

# Chapter 5

## Other issues

### Encouraging more efficient water use

5.1 The efficiency of water use in different areas, and the profitability of use on different crops, varies greatly. The Committee heard a number of examples of irrigation sectors that have improved their efficiency of water use greatly in recent years or decades. However, overall there is still much potential for improvement.

#### *What should be done with saved water?*

5.2 In the case of a textbook firm, efficiencies might allow the firm either to produce more output with the same input, or to produce the same output with less input (or any intermediate combination). The market will show which course is most profitable. In the case of water reform, the implicit aim, overall, is the second: to produce the desired output with less water, so that saved water can be returned to the environment without hurting farming economies.

5.3 The idea that a farmer might use saved water to increase production intuitively seems to run counter to the aim of returning water to the environment. Talk about how the savings from efficiencies should be ‘shared’ between farmers and the environment may raise concerns that a farmer might be asked to invest in efficiencies, only to see government take the saved water away. This sort of concern seemed to be behind comments by many witnesses who stressed that if farmers are to invest in efficiencies they must be able to reap the benefit:

If farmers are encouraged to invest on farm and water efficiency projects then they should be able to recognise, use and retain any saving; and similarly for government. Where there are jointly funded projects, you share the benefits.<sup>1</sup>

5.4 The Committee agrees. To encourage farmers to invest in efficiencies, they must obviously be able to use the savings from their own investment as they see fit - whether to sell the saved water or to increase their production. The duty of the community at large, in conjunction with government, to ensure environmental health is a separate matter, which it does by fixing the size of the consumptive pool and by buying water for the environment as necessary:

The Wentworth Group strongly support water efficiency and we strongly support water efficiency going to increased production, which creates

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1 Mr D. Miell (NSW Irrigators Council), *Committee Hansard* 15 July 2004, p.772.

further wealth. However, it has to be underpinned by securing the environmental health of the river first.<sup>2</sup>

### ***Should government invest in efficiencies directly?***

5.5 The question arises as to whether government should be directly involved in subsidising or investing in efficiency infrastructure on private land. The administrative costs will be considerable. It might be argued that providing government has fixed the consumptive pool at a size that adequately protects the environment and set water prices at full cost recovery (allowing for environmental externalities), it is a matter for users to decide the most profitable mix of capital (irrigation systems etc.) and consumables (water) in their production. Whether a possible efficiency investment is attractive (for example, piping channels to avoid seepage and evaporation losses) will depend on the cost of water, the cost of the investment and the amount of water it saves.

5.6 The IGA implies that government may be directly involved in encouraging efficiencies - presumably by funding or subsidising efficiency investments on private property in return for taking the saved water. The justification for government involvement would be that society may take a longer term view than the individual, and may wish to encourage investment whose payback period would be too long to be attractive to the individual:

It costs money to save this water.... the payback period on this particular graph, which is about 15 years for the best-case scenario, is too long for the farmer. We need to look into investments which can reduce this payback period to less than five years so that farmers will start thinking about conversion and providing this water for other users.<sup>3</sup>

5.7 On the other hand, if government wishes to intervene on the basis that the individual's payback period is too short for society's needs, it can force the pace simply by offering an above market price for water. This would reduce the payback period for the individual's investment in saving water.

5.8 Government will of course need to invest in public infrastructure on its own account:

There is a big difference in the system between on farm, which is essentially private property; near farm, which is the irrigation area which tends to be a cooperative corporate structure; and then system wide, upstream from the irrigation areas, which is effectively the commons and owned by the government. Different principles need to be applied in each of those zones.<sup>4</sup>

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2 Mr P. Cosier (Wentworth Group), *Committee Hansard* 30 October 2003, p.275.

3 Prof. S. Khan (CSIRO), *Committee Hansard* 14 July 2004, p.665.

4 Dr W. Hurditch (Pratt Water), *Committee Hansard* 21 April 2004, p.568.

5.9 It will be important that any direct government investment in private efficiency infrastructure is economically disciplined, and does not become a de facto form of structural adjustment assistance. There is no reason for government to be involved in obtaining environmental water by investment if the cost to government is higher than simply buying the water in the market (subject to paragraphs 5.6-5.7).

5.10 Related comments are at paragraph 5.19 below.

### ***Effect of reducing return flows***

5.11 More efficient water use will reduce return flows to the river or drainage past the root zone to recharge the aquifer. This will reduce supply to downstream users. If this happens in a fully allocated system which has significant return flows, the system will become overused. The possible effects are important, since the possible savings in this way are often high relative to savings from reduced evaporation or more productive transpiration.

5.12 The response could be either to cut allocations across the board, or to define allocations as net of return flows - which requires better knowledge of what the return flows are. Mr Creighton of CSIRO stressed the need for better water accounting to inform this matter:

We have come from a system in Australia where you got an entitlement. You may not have used it all—sleepers and dozers and everything else—or, if you did, you allowed much of it to go via ground water or surface run-off back to the system, then someone else picked it up and used it. As we get more precision about our irrigation, our dry land or whatever it is, that is not going to happen. But, unless we have a water account and unless we understand the system, we are not going to be able to put some numbers on the changes.<sup>5</sup>

5.13 Alternatively: ‘When cost or technology limitations prevent direct measurement of net use either an attempt should be made to deem the extent of net use or entitlements should specifically make it clear that as net use increases gross allocations will be cut on a one for one basis.’<sup>6</sup>

5.14 A benefit of government buying environmental water in preference to investing directly in efficiencies is that when government buys environmental water the least efficiently used water is likely to be offered first. When this water is returned to the environment the return flow problem does not arise. If government invests in improving the efficiency of the least efficient water, the return flow problem will be greatest.

