

Australia's Climate is Changing Australia

THE STATE OF AUSTRALIA'S WATER
WENTWORTH GROUP OF CONCERNED SCIENTISTS
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Australia is experiencing one of the worst 'droughts' in history. It is the first time that the autumn rains have failed seven years in a row in the Murray Darling Basin¹.

There are no signs that this current weather pattern is abating, but there are signs that this is more than just a drought. Our continent is getting hotter, and rainfall patterns have changed significantly.

When you weigh up all the evidence, it appears that parts of Australia are experiencing a step change in its weather patterns. In some parts of Australia, these step changes are more reminiscent of the pre 1950s than the high rainfall period we have experienced in eastern Australia since. And science is warning us of further uncertainty as a result of climate change.

This change in climate may be part of a natural cycle or it might be caused by climate change or it might be a combination of both. Whatever the cause, Australia has a problem, because it's stopped raining where we built our cities and where we developed our irrigation infrastructure.

We built our modern Australian economy in a period of much higher rainfall and we assumed that it would keep on raining. But it hasn't. Our coastal cities are now running out of water, irrigators are staring upstream at empty dams and we're trying to farm where there's less rain. Many of our iconic wetlands have not had a drink for over a decade.

In 2004, the Wentworth Group of Concerned Scientists gave its wholehearted support to the National Water Initiative and we still do. It gives irrigators a secure title to water and the ability to trade this asset, it gives the environment more water to improve the health of our rivers, and in our cities, it is about the rest of us accepting the need to manage water more efficiently. The National Water Initiative will be recognised as one of the most significant agreements in our nation's history because it signals a fundamental change in our understanding of our place on this continent. It is a 21st century solution to a 21st century problem.

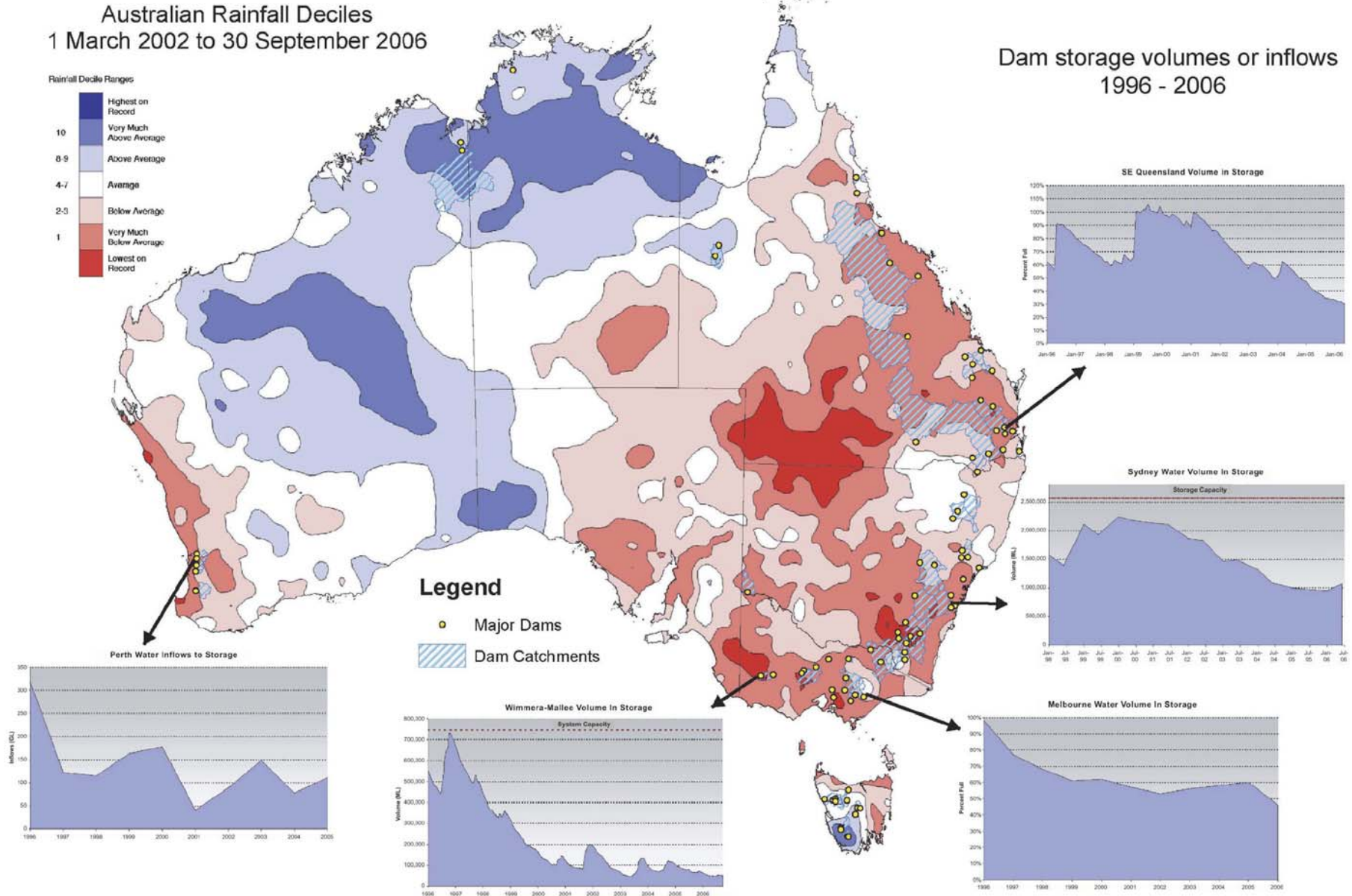
However, when we put the Initiative together, we gave ourselves until 2014 to get water management right, but nature has taken over the timetable.

