

# ANGAS-BREMER PROCLAIMED REGION MANAGEMENT PLAN FOR FIVE YEAR PERIOD JULY 1987 TO JUNE 1992

## 1. INTRODUCTION

This paper details the water resources management plan for the Angas-Bremer Proclaimed Region during the five year period 1987/88 to 1991/92 and makes appropriate recommendations on the implementation of this plan.

## 2. BACKGROUND

The current Review of policies commenced in late 1986 with a ' preliminary examination of hydrogeological information and management options by a sub-committee of the Angas Bremer Water Resources Advisory Committee (ABWRAC). During those early deliberations of the sub-committee it became apparent that with the quantity of water committed to licences far exceeding the quantities actually being used for irrigation purposes, the first and most urgent priority in arresting the decline in water quality was to remove the possibility of this unused portion of total Angas-Bremer water allotment being brought into use. with that aim In mind the sub-committee recommended to ABWRAC that it propose a review of water allotments duringg the 1987/88 licence year with the purpose of bringing the total licenced commitment as close as possible to the irrigated crop land use. ABWRAC adopted that objective, recommended its implementation to the S.A. Water Resources Council, and advised that it would examine any remaining options and discuss them with the community. Council endorsed those recommendations and they were subsequently approved by the minister of Water Resources.

As well public meetings were held in Langhorne Creek on 24 March 1987, 29 April 1987 and 28 October 1987 to provide an opportunity for community information and comment on the plan. In addition, written and verbal submissions have been considered by the Advisory Committee in formulating this plan.

## 3. MANAGEMENT STRATEGY

**OBJECTIVE:** To maintain the viability of the groundwater resources of the Angas-Bremer Region for sustainable use by existing users including, stock, domestic and industrial in the region in so far as is practical.

**AIM:** To adopt a five year programme which will:

- reduce the Licensed commitment frod 29 000 ML to 20 000 ML;
- substantially increase recharge to the groundwater basin:
- encourage the retirement of groundwater licences in exchange for surface water licences drawing on Lake Alexandrina.

## DISCUSSION

Prior to the Proclamation of the Region in 1980 the groundwater resources had become overcommitted to the extent that groundwater withdrawals exceeded 'freshwater' recharge by a significant factor. The initial licensing of irrigators reflected existing commitments and therefore withdrawals in excess of recharge have continued to the present. The clear evidence of stress in the basin graphically illustrated by falling water levels, rising salinity, and the cessation of irrigation by some of those affected, has prompted the current management review.

Early in its deliberations ABWRAC concluded that before any inroads could be made into the problems of sustaining the viability of the Basin the licensed commitment of groundwater had to be reduced from around 29 000 ML a year down to the level of actual use. The Committee considered such action feasible when it is noted that the actual total use is estimated to be in the region of 14 000 to 16 000 ML per year, and so the real impact of any actual reductions will be in relative terms modest and capable of being absorbed by Licensees.

#### 4. MANAGEMENT OPTIONS AND RECOMMENDATIONS

A full range of options has been considered and these are discussed below together with the recommended course of action.

##### 4.1 REDUCTION IN LICENSED COMMITMENT

During the 1986/87 licence year a review of water allotments was carried out. For the 1987/88 year licences are being issued with new water allotments based on the greatest irrigated area over the preceding three years. Allowance was also made for any significant finances actually committed to an expansion of that area up to the pre-review water allotment. This action has reduced the licenced commitment from 29 000 ML to approximately 25 000 ML.

There will be NO further review of unused water allotments.

##### 4.1.1 Percentage Reductions in water Allotments

###### Aim

To achieve a reduction of 5 000 ML over 3 years in the total licenced groundwater allotment resulting in a total licenced allotment of 20 000 ML per annum by the 4th year.

###### Discussion

Three approaches have been considered:

- an across the board uniform reduction of water allotments;
- a progressive scale of reductions;
- a sliding scale of reductions.

An examination of the three approaches was conducted. It is considered that an across the board uniform reduction of water allotments is not acceptable because such reduction would be less capable of being absorbed by smaller scale operators than it would be by the large scale irrigators..

The system of a progressive scale would go some way toward solving this problem but has the major disadvantage of progressing in steps. This would result in an irrigation

allotment which is slightly above the changeover from a lower to a higher scale being more seriously disadvantaged when compared to another which is just below.

The third method of reducing water allotments on a sliding scale is considered as being the fairest method of achieving the aim. In determining this scale, regard has been given to the likely effect on Irrigators and it is concluded that it is capable of being absorbed by the majority of landholders without significant financial impact. It is proposed that such reductions be phased in over a three year period to minimise the necessary adjustment and impacts. Various sliding scales were examined and it was determined that the range of 1St-30t is the fairest way of achieving this aim.

