AN EVALUATION OF THE INTERSTATE WATER TRADE PILOT PROJECT

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Tim Cummins & Associates
Tim.Cummins@bigpond.com

with

Alistair Watson
aswatson@bigpond.net.au

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1 Executive Summary

The trial of permanent interstate trade in water that had been conducted in the Murray-Darling Basin since 1998 was concluded in May 2006. This is the third and final review of the trial for the Murray-Darling Basin Commission. The trial was conducted from Nyah to the Murray Mouth.

Earlier reviews of the trial (Young et al. 2000, Cummins and Watson 2004) concluded that the trial had had beneficial effects on the growth of horticulture and viticulture in the Mallee regions of New South Wales, South Australia and Victoria. These industries were already growing in response to several economic stimuli. Growth has been accelerated by availability of additional water via water trading.

Intrastate trade has been much more important than the amount of water traded in the trial of interstate trade. The interstate trial was especially beneficial to South Australia that has less opportunity to augment water supplies for new developments in horticulture and viticulture by trade from areas using water for irrigated pastures and annual crops.

Summary information on developments in interstate and other types of water trade is presented in Section 3 of this report. The report also elaborates experience in development of systems for coordinating environmental clearances in the three states and the shifts over time in the emphasis given to tagging and exchange rates as a way of regulating trade between states.

Cooperation between the states has been encouraged by the trial at the official level. While the trial is small in relation to the totality of trade, the more elaborate transactions in interstate trade have assisted at the margin the development of a sophisticated and reputable water broking industry with advantages to the entire Murray-Darling Basin.

The question of basing specification of trades on tagging (tying entitlements to originating areas) or exchange rates (between areas) has been a vexed issue in the trial. The trial was intended to begin with tagging but switched to exchange rates in the very early days. After the pilot project finished, tagging emerged as the only agreed form of trade between all three states. This was largely because New South Wales was committed to tagging after introducing Statutory Water Plans. Moreover, exchange rates are difficult to compute between distant areas and may not be stable across wet and dry years. The issue is discussed further in Section 5.1.

Earlier reviews of the trial discussed systems of environmental clearances in the three states in some detail. There were difficulties of inconsistency of approach to environmental clearances between the states early in the trial. That these deficiencies have been rectified counts as one of the major achievements of the trial. The issue is discussed in Section 5.2.

The gradual and generally successful development of interstate trade in the trial encouraged the Murray-Darling Basin Ministerial Council to expand the scope of the project to the southern connected basin in November 2003. This decision was reinforced by the National Water Initiative of June 2004 and formalised in May 2006 with a revised Schedule E to the Murray-Darling Basin Agreement.

2 Introduction

The Murray-Darling Basin Commission (MDBC) Pilot Interstate Water Trade Project (the pilot project) was established in 1998 under Schedule E to the Murray-Darling Basin Agreement. *Schedule E - Interstate Transfer of Water Allocation*[1] enabled irrigators in New South Wales (NSW), South Australia (SA) and Victoria permanently to trade water entitlements across state boundaries.

Schedule E originally provided "for the Scheme to be implemented on a trial basis in that it will initially only apply to specific water diverters and high security water allocations and to a restricted part of the Mallee[2] region".

The pilot project operated in the area upstream of the Murray Barrages in SA and downstream of the off-take pumps for the Nyah irrigation district in Victoria (west of Swan Hill). It ended on 19 May 2006 when a revised Schedule E was adopted. The revised schedule extended interstate water trading to the entire southern connected Murray-Darling Basin.

2.1 Practical Origins of the Pilot Project

Two workshops in Mildura in 1995 considered the prospects for permanent interstate water trade in the Mallee regions of NSW, SA and Victoria, which embrace the 'Riverland' and 'Sunraysia' irrigation areas. The workshop participants[3], community leaders and government agency staff, met in contemplation of the Council of Australian Governments (COAG 1994) agreement to implement the National Competition Policy. In the water industry, those reforms were, among other things, intended to:

- Formalise water entitlement systems, including allocations for the environment;
- Introduce more widespread trading in water entitlements within the social, physical and ecological constraints of catchments; and
- [Ensure] where cross-border trading is possible, that trading arrangements be consistent and facilitate cross-border sales where this is socially, physically and ecologically sustainable;

The first workshop revealed some consensus, and with hindsight a remarkable degree of sophistication, about using market mechanisms to help reallocate water resources in the Riverland and Sunraysia. It also revealed widespread desire to avoid market distortions arising from differences between states in:

- Individual control over property rights to water;
- Specification of individual property rights to water;
- Specification of 'communal property rights[4]' to water;
- Water rates and charges;
- 'Property rights' to water for the environment; and
- Intrastate trading arrangements.

[1] The original schedule is reproduced in Appendix 1.
[2] For the sake of brevity, this report often refers to the area covered by the pilot project as 'the Mallee'.
[3] The workshop participants are listed in Appendix2.
[4] 'Communal property rights' was a term used by the participants in these early workshops to encompass their concerns about the potential for stranded assets in irrigation districts and what this might mean for the remaining members of the irrigation community within those irrigation districts. It also encompassed their concerns about the ownership structures of NSW irrigation companies. As they put it at the time: "***All-else-being-equal***, trade could be expected to favour NSW (particularly at Victoria's expense) because of communal control over water trade in NSW and more liberal trading conditions in Victoria and SA" (Cummins, 1996).

The second workshop considered how market mechanisms might take account of these concerns, and how those mechanisms might be put into practice. The second workshop adopted the assumption that interstate trade was inevitable. The participants reasoned that while there were many uncertainties associated with interstate water trade, most of those also applied to the then already possible intrastate trade. Therefore those uncertainties were not by themselves sufficient reason to stall interstate water trade.

As practical people, the participants focused on making trade simple, efficient and achievable. Their recommendations were that ultimately:

- Interstate water trade should be regulated by consistent and effective environment protection guidelines;
- Interstate water trade should involve predictable and transparent conversion of property rights (to state-of-destination specifications); and
- Interstate water trade should be administratively efficient.

In the expectation that this aim could not be achieved immediately, the participants proposed a pilot scheme to develop momentum and to focus effort on overcoming the barriers to interstate trade. In summary, they believed a pilot project would:

- Avoid uncertainty in property right conversion by initially 'tagging' traded private diversion licences. Tagged water would (initially) remain part of the state-of-origin's share under the Murray-Darling Basin Agreement. Only high security water entitlements should be tagged and traded.
- Minimise uncertainty in calculating transmission losses, environmental threats and river salinity effects by initially allowing free trade only within specific zones.
- Review interim arrangements continuously, with the ultimate aim of full property right conversion.

That initial focus on tagging seems prophetic considering that twelve years later tagged trade has emerged as the only agreed form of trade between all three states. Clearly however the workshop participants saw it as the starting point on a journey towards exchange rate trade which they believed would be more difficult to establish. As it turned out, soon after those initial workshops, the perceived administrative difficulty in keeping track of tagged trades pushed the starting focus on to exchange rate trade.

In retrospect, the long gestation period for the agreement on tagged trade is probably an artefact of the choice of boundaries for the pilot project. Exchange rate trade, involving high security entitlements, is most readily feasible in the Mallee. It was no accident that the pilot project had its roots in the Mallee. Initial community consultation on interstate water trade focused on the Mallee for three main reasons.

