

DEPARTMENT OF WATER RESOURCES

INTERIM  
UNREGULATED FLOW MANAGEMENT PLAN  
FOR THE NORTH-WEST

June 1992

# INTERIM UNREGULATED FLOW MANAGEMENT PLAN FOR THE NORTH-WEST

## 1. INTRODUCTION

In February 1992 the Draft Interim Plan for the management of unregulated flows in the North-West was released for comment. This followed the massive algal bloom in the Barwon-Darling River in the preceding November-December period. The North-West region is shown in the map at Figure 1.

The primary objective was to revise the management of our unregulated flows to achieve immediate gains in the health of our river systems, without causing severely adverse consequences for water users. Other objectives were to provide for fairer and more efficient sharing of water between users, to protect flows required to meet interstate obligations and to alert irrigators that access to unregulated flows will be limited.

The most graphic indicator of river health was the recent algal bloom in the Barwon-Darling. Recent data on fish movements and the scarcity of once common native fish species also demonstrate that river health has declined. Changes in water quality and the frequency and distribution of river flows are two results of past development decisions. These developments now support inland towns and industries and are important to the social well-being of the State.

The proposals in this Interim Plan will establish:

- target flows along the Barwon-Darling River and priorities for river health and riparian flows;
- a basis for sharing unregulated flows between irrigators and better control of extractions;
- improved monitoring and research programs; and
- an advisory committee and a performance reporting process.

After consideration of the comments received some measures proposed in the initial draft of this Plan have been extended while others have been dropped or deferred. Some suggestions which were received have also been incorporated in the Plan or will be considered as part of the future development of Valley Management Plans.

The Interim Plan will operate fully for the 1992/1993 irrigation season, commencing October. It is intended that the Interim Plan will be replaced by a comprehensive State Policy and by Valley Management Plans for the 1993/94 irrigation season. Attachment A outlines the policy concepts and management objectives of these Plans.

## **2. COMMENTS ON THE DRAFT PLAN**

Submissions were received from organisations and government authorities representing irrigators on regulated tributary streams and the Barwon-Darling River, environmental interest groups, aboriginal interests, Local Government and riparian landholders. A number of presentations and discussions were held with peak interest groups. The Department thanks particularly the Unregulated Flow Working Group and the Inland Rivers Network for making their time available to participate in the development of the Plan. Attachment B lists submissions received.

In the space available it is difficult to represent the full range of views expressed. What was apparent, was the genuine interest in being better informed of the river health problems and cooperating in the rational management of unregulated flows.

Some submissions expressed concern about the effectiveness of target flows for algal suppression and fish migration and the scientific basis for these targets. Estimates of the frequency and impacts of the proposed changes on the irrigation industry and supporting financial institutions were also questioned. The general thrust of water-user comments was that they should be consulted about water-sharing decisions and that target flows should be administered with appropriate flexibility, recognizing conditions existing at the time.

On the other hand, the Plan and the flow targets proposed were not viewed as sufficiently precautionary by several groups. They also saw a need to reserve water for a much wider range of environmental purposes. However, there was general recognition that water quality problems and declining fish populations indicated river system health was at risk. As a result, there was strong support for actions proposed in the Draft Interim Plan and further action to prevent over-commitment of water for irrigation and other uses.

There was also strong backing for introducing a quota system for sharing water between tributary irrigators during each off-allocation flow event. As well the introduction of volumetric limits to extractions and time/event/flow meters on the Barwon-Darling River was well supported. Those opposed to an upper limit on off-allocation extractions claimed that sufficient controls were already in place through present licensing arrangements and practical commercial constraints. Others argued that given the present lack of knowledge on the sustainability of the river system, the limits proposed would allow too much water to be extracted.

There was endorsement for proposals to enhance the Department's technical capacity to forecast flows and to assess target flow effectiveness. Particular interest was expressed in accelerating construction of fishways along the Darling River as an alternative to the fish migration target flow.

There remains concern about the apparent unfair burden of costs to be borne by irrigators in the implementation of the Plan. There were strong demands for the NSW Government to accelerate actions to reduce sources of nutrient inputs from sewage treatment plants

and involve the Queensland Government and the State's Border River region irrigators in unregulated flow management.

