SOUTH AUSTRALIAN FISHING INDUSTRY COUNCIL INC. (SAFIC)

Submission to the Murray Darling Basin Commission

Review of the Operation of the Cap

6th July, 2000

This submission is made on behalf of the commercial fishing industry and particularly the River Fishery and the Lakes & Coorong Fishery.

The South Australian Fishing Industry Council (SAFIC) is the peak industry body representing the River and Lakes & Coorong Fisheries.

BACKGROUND

The River Fishery consists of 30 fishers, each fishing a reach system which extends along the Murray River from Wellington to the Border. The actual areas fished are restricted to within the commercial reach area for each fisher, a total of one third of the river. From Wellington to the Mouth, our fishery consists of 38 families forming the Lakes & Coorong fishers.

The entire length of the Murray system (river and lakes) is available for the recreational fishing industry, tourism and related water activities including the commercial reach areas.

Recently SAFIC made a submission to the ERDC on the sustainability of the fishery in the Inland Waters. The final statement in that report suggested Parliament should be more concerned about the sustainability of the River Murray itself, rather than one of the users of the resource.

The Murray-Darling Basin Ministerial Council Cap has been in place since June 1995. The operation of the Cap was to be reviewed in 2000 – this is that draft review.

Introduction of the cap was twofold in purpose:

1) halt declining river health
2) secure levels of irrigation in a sustainable manner.

The Cap must continue to be seen as one part of a range of areas that are needed to control the above aims.

It is recognised that the 1995 introduction of the CAP was an essential and valuable first step but it is not clear if the current CAP level is such that it will result in sustainable practices.

From the commercial fishing industry perspective, our enterprise is expected to be conducted sustainably, with an appropriate management plan, and we therefore expect other agricultural pursuits are similarly sustainable.

Without integrated management of the whole process, it is difficult to expect one management tool to be effective.

SAFIC is supportive of a whole of catchment program which takes account of the parameters including environmental flows, irrigation uses, fish health and salinity control.

THE MURRAY RIVER SYSTEM

(1) Extent

The River Murray as we know it for South Australian purposes extends from the New South Wales border above Renmark to the Murray mouth at Goolwa. This section represents about 7% of the entire Murray-Darling Basin.

It is therefore very clear, that the remaining 93% of the Basin has a huge controlling impact on our Murray River system. To simply look at our section in isolation and expect that conservation and rehabilitation methods taken within that 7% of the Basin will be a solution is naive and misguided. Many actions taken within our State must be complimented by the activities in the remainder of the Basin.

Government has a leading role to play in this area and must take strong leadership for our resource protection.

Accepting the small portion the Murray plays in the overall size of the whole basin, it still provides 30% of South Australia's harvested water resources. In a "normal" year about 40% of Adelaide's water is drawn from the Murray and this figure has been as high as 90%.

(2) Water Flows

At least 1850 GL/year is the agreed flow into South Australia, unless it is a year of water shortage. The River Murray is heavily regulated with a series of water level/flow controls along its length.

Of great concern to the fishing industry is the low flows which have a dramatic effect on habitat for fish breeding and the detrimental effects on the sustenance of the Coorong and the closing of the Murray mouth at Goolwa.

It is estimated that final flows to the sea have decreased to $1/5^{th}$ of what was formally the case without regulation. It is therefore obvious that this is having major detrimental effects on the health of that ecosystem.

Irrigation flows are up to allocations of 555 GL/year with estimates that 85-90% of this allocation is currently being used.

Reticulated supply allocation is 180GL with estimates of 145 GL being used.

Further rights to buy and sell allocations, especially if those rights go interstate, will have the potential for a further negative effect on our section of the Murray.

There have been a series of regulatory structures put in place along the River to manage flow and water levels. This brings to the fore the importance of consideration of environmental flows and maintenance of habitat.