If the pre-1950s rainfall patterns continue, Australia is going to have to get by with a lot less water, a whole lot sooner than we thought. Levels of extraction will decline as water resources shrink and many of our river systems, wetlands and estuaries will be stressed. Impose 2006 levels of population, water allocations and demand on pre-1950s weather patterns, and we would be struggling to maintain our cities and farms.

Australia's climate is changing Australia and we must respond. Australia must urgently accelerate the agreed water reforms.

¹ NWC, 2006. *Australia's water supply status and seasonal outlook October 2006*. National Water Commission.

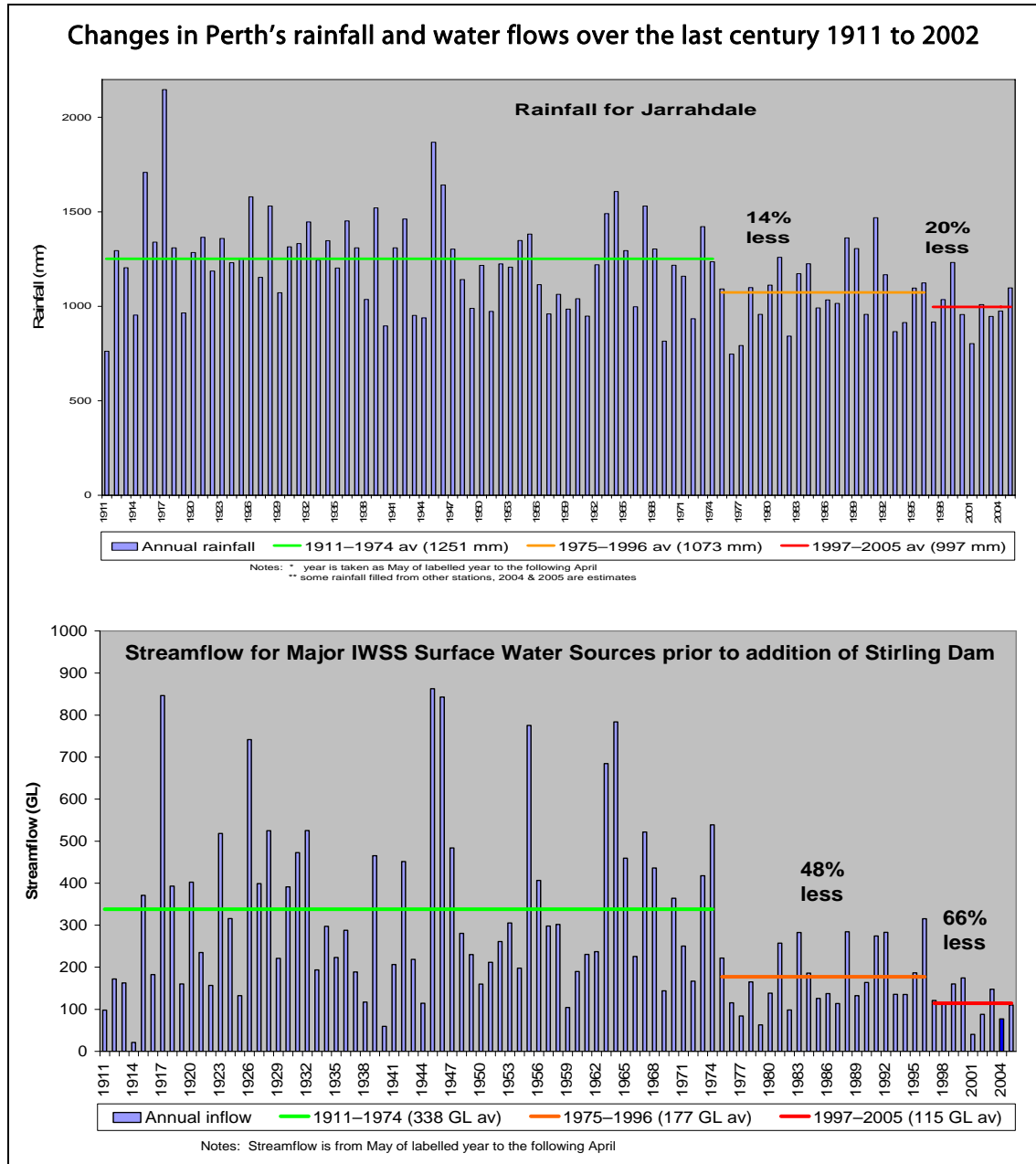
Rainfall patterns in Australia and declines in dam storage 1996-2006



