

*The Secretary
Senate Standing Committee on Rural and Regional Affairs and Transport
Parliament House
Canberra ACT 2600*

Inquiry into Water Management in the Coorong and Lower Lakes

Submission by Liz Yelland, Point Sturt SA

Background

I am a local person with five generations of local knowledge and understanding about the Lower Lakes. Our property on the shore of Lake Alexandrina has been in my husband's family since the 1860s. I also have a science degree and my husband has an engineering degree. We have travelled widely and seen first-hand the legacy of irrigation disasters resulting from overallocation and salt contamination.

Lakes Alexandrina and Albert were fresh in pre-settlement and early settlement times. Only in severe drought conditions, five percent of the time, did the sea water intrude. ("A Fresh History of the Lakes",¹ Sim & Muller 2004) This began changing in the 1880s as more and more water was extracted upstream. Flows were no longer sufficient to keep the seawater at bay. The Lakes became increasingly brackish. In the early 1900s my husband's great grandfather had to dig wells to water his stock. By the 1930s, communities dependent on the Lakes for domestic and stock water pressured the SA Government to build the barrages near Goolwa.

It is people remembering the 1920s and 30s who claim the Lakes were always salt. There are oft-repeated stories about seawater travelling up-river to Mannum and reports of sea fish being observed there. Why would this be? The River Murray below Morgan passes through limestone cliffs of an ancient sea bed. Saline ground water seeps into the River channel. In times of low flows this salinity builds up. It is entirely possible that saltwater fish could have found their way into the salty River via the brackish Lakes.

Fresh conditions returned to the Lakes post barrages. The freshwater ecology re-established itself. Bird life thrived in the 1950s and 60s. My husband's father and some of his neighbours began irrigating lucerne and potatoes. Prior to this there had been no irrigation using Lake water.

Up until the late 1970s there was still sufficient water flowing over the barrages to maintain the required brackish conditions in the Coorong North Lagoon.

In 1981 the Murray Mouth closed over for the first time in both white people's and Ngarrindgeri history and had to be dredged to re-open it. This should have been a warning. It was ignored.

Flows over the barrages and the flourishing of the internationally listed wetlands have declined ever since. In early 2002, before the effects of the drought could have reached this end of the River, the Murray Mouth closed over for the second time. It has been dredged ever since.

Species diversity and numbers in the Coorong have crashed by 95% (CSIRO CLAMMecology groupⁱⁱ).

There is one overarching reason why this has happened: overallocation of water resources throughout the Murray Darling Basin. Extreme overallocation. Development in the Murray Darling Basin has been allowed to expand as if the very wettest years were the norm. In all other years, more is being demanded from the river system than it can supply. The current drought has only exacerbated this situation.

I will discuss possible ways of addressing this at a future date in Part 2 of the enquiry.

I will now address Part 1, the immediate question of Water Management in the Coorong and Lower Lakes according to the terms of reference as follows.

Item 1, b, i. The Government needs to urgently purchase real, high security available water. In this immediate emergency there is no point in buying low security water available only in times of excess (such as much of that used in the rice growing areas) or "paper water" ("sleeper" licences, unused portions of allocations etc). Unfortunately this is what most people are willing to sell. There has to be incentives such as offering to buy for slightly higher than the market price. The tender system currently being used is not working. Also the outrageously high exit fees being demanded by some schemes must be addressed. Many willing sellers just cannot afford these.

Item 1, b, v. Infrastructure improvements, while helpful in the long term, are too slow to assist in this immediate crisis. (The COAG agreement itself is way too slow, with New South Wales and Queensland not ceding control over their sections of the Murray Darling Basin until 2014 and Victoria until 2019! But this is an issue for Part 2 of the enquiry.) Another angle to consider in infrastructure improvements is the viable continuation of the scheme concerned. There was no point in

spending money fixing up a scheme if the critical numbers of users will ultimately leave it (I refer you to the next item).

Item 1, c: As has already been widely discussed, if too many people leave a community because of water buybacks, the community faces decline in its local businesses and services. There is a strong fear of the “trickle away a bit at a time” effect, and the ultimate loss of a community and way of life which may have been there for generations. In practice this means there is a lot of pressure on people not to sell. This reduces drastically the number of willing sellers.

As an alternative way of approaching this I refer you to Professor Mike Young's paper “A future-proofed Basin ⁱⁱⁱ” where he suggests compensating the community as a whole and letting them decide how to spend the money to rationalise water use and perhaps develop alternative industries.

Item 1, d: Any other related matters.

I will discuss three segments here,

1. River health and sustainable production
2. Why we need the Lakes, and
3. Possible immediate options for the Lower Lakes, the for and against of each.

1: River health and sustainable production. We are beyond “business as usual”, we are running on empty. There is no way we can continue to support the excess of over-allocated acres of production currently in the Basin. The hard truth: if the Murray Darling system is to survive as a food bowl into the future, it is imperative to reduce extractive activities immediately. The prevailing attitude, pitting billions of dollars of economic productivity versus the environment for the available water is not viable: reliable productivity can only be sustained by a healthy river, reliably offering non-saline, non-polluted, safe water. And a healthy river is underwritten by adequate river flows and cleansing wetlands.

A river is like the human body.

Water is its lifeblood.

Wetlands are its lungs and kidneys.

An open flowing mouth enables it to eliminate its waste.

“Just in time” water management is a recipe for disaster. How long would we last with no oxygen, no kidneys and being unable to pee?

It is not just a matter of lots of national wealth versus a couple of piddly Lakes.

The health of a river system is measured by the health of its estuary. The estuary is the “canary in the coalmine”. Stress and collapse of a viable water ecology here will creep upstream like a cancer, ultimately affecting the whole system. To abandon the estuary is to abandon the idea of a sustainable river system and sustainable industries dependent on it. History is littered with failed civilisations dependent on failed irrigation schemes. That failure began with just the situation we are facing now. It appears the lessons of history are repeatedly ignored. We have the chance now to reverse this.

We have to change our mindset from extractive production versus the environment to sustainable production and the environment.

Steps towards sustainable management of the MDB:

1. An audit of all water throughout the Basin - including tributaries, storage, (both official and unofficial such as hobby farm dams) and underground water; and subsequent computer modelling of the entire Basin as an integrated system. This modelling can be developed to show the effect on the entire system of changing rainfall or extraction in any part of it (including underground water). CSIRO has already begun a project along these lines.
2. An integrated single management body at arms length from Government in the manner of the Reserve Bank. This must be backed by ongoing scientific studies and measurements and have real authority, real teeth.
3. Painful as this will be, a complete restructuring of extractive arrangements throughout the MDB is necessary. I stress - we are beyond “business as usual”. The amount of water extracted must be flexible and pegged to the amount available in any one year. I refer you again to Prof. Mike Young’s paper.
4. Most important to note from Prof. Young’s work - extraction cannot just match input. A river needs “maintenance flows” to preserve water quality, to keep it oxygenated, transport away salt, excess nutrients and other pollutants, and replace evaporation and seepage losses from the river channel.
5. Sustainable management requires management from the estuary up, rather than the source down. “Maintenance water” to preserve sufficient flows for the removal of waste and provision of adequate water quality at the estuary must be a bottom-line priority. Consumptive extraction then occurs on top of this. Only in

this way is the future health of the entire system assured and with it on-going food security.

2: Why we need the Lakes.

- 1) **A fresh-water buffer.** A little discussed fact is that Lakes Alexandrina and Albert are the largest natural fresh-water body in Australia. They form SA's only storage on the River. They have acted as a buffer to sustain Adelaide and much of the rest of the State in times of drought. Even in the extreme conditions of last summer, water was still being drawn from them. If we lose the Lakes and encounter a further extended period of no flows, Adelaide and other dependent towns had better have made other arrangements for their water. There will be nothing in reserve for them.

There is much concern about the evaporation from the Lakes. A recent study (Brooks and South ^{iv}), has shown the net evaporation to be approximately 400Gt, less than half the values often currently quoted in the media. Both the Menindee Lakes and Lake Victoria, the other storages on the Murray, are in a hot dry climate and hence subject to a relatively higher rate of evaporation.

Lakes Alexandrina and Albert, by contrast, are in a temperate climate, with cool conditions for at least half the year and a good proportion of evaporation is replaced by local winter rains and inflows from local rivers.

- 2) **Honouring the Ramsar, JAMBA and CAMBA agreements.** Australia is signatory to several international agreements protecting unique wetlands essential for the viability of threatened species of migratory birds. The plight of the Lakes and Coorong is being watched internationally. We are already starting to look very shabby. How can we as a nation expect to be a leader in addressing climate change and environmental matters, if we are seen to be trashing our own backyard?

3: Possible immediate options for the Lower Lakes

- A) **Flooding with seawater.** A bad idea for multiple reasons:

- a) The morphology of the Lake bed between Lake Alexandrina and the sea contains bars and rock barriers which would prevent sufficient seawater flowing in. Channels would have to be dredged. There is also only a very small tidal range, ~0.5m, within the lagoon inside the Mouth and therefore only a small head of water to cause the flow into the Lake.