(3) Salinity

The recent release of the Salinity Audit for the Murray-Darling Basin Authority has highlighted the dramatic changes that are taking place as a result of considerable regulation, poor agricultural management strategies and large volumes of water diversions.

Salinity impacts occur from the areas of dryland salinity, reduced dilution of flows, land clearing and irrigation practices and salt loads flowing across the border.

(4) Management and River Regulation

Management Board

The importance of water resources in South Australia has been recognised and the management of them has been placed with Water Catchment Management Boards. The River Murray Catchment Board is one, in place to cover the River Murray Catchment within South Australia.

The role of the River Murray Water Catchment Management Board is defined in the Water Resources Act 1997. Principally the Act defines that a State Water Plan be written and as part of that plan, the River Murray Catchment Water Management Board is established to:

- Establish a water allocation plan
- Establish a catchment water management plan each being subject to 5-yearly reviews.

The Catchment Management plans must include, subject to the State Water plan:

- Assessments of water quality and quantity
- Threats and opportunities for sustainable development
- Develop regional strategies
- Incorporate those into an integrated, whole of catchment, strategy

The Water Resources Act 1997 has the goals of:

a) ensuring that these resources are able to meet the reasonably foreseeable needs of future generations and
b) Protecting the ecosystems (including their biological diversity) that depend on these resources.

SAFIC has a representative role on the Natural Heritage Trust State Panel and recently had the opportunity to visit the Murray Basin, meet with several LAP (Local Action Plan) groups, councils and community representatives.

The entire area is important agriculturally, both from on-land and on-water agriculture, important as a tourist destination and important as a supply of harvestable water for urban development and irrigation. Environmentally, the importance of the Lakes and Coorong is recognised as a Ramsar Wetlands listing.

2) Management of Water Quality

It has been widely reported and discussed, that the quality of water within the River Murray has been in decline for a long period. Many reports such as the State of the Environment Report have referred to measured changes causing concern. The release of the Salinity Audit appears surprisingly to have caught everyone's interest, where other reports in the past appear to have been largely ignored.

Quality of water is refereed to as part of the Water Resources Act 1997 where the Board is required to:

a) maintain or improve the quality of naturally occurring water
b) monitor the quantity and quality of the water in its water resources
c) methods for improving the quality of water in the Board's catchment area.

3) The State Water Plan

The State Water plan forms the strategic framework for the series of regional based water plans within South Australia. It concentrates on the water resources of the land-based rivers and waterways.

The Water Resources Act 1997 has directed the writing of and implementation of a State Water Plan to assess the condition of the State's water resources, identify risk management and degradation, set out management programs for use of water and monitoring of the State's water.

As part of the State Water plan it is necessary to consider the whole of natural resource management, in the context that water impacts on and is impacted on by the whole ecosystem.

This is particularly important when looking at how the River Murray is impacted on by the whole of the Basin, including decisions and policies of other States.

As the downstream recipient of the Murray-Darling flow we, as a State, are more greatly impacted on in many instances by what happens outside our borders then within.

To have this controlled by "partnerships" is not very satisfactory when the "partnership" can be changed or removed by the combined vote of other States. Clearly this is an area where far greater security and long-term clarity is required for South Australia.

The most recent revision and resigning of the collaborative arrangements between the Commonwealth, N.S.W., Victoria and South Australia was in 1992. Now Queensland and A.C.T. are also part of the initiative. The positioning of South Australia both geographically and politically means our position is continually under threat, doing nothing for security of both economic enterprises and the environment.

The State Water Plan, under the Water Resources Act 1997, must include discussion on areas such as:

- Water management via catchment boards and water resource committees
- ESD Principles
- Introduction of water plans

SAFIC believes that the State Water Plan and Regional planning process are a successful and potentially well organised way of devolving responsibility to the local users of the resource.

However, we cannot over-emphasise the importance of the impact upon even the best planning and management processes within our State, of these influences outside our State.

