8. Unregulated streams

Just one or two farmers taking water out of a small creek can have a significant impact on the health of the creek, and on the water available to users immediately downstream. Even moving an entitlement from one location to another along an unregulated stream may have adverse effects. So transfers have to be carefully assessed in the light of the local, individual circumstances.

**Standard rules for the interim**

Pending completion of assessments and plans for each stream, some general, basic trading rules are in place for unregulated streams. North of the Divide, these were largely set as part of the “interim cap” that was announced by Victoria in September 1995, shortly after the decision to introduce the Murray-Darling Basin Cap.

Thus two key rules for unregulated streams north of the Divide have been:

a) **No new diversion licences, including winter-fill ones and for domestic & stock, except through transfer of an existing entitlement.**

This had largely been in place for some years, but in 1995 it was extended to winter-fill licences, and to licences for domestic-and-stock (D&S) purposes (these are ordinary licences, i.e. that allow pumping direct from a stream including in summer, but limited to about 2 ML).

South of the Divide the rule remains the old one, requiring trade for direct pumping irrigation licences but not for winter-fill licences or for licences for D&S purposes.

b) **Trade must be downstream and there is a 20% reduction in volume (for temporary as well as permanent trade), unless the resulting licence is a winter-fill one or for D&S.**

This was seen very much as a holding measure, to allow some trade to continue but to bias it to downstream or winter-fill outcomes. This would put less strain on the often heavily-exploited summer flows, pending investigation of the particular local circumstances in each valley and development of a suitable plan.

(Trade upstream for direct pumping D&S licences is allowed since these are so small. G-MW keeps small banks of water - created from abandoned rights or its land purchases - from which people can buy water for new D&S licences in its region, simplifying administration.)

It follows from the above rule that **no trade is allowed from regulated systems, up into unregulated streams, unless the entitlement ends up as a winter-fill licence or a licence for D&S.**

Another consequence of the rule is that **winter-fill licences cannot be traded into direct pumping licences.** (Winter-fill licences are not usually sold: if they ever are, then the dam they have filled really ought to be decommissioned. They cannot be acquired or sold temporarily.)

South of the Divide downstream trade is generally allowed (with no 20% cut), and upstream trade is considered on its merits (with no requirement that it result in winter-fill).

Another general rule that has been in place until now, this time for the whole State, is:

c) **No trading from unregulated systems, down to regulated systems.**

The problem here is that entitlement on the unregulated streams often has a lower reliability. Theoretically this could be dealt with by an exchange rate, except that the reliability is different for each stream and usually unknown. A looser arrangement has recently been proposed, however (see next page).
Within these general rules, trade relies on the same kind of physical connections as those explained for regulated systems in the previous chapter. Thus a direct pumping licence on one tributary of a river may be transferred to become a winter-fill licence on another tributary of the same river. All transfer applications are subject to some assessment of the environmental and third-party effects.

To summarise the outcome of these rules, north of the Divide a private diverter on an unregulated stream may:

i) Buy entitlement -

- for a direct pumping licence, permanently or temporarily, only from another diverter with a direct pumping licence who is upstream on the same stream (and the volume is cut by 20%);
- for a winter-fill licence or for a licence for D&S purposes, permanently only, from a diverter with any sort of licence on an unregulated stream in the same catchment, or from a connected regulated supply system (see below).41

ii) Sell -

- a direct pumping licence to stay as a direct pumping licence, only to another diverter downstream on the same unregulated stream, permanently or temporarily (and the volume is cut by 20%);
- a direct pumping licence to become a winter-fill licence (or a winter-fill licence, which must stay a winter-fill licence), permanently only, to an unregulated stream in the same catchment.

The government has now proposed the licensing of water used for commercial purposes in all new farm dams, even when they are not on creeks. This would mean that north of the Divide, where the Cap applies, a farmer would need to buy water entitlement. New exchange rates have been suggested for trade from regulated systems up to farm dams (now 1:1 for trade to winter-fill).

If trade is out of gravity districts, an increase in volume (in the order of 1:1.2) could be warranted since “sales” will no longer be available on top of the basic right. The case is less clear in relation to losses: as already noted, regulated system losses are mostly fixed; losses from farm dams, while significant, are hard to gauge. For details of what is being considered, see attachment 4.

For trade down to a regulated system, the most correct approach would be to allow this if the farm dam licence was originally bought from there, and only allow it for pre-existing farm dams after demonstration of their water’s reliability (and setting of an exchange rate accordingly). But, more simply, it is planned to allow trade down to the extent there has been trade up, using the standard exchange rate.

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### Table: Unregulated Catchments and Associated Regulated Zones

<table>
<thead>
<tr>
<th>Unregulated Catchment where buyer is (associated regulated zone number)</th>
<th>Can buy for winter-fill within own unregulated catchment, &amp; from these regulated zones:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Murray (6)</td>
<td>Zone 1, 3, 4, 5, 6, 7</td>
</tr>
<tr>
<td>Mitta Mitta (6)</td>
<td>Zone 1, 3, 4, 5, 6, 7</td>
</tr>
<tr>
<td>Kiewa (6)</td>
<td>Zone 6</td>
</tr>
<tr>
<td>Hume to Barmah Choke (6)</td>
<td>Zone 1, 3, 4, 5, 6, 7</td>
</tr>
<tr>
<td>Ovens and King (9)</td>
<td>Zone 9</td>
</tr>
<tr>
<td>Murray below Barmah (7)</td>
<td>Zone 1, 3, 4, 5, 7</td>
</tr>
<tr>
<td>Broken (2)</td>
<td>Zone 2</td>
</tr>
<tr>
<td>Goulburn (1, 3)</td>
<td>Zone 1, 3</td>
</tr>
</tbody>
</table>

41 The original idea was that each catchment could only buy from the regulated system immediately below it, but this has been loosened for some catchments. As at the end of 2003 the Upper Murray, Mitta Mitta, Hume to Barmah, and Murray below Barmah catchments can buy from the Goulburn system, and even from the Campaspe and Loddon systems, which the Goulburn catchment cannot buy from. It may make sense to revert to the original idea, if exchange rates are introduced for trade to farm dams (see following paragraphs and attachment 4).
Setting local limits on taking water

On unregulated streams, the vehicle used to set constraints on consumptive use of water is a “streamflow management plan”. This is developed through an open planning process, like the one used for establishing bulk water entitlements on regulated systems. The plan acts as a guide to the issuing and transfer of licences, and helps determine licence conditions such as rostering in dry periods.

