

The CAP



Providing security for water users and sustainable rivers

Background

The Murray-Darling Basin covers most of inland south-eastern Australia. It includes much of the country's best farmland and over two million people. Outside the Basin another million people are heavily dependent on its water. Use of the Basin's water resources has made possible the expansion of agricultural development into the huge inland areas of Australia, away from the upland regions of the south-east Basin and the wetter coastal fringe.

The value of the Basin's agricultural produce exceeds \$10 billion. Of this, \$3 billion is derived from irrigation, the economic importance of which is even greater than this figure suggests. Irrigated crops support large numbers of jobs in urban areas and are a significant export income earner. Food processing is the largest secondary industry sector in Australia and it depends heavily on irrigation to provide the steady supply of high quality produce that it needs.

Why the Cap?

- River systems showing signs of stress
- No certainty that the current riverine environment is sustainable with the current regime
- Increased growth in diversions would reduce security to existing irrigators
- No margin of safety for any further changes that will have an adverse impact on water quality (e.g. the emerging problems of dryland salinity)

Since the 1950s, there has been a substantial increase in the quantities of water diverted from the waterways of the Murray-Darling Basin and significant changes to its river flow regimes. Whilst the development of the Basin's water

wetland, native fish numbers have declined in response to the reduction in flow triggers for spawning, salinity levels have risen and algal blooms have increased in frequency in line with the increased frequency of periods of low flow.



Lock 15 - Euston, River Murray

Photo credit: © Michael Bell

resources has brought many benefits, the consequent changes now present a major challenge for the management of the Murray-Darling Basin's water resources and the maintenance of the health of its rivers.

Among other things, the levels of water diversion have significantly reduced flows in the lower reaches of the River Murray, so much so that median annual flows from the Basin to the sea are only 27 per cent of those that would have occurred prior to development. The reduction in flow has affected most notably the small to medium size flood events. The frequency of these events has been substantially reduced and many of them are completely utilised. One consequence is that the lower reaches of the Murray now experience severe drought-like flows in over 60 per cent of years compared with 5 per cent of years under natural conditions.

The changes to the flow regime have had a significant impact on river health. There has been a reduction in the areas of healthy

Audit of Water Use in the Murray-Darling Basin

The Murray-Darling Basin Ministerial Council (the "Ministerial Council") consists of the ministers responsible for land, water and environmental resources in each of the Australian, New South Wales, South Australia, Victoria, Queensland and the Australian Capital Territory Governments. Being a political forum, the Ministerial Council has the power to make decisions for the Basin as a whole. Resolutions of the Council require a unanimous vote. This means that decisions taken by the Council represent a consensus of Government opinion and policy across the Basin.

Audit Findings

- 7.9% growth between 1988 and 1994
- 63% of water permitted for use was utilised
- Potential future growth of a further 14.5%

In June 1993, in response to the changes to the flow regimes in rivers within the Basin and their consequences, the Ministerial Council directed that a report be prepared on the issue. This report, "An Audit of Water Use in the Murray-Darling Basin" was published by the Ministerial Council in 1995.

The Audit confirmed increasing levels of diversions and the consequent decline in river health. From 1988 to 1994, water consumption in the Basin increased by 7.9 per cent overall (see Figure 1). By 1994, water consumption in the Basin had reached 10,780 GL per year. In the northern parts of the Basin, the percentage increases were very much greater, largely as a result of the expansion of the cotton industry, though large increases were also experienced in other areas.

The Audit examined the scope for diversions to grow further under the water allocation system that existed at that time. The existing system had evolved at a time when water managers were trying to encourage development of the Basin's water resources. As such, the system rationed water during periods of shortage but was not effective for controlling diversion during normal non-drought conditions.

In the five years before the Audit, only 63 per cent of the water that was permitted to be used was used, leaving considerable scope for further increases in consumption, without any change in entitlements.

The Audit found that average diversions could increase by a further 14.5 per cent if expansion under 1993/94 management rules was unrestricted. This increase in diversion would reduce security of supply for existing irrigators. Increased diversions would mean that the level of reserves held in the storages will be lower than is currently the case. This would reduce the capacity of the storages to be a reliable source of supply during long periods of drought. Under this scenario, water supplies for existing irrigators would therefore become less secure and river health problems would be exacerbated.