1. The Mallee region was seen even in 1995 as a likely net importer of water under each existing (separate) intrastate water market. Consequently, the local community could discuss permanent interstate trade as a potential benefit for the region.
2. The Mallee's irrigation industries, especially those in the Riverland and Sunraysia, were highly integrated. State-based economic parochialism was therefore relatively subdued in the Mallee.
3. Throughout the Mallee, irrigation enterprises were based around permanent horticultural crops with a relatively constant need for water. Accordingly, irrigators in each part of the Mallee had a similar understanding of property rights to water.

Note too that, as explained by Cummins (1996), the community participants were only willing to discuss interstate trade in the context of private diversion licences. They wanted 'communal property rights to water' to be understood and defined before interstate trade was extended to irrigation districts. Similar concerns held strongly by the NSW irrigation companies long delayed the move from a pilot project to a full-blown interstate water market.

In the event, the pilot project was extended downstream from the Mallee. It was also extended to include irrigation districts in Victoria.

2.2 A More Formal Short History of the Pilot Project

In February 1994, as part of the National Competition Policy, the Council of Australian Governments (COAG) approved a package of water market reform initiatives. In the matter of interstate water trading, COAG agreed that the trading arrangements should be consistent and should facilitate cross border trade where socially, physically and economically sustainable. COAG also agreed that the Murray-Darling Basin Commission (MDBC) should be satisfied as to the sustainability of proposed trading transactions within the Murray-Darling Basin.

In 1996, the Murray-Darling Basin Ministerial Council approved the establishment of an initial pilot project to introduce trade in permanent interstate water property rights in the Mallee Regions, incorporating areas in NSW, Victoria and SA. The Ministerial Council asked for a specific proposal before actions were taken to implement the project.

In 1997, the MDBC endorsed an amended set of the proposed rules and procedures for the trial. It also agreed that "environmental clearances" for new irrigation developments be codified by each state and provided as attachments to a proposed *Schedule* to the *Murray-Darling Basin Agreement*. On 28 November 1997, The Ministerial Council approved *Schedule E - Interstate Transfer of Water Allocation* enabling the pilot project to commence on 1 January 1998.

In November 2003, the Murray-Darling Basin Ministerial Council agreed to expand the scope of the project to the southern interconnected Basin.

In June 2004, COAG agreed to a National Water Initiative (NWI) covering a range of areas in which greater compatibility could bring substantial benefits. Among other things, the NWI set out to:

- Expand permanent trade in water.
- Improve the efficiency of administrative arrangements to facilitate water trade in connected systems
- Remove institutional barriers to trade in water, including a phased removal of barriers to permanent trade out of irrigation districts in the southern Murray-Darling Basin

The interstate trading components of these agreements were finally put into place in May 2006 when a revised *Schedule E Transferring Water Entitlements and Allocations* was adopted. It extended interstate water trading to the entire southern connected Murray-Darling Basin.

2.3 Closure and Review of the Pilot Project

The original Schedule E required that the 'economic and environmental aspects of the pilot scheme' be reviewed and reported to Commission every two years. There were two previous reviews. The first review covered the period from inception in January 1998 to December 2000. The second review covered the period January 2001 to December 2003.

A third review, scheduled for the end of 2005 was postponed, largely due to the impending revision of Schedule E and the proposed expansion of the trading zone to the larger southern connected Murray system. In its place, this report sets out to document the key findings, activities and outcomes of the pilot project. It summarises findings of the two previous reviews, outlines the key statistics and provides an appropriate level of closure to the pilot project. The report provides:

1. Key statistics (volumes and numbers of trades in and out of states) on interstate water trade information for each financial year for the period commencing July 1998 until 19 May 2006;
2. An evaluation of the effectiveness of the MDBC pilot project on Interstate Water Trade in facilitating and promoting permanent interstate transfer of water and the key factors which influenced its effectiveness;
3. A summary of findings from the two previous reviews (2000 and 2003) undertaken on the MDBC pilot project;
4. A reflection on the findings of the two previous reviews in relation to the trends in the statistics for trades since 1 January 2004 to 19 May 2006; and
5. Evaluation/comment on the success of the MDBC pilot project in relation to its original intentions / objectives.

3 Key Statistics

During the life of the pilot project there was a net increase in the total volume of water entitlements in the Mallee region. Transfers within the Mallee region need to be understood in this broader context. Accordingly, this section looks first at the patterns of trade within the Mallee region before looking more broadly at transfers into the Mallee from other parts of the southern-connected Murray-Darling Basin.

3.1 The Facts about Interstate Trade

From the commencement of the trial until 19 May 2006, 312 interstate transfers of entitlements totalling 31,865 megalitres were processed. The following dot points and accompanying table summarise a complex story:

-
- net permanent interstate trade out of NSW was 2,565 megalitres;
- net permanent interstate trade out of Victoria was 19,416 megalitres;
- net permanent interstate trade into South Australia was 21,981 megalitres;
- interstate trades have occurred in every direction;
- the largest individual interstate trade was 2,362 megalitres;
- there were 7 interstate trades of 1,000 megalitres or more;
- there were 8 interstate trades between 500 and 999 megalitres;
- there were 62 interstate trades between 100 and 499 megalitres; and
- most interstate trades (262) involved previously used (non-sleeper) water.

Table 1 Volume of Trades by Source and Destination (in Megalitres)

Origin	Destination			
	NSW Pilot	SA Pilot	Vic Pilot	Total
NSW		7511	345	7856
SA	100		2074	2174
Vic	5191	16644		21835
Total	5291	24155	2419	31865

3.2 Putting the Pilot Project in Perspective

At the end of the pilot project, net transfers of water entitlement into that part of Victoria covered by the pilot project stood at around 119,000 megalitres (including the net transfers out to SA and NSW). Transfers out of the Goulburn-Murray irrigation district supported the increase in this part of Victoria.

Rapid expansions in the total area irrigated, first in the wine industry and then in the almond industry, led to a net transfer in the order of of 138,000[5] megalitres of water entitlement into the Mallee region during the life of the pilot project. Interstate trade allowed both Victoria and SA to benefit from this trend. Since most of the easy sites in Victoria have now been developed, that part of NSW covered by the pilot project is likely to experience a net increase if the trend to increased irrigation in the Mallee is continued.

4 The Two Previous Reviews of the Pilot Project –in Summary

In the 2000 Review, Young *et al* lauded administrators in each state for their spirit of adaptation and their willingness to solve problems as they emerged. But that review also put the pilot project in perspective by pointing out that permanent interstate trade to that time accounted for less than half of one per cent of the total water applied in the area. “Too much attention could easily be given to perfecting inter-state trading arrangements rather than the intra-state arrangements. The inter-dependent nature and scale of the intra-state market is such that market signals are being sent from Shepparton to Lake Albert. The invisible hand of the market is encouraging water to trade into the trial area, others trade only within it”.

In the 2003 review, Cummins and Watson concluded that there were no obvious overwhelming impediments to permanent interstate trade in the Mallee. Rather the matters for further consideration were the ‘two per cent rule’ limiting transfers out of Victorian irrigation districts, the policies preventing net permanent trade out of the privately owned irrigation companies in New South Wales and other restrictions on trade within and between states.