## **OPERATIONAL TARGETS**

### **Riparian Flows**

**Off-allocation pumping and B and C class license operation will not be permitted unless the riparian flow targets are met.**

The flow targets at each town along the Barwon-Darling will vary depending upon the inflows from tributaries downstream of Mungindi. If no such inflows exist the targets would be:

Town	Target Flow ML/d
Mungindi	850
Collarenebri	760
Walgett	700
Brewarrina	550
Bourke	390
Louth	280
Wilcannia	150

If tributary inflows exist the target flows upstream of that tributary will be reduced.

### **Algal Suppression Flow**

**Access to unregulated flows will be managed to achieve a flow of at least 2000 ML/d for 5 days at Wilcannia in the period October to April inclusive, unless a flow of at least this size has occurred within the preceding 3 months.**

Normal pumping will be permitted unless it is assessed that pumping will reduce flows below this target. To achieve this target it may then be necessary to restrict off-allocation access in the tributaries and the operation of B and C class licenses on the Barwon-Darling.

It may be necessary to restrict pumping on the tributaries prior to 3 months of below algal suppression flows at Wilcannia to allow for the time it takes for flow to travel from the tributaries to the lower Barwon-Darling.

## Fish Migration Flows

**Access to unregulated flows will be managed to achieve a flow of at least 14000 ML/d at Brewarrina and/or 10000 ML/d at Bourke for 5 days in the period September to February inclusive, unless two such flows have already occurred within this period.**

To achieve this target it may be necessary to restrict off-allocation access in the tributaries and the operation of B and C class licenses on the Barwon-Darling.

It is assessed that pumping will not reduce flows below this target or if restrictions on flows will not allow the target to be achieved, normal pumping will be permitted. Flow events of sufficient size to achieve the fish migration target usually have a substantial period of high flows following the flow peak during which significant pumping can take place.

The Department has arranged for the design and construction of fishways at Bourke and Brewarrina Weirs. It is anticipated that these will be completed by the end of September 1992.

Once the fishways are operational, the target flows for fish migration will be suspended.

If, during the course of the Interim Plan Investigations, appropriate target flows for fish migration at other sites or other essential river health targets can be validated, these will be introduced after consultation.

## **4. AREAS OF APPLICATION**

**To meet the target flows in the Barwon-Darling may require restriction of off-allocation access in the Border Rivers, Gwydir, Namoi or Macquarie Valleys. Restrictions may only be needed during the Initial stages of a flow event.**

Because of channel capacity limits, the Macquarie Valley can only make modest contributions to the Barwon-Darling through the Northern Marsh Channel and the Bogan River. These flows will only be provided after provisions of the Macquarie Marshes Water Management Plan have been satisfied and pumping of these flows along the unregulated lower Macquarie and Bogan systems will be restricted.

Unregulated flows in the Gwydir are needed to support that system's major wetlands. A strategy for management of these flows to provide for environmental needs is currently being developed by the Department. Only flows from those streams which cannot contribute to the wetlands will be used to meet the Plan targets.

## **5. SHARING OF UNREGULATED FLOWS BETWEEN IRRIGATORS**

**Off-allocation quota schemes similar to that applying in the Gwydir Valley will be implemented in the Border Rivers and the Namoi.**

Water available for off-allocation use will be shared between licence holders using a quota system. During each off-allocation event each water-user will be permitted to take an off-allocation volume equivalent to an announced percentage of the licenced on-allocation entitlement. These percentages will be advised on local radio or by other means.

Other possible sharing methods will be discussed with users and the public during the development of the State Unregulated Flow Policy and Valley Management Plans. Annual diversion limits and individual historical use of off-allocation supply could form elements of future sharing arrangements.

No matter what sharing system is finally adopted, off-allocation management will need to consider environmental priorities, the claims of downstream water-users to supply and the inter-State obligations which now apply to use of Murray-Darling water. This will mean that future off-allocation access opportunities will reduce and the quantities which irrigators take could be less.

*Any irrigator considering an investment in on-farm storage should consider the probability of reduced future off-allocation access. It would be unwise to expect that a further off-river storage development on any of the North-West regulated streams will necessarily qualify for a greater share or volume of future off-allocation water.*

**The annual volumetric limits contained in the Department's document "Water Licencing Policy for the Barwon-Darling River 1991" will be implemented between Mungindi and Menindee.**

Volumetric limits are a fairer way of sharing of available Barwon/Darling supply than the present irrigated area limits. Irrigators will be informed of their new volumetric limits.