#### Policy Statement No. 1

Commencing with the 1988/89 licence year a programme of reduction of Water Allotments in the Angas-Bremer Proclaimed Region will be instituted. The amount of reduction will be in the range of 15% to 30% calculated on the base water allotment applying to each licensee during the 1981/88 licence year and as shown on the graph marked as Appendix I attached to this Plan. The total reduction to apply to each licensee will be phased in over the three year period 1988/89 to 1990/91, with 1/3 of the total reduction, applying each year.

#### 4.1.2 Reduction in Water Allotment On Property Sale

As a means of further reducing the total water allotment commitment with minimal disruption.

#### Policy Statement No. 2

on and after the 1 July 1988 when a property within the Angas-Bremer Proclaimed Region is sold the base Water Allotment applying to that property will be subject to a 5% reduction on that and any subsequent change of ownership. No such reduction will apply if such a property is sold to a person or persons who are the son, daughter, husband, wife, brother or sister of the previous owner, or any relative who has been working on the property for the preceding five years, or to a company of which the principals are in the above categories.

### 4.2 FLEXIBILITY IN IRRIGATION OPERATIONS

#### 4.2.1 Credit System of Water Allotments

##### Discussion

The ABWRAC and South Australian Water Resources Council are in favour of adopting a policy which would allow an Irrigator the flexibility of being able to use at least a portion of any unused water allotment from a previous years licence, in a succeeding year. Such a system could be particularly useful in adverse climatic conditions, or when market conditions are favourable.

The annual volume of irrigation water withdrawn from the Angas-Bremer basin depends mainly on the seasonal weather conditions but also on the farmers' crop rotations and market demands. It is estimated that the groundwater withdrawal during a drought is about 30 percent higher than in a year with average rainfall.

The effect of the varying pumpage over the years is buffered by the relatively large storage of the aquifer. Artificial recharge with low salinity river water will also assist with accommodating the higher water demands in dry years.

Under the existing statewide regulations for metered allotments the extra water usage is not allowed to exceed 5 percent of the base allotment. Above that limit a severe penalty (at the rate of mains water charge at that time) is incurred. This 5 percent regulation is considered to be unnecessarily inflexible to irrigators in this region; particularly to those with permanent plantings.

It is therefore considered that a more flexible approach is required, particularly now that water allotment reductions are needed. Combined with the need for flexibility is also a need to provide some incentive for irrigators to practice artificial recharge.

Irrigators, however, must be aware that the adoption of the new system will require amendments to the current Regulations of the Water Resources Act.

### Policy Statement No. 3

(i) 50% of the unused portion of the base Water Allotment for a given year shall be credited to the allotment for the next year. This credit shall be available for use during the three successive years but ceases thereafter. The over-riding rule is that a Licensee will not be permitted to withdraw more than 130% of his or her base Water Allotment in any one year. The implementation of this policy will be subject to the Regulations under the Water Resources Act.

(ii) 50% of the quantity of surface water added to the basin through artificial recharge wells shall be credited to the base water allotment of that licensee. This credit shall be available for use during the three successive years but ceases thereafter. (The full policy in respect to recharge is detailed in 4.3.2 below). This policy will be subject to review in 1991.

(iii) Any credit so accumulated will not be saleable or transferable.

(iv) Any accumulated credit will be shown on a licensee's Annual Licence separate from the base Water Allotment.

#### 4.2.2 Water Allotment Transfer Policy

The adoption of a policy which permitted the transfer of water allotments to other lands or persons within the Region, was considered, but it was concluded that such a policy should not be further considered until such time as the current management proposals have been implemented.

### 4.3 ALTERNATIVE WATER SOURCES

#### 4.3.1 Conversion of Groundwater Licences to River Murray (Lake Alexandrina) Licences

##### Discussions

A major concern has been to establish an alternative water source to offset the necessity of reducing groundwater Licences. The River Murray Water Resources Advisory Committee have been extremely co-operative and helpful in formulating this proposal.

It has been estimated that the Angas and Bremer Rivers jointly contribute approximately 15 000 ML of flows per year to Lake Alexandrina after allowance is made for existing diversions and losses, and potential artificial recharge. Because recent changes to the operation of flows in the River hurray system have made South Australian flows and availability more secure St has been approved by the minister of Water Resources that the above 15 000 ML be made available to Angas-Bremer licensees in exchange for groundwater allotments.

#### Policy Statement No. 4

That after 1 July 1988 and until 30 June 1991 and within a total upper limit of 15 000 ML any Angas-Bremer Licensee who wishes to convert his or her groundwater licence to a licence endorsed with a water allotment to be diverted from Lake Alexandrina may do so at the level of their pre 1987 Review Groundwater Allotment, or at a corresponding pro rata rate of groundwater for lake water. Those Licensees who desire to convert their total groundwater licence to a licence to use water from Lake Alexandrina, must remove any pumping equipment from their well(s). Permission will be granted for the installation of a windmill to pump drinking water for stock grazing purposes.

