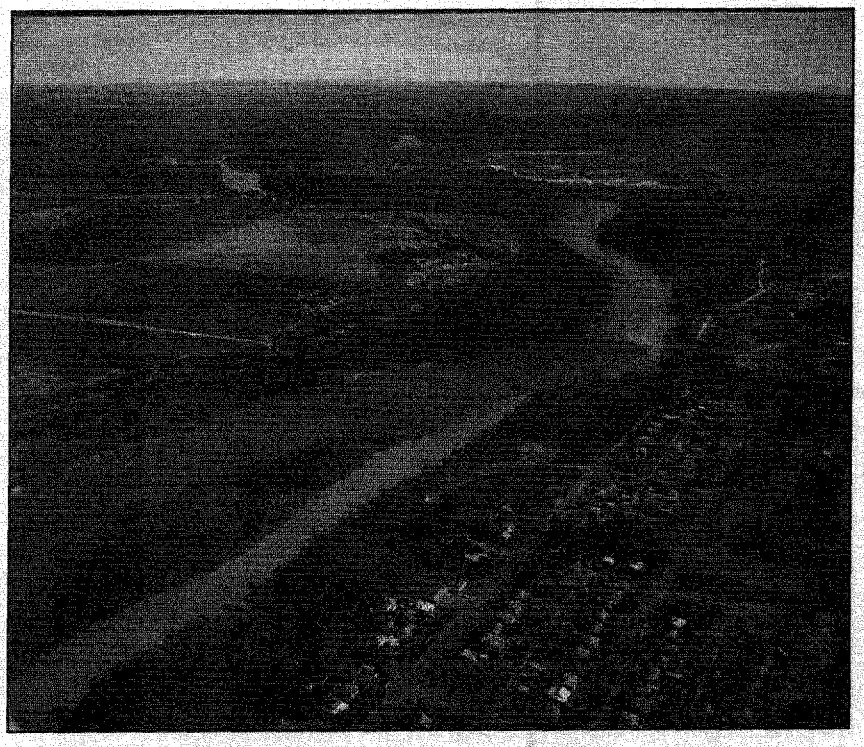
Australian Government

Department of Agriculture, Fisheries and Forestry

THE PROVISION OF FUTURE WATER SUPPLIES FOR AUSTRALIA'S RURAL INDUSTRIES AND COMMUNITIES



SUPPLEMENTARY SUBMISSION TO THE HOUSE OF REPRESENTATIVES STANDING COMMITTEE ON AGRICULTURE, FISHERIES AND FORESTRY

OCTOBER 2003

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The following is a response to supplementary questions to the Australian Government Department of Agriculture Fisheries & Forestry from the House of Representatives Committee for Agriculture, Fisheries and Forestry in conducting their inquiry into *The Provision of Future Water supplies for Australia's Rural Industries and Communities.*

1. What evidence is there that surface and groundwater resources are less stressed now than in 1994 when the COAG reforms were agreed?

The national water monitoring data is not able to allow a direct comparison of the stress of our water resources now with conditions in 1994 when the COAG reforms were agreed. Comprehensive assessments of ecological condition have only recently been undertaken. (See our response to Question 10 for information on improving availability of water resource data.)

COAG identified the concept of "stressed systems" without precise identification of the extent. Jurisdictions were required to undertake a process of allocation for environmental purposes and give priority to those areas they identified as stressed. Consequently, the formal allocation of water to the environment in stressed systems has only recently commenced and it is unlikely that the impact of the COAG reforms on surface and groundwater systems would be evident in such a short period of time.

Direct action to address overallocated river systems has required the development of regulatory frameworks (eg improved property rights water trading markets and identification of environmental allocations) and institutional arrangements (establishment of regional/catchment groups) as well as the development of sufficient scientific data to support fully integrated decision-making at the regional/catchment level. In some jurisdictions, there has been considerable time taken in the development of water plans, in order to gain appropriate scientific understanding and engage the community in the process. As an example, Queensland water resource plans are taking a number of years to develop due to the need to adequately assess the sustainable yield of the resource and undertake necessary consultation with local users and communities. In some situations, such as in the Condamine-Balonne region, widespread community and stakeholder discontent with the decisions reached under the Water Resource Plan meant that the Queensland Government decided to seek further scientific advice on environmental water requirements.