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5 Mr C. Creighton (CSIRO), *Committee Hansard* 14 July 2004, p.678.

6 CSIRO Land and Water [M.D. Young & J.C. McColl], *Robust Separation - a search for a generic framework to simplify registration and trading of interests in natural resources*, September 2002, p.9.

5.15 The Committee draws attention to the importance of this issue. The Committee recognises the primary importance of better accounting for all water flows in a catchment, and recommends that steps be taken in all catchment areas to properly assess the amount of water necessary for maintenance of environmental health and the amount available for trade.

### **Recommendation 5**

**5.16 Water management authorities should take steps to properly assess in all catchments the amount of water necessary to maintain environmental health and the amount available for trade.**

### **Recovering overallocated water**

5.17 The Intergovernmental Agreement sets out principles for recovering water for the environment. Options include:

- investment in more efficient water infrastructure;
- purchase of water on the market, by tender or other market based mechanisms;
- investment in more efficient water management practices, including measurement; or
- investment in behavioural change to reduce urban water consumption. (s79(ii)(a)).

5.18 The selection of measures should be ‘primarily on the basis of cost-effectiveness’ (s79(ii)(c)). The Intergovernmental Agreement on addressing overallocation in the Murray-Darling Basin has similar points (s23).

### ***Buying back water versus investing in efficiencies***

5.19 As to whether government should obtain environmental water by simply buying it in the market, or by investing in efficiencies, the same issues arise as at paragraph 5.5. It would be easier for government simply to buy water as necessary, and leave it to the sellers to decide the best way of finding it - whether by contracting their production, or by investing in efficiencies so they can maintain production and have some water to sell:

If you go in with a voluntary [buyback] mechanism, you find all of the water and you empower people with the money to upgrade, without having to spend a lot of taxpayers’ dollars involved in designing complicated schemes.<sup>7</sup>

5.20 On the other hand, many submitters to this inquiry seemed to prefer the prospect of direct government support. For example:

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7 Prof. M Young (Wentworth Group), *Committee Hansard* 30 October 2003, p.281-2.

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The way to tackle it in the community is not to say, 'We're going to take away your water resource or your economy is going to go down the tubes,' but to say, 'We can actually show you a way where, if you start at the marketing end of your product and look for overseas markets, if you look for products which you can get paid more for, if you look at your quality assurance, if you look at the way you grow your product and if you look at the way you irrigate and do your business, there is actually a better outcome for your regional community.'<sup>8</sup>

5.21 In such comments there appears to be an underlying assumption that government investment means water will be saved by efficiencies while maintaining rural economies at the same level of output; but if government simply buys water back for the environment it is more likely that rural economies will contract.

5.22 This is not necessarily so. If government buys water, the sellers can use the money to invest in efficiencies to maintain their production, and the end result will be the same as if the government invested in the efficiencies directly and took the saved water. How much this happens will depend on the return on investment at prevailing prices. The basic economic calculus does not depend on who initiates the efficiency investment. It would certainly be easier administratively for government simply to buy water, and leave it to the market to prioritise efficiency investments.

5.23 If government wishes to support private efficiency investment directly for policy reasons (which the IGA allows for), it will be important that this investment is economically disciplined and directed with priority to the best returns. It must also be kept in mind that the primary motivation for the development of the IGA was severe degradation of a significant river system. As such, providing money to support private efficiency investment should be peripheral in light of larger issues to be tackled.

5.24 The comments above refer only to the economics of obtaining environmental water. The quote at paragraph 5.20 also relates to government's role in research, public education and consumer advice. These are indeed vital roles of government. They cannot efficiently be turned over to private enterprise because they have a large 'public good' element.

### ***How to treat sleepers and dozers***

5.25 The question arises: should government should tackle overallocation by confiscating sleepers and dozers (unused or little used rights) with priority, on the grounds that this minimises economic dislocation?

5.26 Submitters to the inquiry, however much they regretted the fact that licences may have been given too freely in the past, generally did not favour this. They argued

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8 Mr T. Mader (Riverland Development Corporation Inc) *Committee Hansard* 20 April 2004, p.549.

that sleeper licences have been treated as property with value, property may have changed hands on that basis, and it would not be fair to withdraw them now:

Even though they may be a sleeper or dozer, the finance industry has valued that land at a higher value because of that piece of paper. That higher value is not reflected only in the market rate upon selling the property; even the valuer general recognises it when he values your property for shire rates, whether or not you have used it.<sup>9</sup>

5.27 New South Wales has particular problems with over-allocated groundwater systems, such as the Upper Namoi. New water sharing plans for major groundwater systems have been deferred to further consider this problem. It appears that the NSW government is still considering all options:

The government is looking at the history of use as the focus of how those licences should be amended.... I think you will find that, in areas where for whatever reason there has been a low history of use—whether because of the nature of the aquifer or the level of development of the farm—under the proposed structural adjustment regime the entitlements of those licences will be reduced preferentially before the active licences...<sup>10</sup>