Three streamflow management plans are already in operation, and another thirty are at various stages of preparation. These plans cover altogether about 4,000 private diverters, who have licences to nearly 100,000 ML (excluding bulk entitlements for towns along these streams). Ultimately another hundred or so areas may be covered by streamflow management plans - or by a simpler equivalent.

Preparing the plans can be both time-consuming and expensive. Because of the need to handle development pressures in the interim, a rapid Statewide assessment is being undertaken, to set cautious, “sustainable diversion limits”. These will enable some development to continue in less stressed valleys, with reasonable confidence that environmental damage will not result.

Meanwhile, the streamflow management plans that are nearing completion are tending to confirm the interim, general trading rules that have been operating there - no doubt partly because these first plans have tended to be carried out for streams that are stressed. Some of the plans are proposing additional, quite detailed constraints on trade.
By way of illustration, four streamflow management plans which are at or close to final draft stage (i.e. not yet endorsed by the government), are proposing trading rules as follows:

**Merri River** (flows to sea near Warrnambool in south-western Victoria; about 40 dairy farmers pump water in the summer, which in some years has severely affected the flow):

i) up to about 500 ML of winter-fill to be allocated to existing licence holders (to enable them to offset impacts of higher environmental flows / more rostering in summer);

ii) downstream trading allowed without restriction;

iii) upstream trading to be decided by Southern Rural Water in consultation with irrigators, within the constraint of no net trading up into Spring Creek (habitat for the vulnerable Yarra pigmy perch) or Drysdale Creek;

iv) “sales” water proposed to be available to extent direct pumping licences unused.

**King Parrot Creek** (a tributary of the Goulburn River just north of the Divide from Melbourne; winter as well as summer flows have suffered from a combination of harvesting for Melbourne’s water supply, irrigation, and subdivision for weekenders):

i) no more winter-fill licences to be issued except by conversion of direct pumping licences in the catchment - though rules on trading of winter-fill licences to be finalised following the Statewide sustainable diversions limits work;

ii) direct pumping licences still only allowed to trade downstream on the same stream, with 20% cut in volume, unless converting to a winter-fill licence; this rule to be waived if metering shows an irrigator has been using over their licensed volume, within their licensed area (to facilitate buying entitlement to cover this extra usage);

iii) the above rule doesn’t apply for D&S, but entitlement must be bought within the catchment, unless there’s an agreement to fence off a stream frontage; in Silver, Wallaby, Pheasant and Chyser Creek sub-catchments, special conditions apply for new D&S, e.g. must have winter-fill licences;

iv) no trading to outside the King Parrot Creek catchment (reflecting concern that the potential for local economic development may be eroded, given water can no longer trade into catchment).

**Kiewa River** (a tributary of the River Murray, whose main stem has enough flow and little enough usage to be sometimes classed as regulated for trading purposes, but where dairying, cattle-grazing and vineyards are affecting summer flows; net trade to the Murray was stopped in 1998 - see p.50 - and trade up from the Murray was suspended in 2000 because of the high minimum flows being proposed in the streamflow management plan):

i) entitlement to remain free to trade into and within the catchment to winter-fill licences, up to limits based on the Statewide sustainable diversions limits work;

ii) no net trade of direct pumping licences (including D&S ones) into or out of the catchment, except so as to go 300 ML over or under a cap to be set at the volume of these licences in the catchment in 2001;

iii) these limits on net trade into or out of the catchment be waived for:

- trade out to become winter-fill licences,
- trade out where appropriate exchange rates are applied,
- trade in for stock where there’s an agreement to fence off a stream frontage;
iv) trade continue to be allowed, on the main stem, upstream and downstream, with no 20% cut; and on the tributaries, only downstream, with 20% cut (except for D&S);

v) all trade into or within the tributaries to be subject to case-by-case assessment and any conditions required to ensure it results in no undue stress.

Upper Latrobe River (where licences for 1,400 ML, used for dairying and potatoes, are at a modest level except in two creeks, but there are expansion pressures and downstream sensitivities):

i) an additional 500 ML of winter-fill licence to be issued, in an “equitable” way, with limits on what goes to various tributaries;

ii) trade into four upstream tributaries - Loch and Torongo Rivers, McKerlies and Hemp Hills Creeks - must not breach specified direct pumping and winter-fill entitlement caps; in the last two tributaries, conversion to winter-fill is encouraged, with caps to be adjusted; trade into all other tributaries subject to environmental assessment;

iii) downstream trading allowed without restriction;

iv) up to 500 ML able to be traded in permanently or temporarily from the lower Latrobe system, with a 20% reduction in volume, since on average 80% of use down there is from run-off river;

v) “sales” proposed to be available, to the extent licences are unused.

While some of these plans are already being followed for setting stream flows etc, a few issues need to be sorted out before the plans can be finalised. For instance, “sales” is normally not available on unregulated streams. It is good to develop solutions that are tailored to the local situation, but it is desirable also to have some consistency in how similar problems in different catchments are tackled. Consistency will assist trading.

In general, plans should have the minimum barriers to trade required to achieve proper protection of the environment. Thus, “no trade” up into a creek may be unnecessarily restrictive compared with “no net trade”. “Downstream only trade” is harder to accommodate on a water exchange than “trade only within reaches and to a downstream reach”.

Note that, north of the Divide, streamflow management plans have the Cap as a given: they can consider what extra development should be allowed into their valleys in the light of local conditions, but any extra development - even D&S entitlement - has to be via acquisition of rights from further downstream so that flows in the Murray are not ultimately affected.

In the south there is no overall cap - except on summer pumping. In many catchments it is still possible to obtain winter-fill licences by application across the counter, subject to an assessment showing there is no local environmental or existing-user difficulty. Almost all the trade on unregulated streams is thus in licences that allow summer pumping.