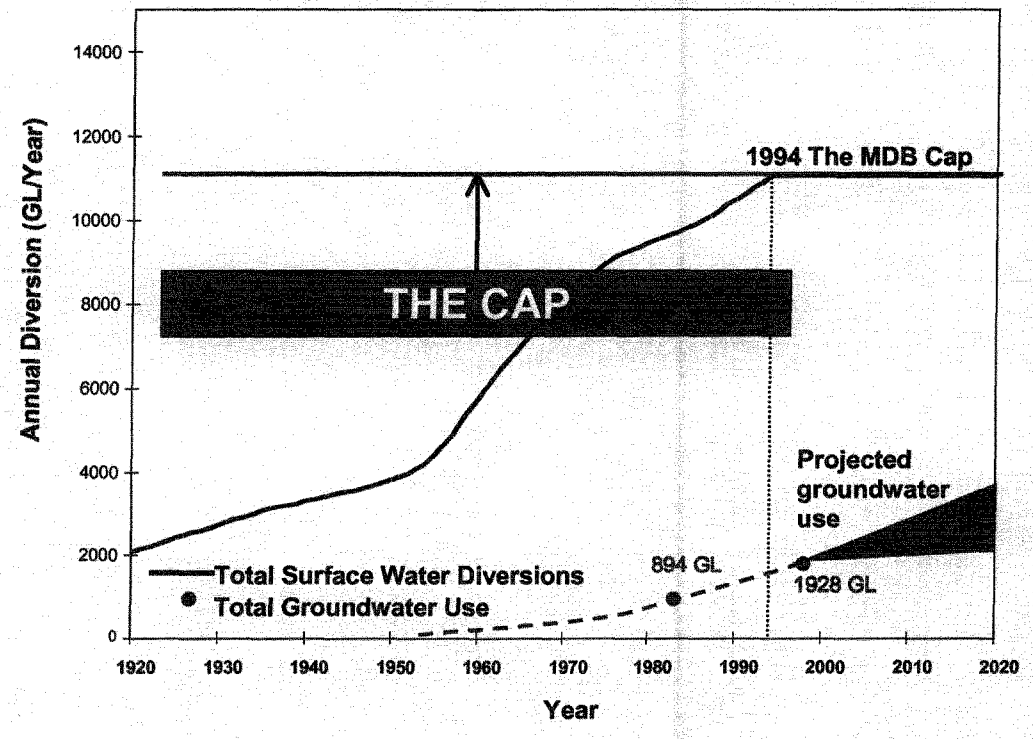
The existing water use data (ABS, 2000) would suggest that there are greater levels of extraction of surface and groundwater resources now than in 1994. However, it is important to differentiate between levels of water allocation and levels of use in assessing the effects of the 1994 reforms as much of this increase in water use is thought to be due to activation of previously existing water entitlements.

In 1993/94, at the commencement of COAG reforms, total net water consumption was estimated at 18,575 GL. Over the four years to 1996/97 this had risen by 19% to 22,186 GL (ABS, 2000). Much of this increase in use was not necessarily avoidable, as it is thought to have related to the increased use of existing allocations (ie activation of sleeper and dozer licences) rather than increased allocation of water.

The Murray-Darling Basin Cap on diversions has limited the issuing of new entitlements in the Murray-Darling Basin.

2. Has the cap been effective in limiting water diversion and use? Should a cap be placed on groundwater as well?

Yes, the *Review of the Operation of the Cap* published in August 2000 concluded that the Murray-Darling Basin cap has provided a mechanism for restraining growth in diversions while enabling economic development to proceed. Without the Cap there would have been continued activation of water entitlements that had not been fully used without a method of overall control. The Murray-Darling Basin Commission viewed the Cap as having provided a more certain climate for long-term investment and development, particularly in high value agriculture and value adding processing, as well as providing benefits to the environment. (Review of the Operation of the Cap p.18)



Queensland and the ACT are yet to establish their respective caps. However, it was apparent to the reviewers of the Cap that in Queensland there had been significant growth in water storage that would impact on the water available for alternative consumptive and environmental uses.

