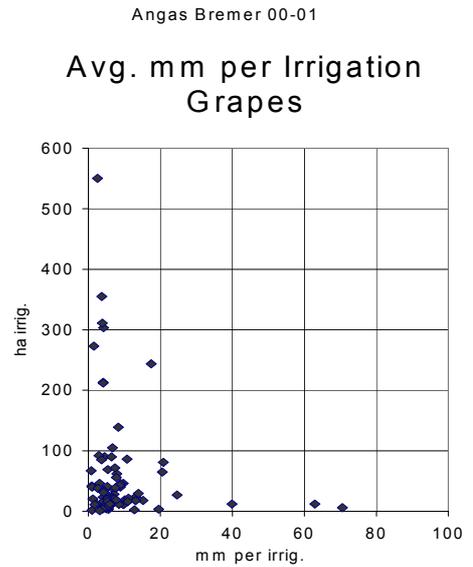
Chart 6



ANREP00-01 Chart 6 (2)
 by Bruce Allnutt (08) 85 360 114

mm/yr grape 98-99 = 0 to 470mm
 99-00 = 15 to 620mm
 00-01 = 0 to 775mm

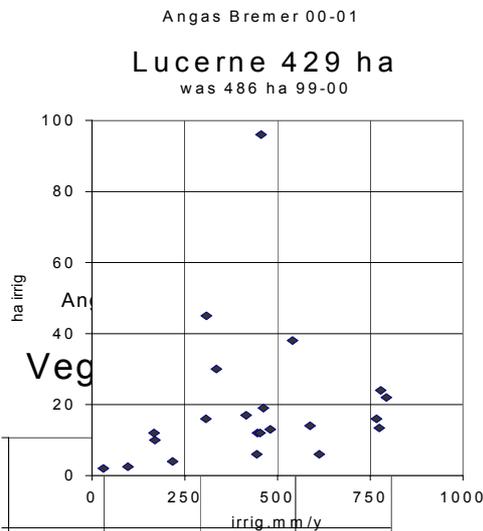
Chart 7



ANREP00-01 Chart 7 (2)
 by Bruce Allnutt (08) 85 360 114

mm/irrig. 99-00 = 1 to 74mm
 00-01 = 0 to 72mm

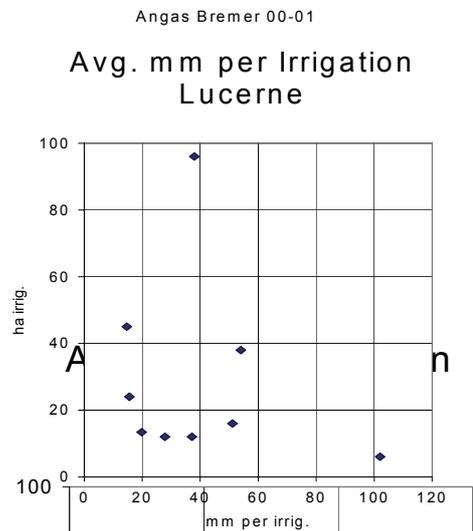
Chart 8



ANREP00-01 Chart 8 (2)
 by Bruce Allnutt (08) 85 360 114

mm/yr lucerne 98-99 = 180 to 1,650
 99-00 = 200 to 1,375
 00-01 = 30 to 775

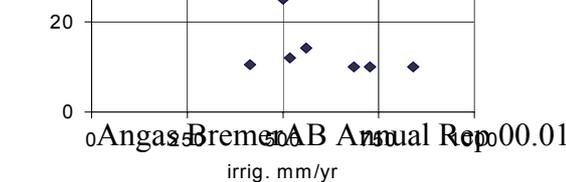
Chart 9



ANREP00-01 Chart 9
 by Bruce Allnutt (08) 85 360 114

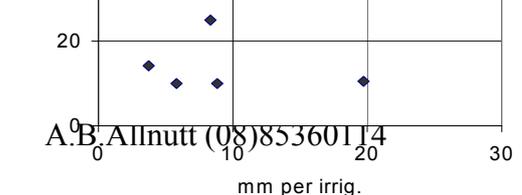
mm/irrig. Lucerne 99-00 = 8 to 45
 00-01 = 17 to 105