The Cap - The Response of the Ministerial Council

In response to the issues raised by the Audit, the Murray-Darling Basin Ministerial Council at its June 1995 meeting decided to introduce an interim Cap on diversions of water from the Basin. In December 1996, this was confirmed as a permanent Cap effective from 1 July 1997.

This was seen as an essential first step in establishing management systems to achieve healthy rivers and sustainable consumptive uses. In other words, the Council determined that a balance needed to be struck between the significant economic and social benefits that have been obtained from the development of the Basin's water resources on the one hand, and the environmental uses of water in the rivers on the other.

Ministerial Council Response

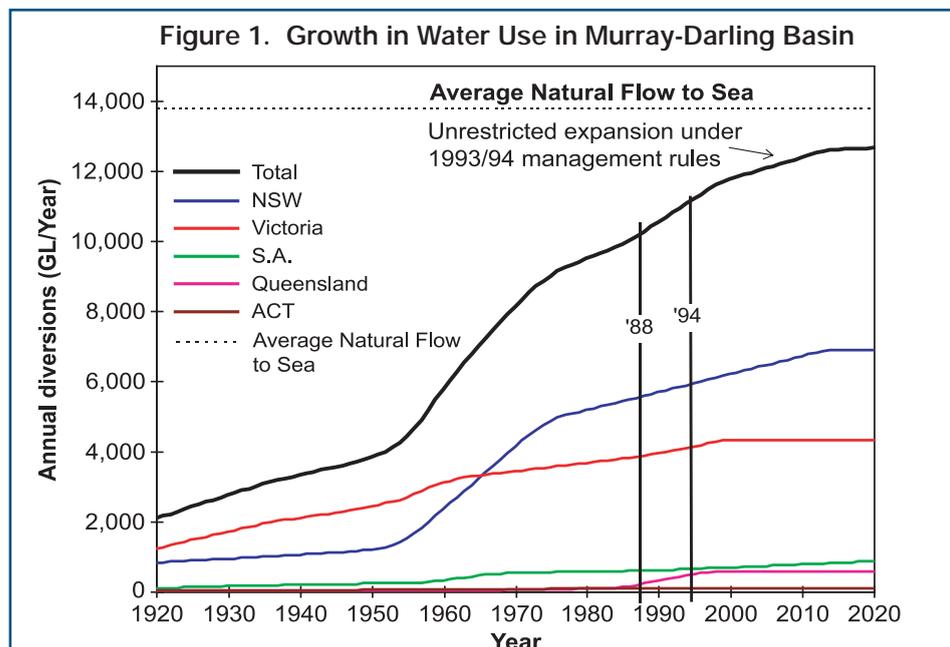
- Cap diversions at 1993/94 levels for New South Wales, Victoria and South Australia
- Audited WAMP/WRP process to determine Cap for Queensland

The Ministerial Council agreed that the Cap be defined as:

"The volume of water that would have been diverted under 1993/94 levels of development".

For reasons of equity, the Cap may be adjusted for certain additional developments that occurred after 1993/94. In terms of each State, it has been agreed that:

- for New South Wales and Victoria, the Cap is the volume of water that would have been diverted under 1993/94 levels of development, subject to two small allowances that will be made for Pindari Dam (NSW) and Mokoan Storage (Victoria);
- for South Australia, diversions should be capped at the level that enables the development of its existing high security entitlements. This represents a small increase in diversion over 1993/94 levels of development and is equal to the long-term average of 90% of the amount on very high security licences that existed in 1993/94;





Centre pivot irrigation, Macquarie catchment, central NSW

Photo credit: © Peter Soliness

In this context, observations of the Independent Audit Group established by the Ministerial Council are important.

The Cap should restrain diversions, not development. With the Cap in place, new developments should be allowed, provided that the water for them is obtained by improving water use efficiency or by purchasing water from existing developments.

In addition to the Cap, individual States are pursuing their own water reform processes. These processes, such as environmental river flow objectives, may themselves result in the reduction of water available for diversion in the long-term. Such reductions, although independent of the capping process, should however ensure the long-term compliance of diversions in such valleys to Cap targets.

Implementing the Cap

The Cap was formally put in place for New South Wales (NSW), Victoria and South Australia (SA) by the Ministerial Council effective from 1 July 1997. For Queensland

and the Australian Capital Territory which together divert less than 7% of total water being diverted in the Basin, the Cap arrangements are still being worked out. However in Queensland, a moratorium on further development has been in place since September 2000.

