The Senate

Rural and Regional Affairs and Transport References Committee

Water policy initiatives

Interim report

September 2006

ISBN 0 642 71677 3

This document was prepared by the Senate Rural and Regional Affairs and Transport References Committee, and printed by the Senate Printing Unit, Department of the Senate, Parliament House, Canberra.

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Interim Report

1.1 On 14 August 2006, the Senate resolved to amend the Standing Orders of the Senate to adopt changes to the Committee system that mean that this Committee, the Rural and Regional Affairs and Transport (RRAT) References Committee will cease to exist as a separate Committee under its current Chair and membership on 10 September 2006.

1.2 On Monday 11 September 2006, a new Committee, the Legislative and General Purpose Standing Committee on Rural and Regional Affairs and Transport, under a new Chair and with a new membership will take the place of this Committee. Since the RRAT Committee is in the middle of inquiring into the current reference on water policy initiatives, the Committee decided to make an Interim report to the Senate on its work up to this point.

Terms of Reference

1.3 On 14 September 2005, the Senate referred the following matter to the Senate Rural and Regional Affairs and Transport References Committee for inquiry and report by the last sitting day in March 2006:[1]

> The impact on rural water usage of recent water policy initiatives and the possible role for Commonwealth agencies, with particular reference to:
>
> (a) the development of water property titles;
>
> (b) methods of protection for rivers and aquifers;
>
> (c) farming innovation;
>
> (d) monitoring drought and predicting farm water demand; and
>
> (e) the implications for agriculture of predicted changes in patterns of precipitation and temperature.

1.4 The Senate agreed to extend the time for presentation of the report to 22 June 2006 and when the Committee found it impossible to hold public hearings because of its commitments to other inquiries, the Senate granted a further extension to 30 November 2006.[2]

Conduct of the Inquiry

1.5 Advertisements calling for submissions to the inquiry were placed in *The Australian* on 12 October 2005, 26 October 2005 and 9 November 2005.

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1 *Journals of the Senate,* 14 September 2005.

2 *Journals of the Senate,* 20 June 2006.

1.6 In addition to advertising in the press, the Committee also wrote directly to a number of interested individuals, organisations and state and Commonwealth agencies advising of the inquiry and inviting submissions.

1.7 The Committee has received 59 written submissions in response to its advertisements and 58 of the submissions are publicly available on the Committee's website at: www.aph.gov.au/Senate/committee/rrat_ctte/rural_water/index.htm A list of all submissions received is provided at **Appendix 1**.

1.8 The Committee notes that a significant percentage of the submissions received has come from individuals and organisations representing the Lower Balonne floodplain, Culgoa and Brewarrina areas and have highlighted specific problems in relation to the allocation of water in South West Queensland.

1.9 To date, the Committee has held three hearings in the following locations:

Canberra	7 March 2006
Toowoomba	2 August 2006
Canberra	16 August 2006

1.10 The Committee has taken evidence from 41 witnesses, including individuals with an interest in water policy issues, representatives of industry organisations, environment groups and community organisations. The Committee also took evidence from representatives of government bodies – Commonwealth, state and local. A list of witnesses who have given evidence to the Committee is provided at **Appendix 2**.

1.11 The Committee will hold further public hearings as its inquiry is not yet completed. It has scheduled a fourth public hearing, to be held in Canberra on 15 September 2006.

Major issues before the Committee

1.12 Managing our water resources is a difficult balancing act. We are a growing nation living on a dry continent with extremely variable rainfall patterns, and recent years have brought water supply security problems to a number of our cities, agricultural industries, and major rural centres. The challenge for policy makers is how to best balance competing demands for a limited precious resource in a manner that ensures the sustainability of the resource, equity among competing users, predictability and security of supply for our industries and populations, and still guarantees the survival of treasured environmental assets. The issue is made more difficult by the complexity and uncertainty of the science of assessing the resource, and predicting the impacts of drought and increased climate variability. Ultimately we need to be able to make good decisions on the basis of incomplete information that can guide us safely into an uncertain future. We need flexible and adaptable water management systems that can deliver equity and certainty to all users. At stake is the

viability of our cities and towns, our industries and our ecosystems, our very way of life.

1.13 The 59 submissions to the Committee's inquiry and the evidence that it has gathered to date at its public hearings have addressed the following issues:

- The undeniable impact of drier climate conditions on water resources throughout Australia (with the possible exception of the Northern Territory).
- The social implications for downstream users of over allocation of rivers upstream – allocations often made by another state than the one in which the downstream river dwellers reside.
- The lack of a definitive database and measuring tools relating to surface water resources (although good work is being done right across the country to fill in the gaps in many areas).
- The lack of understanding of our groundwater resources and their inter-relationship with surface water resources.
- The early development of a water trading regime.
- The relationship between rural and urban water needs.
- The role of recycling in meeting the water needs of the city and the farm in a drier environment.
- Calls for greater protection (and in a few cases greater regulated use) for Australia's pristine northern rivers.

1.14 The committee is still considering these difficult issues. During the period of the inquiry the level of public concern about the security of our water resources has become increasingly apparent, and the issue has featured in the media on a daily basis.

