

SOUTHERN RIVERINA IRRIGATION DISTRICTS COUNCIL

Submission to

**Federal House of Representatives
Standing Committee on Agriculture, Fisheries and Forestry**

**Inquiry into Future Water Supplies for
Australia's Rural Industries and
Communities**

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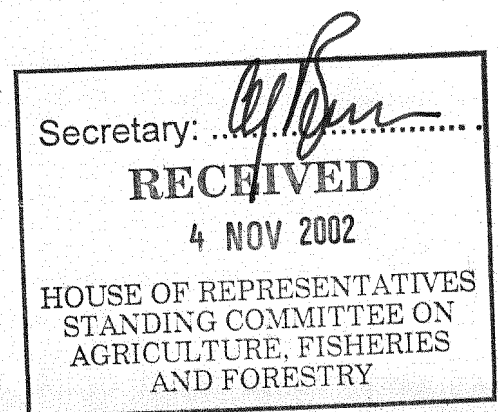


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Introduction

SRIDC would like to thank the House of Representatives Standing Committee on Agriculture, Fisheries and Forestry for the opportunity to make a submission for this Water Inquiry. SRIDC considers the current and future water supplies for irrigated agriculture to be an important issue for irrigated agricultural production in Australia, as water is the critical input for this industry.

SRIDC

SRIDC is an irrigation lobby organisation located in the Southern Riverina area of NSW. SRIDC has been operating since the 1960's, originally established to represent irrigators within the Government Irrigation Areas and Districts'. These were privatised as Murray Irrigation Limited in 1995 and SRIDC now represents the interests of the 2500 irrigators (comprising 1600 family irrigation farm businesses) within Murray Irrigation at all jurisdictional levels.

SRIDC is an umbrella organisation with delegates from the Berrigun Irrigators Central Council, Denimein Landholders Association, Wakool Landholders Association and Deniboota Landholders Association. Each of these associations represents the irrigators within Murray Irrigation Limited. Together SRIDC's irrigator members farm over 800,000 hectares of land (22% of the Murray catchment) and as shareholders in Murray Irrigation control a bulk water entitlement of 1.5 million megalitres – 68% of NSW Murray entitlement and 75% of the NSW Murray general security licensed entitlement.

According to recent statistics released by the National Land and Water Resources Audit¹, irrigators make 50% of the net farm returns from 0.5% of Australia's land mass or from 1% of the agricultural land. This is a significant productive farming area, which needs to attain environmental outcomes if it is to produce clean green foods and fibres as well as improve farmers declining terms of trade and therefore the net farm profitability for each farm business.

The Role of the Commonwealth

SRIDC believes that the Commonwealth Government has a critical role to play in ensuring an adequate and sustainable supply of water as this resource underpins rural economies and communities.

Vision and Development of Policies and Programs

The irrigation industry is coming of age where the various representative organisations are working together to ensure a productive and sustainable irrigation industry. This includes developing a vision and working cooperatively on the representation of irrigators.

At present, no government in Australia has a vision for irrigated agriculture. The Commonwealth Government, in conjunction with the irrigation industry, should develop a vision on which to base the development of its irrigated agricultural policies and programs. A cooperative approach with irrigators is necessary to ensure that any current and future policies do not make the mistake of alienating the irrigation sector. For example, water property rights (and compensation) continue to be eroded by governments and this creates a corresponding fear in the irrigation sector that any changes made to water policies will further

¹ National Land & Water Resources Audit 2001b, *Australian Agriculture Assessment 2001*, Vol 2, National Land and Water Resources Audit, Canberra, p. 294.

erode their rights to access and use the water resources. The development of a vision will alleviate this fear and lead to improvements in irrigation efficiencies and environmental outcomes. Irrigators recognise that this is crucial for the future prosperity of the irrigated agricultural industry and for the values placed on the environment.

The Federal and State Governments make decisions and develop policies and programs on water issues that affect irrigators. However, there is no interaction with the irrigation industry on these. SRIDC believes that an improvement would be to enable representation by the irrigation industry on the various groups and organisations that make decisions on water resources, eg NRM Ministerial Council, Water CEO's, MDBC and so on. This suggestion would aid the irrigation sector by improving their understanding and by providing the ability to have constructive input into processes and decisions that currently affect the irrigation sector. For example, the irrigation sector may well have treated differently decisions on water reforms and the MDBC Cap had the irrigation industry jointly with Governments developed these policies.