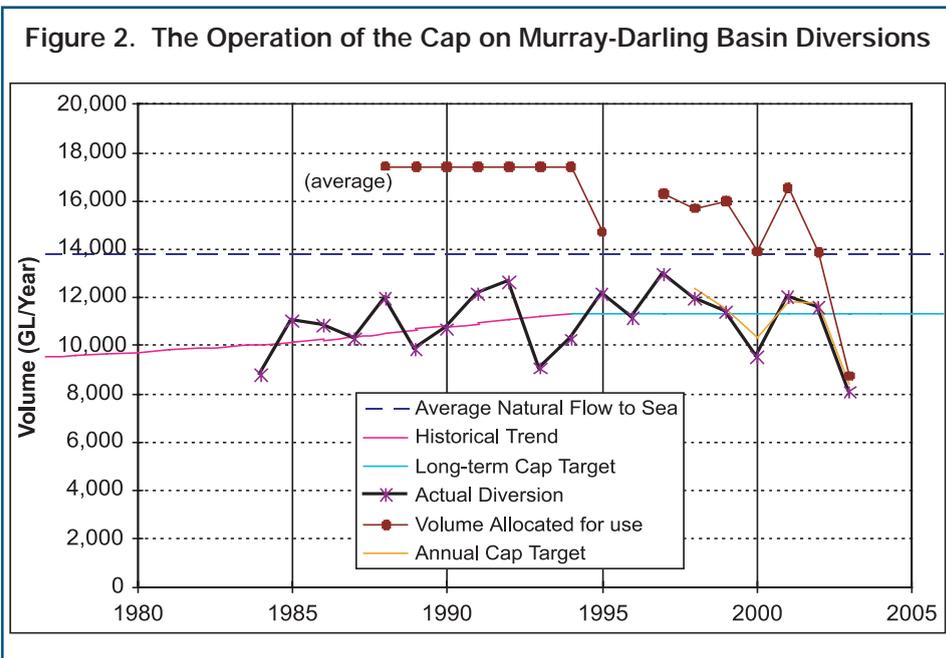
Implementation

- Statutory framework – Schedule F to the Murray-Darling Basin Agreement
- Implementation - the responsibility of individual States
- Cap not a restriction on development
- Future development through efficiency gains and water transfer

- the Cap for Queensland should be determined after an independently audited Water Allocation Management Planning (WAMP) process had been completed.
- a Cap will be developed for the ACT in line with the recent decision of the ACT Government to participate in the Murray-Darling Basin Initiative (the details of the ACT Cap are still to be resolved).

The Cap in New South Wales and Victoria is not the volume of water that was used in 1993/94. Rather, the Cap in any year is the volume of water that would have been used with the infrastructure (pumps, dams, channels, areas developed for irrigation, management rules, etc.) that existed in 1993/94, assuming similar climatic and hydrologic conditions to those experienced in the year in question. Thus, the Cap provides scope for greater water use in certain years and lower use in other years, as illustrated in Figure 2. The Cap itself does not attempt to reduce Basin diversions, it merely prevents them from increasing. The Ministerial Council decided that preventing any increase in diversions from the Basin was essential to arrest further decline in both river health and the security of supply to existing water users.

By agreeing to the Cap, the Ministerial Council has effectively established a new framework for water sharing in the Basin. This decision considerably changed the way the water allocation system is managed across the Basin. To reduce the gap between the volume of water allocated and the usage expected under the Cap,



the system of allocating water will need to be continually tightened over time. The process used to achieve this outcome is determined by individual States but typically it involves reducing access to off-allocation and to limiting the allocation of “general security” and “sales” water. The tightening of the allocation system to deal with this issue could have been expected without the decision to cap diversions. The Cap, however, has made this process more obvious.

The Cap is being managed in accordance with the set of formal rules in Schedule F to the *Murray-Darling Basin Agreement* which was adopted in August 2000. The purposes of this Schedule are:

- to establish long-term diversion Caps from rivers within the Murray-Darling Basin, in order to protect and enhance the riverine environment;
- to set out action to be taken by the Ministerial Council, the Commission and State Contracting Governments to quantify and comply with annual diversion targets; and
- to prescribe arrangements for monitoring and reporting upon action taken by State Contracting Governments to comply with annual diversion targets.