- b) Popular opinion believes the tidal flow in and out would keep the Murray Mouth open. However it is well known that every estuary along the south coast of Australia fills with sand brought in by the surf and quickly closes over unless there is a constant pressure of water flowing out from its river. The Murray Mouth is no different. Dredging will have to continue even if the barrages are opened.
- c) The effects of seawater interacting with the Lake bed muds are unknown. It is suspected that salinity trapped here would contaminate the Lake for decades into the future. It took the Dutch 10 years to recover from seawater floods during World War Two, and they have a much higher rainfall than we do.
- d) The effects of seawater in the Lakes on surrounding aquifers are unknown. Many people in the district are dependent on these aquifers for stock and domestic water.
- e) The drastic sudden change from fresh or brackish water to salt water would be an ecological disaster for all Lake aquatic life. The salinity of the body of Lake Alexandrina now is ~4000EC, less than a tenth of seawater. The Lake would be a cesspool of dead fish, freshwater mussels, tortoises, water rats and thus a massive health problem to surrounding communities.
- f) This act of ecological vandalism will destroy the fresh and brackish water habitats that we have agreed to protect in the Ramsar, JAMBA and CAMBA agreements.

B) Engineering Solutions.

1: The Wellington Weir. Definitely a bad idea, not only for the viability of the Lake, but also for Adelaide's water supply and all other towns and enterprises being supplied from the River below Lock 1.

Building the weir wall in the first place may be problematical. It is well-known that the river bed at the proposed site comprises deep, soft mud. It is unknown how this mud will interact with the rocks being dropped into it.

Possibilities include:

- a) Disturbance of noxious gases from the mud.
- b) Mud waves propagating through River and Lake bed with unknown consequences.
- c) Rocks continuing to just sink into the mud and not providing a suitable foundation. South Australian Water Security Minister Maywald has

admitted publicly that the weir would be a “sinking structure”. This also implies that the rocks will never be able to be removed and remain as an obstruction to water flow and a navigation hazard.

Should the weir wall actually be built, the following conditions will occur:

- a) With no through flow to remove the salt seeping from groundwater, the water trapped behind the weir will quickly become saline.
- b) Similarly, nutrients and other pollutants will also accumulate.
- c) In times of low or zero flow, Lake Alexandrina acts as the “lungs” of this lower section of the River (which includes the intakes for Adelaide's water supply). The Lake water is oxygenated by wave action, and this oxygen-rich water is driven considerable distances upstream by prevailing southerly winds. When the wind drops, the water then flows downstream again, taking the salt with it. The sloshing backwards and forwards between River and Lake is vital for the health of the River below Lock 1. The “sausage” of water trapped between Lock 1 and Wellington would rapidly become saline, deoxygenated and stagnant, offering ideal conditions for the growth of blue green algae. Such water is then unusable by anybody - city-dwellers and irrigators alike.

2: “Twin Lakes”.

In the real world, (as opposed to computer models which are the sole basis for any promotion of the scheme) the construction envisaged, using the Lake sediments, would be out of the question:

- a) The lake bed is *very* soft. Trying to build a permanent embankment from it is impossible. Even post holes fill themselves in as you dig them!
- b) Any disturbance of the muds has the possibility of releasing noxious gases with health risks to the surrounding population or exposing acid sulphate soils trapped in submerged layers, causing rapid acidification problems.
- c) Any dredging to deepen the outside “do-nut” of fresh-water has the possibility of encountering and polluting underground aquifers.

C: The “do nothing else for now” option.

This is probably the best choice available right now.

- a) Good local winter rains and inflows from the Finnis River and Currency Creek have raised the water levels in both Lakes, so the current pumping into Lake Albert from Lake Alexandrina can continue for now, without reducing Lake Alexandrina below its predicted critical level for acidification.
- b) Further research should be undertaken into the acid sulphate soils. In many areas of exposed lake bed around Lake Alexandrina, vegetation is now growing, including in places previously identified as acid sulphate. Perhaps the situation is less dire than first feared.
- c) Lake Alexandrina in particular, probably has a massive enough body of water at its current level, or even slightly lower, to neutralise acidity in the immediate future.
- d) Efforts should continue to procure more flows down the River into the Lake. However, should the drought persist, leaving the Lakes to just “sit” would be less damaging (and much less expensive) than pursuing any of the previously discussed seawater or engineering options. They then have a chance to recover when some flows return.
- e) When flows return, consideration could be given to operating the Lakes permanently at a lower level than the previous Pool level (of 0.75m AHD) and re-engineering the egress of water into the Coorong. That way, there will be less evaporation as the overall area of water surface is smaller, and water will be available for the Coorong without having to completely fill the Lakes first.

I hope and trust that you will give these points serious consideration.

Now is the chance to make a difference. Our children and their children are watching.

Liz Yelland

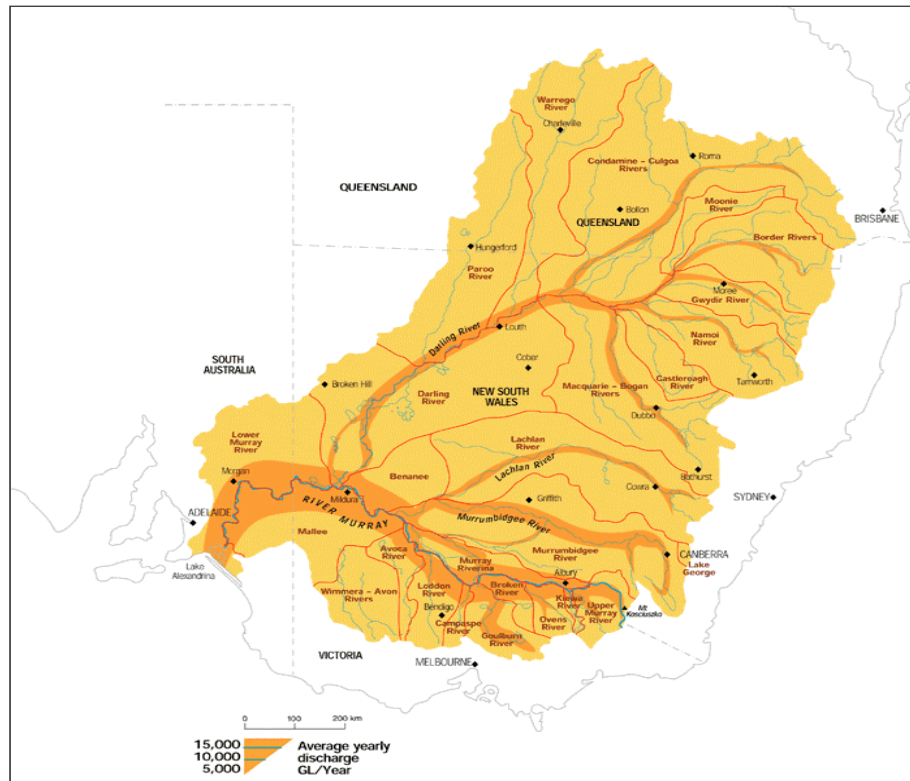
Point Sturt SA.

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- ⁱ “A Fresh History of the Lakes: Wellington to the Murray Mouth, 1800s to 1935.” Terry Sim and Kerri Muller. © River Murray Catchment Water Management Board, 2004, attached also available as a download (4MB) from:
http://www.riverlakescoorong.com.au/documents/Lakes_History.pdf
- ⁱⁱ CSIRO CLAMMecology group:
<http://www.csiro.au/partnerships/CLLAMMecologyCluster.html>
- ⁱⁱⁱ “A future-proofed Basin, A new water management regime for the Murray-Darling Basin”, Young and McColl, 2008, University of Adelaide, attached and also downloadable (400 KB) from: www.myoung.net.au
- ^{iv} “Applying a localised Water Balance approach to estimate losses from Lake Alexandrina and Lake Albert for the years 1970 to 2006”, Brooks and South, 2008, attached and available as a download (193 KB) from:
http://www.riverlakescoorong.com.au/documents/LowerLakesEvapReport_v1_8_2.pdf

A future-proofed Basin

A new water management regime for the Murray-Darling Basin



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Preface and acknowledgements

The aim of the research that underpins this report is to use the immense experience that Australia has gained in the management of its water resources to identify robust ways to manage water resources. We would like to begin by acknowledging the support of Land and Water Australia, CSIRO Water for a Healthy Country and the University of Adelaide that has made it possible. We also acknowledge and thank our Steering Committee who have encouraged us to both search for and evaluate options for the better management of water resources, and to communicate with care and a sense of responsibility.

We would also like to acknowledge the important contribution made to this report by many people who live in the Murray-Darling Basin, who are responsible for the management and use of its water resources. We would also like to thank Fiona McKenzie from the Wentworth Group of Concerned Scientists, David Kaczan from CSIRO's Policy and Economic Research Unit and Marianne Hart from Adelaide University for tremendous support and assistance during the preparation of this report.

A much shorter and less detailed version of this report is available as a chapter in Manne, R. (ed) (2008) *Dear Mr Rudd*, Black Inc., Melbourne.

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Executive summary

The Rudd Government has promised to tackle Australia's water crisis confidently, equitably and efficiently. This report proposes that this commitment be extended to put in place a suite of institutional arrangements that can be confidently explained as ones likely to *fix* Australia's water allocation and investment problems.