Chart 10



10

Chart 11

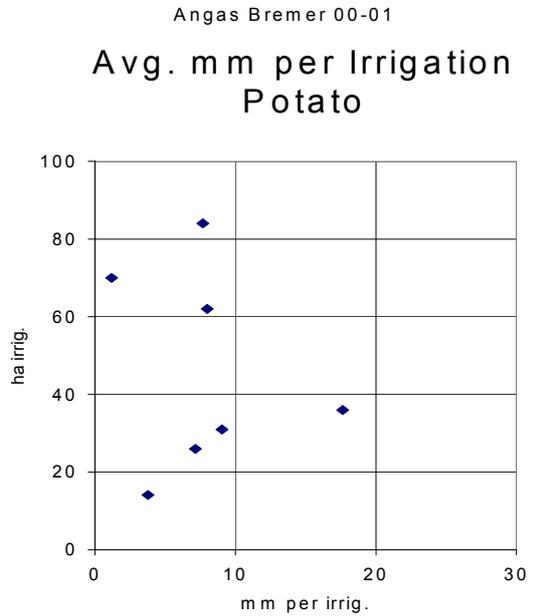
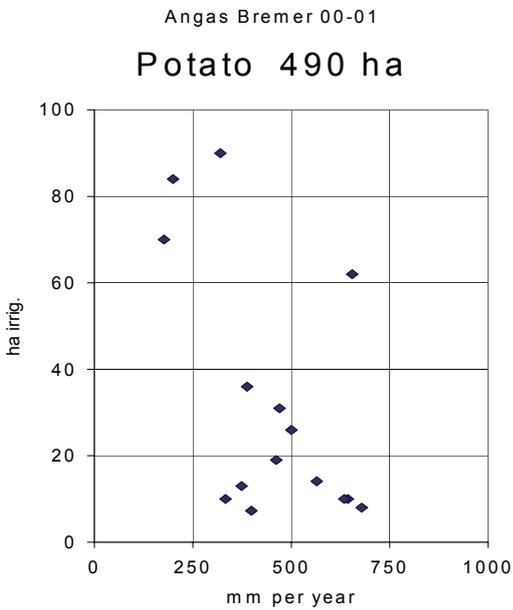


mm/yr Vegetables 98-99 = 100 to 950mm
 99-00 = 80 to 1,350mm
 00-01 = 400 to 850mm