Young *et al* drew particular attention to shortcomings in administrative arrangements in all states and to the complexities involved in trying to make the different systems compatible. “A surprising recommendation from brokers is that the official trial area should not be expanded until administrative arrangements are improved significantly. Illustrative of the complexity of the current system, trade documents can easily spend a total of 32 days in the post moving from one location to another. … There are significant opportunities to improve licence registration arrangements and record keeping procedures. Face to face meetings among the officers who actually manage the process could assist to this end. Many of the problems result, however, from complexities in state record keeping systems. The problems are state and Basin wide, not inter-state specific. The South Australian legislation allows people to hold water allocations without owning land that can be irrigated. An expected similar arrangement is soon to be introduced in New South Wales. The mechanism offers a way to separate volumetric trading from environmental considerations and simplifies administrative procedures.”

Cummins and Watson reported significant improvements; they also flagged the possibility that administrators might have reached the point of diminishing marginal returns in striving for further improvements. “Our investigations indicate that healthy competition between the

[5] 119,000 ML increase in Victoria plus 21,981 ML increase in SA minus 2,565ML decrease in NSW equals 138,416 ML total.

states is encouraging each state to explore ways of streamlining approval processes. The trial has helped to remove some unnecessary differences in the ways that the states do business. Where the trial has not removed differences, at least they have become more transparent. The market can cope with transparent differences between the states."

From an economic perspective, both reviews concluded that interstate trade was conforming with economic theory. The overarching objective of allowing water to be traded is to maximise the value of scarce water resources by enabling it to be transferred to its most productive environmental or consumptive use via trading. Economic theory suggests water trading should reallocate water to higher value uses. A market enables water to be bought and sold, and hence reallocated between competing uses.

Nonetheless Young *et al* raised serious concerns that the economic externalities, specifically river salinity impacts, were not being accounted for adequately. "From a salinity perspective and in the long-run, inter-state trading can be expected to have a negative impact on river salinity. Most water is being transferred to South Australian land that has not been previously irrigated with the consequence that river salinity can be expected to increase. South Australia however is aware of this and is in the process of putting in place arrangements to ensure that salinity impacts remain within acceptable levels. The [Basin Salinity Management Strategy] is expected to form the backbone of this initiative. As part of this process it will be critical that salinity prevention obligations, and their equivalent in other states are implemented and maintained."

Cummins and Watson reported major improvements. "The expansion of trade allowed by the trial has had several beneficial results, apart from the small direct gains from trade in the three previously separated markets. Current approaches are now more firmly concentrated on the appropriate role of government; that is, guarding against externalities and keeping transaction costs low. The questions of overriding public importance concerning irrigation are the total amount of irrigation (hence the Cap) and any adverse off-site effects, not what is produced, by whom or where. Existing environmental clearance processes have minimised or avoided adverse side effects on environmental flows, native vegetation and native fauna. While Young et al. expressed some concerns with South Australia's approach to river salinity externalities, mostly the approach to off-site effects of irrigation has shown continuous improvement since then. … Environment protection processes are now similar in the three states. No state is subsidising economic development by fudging on environmental costs."

Young *et al* were keen to emphasis the role of market mechanisms in managing externalities. "If adequate arrangements are put in place, then the long-run net effect of recent trades could be neutral. For this to occur, end of valley targets will have to be set, and appropriate incentives and administrative arrangements put in place. Experience with trades from High Impact to Low Impact areas in the Nyah to Victorian Border region suggests that market mechanisms can be used to reduce salinity. … With regard to environmental degradation at each trading destination, our conclusion depends upon the degree to which plans are enforced and the adequacy of the standards they set. All states express problems in monitoring compliance with these plans, so one can not be confident that the final out come will be consistent with the goal set – 'a procedural framework and a set of standards .... that ... does not result in increased levels of salinity, reductions in environmental flows or degradation of the natural environment.'"

Cummins and Watson cautioned that while the risk management procedures were working well in the pilot region, different approaches would need to be thought through for expanded trade. "The trial has allowed the important public policy issues – externalities and transactions costs – to be explored enough for us to be confident that full-blown interstate trade can now be permitted. We have gone well past the point of diminishing marginal returns with the pilot project and it is time to let trade develop according to market conditions. Nevertheless, a

different approach to environmental clearances will need to be developed for the expansion of permanent interstate trade into the Riverine Plains. Environmental issues are different outside the Mallee. In the main, water has been moving on to new areas in the trial of permanent interstate trade in the Mallee, as indeed it has for intrastate trade in the Mallee … on the Riverine Plains trade is more likely to be used to expand the area being irrigated on existing irrigation farms."

The 2000 review paid particular attention to the river salinity implications of interstate trade. As Young *et al* put it: "Protecting water quality is a long-term goal and the fundamentals need to be put in place today while the volume of interstate trade is low. There is an opportunity to put in place a system that defines obligations over the long term to the environment. The salinity strategy is one initiative that is defining the long-term policy goals. Another part of a long-term strategy will be a system of salinity debits and credits and a register of salinity prevention obligations and attach these conditions to the water. Where salinity impacts are not going to be felt until far into the future, long-term provisions need to be made to address or mitigate these impacts." Changes in irrigation management and location are now 'accountable actions' under the Basin Salinity Management Strategy.

Cummins and Watson concluded that: "By most criteria the trial should be judged a success. But that success should be kept in perspective. When the trial was first reviewed for the Murray-Darling Basin Commission in 2000, it was observed that permanent interstate trade was very small relative to both permanent intrastate trade and temporary interstate and intrastate trade (Young et al. 2000). Nothing has happened to change that overriding conclusion. But discussions of trade issues are subject to biases, coming from different directions. There is knee jerk opposition to trade from a few who do not like the adjustment pressures arising from market processes. Occasionally, there is self-interested opposition to trade from those who want to restrict trade in order to lower prices. This is because the growth objectives of buyers rather than sellers are favoured by low prices for water, at least in the short-term."

Young *et al* had concluded on a prescient note: "Exchange rates are poorly understood by the buyers and sellers in the market. If market forces change in the future such that the incentives exist to move water from SA to NSW, the exchange rate will act as a tax on trade. Is an exchange rate the right mechanism? If it is, it will be important to communicate this and provide a justification for the numbers to be used."

5 A Reflection on the Findings of the Two Previous Reviews

As discussed above, the pilot project steadfastly concentrated on the important public policy issues – externalities and transactions costs. It is worth reflecting on how the policies have evolved in response to the pressures highlighted in the earlier reviews. This section focuses on two potential sources of external costs 'exchange rates' and 'environmental clearances' before providing a brief discussion on the efforts to minimise transaction costs.

5.1 Advantages and Disadvantages of 'Exchange Rate' and 'Tagged' Trade

The two previous reviews referred to frequent lack of understanding by participants of the rationale for the exchange rate that was incorporated in the initial version of the pilot project. Application of an exchange rate followed from recognition of potential third party effects of permanent water trading, especially effects on the volumetric reliability of other water users when water is traded over large distances.