Source: National Water Commission 2006 <http://www.nwc.gov.au/publications/docs/SeasonalOutlook.pdf>

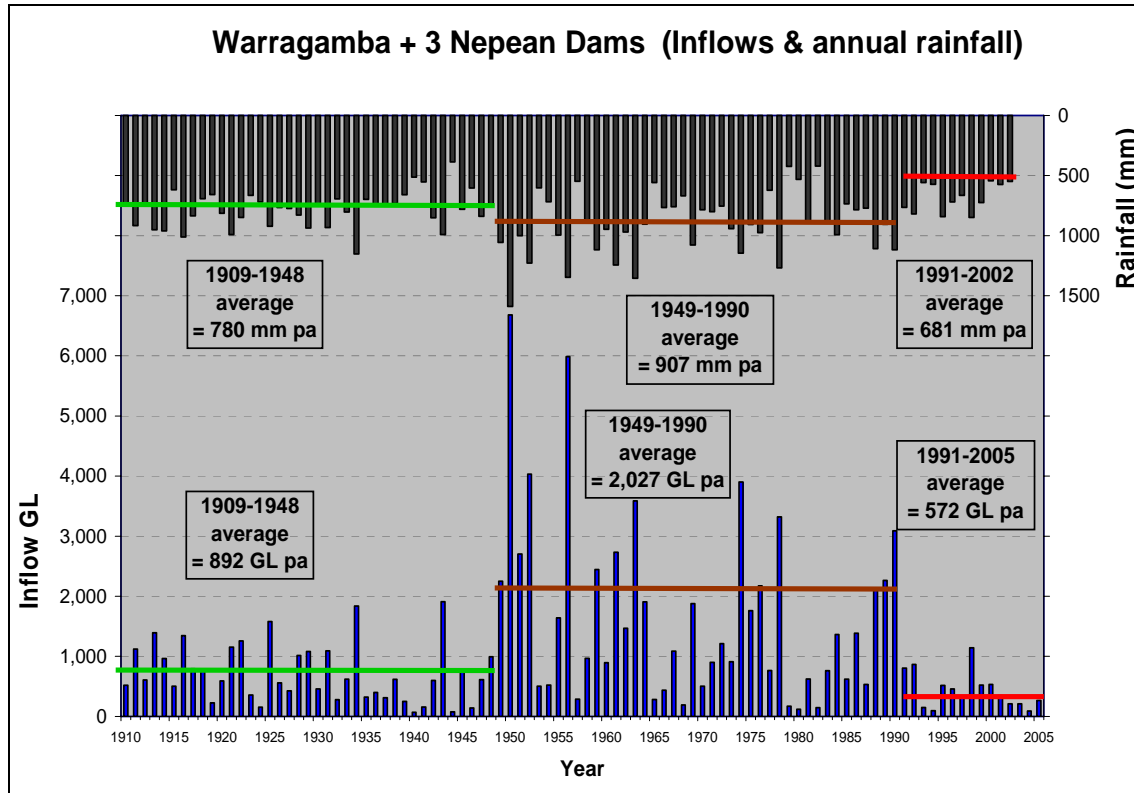
Our cities need better water management

The people of Perth have discovered that small declines in rainfall can mean large reductions in available water. In Perth, a 20% reduction in rainfall resulted in a 60% decline in supply to its dams.