Given allocations in most southern catchments are fast approaching maximum sustainable levels, consideration needs to be given to allocating the remaining winter-fill rights by auction or similar method - as was used in the north from 1988. Just handing out these rights could be seen as conferring a windfall gain (since they will soon be tradeable), and may not get the water to those likely to use it best.
9. Interstate trade

Interstate trade has received attention in south-eastern Australia out of all proportion to its share of total trade. This has been for a combination of reasons:

a) Partly it has been a response to pressure from:
   - New South Wales, whose approach of using all available water in the current year led to some shocks when a long dry spell started (this pressure was for temporary trade); and
   - South Australia, where the economy has been struggling, wine-grape and other horticultural demand is strong, and there is not a pool of water used on lower-value enterprises to call on (this pressure was for permanent trade).

b) The Council of Australian Government’s 1994 water agenda - compliance with which qualified States to “competition payments” - said interstate trade should be provided for where it was “financially, socially and ecologically sustainable”.

c) To open up interstate trade has meant addressing a number of tricky issues - notably, disparities between States with respect to water pricing, reliability policies, and salinity control, all of which could potentially distort the market.

The first transfers across borders

Temporary trade from Victoria to NSW was always a prospect once Victoria got the right to hold over its unused water beyond the end of each season (instead of resources being re-divided between the two States, as had happened until the late 1980s). In early spring of 1992 two officers of the Rural Water Commission visited Deniliquin in NSW, and sold rice-growers options for a total of 1,050 ML, at $1 a ML plus a further $4 a ML if exercised - but the weather turned wetter and the options were not taken up.

Two years later, anxiety by these rice-growers in the face of low allocations (95% in August seemed low in those days) prompted the first ever trade of water across State borders. Pushed politically, the Victorian Minister for Natural Resources agreed to the temporary sale - for legal reasons, via the Rural Water Commission - of part of the 27,600 ML allocation that had been set aside out of Dartmouth resources for flora and fauna conservation purposes.

Accordingly, in January 1995, 20,000 ML was offered for sale by tender to irrigators in both northern Victoria and southern NSW (and SA). A major concern was the lower, subsidised price NSW farmers would pay to get this water delivered, and paid generally - so bids per ML from NSW were, for assessment purposes, discounted by $12 (or $5, if from diverters). Even so, the Victorian Farmers Federation was upset that the water wasn’t kept for Victorian farmers - and began proceedings in the Supreme Court.

With the reserve price set at $15 (effectively $27 for a NSW district irrigator), bids were accepted from about 80 NSW irrigators for 11,000 ML, and 40 Victorian irrigators for 4,000 ML. Successful prices averaged $43 a ML, with a few up at $70 a ML or more. However, rain falling at about this time, plus “sales” water flooding onto the Victorian market, meant that many buyers pulled out. In the end, 10,000 ML was sold, netting $300,000 for flora and fauna projects.
Later in 1995, the Water Act 1989 was amended to let farmers trade interstate on a temporary basis, and the Minister set guidelines for this trade, which were to remain unchanged for five years. Reflecting concerns about an uneven playing field and also about growth in usage, these guidelines were tight: temporary interstate trade was confined to water rights in the Murray and Goulburn gravity irrigation areas, with all “sales” related to the traded water rights forfeited.

The reason for excluding pumped districts, licences and indeed urban entitlements was that these did not have any, or as much, “sales” to forfeit. It was deliberately intended to have a penalty attached to trade, both to counter the perceived bias in the market arising from lower water charges in other States, and to avoid opening up too much new scope for increased usage until it was clear how the Cap was to be implemented.

Meanwhile, Victorian and Murray-Darling Basin Commission (MDBC) officers had come up with the idea of a pilot scheme for permanent interstate trade, organising two large workshops in Sunraysia in the second half of 1995 to develop the idea. It was proposed to limit trade to:

a) High-reliability rights, in the Mallee region (i.e. downstream of Nyah along the Murray, where all three States had practically equivalent reliability rights, used for horticulture).

This would save handling rights that were radically different (especially since Victoria was willing to eliminate the scope for “sales” water when its rights were sold). Yet these rights were still not identical, and two options were identified, in advance of better modelling:

i) Take advantage of their similarity to translate them roughly, on a 1:1 basis, with the State of destination’s restriction policy applying thereafter. It would be agreed in advance that the State of origin would cede the same amount of resource every year, except possibly in a few extremely dry years when this amount would be reduced.

ii) Retain State-of-origin products in the State of destination. The traded right would be tagged, and any restrictions to it would still be determined by the State of origin. This would be pure in terms of always transferring the right amount of water (and would fit well with the temporarily well-supported notion of the buyer making a headworks payment to the State of origin) - but was widely seen as cumbersome.

b) Licences to pump water direct from the River (i.e. farmers in districts were not allowed to trade).

This largely defused arguments about pricing subsidies distorting trade, since the cost of water in the River was only about $6 a ML ($1 for licence administration, the rest for MDBC headworks costs), much less than the additional up to $90 a ML costs for delivery in districts.42

After legal advice and further discussions, it was agreed that buyers would need to be given rights to water under the legislation of the State of destination - with monitoring, enforcement, and fee collection all carried out by that State (this didn’t quite preclude option ii above, i.e. retaining State-of-origin restriction policies, but seemed to make it even more awkward).

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42 At first there were concerns about subsidies even in relation to these small costs, since SA irrigators did not pay anything (but were subject to a $2.50 a ML catchment levy), and NSW irrigators paid about $4.50 a ML, while Victorian irrigators paid all the costs. To get around this problem, it was initially proposed that traded water would remain part of the State of origin’s water share, with the new owner of the retail right sending on-going payments across the border (this would mean that Victorian water would not be cheaper when it traded to SA).
Later, this was simplified to requiring the State of destination to pay an extra amount to MDBC – the need to pass this on to the buyer went by the board – with the other State paying less. Ideally, this was to be based on mooted new MDBC business prices. Eventually, since SA was seen as paying a relatively high charge for its share of resources, it was decided not necessarily to increase SA’s contribution to MDBC when water traded there: Schedule E simply allows the Ministerial Council to make adjustments in the light of trade. So far it hasn’t.
It was also agreed that rules on permanent interstate trade should be incorporated into the Murray-Darling Basin Agreement by means of a schedule approved by the Ministerial Council. The Council endorsed the concept of a pilot scheme in June 1996, and finally put “Schedule E” in place in November 1997. Key provisions of that first Schedule E (most of which still apply) were:

- Trade confined to rights that are of high reliability on the Murray between Nyah and the barrages, and held by end-users of water to pump out of the River themselves.