Under the State Water Plan issues are raised for Catchment Water Management Plans and Water Allocation Plans both based on considerable community input.

THE SALINITY AUDIT

The issues facing the Murray and explained in the Salinity Audit are well researched and not new. It should not have come as any surprise to anyone in Parliament or in South Australia generally, that the Murray is in trouble.

During a recent ERDC report of the Parliament to examine the "sustainability" of commercial river fishing, SAFIC made the concluding remark – "the Parliament should be more concerned about the sustainability of the River". For such an important waterway that has been the life blood of South Australia for so long and yet has only recently been seen to reach major importance in the eyes of this Parliament, is an indictment to this place.

The basic results from the audit are:

- Annual movements of salt in the landscape will double in 100 years
- Average river salinities will rise significantly
- Sources of salt are better identified

- Land areas impacted not well known
- Investment needs prioritising into best cost:benefit areas

According to the Salinity Audit, we have 20 years to get things right.

Data used from the audit includes:

- 16 million ha of the 100 mill ha of the Murray Darling Basin already experiences rising ground water levels.
- Readings and how they have changed in bores across the basin both in depth and salinity levels
- River salinities

The Salinity Audit predicts that in the next 50 years of the 8.3 million tonnes of salt mobilised, 3.3 million tonnes will be drained to rivers.

River Murray Salinity

The Salinity Audit indicates that rising salinity is occurring both in upper and lower reaches of the Murray-Darling system. Within South Australia, it is expected that all the salt mobilised will be able to reach the River. This will lead to values of 800EC and greater in the Murray within 50 years (the threshold value for drinking water). These levels are already reached but not on a consistent basis.

The introduction of the Salinity and Drainage Strategy has had a positive effect on river salinity by:

- Adopting the 1985 salinity level as the benchmark against which to measure changes
- Making each State responsible for any salinity effects
- Any action that increases salinity must be offset by work to rehabilitate that effect.

It is estimated that river salinity is much lower because of the introduction of the strategy, than it would have been without it.

The salinity level adopted as a benchmark at Morgan was 583EC. Under current levels of management this will be 791EC by 2050 and 900EC by 2100.

A major portion of this increase is from dryland salinity (60%), not irrigation.

Salinity Values

800EC units is used as the figure considered to be the limit for drinking water suitability. Above this level treatment costs lead to an uneconomic use of water as drinking and urban use. It is already uneconomic to treat GL of River water so that it can be placed onto Adelaide gardens and more sensible use of grey water should be encouraged.

If Governments were prepared to be serious, they would Legislate for each household to have a rainwater tank so that the demand, particularly in the summer months, on the Murray would be decreased. One can only imagine the extra water available to the River system if everyone within the Murray-Darling Basin had the use of rainwater for their own supply.

This is a further way of making everyone responsible for what is everyone's problem.

The total economic impact due to current levels of salinity is around $46.2 million/year and this will continue to rise if no new ideas and strategies are put in place.

1500EC units is the level where degradation to habitat and environment occurs. Water plants and insects will die at this level and it is detrimental to some crops.

5000EC units is the level where fresh water is declared salt water (or saline water). Although adult fish may tolerate this salinity, spawning fish cannot.

The introduction of the regulated dilution flows has proven essential in keeping salinity levels below 800EC at Morgan almost at all times.

Without intervention this level, due to dryland farming, will double in the next 50 years making that water unsuitable for drinking, irrigation and degrading habitats for fish and water plants.

The lower Murray area from Wellington to the Murray Mouth (known as the Lakes & Coorong) supports a valuable inland fishery. The salinities in this region are kept basically under control because of dilution flows and salt interception schemes.

These lower areas such as Lake Albert and Lake Alexandrina are faced with the extra problem of influx of higher salinity waters to accommodate the dilution flows. This will also have a detrimental effect on the anabranches and backwaters where a large proportion of fish breeding occurs.