5.28 A related matter is whether some groundwater sleepers are in fact ‘ghosts’ - licences held by farmers who do not in fact have access to groundwater. The extent of the problem is unclear. The Committee heard that there is a problem on the Gwydir.<sup>11</sup> The Department of Infrastructure, Planning and Natural Resources suggested that it is not so much a problem of no water as of low yield:

**Senator HEFFERNAN**—But there are people who have bore licences and do not have any bore water.

**Mr Alvarez**—No, there are not any that do not have any bore water.... There are some areas of cracked rock where the amount of water they were granted was greater than the amount they could ever get out of it. There is no doubt about that. But, over all aquifers, it is about the rate at which they can take it.<sup>12</sup>

5.29 NSW is now considering how to deal with these situations:

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9 Miss J. Hamparsum (Upper Namoi Water Users Association), *Committee Hansard* 26 August 2003, p.163. Similarly Mr N. Shillabeer (South Australian Murray Irrigators Inc.), *Committee Hansard* 20 April 2004, p.523.

10 Mr P. Sutherland (NSW Department of Infrastructure, Planning & Natural Resources), *Committee Hansard* 15 July 2004, p.791,793

11 Mr M. Murray (Gwydir Valley Irrigators Association), *Committee Hansard* 26 August 2004, p.124-5. Mr J. Warnock (Upper Namoi Water Users Association), *Committee Hansard* 26 August 2004, p.163-4.

12 Mr K. Alvarez (NSW Department Infrastructure, Planning & Natural Resources), *Committee Hansard* 15 July 2004, p.792.

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In areas where for whatever reason there has been a low history of use—whether because of the nature of the aquifer or the level of development of the farm—under the proposed structural adjustment regime the entitlements of those licences will be reduced preferentially before the active licences.<sup>13</sup>

5.30 In the Committee's view the question of how to treat sleepers and dozers will have to be worked out by catchment communities and government on a case by case basis. The Committee does not think that the owners of ghost licences should be allowed to profit from them. There is no reason in fairness why a licence to take groundwater if there is any, when in fact there is none (that point being at the licensee's risk) should be upgraded into an entitlement to a share of a *known* water resource.

5.31 Related comment on sleepers is at paragraph 4.43ff.

### **Allowing for water interception by landuse changes**

5.32 Interception of water before it reaches a watercourse is a significant issue. The Intergovernmental Agreement provides that, in water systems that are fully allocated or approaching full allocation, interception activities above an agreed threshold size will require a water access entitlement. Systems not yet near full allocation should be monitored, and water access entitlements will be required when the threshold level of interception is reached or the system approaches full allocation (s57).

5.33 Examples of 'such activities that are of concern, many of which are currently undertaken without a water access entitlement', are:

- farm dams and bores;
- large scale plantation forestry; and
- intercepting and storing of overland flows (s55).

### ***Effects of farm dams***

5.34 The National Land and Water Resources Audit estimated that in 1996-97 Australia's several million farm dams accounted for about 9% of total stored water.<sup>14</sup> Farm dams can obviously have a significant impact on downstream water availability.

5.35 The Department of Agriculture, Fisheries and Forestry (DAFF) noted the concern about the growth in numbers of farm dams, particularly in the upper catchments of major rivers. It described the different approaches to farm dams taken by NSW and Victoria:

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13 Mr P. Sutherland (NSW Department Infrastructure, Planning & Natural Resources), *Committee Hansard* 15 July 2004, p.793.

14 National Land and Water Resources Audit report '*Australian Water Resources Assessment 2000*', June 2001, p. 27. The report estimated total storage capacity at 79,000GL.

The NSW farm policy, for example, limits the right of landholders to capture and use runoff for any purpose to 10% of the average yearly rainfall runoff for their property. This is known as a Harvestable Right and is tied to the land - it is intended to satisfy essential farm needs such as for stock watering, house and gardens and may be for any purpose including irrigation. This right will not be licensed and no fees will apply.

In Victoria, the *Water (Irrigation Farm Dams) Act 2002* came into operation on 4 April 2002. It amended the *Water Act 1989* and extends licensing arrangements to cover all irrigation and commercial use in the catchment.<sup>15</sup>

5.36 Mr Weller of the Victorian Farmers Federation gave the rationale for the new regulation of farm dams in Victoria:

If you have a Murray-Darling Basin cap and farmers in the catchment areas continue to catch water and create new developments on their farms—which they have been able to do, provided they do it off a waterway—you are undermining the reliability of the water supplied to the irrigators who have made investments in laser grading and drip irrigation.<sup>16</sup>

5.37 The contrary view is that landholders should have a basic right to take a share of the water which falls on their own property. Mr Evans described the effect of the new rules on upper Murray farmers:

Following passage of the [Victorian] Farm Dams legislation, a landowner wishing to store any water resulting from rainfall on his/her land, to use on that land for productive purposes, must first purchase a Water Right from within the relevant catchment, and then build a storage dam – for water which has never left the farm!<sup>17</sup>

5.38 Mr Evans suggested that if 20 per cent of sales water was set aside for upper catchment farmers, this would not be a significant risk to water supply to irrigation farmers. He suggested further: ‘The right to store water should be proportionate to the average rainfall in the area of land it held, and not be transferable.’<sup>18</sup>

### ***Comment***

5.39 The Committee is sympathetic to these concerns, especially in light of the fact that the farm dam controls differ between Victoria and New South Wales. However there is no denying that, in principle, upstream water interception should be integrated into the total water sharing plan for the catchment. That implies controlling it if necessary, along the lines suggested in the Intergovernmental Agreement.