- The water delivered to South Australia each year to be increased by the volume of net transfers into SA, with Victoria and NSW contributing in line with their net transfers to SA; similarly, Victoria’s and NSW’s water in Hume Dam to be adjusted each year in line with net transfers between them.

- All these adjustments in States’ water to be made in equal parts from September to April, and, if SA’s normal entitlement is cut back, to be cut back by the same percentage.

- The Cap in the State of origin to be cut, and in the State of destination to be lifted, on the basis that the seller’s right was, and the buyer’s right will be, 100% used, or any lower percentage set by MDB. (This has been set at 90%, based on the buyer’s right not being quite fully used, and the State-of-origin Cap having to be cut by the same amount. Given the seller’s right is often much less than 90% used, the trade could be seen as having adverse impacts on State-of-origin water users - though the seller’s right could always have been used more, without trading.)

- MDB also to set exchange rates to adjust: i. the buyer’s right, and ii. water transferred to the buyer’s State, to take account of different sources of water, changes in reliability, extra losses, etc.

- Rights transferring not to be increased; instead, any extra water to stay in the River.

- Ministerial Council may adjust State financial contributions to MDB in line with the adjustments made to States’ water.

- Salinity credits or debits from the dilution effects of a transfer, to be shared between the two States involved, but if trade is with SA to be attributed in full to the upstream State; and from the site effects of a transfer, to be attributed to the relevant State, except that trade into or out of SA to have nil impact.

- A State may suspend or limit trade if worried trade is degrading the environment.

- Seller and buyer must apply to the licensing authority of the State of destination, which sends copies to the State of origin (for approval), checks buyer’s application, informs MDB (to advise exchange rate), tells State of origin to cancel seller’s licence, issues licence to buyer, and notifies MDB (to change water deliveries, etc).

MDB has set an exchange rate of 1:0.9 for trade from SA, upstream to say Victoria, since entitlement moving this way can no longer be supplied out of Lake Victoria or the Darling River. Diversions overall decrease, and the lower Murray benefits. But 100 ML trading downstream stays 100 ML, it does not increase: the lower Murray does not give up any benefits.44

At almost the same time as Schedule E came into being, complementary amendments were made to Victoria’s Water Act, providing for permanent trade between Victoria and other States. Then in September 1998 came the first ever permanent interstate transfer: 249 ML from near Wentworth in NSW, where it had been used for citrus, to a related company at Nangiloc in Victoria, for irrigating wine-grapes.

43 Under the 2001 revisions to Schedule E, adjustments in supplies to SA are to be distributed between the months from September to April in the same way as SA’s entitlement under cl.86(a) of the MDB Agreement during these months is distributed.

44 In this case, 100 ML more is delivered from Victoria’s resources to SA each year (cut back only when SA’s entitlement is cut back). Victoria’s Cap is cut by 90 ML and SA’s Cap increased by the same amount.

When 100 ML traded from SA to NSW in June 1999, in line with current rules the buyer obtained a right to 90 ML (since above the Darling),100 ML less is now sent to SA (almost) every year, the Cap has been cut by 90 ML in SA & increased by 81 ML in NSW (i.e. 90% of the seller’s & the buyer’s right respectively). The net cut of 9 ML in the overall Cap means that more water stays in the River, either spilling to SA or somehow being managed.
Current activity and rules

Permanent trade

Since that earliest transfer, there has been no more permanent trade into Victoria, and a considerable amount out. A couple of transfers to NSW have evened up the volume that came in from there, but otherwise it has been all one-way from Victoria to SA (with the rest of the interstate trade being almost all one-way from NSW to SA).

At first, most of the water going to SA was coming out of NSW, but, recently, most of it has been coming out of Victoria. Evidently, because of staff shortages, NSW has been taking as long as six months to process applications to trade out; this has been putting buyers off, resulting in Victoria being targeted for the purchase of water.

Like recent trade within Victoria to Sunraysia, trade into SA is going to capital-intensive horticultural (mostly viticultural) enterprises, often run by companies. While the average parcel size for the water traded interstate has been just under 200 ML, there have been a handful of trades of 1,000 ML or more, each worth about $1 million.

Trade interstate represents a fraction of the trade within the three River Murray States. Victoria’s two neighbours, South Australia and New South Wales, had moved gradually to untie water rights from land in the mid-to-late 1980s and early 1990s, at about the same time as Victoria had. Rights to Murray water and levels of permanent trade in each of the States are shown in table 8.

Diagram 5: Net permanent trade into States, up to 30 June 2001

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Thus in 1998/99, NSW had net trade out of over 3,000 ML and Victoria only about 350 ML; in the second year Victoria lost a bit more than half of what NSW did, in 2000/01 Victoria lost well over 4,000 ML (this MDBC figure includes one trade of 1,200 ML that actually came into effect on 1/7/01), and NSW about 350 ML. Victoria has now lost more in net terms than NSW, plus further trades out of Victoria are in the pipeline.
Table 8: Rights to River Murray water and permanent trade, by State