In developing a vision for irrigated agriculture, the Commonwealth Government must also ensure that it recognises that irrigators are legitimate users of water. Irrigated agriculture plays an important part producing essential food and fibre and export earnings for Australia. There are few in environmental or scientific organisations and even some agricultural sectors that recognise this. Governments have failed to articulate support for the irrigation industry and this must be rectified to ensure balanced debate and opinions.

COAG

SRIDC believes that it is essential for the Commonwealth to insist that the COAG water reform agenda is implemented in its entirety by State Governments. The States have chosen to implement the environmental requirements of these reforms whilst those reforms essential to the future prosperity and security of irrigators, eg compensation, have been omitted. The environmental outcomes have been seen as the easy fix solution, providing outcomes for the strong environmental lobby groups.

One method of full implementation of the CoAG water reform agenda is to tighten the compliance reporting by the States of the National Competition Policy and linking compliance tightly to the Tranche payments. The definition of compliance is different between States and to the irrigation industry. The irrigation industry must be allowed to have input into this process to ensure that their views and concerns are expressed and to counter claims of adequate compliance by the States.

The Commonwealth government pays the State Governments "Tranches" for the costs incurred in implementing reforms. The State Governments must use these funds to ensure that individual irrigators do not bear the costs of this reform agenda that was designed to economically benefit the National as a whole. The Tranche payments must be used for compensation and structural adjustment, as was required under the COAG Agreement and more recently as stated by the Prime Minister in his announcement on the National Action Plan for Salinity and Water Quality.

Property Rights (Water Access Rights)

One aspect that must be immediately addressed is the different interpretations of what constitutes a property right. There is inconsistent definition of water property rights (and compensation) between Governments, the environmental movement, scientists and irrigators.

In Victoria, a water property right (or bulk entitlement) was provided by an Act of Parliament and any changes require the same process. However, the sales water is tenuously held and

yet this water is essential for farm profitability. In NSW, effectively irrigators have been given an access licence for fifteen years with compensation provided but linked to a ten-year water management plan. The compensation should be linked to the licence, provided in perpetuity, and compensation mechanisms taken from outside a Ministerial determined process to an independent authority.

The Commonwealth government has a critical role to ensure property rights provided by State governments not only complies with COAG but provides the essential security and tenure required by irrigators to sustain farm businesses and therefore rural and regional communities. The framework and definition of what constitutes a property right must be developed in conjunction with the irrigation industry. Much of groundwork for this has been done by both NSW Irrigators Council and the National Farmers Federation and the Federal Government should build on this work in order to ensure State Governments delivery of an adequate property right.

Although property rights are a state issue, through the National Competition Policy, its associated Tranche payments and the NAP for Salinity and Water Quality, the Federal Government had the opportunity and means to ensure compliance to agreed outcomes by State Governments. As a matter of urgency, the Federal Government should insist on the immediate and total implementation of water reforms as agreed by the COAG.

The provision of appropriate property rights underpinned by compensation (or Just Terms Acquisition) is necessary in the event of a claw back of these rights by governments. This will ensure the sustainability of irrigation businesses and rural and regional communities. Structural adjustment is one means of allowing businesses and communities to adapt to changed business environment (ie water reforms). However, private businesses set up on previous government commitments of water licences are in jeopardy of remaining viable.

SRIDC's members have undergone continued and most likely future erosion of what has constituted their water property rights. Licences issued under the *Water Act 1912* (NSW), whilst issued for a term of five years, were automatically rolled over for decades providing an implied property right in perpetuity. With the MDBC Cap and COAG Water Reform agenda including the *Water Management Act 2000* (NSW), irrigators have faced and continue to face erosion of access to water thus placing in jeopardy irrigation businesses. Reductions to yield and access over the last decade include the Barmah-Millewa allocation (1.28%), MDBC Cap (12%), Murray Water Sharing Plan (3.8%), carry over rules, Cap credit, restoration of 28% to the Snowy River and Murray Environmental Flows (possibly up to 40%).

Ultimately, the Federal Government missed the opportunity with the NAP for Salinity and Water Quality funding to tie State compliance of property rights to funding. The Prime Minister's media release to announce this initiative stated that this would occur, but this outcome was not delivered in reality.