There is a case for groundwater to be included within the 'Cap' where there is a high degree of interconnectivity between surface and groundwater, as a reduction in surface water base flow caused by groundwater extractions has the potential to impact on the on the total amount of water available and therefore affect the amount of water remaining in the river system. There is a risk that existing allocations to users or the environment could be threatened by not considering the interactions between different

water resources. However, any decision on extending the MDBC cap to groundwater resources would be for the Murray-Darling Ministerial Council to make.

This issue has been addressed through the National Action Plan for Salinity and Water Quality, where all jurisdictions agreed to cap, by 1 January 2003 or as otherwise agreed, extractive use of water from all surface and groundwater systems that are over-allocated or approaching full allocation, and to develop a strategy and timetable for meeting those caps.

3. How close is the aim of "full cost recovery" for the pricing of rural water?

Progress in achieving full-cost recovery varies both between and within jurisdictions. In its 2002 assessment, the National Competition Council was satisfied that State and Territory implementation of pricing reforms in the urban and rural sector met at least the minimum COAG requirements .

COAG, at its 29 August 2003 meeting agreed that one of the key objectives of the National Water Initiative will be the establishment of best practice water pricing. This will involve the principles of user pays and full cost recovery, and include where appropriate, the cost of delivery, planning, and environmental impact.

4. What is the most equitable way of reducing overallocation of water resources to achieve sustainable rivers and aquifers?

Under the Constitution, States and Territories are responsible for identifying and implementing policies for reducing overallocation of water resources. There are many variables to be considered in the recovery for the environment of water from productive uses. It is likely that different methods may be preferred in different catchments or river/aquifer systems, depending upon the history of ownership and use, impacts of reduction in entitlements and the level of investment in water efficient technology. As an example, there may be differences in the way Governments approach overallocation issues in areas where the remaining water users will be the major beneficiaries as opposed to those areas where the broader community will be the major beneficiary.

Investment in water savings or the use of markets to recover water are thought to be the most equitable methods of recovering water as they do not mandate change on water users. The methods will go a long way to resolving community concerns about the sovereign-risk of Governments compulsorily acquiring water. The use of market mechanisms to recover water is likely to have a low opportunity-cost, as water is likely to come from lowest value uses. Investment in water savings may be more expensive, but has the added advantage of not removing water from production.

The social and regional impacts of change need to be considered. If water comes from the lowest value uses, the effects of the reduction in water availability may be concentrated in areas. The various options for acquiring water, including the social and economic implications of these options, will need to be considered by Governments in the context of the 29 August COAG decision on a National Water Initiative.

The National Water Initiative will establish new arrangements dedicated to the management of water at a basin, aquifer or catchment scale to deliver agreed environmental outcomes. For example, in the Murray-Darling Basin, a basin-wide system of mechanisms will be established to enable environmental water management, including through the market. A flexible trading model has the advantage of being able to purchase water for the environment in a cost-effective manner when needed, and selling or leasing water back to other water users at other times.

Under the National Water Initiative, water will also be provided for the environment through targeted public and private investment in engineering works to improve 'leaky' infrastructure, based on rigorous investment criteria.

As a part of this Initiative, the Australian Government committed $200 million to address overallocation issues in the Murray-Darling Basin. New South Wales and Victoria have also committed $115 million each, with South Australia and the ACT contributing $65 million and $5 million respectively, bringing the total to $500 million. Arrangements for this funding will be finalised at COAG in 2004.

5. Should a planning and operations framework be established to deal with water allocated to the environment?

As noted above, COAG agreed that a National Water Initiative will establish new arrangements dedicated to the management of water at a basin, aquifer or catchment scale to deliver agreed environmental outcomes. In the Murray-Darling Basin, it is likely that a basin-wide system will be established to enable environmental water management, including through the operation of the water market.