Schedule F requires an approved Cap model to be used for the determination

of annual diversion Cap target for each of 22 designated Cap valleys. The development of Cap models for valleys within its jurisdiction is the responsibility of the concerned Government. Once a Cap model has been developed, it is subjected to independent technical audit to ensure that it appropriately represents the Cap



Vineyard, Macquarie catchment, central NSW

Photo credit: © Peter Solness

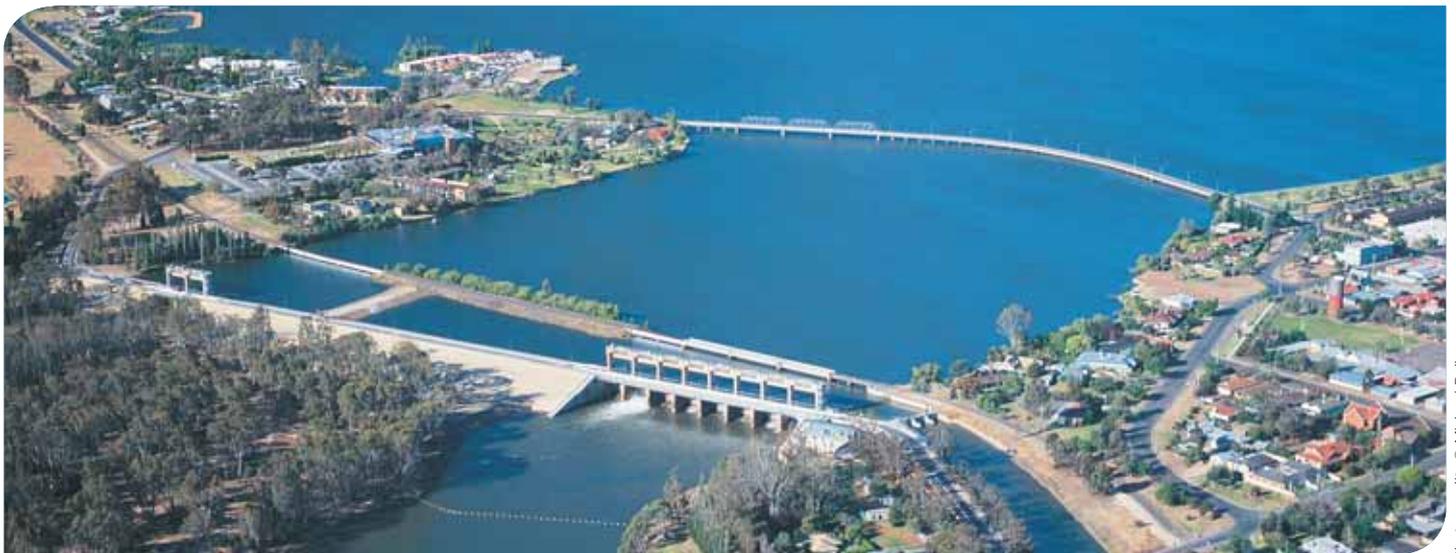
conditions. Following this audit, the Cap model is submitted to the Commission for approval. The implementation of the Cap within each valley under its jurisdiction is also the responsibility of the respective State or Territory. The Commission is responsible for auditing the compliance with the Cap.

An Independent Audit Group (IAG) conducts an annual audit of the diversion in every designated Cap valley of the Basin in October every year, comparing observed diversion against annual targets determined by the valley Cap models. If

the cumulative difference since 1997/98 between the annual diversion Cap target and the observed diversion for a valley exceeds 20% of the long-term Cap, the IAG conducts a Special Audit. In a Special Audit, the IAG may consider additional information such as crop areas, on-farm storage volumes, operational rules and the results of computer models. If following the Special Audit, the IAG determines that a valley is in breach of the Cap, the Commission must declare that valley in breach and advise the Ministerial Council. In the case of a breach of the Cap in any valley, the concerned State Government is required to report to every Council meeting subsequent to the declaration of the breach of Cap on: (a) the reasons why the breach occurred; (b) the actions taken, or proposed to be taken by the State to ensure that diversions are brought back into balance with the Cap; and (c) the period within which diversion will be brought back into balance with the Cap.