<table>
<thead>
<tr>
<th>Place, and kind of rights</th>
<th>Rights 30/6/99 (ML, rounded)</th>
<th>Total trade, 1998/99 to 2000/01 (ML)</th>
<th>Trade as % of rights</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From other State</td>
<td>From within State</td>
<td>Internal to this kind</td>
</tr>
<tr>
<td>Victoria</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot scheme zone:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Districts (Merbein, R Cliffs, Rob., FMIT, Nyah)</td>
<td>180,000</td>
<td>0</td>
<td>1,548</td>
</tr>
<tr>
<td>Private diverters</td>
<td>175,000</td>
<td>249</td>
<td>18,487</td>
</tr>
<tr>
<td>Rest of Murray:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Districts (Torrumbarry, Murray V, Tresco)</td>
<td>620,000</td>
<td>not allowed</td>
<td>2,599</td>
</tr>
<tr>
<td>Private diverters</td>
<td>70,000</td>
<td>not allowed</td>
<td>531</td>
</tr>
<tr>
<td>NSW</td>
<td></td>
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<tr>
<td>Pilot scheme zone:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Districts (all Western Murray ones)</td>
<td>60,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Private diverters</td>
<td>150,000</td>
<td>550</td>
<td>3,496</td>
</tr>
<tr>
<td>Rest of Murray:</td>
<td></td>
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</tr>
<tr>
<td>Districts (mainly Murray Irrigation Ltd ones)</td>
<td>1,640,000</td>
<td>not allowed</td>
<td>4,006</td>
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<tr>
<td>Private diverters</td>
<td>520,000</td>
<td>not allowed</td>
<td>50</td>
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<td>SA</td>
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<tr>
<td>Pilot scheme zone:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Districts (Central Irrig. Trust, Renmark I.T.)</td>
<td>165,000</td>
<td>400</td>
<td>480</td>
</tr>
<tr>
<td>Private diverters</td>
<td>420,000</td>
<td>12,403</td>
<td>721</td>
</tr>
</tbody>
</table>

Notes:
1. Rights exclude “sales” water in Victoria - mainly outside the pilot scheme zone. In NSW, almost all the rights in the zone are high security, and almost all those outside are general security.
2. Rights for NSW and SA co-ops include losses (e.g. MIL has to provide for its own losses after allocations reach 65%). In Victoria, the figures given are for irrigators’ rights only.
3. The table deals with the regulated River Murray (including the Lower Darling & Edwards/Wakool but not the Mitta). It excludes urban supplies (180,000 ML in SA) and D&S supplies.
4. Victorian pilot zone diverters’ trade out includes 1,200 ML that actually took effect in July 2001, since MDBCT figures used on the same line do. NSW rest-of-Murray district figures are mainly for MIL (which had 1,480,000 ML of entitlement, and 1,122 ML trade in, 9,599 internal including 3,424 ML between districts, and 1,415 ML out - though DLWC figure for out is 2/4 ML); the rest of the trade in these figures is for West Corurgan (2,884 ML in, only - compare DLWC figure of 2,084 ML). DWR figure for SA interstate Murray trade is 11,738 ML, which has been adjusted down where it includes CIT trade. RIT had no trade except 430 ML that came in (400 ML from interstate) and 57 ML that went out, all involving within-district people under RTI licence who pump directly from the River. CIT’s trade in includes 422 ML for a group of private diverters who agreed to be supplied by CIT.
5. In the last column, trade for each kind is the volume of internal trade, plus the average of intos and outs.
The table shows that the level of trade in relation to the volume of entitlement, is generally highest in Victoria. Thus, Victoria’s gravity districts have about three times the level of trade that NSW’s gravity districts have (2.3% of entitlement, compared with 0.7%).

Private diversion licences have been traded more than district rights, reflecting, firstly, the fact that these licences are more likely to have been sleepers, but, secondly, the existence of far fewer restrictions on their movement.

A lot of water has moved to large licensed developments out of Victoria’s gravity districts (more than shown in the table, counting the Goulburn ones). These districts in Victoria hold significant volumes of not optimally used, high-reliability water, which are very attractive and comparatively accessible.

The various limits put around the pilot scheme have been subject to some challenges. For instance, attempts have been made to trade water from places like Torrumbarry that are upstream of the pilot zone, into the zone as a first step, and then to SA as a second step. And, for a while, lower-reliability water in NSW could be converted into high-reliability water (on a 2:1 basis), making it eligible to go interstate.

SA buyers obviously tend to be interested in the cheaper prices payable upstream of the pilot zone; while sellers upstream of the pilot zone are attracted by the better prices offered in SA (which reflect strong demand in SA for water for vineyards and other horticultural enterprises, plus limited sources of water to draw on).

Licensing authorities, supported by brokers who do not want to see the pilot scheme tarnished and thereby put in jeopardy, have managed to keep a lid on such two-step, “bouncing”. Nevertheless, the scheme’s vulnerability on this front has been pushing the States to look at how the scheme could be expanded in a sound way.

Some loosening of the limits around the scheme occurred less than 12 months after trade started: irrigators in districts (in the pilot scheme zone, i.e. from Nyah downstream) were included. Initially, a major concern had been the relatively high costs of delivering water in districts, and thus the large scope for distortion through subsidies. However, MDBC officers organised a forum, and then hired consultants to assess this issue.

The resulting study found that all districts had benefited from some kind of financial assistance in the past (dowry when made independent, debt write-off, etc); and that all of them were now unsubsidised (in the minimalist sense of them all being viable enterprises).

Moreover, the study found that annual charges for water were a minor consideration in the minds of developers - compared with availability of land, proximity to schools, etc - when they were deciding in which State to locate.

Accordingly, Schedule E was amended by the Ministerial Council in May 1999, as follows:

- Irrigators in districts within the pilot scheme zone included in the scheme - and so able to trade interstate, to the extent that local rules for a district allowed.
- The organisation running a district to be consulted about any trade out of or into the district, and able to keep some of the entitlement coming in to cover losses.

Temporary trade

In the first couple of years that temporary trade interstate was allowed, things were quiet. But starting in 1997/98, trade burgeoned. Early in that season, Torrumbarry dairy farmers, faced with allocations of just 130%, were buying water out of NSW and SA. Right at the end of the season, about 16,000 ML was sold to NSW ricegrowers, mainly from SA horticulturists.

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47 In the 2001 revisions to Schedule E, the stipulation that the individual irrigator, and not the holder of the bulk entitlement, be the trader was dropped.
The late-season trade to NSW raised a number of issues, with the most immediate concern being the timing of the consequential cuts to flows into SA:

a) If the cuts to flows were made immediately - in May and June, the last months of the season, when flows to SA were normally at their lowest - this would worsen salinity, blue-green algae, and other problems for the health of the lower River.

b) On the other hand, if the cuts were delayed to the following season, when (as it happened in 1998) enough water would be coming down the Darling River to supply SA, then the cut would not mean water saved in Hume Dam, out of which the NSW buyers of the traded water had been supplied. This could hurt NSW irrigators supplied from Hume Dam.