Drought and Climate Change

1.15 The issue of the impacts of a lack of rainfall on the sustainability and security of our water resources has emerged as a significant policy challenge - whether it is considered to be the result of drought, part of a long-term cycle of climate variation, or the direct result of climate change. While the exact scope and extent of this change may be uncertain and disputed, it is clear that any significant change in rainfall and temperature patterns could leave a major hole in our water accounting processes that has major implications for our resource management policy, legislation and practice. We need to give serious consideration to the implications this could have for our agricultural industries, the sustainability and limits on growth of our cities, and develop adaptive management options which allow us to respond to likely scenarios in a timely manner.

1.16 Regardless of whether current weather conditions in most of Australia are perceived to be a long period of drought or the result of permanent climate change[3] as is the case in south west Western Australia, the impact on water resources has been quite severe. CSIRO's Professor Michael Young told the Committee that:

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3 Mr Warwick McDONALD, (CSIRO), Committee Hansard, 7 March 2006, p.36-37

> As a rule of thumb, if you have a decline in rainfall, normally the decline in water available for use is roughly twice the reduction in rainfall A 15 per cent reduction in rainfall, which is what a lot of people are talking about, means a 30 per cent reduction in yield… This is a general rule of thumb; you would need to run the models everywhere. [4]

1.17 His caution in predicting the availability of water in such changed conditions is dramatically illustrated by the situation in southern Western Australia (including the Perth region) where a 21 per cent reduction in rainfall has resulted in more than a three-fold reduction in run-off. The CEO of WA's Water Corporation, Dr Gill told the Committee:

> There has been a phenomenal shift of climate and weather in the south of WA and it does appear to be unique worldwide… there seems to be no other place that is drying quite as fast as the south of Western Australia… We have had to cope with that over the last 10 years. It has been a trend, we now know with the best of hindsight, for about 30 years.
>
> For the last eight or nine years the rainfall has been down by about 21 per cent on what it was up until 1974, and the run-off has been down by 64 per cent. Actually now it is becoming clear that for the last four or five years, since 2001, we seem to be down still further. [5]

1.18 In such a situation, it becomes crucial to manage the water available so that it yields the maximum benefit to both urban and rural users – a balance towards which the WA Water Corporation has made some progress. One of the ways it has done this by engaging in water trading with a group of rural irrigators at Harvey, south of Perth. The arrangement includes payment in kind through replacing open irrigation channels with a pipe network that makes water delivery to the farmers more effective by eliminating loss to evaporation.

1.19 The Committee is firmly of the view that such examples of urban-rural cooperation on water initiatives can be of great benefit to those who engage in it and it would like to urge water authorities around the country to look for opportunities to develop similar approaches.

1.20 Dealing with the issues of reduced supply, increasing demand, and competition between a range of urban, rural and industrial users requires an integrated strategy that combines demand reduction, increased efficiency, flexible trading schemes (like this example) and the exploration and development of potential new water sources to ensure sustainable supplies. The WA Water Corporation has shown some foresight in responding to the seriousness of the situation in the south-west of WA.

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4 Prof. Michael Young, (CSIRO), Committee Hansard, 7 March 2006, p.48

5 Dr James Gill, Water Corporation of Western Australia, Committee Hansard, 16 August 2006, p.19

1.21 In other innovative (at least in the Australian context) approaches to ensuring a reliable water supply for Perth in a drying climate, WA Water Corporation has constructed a large desalination plant at Kwinana, about 40 kilometres from the city, which is due to come on line in November 2006 and which will supply 17 per cent of Perth's water needs. It is also exploring other possibilities, including extracting water from the south-west Yarragadee – a big aquifer about 300 kilometres south of Perth. There is however a high level of community concern around the use of this aquifer and its possible impacts on both the water security of the south-west and the local environment.

1.22 In no other Australian capital city has the reality of drier climatic conditions had as dramatic an effect on water policy initiatives as it has had in Perth, although many of our other cities and major rural centres also face growing water problems. However, the South Australian government has used innovative approaches in rural areas to conserve water in the face of rising temperatures and evaporation. It told the Committee in its submission that an independent assessment of the situation in South Australia (by Professor Peter Cullen) found that:

> There has been considerable public investment in water delivery systems to farms that sees most water piped rather than transported in open channels".[6]

1.23 Dam levels for many capital cities around the country present a challenging picture. Only Darwin (89%) and Hobart (76%) have reasonably high levels of water in storage. Perth (29.98%) has now taken major steps to address its water supply shortage. Brisbane with a dam level of 28.13% faces a difficult situation and has not yet developed an integrated approach to securing its water supply. The country's most populous city, Sydney faces a dwindling 41.4% dam level. Canberra (49.36%) an inland city which does not have the same options as the other capital cities, faces different challenges to the two remaining coastal cities which, with dam levels of 46.9% for Melbourne and 54% for Adelaide have a slightly longer timeframe before facing a crisis situation.[7]

1.24 In all capital cities with the exception of Darwin and Hobart, some water restrictions will be in force this coming summer. The situation is equally bad or worse in most rural and regional areas, except for the far north of the continent where tropical rains are a replenishing source of water.