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15 Submission no. 52, Attachment A, p. 34.

16 Mr P. Weller (Victorian Farmers Federation), *Committee Hansard* 21 April 2004, p.600.

17 Supplementary submission no. 12A, p.1.

18 The Hon D Evans, *Committee Hansard*, 15 July 2004, p. 720,723.



5.40 The Committee could not question the Victorian government on this matter, as the Victorian government declined the Committee's invitation to appear. In relation to the policy, the Committee cannot comment on whether the recent tightened regulation of farm dams is warranted, or an over-reaction, in context of the water balance the whole catchment. The Committee notes the different policies of the New South Wales and Victorian governments, and suggests that the two governments should negotiate a harmonised position.

5.41 On the question of fairness: the situation is similar to any situation where government limits a long held right for policy reasons - for example, new controls on land clearing, or withdrawing a sleeper water licence on 'use it or lose it' policy. Government must be able to make such changes for the longer term common good. Fairness means making reasonable transitional arrangements for the people most affected.

5.42 The Committee notes that the Victorian farm dams legislation provided a subsidy to those who decided to put in dams following the passage of the legislation, although according to Mr Evans this has had a very slow take-up.<sup>19</sup> The suggestion to give the affected farmers a water entitlement raises concerns about how widely eligible landowners should be defined and what the effect would be on demand:

**ACTING CHAIR**—If we are going to buy back water for the environment—and there is not a lot of water, just a few thousand megalitres—couldn't we buy their water back for them?

**Prof. Cullen**—It might only be a few thousand megalitres at the moment, but I think once you set that precedent there will be quite a big queue.<sup>20</sup>

5.43 The Committee suggests that where a tightening up policy is necessary, in fairness it would at least be reasonable to announce it as a 'use it or lose it' policy, and give farmers a reasonable time to use it.

### *Effects of plantation forestry*

5.44 The issue of water-intercepting landuse changes arises particularly in relation to plantation forestry in higher rainfall areas. A pine forest at the 800mm rainfall isohyet intercepts up to 2 megalitres per hectare per year; at the 1000mm isohyet, up to 3 megalitres - which is about equivalent to the effect of a small farm dam on every hectare.<sup>21</sup> Plantation forestry in the Murray-Darling Basin is growing strongly, with government incentives. On one estimate, the goals for forestry development in the

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19 The Hon. D. Evans, *Committee Hansard* 15 July 2004, p.723.

20 Prof. P. Cullen, *Committee Hansard* 14 July 2004, p.706.

21 Prof. R. Vertessy (CSIRO), *Committee Hansard* 30 October 2003, p.300-302. R. Vertessy, L. Zhang, W.R. Dawes, *Plantations, River Flows and River Salinity*, Cooperative Research Centre for Catchment Hydrology, n.d., p.3,10.

2020 Vision for plantation forestry would reduce flow in the Murray-Darling by 600 gigalitres per year.<sup>22</sup>

5.45 The plantation forestry industry disputes exactly how serious the problem is;<sup>23</sup> however there can be no disputing the principle that this interception of water should be considered a consumptive use, and should be factored into water planning for a catchment.

5.46 This issue has been slow in being recognised. For example, the Committee was concerned to note that the recent Murrumbidgee water sharing plan made no reference to it.<sup>24</sup> It appears that it is now being addressed. Mr Sutherland of NSW DIPNR advised:

In high-yielding aquifers with good quality water, there is clearly a threat to the water production potential of those aquifers. So New South Wales, together with other states and the Commonwealth, is certainly exploring this: firstly, getting the scientific knowledge right in terms of how we model that and, secondly, using the best range of policy instruments to provide incentives or disincentives to industry so as not to see plantations established in those high-yield catchments.<sup>25</sup>

5.47 The plantation forestry industry is concerned that forests should not be discriminated against because they are the most visible target. It argues that ‘a national approach to water rights and allocations should take into account water use by all irrigated and dryland rural industries in a non-discriminatory manner. There is no scientific basis to suggest that plantation forestry should be regulated in a different manner to any other dryland landuse.’<sup>26</sup>

### ***General comment on water intercepting activities***

5.48 The Committee appreciates the difficulty of this issue and the good intentions of this section of the IGA. However it has a concern that the IGA provisions on this depend very much on the interpretation of when a water system is ‘approaching full allocation’, and what the threshold level of water intercepting activity should be. Progress on this matter will depend on continuing political commitment. The prospect of introducing a wide ranging new suite of rural landuse controls to account for dryland water use is daunting. Alternatively, Prof. Young suggested that better

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22 M.D. Young & J.C. McColl, ‘Robust Reform: the case for a new water entitlement system for Australia’, *The Australian Economic Review*, vol.36 no.2, p.227

23 ‘Plantations, River Flows and River Salinity’ - comments by the National Association of Forest Industries, n.d. [2003]

24 *Committee Hansard* 27 August 2003, p.260-262.