Trading Issues

Whilst SRIDC supports the improved health of the riverine environment, this should be paid for by the Australian community as a whole, NOT irrigators as individuals. It is the current "flavour" that governments should avoid compensation and structural adjustment as the water reform agenda will result in the remaining water access licences being very valuable and thus irrigators do not need to be compensated.

This assumption is incorrect and SRIDC draws your attention to the article in Appendix 1, which negates the main assumptions on which the water reform agenda has been based. SRIDC supports this article, which clearly articulates the difference between the outcomes sought by Governments and what happens from an irrigators' perspective. The principles

behind trade have not been realised as the social and cultural drivers for irrigator decisions have been ignored in favour of economic outcomes sought for the nation. The Federal Government should reassess the objectives of water reforms and the methods used to achieve these objectives in the light of incorrect assumptions of irrigator behaviour.

Environment and Social

Some comment should be made on the commitment of governments to environmental outcomes. As an example, the Snowy River outcome disregarded a lengthy Inquiry process, which recommended the return of 15% average natural flow (ANF). In lieu, the NSW, Victorian and Federal Governments decided to return up to 28% ANF but committed funding of this up front. The principle of minimising the impact to irrigators and funding the environmental outcomes at the beginning should be applied to other environmental problems, eg The Living Murray process. While the MDBC chooses to run modelling of the options for this process with no compensation, there is no commitment to funding the environmental outcomes sought (being a return of two thirds ANF at the Murray Mouth, which achieves moderate to high ecological improvements). Therefore, Governments Treasury Departments must therefore become involved to understanding the issues and outcomes desired and why compensation is required, ie so that individuals do not wear the cost of environmental outcomes demanded by society.

Retrieval of water for the environment must be based on the principles already established under the Snowy River process, ie investment in water efficiency savings, better management of the existing resources (water & infrastructure) and voluntary buy back of licences. All other options must be exhausted and only as an absolute last resort should irrigator entitlements be eroded with commensurate compensation paid. This decision to claw back entitlements must be based on the objective scientific evidence that more water is needed. Compensation must be paid in these instances and the principles on how this is to occur must be agreed in conjunction with the irrigation industry, before embarking on any environmental objectives.

To do otherwise shifts the responsibility of paying for water reforms to individuals, whose only recourse is the make adjustments to farm production levels, change enterprises (usually at a significant capital cost) or participate in the water market, which in times of low resource can be cost prohibitive.

It is essential that the science used to attain the environmental outcomes desired is robust and objective. To date, much of the work that has been done is not available for public perusal and what is produced (eg expert panel reports) is based on broad commentaries and little detail of the base data used. This must be overcome and the Federal Government certainly has a role in this respect.

As a starting point, the science must define clearly the desired outcomes, use quality data to collect the available current conditions and then develop a plan to achieve those desired outcomes. It is essential that appropriate monitoring and benchmarks are set to enable comparison of the benchmark data to future improvements.

One missing link in the environmental debate is that there has been no public recognition of the work done by irrigators to improve sustainability (eg Murray Land and Water Management Plans), water already provided by irrigators to the environment (eg Barmah-Millewa allocation, water sharing plans) and as a consequence the individual costs already borne by irrigators to improvement environment outcomes. Irrigators are committed environmentalists as they are actually doing on-the-ground works, eg LWMP's, and achieving improvements in environmental outcomes.

A word must be made on the precautionary principle. This principle is used by governments as the excuse and expert panels as means to implement policy rather than gathering relevant data for informed decision-making, eg Living Murray science is based on data collected from a small number of reaches extrapolated over the entire river. However, the larger the reaches or system from the original data set, the less relevance this data has. Base data needs to be collected using agreed methods over a period of at least five years to ensure the data collected relates to all climatic variability's (ie wet and dry cycles).

There is also an argument as to whether environmental outcomes should be to restore or maintain – the government agencies charter is to maintain yet The Living Murray is clearly designed to restore!

Many of the water environmental problems are not related to flow volume but to land management issues, eg cold-water pollution (dam infrastructure), salinity levels relate to human consumption requirements and dryland salinity causes not aquatic species outcomes, sediment and nutrient runoff. These concerns generally are wrapped up in more water equates to better outcomes – based on the generalisation that 67% of natural flow is the threshold of ecological change. The key is the extent of change, which is dependant on the sensitivity of a river to the component of the flow regime that has been changed.