1.25 Analysis by CSIRO suggests that the implications of climate change for the Murray Darling Basin are likely to be significant.[8]

> Initial evidence suggests climate change poses the greatest risk to our shared water resources in volume terms. Climate change could potentially

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6 *Submission* No.52, SA Government, p.14

7 Source: ActewAGL, Melbourne Water, Sydney Catchment Authority, SA Water, SEQ Water and WA Water Corporation, as at 30 August 2006

8 *Risks to the Shared Water Resources of the Murray-Darling Basin* , CSIRO, 2006

> reduce stream flow by 1,100 GL in 20 years (5% of annual flow) and by 3,300 GL in 50 years (15% of annual flow).

1.26 The committee is concerned that the potential impacts of climate change may not been sufficiently factored into water entitlements and management plans, and intends to give further consideration to their flexibility and adaptability.

Water Recycling

1.27 Australia's record on the use of recycled water is very poor by international standards, particularly given our low rainfall. Sydney is arguably the worst city at recycling, with only 3% of wastewater recycled, and 75% (450 billion litres) going out to sea as barely treated sewerage. However, the NSW Government has committed to increase the current level of recycling more than fourfold from the current 15 billion litres a year up to 70 billion litres a year by 2015. To date, projects that will yield 15 GL a year are currently under construction or have been commissioned. In addition, the recently established Water Savings Fund ($130 million over four years) has contributed $26.2 million to Councils and businesses for water recycling projects. The third round of funding is expected to commence in 2006. A number of state regulations have recently been amended to encourage recycling and during the current session of Parliament new legislation for third party access will be introduced to enable the private sector to access effluent in Sydney Water and Hunter Water pipes for recycling.

1.28 Israel, which has a similar Mediterranean climate, recycles 70% of its water. Given the sustainability limits on Australian supplies together with increasing demand as our nation grows, it is inevitable that we will have to embrace water recycling on a much greater scale. There are a range of different approaches to water recycling for industrial, agricultural, non-potable and potable uses, and substituting recycled water of a quality fit for use can free up existing supplies for higher quality uses, keep down treatment costs, and help address public concerns about water safety.

1.29 The Committee held a public hearing in Toowoomba, a city that has experienced water restrictions since 1992 and the only Australian city to have considered a serious direct potable reuse proposal, that is, a plan to recycle waste water to supply one quarter of its water needs including all domestic uses and drinking water. The reason Toowoomba considered this plan is that the city currently has just enough water for two years consumption and according to Toowoomba's mayor:

> There is both depleting rainfall and depleting run-off. We get a bit of rain and it fills the catchment, but before we get the next bit of rain it has dried out and we have to go again, so our catchment never stays wetted up enough for us to get run-off. We have seen a fairly substantial lack of run-off over the last 30 years. I should tell you that our major dam in the last 15 years has run over on only 16 consecutive days on one occasion. In the two previous years, it ran over on 285 days.[9]

9 Councillor Di Thorley, *Committee Hansard,* 2 August 2006, p.9

1.30 The Committee's visit took place on 2 August 2006, just 4 days after the people of Toowoomba had rejected the recycling proposal in a plebiscite by a vote of 68 per cent to 32 per cent. Concern was expressed in the hearings that the period for consultation was too short to allow an effective public education campaign, and that an alternative solution to secure the city's water supply was not put forward. The direct potable reuse campaign had been conducted intensely for three months prior to the referendum and the idea had first been talked about less than 10 months before the vote. Toowoomba's mayor told the Committee that in her opinion, three or four years were needed to educate the public about the scientific aspects of the issue under consideration. The plebiscite decision effectively leaves the city still searching for a solution to an increasingly pressing problem. The irony is that legitimate public concerns about the health and safety of their water ultimately led them to reject a water source which is arguably cleaner than their current supply.

1.31 Direct potable reuse is only one of a range of approaches to water recycling, and systems based on the substitution of recycled water for industrial, agricultural and other non-potable uses (such as watering parks and gardens) are more likely to receive public endorsement in the shorter term. The Chair and Chief Executive Officer of the National Water Commission, Mr Ken Matthews, sees water recycling as one of key policy areas that has to be addressed by the National Water Initiative. He told the Committee:

> there is a need for more widespread and objective consideration (of water recycling) across Australia. Surely Australia, as the driest inhabited continent in the world, should be an early adopter of new and cost-effective recycling technologies that are now becoming available.[10]

1.32 It appears that in the first instance, using recycled water for watering parks and gardens and for industrial purposes will prove more acceptable to the public than using it for domestic purposes.[11] Twin-pipe or 'purple pipe' domestic systems, which use recycled water for non-potable domestic purposes (like flushing toilets or watering gardens) are another less-controversial option for new developments, but the cost of retro-fitting such systems to existing suburbs is prohibitive. Western Australia's Water Corporation is currently involved in a joint project with CSIRO to research the possibilities of managed aquifer recharge, in which recycled water is infiltrated into an aquifer. The method increases water storage in the aquifer, to make more water available for irrigation and other uses and also to preserve water levels in wetlands that are maintained by groundwater. The intention is to initially use the aquifer's water for watering parks, ovals and golf courses.[12]

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10 Mr Ken Matthews, *Committee Hansard,* 7 March 2006, p.3

11 Note: The Committee is only too aware that this does not solve the water shortage problems of cities like Toowoomba and Goulburn.