25 Mr P. Sutherland (NSW Department of Infrastructure, Planning and Natural Resources), *Committee Hansard* 15 July 2004, p.794.

26 Submission 54, National Association of Forest Industries Ltd, p.3.

accounting for impacts, both positive and negative, would allow more market-based solutions:

You set up robust ways so that people account for water fully and properly; similarly, you set up robust ways of accurately defining salinity impacts and accountability for salinity and giving people credits for when they produce real solutions and giving them debits when they do not—and similarly with issues like greenhouse. If you put the whole suite together and design your pricing, quota and allocation systems, whether for water or salinity or whatever, then you can have optimal allocation through market processes without having to have tighter planning controls. Alternatively, you can use zoning type models where you just prohibit people from doing things at specific locations.<sup>27</sup>

5.49 This raises the question of whether we have enough scientific knowledge to do the necessary accounting. Dr Williams suggested:

Have we got enough technical and scientific knowledge of our landscapes to be able to do comprehensive water balance and water accounting everywhere? Probably the answer is: we have enough to start, but we will need to refine it as we go along.<sup>28</sup>

5.50 Prof. Young suggested that there is a tradeoff between the cost and complexity of a water accounting system and the accuracy required:

The systems the work best are those that are quite clunky and have four or five classes and a deeming arrangement, in which it is assumed that, for now, all lucerne, for example, has a recharge of such and such, or a run-off of such and such, or that a certain class of plantation has a factor of so much—you do it on a class-by-class basis. You build your accounting framework on that sort of fairly crude system, which will get it 80 or 90 per cent right.<sup>29</sup>

5.51 The Committee recommends these matters be progressed quickly, so that water authorities can adequately manage the total water balance of the catchment.

## **Recommendation 6**

**5.52 Water management authorities should give priority to establishing the systems necessary to account for the total water balance of catchments to allow better management of water-intercepting activities.**

5.53 The Committee is sympathetic to the concern of the plantation forestry industry that plantations should not be discriminated against because they are the most visible target. The IGA refers to all water-intercepting activities in the same way, which is appropriate. However it may be a matter of practical necessity to control

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27 Prof. M. Young (CSIRO), *Committee Hansard* 30 October 2003, p.289.

28 Dr J. Williams (CSIRO), *Committee Hansard* 30 October 2003, p.297

29 Prof. M. Young (CSIRO), *Committee Hansard* 30 October 2003, p.298.

large scale plantation forestry with priority, if the science shows that that is the most important single issue.

5.54 The Committee notes the importance of better scientific knowledge to account for total water movement in catchments. The Committee recommends that this should be a priority for Commonwealth funded programs such as the National Land and Water Resources Audit, the Cooperative Centre for Catchment Hydrology, and the Water for a Healthy Country Flagship.

### **Recommendation 7**

**5.55 Relevant Commonwealth funded research programs should give priority to researching the total water balance of catchments to allow better management of water-intercepting activities, with particular reference to the effects of large scale plantation forestry on runoff.**

### **Example of overallocation: the Lower Balonne**

5.56 The lower Balonne River in southwest Queensland stands as an example of some problems of water planning which are not solved in the Intergovernmental Agreement. Solving them will require continuing political motivation.

5.57 The lower Balonne is a 'flood pulse' river, whose flows vary enormously from year to year. The downstream floodplain environment (including the important RAMSAR listed Narran Lake Nature Reserve<sup>30</sup>), as well as the productivity of floodplain graziers, depends critically on the regime of flooding.

5.58 During the 1990s water harvesting developments on the lower Balonne (downstream of St George) increased greatly. Total offstream storage is now about 1,500,000 megalitres - five times greater than in 1993/94.<sup>31</sup> Cubbie Station, the biggest cotton farm in the district, has storage capacity of 460,000 megalitres.

5.59 It is now clear that the government of the day was at best shortsighted, at worst reckless and overpowered by self-interest, in allowing this level of development. The enormously increased water harvesting has greatly reduced the reliability of supply to the pre-existing St George irrigation area. Reduction in beneficial flooding has seriously affected the productivity of the downstream floodplain graziers in southwest Queensland and northwest New South Wales.<sup>32</sup> It will probably have serious long term effects on the ecology of the floodplain, mainly by eliminating the more frequent small floods. This is important because the health of

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30 RAMSAR list: the list of wetlands of international importance established under the Convention on Wetlands (Ramsar, Iran, 1971)

31 *New South Wales government response to the Consultation Draft Water Resource (Condamine and Balonne) Plan 2003*, May 2004, p.14.