A number of other questions were raised by the sudden jump in temporary trade, such as application of the Cap, which by that time had been addressed for permanent trade in Schedule E. This provided a starting point for the development of rules governing temporary trade.

One matter that had not so far been covered in Schedule E, since it involved trade beyond the pilot zone, was trade from other valleys like the Goulburn and Murrumbidgee to the River Murray. Such trade must result in extra water being let out of these tributaries to supply the new owners of the traded entitlement.

This water must be let out, not necessarily exactly when water is to be delivered to the new individual owners, but certainly at a time where it can be put to some use on the Murray. The solution to this has been to keep account of all the water due to be supplied out of, say, the Goulburn, and let the operator of the River Murray (MDBC) call for water to be released from the Goulburn, at times that suits it, up to the amount in the account.48

Work by MDBC and other officers on these various issues led to a set of rules covering temporary and inter-valley trade, which were endorsed in late 1999 on a trial basis. Early in 2001, with some modifications, the rules were put to the Ministerial Council as part of a revised Schedule E (which at the end of that year was still awaiting ratification):

- For trades with SA up to March each season, supplies to SA to be adjusted in the rest of that season, and after March, in the next season (a system of provisional adjustments had been tried, but temporary trade was too hard to predict).

- For trade between NSW and Victoria, adjustments only need to be made in Hume Dam; all to be made in the current season and spread as much as possible (to avoid undue spilling).

48 In early 2000, with about 3,000 ML net traded permanently from the Goulburn to the Murray, about 1,000 ML was released into the Murray, the balance being held – at G-MW’s request – for trade back up into the Goulburn. This first ever release was negotiated between G-MW and MDBC, rather than being simply called for by MDBC.

Note that the new arrangements need some refinement, e.g. Schedule E as yet makes no provision for the amount credited to a valley account to be restricted in any way in a dry period.

Table 9: Net temporary trade between States, by year (ML)

<table>
<thead>
<tr>
<th>Year</th>
<th>NSW to Victoria</th>
<th>Victoria to SA</th>
<th>NSW to SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997/98</td>
<td>9,199</td>
<td>- 5,020</td>
<td>- 11,351</td>
</tr>
<tr>
<td>1998/99</td>
<td>11,098</td>
<td>- 4,445</td>
<td>? (volume not yet settled by MDBCC)</td>
</tr>
<tr>
<td>1999/00</td>
<td>- 4,571</td>
<td>348</td>
<td>?</td>
</tr>
<tr>
<td>2000/01</td>
<td>- 633</td>
<td>- 50</td>
<td>3,865</td>
</tr>
</tbody>
</table>
States can set limits on temporary trade, to limit harm to the environment or other users, e.g. from moving extractions upstream of the Darling in years when the Darling has ample resources.

The annual Cap targets in a valley to be adjusted up, or down, by the volume of temporary trade into, or out of, the valley, factored down as MDBC determines (so far, 100% usage has been assumed for temporary transfers).

Salinity debits and credits for temporary trade to be assigned using the average trade in the past five years (as if this trade was permanent, but with revisions each year); and from now on, for permanent as well as for temporary trade, to be assigned to SA as appropriate, in the same way as to the other States.

Net trade out of another valley to the Murray to be recorded in an account in that valley, which MDBC can call on to meet Murray needs; this to apply for permanent or temporary trades, even within a State.

MDBC must draw on a valley account before Hume, unless a State agrees otherwise (e.g. keeping water in Eildon could avoid the need for rationing supplies below the Choke at a subsequent time of peak demand).

A State’s valley accounts will be cleared if that State runs out of airspace in Hume / Dartmouth (this slightly oddly, but fairly harmlessly, “socialises” the Murray resources to other valleys in times of plenty on the Murray).

Meanwhile, significant changes to the rules on trade out of Victoria were made, quite suddenly, on 2 May 2000. NSW farmers had begun buying temporary water at cheap, end-of-season prices to carry it over to the following year, something Victorian farmers have never been allowed to do.

Victoria has long had a policy of holding water aside, on behalf of all users, to ensure rights can be met next year, but individual farmers’ unused water goes back into the pool for re-allocation. NSW, on the other hand, has lately been permitting individuals to keep unused water (some compensation for supplies not being reliable: in late April 2000 allocations had just reached 35%). Victorian farmers were at a disadvantage in the market.

When about 1,600 letters were sent out on behalf of a big irrigation company on the lower Darling, to Goulburn irrigators (who had been allocated no “sales” that season, and so had none that they would have to forfeit), offering to buy water for $20 a ML ($7 above the most recent Water Exchange price), some irrigators were happy to sell, but others felt affronted.

With Eildon Dam emptier than it had ever been, many were upset to see resources disappearing to another State (if all of the targeted 30,000 ML had been acquired, the following year’s allocations could have been reduced by 5%). Allowance to take water under the Cap (Cap space) was being lost too, so there could well have been a reaction even in a year with reasonably plentiful resources.

The Victorian Farmers Federation called for a halt to the trade. The Minister took quick action, approving guidelines that banned temporary transfers out of Victoria into NSW after the end of February each year (by that point, Victorian farmers have mostly arranged their season’s water, and prices are starting to sink).

At the same time, the opportunity was taken to reform the original, 1995 guidelines, which had confined temporary interstate trade to water rights from gravity-supplied areas. The concerns of 1995 had receded, and indeed Schedule E by this time was already allowing permanent trade of licences, and of water rights in pumped districts.
Now, any high-reliability rights can be traded interstate temporarily. So too can the first 30% of “sales” water in gravity areas - though if a farmer trades away any of this “sales”, or any water right, all “sales” above 30% is forfeited. The rules for interstate trade have been brought into line with the rules for trade within Victoria.

The February cut-off was a blunt way of preventing trade being distorted by divergent carryover policies. MDBC officers later proposed, more elegantly, that if water was not allowed to be carried over in the State of origin, the State of destination should not allow it to be carried over there.

(To avoid buyers getting around the intent of this control - by using the bought-in water in the current season and carrying over more of their normal water - water traded in from a State without carryover would have to be used last.)