In particular, the pilot project was designed to account for the contribution of the Darling to securing South Australia's water entitlements. Without some adjustment, water traded out of South Australia would effectively increase security for the remaining SA irrigators at the expense of irrigators above the Darling in NSW and Victoria. Water traded from SA to above the confluence with the Darling River was subject to an exchange rate of 0.9 so that ten megalitres had to be traded out of SA to support nine megalitres of irrigation in NSW or Victoria.[6] The exchange rate chosen was based on long-term average flows from the Darling at Wentworth.

Pointedly, during the life of the pilot project, actual flows into the Murray from the Darling were much less than ten per cent because of protracted drought. In addition, there has been extensive irrigation development on the Upper Darling in the last twenty years following widespread application of techniques to capture overland flows in on-farm storages. This has enabled the growth of a profitable irrigated cotton industry. Expected flows from the Darling are thus now and will be in the future less than long-term averages, irrespective of other issues like climate change. The decline in water available from the Darling demonstrated an intrinsic problem with exchange rates calculated from average experience. Unless experience turns out to be 'average', there will be winners and losers from individual transactions.

Four biophysical variables (rainfall, run-off, groundwater inflows and evaporation) plus two management variables (seasonal allocation procedures and on-farm uptake rates), in at least two jurisdictions, must all, over the long run, turn out to be 'average' in order for average exchange rates to work. Even if all these variables do, over the long run, turn out to repeat the averages of the past, there remain unresolved questions about how to deal with the tails of the normal curve. It is at the dry margins that small differences in seasonal allocations can profoundly influence the viability of individual farm businesses.

The result of the experiment with exchange rates in the pilot project is another example of an important theme of this review. That is, the opportunity provided by the pilot project to learn from limited interstate trade in high security entitlements in a restricted area with similar production systems. It was hoped that lessons from the pilot project could be applied to expanded interstate trade between regions where water entitlements have vastly different supply reliability and yield characteristics. A negative lesson from something that did not work in the pilot project adds as much to knowledge as a positive lesson from something that did work, such as the evolution over time of satisfactory administrative procedures to transfer entitlements between the registers of the three different states.

It is arguable though whether exchange rates failed in the limited context of the pilot project. The retreat from exchange rates has other explanations.

The introduction of regional water plans in NSW catalysed a shift away from exchange rates towards tagged trade. These statutory plans defined the rights and obligations of irrigators and provided for water sharing between irrigators and the environment. Importantly, they also provide for systematic review of the water sharing arrangements every ten years. This raised questions about the legality of, in effect, quarantining some of those shares from review by converting them, through exchange-rate trade, into other entitlements. Moreover, it made explicit the potential third-party costs borne by those whose shares were not quarantined; if the environmental share were to be increased, they would have their shares cut by more than they would have been in the absence of exchange-rate trade.

As defined by the Productivity Commission (2006, Box 4.5, p. 105):

[6] Out of concern for the cap on diversions, trade in the other direction did not involve an exchange greater than one.

> Tagging allows the traded entitlement to maintain its original characteristics from its source location. Through tagging, entitlements are clearly defined assets that can be traded directly by water traders. Prices determined in the water market will reflect the value of entitlements sourced from different locations.

We argue that there will always be some uncertainty surrounding the characteristics of water entitlements. The main benefit of tagging is that all holders of a given class of entitlements from a given valley will continue to be exposed to the same approach to managing that uncertainty. By contrast, exchange-rate trade offers the potential to continuously alter the total volumes (within the cap) that are exposed to the nine main management regimes[7]. This would have the effect of increasing uncertainty rather than gradually diminishing it.

Irrigators with large water holdings can be expected to hold a portfolio of different tagged entitlements in the future; this will allow them to pursue tailored approaches to risk management. By contrast, tagged trading is unlikely to be attractive to irrigators with small water holdings since for them there is no obvious benefit with which to offset the up to nine-fold increase (albeit in individually relatively minor) transaction costs associated with holding more than one type of entitlement. Nonetheless as pointed out by Young *et al* "The inter-dependent nature and scale of the intra-state market is such that market signals are being sent from Shepparton to Lake Albert". The invisible hand of the market will therefore mean that the prices paid by these smaller players for the entitlements that best suit their needs is influenced by the priced paid by larger players for the elements of the portfolio of tagged entitlements that best suits their needs.

A water broker in SA claimed that the switch to tagging was hindering interstate trade in permanent water rights. An even higher proportion of trade was now conducted as temporary trade in water allocations because of the ambiguity in buyers' minds of their rights under tagged trade. A NSW official countered this argument by pointing out that with the very low allocations in NSW 2006/2007 there had been very little trade in entitlements within NSW during the same period. His point was that drought was having a bigger effect on the trade in NSW entitlements than was tagging.

While part justification for the pilot project was to demonstrate that permanent interstate trade was feasible, we stick with the observations made in our earlier review about the equivalence of permanent and temporary transactions in obtaining gains from trade by reallocating water between regions to achieve benefits for the environment, in production and in risk management. The economic effects of restrictions on permanent trade may be more apparent than real.

In principle, there is no reason why tagging and exchange rate trade could not co-exist provided buyers, sellers and third parties were happy about exchange rates.

Exchange rates have been developed by the MDBC for application between Victorian and South Australian entitlements. Limited exchange rate trade is also being allowed within Victoria from the Murray to the Goulburn systems. Over the long term this is expected to reverse the exchange rate trade out of the Goulburn into the Murray over the past five years.

The transition to tagged trade has involved considerable administrative difficulty. Several protocols had to be developed or updated under Schedule E before tagged trade could commence. Similarly, legislative changes were required in the states before the notion of tagged trade could be given substance. Moreover significant registry and accounting changes were needed at the MDBC level before tagging could be brought into being.

[7] Two entitlement 'products' each on the Goulburn, Murrumbidgee, Victorian Murray, NSW Murray and one in SA.

5.2 Environmental Clearances

Each state has approval processes in place that are designed to minimise the environmental impacts of new irrigation developments. These were described as 'environmental clearances' under the original Schedule E.

The environmental clearances used in the pilot project had their genesis in pioneering work carried out by the Irrigated Crop Management Service[8] at Loxton in SA. These concepts were first given regulatory substance in the Victorian salinity management plans completed in the early 1990s. They were further strengthened by the experiences growing out of NSW land and water management plans.

They revolve around mapping and understanding the soil moisture holding characteristics of the soils that are to be irrigated. Land capability, in terms of the 'readily available water' that can be held in the 'effective rootzones' of irrigated crops, is then matched with crop layout and irrigation layout. This matching significantly reduces the potential for water to be applied in excess of crop irrigation requirements. This in turn reduces the potential to mobilise the highly saline groundwater that is a common feature of the pilot project area.

As well as matching irrigation to land capability, the environmental clearances also place controls on the siting, construction, operation and maintenance of pumps, pumphouses pipelines and access tracks along waterways. Where the use of water for irrigation poses ongoing risks (typically through watertable rise or drainage disposal) to native vegetation or native animal habitats, the clearances also strive to give guidance on how those risks should be monitored and reduced.

A 1999 review of these clearances (MDBC, 1999) found that: "While there is room for improvement, the existing clearances have made a significant contribution to environmental protection. The most successful clearances, in terms of compliance, have been those designed around the planning phase of new irrigation developments. Compliance during the management phase has been lower … [this] demonstrates the need for formal monitoring and corrective action procedures to accompany existing environmental clearances. None of the states has adequate procedures in this regard."