Occasional salinities at Goolwa of 1500 EC already are experienced.

Flood plain and backwaters

Flood plain and backwater habitats are very important for the fishing industry.

Flood plain is defined as land adjoining the watercourse that is periodically subject to flooding from the watercourse.

Adjacent Backwater is defined as those backwaters that are adjacent to a reach, and defined by reach/backwaters coordinates endorsed on the licence.

Common backwaters is defined as backwaters that cannot be identified as being adjacent to a reach and so are defined as common backwaters.

Almost all backwaters are influenced by salt with EC levels almost always above 1000 EC units.

The flood plain areas tend to act as salt traps and when low waters occur, there is a flow of salt to the river. Consequently, the irrigators would be expected to raise a complaint about the level of salinity and hence the water levels are again artificially raised. The big question for the regulators is how do you get control over that salt problem without a massive flushing, such as the 1956 flood. How will this problem be handled to drain this salt away without total River Murray degradation and loss of habitat?

It is estimated that ≈ 25% or 26,000 ha of the flood plain is influenced by salt.

It was noted in the structural adjustment for the River fishery in 1989 (as approved by Government) the following:

- Water and land management have caused serious decline of native fish stocks
- Initiatives needed to enhance natural stock recruitment
- A joint State-Murray Darling River management advisory committee be formed to coordinate fish stock management, advise other agencies affecting native fish stocks and identify research priorities.

It is questionable that this momentum in 1989 was maintained from any source other than the commercial fishing industry.

WATER QUALITY

The River Murray suffers water quality problems from:

- Turbidity
- Low flow rates
- Point source and non-point source pollution
- River regulation

- Irrigation drainage containing high salt levels, nutrients, chemicals
- Stormwater and sewage effluent

a) turbidity, siltation and slugs of poor quality water effect the habitat for fish and have a negative effect on the efficiency of catch for both the commercial and recreational fisher. Satisfactory breeding conditions for carp leads to additional turbidity problems.

b) river regulation, by the use of upstream storages and weirs effects water quality by reducing flushing events.

c) run off pollution collects both surface salinity, sediments and pollutants to decrease water quality

Flow control of the River Murray system has been a detrimental contributor to water quality. An important positive effect of adequate environmental flows will be a boost to both the commercial and recreational users of the ecosystem.

The Catchment Board is not responsible for the management of the River regulation and the dichotomy of responsibilities can lead to conflicting effects on the river water quality.

Decisions need to be made to determine exactly what the water quality is being controlled for because there may be different emphasis for drinking water vs fish breeding.

Environmental flows have been called for to manage evaporation, salinity dilution, and to control turbidity and nutrient levels.

There are also potential conflicts between economic and environmental requirements. For instance, keeping the river levels at a constant level is unnatural and therefore at odds with maintenance of ecosystem health and water quality.

There will be a requirement to ensure that the allocation of water includes the requirement of environmental flow regimes to protect the whole of the River ecosystem.

The State Plan requires that water is used in the most economically valuable way but tempered by the requirement for ESD and protection of the sustainability of the resource.

DRYLAND SALINITY

Dryland salinity is a problem for the Murray and the whole catchment. For the Murray, the Salinity Audit suggests that 40% of the salinity at Morgan will be as a result of dryland salinity compared to 25% from upstream catchments.

It was estimated in 1998 that dryland salinity cost $700 million in land lost to agriculture and $130 million in production loss. There is an expectation, without radical and immediate changes to management that this cost of degradation will increase.

Dryland salinity is a particularly prevalent problem for South Australia because of our State's large areas of land clearance with deep-rooted plants being replaced by shallow rooted crops. This allows the groundwater to rise towards the surface, bringing salt with it to the surface.

Without deep-rooted trees removing this surface water and the associated salts, the salinity will degrade the land and eventually prevent growth of all vegetation.