Source: WA Water Corporation, www.watercorporation.com.au/D/dams_streamflow.cfm. The rainfall data are illustrative and from one rainfall station only.

Inflows into the Warragamba and three dams in the Nepean system show a similar pattern. Inflows into the first half of last century were 44% lower than the second half of the century. Over the past 10 years, inflows into our storages have returned to and are actually below the pre 1950s levels.



Source: Sydney Catchment Authority, 2006.

It is time for Australia to put in place arrangements that encourage rapid responses to changing water supplies.

Our river systems need water

If we return to a pre 1950s weather pattern, our southern river systems are in trouble and so are the communities who depend on them.

Let's take the Murray Darling Basin as an example. Whilst the annual flows vary considerably from year to – it is “a land of droughts and flooding rains” – water has almost always reached the Coorong estuary.

If we now apply current extraction levels to the pre-1950s weather patterns and don't address expected losses to the system from forestry plantations, increased groundwater extraction, new farm dams and losses to the river from on-farm water efficiency, the impact on the Murray will be catastrophic. This places at risk internationally significant wetlands, the Coorong estuary and water supplies for Adelaide.

We need to adopt allocation rules that take account of the nature of events that are occurring and the underlying health and change state of the system.

Immediate national priorities

There is a way through this. Whilst the solutions are not easy, they are clear. We need to expedite adjustment and we need to remove barriers that are restricting change.

There are 5 key actions that require immediate attention. None of them are easy and they require a degree of collaboration rarely seen before in Australia:

1. Buy water for the environment to secure the health of over-allocated river systems from anyone willing to sell;
2. Regulate to offset further water losses caused by timber plantations, farm dams, groundwater use and water efficiency;
3. Build a National Water Account to find out where our water is, who is using it and what condition it's in;
4. Apply the same environmental, market and price disciplines to everyone so that all users pay the full cost of water, including the cost of addressing environmental impacts; and
5. Accept that desalination, potable reuse, stormwater capture, recycling and urban-rural trade are all legitimate options for our coastal cities and often better options than building new dams and damaging more coastal rivers.

Governments, industries and the community must all work together to secure the health of Australia's water resources.

1. BUY WATER FOR THE ENVIRONMENT TO SECURE THE HEALTH OF OVERALLOCATED RIVER SYSTEMS FROM ANYONE PREPARED TO SELL.

Healthy rivers underpin our economic, social and environmental wellbeing. Everyone knows that we have a number of rivers that are stressed from a range of human impacts on flow and water quality.

Governments have agreed that where those systems are overallocated, water must be found for the environment, and that it should not be 'taken' from entitlement holders. We also know that water use efficiency gains and infrastructure refurbishment will not generate the volumes required in systems such as the Murray.

There are, therefore, only two ways to get water for our rivers: governments must enter the market and purchase water or write contracts to lease the required water. Governments must work with urban and irrigation communities to ensure that as far as possible consumptive supplies are also used to enhance environmental outcomes.

Statutory Environmental Trusts must be established to purchase and manage environmental entitlements in regulated systems. They must be given planning responsibility with a requirement to report annually on outcomes and they must work with consumptive users to maximise the benefits of all flows. Statutory independence is required so that the market can be used to maximise environmental benefits rather than the environment having to make do with what's left over. In unregulated systems, planning processes must ensure that environmental needs are at least given equal priority with consumptive use.

These Trusts need highly qualified, tough and experienced professionals, because they are going to have to make some hard decisions.

They need to draw up re-watering plans immediately to allow a rapid re-watering of critical areas as soon as possible. They cannot be put on hold.

With 245 river basins and over 850 wetlands of national importance, these watering plans need to be based on the best science that is available now. With time and water running low, Australia is going to have to accept that we may not be able to save them all.

Buying water is not difficult. One simple approach is to ask all to indicate how much water entitlement holders would be willing to sell. It can be a small or large part of their title share. It worked for the Coles Myer share buyback and it can work just as well for an environmental water buyback. The entire prospectus need only be a few pages long and in plain English. This could involve a permanent purchase and thus enable a supply of water to the environment as and when needed.

We also need to free up the water market. An open market builds a platform for flexible and efficient management of our water resources. An efficient market free from administrative impediments, but recognising and addressing third party impacts, offers the most cost-effective way to facilitate change and allow both people and systems to adjust.