Clearly, the basis of much of the available science is not good enough. Addressing the root causes of these land management issues will be the resolution of many of the problems and for increases in flow regime to be supported, quality base data is a must for informed decisions on desired outcomes based on clearly established and agreed principles.

Policies and Programs to Underpin Stability of Storage and Supply of Water

The current drought in NSW, 10% allocation for general security irrigators in the NSW Murray Valley (of which 8.7% is borrowed from the Barmah-Millewa forest) coupled with an inability to secure releases from Snowy Hydro begs the question of how better this can be done. Processes to facilitate decisions are vital as the multi-jurisdictional nature of this valley is prone to slow negotiations so that the ability for irrigated agriculture to use of the resource is severely impacted.

SRIDC believes that some flexibility has been included into the new water licence for Snowy Hydro. However, little or no consideration has been given to the ability to access water for irrigation purposes in drought years, especially when these years are coupled with low resource availability. Priority must be given to access water for irrigation purposes in low resource years, say below 20% for general security irrigators. A commercial arrangement can be successfully negotiated, however the value of any arrangement must be commensurate with the value of the water product for irrigation use – not electricity generation.

One of the other methods of delivering water for irrigation in a drought year is to enable water to be stored by the irrigation communities in the Snowy Scheme. This may be done by way of a special reserve with the ability for the irrigation industry to make call on this water at their discretion. The water must be tagged, as being “owned” by the irrigation sector to ensure that other jurisdictions or the electricity business do not affect the “call” decision.

The Effect of Policies and Programs on Current and Future Water Use

The effect of existing policies and programs on the current and future water use in Australia has been to undermine security for irrigators, their communities and the Nation. The latter is particularly important, as Governments have failed to adequately understand the drivers that underpin decisions by irrigators. For example, trading of water was supposed to see water being sold permanent to other users with higher value uses – the economic focus.

Instead, the sale of water on a permanent basis remains a stagnant trading market. In contrast, the temporary or annual market is blossoming as water users sell on an annual basis water which they would not use or because the price is higher than they would otherwise make on farm (eg this years water prices on the SRIDC Water Exchange are four times last years maximum price). Ultimately, irrigators acknowledge that water is the lifeblood of their farm business and community and the water reforms have ignored the social and cultural aspirations that drive farmer decisions.

The selective implementation of COAG water reforms, ie those with a significant environmental bias, do not guarantee long-term irrigator security and do nothing to achieve the goals of water reform. These are the equity issues – property rights and compensation. Irrigators require cost sharing to be borne by the entire Australian community for reforms desired by the community. The changing community values, ie higher environmental values, must be borne by all Australians. Therefore, in the absence of Federal or State Governments willingness to address this issue, SRIDC suggests that the most beneficial method of sharing the cost may be in the form of an environmental levy or tax. To do otherwise creates an unequitable situation where individuals withstand the worst of reform. This will result in a generation of farmers unwilling to cooperate with desired government outcomes, eg implementation of best management practices or environmental management systems. The lessons of the cooperative outcomes such as the Murray Land and Water Management Plans are excellent models from which to move forward.

As an absolute necessity, the Federal Government must lead the States in clearly stating the cost sharing arrangements. Australia is already a world leader in environmental health – the question is should we continue to lift the minimum standards at the cost of individuals and rural communities.

Policies and Programs That Could Address and Balance the Competing Demands on Water Resources

As a first priority, the Federal Government must ensure that a database of information is compiled on the ecological, hydrological etc aspects of riverine environments. As an example, scientific data used in the Murray Environmental Flows process is basic at best and has been extrapolated from a small number of reaches as the basis for an entire system. This is clearly insufficient to base such an important decision. Databases must be compiled for each reach of a river system over a least a five year period to ensure quality data is obtained on which to base decisions.

It is no longer good enough to use the excuse of adaptive management or ecologically sustainable development (the latter actually recognises that all development decisions must simultaneously consider aspects of economy, environment and equity - unlike its current use by Governments and environmental organisations²). Irrigators and their representatives have been calling for a number of years on improved science on which to base informed decision-making. Clearly, ad hoc decision making based on the ethos of “more flow must be better” is

² Allen, W. online. Available <http://nrm.massey.ac.nz/changelinks/>

not good enough when these decisions impact on individual farmers and their communities without due regard to their financial cost.