12 http://www.watercorporation.com.au/M/mar.cfm?uid=4994-1407-5238-5959

1.33 Ideally, recycled urban wastewater should be available for use not only in cities and for industry but where possible, it should add to the volume of water available for irrigation in rural areas. This is happening to some extent already, for example in South Australia as explained by the South Australian government in its submission to the Committee:

> Trials involving the storage and recovery of treated wastewater for irrigation of horticultural crops are currently being undertaken at Bolivar on the Northern Adelaide Plains and in the McLaren Vale area.[13]

1.34 Elsewhere in the country treated town water is routinely returned to various rivers and streams but a concerted effort should be made to make this the norm rather than the exception. More importantly, town and shire councils should not be reluctant to reveal this to ratepayers since it would assist in making the concept of using recycled water more acceptable, and would constitute an important step in encouraging judicious use of a precious resource that is becoming scarcer in many areas through reduced rainfall at the same time as a growing population means that demand for it is growing.

1.35 Toowoomba's mayor, Councillor Thorley, argued that seeing an advanced water recycling plant in operation would help people make a decision based on facts rather than emotion.[14] In the Committee's view, there is a case for governments to invest in one or more water recycling plants around the country as part of a community education project designed to raise the awareness of the Australian public in regards to how a water recycling plant would work and how safe the water would be.

1.36 The reason why this would make sense is that, while the issue has been decided in Toowoomba, it is highly likely that at some future date, other cities and regions may wish to consider putting recycled water to uses that have not been contemplated previously in this country. Politicians of all persuasions are on the public record as backing this idea.[15]

Water Property Titles and Water Trading

1.37 Australia does not have a single definition of a water property title in use across the continent in the way that the Torrens title defines the right to land ownership. Each State and territory has its own system of water rights and the Australian government has pursued the National Water Initiative without expecting all the participating governments to agree to a national standard before participating in the Initiative, a move that has ensured that the NWI could get off the ground. At this

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13 *Submission* No.52, SA Government, p.29

14 Councillor Di Thorley, *Committee Hansard,* 2 August 2006, p.14

15 Kim Beazley, *Media statement*, 5 April 06, John Howard, *SMH*, 17 July 06, Andrew Bartlett, *The Bartlett Diaries*, 28 July 06, Rachel Siewert, *Aust Greens Online*, 15 August 06, Andrew Stoner, *Press Release,* NSW Nationals, 26 August 06

point in the process it is too early for the committee to comment on how the NWI process is working.

1.38 There are no less than 438 types of regulated surface water entitlements in the three south eastern states through which the Murray river flows.[16] Professor Michael Young told the Committee that "in an idealised world you need no more than two access entitlements per system". In his view, Australia is perfectly placed to devise "a flawless, perfect water entitlement and water management" system that could be copied all over the world. [17]

What is water trade all about?

1.39 The major challenge for water property titles and allocation systems is how to define property rights to ensure the long-term sustainability of the resource. Australia currently faces four major challenges in making this work - how to develop a uniform approach to water entitlements and water trade across state and territory borders (particularly in the Murray-Darling Basin); how to equitably reform over-allocated systems; how to best manage allocation of water to the environment; and how to account for the impacts of climate variability and drought on water availability within these systems.

1.40 The major benefit of water trading schemes is that (when well designed and implemented) they can provide an efficient and cost-effective way of reallocating limited resources to ensure highest value use. Under ideal circumstances a well-designed, robust trading system should be flexible, adaptive, transparent and equitable. It should deliver security and economic efficiency, along with low trading and administrative costs.

1.41 The Murray Darling Basin Commission told the Committee in its submission that trade in annual allocations is more common than trade in entitlements.[18] Trade in annual allocations is also referred to as 'temporary' trade, whereby a 'share' of a water access entitlement is sold to the farmer who is able to realise the highest return on the amount of water available. Temporary trade has enabled farmers to draw the maximum benefits from their water allocations at a time when they face low rainfalls in the Basin. It has been particularly useful in a prolonged dry period.

1.42 The difficulties posed by the lack of a uniform system of water property rights, as discussed earlier, may be a key factor in discouraging more robust trading in water entitlements. A reluctance to trade water permanently "out" of a region, especially in a period of climate variability may also be at work.

1.43 Nevertheless, the Committee sees merit in standardising water rights both to facilitate trade and also because it is currently assessed as part of a property valuation

16 *Submission* No.40, CSIRO, p.8

17 Prof. Michael Young, (CSIRO), Committee Hansard, 7 March 2006, p.44

18 *Submission* No.35, MDBC, p.2

for the purposes of selling and mortgaging a property. It is therefore imperative that that right to water should be defined in a standardised way that would be acceptable to all involved, whether bankers or interstate farmers.

Effects of over allocation of rivers

1.44 One of the biggest and most difficult issues facing all the governments involved in the National Water Initiative is the need to resolve problems associated with over allocation of rivers, especially now that the country faces long periods of drought and reduced water flow in many rivers, especially those of the Murray Darling Basin.

1.45 More than a third of the submissions received by the Committee dealt with this issue whereby those living downstream of the river, suffer the consequences of over allocation of water licences to irrigators in the upper reaches of that river. Those water licences have in most cases been allocated with very little understanding of the long term climatic history of the region, the size and fluctuations of the river flows and the consequent effects on the licensees and on those who farm further downriver.

1.46 About 31% of submitters from Queensland and New South Wales expressed their concern and frustration at the parlous state of the lower reaches of the Birrie and Bokhara rivers, the Culgoa, Condamine-Balonne and the Lower Balonne floodplain in north west New South Wales. In addition, a number of submissions portrayed a similar situation in the Lower Lachlan river again in New South Wales.