Urban-rural trade, in both directions, needs to be encouraged and we need irrigation water to be able to move to places where the market says it is most valuable. Before the end of this December it should be possible to complete any permanent cross border trade within a month and any temporary trade within two days.

Barriers to the water market need to be removed to let the market work.

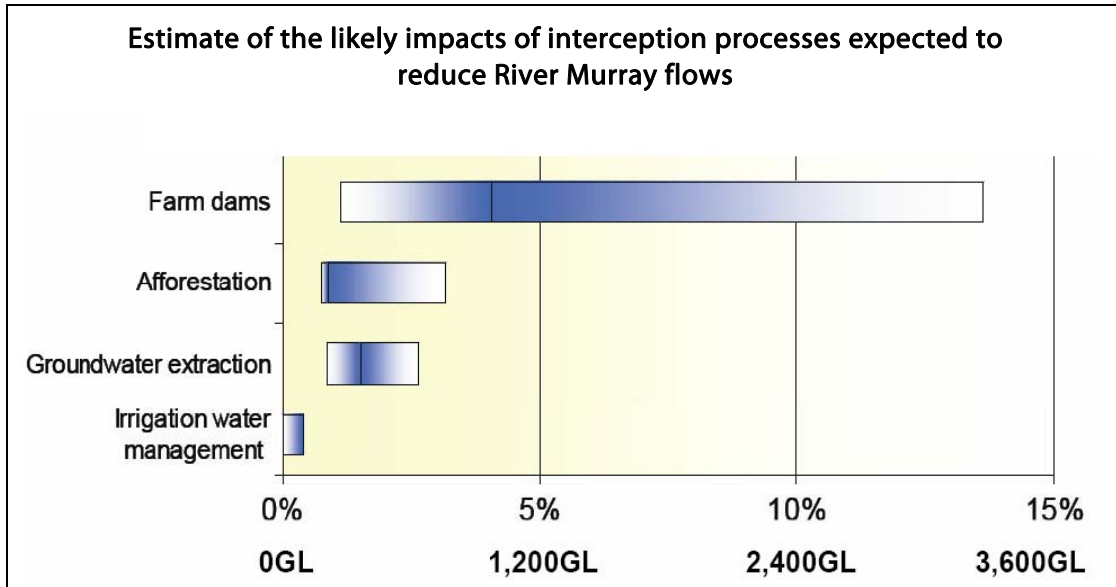
2. REGULATE TO OFFSET FURTHER WATER LOSSES CAUSED BY TIMBER PLANTATIONS, FARM DAMS, GROUNDWATER USE AND WATER EFFICIENCY.

Increases in timber plantations, increases in farm dams, increased groundwater use and, even increases in water use efficiency are seriously eroding water supplies to rivers. While 500GL is being put back in the River Murray, as much as 2,000GL may be lost. It is like taking one step forward and four steps back.

All States and Territories need to cap groundwater extraction, and in all over-allocated systems buy back unused entitlements. Most groundwater aquifers are connected to river systems, so if more water is taken out of aquifers, less water will be available for other water users and our rivers.

All new developments, including forestry plantations and new urban subdivisions, should be required by law to purchase a water entitlement for any water needed to supply the development and neither should be allowed to take water away from other water users or from the environment.

The tyranny of many small flow-reducing actions needs to be managed. All land use changes need to become part of our water accounting system in order to prevent the death of our water resources by a thousand cuts.



Source: Adapted from Risks to the Shared Water Resources of the Murray-Darling Basin Part II in a two part series on the shared water resources of the Murray-Darling Basin, Murray-Darling Basin Commission Publication 22/06. Assumed average flow is 24,000 GL per annum. http://www.mdbc.gov.au/_data/page/1131/PartII_Risks_shared_water_resources_MDB_complete.pdf

3. BUILD A NATIONAL WATER ACCOUNTING SYSTEM AND SET UP REGIONAL ACCOUNTS SO WE KNOW WHERE OUR WATER IS, WHO IS USING IT AND WHAT CONDITION IT IS IN.

Water resources need to be accounted for properly and regulated to deal with the risks to river systems and water supplies.

This means reporting on:

- the movement of water through the landscape, where it is and who owns it;
- the condition of water quality and river and estuary health;
- the extent of forestry, farm dam and other forms of interception;
- transfers between groundwater and surface water systems; and
- the price paid for all temporary and permanent water trades.