We urge people to begin by considering the robustness of the institutional template set out in this report and leave negotiation of the percentages and amounts of money offered to facilitate adoption of this template to a later stage.

Build on the NWI
and NPWS

Many of the clues derive from knowledge about the design of robust systems. From a water perspective, this knowledge is well summarised in the National Water Initiative. Some of this knowledge is developed further in the National Plan for Water Security. Moreover, the money needed to fix the water crisis is available.

One of the key elements in the proposal is the reintroduction of an incentive payment system that rewards State and Territory governments for the delivery of agreed milestones. In the case of water reform, past experience has shown that reform is easier if agreement on what needs to be done is accompanied by an arrangement that makes delivery financially rewarding.

The Murray-Darling Basin

More than a
drought

The causes of the Murray-Darling Basin's problems stem from a flawed allocation regime. Moreover, because Basin Governments could not agree, arrangements expressed in the new Commonwealth Water Act of 2007 are compromised.

The short answer to the question: "Can the arrangements set out in the new Water Act be confidently presented as likely to work well in times when water is abundant, in drought and cope during a prolonged dry period?" is NO.

The Basin's water resources, its river and aquifer environments and its people all deserve a regime that can be expected to work well in long dry periods and in times when water is abundant. The system has to be able to cope with change.

Two commitments	<p>To fix the Basin’s problems, it is necessary to put a new system in place that is designed to cope with whatever climatic conditions the future brings. Now is the time to:</p> <ol style="list-style-type: none"> 1. Replace the current entitlement and allocation regime with a robust one that can be confidently explained as one that will work – work no matter what climatic future arrives. 2. Implement the resultant change in a just and fair manner.
Benefits	<p>The main benefit of the proposal is a confident change to a system that can be expected to work – no matter what the future brings. For irrigators, the proposal also brings benefits in terms of prevention of the ongoing erosion of entitlement reliability and an end to investment and planning uncertainty. For the environment, it means a timely end to the debate about how best to resolve existing over-allocation problems. Other wider benefits include</p> <ul style="list-style-type: none"> – An efficient water trading market that reflects the value of future opportunities; – An efficient adjustment process that establishes a ‘level playing field’ among all supply systems and all irrigation businesses; – A reduction in opportunities for speculation and opportunism; and – The immediate transfer of money to local communities in a way that will enable all to make the necessary adjustments in an efficient and socially equitable manner. <p>A dramatic increase in the efficiency of environmental water use and storage management can also be expected.</p>
A new Agreement	<p>This report proposes that the Federal Government, in partnership with Murray-Darling States and the ACT enter into a new Murray-Darling Basin Agreement that commits all to working under a system that is capable of coping with whatever future arrives. It is proposed that money to expedite the change process is made available now in a way that empowers and speeds, rather than hinders, progress.</p> <p>One of the important principles of just reform is that the direction, nature and extent of the reform process must be clear. The new Murray-Darling Basin Agreement needs to bring clarity to water allocation and sharing arrangements.</p>

Start with the southern system

The Murray-Darling Basin can be usefully partitioned into a northern summer-rainfall dominated system and a southern winter rainfall dominated system. While management in the northern Darling System needs attention, as a result of the pattern of climatic events and water allocation decisions over the last two decades, the situation in the southern River Murray System now needs to be urgently addressed.

Maintenance, shared and flood water

The report proposes that the new Agreement begins by defining entitlements and allocation rules in a manner that is consistent with the way water can be captured, stored and allowed to flow through and across land. This will require it to:

1. identify first the water needed to maintain the basic character of the system by putting aside enough water to cover evaporative losses, keep the Murray Mouth open, periodically flush some salt to the sea and provide sufficient amounts for existing stock and domestic purposes => **maintenance water**;
2. recognise that flood waters, particularly that water which can not be held in storages and is difficult to control, is best left to flow through the system in a way that minimises damage to property whilst maximising benefit to the environment => **flood water**; and
3. then formally share the remaining water between the environment and all other water users => **shared water**.

Rather than using complex planning systems to define when and how much water should be given to the environment, this report proposes that the environment be given a formal entitlement to a proportion of all allocations of water to the shared water pool. Consistent with the National Water Initiative, there would be no difference between an entitlement held by the environment and that held by any other entitlement holder.

Manage inter-connected surface and groundwater systems as one

The entire system, surface and groundwater, must be managed as a single interconnected system. For too long, the positive contribution that ground water flows make to the river and the adverse effects on river flow from land-use changes, like increased forestry, more farm dams and increases in saline water interception – have not been properly accounted for. If efficient investment decisions are to be made, if communities are to prosper and the environment's interest is not going to be continuously eroded, the practice of granting two or more people the opportunity to take the same water in the same year but at two or more different places has to stop.

Establish a Basin water entitlement register	The existing suite of allocation rules and the Cap on water diversions can be replaced with a Basin water entitlement register that defines bulk entitlements to receive allocations to the southern River Murray System's shared ground water and surface waters.
Appoint a Murray-Darling Basin Authority responsible for the integrity of the Basin entitlement register	A Murray-Darling Basin Authority needs to be appointed and made responsible for, amongst other things, making allocations across the system and to bulk entitlements, requiring the effects of adverse land-use change and other interception activities to be offset, and maintaining and enforcing the integrity of the Basin entitlement register. Penalties for using water without an allocation would apply equally to States and the ACT, irrigators and everyone else.
Working cooperatively with States	To bring integrity back into the system, a take over of the entire system is not necessary. Land-use control remains in the hands of States and the ACT and, as is the current case, responsibility for water delivery is left in the hands of government-owned and irrigator-owned water supply businesses.
No special treatment for the environment	<p>The environment's entitlement to shared water would be defined in exactly the same way as all other shared water entitlements. In order to allow local catchment boards and communities to plan with confidence, the majority of these environment entitlements would be held by regional environment trusts.</p> <p>In order to allow the environment to pay its way, the amount of shared water entitlement allocated to environment trusts should be large enough to enable them to recover costs by periodically selling water allocations. It should be possible to make tax deductible donations to these trusts and for them to enter into counter-cyclic trading agreements.</p> <p>State and ACT Ministers would be responsible for appointing trustees who, by definition, would be the guardians of that water. In order to allow the pursuit of system-wide initiatives, a proportion of environmental entitlements should be placed in a system-wide trust.</p>
Improve water trading processes	Under the current regime, it is possible for an interstate entitlement trade to take months to complete. The new system needs trading rules and processes that enable electronic trading across State boundaries so that allocation trades can be completed instantaneously and all unencumbered entitlement trades completed within two days.

Carry forward allowed	Each State, the ACT and all bulk water entitlement holders would be free to use, trade, or with an adjustment for evaporative and seepage losses, carry forward and store any water allocation made to them.
Fix the system properly, fix it now	<p>Beginning in the southern River Murray System, it is proposed that as soon as a new Agreement can be put in place and approved by the Parliaments of all participating Governments, existing entitlement holders can be informed of the nature of the changes to the bulk entitlement system and when the change will be made.</p> <p>In order to prevent flood damage, water-users would need to understand that the system manager may decide to spill stored water when a storage is more than, say, 85 per cent full. When spilt, shared water would be redefined as floodwater and managed by the Authority as it flows through the system.</p>
The \$10 billion over 10 years or \$5 billion now?	Under the National Plan for Water Security it was proposed that \$10 billion be invested in the Basin over 10 years. When discounted at a rate that recognises inflation and the opportunity cost of money (10%), the present value of the money on offer to the irrigation industry to secure water for the environment and for system modernisation is just over \$5 billion. It is proposed that money to expedite the change process in the southern River Murray System is made available in a way that empowers and speeds, rather than hinders, progress.
Just financial recompense	<p>When property rights are changed quickly, compensation is justified – especially when delivered fairly and in a manner that facilitates and expedites the adjustment processes. To treat irrigators fairly, it is necessary to provide them with early financial recompense for the likely impact of the change, and do so in a way that enables them to plan for change.</p> <p>At a time when little water is available and all are searching for more efficient ways to use water, as soon as the new Agreement can be ratified by State and the ACT Parliaments, an up front compensating payment could be made to each entitlement holder.</p>

Facilitating adjustment

It is suggested that \$500 million be set aside for the northern Darling System. For the southern River Murray System, \$1 billion could be set aside in an inflation proofed fund for the reconfiguration of any supply systems which become redundant as a result of these reforms. The remaining \$3.5 billion of \$5 billion should be made available as quickly as possible.

Given budget realities, 50% could be transferred as soon as the new Agreement is adopted, with two further equal 25% payments at the start of each of the next two financial years. If reinvested, these payments should not be subject to capital gains tax.

If States and the ACT can agree to this proposition quickly, the first payment could be made in the 2008/09 financial year. In order to expedite the adjustment process, during the two following years, all government water trading charges could be waived. In addition, it would be possible to reimburse water supply companies for the loss in revenue caused by the transfer of water from their system to the environment.

Under the new regime, the environment would be given a share and its trustees required to manage it in an efficient and accountable manner.

How fast a change?