1.47 They argue that, even when the drought situation in their region over the last 10 years is taken into account, the lower reaches of those rivers on which they depend are being destroyed as a result of over allocation of the water available to irrigators 'upriver'. One witness, Mr Fessey, pointed out that even when there is more rainfall in the area than there was 25 years ago, the Lower Balonne river and its floodplain are now drier because of the large amounts of water that are being diverted upstream, especially in times of flood, because of an erroneous assumption that water flowing over the banks would otherwise be wasted.[19]

1.48 As a result, access to this water has been granted to the irrigation industry generally with no requirement that it be metered or accounted for in any way (and free of charge in Queensland), further encouraging the building of off-river storages, the numbers of which have grown exponentially since the mid-eighties.

1.49 In his submission to the Committee, Professor Richard Kingsford of the University of NSW, explained that one of the reasons behind the failure to consider during the water policy development stage the massive impact of diverting floodwater before it reaches the lower floodplains is that:

19 Mr Ed Fessey, *Committee Hansard,* 16 August 2006, p.2

> Most of Australia's legislation for river was derived from English legislation where rivers are considerably different. So until relatively recently most of Australia's legislation, policy and management left out floodplains, the vast majority of a river. In NSW, floodplains equate to about 88% of a river's area and more than 95% of this is owned by landholders who will be affected by changes in river flows.[20]

1.50 Many of those floodplain landholders are part of the 36% of submitters to this Committee's inquiry who are facing financial hardship and in some cases, possible ruin as a result of water being diverted away from the floodplains. For some, even water for their daily needs is threatened and they face having to abandon farming in areas where their families have farmed for generations. Many express feelings of frustration at being cheated by a system over which they have no control.[21]

1.51 The irrigators in the upper reaches of the Condamine-Balonne argued that all the water flowing over the banks in times of flood is "wasted" and that they are doing the community a favour by storing it. In fact, the over-flow is essential to the survival of the river downstream, its floodplains and the landowners who depend on them. Water that infiltrates into the flood-plain contributes to aquifer recharge which also ultimately impacts on downstream flow.

1.52 The following graph from Professor Kingsford's submission illustrate the dramatic increase in the number of private dams and in dam storage capacity in the Condamine-Balonne catchment area.

20 Professor Richard Kingsford, (University of NSW), *Submission* No.9, p.5

21 *Submissions* Nos. 16, 19, 20 26 & 29

Growth in off-river storage in the Condamine-Balonne catchment area

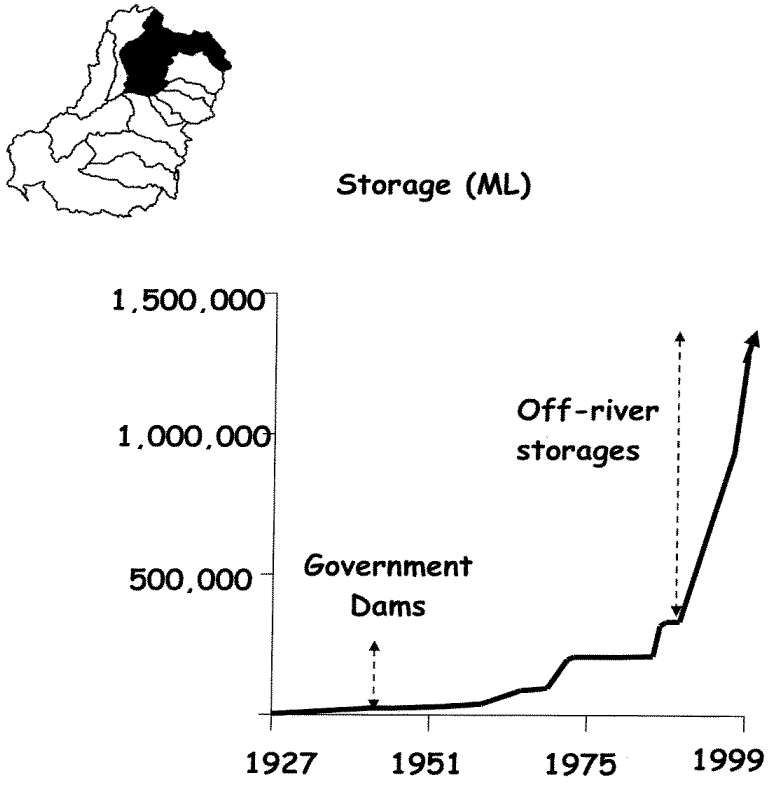

Fig. 4. Cumulative storage capacity of dams in the Condamine-Balonne catchment of the Murray-Darling Basin, showing the cumulative capacity of Government built dams relative private off-river storages.

Provided by Prof. Richard Kingsford, (Uni.of NSW), Submission No.9, p.7

1.53 The situation of these northern NSW floodplain farmers is mirrored in the lower reaches of the Murray river where according to the South Australian government submission:

> Drought-like flows are now experienced in the lower reaches of the River Murray 60 per cent of the time, compared with 5 per cent before river regulation and development.[22]

1.54 Diversion of flood waters to storage for irrigation has an economic and social impact not only on floodplain farmers and the communities in which they live but also on the original dwellers of the floodplains, the indigenous peoples of the river area. The Committee will address this matter at its next public hearing and therefore it reserves further comments on this issue for its final report to the Senate.