mm/irrig. vegetables 99-00 = 4 to 21mm
 00-01 = 4 to 19mm

Chart 11

Chart 12

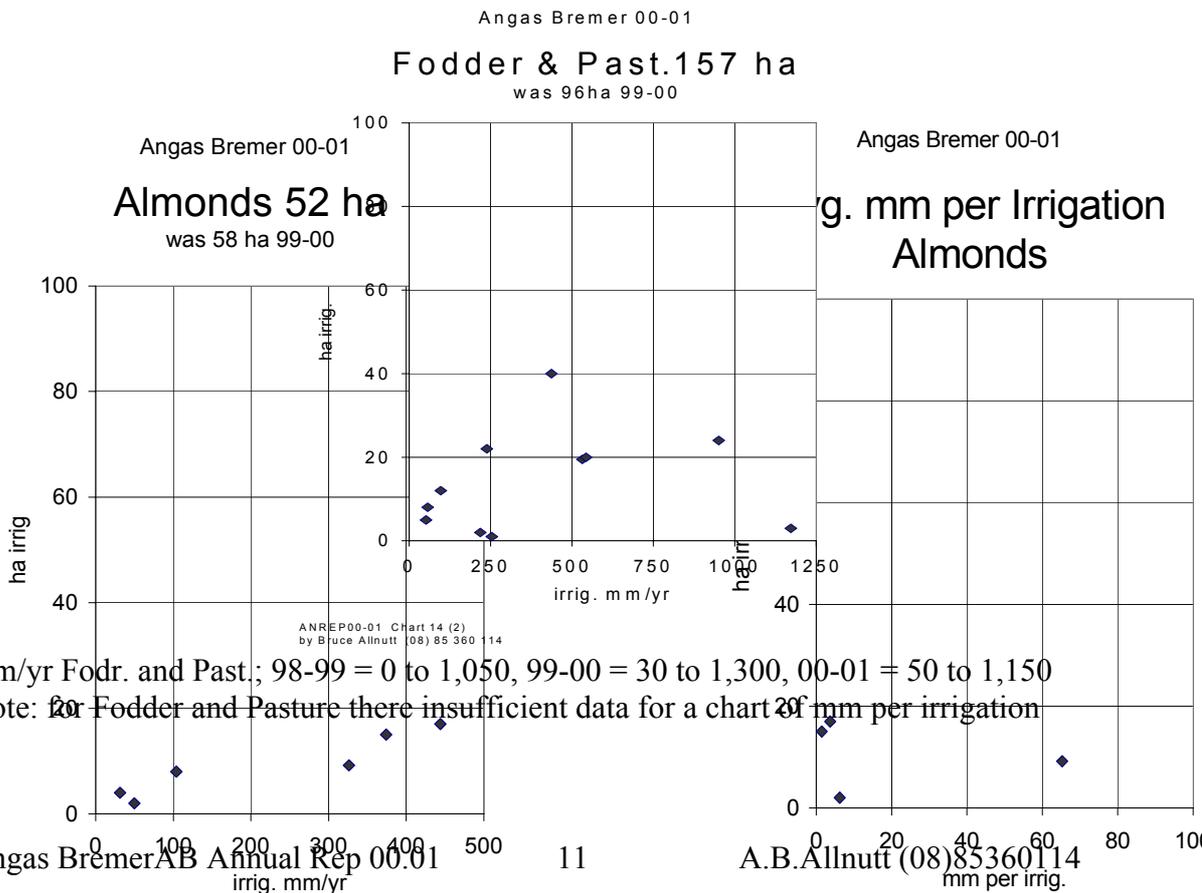


ANREP00-01 Chart 12 (2)
 by Bruce Allnutt (08) 85 360 114

ANREP00-01 Chart 13 (2)
 by Bruce Allnutt (08) 85 360 114

note : potato separate from Vegetable from 00-01

Chart 14



mm/yr Fodr. and Past.; 98-99 = 0 to 1,050, 99-00 = 30 to 1,300, 00-01 = 50 to 1,150

Note: For Fodder and Pasture there insufficient data for a chart of mm per irrigation

ANREP00-01 Chart 15 (2)
 by Bruce Allnutt (08) 85 360 114

ANREP00-01 Chart 16 (2)
 by Bruce Allnutt (08) 85 360 114

Chart 15

mm/yr Almond 98-99 = 0 to 440mm/yr
 99-00 = 70 to 450mm/yr
 00-01 = 40 to 450mm/yr

Chart 16

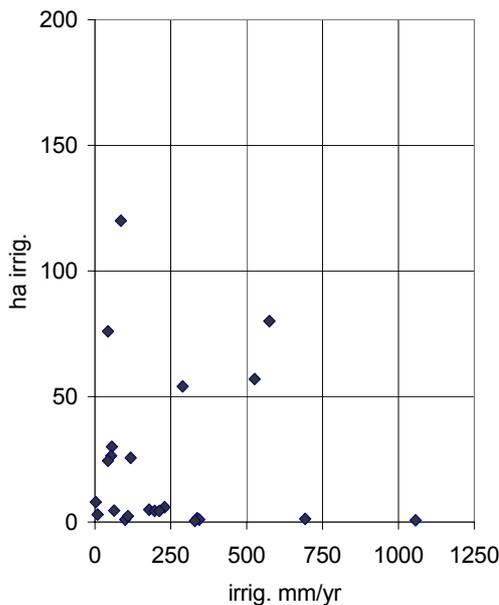
mm/irrig. Almond 99-00 = 15 to 85mm/irrig..
 00-01 = 2 to 65mm/irrig.