Rather than a complete step change, there is an option to phase in the change in the balance between consumptive use and the environment over several years. But time, especially in the southern River Murray system, is not on the Basin's side. The slow incremental reform processes that have characterised the last decade of water reform have not served the Basin well. In our view, provided that adequate financial recompense and sufficient warning is given, the proposed step change is preferable to avoid the uncertainty of a long drawn out adjustment process.

Review system size and configuration

Finally, at the time of writing this report, the southern River Murray System is virtually out of water. Many wetlands have already been closed, and the level of Lake Alexandrina and Lake Albert is now below sea level. If this coming winter does not deliver well above average rainfall, a review of system size and configuration, and, in particular, a decision as to how best to downsize the entire system should be undertaken.

It may not be possible to keep all environmental assets and all irrigation systems going. Parts may have to be abandoned, or accepted as changed forever.

A future-proofed Basin

In summary, it is time to reset the system now. The biggest mistake this nation could make is to expend \$10 billion and take 10 years to only partially fix the Murray-Darling Basin's problems.

A new Murray-Darling Basin Agreement is needed. This new Agreement must be more than a general plan. It must be a co-operative inter-state Agreement that rises above politics, and its implementation and management must not be subject to the whims of ministers or other authorities. It is time to stop incremental approaches to water reform and return to a focus on getting the fundamentals right.

Now is the time to confidently inform those who depend upon, and love the Murray-Darling Basin, what type of future they, and the system, can expect.

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A future-proofed Basin: A new water management regime for the Murray-Darling Basin

“A Rudd Labor government will tackle the water crisis with a national plan to invest in water infrastructure, sustain our farmers, revitalize our rivers and water ways, secure water supplies and adapt to climate change”.

ALP Policy Document, November 2007

The first and arguably most important test of the new Rudd Government’s capacity to fix the national water crisis will come in the Murray-Darling Basin and more particularly, in the southern half of the Basin. This region is often described as the River Murray System, where the river system, its aquifers, its environment and the livelihoods of people who depend upon it are under threat.

National water reform has been part of federal Labor’s agenda since the late 1980s. Working collaboratively with states, its first major contribution was the development of the current Murray-Darling Basin Agreement, which all participating governments agreed to in 1993. This was followed by the inclusion of the water-reform agenda in CoAG’s 1994 National Competition Policy. One of the pioneering features of this National Competition Policy was a condition that state and territory government access to competition payments would be limited to those who delivered the agreed reforms, including a number of critically important water reforms, on schedule.

The Rudd Government’s election statement on water acknowledges the problems are due to much more than the current drought. Reforms over the past decade have been incremental, uneven and too slow.

The National Water Initiative, agreed to at CoAG in 2004, provided a great platform for change because it committed governments to:

- identifying and restoring over-allocated water systems to sustainable levels;
- expanding water trading;
- releasing environmental flows for rivers;
- ensuring secure water access entitlements;
- improving reporting and accounting of water use;
- introducing transparent water planning;
- improving the management of water in urban environments; and
- full cost pricing in a way that reflects environmental costs.

The National Water Initiative is acclaimed as a uniquely clear statement of international best practice in water management. When the NWI was negotiated, it was decided that it was no longer necessary to make delivery of agreed milestones a necessary condition for states to receive competition payments.

Unfortunately, without the financial discipline imposed by competition payments on state and territory governments, water reform progress has slowed to a snail like pace and, to make matters worse, many of the old *ad hoc* water policy and administration habits have started to return.

The Murray-Darling Basin

While progress has been made in the Murray-Darling Basin, many National Water Initiative commitments have yet to be met.

While all participating governments agree that the current water allocation regime needs to be changed, lack of cooperation and fundamental flaws in the existing Murray-Darling Basin Agreement have hampered progress. Because we have glued a water-trading system onto an allocation regime that was never designed for the world we now find ourselves in, the system is going backwards faster than reforms are taking it forward.

As many are aware, the southern part of this system is now seriously over-allocated. Moreover, as a result of the shift to a long dry period, like several of those experienced in the first half of last century (Figure 1), the lower part of this system is now being run below empty. This is not sustainable.

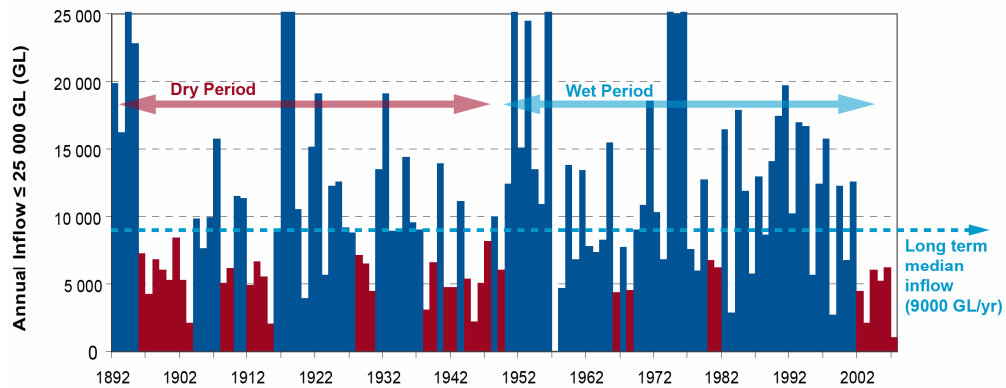


Figure 1 A century of knowledge about the Murray Darling System - total annual inflows. Extended droughts shown in red.

We are living in the 21st century and it is time to reshape, time to future proof the system by decoupling it from the past – decoupling it from all the arrangements that cause problems.

To fix the Basin's problems, it is necessary to put a new system in place that is designed to cope with whatever climatic conditions the future brings. Now is the time to:

1. Replace the current entitlement and allocation regime with a robust one that can be confidently explained as one that will work – work no matter what climatic future arrives.
2. Implement the resultant change in a just and fair manner.

A new Murray-Darling Basin Agreement

The proposition put forward in this report is that the Federal Government, in partnership with Murray-Darling State governments and the ACT government put in place arrangements that will withstand the test of time – no matter what climatic future arrives. This will require a new Murray-Darling Basin Agreement.

The southern River Murray System is heavily dependent on winter rainfall and storage, while much of the northern part of the system relies on episodic summer rainfall and the 'harvesting' of water by irrigators as it flows past their properties.

The good news is that the need for reform is less urgent in the summer rainfall driven northern Darling System. Rather than trying to fix the entire system in one hit, reform implementation can start in the southern River Murray System that encompasses the Murrumbidgee, River Murray, the Lower Darling and main Victorian tributaries to the River Murray.¹

Significantly, the proposition can be implemented co-operatively with the States. It does not require a federal take-over of the entire allocation system. However, it will require a resetting of the system in a way that is just and fair and empowers local communities. The new Agreement will need to:

- Introduce a new bulk water sharing regime for the southern system;
- Manage the connected ground and surface water system as one;
- Remove water accounting flaws from the system;
- Create a water right for the environment;
- Establish environment trusts;
- Decide how hard to work the River;
- Replace the Cap with bulk entitlement shares;
- Appoint an Authority to allocate water to all bulk entitlement holders;
- Establish a Basin entitlement register;
- Create consistency among states in entitlements;
- Provide guaranteed allocations;
- Retain key State responsibilities;
- Empower the water market;
- Ensure a fair and equitable transition;

¹ If New South Wales and Victoria agree this could include the Lachlan and Wimmera systems.

- Improve water trading processes, and
- Allow water allocations to be carried forward.

If the Commonwealth, participating States and the ACT are prepared to sign-off on these core features, then we will have the opportunity to break the current impasse, get the details right and launch a new era in the management of the Murray-Darling Basin and its people.

In the southern River Murray System, the main difference between this proposal and that proposed under the Water Act 2007 is the upfront commitment to giving bulk entitlement shares to each State and the ACT and the environment, to bring an end to all processes that are undermining entitlement reliability, and to commence an adjustment process that is more predictable because the nature of the final outcome is predetermined.

The proposal also raises the question as to whether or not it will be possible to retain all environmental assets. Parts of the system may have to be abandoned, and we may have to accept that some parts have changed forever.

The following provides more detail supporting the listed elements of the proposed new Murray-Darling Basin Agreement.

*

A new bulk water sharing regime for the southern River Murray System

One of the essential building blocks for the proposed new agreement is a new water bulk water sharing regime for the southern River Murray System.

If the system is to be robust enough to work no matter what climatic conditions the future brings, the allocation regime must be aligned with hydrological realities and defined in a way compatible with processes such as evaporation, storage and flow across and through land.

The southern River Murray System is characterised by a set of linked and interdependent dams, weirs, locks, lakes and barrages that collectively cause much water to evaporate.

Thus, the first step to a robust regime is to differentiate between water needed to cover evaporative losses and keep the Murray Mouth open; flood water; and water that can be shared between the environment and irrigation and other consumptive water users. The new Agreement needs to:

- Set aside enough **maintenance water** to allow for evaporative and other losses, existing stock and domestic uses² and to flush a small amount into the sea.³
- Leave **floodwater**, when it arrives, to be managed in a way that maximises environmental benefit whilst minimising damage to property.
- Define the remaining water as **shared water** and put in place a regime that entitles all users and the environment to a share of any allocations made to this pool of water.