The provision of an acceptable property right is the most likely source to balance the competing demands on the water resource. Under NSW legislation, the environment has the first priority above any other users. Therefore, it does not need protecting – it has statutory power of access. If irrigators were provided with a property rights, say in perpetuity, with compensation linked to the access licence, and the Water Management Plans determining the how to share the available resource, then security for long term planning and the economic growth of farm business and communities will follow. There would be no need to fear the “transition phase” from one plan to the next, regardless of the outcomes.

It is interesting to note that Snowy Hydro, the recently corporatised business of NSW, Victorian and Commonwealth Governments, has a NSW water licence with a seventy-five year tenure. Most irrigators would welcome this level security backed with compensation.

Communities who “own the decision” on the future of water resources are more likely to accept the hard decisions that must be made. The community engagement processes undertaken at various jurisdictional levels is hardly adequate. Community consultation involves various agencies coming to various communities to provide a presentation on what has been done or what is planned. However, communities do not want this consultation – they want participation. Participation in the decision making process is crucial to ownership.

Participation involves developing and weighing up the options, making the decision, accepting the consequences and winning over peers, with little influence from Government policies. This is a bottom up approach to decision making and planning. Over many years, the top-down approach has failed to deliver the promised outcomes. It is time for a change and this change must be genuine acceptance that those that live in communities have their welfare at heart – as it is their future that will be affected by the outcomes whether this is good or bad.

Finally, the various jurisdictions must ensure that the continual passing of blame stops and productive outcomes are achieved. There are many instances in which this has occurred, eg property rights, compensation, MDBC issues and exceptional circumstances. It is time for leadership on these issues to ensure sustainable and viable rural communities.

The Adequacy of Scientific Research for Adaptation to Climate Variability and Better Weather Prediction

SRIDC are not in a position where comment can be delivered in this respect. As with many scientific programs, the information on what is being done, by whom and on what basis has not been disseminated adequately. Therefore, we are not in a position to judge whether the current or proposed scientific research will result in better or improved approaches to adapt to climate variability, especially concerning better weather prediction, improved reliability of forecasting systems and the capacity to provide specialist forecasting.

Anecdotally, the Bureau of Metrology currently provides many of these facilities or services but private organisations have also started to provide this material – for a (sometimes significant) cost. Nearly all are available electronically on websites. Many farmers access online real time rainfall charts and this provides the ability to cater for current on farm management decisions, eg timing of irrigation watering or application of chemicals to timing of shearing to minimise flock losses.

Nevertheless, some general comments can be made. It is essential that there is targeted scientific research, with results disseminated in a format and language that can be understood by landholders with differing levels of knowledge and needs. The end use must be practical, ie able to be readily adopted, and be formatted to enable ready and easy uptake by farmers. For example, software applications for weather forecasting, including historical records and El Nino event predictions.

The issues surrounding weather prediction and climate variability are essential to enable effective planning at farm levels. For example, many of our landholders struggle to understand the impacts on their water allocations. These factors can include the effect of rainfall and runoff in the catchment and the correlation between rainfall events and runoff (and therefore water storage levels and irrigator allocations). If irrigators do not understand these impacts, they are not in a position to judge the influences on their current and future water allocations. This can be related on a practical level to carry over, a facility offered to NSW Murray Valley irrigators to manage their own risk. Irrigators are required to make an assessment for carry over in May each year for the following season. Critical factors are current and future rainfall events over the next six months, storage levels in the dams and how this may influence the yield on their licence in the long term.

If these issues are not well managed into the future, then farm production and therefore profitability can be impacted, leading to declining individual terms of trade and farm viability. Therefore, it is critical that research is turned into practical and easy to use tools that enable a ready adoption of the new service or facility by farmers.

Conclusion

Irrigators require long-term security of access to natural resources, objective sound science, good infrastructure, an enabling fiscal and monetary environment, good extension services, limited funding programs to highlight and encourage best practice and an acceptance that irrigators are legitimate users of water. Irrigators do not require massive handouts just commensurate compensation for eroded water security, equity in cost sharing and decision-making.