**Additional restrictions will be considered for all new licences along unregulated tributaries and effluents of the Border Rivers, Gwydir, Namoi, lower Macquarie and Barwon-Darling river systems.**

Continued growth in water use along unregulated streams in the North-West is also reducing water available to downstream users and the environment. Restrictions on new licences on these streams would be an extension of actions already taken on the regulated streams and along the Barwon-Darling.

## **6. MONITORING AND RESEARCH PROGRAMS**

### **Irrigation Monitoring**

**All Barwon-Darling licenses with on-farm irrigation storages will be required to fit approved time/event/flow meters before October 1992. Others with allocations greater than 1200 ML or an authorised area greater than 80 ha will be required to install an approved time/event/flow meter on irrigation pumps before October 1993.**

Unless a time/event/flow meter is installed, all licenses for smaller allocations or areas will be required to maintain records of their pumping activities and make these available to the Department on request and at the end of each water year. Newsletters will be sent to all irrigators in the near future informing them of details of the metering requirements.

There will be increased monitoring of pumping activities and violations of license conditions will be actively pursued and offenders prosecuted.

Irrigators on the regulated tributaries will be required to fit time/event/flow meters progressively within the next 3 years.

### **Water Quality and Algae**

**The Department's existing water quality sampling program will be expanded to include algal monitoring along the Barwon-Darling River.**

This monitoring will be used in assessing the performance of the Plan's target flows and the need to modify them. It will also be useful in research for other methods of algal protection.

### **Fish Flows**

**Investigations will continue to determine the water quality and flow conditions required to maintain a healthy and sustainable fish population in the North-West river system.**

Research will continue to determine the flow rates required for fish to migrate over the many weirs and other barriers along the Barwon-Darling.

Investigations have commenced on the provision of fishways at weirs to reduce the flow rates and to increase fish migration. Alternatives for the Bourke and Brewarrina Weirs are being assessed.

## Flow Forecasting

**The Department will develop an improved flow forecasting system for the North-West.**

Forecasting of flows in the Barwon-Darling as soon as possible after rain and as flows develop is essential if decisions are to be made about whether restrictions on pumping are necessary to meet Plan targets.

The improvements in flow forecasting methods which will be possible will depend on available funds. The present manual system would first be upgraded. However, further improved data collection and a computer analysis system would be needed to achieve the best possible results.

## Funding of Programs

**Additional funding from charges on water-users on both the Barwon-Darling River and the regulated tributaries will be necessary to fund the above programs.**

Without further funds the risk that pumping restrictions will be required during the life of this Plan and during later years will be increased.

These funds would be necessary to provide additional surveillance and analysis of unregulated flows and water usage, increased staff time to operate the system and to allow algal and fish monitoring and the development of the flow forecasting system to occur. These charges will be discussed with user groups.

## **7. REVIEW AND REPORTING**

**An Advisory Group convened by the Regional Manager Barwon will be established to assist the Manager in meeting Plan objectives. The Group will include Department water supply and environmental staff and a New South Wales Fisheries nominee. An irrigator representative nominated by the Irrigators' Council and an environmental representative, nominated by the Inland Rivers Network, and a representative of the North West Total Catchment Management Committee will also be invited to join the Group.**

The Group will advise the Manager of the water requirement priorities current at the time and of appropriate flow management. It will also evaluate the effectiveness of operational decisions, taking into account feedback from the various monitoring programs, and make recommendations concerning possible changes.

**The Manager Barwon will review and report on the Plan's performance every six months.**

This report will need to include:



- rainfall and streamflow data;
- details of pumping announcements and actual pumping activities;
- a summary of the flow forecasting procedure and its accuracy;
- the consequences of decisions for Plan targets.

The report will be circulated to peak interest groups including New South Wales Fisheries, State Pollution Control Commission, the Inland Rivers Network, Irrigator Advisory Associations in the North-West and Shire Councils along the Barwon-Darling and other groups nominated in submissions.

## **8. FUTURE DIRECTIONS**

The time of unfettered use of unregulated water is now over. We must recognise that the health and sustainable use of all the rivers of the Barwon-Darling are connected. If we are to protect our river ecosystems, acknowledge the rights of the many diverse interests in the community and ensure the long-term viability of irrigation, our attitudes to unregulated water must change.