In a more recent review of environmental clearances, O'Neill (2004) found that, "despite differences in legislative regimes, states have in place similar legislative requirements and assessment processes for assessing and managing potential environmental impacts from interstate trade. These processes have been well developed over the past decade as a result of significant advances in land capability and hydrogeological assessment, in irrigation technology, in understanding of environmental impact and in increasing demand for scarce water resources."

Since then each of the states has set up a licensing regime designed to strengthen the controls over the ongoing 'management phase' of new irrigation developments. For example, in SA irrigators are asked to demonstrate the 'efficiency' of their irrigation in terms of how much of the water they apply is used by their crops.

For new site use licences, the states are now starting to make the continued use of water for irrigation conditional on meeting site-specific monitoring and correctional requirements specified in development plans. Those involved in establishing these regimes affirm that this approach has grown directly out of the insights gleaned from the pilot project's reviews of environmental clearances.

[8] Now part of the South Australian Research and Development Institute.

It is worth noting too that these new licensing regimes provide scope to manage the cumulative effects of water trade; a deficiency in the previous regime that was noted in both of the earlier reviews of environmental clearances. Moreover, the concepts incorporated in the pilot project's clearances have been teased out into generic statements that, with the benefit of local knowledge, can be applied in regionally appropriate ways in the riverine plains as well as the Mallee. This challenge was highlighted by Cummins and Watson.

The institutional mechanisms developed as part of the pilot have therefore provided the default settings for the expansion in interstate trade. The pilot project's clearances have catalysed the codification of 'best practice' in other parts of the Basin into relevant environmental clearances.

5.3 Transaction Costs

The pilot project drove down transaction costs. The two earlier reviews document profound changes in the timeliness of transactions between one review and the next. Face to face meetings between administrators in each state, greater understanding of the other states' processes and market forces all combined to drive transaction costs down.

Diminishing marginal returns have set in, but the residual transaction costs are at least transparent. Recent efforts have concentrated on improving the efficacy and efficiency of intrastate processes. For example, each state will soon have secure electronic water registers. And each state has separated land transactions (such as environmental clearances) from water transactions. Importantly, there are now streamlined processes governing trade in water allocations (temporary trade) relative to entitlement (permanent) trade.

6 An Evaluation of the Pilot Project's Effectiveness

How effective was the pilot project? In this section, we pose the counterfactual question: Would there have been any significant difference in the current policy settings if there had been no pilot project? The remarks below are based on comments made by interviewees from all jurisdictions involved.

The short answer to the counterfactual question is Yes! The pilot contributed in several ways to the development of trade in the target area. Although permanent interstate trade was small in relation to permanent intrastate trade and intrastate and interstate temporary trade, the incremental increase in trade allowed relocation of additional water to take advantage of business opportunities for horticulture arising in a relatively homogeneous section of the Murray River for high security water. We note however that the amount of permanent trade is effectively understated in official measures. There is additional quasi-permanent trade through long-term lease arrangements between separate businesses and regular temporary trade within the same businesses conducted at different locations. Within-firm trade is counted as temporary trade whether intrastate or interstate.

The pilot encouraged streamlining of administrative procedures that benefited all water trade. Notably, the pilot aided the development of a network of water brokers across the entire southern connected Basin. The pilot allowed capacity building and sorting out the more efficient brokers from those first entering the broking business. The successful brokers now have specialised knowledge of the rules governing trade and the confidence of buyers and sellers. Information about water trading and prices has spread more rapidly with the advent of sophisticated web-based systems developed by water brokers.

Each participating state gained more knowledge of practices and procedures in other states. This has encouraged relaxation of constraints on trade in individual states. An example is the

more positive attitude now taken in Victoria towards carryover. There have also been overall improvements in systems for environmental clearances. Our belief is that harmonisation of approaches has been towards the upper end of approaches taken in individual states. The pilot project has also strengthened relationships between officials with beneficial consequences for other aspects of water policy.

Some interviewees bemoaned the length of time taken to get the trial underway and to bring the pilot to a conclusion. Surely, this reflects the innate opposition to trade of significant groups within individual states. Caution within jurisdictions is understandable. It is better for such reticence to be overcome gradually through a trial with limited objectives in a limited area than not at all. In particular, the pilot occurred during an extremely dry period when residual fears about trade are exacerbated.

A most significant development coinciding with the pilot was the substitution of ‘tagged’ trade for ‘exchange rate’ trade. In part, tardiness in moving forward from the pilot project required experience with exchange rates allowed by the pilot.

7 An Evaluation of the Pilot Project in Relation to its Original Objectives

Appendix 1 sets out the original Schedule E to the Murray-Darling Basin Agreement as it applied to the pilot project. The schedule includes *inter alia* the original objectives of the pilot. They were:

1. To facilitate and promote interstate water trade;
2. To restrict the trial to the Mallee region;
3. To improve the efficiency and effectiveness of consumptive water without increasing or accelerating environmental degradation;
4. To establish a procedural framework and set of standards so that the Scheme is accountable and does not result in increased levels of salinity, reductions in environmental flows or degradation of the natural environment;
5. To suspend interstate trade if it caused an increase in, or acceleration of, environmental degradation;
6. To give effect to water trade in accordance with the cap on diversions; and
7. To enable the Commission to adjust the quantity of water to be delivered to the states as a result of the Scheme.

The pilot project's effectiveness in fulfilling those objectives is evaluated in the following table:

Objective	Evaluation
1. To facilitate and promote interstate water trade;	This objective has been satisfied and is a promising achievement in the evolution of water policy. Economic development of horticulture, especially the wine and almond industries, has proceeded apace in the Mallee region during the time of the trial and the pilot has accelerated this growth. In reaching this conclusion, we emphasise that other economic forces were at work including favourable prices for wine grapes for most of the period, technical changes that favoured large-scale developments that required water that could not have been entirely sourced from the relatively declining small farms within the former irrigation districts. This applies especially to South Australia, which has been a net importer of water. Conceivably, sufficient water for large-scale developments in New South Wales and Victoria would have been available via intrastate trade.

Objective	Evaluation
2. To restrict the trial to the Mallee region;	This objective has not been satisfied in a strict sense because demonstrably some of the water that was eventually traded into South Australia was initially sourced from outside the target area. In many ways, however, the objective was more a necessary compromise or even a device to get the trial underway rather than an achievable objective of the pilot. Young et al noted in their initial review that price differentials between the states were such that 'creative means' were being found to get around strictures against 'bouncing', the pejorative term used to describe the process of first making an intrastate trade into the region and then trading it across the border. Our earlier review set out at page 12 our reasons (with an example) of why bouncing could not be controlled and, more to the point, why concerns with bouncing were unwarranted and a distraction from more important policy issues like reducing the transactions costs of trade and protecting the environment.
3. To improve the efficiency and effectiveness of consumptive water without increasing or accelerating environmental degradation;	Trade in water increases economic efficiency because water is able to move to higher value uses. The environmental consequences of water use depend upon the effectiveness of environmental controls at the destination site of trade. Prima facie, it is easier to apply environmental controls for new water use in a region than in the regions where it was first allocated. This objective should be regarded as satisfied.
4. To establish a procedural framework and set of standards so that the Scheme is accountable and does not result in increased levels of salinity, reductions in environmental flows or degradation of the natural environment;	Young et al. referred to the increase in salinity that occurred as more water was applied to land in South Australia. This adverse effect of interstate trade has been offset to a large extent as South Australia moved to improved standards of environmental clearances. This favourable development could be attributed in part to the greater scrutiny of each state's environmental procedures that occurred as part of the pilot project. Because net water movement was downstream to South Australia environmental flows were in fact marginally increased.
5. To suspend interstate trade if it caused an increase in, or acceleration of, environmental degradation;	No suspension was required because additional environmental degradation did not occur as a result of the project. Cooperation between the parties was adequate to deal with any issues that arose.
6. To give effect to water trade in accordance with the cap on diversions;	Cap adjustments were made in accordance with the requirements of exchange rate trade, Moreover, the amounts of water involved in the pilot were insufficient to place additional stress on the cap.