Impacts occur when salt reaches within 2 metres of the surface. Accumulated salts at the surface, or close to the surface, flow to local creeks and rivers by movement of groundwater or runoff.

In South Australia's Murray Mallee, there are a range of initiatives being put in place by innovative dryland mallee farmers, using NHT grants and the like.

These are slow and if continually dependent on granting body money, will not always be successful.

Changed farming practices, changes to species cropped and re-treeing are all satisfactory improvement methods. But the authorities must recognise that to change a major farming practice requires investment. Farmers in these areas have already suffered years of lower or reduced monies because of the poor quality of soils. Many lack the available resources or even ability to borrow to implement major change.

Based on regional plans, it may be necessary for pro-active decisions to be made to:

- Close up worst effected areas to prevent further degradation increases
- Concentration of least effected areas to improve situations of greatest cost:benefit response

- Regional planning programs with broad scale impact management changes rather than small piece meal approach in isolated areas.

If we know from years of research and results that the issue is excess leakage because of the shallow-rooted crops, then solutions seem simple. The complications of reality, therefore, need to be factored in – the greatest of these being lack of money to diversify or to lock up land for rehabilitation purposes.

Mallee farming methods result in leakage of a few mm per year.

One positive response is to remove the fallow farming period resulting in 20-40% reduction in leakage. Lucerne as a short or long-term alternate crop further improves the soil moisture content but in very low rainfall areas, this becomes difficult to achieve.

Secondly, in grazing areas, the introduction of ago-forestry adds valuable deep-rooted plants to the system without lowering stocking rates. Leakage under normal pasture situations in high rainfall areas (>600mm) is as high as 100mm/year. Incorporation of trees into that environment can reduce the leakage by 2 or 3 fold.

Thirdly, where appropriate planting groups of trees on slopes to act as root intercepts of groundwater movement prevents excess water flow to lower land.

Tree belts are used to provide divides in cropping land to act as sponges to remove excess water that crops have not used in the growth phase. They can have an affect to 50m into a cropped area, suggesting treeblocks each 100m.

The other agroforestry process is as mentioned previously in combination with pasture/grazing where trees are planted plantation style throughout the landscape.

Removal of water is most active when trees are actively growing and can only use water within their capacity. Different species have the ability to use greater or lesser amounts of water and to exist in varying levels of waterlogging conditions.

Interception can also occur in shallow groundwater flow areas to prevent this saline water reaching aquifers by growing blocks of trees across a water flow path.

Fourthly, in looking for alternate farming practices, plantations may be, in a limited range of areas, an alternate crop. The limitation is the time that land is suddenly locked up, costs to implement this changed land use and lack of income over the growth period. Areas that could benefit from such plantation farming could be joint ventured by Government, other industries or cooperatives to save the cost being born by a single land owner. This could be considered as part of the salinity credits scheme.

Consideration of property planning to achieve both prevention of recharge into the aquifer and reclamation of affected land using salt tolerant plants and major tree plantings to prevent flows to creeks and rivers should all be used in combination.

Reality says that the problem is not neatly confined to a property, a local area or a region.

Dryland farmers have, for many years, quite rightly been unable to see the connection between their farming practices and the salinity effects many kilometres away. However, now that the connection is clear, both they and others in the catchment are working cooperatively towards seeking and implementing solutions.

It also needs to be acknowledged that salt accumulation, discharge and recharge have always occurred naturally. The change of a natural system to our farming system has speeded up and accentuated that problem. It may never be possible to ever return to the previous "natural" systems known in the past on a broad scale, but efforts should not be lessened because of that difficulty.

It is important to note that the most significant impact of salinity for the River Murray over the next 30 years will be from dryland salinity.