While the Interim Unregulated Flow Management Plan for the North-West will provide recognition to some environmental flow priorities and to the notion of equitable sharing between users, it represents only the start of a management rationalisation process. The Interim Plan submissions received have confirmed that the community sees that management of river flows must look to more than satisfaction of user needs. The submissions also confirm the importance of unregulated flow to irrigation in the region, an industry central to the economic well-being of many North-West communities.

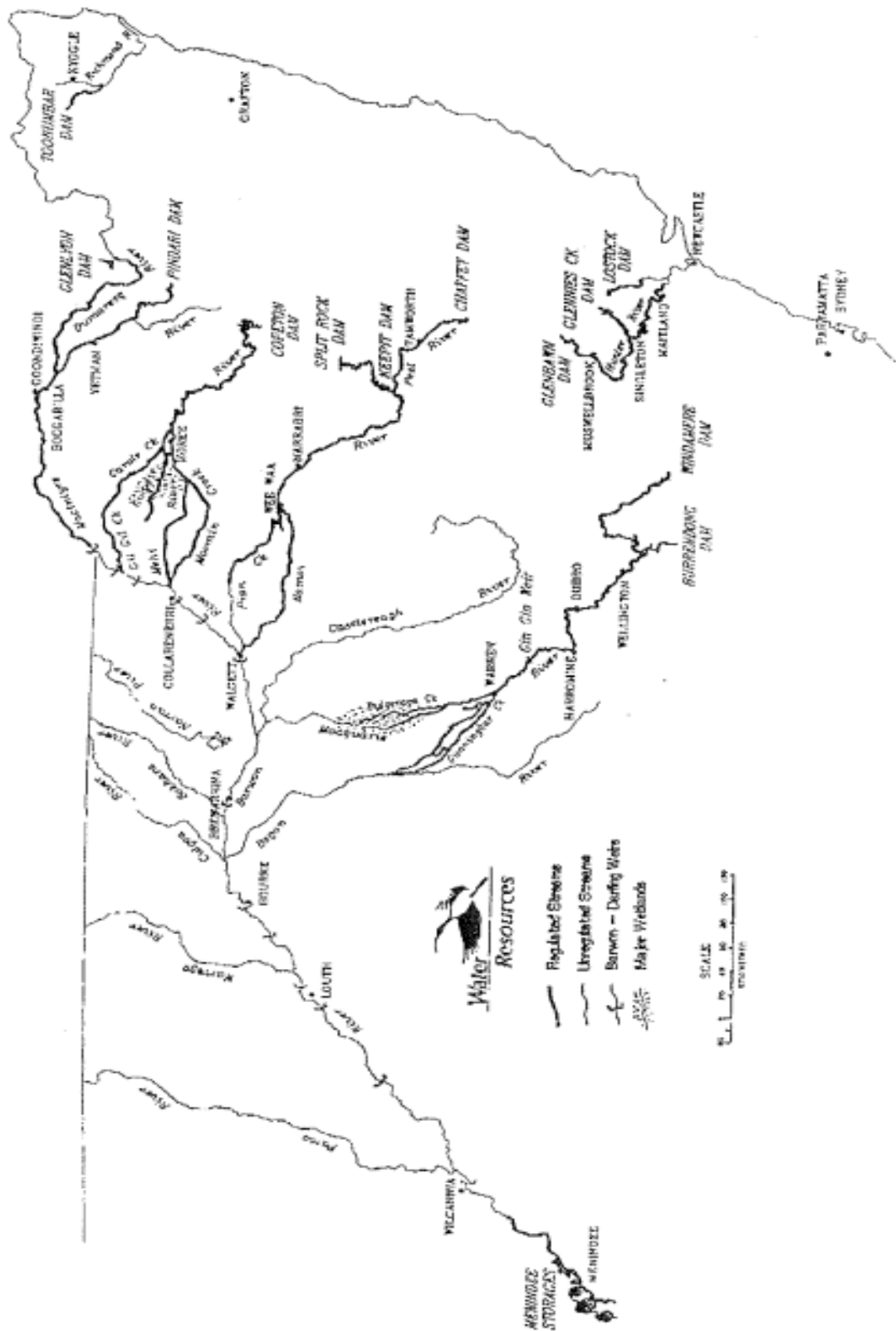
Future unregulated flow management will need to address all the competing demands and reconcile the opposing views. Bounds on use will need to be fixed if the goal of sustainable and acceptable use of unregulated flows in our North-West rivers is to be achieved. All parties will need to compromise.