This proposal was supported by both Victoria and SA at the Ministerial Council meeting in March 2001, but NSW felt it was not its responsibility to sort out the market distortion: NSW was unwilling to limit people’s access to carryover, and felt other States should introduce carryover too. As a result, SA now feels compelled to have a blunt control like Victoria’s.

**Taking stock**

As a way of recapping on some of the key rules, and to illustrate the consequential adjustments made to flows, valley caps, and so on, the volume of trade and the adjustments that were made by MDBC in 2000/01 are shown in table 10.

<table>
<thead>
<tr>
<th>Trade / Adjustment</th>
<th>NSW to Victoria</th>
<th>Victoria to SA</th>
<th>NSW to SA</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Permanent trade:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net trade, 1998 to June 2000 (ML)</td>
<td>-1</td>
<td>2,218</td>
<td>6,110</td>
<td></td>
</tr>
<tr>
<td>Adjustment Hume Dam or SA flow</td>
<td>-347*</td>
<td>2,218</td>
<td>6,110</td>
<td></td>
</tr>
<tr>
<td>Adjust. to Cap (State of origin first)</td>
<td>+312 / -312*</td>
<td>+1,996 / -1,996</td>
<td>-5,508 / +5,499</td>
<td>Spread from Sep to Apr.</td>
</tr>
<tr>
<td>Salt credits 1998-2001, dilution (EC)</td>
<td>0 / 0</td>
<td>0.16 / 0</td>
<td>0.16 / 0</td>
<td>Overall Cap cut = 9 ML</td>
</tr>
<tr>
<td>Salt credits 1998-2001, site (EC)</td>
<td>0 / 0.02</td>
<td>0.85 / -</td>
<td>0 / -</td>
<td>In future, SA to share.</td>
</tr>
<tr>
<td>Adjust. in payments to MDBC. ($)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>SA accountable in future. #</td>
</tr>
<tr>
<td><strong>Temporary trade:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carryover from 1999/00 (ML)</td>
<td>-</td>
<td>573†</td>
<td>-1,703</td>
<td>None agreed to yet.</td>
</tr>
<tr>
<td>Net trade, 2000/01</td>
<td>-633</td>
<td>-50</td>
<td>3,865</td>
<td></td>
</tr>
<tr>
<td>Adjustment Hume Dam or SA flow</td>
<td>-633</td>
<td>573</td>
<td>-1,703</td>
<td>SA adjust. made in year after trade (this to alter under new Schedule E).</td>
</tr>
<tr>
<td>Adjust. to Cap (State of origin first)</td>
<td>-633 / +633</td>
<td>-573 / +573</td>
<td>-1,073 / +1,705</td>
<td>In future, 5-year average.</td>
</tr>
<tr>
<td>Salt credits, dilution &amp; site (EC)</td>
<td>0 / 0</td>
<td>0 / 0</td>
<td>0 / 0</td>
<td></td>
</tr>
<tr>
<td><strong>Valley accounts at 30/6/01 (ML)</strong></td>
<td>M‘bidgee: -29,947 (Snowy loan).</td>
<td>Goulb.: 0 (trade out kept for back trade).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Two trades from Victoria to NSW which had not actually gone through were included, so MDBC assumed net trade from NSW to Victoria to June 2000 was -347 ML, these Hume and cap adjustments were thus higher than they should have been.

# Debits and credits for water coming to or leaving a site have so far only been made for Victoria, in line with the Nyah-to-the-border plan, groundwater below development in nearby NSW is thought to move away from the River, and SA has so far been exempt. Credits are not strictly given until the benefits arrive at the River, years later, but in practice MDBC looks at net trade into Sunraysia in registering debits. Net trade from Victoria to NSW up to 30/6/01 = 450-249 ML, all LIZ (0.1 EC per 1,000 ML), so 0.02 EC credit. Trade to SA = 583.5 ML from LH, LIZ, so 0.85 EC credit. These figures do not appear separately on the register, indeed, they were not fully included by 30/6/01, instead they are NRE calculations of what will be included, moreover, they must be converted into “salinity cost effects” (see footnote 36), and amended in the light of refined HIZ/LIZ zones. (see chapter 7).

† This differs from the 348 ML figure in table 9; the figure here may have included trade from a year earlier (1998/99) for which no adjustment had yet been made, or it may have been a working figure which was later revised down.
Trade between States requires entitlements to be well defined. Here, as often happens, Victoria has accumulated a relatively high volume of water in Dartmouth Dam – this helps to make Victorian water users' entitlements very reliable.
In summary, the current rules on interstate trade allow holders of licences and water rights on the Murray below Nyah to trade permanently, and holders of licences and water rights anywhere in the Murray, Goulburn and Campaspe systems to trade temporarily - but not into NSW after February. People can trade the first 30% of “sales” temporarily, but if they sell any water at all, all “sales” above 30% is forfeited.

**Hurdles for expansion**

The pilot scheme only covers about a quarter of all the entitlement along the regulated River Murray, and about an eighth of the entitlement in the regulated and interconnected southern Murray-Darling Basin. There is keen interest in expanding the scheme, to take in the big gravity-supplied areas, and lower-reliability water like “sales”. Extra pressure is currently coming from:

- the agreement to restore flows to the Snowy River: this is being implemented primarily through saving water that is currently lost in delivery systems, with buying water only a fallback option, but even using savings it is necessary to have sorted out how to transfer water out of the wider irrigation areas and across State borders;

- the need to determine what the Cap on diversions should be for the Australian Capital Territory: the government there is reluctant to accept capping based on existing net usage out of the Murrumbidgee catchment, unless it can see ample scope for buying additional water as Canberra grows.

A recent, two-year review of the pilot scheme indicated that administrative systems needed rejigging and tightening, e.g. it noted that paperwork for one transaction could spend altogether 32 days in the mail. Since then, licensing officers have met and agreed on streamlined processes. States have been looking at tighter recording systems for all water trade.