1.55 Over allocation results from lack of, or inadequate knowledge about the rivers from which the water is taken. The need for broader knowledge and more precise

22 SA Government, *Submission* No.52, p. 10

measurement of rivers was recognised by various submitters to the Committee ranging from Engineers Australia to the National Water Commission's Ken Matthews:

> We do not know nearly accurately enough where the water is, what it is being used for and what its state of health is, and that is not good enough... Unless water can be monitored and measured, it simply cannot be managed. Good water accounting is vital for not only economic purposes but also environmental management and good policy formulation… In lay terms, water planning is about getting all the parties around a table to try to reconcile their sometimes conflicting demands—consumptive purposes, environmental purposes and the implications for communities of different water use. [23]

1.56 The Department of Agriculture, Fisheries and Forestry explained that one of the aims of the National Water Initiative (NWI) is for all states to work towards fair and sustainable allocation of water and redress as much as possible the negative impact of over allocation:

> The over allocations are intended to be dealt with by all the states, consistent with the National Water Initiative. The National Water Initiative indicates that, if structural adjustment is required, the Australian government will consider that on a case-by-case basis. In the meantime we need to improve the information base, and we are seeking to do that.[24]

1.57 The problem on the ground is that it is unrealistic to expect all river extraction to stop while the data is collected and the science perfected. As a result, permanent water licences have been granted by state authorities in the absence of adequate knowledge, history, understanding and any precise measurement of the water available in rivers and lakes around the country. In many cases, it is anybody's guess what the sustainable levels of extraction are. Yet, as Professor Young told the Committee, it is the very survival of the river that might be at stake:

> Conceptually, there is a base amount of water that all rivers need… Some people—and this involves some value judgements—would argue that the right way to do this, as the system gets drier, is to increase allocations to the environment so you still have a river which supplies water for recreation, for maintenance of flood plains and so forth. Alternatively, you can have a system in which, as it gets drier, we lose all of those assets.

1.58 Not surprisingly in the face of a lack of solid data on which to base and explain decisions, many irrigators are suspicious of changes to access rights justified by reference to new or 'increased' knowledge. They are demanding both an independent assessment of the new knowledge and:

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23 Mr Ken Matthews, *Committee Hansard,* 7 March 2006, p.3

24 Mr Simon Smalley, (DAFF) *Committee Hansard,* 7 March 2006, p.91

> greater specification of delivery rights (in terms of timing, flow rates, and known constraints to delivery). [25]

1.59 The problem with this is that there is such uncertainty surrounding the impact of climate change. According to the Murray Darling Basin Commission, stream flow could be reduced by as much as 40 per cent in some parts of Victoria. Clearly, it would be unwise to specify absolute delivery rights in this context, however it may be possible to provide access to independent analysis and ensure meaningful involvement in the decision-making process.

Improving quality of water resources data

1.60 The National Water Commission's Dr Chartres told the Committee that all states and territories continue to work towards improving the quality of the data that they are contributing towards a national baseline assessment of water resources that is being compiled by the Commission. The Commission is planning to publish the first set of data (a level 1 assessment, comprising management and planning status information) in September 2006.

1.61 The Commission is hoping to have a more comprehensive set of data (a level 2 assessment comprising water balances for 50-70 water management areas around the country) completed by early 2007.[26] At the same time, it will also publish a nationally harmonised methodology for river health assessment and the *Water Account for 2004-05*, prepared in collaboration with the Australian Bureau of Statistics.

1.62 The Committee welcomes this development as it is very keen to see more data about rivers and water collected and made publicly available so that decisions about water allocations can be based on the best available science. Data will always be incomplete but sound decisions about flow rates, timing and the volume of water that each irrigator can depend on must be made in response to each particular ecosystem and how much water each river needs for its survival and for it to support a flourishing riverine environment.

Capping water extraction and diversion

1.63 At present, the people of the Border rivers area in northern NSW and of the Condamine-Balonne area are kept in suspense and extremely dry conditions while the Queensland government completes the decision making process on the cap on surface water diversions. It now seems that it will be at least June 2007 before they know whether the outcome of that process will bring them some relief – some 12 years after the Murray-Darling Ministerial Council first agreed to a cap on water diversions in the basin.

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25 For example, *Submission* No. 46, p.3 (Murrumbidgee Irrigators)

26 Dr Colin Chartres, National Water Commission, *Committee Hansard,* 7 March 2006, p. 8 and email to the Committee dated 30 August 2006.

1.64 A number of submitters to the Committee argued strongly that the cap should not apply to Queensland because they are convinced that their rivers either have no effect on the flow of the Murray in the southern states, or because their rivers are not suffering as much as the lower reaches of the Murray. The Committee will return to this difficult issue in its final report.