32 Submission 61, Culgoa Balonne Minor Water Users Association.

ecological assets such as the Narran Lakes depends on the frequency of floods. A 2003 scientific review found:

The Panel supports the contention of the CRC for Freshwater Ecology that there will be significant long term degradation of the Lower Balonne floodplain and of the Narran lakes in particular once the system experiences the water extraction that is possible with the present infrastructure. We see a long period of decline, with the full impacts not necessarily being fully obvious within the 40 year time scale of this assessment, due to the background high flow variability.<sup>33</sup>

5.60 For example, the medium flood in January 2004 delivered far less water to the floodplain than the similar event in 1994. Cubbie harvested about 150,000 megalitres.<sup>34</sup> The NSW government reported later:

The flow events of February-March 1981, March 1988 and March 1994 all followed long periods of no flow (the 1981 being the longest) and are similar to the January 2004 event. The volume of water entering NSW, as a proportion of the total flow at St George, was 44% for 1981, 45% for 1988 and 48% for 1994. In contrast, the cross-border flow from the Jan 2004 was only 20% of the total at St George. Preliminary Landsat 5 image analyses, comparing the 1988 and 2004 events, indicate that this 50% reduction in total flow and greater attenuation of flow peaks, resulted in a reduction to floodplain inundation of 73% in Queensland and 88% in NSW.<sup>35</sup>

5.61 Against this background the Queensland government has been conducting a contentious and long-drawn-out water planning exercise for the Condamine-Balonne. The draft Condamine-Balonne Water Resource Plan issued in December 2003 proposes that Lower Balonne water users would reduce their daily extractions by up to 10% during specified flow events (the water will be paid back by allowing higher extraction during bigger floods).<sup>36</sup> However it also formalises existing practices for taking overland flows, by building levees to redirect flow, or by 'bundling' - excluding water from an area in order to harvest the water that would have soaked into the ground over that area. These developments have taken place apparently without adequate regulation or assessment of environmental impacts. In fact some evidence points to environmental evasion.

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33 P. Cullen, R. Marchant & R. Mein, *Review of Science Underpinning the Assessment of the Ecological Condition of the Lower Balonne System*, January 2003, p.31,34.

34 Mr O. Betts (Culgoa Balonne Minor Water Users Association), *Committee Hansard* 14 July 2004, p.639.

35 *New South Wales government response to the Consultation Draft Water Resource (Condamine and Balonne) Plan 2003*, May 2004, p.5.

36 The Hon. Stephen Robertson, *Condamine-Balonne Draft Water Resource Plan Released*, media release 3 December 2003.

5.62 The floodplain graziers regard the 10% provision as inadequate. Mr Betts, using the example of the January 2004 flood, showed that a 10 per cent reduction in water harvesting over 5 days would only have added 3.5 per cent to the total downstream flow over the whole event: ‘It may put a couple of inches in the river but would be insufficient to produce any beneficial flooding’.<sup>37</sup>

Our big problem is that the extractions were already very high—over 100 per cent in some flow rates down to about 70 per cent.... When you reduce it by 10 per cent, it makes a minuscule difference. This reduction period is only for up to five days. In this last flow event it would have only made 3,500 megalitres extra per day to be spread over five rivers, which would make no difference to the flood plain.<sup>38</sup>

5.63 They also stress that there is no change proposed to harvesting large flows, which means ‘there will be very little chance of getting a large flood until the 1,200 gegalitres of storage is filled’:

At a peak of 200,000 Ml/day the extraction rate is 99,917 Ml/day (49.9%). The 10% reduction for up to 5 days is only for low and medium flows, so there would be no reduction for these large flows. As it is the height and duration of the peak that is essential for beneficial flooding these large extraction levels will mean there will be very little chance of getting a large flood until the 1,200 gegalitres of storage is filled.<sup>39</sup>

5.64 The floodplain graziers oppose the proposals to legitimise existing harvesting of overland flows:

We are largely prepared to accept what has been given in the original river licences. Our main problem is all the overland flow extraction, bunding and diverting; it has been the law of the jungle out on the flood plain....

The water-harvesting licences are basically capped at a flow rate out of St George of 60,000 megalitres a day. So, once you reach 60,000, there is no increase in the amount of water that can be taken under the water-harvesting licences. If you have a big flood of in excess of 100,000 or up to 150,000 megalitres a day, there is sufficient water then to service the flood plain down below. But, if the extractions from the flood plains are allowed to continue, they go on right up to flows of 200,000 megalitres per day and basically permit up to at least 50 per cent of that water to be diverted. The problem is that some of that water is not actually extracted by pumps but by gravity diversion, which means that it can be done at an enormous rate.<sup>40</sup>

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37 Submission 77, O & K Betts, p.2.

38 Mr O. Betts (Culgoa Balonne Minor Water Users Association), *Committee Hansard* 14 July, p.634.

39 Submission 77, O & K Betts, p.2. According to the NSW government ‘the total on-farm storage capacity in the Lower Balonne is 1,513 gegalitres.’ *New South Wales government response to the Consultation Draft Water Resource (Condamine and Balonne) Plan 2003*, May 2004, p.14.

40 Mr O. Betts & Mr R. Treweeke, (Culgoa Balonne Minor Water Users Association), *Committee Hansard* 14 July, p.636.

5.65 The practice of bunding also raises serious concerns about the environmental consequences for land which is no longer wetted. Prof. Cullen commented:

The logic ... was that if people put up bunds to create a farm dam they should be given an extra licence for the water that would have flooded their land. This was the type A licence. You can see the logic for that, but the logical extension of it was that people started to put up bunds just to create type A licences and that seems to be a scandalous way to manage water on a flood plain....

I think they have quite a good water planning framework in place, but in that situation they are dealing with the mistakes of past governments, when water planning was almost nonexistent as far as I can see....

**ACTING CHAIR**—Anyhow, you would like to knock A and B on the head?

**Prof. Cullen**—Certainly.

**ACTING CHAIR**—I am amazed that there has been no environmental work done on what happens to a piece of flood country when you peg it off from water for all time.