There are also inter-State considerations to unregulated flow management. Inter-state agreements and rational management demand that we acknowledge that all inland river systems are connected. Queensland's recent decision to join the Murray-Darling Basin Commission is welcomed and should help to foster the necessary "one system" view of water within the Basin. The cooperation of Queensland authorities and irrigators is vital in managing unregulated flows to meet the objectives of this Plan and is being sought.

The Interim Plan is part of a package of actions being taken to reduce the blue-green algae threat. These include detergent phosphate controls and artificial wetlands; these form part of a long-term total catchment management approach. Measures to control inflows of phosphorous and other nutrients from rural and urban areas, including improved sewage treatment, will be introduced. The New South Wales Blue-Green Algae Task Force and the Murray-Darling Basin Commission are addressing these needs.

The State Unregulated Flow Policy and Valley Management Plan development process will provide a much wider scope for community consultation than has been possible during the necessarily rapid preparation of the Interim Plan. The issues addressed will also be broader and more comprehensive. However, even then, the rules cannot remain set forever. Fixed management rules will not produce the best long-term results. The Policy and Plans will need to be flexible and accommodate changes in knowledge and community views. In the future a more adaptive approach to management of our streams will be needed. Attachment A describes the principles which will underlie the Policy and Valley Plans and the process which will be followed in setting them up.

Figure 1





## ATTACHMENT A

## UNREGULATED FLOW MANAGEMENT – POLICY AND VALLEY PLANS

## Policy Precepts

- healthy rivers are important for the community and must be safeguarded;
- the long-term survival of our rivers and their plants and animals requires that some flow variability, including high flows, be retained;
- the community and economic development requires the storage, control and use of the State's river systems;
- the significant financial and social investment in irrigation depends in part on access to unregulated water;
- the State's inland water resources are insufficient to supply all potential consumptive demands and still meet the needs of river health and river plants and animals;
- the environmental needs of downstream valleys must be considered;
- users in downstream valleys have a right to an equitable share of unregulated flows;
- unregulated flow extractions cannot grow indefinitely without harming the environment, downstream users and users in the source valley.

## Management Objectives

- to ensure the overall sustainability of the health of the State's rivers and of their plants and animals;
- to protect important ecosystems;
- to achieve river health and water quality targets;
- to encourage the efficient and economically most productive use of water;
- to maintain the regional integrity of irrigation;
- to minimise community disruption and conflict;
- to share water in an equitable way which is acceptable to the community;
- to involve the community in policy development and review.

## Probable Features of the Sharing System

- Sharing priority will generally be:
  - domestic and stock needs of all users;
  - environmental needs in the source valley;
  - environmental needs in downstream valleys;

- it should be flexible to maximise community benefits from each flow event and to allow incorporation of new knowledge and experience;
- consumptive user rights should be defined and transferable;
- unregulated flow management rules will become part of specific valley management plans for each valley;
- the volumes of water available for diversion will be limited.

The three strands to development of unregulated flow management will be:

- this Interim Plan for the North-West;
- a State Policy, which will set out Statewide management objectives and principles will be developed during 1992 in consultation with the public;
- Valley Management Plans, setting rules specifically tailored to each Valley, which will be developed over the next two years, starting with the North-Western river systems.

ATTACHMENT B

ORGANISATIONS MAKING SUBMISSIONS ON  
THE DRAFT INTERIM PLAN

ATSIC Bourke Regional Office  
Bourke Water Users' Association  
Central Darling Shire  
Co-ordinating Committee of the Namoi Water Users  
Gwydir Water Users' Council  
Inland Rivers Network  
Lower Murray-Darling River Management Board  
Macintyre Valley Cotton Growers' Association  
Macquarie River Advisory Committee  
Mungindi-Menindee Advisory Council  
National Parks Association of NSW  
NSW Fisheries  
NSW Agriculture  
NSW Border Rivers' Council  
NSW Irrigators' Council  
Walgett Shire  
Various Individuals