These issues will be considered in the context further development of the National Water Initiative.

6. Some farming groups express scepticism of the science underlying environmental flows. How can those views be changed? How are BRS and ABARE contributing to this debate?

A lot of community skepticism of science underlying environmental flows could be resolved through widespread access to robust and well communicated science. Skepticism of the science can arise from value differences among players, inadequate communication and understanding of the underlying science, or indeed poor science. To date, poor communication of the need for increase environmental flows has caused significant unrest in rural communities. This unrest is often compounded by strong discontent with the process of change proposed by State and Territory Governments.

Both BRS and ABARE have a role in achieving an improved understanding through conducting research to build an information base and through encouraging information sharing. However, the primary responsibility for the development of good scientific understanding of water systems is the responsibility of States and Territories.

The BRS provides scientific advice to underpin evidence-based policy development and decision making by the Department, government and portfolio stakeholders. Scientific advice can integrate social sciences and biophysical sciences for fisheries and marine, forests and vegetation, landscapes, data and information and water issues.

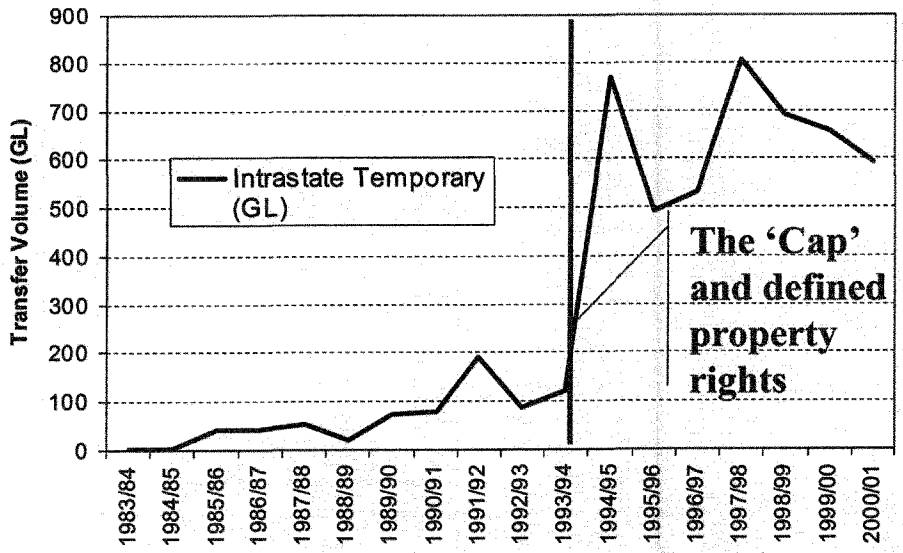
BRS has recently created a new Integrated Water Sciences Program that focuses expertise on surface water, ground water, salinity management, riparian vegetation and freshwater ecology to inform decision-making. BRS is currently contributing to the debate through the evaluation and assessment of the science being used in the Living Murray Process through participation in MDBC technical committees on issues such as groundwater management, salinity management and river health. BRS is undertaking its research within a larger framework that includes understanding, predicting and mitigating the social impacts of changes in water policy as well as linking with economic analyses. BRS is developing an evaluation framework involving key stakeholders that identifies the full range of objectives for water use so decisions on allocation and management can be made in a more open and transparent manner. With such a framework, views can be based on a better understanding of the available information and may be changed accordingly.

ABARE's core business is the provision of high quality information based on the application of economic and statistical analysis and an understanding of the issues facing Australian commodity industries. ABARE's contribution has been to analyse, and where possible, quantify the economic impacts of flow regimes identified (by other organisations) as being necessary to satisfy environmental goals. This analysis normally takes the form of identifying the opportunity cost of withdrawing water from irrigators to source environmental flows. For example, ABARE provided research directly to the Socio-Economic Reference Panel (of the MDBC) estimating the basin scale opportunity costs of the environmental flow reference points. ABARE has also used its modelling capacity to illustrate the importance of an effective water market for obtaining environmental flows at minimum cost. The scenario considered was a 20 per cent reduction in all irrigation allocations in the southern Murray Darling Basin (including high security users) phased in over a 10 year period. When no trade is allowed between regions following the cut in allocations, the opportunity cost of forgone agricultural production was more than $900 million. In contrast, when free trade is allowed between regions the opportunity cost is reduced by around one third or $360 million.