RIVER REGULATION

The Murray-Darling Basin Act 1993 provides for State entitlements of water from the Murray-Darling Basin via the following items:

- There is a monthly flow allowance and in addition a flow for deletion and evaporation compensation and additional dilution flows as required from time to time
- Commission gives the direction for release of water from upper River Murray storages
- Commission must maintain the supply to South Australia that it is entitled to receive
- Commission may coordinate or carry out surveys and studies to investigate the desirability and practicality of works to conserve and regulate the river, protect quality, manage the aquatic and riverine environments and manage groundwater that may affect water quality and quantity.
- Maintain and operate effective monitoring of the quality and diversity of the aquatic environment and effects of groundwater
- Measurements of the flow of the River Murray and its tributaries and volumes of stored water
- Measurements of all diversions
- Measurements of quality of River Murray water and stored water.

There is an ability for the Commission to implement the monitoring and measuring on or adjacent to the upper Murray and the Murray in South Australia without further approval of Government.

- Commission is to formulate water quality objectives for the River Murray.

Within South Australia, State controls exist via the Water Resources Act 1997 where the River Murray Catchment Water Management Board is established. Also the State Water Plan and Water allocation plans are established.

Flows established for South Australia are:

1)	evaporation and river maintenance	1050 GL
2)	MDBC committed entitlement to SA	1850 GL
3)	Median natural flow to SA	12648 GL

source "Setting the Cap: report of Independent Audit Group, Nov 1996". MDBMC

The water allocation plans determine licencing conditions, allocation of volumes and diversions from the River.

The allocation must consider social, environmental and economic needs. Allocations cannot exceed the agreed cap as set by the Murray-Darling Basin Commission.

THE CAP ON WATER DIVERSIONS

Primary objectives for the Cap are to:

- Maintain and improve existing flow regimes
- Achieve sustainable consumption

The cap resulted from a decision by the Murray-Darling Basin Management Committee in 1993 after they received a report from the Murray Darling Basin Commission that indicated diversions, if left unchecked, would exceed available water resources. They therefore agreed there needed to be a limit on the diversion values to allow retention of sustainable levels for the health of the overall River habitat.

The response was in the form of a cap on new diversions of water and is capped at the 1993/94 diversion rates.

Accepting the principle of a cap, there were a series of other agreements made on which to base future decisions about the way the cap would be managed. They were in summary form:

a) no further deterioration to water quality
b) allocations using precautionary principle
c) allocation to the highest value use
d) agreed property rights to be recognised
e) transparent management
f) simple administrative system

Eventually, in 1997, the Federal Government and the State Governments of South Australia, New South Wales, Victoria and Queensland signed the Cap agreement thus locking in all future use of water to the 1993/94 levels.

The flow level agreed to for South Australia is 1850 GL/year (other than drought years) and is expected to be achieved in 9 of every 100 years.

South Australia has currently and historically had a restrictive use pattern of water to relatively efficient use. South Australia took a proactive lead by imposing our own ”caps” in 1969 and further reduced them in 1979 and 1991.

Of the flow regime for South Australia, irrigation use is around 470 GL/year, around 800GL is lost via evaporation within the Murray and Lakes and 130GL to Adelaide Metropolitan supply.

More recent studies by Vivian {(1998) EPA Murray lands Region} would suggest the more accurate evaporation is 1000 GL and so the allowed flow for compensating this should increase. With the expectation of global warming, there will be a further incremental evaporation level.

SA Regulation of River Murray

A series of locks and weirs are constructed along the River Murray. The original objective for the locks was to regulate the water levels within the River for transport purposes and to improve water security.

The Hume Dam structure provides regulating capacity for the Murray.

Lake Victoria has a storage capacity of 680GL and acts as a major storage capacity for the Murray. Lake Victoria also acts as a method of storing flows that are excess to entitlements. The contention surrounding Lake Victoria that requires further discussion is the belief that good quality water flows into the Lake, is stored and mixed and poor quality water is allowed to flow out to the Murray.

Future water storage is to be controlled such that it fits well with the agreement of Aboriginal needs and is done according to the NPWS permits.