Objective	Evaluation
7. To enable the Commission to adjust the quantity of water to be delivered to the states as a result of the Scheme.	The objective has been satisfied. There have been no problems making any required adjustments to each state's entitlements.

8 References

Cummins, T., (1996), “Enabling Permanent Interstate Water Trade in the Mallee”, a report to the MDBC.

Cummins, T., and Watson, A., (2005), “An Evaluation of the Interstate Water Trade Pilot Program”, a report by Tim Cummins & Associates to the MDBC.

MDBC, (1999), “Review of Environmental Clearances for New Irrigation Developments in the Mallee Region”.

O’Neill, D., (2004) “Review of Environmental Clearances for Permanent Interstate Water Trade”, Report to the MDBC.

Productivity Commission (2006), *Rural Water Use and the Environment: the Role of Market Mechanisms*, Research Report, Melbourne.

Young, M., McDonald, D. H., Stringer, R., and Bjornlund, H., (2000), “Interstate Water Trading: A Two year Review”, Report by CSIRO to MDBC.

APPENDIX 1: Schedule E as it Originally Applied to the Pilot Project

SCHEDULE TO MURRAY-DARLING BASIN AGREEMENT

Pursuant to sub-clause 50 (6) of the Murray-Darling Basin Agreement, the Ministerial Council:

(a) has resolved to include measures authorised pursuant to sub-clause 50 (1) of that Agreement in a Schedule to that Agreement; and

(b) has approved the following Schedule.

Pursuant to sub-clause 50 (7) of the Murray-Darling Basin Agreement:

(a) the following Schedule as approved by the Ministerial Council is, from the date of that approval, part of that Agreement; and

(b) that Agreement is deemed to have been amended accordingly.

SCHEDULE E - INTERSTATE TRANSFER OF WATER ALLOCATIONS

PART 1 - PRELIMINARY

Objects of Schedule

1. The objects of this Schedule are as follows -

(a) to facilitate and promote the interstate transfer of water allocations co-ordinated by the Commission,

(b) to provide for the Scheme to be implemented on a trial basis in that it will initially only apply to specific water diverters and high security water allocations and to a restricted part of the Mallee region;

(c) to improve the efficiency and effectiveness of consumptive water use in ways which facilitate environmental sustainability but which do not increase or accelerate environmental degradation;

(d) to establish a procedural framework and set of standards so that the Scheme is accountable and does not result in increased levels of salinity, reductions in environmental flows or degradation of the natural environment;

(e) to provide for the suspension of the operation of this Schedule if there is an increase in, or acceleration of, environmental degradation from the use or management of water that has been diverted interstate in accordance with the Scheme;

(f) to give effect to water trading arrangements in accordance with the terms of the Ministerial Council's decision regarding the long-term level for off-stream diversions in the Murray-Darling Basin;

(g) to enable the Commission to adjust the quantity of water to be delivered to the states as a result of the Scheme.

Definitions

2. (1) In this Schedule -

"exchange rates" means the exchanges rates determined by the Commission in accordance with clause 7 of this Schedule;

"Scheme" means the scheme for the interstate transfer of water allocations established under this Schedule;

"state of destination", in relation to a water allocation, means the state to which the water allocation is transferred;

"state of origin", in relation to a water allocation, means the state from which the water allocation is transferred;

"transfer register" means the register required to be kept by the Commission under clause 17 of this Schedule;

"water allocation" means a privately held statutory entitlement to divert water on a river system in the Murray-Darling Basin.

(2) A reference in this Schedule to a "**water cap**" is a reference to the total volume of water permitted to be diverted within the Murray-Darling Basin in line with the Ministerial Council's decision to limit diversions to 1993-94 levels of development.

Application of Schedule

3. (1) This Schedule applies to water allocations -

(a) that are supplied from the River Murray between Nyah and the barrages; or

(b) that are River Murray licences supplied from the Lock 10 weir pool.

(2) This Schedule applies to the following types of water allocations -

(a) private statutory entitlements to divert water for use by the holder of the statutory entitlement concerned;

(b) high security water allocations, being water allocations described -

(i) in New South Wales as private high security licences; or

(ii) in South Australia as water licences granted under the Water Resources Act 1997; or

(iii) in Victoria as private diversion licences.

(3) This Schedule applies to and in respect of that part of a water allocation that is proposed to be transferred permanently, that is, a transaction where the rights of the seller in relation to the part of the water allocation to be transferred are cancelled when the transaction is concluded. The part of a water allocation that is proposed to be transferred may include the whole of the water allocation if the seller is proposing to transfer the whole of the water allocation.

(4) This Schedule does not apply to temporary transfers of water allocations.

(5) Any water allocation that comprises a statutory entitlement to a bulk supply of water for the purpose of on-supply through reticulated systems to users other than the holder of the statutory entitlement (for example, to irrigation districts) may not be transferred under this Schedule.

Suspension of Schedule

4. (1) A state Contracting Government may from time to time, after consultation with the Ministerial Council, suspend or limit the operation of this Schedule in that state on the grounds that the state Contracting Government considers that -

(a) there has been an increase or acceleration of environmental degradation resulting from the use or management of water diverted pursuant to the transferred water allocations; or

(b) inadequate progress has been made by any one of the states involved in the Scheme in achieving full cost recovery water pricing.

(2) The Ministerial Council may, from time to time, resolve to suspend or limit the operation of this Schedule -

(a) if a Contracting Government fails to provide a report to the Commission in accordance with clause 18 of this Schedule; or

(c) for such reasons, or on such other grounds, as the Ministerial Council thinks fit.

(3) Any resolution under this sub-clause (2) operates to suspend or limit the operation of this Schedule according to the terms of the resolution.

PART II - GENERAL OPERATIONAL PROVISIONS

Adjustment of delivery of state entitlements under Part X of the Agreement

5. (1) The delivery of water pursuant to each state's entitlement under Part X of the Agreement, and the water accounting provisions under that Part, may be adjusted by the Commission in order to take into account, and to give effect to, the Scheme.

(2) Water deliveries to South Australia are to be increased by a volume equal to the adjusted net balance of water allocation transfers into that state as recorded in the transfer register at the end of each financial year.