This and other research by ABARE has successfully raised awareness among policy makers and irrigation stakeholders of the importance of effective water markets in minimising the opportunity cost of environmental flows, and accounting for the environmental impacts of trade.

7. How has water trading developed in the last 10 years? What impact does AFFA expect a national system of water entitlements would have on water trading?

Water has been traded informally over a long period of time, often through the purchase of properties that had a water entitlement attached.
Water trades have occurred within catchments and irrigation systems in the Murray-Darling Basin for many years. The implementation of the Murray-Darling Basin



'Cap' in 1995 was a major driver in the growth water trade, as it constrained water availability in the basin. Increasing demand for limited water resources stimulated the creation of markets for water entitlements.

In Victoria the water trading market has become well established and plays an important role in agricultural production. Around 17% of water entitlement is traded every year on a temporary basis, and between 1-4% on a permanent basis. More water is traded in New South Wales than any other state, although trading markets, particularly outside irrigation districts and in groundwater, are not as well developed.

Temporary transfers have been allowed for Queensland for around ten years. Permanent trading was, until very recently, only possible in one area in Queensland, the Mareeba-Dimbulah irrigation area. In South Australia there has been major progress in some areas such as the Barossa Valley where COAG reforms have promoted significant high value development that would not have otherwise occurred due to lack of locally available water. Trade also occurs in the South-West Irrigation Area in Western Australia.

There has been limited development of water trading markets in other States.

In 1998 the Murray-Darling Basin Ministerial Council commenced an interstate trading pilot in the River Murray from below Nyah in Victoria to the Barrages in South Australia. Council provided the framework for this pilot through the adoption by participating governments of a Schedule (Schedule E) to the *Murray-Darling Basin Agreement.* The pilot has enabled the establishment and testing of requirements for a cross-jurisdictional market in a limited range of water entitlement types.

Most water is, however, held in entitlement types which cannot yet be traded interstate. The major systems of the Goulburn and Murrumbidgee valleys and of the

Murray above Nyah, which include the vast majority of irrigation water in Australia, are, at present, excluded from permanent interstate trade.

A national system of water entitlements would help overcome barriers to water trade, particularly interstate trade, where differences in water rights between jurisdictions provides an impediment to the efficient interstate trade of water. The development of water access entitlements in each jurisdiction has developed over many decades and reflects different historical pathways, which in turn reflect the nature of the production the water was being used for, the reliability of the water, and the State/Territory policy frameworks within which these were being developed. However, DAFF does not have any expectations about the amount of trade a better system of entitlements would generate.

COAG has supported the development of nationally compatible water entitlements under the National Water Initiative. An objective of the National Water Initiative is to achieve an efficient water market structure and expand markets to their widest practical scope, enabling increased returns from water use. Where applicable, and particularly in the Murray-Darling Basin, this will involve a review of the various water entitlement products, pricing policies, exchange rates and trading rules with a view to ensuring compatibility across jurisdictions.

Work on water trading is also occurring through the Murray-Darling Basin Ministerial Council, which directed the Murray-Darling Basin Commission (MDBC) at its meeting on 9 May 2003 to pursue the opportunity to establish permanent interstate water trade across the southern Murray-Darling Basin. The MDB Ministerial Council identified four main tasks required to pursue this opportunity including:

- Establishment of trading zones and exchange rates;
- Provision of rules to manage different tenures and review periods;
- Recommendations on ways of removing rules that currently prevent trade out of irrigation districts and on mechanisms to deal with financial and asset management impacts of trade away from current regional supply infrastructure; and
- Ensuring the legal validity of trade.