Chart 17

Angas Bremer 00-01

Other Crops 533 ha

Turf, Ovals, Cereal, Hay, Fruit trees & Conservation
 was 777ha 99-00

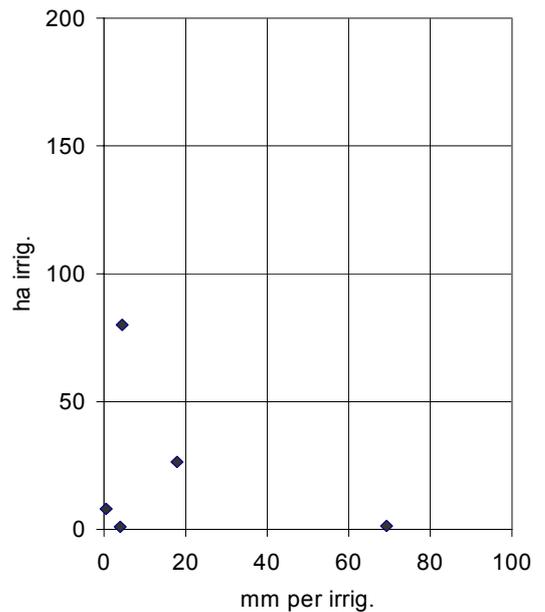


ANREP00-01 Chart 17 (2)
 by Bruce Allnutt (08) 85 360 114

Chart 18

Angas Bremer 00-01

Avg. mm per Irrigation Other Crops



ANREP00-01 Chart 18 (2)
 by Bruce Allnutt (08) 85 360 114

mm/yr Other Crops 98-99 = 0 to 1,100mm/yr
 99-00 = 20 to 750mm/yr
 00-01 = 0 to 1,050mm/yr

mm/irrig. 99-00 = 3 to 70 mm/irrig.
 00-01 = 0 to 70 mm/irrig.

4.6 Monitoring Wells

Map 1, at the back of this report, shows the movement of water levels in the monitoring wells which have or had water in them during the 2000-01 irrigation year. Monitoring wells that have remained dry are not shown on the map.

153 Monitoring Wells were reported on in the Irrigation Annual reports.

A further 9 monitoring wells are in the process of being installed.

4.7 Recharge Wells

14 irrigators reported recharge activities for the 2000-01 irrigation year. Total recharge of 185,567 kl. for the year.

Other year recharge are 1999-00 = 82,456kl, 1998-9 = 120,366kl, 1997-8 = 158,509 kl and 1996-7 = 346,114 kl.

4.8 Flooding

Map 2, at the back of this report, shows where flooding occurred during the year. A total of 1,223 ha of crop area was flooded (some counted twice) and the average hours the crop was flooded for was 25 hours, 62 properties were flooded. Flooding occurred in July and September 2000.

Some 515 ha of non-cropping area were also flooded on 34 properties and the average time flooded was 15 hours.

4.9 Salinity

(a) Groundwater

Map 3, at the back of this report gives an indication of the groundwater salinity for some of the ground water wells (bores).

46 irrigators reported on the salinity level of their bore water, the salinity ranges from 770ppm to 3900ppm. 2 irrigators reported readings of 1000ppm and below, 16 reported readings between 1000 and 1500ppm, 12 with readings 1500 to 2000ppm, 11 with readings between 2000 and 3000ppm and the remainder above 3000ppm.

(b) River Murray Water

32 irrigators reported on the salinity levels of the River Murray water, the readings ranged between 300 and 700ppm

4.10 Soil Moisture Monitoring

Data from the 2000-01 Irrigation Annual Report indicates that 72 irrigators are using soil moisture monitoring devices, 20 irrigators more than in 1999-01.

Gypsum Blocks are the most popular, 32 irrigators have them installed, compared with 1999-00 when 26 irrigators had them installed. Enviroscan are the next mostly installed equipment with 13 irrigators using them, 4 more than 1999-00. 5 irrigators are using Agrilink, the remainder are using post hole diggers, dig sticks, spade, hand auger, tensiometers, Irrometer, thermal probe, Micro-Gopher, Neutron Probe and 2 used "Full Stops in 2000-01