Some may prefer to think of the maintenance water as a base flow but it is more than this. Without this minimal amount of water in the system, no-one can access water. Without it, there is no system as we know it. Pragmatically, and as this water will always be taken, maintenance water needs to include a provision for existing stock and domestic water.

At the end of this report, we also raise the question of whether or not the system should be reconfigured in a way that reduces the volume of water needed to maintain the system.

The maximum size of the shared water system is defined primarily by the volumetric capacity of the existing storage system. In most parts of the system, it would also be necessary to assign delivery entitlements to manage congestion through the Barmah Choke and within some water supply systems and, as already happens in the continuous accounting systems used in Queensland, make efficient trade of delivery entitlements possible (Figure 2).

² The emphasis here is on existing stock and domestic uses which in most cases are unmetered. As far as possible, these uses should be metered.

³ Scientists analyzing this part of the system think that the absolute minimum necessary is around 200 GL.

Total evaporative losses from the southern River Murray System are in the vicinity of 1,800 GL per year. We imagine that something like the first 2000 GL of annual inflows would be defined as maintenance water.

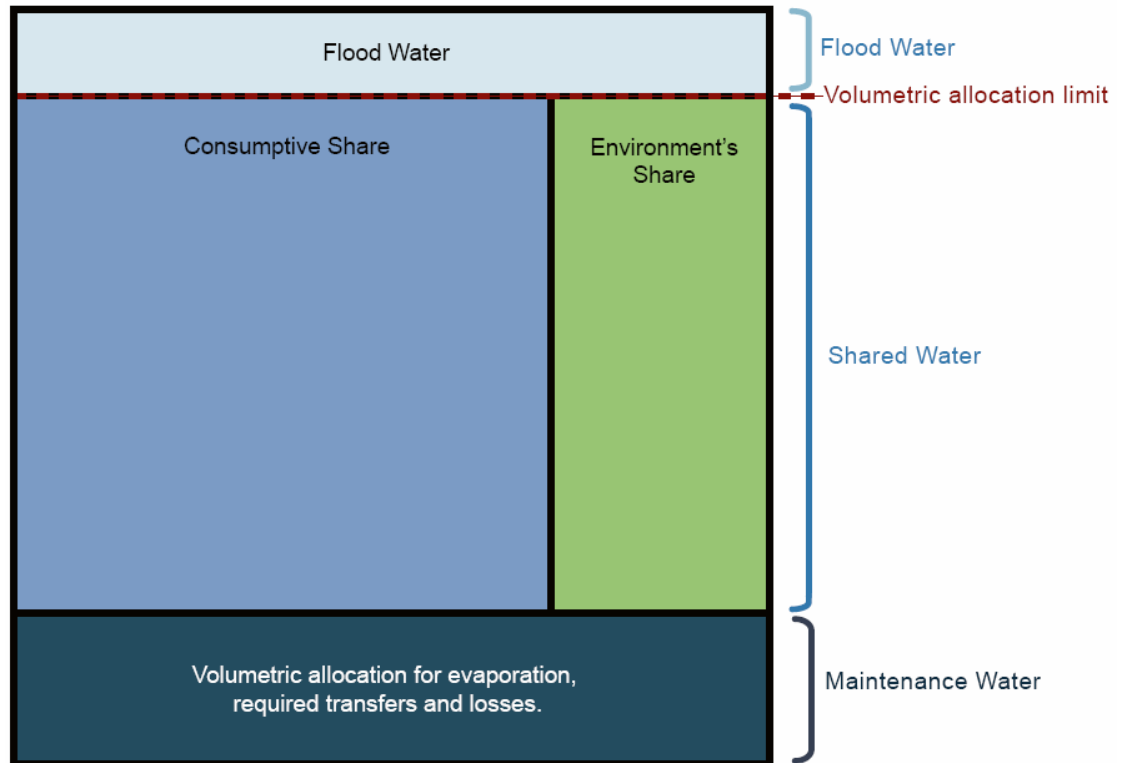


Figure 2 Basic structure of the proposed regime

Manage connected ground and surface water systems as one

In addition, the new Agreement needs to recognise the high degree of connectivity among the Basin's unconfined aquifers and its rivers. Whenever more groundwater is used, less water ultimately enters the river. The new Agreement thus needs to:

- Define all groundwater as part of the system and use a similar sharing system to allocate entitlements to take water from it.

As part of the process of managing system interconnectivity, it will be necessary to define the proportion and volume of groundwater in each part of the system that transfers to other water bodies.

*

Remove water accounting flaws from the system

We cannot go on ignoring the fact that the current water accounting and allocation processes are undermining progress at a faster rate than water reform is driving the health of the southern River Murray System forward. It is time to get the basics of water allocation and accounting right. In particular, we need to stop the practice of defining water and land-use opportunities in a manner that allows the same water to be taken by two or more different people in two different locations. Whenever this happens, either someone else or the environment loses.

Too many actions that reduce flow and debase entitlement reliability are still allowed to occur. The list is long and includes the expansion of forestry in high rainfall areas, the continued construction of small farm dams and also the increased interception and evaporation of saline groundwater. Whenever any of these activities occur, either allocations to the water users or allocations to the environment are reduced.

Flawed allocation practices, like those described above, undermine the integrity of the entire system and debase the value of entitlements. It is time to fix them. Allocation policies must not allow the actions of one party to undermine the interests of another.

In short, the new Agreement must put in place an entitlement and allocation regime that is consistent with the way that water flows across the land. It is time to:

- Require the offset of the adverse effects on supply reliability of all water interception activities such as forestry in high rainfall areas, the building of more farm dams and the construction of salinity interception schemes.

Coordinated by the Authority, the States and the ACT would be required to establish and manage offset arrangements. Such arrangements could be administered by government agencies, catchment boards, or local governments.

This new approach, designed to prevent land use changes from undermining the reliability of the entitlements held by irrigators and the environment, should commence as soon as the new Agreement is put in place.

*

Create a water right for the environment

As proposed in the National Water Initiative, we need a revolution in environmental management that gives environmental water the same degree of security given to all other water-users. We need managers responsible and accountable for managing environmental water in the best interests of the environment.

One of the features of the proposed new entitlement regime is that the environment is given an entitlement to receive allocations in exactly the same way as all other entitlement holders do. Thus:

- In every part of the system, the environment must be given a formal entitlement to a proportion of all allocations to shared water.

*

Establish environment trusts

Some environmental water needs to be held centrally, but most of the environment's entitlement can be placed under the control of local or regional environment trusts. These environment trusts should be independent of ministers and other agencies, and should work in partnership with catchment boards and local communities to ensure that the water under their control is used to deliver the best environmental outcomes possible.

- The majority of shared water entitlements assigned to the environment should be placed in regional environmental trusts and a small proportion held centrally in a system wide trust.

Pragmatically, we suggest that the boundary of a regional environment trust's responsibilities should align with catchment board boundaries, and include responsibility for the management of all icon environmental sites within their boundaries.

By placing this water in regional trusts, environmental managers will, for the first time, be able to decide when, and how, to apply water to land. Empowered in this way, a dramatic improvement in the efficiency of environmental water use can be expected. Local environmental managers will be able to plan confidently and respond quickly when opportunities arise.

The role of governments is to define environmental objectives and to appoint the people to be responsible for determining where, and when, the environment's water should be used. At the local level, environmental managers, like irrigators, need to be empowered to make decisions in a timely manner. Therefore the new Agreement should:

- Assign responsibility for appointing environmental trustees and defining the regional trusts' objectives to the States and the ACT.

With responsibility and accountability, the environment must be seen as an equal partner in the system. Amongst other things, this means that environmental trusts must be required to pay their way, and should be expected to be as innovative as we expect irrigators to be.

One of the simplest ways of enabling the environment trusts to pay their way is to assign enough water to each trust to enable its managers to sell sufficient water allocations on the water market to recover costs. Thus, when deciding how large to make the environment's entitlement as a proportion of the shared pool:

- The amount of shared water entitlement allocated to environment trusts should be large enough to enable them to recover costs by periodically selling water allocations.

Under this proposal, each environment trust would be eligible under the Income Tax Assessment Act to receive tax deductible donations of water entitlement shares and/or allocations.

Each regional environment trust should also be able to enter into counter-cyclic trading⁴ and long-term water sharing agreements with other entitlement holders.

*

Decide how hard to work the River

Perhaps the most difficult element of this proposal is to determine the volume of maintenance water to set aside, and then to determine initial proportions of shared water to allocate as shares to each State and the ACT and to the environment.

With regard to the mix between the environment and consumptive users, we could begin by asking: "How hard should the River Murray be worked?" International standards for very hard working rivers (like the southern River Murray system) suggest that no more than 50% of all inflows on average should be used for consumption.

Assuming a continuing community preference for working this River and its associated aquifers very hard, and given that system maintenance water is first set aside and that all floods go to the River and its water dependent ecosystems, an indicative proportion of shared water to assign to the environment could be in the vicinity of 20%.

Many will argue that 20% or, perhaps 25%, is either too much or too little to assign to the environment. If this proposition is accepted in principle, the final proportion should be determined only after careful scientific analysis and widespread community consultation.