Monitoring and Reporting the Cap Implementation

In addition to the annual IAG Report on Cap Implementation published in March, the Commission also publishes every year a Water Audit and Monitoring (WAM) Report on Cap implementation. Whereas the focus of the Independent Audit Group Report is the Cap compliance and the



Yarrowonga Weir and Lake Mulwala, River Murray, on the New South Wales and Victorian border

Photo credit: © Michael Bell

activities related to it, the WAM Report provides a broader picture of the Cap compliance, water use, accuracy of water use figures, climatic overview for the water year, water availability through allocations, off-allocations and water trading, storage losses and groundwater use.

Monitoring

- Comprehensive monitoring arrangements
- An Independent Audit Group audits the compliance with the Cap and determines any breaches
- In case of a Cap breach, the concerned Government is required to report in every Council Meeting on reasons of breach, actions for compliance and timeframe

The Diversion Cap Register is published as the appendices to the WAM Report. The Diversion Cap Register provides details for every designated Cap valley and for every reporting year since 1997/98, of annual Cap targets, diversions and trades and lists the cumulative Cap credits or debits since 1997/98. This Register is the formal record of diversions and Cap compliance in the Basin. As the WAM Report is published later than the IAG Report, diversion figures for the water year in the WAM Report are considered to be the final figures for the water year and supersede the diversions data reported in the IAG Report.

Both the IAG Report and the WAM Report are public documents and are widely circulated in hard copy to the jurisdictions through the contact officers and also to other stakeholders and the general public. The IAG Reports and the WAM Reports on Cap implementation since 1997/98 are also available on the Commission's web site (www.mdbc.gov.au).

Review of the Operation of the Cap

In 1999, the Murray-Darling Basin Ministerial Council commissioned a comprehensive review of the operation of the Cap. This review focused on how the Cap can be refined to better meet the needs of the Basin. The "Review of Cap Operation" completed in 2000 concluded among other things that:

- the Cap has supported the Ministerial Council's aim of achieving the ecological sustainability of the Basin's river systems;
- while the Cap does not necessarily provide for a sustainable Basin ecosystem, it has been an essential first step in achieving this outcome;
- without the Cap there would have been a significantly increased risk that the environmental degradation of the river system of the Basin would have been worse;
- the Cap is ensuring and enhancing security of water supply and thereby providing a certain climate for long-term investment.

Many other water reforms in the States and nationally have followed the implementation of the Cap. These reforms have promoted the efficient use of water and provided benefits such as the provision of environmental water for the rivers and the creation of property rights in water.



Barmah-Millewa Forest wetlands

Photo credit: © AM Photography/Arthur Mostead

Conclusions

The Cap is essential to the achievement of the objective of the Murray-Darling Basin Initiative:

to promote and co-ordinate effective planning and management for the equitable, efficient and sustainable use of the water, land and other environmental resources of the Murray-Darling Basin.

While issues remain to be resolved with regard to the Cap implementation, there can be no doubt that it has halted the growth in diversions and therefore is the first step in protecting water quality, water supply reliability and environmental health. The Cap is the starting point for any water recovery under "The Living Murray," which is a major initiative to provide environmental flow for the River Murray System.



Murray Mouth - Goolwa, South Australia

Photo credit: © Michael Bell



**Further Reading
(available at:
www.mdbc.gov.au)**

1. Murray-Darling Basin Ministerial Council (1995). **An Audit of Water Use in the Murray-Darling Basin.** Murray-Darling Basin Ministerial Council, Canberra.
2. Independent Audit Group (1996). **Setting the Cap.** Murray-Darling Basin Ministerial Council, Canberra.
3. Independent Audit Group. **Review of Cap Implementation Reports 1996/97 - Current.** Murray-Darling Basin Ministerial Council, Canberra.
4. Murray-Darling Basin Commission. **Water Audit Monitoring Report 1996/97 - Current.** Murray-Darling Basin Commission, Canberra.
5. Murray-Darling Basin Commission (1998). **Murray-Darling Basin Cap on Diversions 1997/98 - Striking the Balance.** Murray-Darling Basin Commission, Canberra.
6. **Schedule F** to the *Murray-Darling Basin Agreement*.



Further Information

For further information, please contact the MDBC or the agency in the concerned State.

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