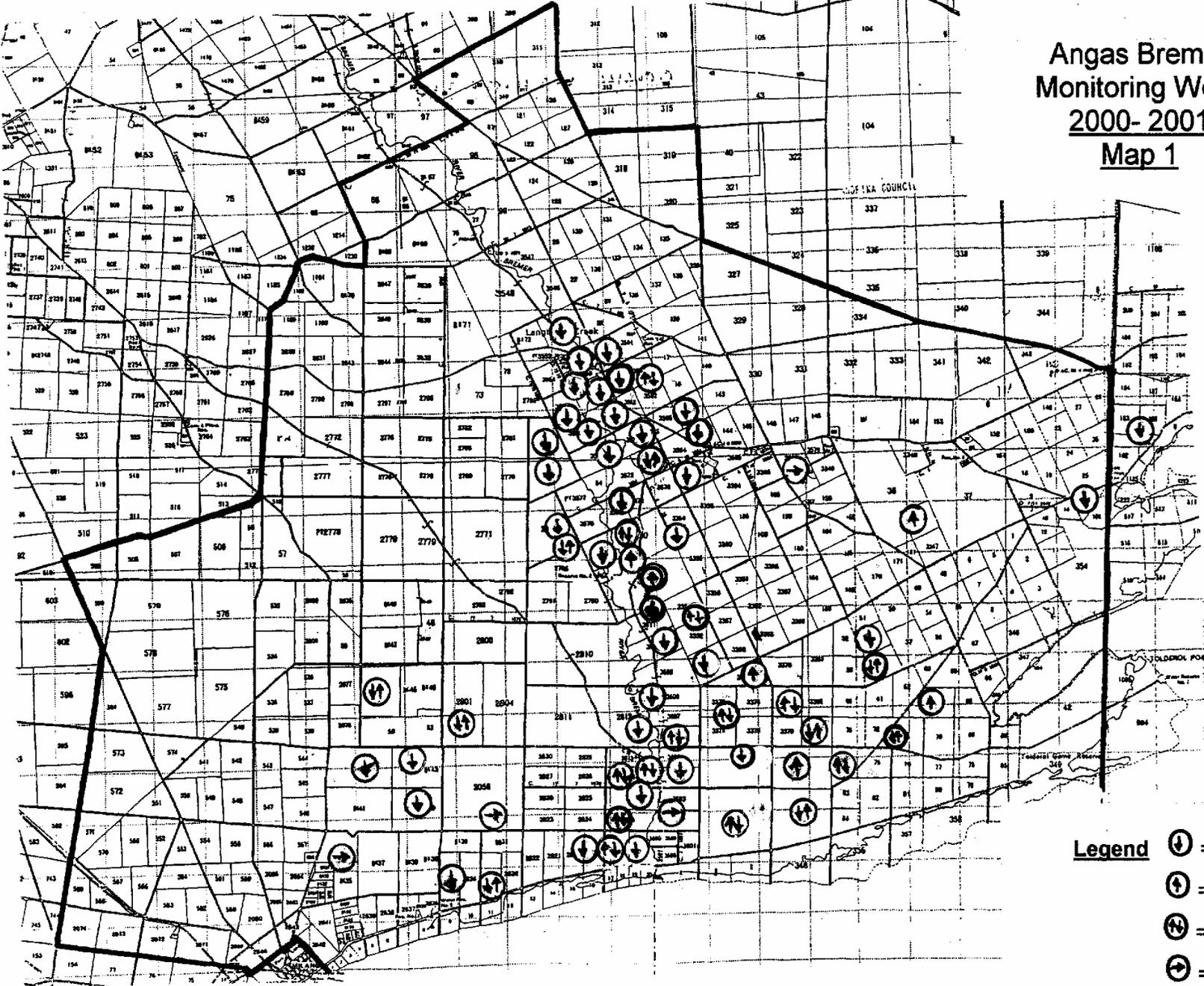
53 irrigators are not using soil moisture monitoring.

4.11 Revegetation

As the Angas Bremer Water Allocation Plan requires irrigators to plant vegetation in relation to their water allocation, the Committee added a question to the Irrigation Annual Report asking what areas of un-irrigated vegetation each irrigator already has. In answer to the Revegetation question 105 irrigators are claiming 514ha of vegetation, 33 irrigators did not answer the question.

From these figures it would appear that an extra 173ha of un-irrigated vegetation should be planted by 2003, with an additional 168ha by 2005.