(3) The supply of water by New South Wales and Victoria to South Australia under clause 93 of the Agreement is to be increased in each case by a volume equal to the adjusted net balance of water allocation transfers into South Australia from the state concerned as recorded in the transfer register at the end of each financial year.

(4) The delivery of water in the Hume Reservoir to New South Wales is to be increased by the adjusted net balance of water allocation transfers from Victoria to New South Wales as recorded in the transfer register at the end of each financial year, and the delivery of water in the Hume Reservoir to Victoria is to be decreased by that same amount. In accordance with sub-clause (8), a transfer from New South Wales to Victoria would equal a negative net balance of water allocation transfers from New South Wales to Victoria.

(5) During any special period of accounting declared by the Commission (referred to as ***a period of special accounting***), the Special Accounts of state diversions under paragraph 124 (a) of the Agreement are to be decreased by a volume equal to the adjusted net balance of water allocation transfers into the state concerned as recorded in the transfer register.

(6) The Special Account of water supplied to meet the entitlement of South Australia under paragraph 124 (c) of the Agreement is to be decreased by a volume equal to the adjusted net balance of water allocation transfers into South Australia from the state concerned as recorded in the transfer register.

(7) Adjustments under sub-clauses (2) - (6) are to be made in equal amounts in the months of September to April inclusive. If South Australia's entitlement is restricted at any time in accordance with clause 127 of the Agreement, those restrictions (that is, the same percentage reductions) are to apply in relation to the adjustments.

(8) For the purposes of this clause, the ***adjusted net balance*** is the net balance of water allocation transfers following adjustment by the application of the appropriate exchange rates. Any such adjusted net balance may be a positive amount or a negative amount.

Adjustment of water cap

6. (1) The water cap in respect of each Contracting Government is to be adjusted by the Commission:

(a) to maintain the integrity of the overall water cap for the Murray-Darling Basin; and

(b) to reflect the water allocations that have been transferred interstate under the Scheme.

(2) The water cap in respect of the state of origin is to be lowered, and the water cap in respect of the state of destination is to be correspondingly raised, to ensure that the total level of off-stream diversions remains within the total of the respective water caps of the states.

(3) For the purposes of adjusting the water cap in respect of a particular state, a water allocation that is transferred interstate under the Scheme -

(a) is taken to have been fully used (or by such lesser proportion as may be determined by the Commission) in the state of origin: and

(b) is taken to have been transferred for full use (or by such lesser proportion as may be determined by the Commission) in the state of destination.

Exchange rates

7. (1) The Commission is to determine exchange rates for the purposes of the Scheme.

(2) The exchange rates are set out in the document called "Exchange Rates for the Inter-state Transfer of Water Entitlements in the Mallee Region" issued by the Commission.

(3) The object of exchange rates is to limit the impact that any particular transfer in accordance with the Scheme might have on other water users.

(4) The exchange rates are to take into account -

(a) losses through transmission in the river channel; and

(b) losses through changes in the level of security for the supply of water,

resulting from the operation of the Scheme.

(5) The Commission may vary the exchange rates from time to time.

(6) Water allocations that are transferred interstate under the Scheme:

(a) are subject to any adjustment by the Commission at the time of the transfer so as to give effect to any losses identified under the exchange rates; and

(b) are not to be increased so as to give effect to any gains identified under the exchange rates.

(7) Any such gains are to be set aside by the Commission for environmental purposes. The Commission is to establish an account in respect of these gains.

(8) A state of origin may also determine exchange rates for the purposes of adjusting the volume of water in respect of a statutory entitlement in order to reflect the amount of water that has been used under the entitlement.

Charges

8. (1) The Council may, after considering any recommendation by the Commission, adjust the share of contributions due by each state under Part VII of the Agreement (referred to in this Schedule as **"Part VII charges"**) in proportion with any variation in the delivery of water under state entitlements that has resulted from the operation of the Scheme.

(2) Adjustments to Part VII charges are:

(a) to be determined annually in accordance with the water pricing principles approved by the Commission from time to time; and

(b) to take into account any variation in the delivery or allocation of water under state entitlements from the beginning of the Scheme.

(3) Once the Commission has made an adjustment of any Part VII charges in accordance with this clause, any charges imposed by the state of origin which had been applicable to a water allocation transferred interstate cease to be recoverable by that state.

(4) Subject to the laws of the state of destination, that state may recover from the recipient of the transferred water allocation the additional Part VII charges resulting from the transfer, together with such other charges as may be recoverable from the holders of other similar private statutory entitlements to take water in the state of destination.

Salinity and drainage strategy

9. (1) The operation of the Scheme is subject to the requirements of Schedule C to the Agreement.

(2) Any salinity debits or credits arising from the dilution effects brought about by water allocation transfers to or from South Australia are to be assigned at the end of each financial year under Schedule C to the upstream state involved in the transfer concerned.

(3) Any salinity debits or credits arising from the dilution effects brought about by water allocation transfers between New South Wales and Victoria are to be shared equally by those two states.

(4) Any salinity debits or credits arising from changes to salt accessions brought about by the operation of the Scheme are -

(a) to be assigned in New South Wales and Victoria to the state in which the change occurs; and

(b) to be treated as a requirement in South Australia for zero impact on salinity.

Environmental and supply considerations

10. (1) The licensing authority of each Contracting Government must, in assessing or determining any proposed transfer of a water allocation under this Schedule, ensure that:

(a) the licensing authority takes into consideration the Ministerial Council's policies on environmental flow management; and

(b) the proposed transfer is not inconsistent with those policies.

(2) The licensing authority of each Contracting Government must ensure that -

(a) any water allocation that has been transferred to the state under the Scheme; and

(b) the use of water diverted pursuant to such a transfer,

are subject to the same regulatory provisions and environmental considerations that apply in respect of water allocations granted by the licensing authority in the state and in respect of the use of water diverted pursuant to an intra-state transfer.

(3) The environmental considerations referred to in sub-clause (2) are set out in the document called "Environmental Clearances for New Irrigation Developments in the Mallee Region" (as approved by the Ministerial Council from time to time), and may include such matters as land use development, movement of water between high and low impact zones, channel capacity, clearance of native vegetation, on-farm irrigation standards, consideration of ground water accessions and surface drainage.

PART III - PROCEDURAL PROVISIONS

Procedural responsibilities in relation to transfer of water allocations

11. (1) The state of destination is responsible for processing applications to transfer interstate water allocations and for liaising with other relevant authorities for the assessments or approvals necessary to process such applications.

(2) The Commission is responsible for making -

(a) the necessary adjustments to the delivery of water under a state's entitlement, and

(b) any adjustment of river flows,

resulting from the Scheme.

Application for transferring water allocation interstate

12. (1) The holder of a water allocation may lodge an application to transfer the water allocation interstate. The application must be lodged with the licensing authority of the state of destination.

(2) The proposed purchaser of the water allocation may lodge, with the licensing authority in the state of destination, an application to obtain the water allocation.

(3) Both applications must be lodged at the same time.

(4) The licensing authority in the state of destination must:

(a) forward copies of both applications to the licensing authority in the state of origin for consideration; and
(b) consider the proposed purchaser's application to obtain the water allocation in that state; and
(c) forward both applications to the Commission so as to enable the Commission to determine the exchange rates in respect of the transfer and to assess the Commission's ability to deliver the water to which the transfer relates.