⁴ Environmental and other user needs can be counter-cyclic to one another. Environmental managers, for example, can be very interested in turning a high river -flow event into a managed flood and may be prepared to contract with other entitlement holders to have access to more water during such times on the condition that the other entitlement holders have access to a larger volume during dryer times.

Ultimately, any decision about how healthy the River Murray and its tributaries should be, and what proportion of shared water is required, is a matter of judgement. *Scientists can have their say but, at some point in time, participating governments will need to collectively decide on a proportion to allocate to the environment, and accept the consequences of and challenges that come with that decision.*

Once a proportion is decided upon at a system level, further analysis will be necessary to assign environmental entitlements to regional environment trusts.

*

Replace the Cap with bulk entitlement shares

The Basin's current limit on water-diversions – a cap on the use of surface water and the associated water-allocation rules – is incapable of dealing with the situation we are now facing. The current agreement was designed for a specific climate with higher rainfall. Now that patterns have shifted, the move from a fully to an over-allocated system has been inevitable and swift. The new agreement for the southern River Murray System should:

- Replace the existing cap and limit on water extractions and associated sharing rules with a bulk entitlement system that is enforceable and underpinned by an accounting system that has integrity.

One of the flaws in the current allocation system is that it was not designed to work during long dry periods such as that which occurred when Australia was federated and the dry period that started in 1938 and ended twelve years later in 1950. Critically, by drawing a clear distinction between maintenance water, shared water and flood water, it is possible to put in place a regime that can be expected to work in wet and prolonged dry periods.

In the southern River Murray System and in most groundwater systems, the entitlement would be to a share of allocations made.⁵ Allocations would be volumetric. Shares would be unitised in the same way that company shares are defined.

In most parts of the system, it would also be necessary to assign delivery entitlements and, as already happens in the continuous accounting systems used in Queensland, make efficient trade of delivery entitlements possible.

⁵ In episodic systems, especially those that are dry for part of the year, sharing rules need to be more complex and constrained by river height, etc.

One of the merits of assigning water entitlements as shares is that the entitlement system does not have to be changed if, and when, climate change occurs. If it gets drier, then allocations per share are reduced proportionately. All shareholders are expected to manage with the water assigned to them. All shareholders have the capacity to manage supply risk by carrying forward water and, within delivery limits, decide when to use water.

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Establish a Basin water entitlement register

An indicative template for the structure of the proposed bulk entitlement register to be set up in each part of the system is set up in Figure 3 below.

Under the new Agreement, no State or Territory and no individual should be allowed to cheat. Practices such as those that have allowed some States to exceed the Cap should not be allowed to continue.

The penalty for taking water without an allocation should be the same for a State or Territory, an irrigator, an environmental manager and any one else. At a Basin level, the penalty for taking water without an allocation should be something like five to ten times the market value of the water taken. Among other things, this requires:

- The establishment of a Basin water entitlement register that defines bulk entitlements to receive allocations, and assignment of complete responsibility for allocating water to an independent, expertise-based Authority.
- The introduction and enforcement of penalties for taking unallocated water. These must apply equally to the States, the ACT, irrigation companies, entities responsible for managing environmental water and all other parties.

One of the features of the proposed Basin water entitlement register is that it would be possible for any person or any State or Territory to convert their current entitlement into an entitlement that is registered *only* on the Basin register.

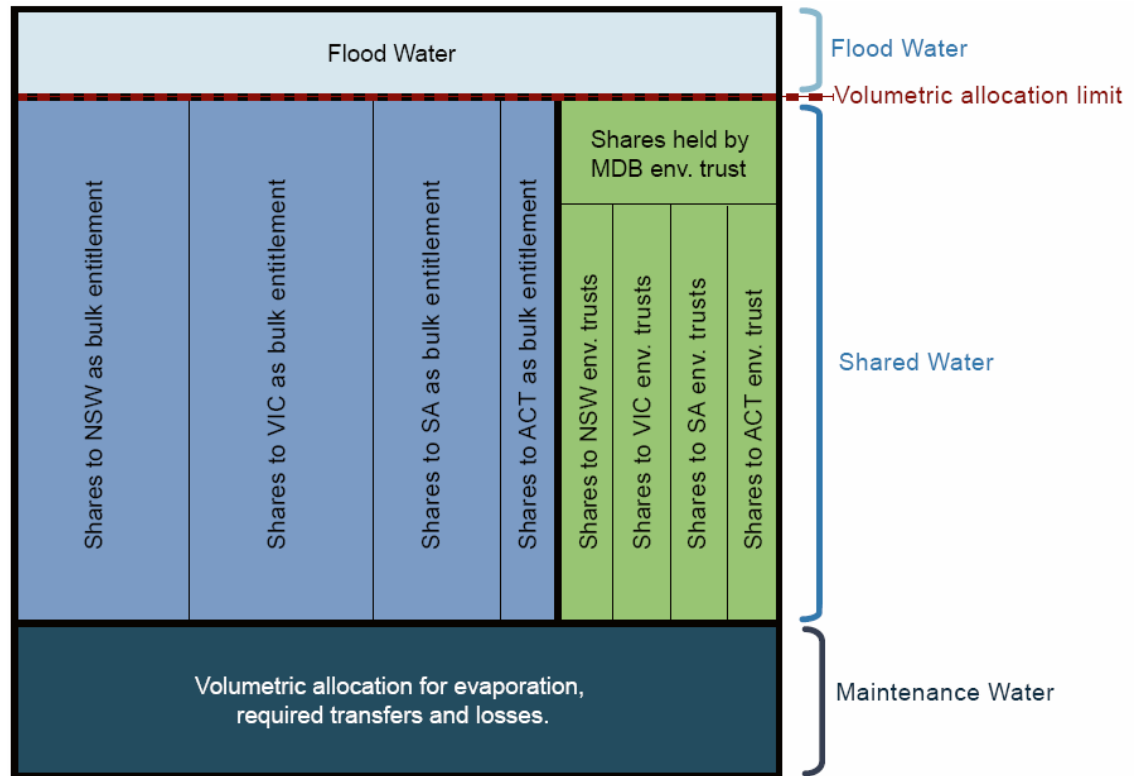


Figure 3 Indicative template for the proposed allocation regime in each part of the southern River Murray system. Each State share could be further divided into high and low security entitlements (Not to scale)

Existing hydrological models could be used to define the boundaries of each part of the system. There is also a question as to whether or not the Snowy system should be included within the new regime or treated as an external source of water that becomes available for allocation whenever it arrives.

*

Appoint a new Authority to allocate water to all bulk entitlement holders

The Rudd Government has committed to taking the politics out of the water business, and also endorsed the thrust of the National Water Initiative and the \$10 billion National Plan for Water Security. This last decision includes support for an independent, expertise-based Murray-Darling Basin Authority. Allocation decisions should be made using the best available science, information and expertise. The new Agreement must therefore:

- Establish an independent, expertise-based Authority responsible for allocating groundwater and surface water, informed by the best available science.

Rather than a Cap on diversions, we need a regime that requires a limit on allocations to the shared water pool.

Under the new regime, it is critical that water markets should operate in a fair manner that gives all participants an equally informed opportunity to be active in the market. In particular, allocation announcements should always be made in the same way. Like the Reserve Bank, the Authority should be required to communicate with great discipline and always be mindful of the weight given to its statements. The new Authority must be required to:

- Give all stakeholders an equal opportunity to access information about likely and actual allocation announcements.

*

Create consistency among States and ACT bulk entitlements

Entitlements throughout the system should be defined in the same manner. For example, the existing annual entitlement to minimum flows into South Australia would be replaced with a bulk water entitlement to its share of the system. South Australia would then be able to allocate this water to all users including irrigators and those in its urban centres. The Basin Authority and environment trusts would be responsible for maintaining essential river functions, and the environmental trusts would be further responsible for looking after the environment's interests. As a result, the status of South Australian water-users would be no different from that of any other water-user in the system.

As part of the process of sorting out the detail, States/Territory can be expected to want to split the shared water pool into high and low security entitlement water. If this is done, in order to climate-change-proof the relationship between high and low security water, it will be necessary to keep a degree of balance between them. One way of doing this would be to define the maximum size of the volume of high security water as an entitlement to a percentage of the moving average of the last, say, ten years' allocations to the shared water pool.

Using a similar moving average allocation rule, the States and the ACT may wish to create an extremely secure pool to provide for essential urban, industrial, mining and other needs. If agreed, this could be included in the bulk entitlement regime.⁶

The models that underpin the CSIRO Sustainable Yield study could be used to help determine ground-surface water system transfer obligations and the most appropriate number of shares to issue in each groundwater system.

*

⁶ Each State and the ACT would also be able to provide for such an arrangement as part of their own system. It would also be possible to include such a provision in the maintenance water pool.

Provide guaranteed allocations

Allocations made by the Authority to bulk water entitlements should be conservative. Unless a calamitous event occurs, such as the failure of a dam, all allocations should be guaranteed as being available for delivery.

*

Retain key State responsibilities

It is neither necessary nor appropriate for the proposed Authority to control everything. Under the proposed regime and nested under the bulk entitlement register, the States and the ACT would still be able to retain their existing register and entitlement systems.