The uncertainty surrounding the flows to South Australia that were created by the recent considerations of Aboriginal cultural heritage and operations of the Lake as a storage area have indicated how vulnerable South Australia is to changes or potential changes of water flows.

Lake Victoria is pivotal in the management regime, acting as an intercept for water from the Menindie Lakes.

The Hume-Dartmouth system of storage capacity arises from high rainfall winder fed streams and rivers. This is of good quality. In contrast, the Lakes Menindie and Victoria storage capacity comes from high volume summer rains due to monsoonal situations. This water flows off poor and unstable soils and through the heavy irrigation systems of cotton and rice growers. Therefore the quality of water being fed into the Menindie and Victoria Lakes system is of poor quality because these systems are shallow causing water to heat, become high in nutrient content and salt from evaporation. When this water is released to the South Australian system, it is releasing poor quality slugs because even if the quality flowing into the top of the system is reasonable, it decreases in quality as it is held in these storage systems.

Release of greater proportions of the Hume-Dartmouth system to South Australia is needed to balance the quality of water from the Victoria system.

The Goolwa barrages separating Lake Alexandrina from the Coorong and the sea were designed to keep the Lakes freshwater and to maintain levels above that of the reclaimed swamps.

The barrages are ≈ 8 km from the Murray mouth and designed to control water levels of the Lower Lakes around 0.75M AHD.

Flow Patterns

River Murray is a low flow river and this has been escalated by irrigation and domestic diversions and storages.

Regulation has also meant that high spring flows are now lower, along with the negative impact on the natural ecosystem.

SA has suffered a 46% reduction of flow into the State because of the developments requiring water diversion interstate. Compare our current flow (average) of 6715 GL/year to that as recent as 1987 which was 10,400 GL/year and this is under the diversions currently happening. It takes no account of potential effects from further expansions interstate.

Continual restrictions, increased efficiencies and reduced usage within South Australia has a very small impact overall compared to the ability for other States to dominate our flows.

60% of the water expected to reach the Murray mouth now is diverted to other uses or evaporates. Consequently we have experienced recent closures of the Murray mouth and unacceptable negative effects on the commercial fishing industry.

It is fair to say that the flushing solutions offered to date to solve the silting over of the Mouth have caused severe negative environmental effects to our fisheries. Despite continual offers by our industry representatives to be part of the decision making process and share the extensive knowledge they have of the region, little has been gained.

Under natural flow conditions, a severe drought effect could be expected every 5 in 100 years which would result in very low flows at the mouth. With current diversions and regulations, this “drought” effect is felt 61 of every 100 years. Without changes this will happen in 3 of any 4 years as predicted by MDBMC 1995 audit.

Current flows over the barrage are 191 GL minimum compared with 2,454 GL under natural conditions.

Flows through the mouth will continue to decline unless there are some decisions that result in more water staying in our portion of the river.

THE ECONOMIC USE OF WATER

Environmental flow economic value

There is a necessity to consider the value of environmental flows within the context of the economic use of water. The reason for this is that environmental flows are required to maintain ecological values of the aquatic ecosystem, biological diversity and water quality capable of supporting the whole of the previously discussed areas.

Does that therefore mean that the economic value of environmental flows is the sum of all the previous values, because without satisfactory water, none would exist at the current level of value?

Or does it mean that environmental flows are not valued until the river environment degrades to a level that requires upgrade and rehabilitation, hence the value then being the value of the upgrades?

It is fair to say that there are many varied methods used to estimate environmental flows and the economic need for them and the number of methods used reflects the complexity of the system.

To further complicate this issue, if the allocation is given to the highest value use, this implies that there will be a lot of users that are pushed aside and not supported. This does not necessarily provide the best outcome for the community overall. For instance, if all water was allocated to grape irrigation (as the most economically viable venture) and none to environmental flows then regardless of the cap, there would be continued and ultimate destruction of the water resource.