Very few rivers are properly monitored, allowing emotion and conflict to dominate water planning, not good science. Effective monitoring underpins effective accounting – you can't have one without the other. Governments must release funds to mobilise a major investment in a national river health monitoring program that can guide water planners and decision makers at all levels. We can no longer afford to have different systems in different States, thus we also need a single national water accounting system.

Australia's leaders need to put in place a set of accounting arrangements that force water managers to disclose what is really happening to our water supplies and water dependent ecosystems. The disciplines placed on them need to be as strict as the disclosure disciplines imposed on corporate Australia.

Water accounts should be independently audited and published at the end of each year for both urban and rural sectors. Water should be recorded as an asset on our national accounts, and each Catchment Authority or Environmental Water Trust should be required to produce an annual report card on the health of their water resources.

4. APPLY THE SAME ENVIRONMENTAL, MARKET AND PRICE DISCIPLINES TO EVERYONE, SO THAT ALL USERS PAY THE FULL COST OF WATER, INCLUDING MANAGING ENVIRONMENTAL IMPACTS.

Urban, rural and industrial water users should be exposed to the same environmental and price disciplines.

Over use is encouraged by hidden subsidies. All water users must be required to pay the full cost of water and infrastructure grants and for the cost of environmental impacts. We all pay ridiculously cheap prices for water. It costs thirty five dollars to buy a trailer load of sand, yet we pay only one dollar for the same volume of water. Prices – as well as restrictions – need to be used to ration use.

It is time to put in place systems that require all industrial and commercial businesses to hold their own water entitlement in the same way that irrigators do.

5. ACCEPT THAT DESALINATION, POTABLE REUSE, STORMWATER CAPTURE, RECYCLING AND URBAN-RURAL TRADE ARE ALL LEGITIMATE OPTIONS FOR OUR COASTAL CITIES AND OFTEN BETTER OPTIONS THAN BUILDING NEW DAMS AND DAMAGING MORE COASTAL RIVERS.

Integrated solutions, purposefully designed for each city must become the norm. Every city is different and it will require innovation, creativity and discipline through economic and environmental analyses to find the most effective and efficient solutions.

Desalination, potable reuse, stormwater capture and recycling, all need to be recognised as viable economic options to be costed properly. Often they are better options than building more dams and damaging more coastal rivers.

The full cost of infrastructure should be incorporated in water prices. All water authorities should be required to pay and charge the full cost supply, including environmental impacts, instead of relying on the grant subsidies now being given to them.

Indicative costs of alternative water supply and demand management options (not including the cost of externalities)

Option	Cost / Kilotitre (\$/kL)
Buying a high security water from the River Murray ^{a)}	0.50
Appliance standards and labelling ^{b)}	\$0.05
Leakage reduction ^{b)}	\$0.20
Residential retrofits and rebates ^{b)}	\$0.60
Desalination, Perth ^{c)}	\$1.17
Desalination, Sydney ^{d)}	\$1.95
Indirect Potable Recycling ^{b)}	\$2.61
Rainwater tank rebates ^{b)}	\$3.00
BASIX standards for water efficient buildings ^{b)}	\$0.30 – \$4.00

^{a)} Recent prices for High Security River Murray water entitlements in recent times have risen to nearly \$2000 per ML or \$2 per kilolitre. Discounted at 10% this equates to an annualised supply price of 20 cents per kilolitre. Thirty cents is allowed for pumping and treatment. ^{b)} Institute for Sustainable Futures, ACILTasman and SMEC (April 2006), Review of the Metropolitan Water Plan: Final Report. ^{c)} <http://www.water-technology.net/projects/perth/>. ^{d)} Sydney Water, Indirect potable recycling and desalination - a cost comparison, http://www.sydneywater.com.au/Publications/_download.cfm?DownloadFile=../EnsuringtheFuture/Desalination/Indirect_potable_recycling_and_desalination_-_a_cost_comparison.pdf

Australia is running out of water

The 2004 National Water Initiative will be recognised as one of the most significant agreements in our nation's history because it signals a fundamental change in our understanding of our place on this continent. We now appear to be confronting a step change in our weather patterns with significantly less rainfall where we live and where we grow our food.

Nature has taken over the timetable.

Without water life does not exist. Individuals as well as governments must respond. This challenge will not be solved by blaming "someone else".

The message here is one of urgency.

All of these priorities are consistent with the National Water Initiative signed by our Prime Minister, and our State Premiers and Chief Ministers two years ago.

We need to stop blaming each other, take a deep breath and get on with it.