The work of the MDBC is focused on providing, over the next twelve months, the practical mechanisms to support an expansion of water trade and arrangements for ongoing management of interstate water trade within existing legal and administrative arrangements. It is also focused on addressing some of the obstacles to the establishment of extensive water trading which have been recently identified by the Chief Executive Officers Group on Water (CEOGW) in its report to COAG in April 2003. These obstacles include inconsistent entitlement definitions, unclear trading rules, institutional barriers, lack of market information and a lack of administrative support infrastructure.

8. Could improvements in water use efficiency provide the increased environmental flows necessary to achieve a 'healthy working river'? How?

Allocation of water savings to the environment is one possible option for addressing the need to return water to the environment.

Water recovery for environmental flows through government investment in infrastructure savings is being considered as part of The Living Murray initiative. Irrigation authorities have already made many of the most cost-effective investments in the past to provide additional water for production. However, the amount of water that can be recovered from cost-effective investment opportunities for infrastructure savings may be limited. Consequently the Living Murray process will also consider a range of market mechanisms for the recovery of water for the environment that will minimise impacts on industry.

The Hon Warren Truss, Minister for Agriculture, Fisheries and Forestry and chair of the MDB Ministerial Council, announced a seven-year, $150 million, program of structural and operational modifications along the River Murray to improve the river's health. The program focuses on making the best use of water currently available to the environment, and encourages greater cooperation in using the Basin's natural resources. It will deliver environmental benefits and improved water quality for all users.

The $500 million announced as a part of the National Water Initiative will be used to address overallocation in the Basin. Some water will be provided for the environment through targeted public and private investment in engineering works to improve 'leaky' infrastructure, based on rigorous investment criteria.

Following the outcome of the Snowy Water Inquiry, the Australian Government and the NSW and Victorian governments agreed to a staged process to return up to 21% of average natural flow (ANF) to the Snowy River. The projected level of flows is for 142 GL (15% ANF) in the seventh year after corporatisation and for 212 GL (21% ANF) in the tenth year after corporatisation. The governments also agreed to provide up to 70 GL per annum of water to the River Murray for environmental flows.

The environmental water is to sourced primarily from water efficiency projects on diversions from the River Murray System, the Murrumbidgee System and/or the Goulburn River System. NSW and Victoria will each provide $150 million and the Commonwealth $75 million to fund the savings.

9. AFFA's call to the public for water saving ideas sounds like a worthwhile initiative. When do you expect to be able to release details of the best suggestions, and how will they be implemented?

A total of 550 submissions have been received and the assessment process for the Water Savings Project is currently underway. An independent Assessment Panel is responsible for making recommendations to the Department of Agriculture, Fisheries & Forestry on the best and most suitable ideas for consideration to undergo feasibility studies.

It is expected that the best ideas are identified and a recommended action decided by early October 2003. The formal involvement of all States and Territories as well as other Commonwealth agencies which be through an Advisory Committee which is expected to further refine the appropriate avenues for the best ideas. The potential to implement any idea will need to be determined on a case by case basis and may depend on cooperation from the appropriate State or Territory government.

Possible avenues for progression of suitable options could include Australian and State Government investment in feasibility studies under the National Action Plan for Salinity and Water Quality or the Natural Heritage Trust; direct referrals to relevant States/Territories of suitable ideas and initiatives which may seek to address the lack of connection between water saving products and potential users of those products.

Pending any unexpected delays, following Advisory Committee processes, advice and recommendations will then be presented to Minister Truss, with initial feasibility contracts resulting from the process to be commenced by December 2003.

10. What are the top 3 or 4 research priorities for water for the next 10 years and which agencies could undertake that research?

Access to Data

The Australian Government is contributing to the knowledge base underpinning the sustainable management and use of water resources through improving the accessibility of water related data to resource managers (at regional level and governments).

The National Land & Water Resources Audit published the *Australian Water Resources Assessment 2000* which provides data on the quality and availability of water in both surface and groundwater systems.