Application fees

13. (1) An application to transfer a water allocation to another state must be accompanied by the fee (if any) required under the law of the state of origin for transferring a water allocation in that state.

(2) An application to obtain a water allocation from interstate must be accompanied by the fee (if any) required under the law of the state of destination for granting a water allocation in that state.

(3) The licensing authority in the state of destination which receives an application fee in accordance with sub-clause (1) must send the fee to the licensing authority in the state of origin when forwarding copies of the applications to the state of origin.

Assessment of application

14. (1) The licensing authority in the state of origin must ascertain whether the application to transfer a water allocation complies with that state's requirements for granting approvals to transfer water allocations within that state.

(2) The licensing authority in the state of destination must -

(a) determine whether the application to obtain the water allocation complies with that state's requirements for granting an approval for a new or increased water allocation; and
(b) determine what conditions, if any, are to be attached to the transferred water allocation to meet those requirements (including such conditions as may be necessary to meet the state of destination's obligations under Schedule C to this Agreement).

(3) The Commission is to notify the licensing authority in the state of destination -

(a) of any necessary adjustment to the transferred water allocation in order to give effect to a determination of the exchange rates; and
(b) whether the Commission has the capacity to deliver the water to which the transfer relates.

Grant of water allocation in state of destination and cancellation or reduction of water allocation in state of origin

15. (1) If:

(a) an application to transfer a water allocation is assessed by the licensing authority in the state of destination to be capable of being granted; and
(b) the Commission has advised the licensing authority that the Commission has the capacity to deliver the water to which the transfer relates,

the licensing authority in the state of destination may grant the water allocation.

(2) However, the licensing authority in the state of destination must not do so until the licensing authority in the state of origin has confirmed that the transferred water allocation has been cancelled in the state of origin.

(3) Once the cancellation of the transferred water allocation by the licensing authority in the state of origin is confirmed, the licensing authority in the state of destination may grant the water allocation -

(a) subject to such conditions as the licensing authority thinks fit to impose; and
(b) subject to the exchange rates.

Requirement to notify Commission

16. (1) The licensing authority in the state of destination must notify the Commission as soon as practicable after the licensing authority grants a transferred water allocation.

(2) The Commission must -

(a) record the transfer in the transfer register; and
(b) make such adjustments to the delivery of the state entitlements as may be necessary.

Transfer register

17. The Commission must keep a register for the purposes of this Schedule and record in it any water allocation that is transferred under the Scheme.

Monitoring and reporting requirements

18. (1) Each Contracting Government must prepare a report every two years detailing the measures taken in that state to manage the environmental impact of new or extended irrigation development arising as a result of the Scheme.

(2) Each Contracting Government must provide the report to the Commission within six months after the end of every second financial year that follows the date on which the Ministerial Council approved of this Schedule.

(3) The Commission must prepare a report every year detailing the following matters -

(a) the volumes of water allocations which have been transferred in the previous financial year between each of the Contracting Governments;
(b) the exchange rates determined by the Commission, and those determined by the states, in respect of each water allocation transferred in the previous financial year;
(c) any gains set aside for environmental purposes resulting from the application of exchange rates;
(d) the adjustments made to Part VII charges for each Contracting Government in accordance with the pricing principles approved by the Commission as a result of all transferred water allocations in the previous financial year;
(e) the adjustments made by the Commission to the delivery of water, and any adjustments to states' entitlements under the Agreement;
(f) the adjustments made by the Commission to the water cap in respect of each state;
(g) the performance of each state in complying with the overall Murray-Darling Basin water cap;
(h) any environmental impacts resulting from the operation of the Scheme, in particular those relating to increased levels of salinity, reductions in environmental flows, and degradation of the natural environment;
(i) the progress in each state involved in the Scheme in achieving full cost recovery water pricing.

(4) The Commission must provide the report to each of the Contracting Governments within six months after the end of each financial year that follows the date on which the Ministerial Council approved of this Schedule.

Review by Commission of operation of Scheme

19. (1) The Commission is to carry out evaluations of the Scheme. An evaluation must deal with both the economic and environmental aspects of the Scheme.

(2) The first evaluation must be carried out as soon as possible after the period of 2 years from the date on which the Ministerial Council approved of this Schedule (or sooner if trade exceeds 10 gigalitres from any one state during that 2 year period). Subsequent evaluations must be carried out at 2 yearly intervals after the first evaluation.

(3) The Commission must report the outcome of each evaluation under this clause to the Ministerial Council and to the Community Advisory Committee appointed under clause 14 of the Agreement.

Appendix 2. Participants in the 1995 Workshops that Recommended the Pilot Project

Name	Position	Organisation
Peter McIntosh	Chairman	Australian Dried Fruits Association
Anthony Couroupis	Project Officer	Australian Dried Fruits Association
Tim Fisher	National Resources Campaign Coordinator	Australian Conservation Foundation
John Cooke	Manager Flora Fauna & Fisheries	DCNR
Campbell Fitzpatrick	Manager, Bulk Entitlement Project	DCNR Water Bureau
David Lewis	Senior Policy Advisor	DCNR Water Bureau
Jan Greig	Manager Water Markets & Rural	DCNR Water Bureau
Mike Smith	Senior Water Policy Officer	DENR - Water Resources Group
Kim Alvarez	Regional Director	Dept Land & Water Conservation
David Harriss	Manager	Dept Land & Water Conservation
Greg Claydon		DPIE Inter-Governmental Realtions
Anne Tarran		DPIE Inter-Governmental Realtions
Bob Newman	Water Resources Manager	Environment & Natural Resources
Phil Murray	Sustainable Land and Water Strategy	Environment, Sport & Territories
Barry Kilpatrick	Chairman	First Mildura Irrigation Trust
Ray Byrnes	Chief Executive	First Mildura Irrigation Trust
John Petersen	Chairman,	Government Highland Irrigation Districts Advisory Board
Vic Patrick	Vineyard Director	Mildara-Blass
Graeme Wellman	Area Manager Vineyards Northern Victoria	Mildara-Blass
Leon Broster	General Manager	Murray Darling Association
Andy Close	Engineer Systems Modelling	Murray-Darling Basin Commission
Scott Keyworth		Murray-Darling Basin Commission
John Craker	Vice-Chairman	Renmark Irrigation Trust
David Morris	Secretary Manager	Renmark Irrigation Trust
Jeff Parish	Horticultural Director	Riverland Development Corporation
Brian Martin	Manager Business Operations	SA Water
Bob Halse	Acting Manager Operations Support	SA Water
Bruce McDougal	Business Development Manager	Southcorp Wines
Bob Smith		Stanley Wines
Richard Wells	Director	Sunraysia Rural Water Authority
Chris Stoltz	Chief Executive Officer	Sunraysia Rural Water Authority
Peter Hartshorn	Customer Services Manager	Sunraysia Rural Water Authority
Janice Dowe	Salinity Coordinator	Sunraysia Rural Water Authority
Henry Tankard	Chairperson	SunRISE 21
Bob Smith		TANDOU
Ian Murdoch	Chairman	Western Murray Irrigation
Susan Chapman	General Manager	Western Murray Irrigation