1.65 Witnesses from the federal Department of Agriculture, Fisheries and Forestry, the National Water Commission and (in the case of the Murray river) from the Murray Darling Commission are optimistic that many of the problems caused by over allocation can be resolved through negotiation and through the National Water Initiative. The Committee agrees with those witnesses that the processes for addressing the problems are in train but it is concerned at the slow pace of negotiations while so many of the affected graziers are seeing their livelihood disappear: several submitters talked about being only able to support a quarter of the stock they once ran on their properties.[27]

Protecting Northern Rivers

1.66 Many of the river systems in Australia are over-allocated and degraded, suffering from the excessive demands brought about by their proximity to our agricultural and residential zones. Fortunately, this is not the case for the rivers in Australia's tropical and semi-arid zones. Various submissions to the Committee (including the Environment Centre, NT and WWF-Australia) have called on governments to agree to grant special protection to those rivers that are still in a relatively pristine condition to ensure that they do not suffer the fate of the Murray.

1.67 Australia's northern rivers have the advantage of not being in heavily populated areas compared to the Murray. The Northern Territory has some 140,000 kilometres of rivers and creeks that are identified as being largely undisturbed. In its final report, the Committee will examine the tools available to governments to ensure the long term protection of all or part of those rivers for future generations.

Groundwater

1.68 As it becomes more costly and more difficult to meet the growing demand for water from surface water resources, both urban and rural users have turned to pumping groundwater as a way to solve water shortage problems. While in some states some of these bores are licensed, very few of these bores are metered making it extremely difficult to track levels of extraction and develop data on sustainable yields. There seems almost to be an implicit assumption that groundwater is limitless. While great progress has been made in hydro-geology in recent years, it remains a complex and inexact science. There is limited knowledge about the interaction between surface and ground water in many areas, and we lack long-term data on the effects of groundwater pumping on the sustainability of our aquifers.

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27 For example, *Submissions* Nos.21 & 33

1.69 With the help of CSIRO, the Murray Darling Basin Ministerial Council has identified groundwater extraction as one of the six significant risks [28] facing the Murray-Darling Basin that could eventually reduce the amount of water available in its rivers and streams.

1.70 There is every reason to believe that the risk of ground water extraction significantly reducing stream flow must also be real for other aquifers in the country – not just in the Murray-Darling Basin. The Committee will return to the six risks identified by CSIRO in its final report.

1.71 The issue here is that in addition to the immediate negative impacts on groundwater stores, the long term impacts may be of greater consequence:

> In connected groundwater-surface water systems, there is normally a time lag of years or decades between the start of groundwater extraction and the moment the full impact of that pumping is felt in the streams…even if all groundwater pumping were to cease immediately, there will be an ongoing impact in streams due to historical pumping.[29]

1.72 The Committee urges all governments to exercise the utmost caution in granting licences for groundwater extraction in cases where little is known about the aquifer in question. The data available is improving greatly and it is important to wait until sound knowledge is available before taking further action in this area.

1.73 The Committee was also very interested to hear of the Managed Aquifer Recharge experiment currently being conducted in the Perth basin where advanced treated effluent is being returned to the aquifer thus avoiding depletion of that water resource. [30]

1.74 The difficulties posed by the lack of a uniform system of water property rights, as discussed earlier, may be a key factor in discouraging more robust trading in water entitlements. A reluctance to trade water permanently "out" of a region, especially in a period of climate variability, may also be at work. While trade in many areas is dominated by a fear of seeing precious water resources taken out of a particular region, farmers and irrigators are unlikely to pressure state governments to agree to a nationally uniform standard in the immediate future.

1.75 Nevertheless, the Committee sees merit in standardising water rights both to facilitate trade and also because it is currently assessed as part of a property valuation for the purposes of selling and mortgaging a property. It is therefore imperative that

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28 Van Dijk, A., Evans, R., Hairsine, P., Khan, S., Nathan, R. Paydar, Z., Viney, N. and Zhang, L. (2006) Risks to the Shared Water Resources of the Murray-Darling Basin. *Murray- Darling Basin Commission Report*, Canberra, p.6

29 Van Dijk, A. and others (2006), *Murray- Darling Basin Commission Report*, Canberra, p.19

30 Dr James Gill, Water Corporation of Western Australia, Committee Hansard, 16 August 2006, p.22

that right to water should be defined in a standardised way that would be acceptable to all involved, whether bankers or interstate farmers.

1.76 In this interim report, the Committee has touched on some of the major issues that have been brought to its attention during its inquiry to date. As indicated, the Committee is planning to pursue certain issues further through forthcoming public hearings. It will make its recommendations in its final report.

Acknowledgements

1.77 The Committee thanks all those who have prepared submissions or who have appeared as witnesses at its public hearings for their contribution to its inquiry.