**Prof. Cullen**—It certainly does not stay as flood country, does it?<sup>41</sup>

5.66 The NSW Government has criticised the draft Condamine-Balonne Water Resource Plan strongly. The New South Wales submission is mostly focussed on ecological rather than economic effects, but it corroborates the concerns of the floodplain graziers. The main criticisms are:

- The plan fails to address the cautionary statements about possible future environmental damage in Cullen et al's 2003 scientific review;
- It is doubtful that the environmental flows rules will be enough to prevent degradation of Narran Lakes;
- The proposed 10% cuts to harvesting during specified flood events will do little to reduce the impact on beneficial flooding;
- There will be a total loss of minor to small floods;
- Paying back reduced harvesting in small floods with increased harvesting in bigger floods will decrease the ecological value of large floods in NSW;
- It is unacceptable that the plan defers any significant clawback of current extractions for 5 years.

5.67 In summary, 'the draft WRP is completely unacceptable to New South Wales.'

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41 Prof. P. Cullen, *Committee Hansard* 14 July 2004, p.701,703.

5.68 NSW considers that significant clawback is essential to avert ecological collapse. NSW believes that Queensland must set a volumetric cap for the Condamine-Balonne, and specify an acceptable timeframe to bring diversions back to this level.<sup>42</sup> The Committee's recommendation at paragraph 2.7 above also deals with the issue of overallocation in Queensland systems.

### ***Comment***

5.69 The Lower Balonne problem shows the difficulty of trying to repair matters following the shortsighted decisions of the past. The Committee agrees with NSW that the draft Water Resource Plan is a weak response to the problem. The Committee also agrees with New South Wales that Queensland must set a volumetric cap for the Condamine-Balonne, and specify an acceptable timeframe to bring diversions back to this level.

5.70 In the Committee's view the principle of bundled water licences should be banned. If proper science shows that this practice has more damaging environmental consequences than harvesting from the river (which seems likely), it logically suggests that water harvested in this way should be clawed back with priority.

5.71 The Committee suggests that if necessary the Commonwealth should take a stronger role in progressing this issue. For example, the Commonwealth could attach conditions to future financial assistance for water reform, comparable to the conditions attached to national competition payments.

5.72 Another possibility is that, because the Narran Lake Nature Reserve is listed under an international treaty (the RAMSAR Convention), the Commonwealth could legislate to control its management using the external affairs power (section 51(xxix) of the Constitution).

5.73 The Committee notes with concern that large proposals to divert overland flows with levees are now under consideration in New South Wales (for example, at Carbucky near Goondiwindi).<sup>43</sup> The Committee urges New South Wales to treat such proposals with extreme caution and not to repeat the past mistakes of Queensland.

### **Example of groundwater management problems: the Latrobe aquifer**

5.74 Many witnesses stressed the need for better knowledge and more consistent management of the whole water system, integrating surface water and ground water.

We have put the emphasis on the surface water flow and regulating the surface extraction. If you look at the ground water extraction, you will find that we have put a cap on one and increased the other. We really need to

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42 *New South Wales government response to the Consultation Draft Water Resource (Condamine and Balonne) Plan 2003*, May 2004, p.6,7,9,10,14.

43 'Giant irrigator's great wall "danger"', *Sydney Morning Herald*, 2 December 2002.



treat the whole hydrological system as one and to understand the interactions within it.<sup>44</sup>

There are very important links between ground water and surface water ecosystems and that, if you are trying to manage a ground water resource, you have to take into account environmental ground water flows, which are basically discharges of ground water. Trying to find a rational way of doing that has been exercising most state agencies.<sup>45</sup>

5.75 This issue is particularly important in relation to groundwater because the effects of extraction may be longer appearing and harder to reverse:

Ground water is very different in its nature from surface water in that there are long timelags associated with changing recharge and the response we see in stream systems. If we focused upon end-of-valley targets and the control of stream salinity as part of those targets then timelags typically range between 10 years and 200 years. So in some of our ground water systems we are still seeing a response to the initial European clearing.<sup>46</sup>

5.76 In some cases in the past governments have knowingly overallocated groundwater - an effective policy of mining the aquifer. This is of course unacceptable. The long term damage could be severe, both for the environment and for rural communities who find the resource they depend on gradually disappearing.

5.77 Better accounting for the total water balance is important in relation to the problems of return flows and water-intercepting landuse changes, mentioned above.

5.78 As an example of the problems that can arise, the Committee notes the plight of groundwater users of South Gippsland, where there is a strong correlation between offshore oil drilling and dropping groundwater levels. This causes expense to farmers who must deepen or replace bores, and creates a risk of land subsidence. The Victorian Farmers Federation (VFF) explained the situation:

Approximately 100,000 megalitres of fluid is extracted annually with water being brought to the surface, separately from the oil and gas component and then dumped back into the sea... As a result of these activities, groundwater levels in the La Trobe aquifer have been declining by around 1 meter per year across the whole Gippsland Basin.<sup>47</sup>

5.79 Mr Greenaway of the VFF argued that 'that water really should be reinjected into the aquifer, which happens in most oilfields around the world.'<sup>48</sup>

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44 Dr J. Williams (CSIRO), *Committee Hansard* 11 December 2002, p.14.