The Committee and Council also note that approval may need to be sought in the future to extend this period; provided the upper limit of 15 000 ML has riot been reached and that no other problems In respect to the use of Lake Alexandrina water are evident.

#### 4.3.2 Artificial Recharge of Groundwater

##### Discussion

In 1986 approximately 400 ML of water was artifically recharged to the Angas-Bremer Basin from the Angas and Bremer Rivers by the Region's irrigators. This Is a significant quantity in relation to natural recharge from the streams and there is considerable potential for increasing that amount. The principal incentive for constructing recharge wells has been the improvement of water quality in the immediate vicinity of the well itself. It is expected that more wells will be constructed for that purpose in the future. As an added Incentlve, a credit of 50% of water so recharged will be allowed as outlined in 4.2.1 of this paper.

Such a credit will be allowed to any well subject to the following conditions:

- (1) Any recharge well shall be equipped with an approved measuring device such as flow meter or welt/orifice plate with recorder, fitted and maintained at the owners expense.
- (2) Recharge cannot commence until water salinity is equal to oc less than a level acceptable to the minister of Water Resources.

It should be noted that while flow meters are not always totally accurate they represent the most convenient measuring devices. Although V-notch Weirs and orifice plates are more reliable they add significant capital cost to such an operation and are not applicable to a syphon fed well.

Where an irrigator has no opportunity to recharge directly due to distance from a water source it is proposed that the credit be made available to him in respect of a well constructed by him on another property. In this regard it is considered beneficial if the opportunity can be taken for swamp recharge. It should, however, be noted that this may

lead to problems due to the interference affect of wells close together and it is proposed that each application for the recharge credit will be considered on its merits having regard to the hydrogeological implications, rather than issuing a blanket approval. As well in considering the use of swamp for recharge it will be necessary to undertake an assessment of the Impact on the environment.

#### Policy Statement No. 5

- (i) each application by a Licensee -for water credit from recharge of the groundwater basin will be considered on Its own merles. having regard to the hydrogeological implications of the particular, application.
- (ii) 50% of the annual quantity of surface water added to the basin through artificial recharge wells will be credited to the base water allotment of that Licensee. This credit will be - available for use during the three successive years but ceases thereafter.
- (iii) Any credit so accumulated will not be saleable or transferable.
- (iv) Any accumulated credit will be shown on a Licensees annual licence separate from the base water allotment.
- (v) Any recharge well shall be equipped with an approved measuring device such as flow meter or weir/orifice plate with recorder, fitted and maintained at the owners expense.
- (vi) Recharge cannot commence until water salinity Is equal or less than a level acceptable to the Minister of Water Resources.
- (vii) where a Licensee has no opportunity to recharge directly to the groundwater basin due to distance from a water source, credit will be granted in accordance with these policies In respect of a well constructed by the Licensee on another property closer to the water source and having regard to the hydrogeological Implications of increased withdrawal and any associated problems.
- (viii) The opportunity may be examined for swamp recharge, provided that in conducting an examination, an assessment of the impact on the environment is made in respect of such proposed recharge.
- (Ix) This policy is subject to review in 1991.

#### 4.4 FUTURE ACTIVITIES

It is intended to pursue a four year programme which includes the following investigations. and activities:

- the feasibility of introducing a water allotment transfer policy;
- monitoring of recharge to the basin;
- the potential of swamps for recharge, to include the investigation of installing a trial well in a swamp;

- encourage the conversion of Groundwater Licences to River Murray (Lake) Licences in accordance with approved policies;
- continue to monitor groundwater levels and quality, and monitor flows and salinity in the Angas and Bremer Rivers;
- explore the feasibility of a Government 'Licence buy back' scheme;
- explore the possibility of allowing the transfer of water allotments outside the Region.
- as a means of encouraging licencees to undertake schemes that will assist in the better management of the groundwater resources, submissions will be prepared seeking Federal Taxation concessions and low interest State loans for such matters as installing pipework from the Lake and the construction of recharge facilities.

#### 4.5 CONCLUSION

It should be noted that no irrigator will be disadvantaged due to underuse of their water allotment in this management plan.

The Angas-Bremer Water Resources Advisory Committee and the South Australian Water Resources Council are of the view that the contained herein represent the most practical way to start to redress the decline in the Angas-Bremer groundwater basin.

ANGAS BREMER PROCLAIMED REGION  
Sliding Scale For Reduction Of Water Allotments  
To Apply From 1 July 1988 To 30 June 1991