The Federal Government has a role to play to ensure a level playing field for irrigators in the debate to improve the environmental for all Australians. It is imperative to individual farm businesses, rural and regional communities and the nation that the prosperity of the irrigation industry is given due recognition and equality in this quest for balancing the competing demands for the water resources.

Appendix 1 – To market, to market – why dogma hasn't worked with water

Property rights and free markets were supposed to lead to more efficient and sensitive use of our rivers, but the reverse seems to have happened – more water being taken up and applied to some of the most wasteful crops. May Isaac analyses what went wrong.

The recent proposed buyout of Cubbie Station has once again focussed our collective attention on land degradation. Although the symptoms of land degradation are many – for example soil acidification, soil structure decline, erosion and waterlogging – it is salinity, which has captured the imagination of the Australian public and become a symbol of our water crisis. In fact, the overload of information has led to public lassitude encapsulated at “Water: yawn. Salinity: double yawn”. The spotlight on salinity has been so sustained that most people (particularly in urban centres), are not even aware that Australia is experiencing the most dramatic and comprehensive reform of its rural water industry placing it at the leading edge of water management internationally.

The reforms were formally agreed to in February 1994, when the Council of Australian Governments (COAG), a committee comprised of the heads of the Federal and State/Territory Governments, adopted the strategic framework for water reform. The COAG water reform package formed part of the National Competition Policy, which in turn aimed at wider microeconomic reform of the Australian domestic economy in terms of increased economic efficiency and greater reliance on market forces. The COAG package, with an overall implementation target of 2001 (later extended to 2005), committed the States to making legislative changes, which ensured the viability of water markets in return for significant financial reward averaging over \$700 million annually.

“It is becoming increasingly evident that water market (in their current structure) are going to exacerbate rather than resolve the nation’s water crisis. Yet, the irony is that Australia is being held up as an example of best practice in the use of market based instruments for water management.”

A key feature of the COAG water reform package is the explicit linking of economic and environmental objectives; in that the reforms seek to improve environmental management of the nation’s water resources by increasing the efficiency of water use via water markets. In other words, the expectation is that water will move from low to higher value uses via trade and so be used most efficiently. The assumption is that economic efficiency will ensure environmental effectiveness. The economic approach to water management endorses the use of water markets because it assumes that:

- The demand for water will decrease as the price of water increases
- Water will move from low value uses to high value uses of water. This higher value of use will be environmentally neutral.
- The correct pricing of water combined with the ability to trade will lead to a restructure of the water industry with inefficient (environmentally damaging) users of water exiting the industry.

In essence, the presupposition is that the most economically efficient use of water will also be the most environmentally effective.

Since 1994, all States have made significant progress with the implementation of the COAG package. The legislative basis for water markets is almost complete across the nation and water trading for irrigation is now possible in 98 per cent of river systems. Water is traded at auctions, formal water exchanges and even on the Internet (www.waterechange.com.au). While it is too early to offer more than a preliminary assessment of the water reform strategy, some interesting evidence in

³ Isaac, M. 2002, online. Available URL:
http://www.brisinst.org.au/resources/brisbane_institute_isaac_water.html.

relation to its environmental objectives are emerging. While a detailed evaluation of this data is beyond the scope of this paper, a summary is provided below.