Eventually the allocation of water available to a particular use (eg. the grape industry) would result in a decrease in the cost:benefit and increase the "value" of those considerations that were doing without the water. A wetland or other irrigation industry which was not able to function would have major detrimental effects on fish breeding and employment respectively.

As with all other areas, a balance is required so that the best allocation of the resource occurs across the whole community. To satisfactorily choose the correct need for the environmental flow, a decision must be made on the ecosystem parameters to be used as the appropriate biological and sustainability indicators.

It is not correct to look at the current flows given to the Murray as environmental flows. They are merely to flush the system and dilute the salt.

There is no basis for the level of flow and certainly, there are no agreed criteria by which to measure true environmental flow levels.

The recognition of the need for environmental flows is a positive first step. Such flows are needed to address many issues including but not restricted to:

- Maintaining river habitat
- Mix and aerate water

- Maintain adequate oxygen levels
- Inundation of flood plains
- Support for breeding fish and birds
- Influx of organic materials from flood plains to River
- Maintain life cycles of biota by inundations at the correct time.

WATER ALLOCATION PLAN

Such plans must conserve the environmental impacts of many areas including:

- Loss of native fish and aquatic biodiversity
- Lack of natural flows
- Reduced water quality – turbidity and salinity
- Droughting of flood plain

- Dilution flows
- Siltation of Murray mouth
- Use of backwaters
- River regulation

The requirements set under the Water Resources Act 1997 for water allocation plans are considerable. The expertise required to make the judgements needed are also considerable.

The commercial fishing industry in the River, Lakes & Coorong would be invaluable contributors to this process. No involvement currently occurs and this is a major shortcoming of the process.

This $6 million industry is reliant on decisions made by a range of people without direct input by them. Minor changes to flows have major effects on ability to catch fish and conduct their business. It is essential they are much more closely involved in the planning process.

WHY A CAP?

Without a cap the following is expected

- Increased levels of diversion
- Decline in river flow = decline in river health
- Reduced fish habitats – reduced fish breeding
- Significant reduced flows to the lower Murray
- Closures of the River Mouth at Goolwa
- Reduced flood activity – reduced fish spawning
- River experiences “drought flows” even in normal years
- Reduced storage capacity
- Security of users becomes less tangible.

The review has examined this scenario under four headings:

1) ecological sustainability of river
2) economic and social impacts
3) equity
4) implementation and compliance

- SAFIC supports the use of the CAP as part of an integrated management scheme to ensure sustainability of the river and the users of that resource.

- SAFIC supports a component of supply dedicated to environmental flows to ensure the ecosystem is protected.

- SAFIC would support an economic value being placed on the environment and environmental flows to support it.

- SAFIC supports end users (commercial fishers) being consulted about decisions to release or withhold water flows.

- Government must offer advice and financial incentives to agricultural enterprises that need to change because of impacts they are causing.

- SAFIC supports alternate farming practices to reduce salinity efforts being supported by Government both financially and as incentive schemes such as:

  - Removal of fallow farming
  - Agroforestry
  - Tree planting

- Evaporation figures be accurately calculated giving consideration to ongoing changes due to global warming.

- Environmental flows be maintained to prevent further closures to the Murray mouth.
- Benchmarks to be established for each soil type/irrigation practice to establish best practice systems
- Further work be done to ensure that incentive/disincentive schemes be in place for irrigation efficiencies.
- Research to be done into reducing costs of desalination plans, particularly using solar and wind power.
- An agreed set of criteria be developed to value in $ terms the “market” value of the environmental flows and ecosystem protection of the River.
- An agreed set of biological and environmental indicators be developed for testing both ecosystem health and effects of flow patterns.
- The commercial fishing industry be involved in the setting of and collecting of monitoring values and in flow levels
- Water trading upstream interstate be carefully monitored to ensure South Australian entitlements are not degraded.
- Regional plans be developed to prioritise activities on a large scale for funding purposes.