An Australian Water Data Infrastructure Project (AWDIP) has been established to build on the *Australian Water Resources Assessment 2000*, a part of the *National Land and Water Resources Audit.* The AWDIP will facilitate national assessments of Australia's water resources through ongoing development of a comprehensive and accessible national water information framework. Its focus is on the development of data infrastructure that will make existing data accessible to users. The data is available from many sources, including State and Territory Governments.

The project is managed by an Executive Steering Committee on Australian Water Resources Information, chaired by the Department of Agriculture Fisheries and Forestry. Other members include the Australian Government Department of Environment and Heritage, a representative from each State and Territory Government and a representative each from the Bureau of Rural Sciences, the National Land and Water Resources Audit, CSIRO, the Australian Bureau of Statistics, the Bureau of Meteorology and the Murray-Darling Basin Commission.

Funding of $300,000 was provided for the project under the Natural Heritage Trust (NHT) in 2002-03 and $500,000 from the national components of the NHT and the National Landcare Program in 2003-04.
The Department of Agriculture Fisheries & Forestry has responsibility for this project.

Groundwater Systems

Better knowledge and understanding of the dynamics of groundwater systems and their impact on related surface water systems and other ecosystems to support management of these systems within sustainable yields.

In many instances there is connectivity between surface and groundwater resources and existing management systems are insufficient to account for the impact. This connectivity has not been accounted for either in the Murray-Darling Basin Cap or in water resource planning. The impact reduction in surface water flows and/or groundwater accessions where connectivity is not taken into account in allocating water from either resource.

A national definition for the sustainable yield of groundwater systems has been developed through the National Groundwater Committee. However, there is not as yet a standard protocol for determining sustainable yield. This means that there are differences in the degree and nature that jurisdictions have accounted for such issues as environmental dependencies and connectivity with surface water resources.

State and Territory Governments are responsible for the management of groundwater systems in their jurisdictions and for undertaking relevant research. The Bureau of Rural Sciences (BRS) and CSIRO have the technical capacity to assist in further work. However, Land & Water Australia, the Cooperative Research Centre (CRC) for Irrigation Futures, the CRC for Catchment Hydrology and the Murray-Darling Basin Commission would also be important participants. There are also private sector consultants who have the relevant expertise.

Integrated Management of the Total Water Cycle

Surface and groundwater systems are part of the total water cycle. As noted above, managing these two resources separately where they do connect often ignores their interaction and can impact on environmental outcomes.

Other factors that can also impact on environmental outcomes are land-use change and a reduction in return flows from irrigation systems.

Large changes to land-use can impact directly on water availability and quality, in particular by reducing the sustainable yield of water resources. Such changes include: proliferation of farm dams in upper catchments; large scale afforestation; urban development; land clearing; and changes in enterprise mix on a regional scale, for example pasture to horticulture.

Vegetation intercepts and utilises rainfall and runoff and releases moisture into the atmosphere through transpiration. Changing the nature of the cover to radically increase or decrease transpiration and/or runoff changes the water balance. This increase or decrease due to large scale change has not been incorporated into water allocation decision or planning decisions in the past. However, in some cases land use change may also provide benefits for water quality, for example where large scale afforestation is implemented in some mid to low rainfall areas to reduce salinity.

Changing the way water is used, particularly through improving water use efficiency, can also impact on the total water balance for a catchment or a region. This can occur, for example, when water previously not fully utilised by irrigators was being returned to the river system. This provided environmental water or dilution flows further downstream. As an irrigator invests in efficiency and increases his/her production (or trades their water so someone else can increase their production) surplus water no longer returns to the river system and the environmental flows are lost. The same dynamics apply where aquifers are being utilised for irrigation and other uses.

These issues highlight the need for water resources to be managed in the context of a total water cycle, with an appreciation for the hydrological linkages between water availability and quality and activities taking place in the region/catchment.

This issue will require further policy work but will need to be backed up further by a better scientific understanding of the total water cycle. A number of organisations are contributing the development of this knowledge base, including the BRS, CSIRO CRC Catchment Hydrology, R&D Corporations and the MDBC.