- **Water prices increase water demand:** Since the operation of water markets, the price of rural water has doubled in the last four years making water (licences) more valuable than land. Contrary to expectations, increases in water prices rather than decreasing demand have increased water usage overall. The increases in water prices have led to the activation of sleeper (unused) and dozer (partially used) water entitlements resulting in 99 per cent of the water sold inter-state being water that was not used by the sellers in the first place.
- **Higher value use of water is not environmentally neutral:** The water trading patterns in the Murray Darling Basin register reveal that in line with efficiency expectations, water is moving to higher value users with approximately 64% of water traded inter-state going into new vineyards in South Australia. However, the impact of this movement is that water is being transferred to land that had not been previously irrigated leading to increases risks of salinity. Indeed, economic exchanges have dictated the cross border movement of water into South Australia, producing the worst environmental result in terms of salinity. The most recent government enquiry into water trading in Victoria has also confirmed this trend.
- **Water market move water to high value business not environmentally high value crops:** A curious outcome of the operation of water markets has been that rice and cotton, the crops which have had the greatest impact on Australian rivers, and the supposed 'passé crops of the new water order' are showing no signs of decline. Instead, rice is set to break production levels while the current top nine private water holders are in the cotton trade. During 1998-99, in NSW, 477,000 megalitres (more than half the total water sold) went towards rice farming while horticulture and pasture received 100,000 megalitres. Three conclusions may be drawn from the experience so far. First, market forces are moving water to high value businesses, which may not necessarily be growing a high value crop. This is because water requirement is not the only factor upon which a decision to grow a crop is based. The start up costs and time taken to obtain a return on a high value crop might be prohibitive. The driving factor regarding crop choice is economic efficiency. Second, the majority of Australian water is held in irrigation trusts representing a number of small farmers. This has restricted intra-state trading within set irrigation districts, which in turn limits crop choice. Third, the purchasers of water are higher income earners while the sellers of water are low-income earners who were not using their entitlements in the first place. Water is becoming increasingly concentrated in the hands of a few powerful owners who will continue to grow crops to achieve economic efficiency. Environmental effectiveness will result only if they choose to invest in new infrastructure to improve water use efficiency.
- **Inefficient users are choosing not to exit the industry:** The creation of water markets was expected to increase the pressure on rural adjustment and generate major industry restructuring as unprofitable and unsustainable water users would sell their water for financial compensation and exit the industry. In reality, the majority of water trades (nine out of every ten) is temporary with the increasing capital worth of water making it too valuable a resource to sell permanently. Further, in a context where many farming families feel that irrigation is their 'life blood', and entire rural communities are sustained by irrigation, farmers do not want to trade water out permanently as they perceive it as taking away their community's money. Inefficient practices continue with the market allocating water from one user to the other with little gain to the environment.

It is becoming increasingly evident that water markets are failing to achieve environmental objectives. So how can this failure be explained? The first step towards understanding this malfunctioning is to reject the view of social institutions as akin to markets and examine instead 'markets as social institutions'. Water markets as they are currently structure will not bring about environmental good because far from being abstract and free, markets are social institutions, which are embedded in existing social/industry structures, power relations and patterns of water usage. The implications of, and the different forms of embeddedness (political, social, institutional and structural) are currently being explored as part of my doctoral thesis and are well beyond the scope of this paper. In essence, however, the fundamental argument is that creating water a market is far more complex and intricate than just separating land from water title and allowing water to be traded. The new markets inherit the history of what has gone before. They entrench and legitimise existing social relations and participants in the water industry. For Australia, this has very significant implications as water has always been used as a political tool and as a vehicle for national development.

It is becomingly increasingly evident that water markets (in their current structure) are going to exacerbate rather than resolve the nations' water crisis. Yet, the irony is that Australia is being held up as an example of best practice in the use of market based instruments for water management. Indeed, as the NSW Minister for the Environment declared recently "the water trading system in south eastern Australia is general considered to be the most developed in the world". It is also apparent that for real environmental benefits to accrue, existing water markets must be seriously restructured. So what are the elements of such a restructure?

Two fundamental principles should guide this mammoth task. The first is to reject the belief that 'the market is always in control, always infallible, and always to be obeyed'. Rather, 'markets make good servants but poor masters'. Such a reassessment would acknowledge that the goal of the market – economic efficiency – does not and will not guarantee environmental effectiveness. Progress towards a solution to the water related environmental crisis requires a paradigm shift from the economic to the environmental where sustainability is the goal for which the market is the servant. This would involve drastic changes in water allocation, usage and ownership and a major streamlining of Australian agriculture. The second principle is to recognise that real reform of the water industry is unlikely to occur without strong and coordinated state action, commitment from the rural sector and the significant support and involvement of the community. This would require 'real and not tokenistic public participation in decision making, following processes that are perceived to be fair and equitable'.

Given the acknowledged spotlight on salinity, this paper has deliberately not provided alarming statistics proclaiming Australia's 'water crisis'. Nevertheless, it must be stressed that the need for solutions to the water management crisis is escalating so rapidly, and the potential environmental, social and economic consequences of failure are so severe that there is no room for complacency. WE can find a precedent to the reform of the water industry in Australia's reform of its manufacturing industry in the 1980's. During that experience, the state largely failed to establish an industrial vision and engage in concerted policy making. This time, it would do well to remember that unlike manufacturing, water cannot go offshore.