Furthermore, over the last decade, one of the important reforms delivered by the States has been the separation of water licences into formal access entitlements and approvals for water use at specific locations. Allocations are now made in proportion to each entitlement and can be traded without touching the entitlement.⁷ As a result of these reforms and through the use of normal development and catchment management processes, land-use can be controlled separately from water. Thus, under the new Agreement:

- Responsibility for control of land-use and water-use practices should remain with States and the ACT on the understanding that they deliver agreed salinity and other water-quality management targets, and manage offset arrangements for the adverse effects of water interception activities.

The proposed new Agreement should enable individuals and/or any consortia to earn and trade salinity credits.

Similarly, as a result of a decade of water reform, state-owned and irrigator-owned water supply businesses now deliver water allocated to water users. The new system could continue to:

- Use business structures to run and maintain system infrastructure and recover the costs of doing this from water users.

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⁷ Under the old regime, an allocation trade was called a temporary trade because it was implemented by temporarily transferring the entire entitlement to another person, removing the allocation from the entitlement and then transferring the entitlement back to the original owner.

Empower the water market

Buying water for the environment is one of the most effective ways to restore over-allocated systems to sustainability. However, under the National Plan for Water Security, buying water for the environment to achieve the volume proposed threatens the viability of the entire water market. In effect, this would result in the gradual buy back of water for the environment over each of the next 10 years at an annual rate that, in all but this financial year, is greater than the value of all the water entitlements that have ever been sold in a year (see Figure 4).⁸

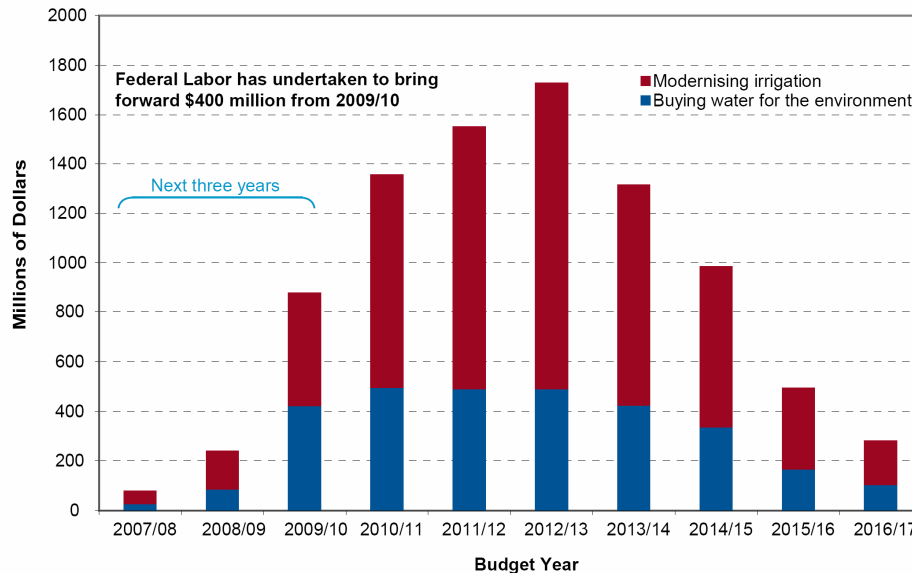


Figure 4 National Plan for Water Security budget for modernisation and the purchase of environmental water as presented in budget papers for 2007/08

The result would be an increase in water prices to the extent that no irrigator would be able to compete with the environment's water purchaser. The entitlement market would be wrecked and any structural adjustment that required the purchase of a water entitlement financially impossible.

This proposal presented here removes the need for the government to directly enter the water market and buy water entitlements for the environment. Instead, the environment is given an entitlement to receive allocations in exactly the same way as all other entitlement holders do, with compensation paid for this change in regime. The approach allows the water market to continue to do what it does best – to continuously reveal and recalculate the value of future opportunities to use water.

⁸ Estimates of the maximum value of permanent entitlement trades in the Southern Connected River Murray System, suggest that the maximum total value of water entitlements sold separately from an accompanying land transaction is in the vicinity of \$100 million per year.

Under this proposal, the water market would continue to operate. Market prices would be determined by buyers without government interference. If the alternative market purchase approach is taken, no one other than the government will be able to afford to buy water. For the next decade, all others would be forced to stand still and watch opportunity after opportunity go past as the government tries to fix up a past mistake.

*

Ensure a fair and equitable transition

In announcing the step change to a new robust regime that is designed to work in all circumstances and conditions, it is necessary to treat those dependent upon the system fairly and equitably. This will require the Federal Government to:

- Compensate entitlement holders and water supply companies for the impact of the change on their livelihoods and on the value of capital assets, and assist them to adjust rapidly to the new regime.

The Howard Government's National Plan for Water Security put aside \$10 billion, with \$8.9 billion to be spent on modernising irrigation and purchasing water for the environment. Under this Plan, it is proposed that this money be spent over the next 10 years, with most not becoming available until after 2010.

Discounted at 10% to allow for the time delay of expenditure over the 10 year period and for inflation, the present value of the total of \$8.9 billion on offer to the irrigation industry is a little over \$5 billion.

It is suggested that the northern Darling System should have access to a fair share of the funds set aside under the National Plan for Water Security. For the purposes of discussion, we suggest that an appropriate amount to set aside for the Darling System would be in the vicinity of \$500 million or thereabouts. This would leave around \$4.5 billion for use in the southern River Murray System.

\$1 billion could be set aside in an inflation-proof fund for the efficient reconfiguration of any parts of water supply systems that become redundant as a result of adjustment to the new management regime. The remaining \$3.5 billion could be used to provide financial recompense to the industry for the change in the way that State entitlements are defined, the redefinition of the environment's entitlement, the change in the value of the industry's capital assets, and for the social impacts on each person's livelihood.

How this \$3.5 billion is partitioned between irrigators and water system managers is a matter that requires careful consideration and further analysis. One option would be to provide a payment to each irrigation company equivalent to the termination fee these companies would be entitled to recover as a result of the increase in the environment's share and the transfer of this water out of their supply system.⁹

In order to ensure that all have sufficient opportunity to plan for the proposed step change, payments should be made several years in advance of the proposed change to the bulk water entitlement regime. Providing sufficient time and money is made available, all irrigators and all water supply companies involved would then plan for and put in place strategies to enable them to adjust. Pragmatically, payments to each irrigator could be in proportion to the current market value of their entitlements.

In our view, this approach is likely to be much more cost-effective and fair than one that requires entitlement holders and water supply companies to develop modernisation proposals and apply for money to implement them. In particular, it would ensure that those who have already modernised their farms and their supply systems are not dis-advantaged. Consistent with National Water Initiative compensation and pricing principles, a level "adjustment playing field" would be put in place.

When assessing whether or not the proposed transitional arrangement is fair and just, consideration needs to be given to the value of preventing the ongoing erosion of entitlement reliability. Consideration also needs to be given to the value of the planning and investment certainty provided by the assignment of formal share of shared water to the environment. Other wider benefits of the proposed step change include:

- An efficient water trading market that reflects the value of future opportunities;
- An efficient adjustment process that establishes a 'level playing field' among all supply systems and all irrigation businesses;
- A reduction in opportunities for speculation and opportunism; and
- The immediate injection of money into local communities to facilitate adjustment in an efficient and socially equitable manner.

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Implementation

As soon as a new Agreement has been approved by all Murray-Darling State Parliaments and the ACT Parliament, payments could be made to all likely to be affected by the proposed new system.

⁹ The most recent ABS survey data suggests that there 15,496 agricultural establishments involved in irrigation in the Murray-Darling Basin and 12,478 agricultural establishments involved in irrigation in the southern Murray System (see ABS Publication 4618.0).

If fiscally possible, the cheques could be for the full amount to be paid. Alternatively, the first payment could be for, say, 50% of the total amount to be paid and accompanied by a statement indicating how much more money would be sent at the start of the next fiscal year and, if absolutely necessary, the year after that.

All payments would be made on the understanding that, in two irrigation seasons' time – in July 2010 – the new future-proofed water-allocation regime would begin.

If it remains dry over the next few years, considerable structural adjustment may be needed. Some irrigators will choose to leave the irrigation industry, others will choose to buy additional entitlement shares. Many will choose to invest the money in the development of more efficient systems.

If the money received is reinvested, it should not be subject to capital gains tax.

During this adjustment period, it will be critical that all impediments in the water market are removed.

In order to encourage structural adjustment and rationalisation of supply systems, at least until 2011, all government water-trading charges should be waived.

As part of the process of fixing water, it will be necessary to communicate carefully with all those living in rural communities about the nature and extent of the change that could be expected.

Fixing water is also about fixing the communities who have found so many of the past attempts to manage water unsatisfactory. It needs to be stressed that the vision is to put in place, once and for all, a system that can be expected to work no matter what climatic conditions the future brings.

How fast the step change is then implemented needs careful consideration. Rather than a complete step change, there is an option to phase in the proportion of shared water assigned to the environment over several years. A variant on this option would be to begin by allocating a smaller proportion to the environment and then using a voluntary share buy-back process to secure the remainder in a timely manner. It is also possible to buy water for the environment before the proposed step change to a new regime is implemented.