Senator Rachel Siewert
Chair

Appendix 1

List of Submissions

1. Hindmarsh Shire

2. Dr Mark Patrick Taylor, Macquarie University, Sydney

3. Coleambally Irrigation Cooperative Limited

4. Concerned Lower Lachlan Community

5. Australian Floodplain Association

6. Quambone Pastoral Company

7. Pioneer Valley Water Board

8. Engineers Australia

9. Professor Richard Kingsford, School of Biological, Earth and Environmental Sciences

10. Mr Robert and Ms Ann Senior

11. Messrs Tony and Derek Schneider

12. Australian Bureau of Agricultural and Resource Economics (ABARE)

13. Mr Robin Gaskell

14. Water for Australia

15. WWF-Australia

16. Mr Owen and Ms Karen Betts

17. Paroo River Association Inc

18. Mr Max Sandford

19. Mr Rick and Ms Helen Hall

20. Mr Edward Fessey

21. Mr Andy Sullivan

22. North Burdekin Water Board and South Burdekin Water Board

23. The Western Australian Farmers' Federation (WAFarmers)

24. Mr Richard and Ms Catherine Bucknell

25. Ms Janet Stein

26. Mr James Clive Green and Ms Victoria Campbell Green

27. Mr Jon Nevill, OnlyOnePlanet Consulting

28. Mr David Hanlon and Ms Amanda Friend

29. Mr Bill and Ms Willa Hagarty

30. (Affected landholders) Birrie River and Floodplain

31. Mr Christopher Irons

32. Lower Balonne Floodplain Association

33. Messrs Peter and Pop Petersen

34. Queensland Farmers' Federation

35. Murray-Darling Basin Commission

36. Australian Spatial Information Business Association

37. Australian Property Institute

38. Australian Conservation Foundation and Inland Rivers Network

39. National Water Commission

40. CSIRO

41. Department of Agriculture, Fisheries and Forestry

42. Australian Government Bureau of Meteorology

43. Mr Ian Marshall

44. Ricegrowers' Association of Australia Inc.

45. NSW Irrigators' Council

46. Murrumbidgee Irrigation

47. Smartrivers

48. Tasmanian Government

49. Environment Centre NT Inc.

50. Mr Laurence Jones

50A. Mr Laurence Jones

51. Ms Catherine Davis

52. South Australian Government

53. Huon Valley Council

54. Ms Wendy Bunce

55. Cubbie Group Ltd

56. Chinchilla and District Water Users' Association

57. Cotton Australia Ltd

58. CONFIDENTIAL

59. Mrs Terry Murphy-Fleming and Phillip Fleming
Mr Howard Blackburn

Appendix 2

Witnesses who appeared before the Committee at Public Hearings

Tuesday, 7 March 2006
Parliament House, Canberra

National Water Commission
Mr Ken Matthews, Chair and Chief Executive Officer
Mr Malcolm Thompson, General Manager, Water Reform Group
Dr Colin Chartres, Science Advisor

Murray Darling Basin Commission
Mr Robert Douglas, Director, Water Policy Coordination
Mr Scott Keyworth, Director, Strategy Implementation
Mr Leslie Roberts, General Manager, Natural Resources
Mr Andrew Close, Manager, Water Resources Group

Commonwealth Scientific and Industrial Research Organisation
Mr Warwick McDonald, Acting Flagship Director, Water for a Healthy Country
Professor Michael Young, Chief Research Scientist, Land and Water and Adjunct Professor, University of New England and Charles Sturt University

Engineers Australia
Mr Andre Kaspura, Policy Analyst
Mr Alexander Loy, Chair, National Subcommittee on Water Data
Dr Ian Cordery, Committee Member
Dr William Weeks, Committee Member

Australian Property Institute, Australian Spatial Information Business Association and Open Geospatial Consortium Australasia
Mr John Sheehan, Chair, Government Liaison, and Past NSW Divisional President Australian Property Institute
Mr Jeffrey Warner, Deputy National Director, Australian Property Institute
Mr David Hocking, Chief Executive Officer, Australian Spatial Information Business Association
Dr Robert Starling, Regional Coordinator, Open Geospatial Consortium Australasia

Australian Bureau of Agricultural and Resource Economics (ABARE)
Dr Stephen Beare, Chief Economist
Ms Annalise Heaney, Manager, Land and Water, Natural Resources Branch

Department of Agriculture, Fisheries and Forestry
Mr Tom Aldred, Executive Manager, Natural Resource Management Division

Mr Ross Dalton, General Manager, Assessment, Innovation and Climate Change
Dr Colin Grant, Deputy Executive Director, Bureau of Rural Sciences
Mr Simon Smalley, General Manager, Water Policy and Murray-Darling Basin

Wednesday, 2 August 2006
Toowoomba City Hall, Toowoomba

Toowoomba City Council
Councillor Dianne Thorley, Mayor
Councillor Lyle Shelton

Cubbie Group Ltd
Mr John Grabbe, Joint Managing Director, Cubbie Group Ltd
Mr Paul Brimblecombe, Joint Managing Director, Cubbie Group Ltd
Councillor Robert Buchan, Mayor, Balonne Shire Council

Central Downs Irrigators Ltd/Queensland Irrigators' Council
Mr Ian Hayllor, Vice Chairman, Central Downs Irrigators Ltd
Mr Jan Lafrenz, Chairman, Central Downs Irrigators Ltd
Mr Franklyn Brazil, Chairman, Queensland Irrigators' Council

Toowoomba and Region Environment Council
Ms Sarah Moles, Member

Condamine Alliance
Mr Richard Browne, Chair
Mr Phillip McCullough, Chief Executive Officer

Queensland Farmers' Federation
Mr Gary Sansom, President
Mr Ian Johnson, Water Adviser

Wednesday, 16 August 2006
Parliament House, Canberra

New South Wales Farmers Association, Brewarrina Branch/Lower Balonne Floodplain Graziers Association
Mr Edward Fessey, Chair, NSW Farmers' Association, Brewarrina Branch and Member, Lower Balonne Floodplain Graziers' Association
Mr Rory Treweeke, Chairman, Lower Balonne Floodplain Graziers' Association

Water Corporation of Western Australia
Dr James Gill, Chief Executive Officer