Angas Bremer
Monitoring Wells
2000- 2001
Map 1

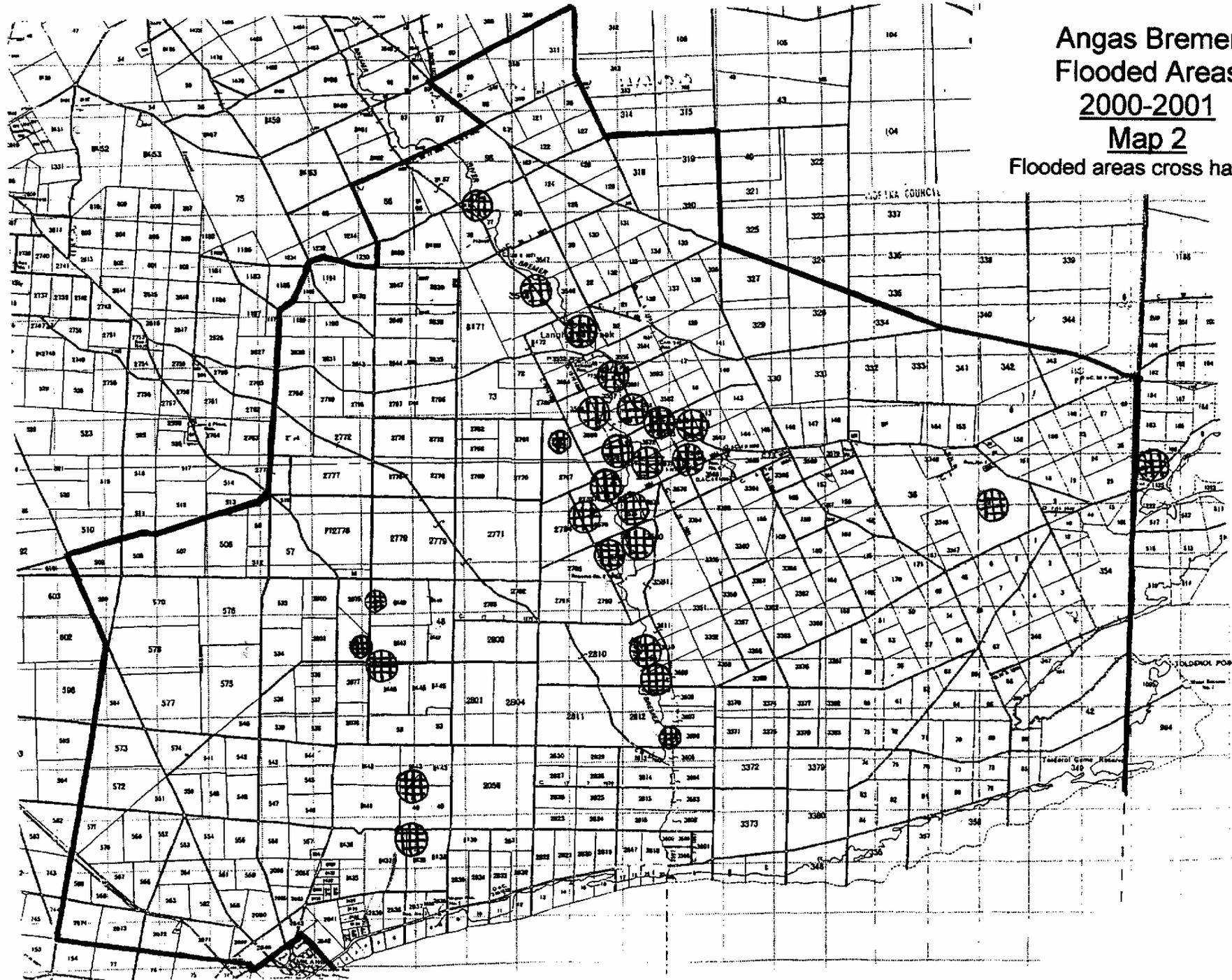


- Legend**
- ⬇ = Down
 - ⬆ = Up
 - ↕ = Up /Down
 - ⊕ = Static

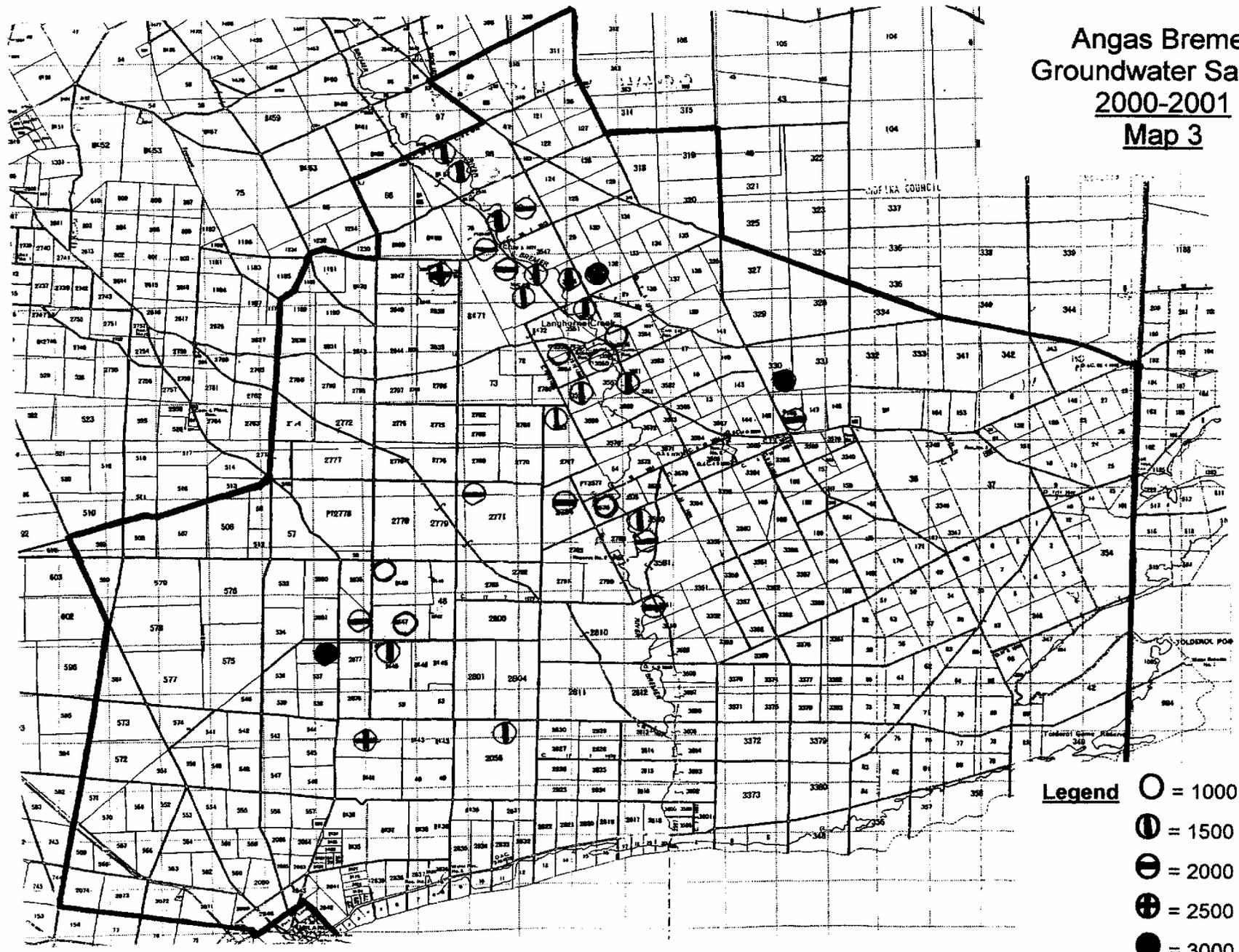
Angas Bremer
Flooded Areas
2000-2001

Map 2

Flooded areas cross hatched



Angas Bremer
Groundwater Salinity
2000-2001
Map 3



- Legend**
- = 1000 -1500 ppm.
 - ⊖ = 1500 - 2000 ppm.
 - ⊕ = 2000 - 2500 ppm.
 - ⊗ = 2500 - 3000 ppm.
 - = 3000 →