45 Dr C. Barber (Centre for Groundwater Studies), *Committee Hansard* 20 April 2004, p.510.

46 Dr P. Hairsine (CSIRO), *Committee Hansard* 30 October 2004, p.291.

47 Submission 45, Victorian Farmers Federation, p.1-2.

48 Mr E. Greenaway (Victorian Farmers Federation), *Committee Hansard* 21 April 2004, p.597.

5.80 According to the VFF the Commonwealth, which licences the oil wells, has refused to acknowledge the cause of the problem:

To date, the Commonwealth Government has rejected our request for financial assistance to be made available to farmers whose groundwater irrigation bores have been impact upon by the extraction of oil and gas off shore. This action of the Commonwealth in relation to this matter is unfair particularly when it is assessed against the one billion dollars in resource rent tax that it receives annually from the oil and gas fields in Bass Strait....

The VFF feels frustrated with the way the Commonwealth is unwilling to fully engage on this matter, especially since all the published research in this area clearly indicates that the problems arises from the off shore fluid extraction.<sup>49</sup>

5.81 The Committee shares the VFF's concerns. Quite apart from the need to do justice to the affected farmers, the long term effect on the aquifer, and the risk of land subsidence, is severe. The Committee recommends that the Commonwealth should acknowledge this problem and propose solutions as a matter of urgency. The Committee notes the Federal Government has commissioned an investigation by Dr Tom Hatton of CSIRO into all aspects of the Latrobe aquifer.<sup>50</sup>

### **Recommendation 8**

**5.82 The Commonwealth should, as a matter of urgency, address the impact of Commonwealth-licensed oil drilling on the Latrobe aquifer and propose solutions which respect the rights of groundwater users.**

### **Coordination of research on water**

5.83 Many of the policies in the National Water Initiative imply a need for better scientific knowledge.

5.84 The Commonwealth supports water research through the Commonwealth Scientific and Industrial Research Organisation (CSIRO) (including the recently established Water for a Healthy Country Flagship), the Bureau of Meteorology, the Australian Bureau of Agricultural and Resource Economics, the Bureau of Rural Sciences, Land and Water Australia and the National Land and Water Resources Audit (part of the Natural Heritage Trust program).

5.85 For example, the recently established CSIRO Water for a Healthy Country Flagship aims to achieve the following outcomes:

- information at regional and Australia-wide scales to support improved water and natural resources policy ;

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49 Submission 45, Victorian Farmers Federation, p.2-3. Mr E. Greenaway (Victorian Farmers Federation), *Committee Hansard* 21 April 2004, p.598.

50 Mr P. Weller (Victorian Farmers Federation), *Committee Hansard* 21 April 2004, p.589.

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- rational water allocation decisions, based on water use benefits and opportunities, and providing input to water trading and market arrangements;
  - best practice farming and urban water uses that increase productivity, improve water quality, re-use resources and reduce input costs;
  - investment strategies that build on a systems understanding of our catchments, rivers and estuaries; and
  - inclusion of climate variability and climate change as a component of all water resource use management decisions.<sup>51</sup>

5.86 A number of Cooperative Research Centres deal with water, including the CRC for Catchment Hydrology, the CRC for Freshwater Ecology, the CRC for Water Quality and Treatment, the CRC for Irrigation Futures, and crop-specific CRCs such as the CRCs for cotton and rice. The CRC program involves a combination of public and private sector funding, and is administered by the Department of Education, Science and Training. The Committee, noting recent cuts to government funding to some CRCs, urges that the government should be mindful of the importance of the CRCs' work on water issues when allocating funding for their operation.

5.87 The Committee has a concern that the number of research bodies involved could lead to a lack of coordination of the water research effort. The Committee is pleased to note that the Intergovernmental Agreement commits to the research needed to implement the agreement, and to 'more effectively coordinate the national water knowledge effort' (s101(ii)).

5.88 Mr Creighton of CSIRO described arrangements in the USA and the Netherlands for integrating research and policy-making:

They have a strong link between the science, the management and the policy. The science does scenarios, the science collects information—yes, we need more information about water and so on... but the science does not play the policy game. It gives the information. The scenarios then go forward to the managers, the bureaucrats, the people in government and so on, and they look through which lever is to be pulled and which opportunities we have got. That comes forward every five years as a report to their parliaments... and they actually get in there and debate the future of the natural resources or their public health.

That rigour in the way we pick up science knowledge, we understand the progress we are making and then we finetune, move forward, implement changes in management policy is not quite there yet in Australia, but we are a long, long way towards that. I think it is just putting the final touches on it that is important....

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51 *About us - Water for a Healthy Country Flagship*, at [www.cmis.csiro.au/healthycountry/about.htm](http://www.cmis.csiro.au/healthycountry/about.htm) [August 2004]

I am looking for a closer link between science and policy, and I am saying to you that the [CSIRO Water for a Healthy Country] Flagship is an opportunity to move forward on that right now.<sup>52</sup>

5.89 The Committee suggests that coordinating research to best inform implementation of the Intergovernmental Agreement could be a responsibility of the National Water Commission. It would have to consult the interested bodies as to how to delegate effective management of the coordination role in the scientific community.

**Aden Ridgeway, Senator for New South Wales  
Chair**

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52 Mr C. Creighton (CSIRO), *Committee Hansard*, 14 July 2004, pp. 660-661.