If the money is transferred at least two years in advance of the step change, all irrigators would have sufficient time to consider how best to adapt. In our view, therefore, provided that adequate financial recompense *and* sufficient warning of the change is given, a complete step change that involves all irrigators is preferable to the uncertainty of a long drawn out adjustment process.

Implementation of this proposed step change would need to be coordinated with existing regional assistance and structural adjustment programs. Existing commitments to purchase environmental water should still be honoured.

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Improve water trading processes

It is also time to put in place inter-state water trading arrangements that are as efficient as those found anywhere in the world. In practice, there are two water markets: a market where entitlements, like company shares, are traded, and a market where seasonal allocations, which are more like dividends, are traded.

One of the biggest impediments to improvement in the way water is managed is the presence of a significant number of extremely inefficient administrative practices. Under the current regime, it is possible for an interstate entitlement trade to take months. Under the new regime, it should be possible for entitlement trades to be executed as quickly as company shares can be traded on the stock market. It should also be possible for allocation trades to be executed in the same way that money can be moved from one bank account to another. The system therefore needs to:

- Establish trading rules and processes that enable electronic trading across state boundaries so that:
 - all allocation trades can be completed instantaneously, and
 - all unencumbered entitlement trades can be completed within two days.

*

Allow water allocations to be carried forward

In the northern Darling System, a significant water reform has been the conversion of a number of the existing entitlement regimes into ones that allow irrigators to decide whether or not to leave water in storage, use it or sell it. When water is left in storage, the amount stored is adjusted for evaporation. As a result, supply risk is managed largely by individual water users and governments do not have to decide between how much water to save and how much water to allocate each year.

In a climate where both long-dry and long-wet periods can occur, every user is better off with an opportunity to decide how much water to use and how much to keep in storage. The next core element to be included in a new Murray-Darling Agreement is therefore to:

- Allow all entitlement holders – all irrigators and all environmental managers – to carry forward allocations with adjustment for evaporative losses and seepage.

In order to prevent flood damage, water users would need to understand that the system manager may decide to spill stored water when a storage is more than, say, 85 per cent full. When spilt, such water would be redefined as floodwater and managed by the Authority as it flowed through the system.

In some parts of the system, because of limitations on the capacity to deliver water for use, separate delivery entitlements will need to be assigned to water access entitlement holders. These delivery entitlements should be tradeable.

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Review system size and configuration

Exceptional rains may get the southern River Murray System out of trouble but, by the end of this irrigation season, it is still possible that River Murray System dams will be nearly empty and that well over forty wetlands and lakes will have been dried out. At the time of writing, the water level in Lake Albert and Lake Alexandrina is predicted to be more than half a metre below sea level.

Recent rain is helping, but the amount of water necessary to fill this system back up to 'empty' is more than has flowed into the southern River Murray System during the past year. Several years of above-average rainfall are needed. If significant amounts of rainfall are not received by the end of August 2008, it would be wise to:

- Commission a formal review of opportunities to downsize and reconfigure the southern River Murray System.

It may not be possible to keep all environmental assets and all irrigation areas going. Parts of the system may have to be abandoned, and we may have to accept that parts may have changed forever.

Another important reason for commissioning a formal review of opportunities to downsize and reconfigure the southern River Murray System is the prospect that we may be experiencing a shift to a drier regime.

In Mediterranean climates, a 1 per cent decline in mean rainfall typically produces a 3 per cent decline in the amount of water that flows into the system. Australia appears to be getting drier. In Perth for instance, since 1974, the amount of water in storage has never reached the average amount that was available before that year. Very small reductions in mean rainfall can result in very large reductions in the amount of water available to consumers.

Because the amount of water lost to evaporation is a function of the size of the system, if existing environmental commitments are honoured, this means that a 10% reduction in mean rainfall can result in a 67% reduction in the amount of water available for use by irrigators (Table 1). If such a climate shift occurs, as it has in Western Australia, then this is another reason for immediately beginning a search for ways to reconfigure and downsize the current system.

Table 1 An illustrative overview of the consequences of a shift to a drier regime for a 10,000 GL system similar to the River Murray's. (Readers are encouraged to enter their own assessment of how best to configure such a system if, as Perth has experienced, there is a 20% decline in mean rainfall).

Mean rainfall shift		10% reduction in mean rainfall	20% reduction in mean rainfall
Mean inflow	10,000	7,000	4,000
Mean evaporation	2,000	2,000	2,000
Mean flow to the sea	<u>2,000</u>	<u>2,000</u>
Net volume available for discretionary use	6,000	3,000
Environmental entitlement	1,500	1,500
Consumptive user entitlement	<u>4,500</u>	<u>1,500</u>
Unallocated water	0	0	0
Reduction in mean volume available to consumptive users		67%%

* Murray-Darling Basin historical records indicate that mean annual inflows into the southern River Murray system including the Lower Darling is 11,229 GL per annum and the median inflow is 9,033 GL per annum.

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State incentive payments

Payments to state and territory governments should be made conditional upon completion of already agreed National Water Initiative milestones, for both urban and rural agendas. This arrangement could extend to include funding for projects promised by the Rudd Government and also those that the previous government undertook to fund. It is time to:

- Reward states for implementing reforms and for the delivery of agreed water reform milestones under an outcome-focused regime similar to that set up under the National Competition Policy.

It is time to bring some economic discipline back to water reform.

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A new agreement – A future-proofed Basin

It is time to reset the system now. The biggest mistake this nation could make is to take 10 years to only partially fix the Murray-Darling Basin's problems.

A new Murray-Darling Basin Agreement is needed. This new Agreement must be more than a general plan. It must be a co-operative inter-state Agreement that rises above politics, and it must not be subject to the whims of ministers or other authorities. It is time to stop incremental approaches to water reform and return to a focus on getting the fundamentals right.

Now is the time to confidently inform those who depend upon, and love the Murray-Darling Basin, what type of future they, and the system, can expect.

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Summary of key elements of the proposal

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| A 3-part system | 1. Set aside enough maintenance water to allow for evaporative and other losses, existing stock and domestic uses ¹⁰ and to flush a small amount into the sea. |
| Maintenance water
Flood water
Shared water | 2. Leave floodwater , when it arrives, to be managed in a way that maximises environmental benefit whilst minimising damage to property.

3. Define the remaining water as shared water and put in place a regime that entitles all users and the environment to a share of any allocations made to this pool of water. |
| Ground and surface water | 4. Define all groundwater as part of the system and use a similar sharing system to allocate entitlements to take water from it. |
| Offset all interception | 5. Require the offset of the adverse effects on supply reliability of all water interception activities such as forestry in high rainfall areas, the building of more farm dams and the construction of salinity interception schemes. |
| A right for the environment | 6. In every part of the system, the environment must be given a formal entitlement to a proportion of all allocations of shared water. |
| Regional environmental trusts | 7. The majority of shared water entitlements assigned to the environment should be placed in regional environmental trusts and a small proportion held centrally in a system wide trust. |
| Appoint trustees | 8. Assign responsibility for appointing environmental trustees and defining regional trusts' objectives to the States and the ACT. |
| Environment pays its way | 9. The amount of shared water entitlement allocated to environment trusts should be large enough to enable them to recover costs by periodically selling water allocations. |
| Bulk entitlements | 10. Replace the existing cap and limit on water extractions and associated sharing rules with a bulk entitlement system that is enforceable and underpinned by an accounting system that has integrity. |
| A Basin Register | 11. The establishment of a Basin water entitlement register that defines bulk entitlements to receive allocations, and assignment of complete responsibility for allocating water to an independent, expertise-based Authority. |
| Penalties that apply to all | 12. The introduction and enforcement of penalties for taking unallocated water. These must apply equally to states, irrigation companies, entities responsible for managing environmental water and all other parties. |

¹⁰ The emphasis here is on existing stock and domestic uses which in most cases are unmetered. As far as possible, these uses should be metered.

Authority makes all allocations	13. Establish an independent, expertise-based Authority responsible for allocating groundwater and surface water, informed by the best available science.
Equal opportunity	14. Give all stakeholders an equal opportunity to access information about likely and actual allocation announcements.
Land-use control with States	15. Responsibility for the control of land-use and water-use practices should remain with the States and the ACT on the understanding that they deliver agreed salinity and other water-quality management targets, and manage offset arrangements for the adverse effects of water interception activities.
Leave water supply as it is	16. Use business structures to run and maintain system infrastructure and recover the costs of doing this from water users.
Just compensation	17. Compensate entitlement holders and water supply companies for the impact of the change on their livelihoods and on the value of capital assets, and assist them to adjust rapidly to the new regime.
Electronic trading	18. Establish trading rules and processes that enable electronic trading across state boundaries so that: <ul style="list-style-type: none"> - all allocation trades can be completed instantaneously, and - all unencumbered entitlement trades can be completed within two days.
Carry forward	19. Allow all entitlement holders – all irrigators and all environmental managers – to carry forward allocations with adjustment for evaporative losses.
Reconfigure and downsize system?	20. Commission a formal review of opportunities to downsize and reconfigure the southern River Murray System.
Reward States	21. Reward states for implementing reforms and for the delivery of agreed water reform milestones under an outcome-focused regime similar to that set up under the National Competition Policy.