There are three, much less tractable problems that need to be dealt with before there is any expansion of the pilot scheme - in fact, the first one requires urgent resolution if the scheme is to avoid being largely closed down. The three key challenges are:

A. Putting effective, comparable salinity controls in place;

B. Handling divergent, sometimes unclear, entitlement reliabilities;

C. Overcoming bans by irrigator co-operatives on water trading out.

**A. Putting salinity controls in place**

It is a worry that, as yet, there is not proper accounting for the salinity effects of water that trades into South Australia. The two-year review of the scheme indicated this was a serious problem, and called for irrigators’ salinity prevention obligations to be properly enforced (the review’s conclusions were reported in *The Australian* of 19/5/01, with the comment that trade is hurting the environment).

Under Schedule E, new irrigation developments resulting from trade into SA have been required to have zero salinity impact. This arrangement was made because SA had early on said that any new development there would have nil impact - and that its contributions to salinity mitigation were gifts to the River - so, until recently, no debits or credits for SA ever went onto MDBC’s register.

It is most unlikely there could actually be zero impact. Even in Victoria’s “low impact zone”, despite best-practice systems being employed, there is an impact in the long term; development there results in debits accordingly, with the cost of offsetting credits recovered via a levy on trade - on top of which there are the much higher expenses of irrigating further from the River.
9. Interstate trade

Development in SA is taking place on land close to the River and sitting over extremely salty groundwater, with as much as 0.8 EC impact per 1,000 ML - i.e. higher than the 0.6 EC impact in Victoria’s “high impact zone”, into which no trade is allowed. The recent review of MDBC’s salinity strategy revealed that the effect of new development in SA up until 1998 is as much as 30 EC.

While recognising this 30 EC impact, SA is claiming it may be only some 5 EC behind, since there have been offsetting measures like improved distribution and irrigation systems - but these are yet to be properly assessed. And it is now clear that the 13,000 ML (till mid-2001) that has traded into SA from interstate since late 1998, is likely to have set in motion an additional adverse impact of at least 10 EC.

Victoria expressed its concern about this issue in a letter to MDBC in mid-2001, noting that SA’s lack of accountability appeared to create an uneven playing field for trade - with Victoria at a disadvantage. It also appeared to negate gains in River Murray water quality towards which Victoria and other governments had been contributing.

Victoria pressed for urgent settling of the size of the outstanding impact of all development in SA, a determined program to compensate for this impact, and suitable arrangements to manage new impacts. If trade was to continue, Victoria suggested that MDBC immediately require:

a) that any new trade into SA have tight conditions (e.g. payment of a bond) to ensure salinity is minimised;
b) that the residual impact be identified and entered as a debit onto MDBC’s register at the time of the trade;
c) that an upfront payment be made by the buyer or developer to cover the cost of a salinity credit to match this debit.

Certainly SA has lifted its game in recent months. It is now convincing developers that salinity prevention obligations will be enforced: if they go ahead and develop close to the River, then in 25 years’ time they will have to deal with the residual impact - either by buying salt disposal credits / a share of a State interception project, or by setting up their own pump and disposal site. Failure to meet their obligations could lead to their licence being resumed and sold.

Victoria remains sceptical that these obligations to fix the problem in 25 years’ time will work. For instance, if monitoring shows salinity has increased, it may be hard to trace this to a particular licence. That is why Victoria prefers to estimate the future impact and settle at the outset.

It should be noted that under each approach, the State is responsible for making up any shortfall - whether because the future obligation proves hard to enforce, or because the upfront settlement turns out to be too little. The State needs to have the credits to do this, however. Thus, if Victoria ran out of credits for trade into Sunraysia, it would feel obliged to stop the trade.51

It is likely to take until the end of 2002 to identify SA’s backlog, and the measures needed to compensate for it.52 In the meantime, SA won’t be in a position to know where credits for on-going trade will come from, and what to charge for them. This creates a risk for SA, as well as for the River Murray, in letting trade continue.

B. Handling divergent, unclear entitlement reliabilities

Most rights on the Murray in NSW, notably those of the gravity-supplied areas, are “general security”: distinctly less reliable than those in the pilot scheme. In Victoria’s gravity areas, “sales” water has an even lower reliability, if taken by itself, but it is actually icing on a reliable cake.

The divergent reliabilities are shown in diagram 6. This is MDBC’s estimate of how 100 ML of rights in the two States would be met or restricted, given a repeat of the last 109 years of weather.

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51 Schedule C establishes this obligation. Under the Schedule, debits are recorded when a salinity-inducing action is approved, while credits are only granted when a countering action becomes effective. Some MDBC officers have expressed an interest in reviewing the time-frame in which debits for irrigation developments go on the register, to fit the long lead-times before EC effects show up. But Victoria has argued against postponement of debits, as this creates an unfunded liability.

52 A positive move is the draft River Murray Water Allocation Plan’s proposal, not only that all new buyers of water be required to have 85% water efficiency from day one, but also that all long-term users of water be required to meet this same standard by 2010.
The problem of divergent reliabilities has been made harder because reliability in NSW has not been well-defined. For example, a great deal of high-security water was given out when Western Murray was privatised, it has only been about two-thirds used, and there has been pressure for holders of this water to share in the pain of droughts etc. It is now proposed that if holders of this water do any temporary trade, then their usage plus trade is limited to 90% of entitlement.

The uncertainty has been potentially more widespread, since provisions for environmental flows in the River Murray, which are currently in the process of being determined, may affect the reliability of rights in Victoria and SA as well as in NSW (though Victoria may well try to manage this by other methods than by just letting reliability of rights slip - see chapter 12).

Exchange rates are one way of dealing with the divergent reliabilities - although it is even harder than usual to calculate these because of the uncertainty. Given the uncertainty, it is desirable to be clear about who should bear the risk of inaccuracies and changes: how far any adverse impacts should be socialised by the selling or buying system, or sheeted home to the individuals.

If a NSW farmer sold 100 ML of general security water to someone in SA, and agreement could be reached that this is equivalent to providing 70 ML of high-reliability water, then one method would be to require NSW to provide SA with 70 ML extra each year, regardless of what the reliability of the 100 ML subsequently turned out to be.

Note: MDRC's model has estimated the seasonal allocations by February each year, with current policies, diversions at Cap levels, and Barmah-Millewa forest watering rules as agreed in March 2001. (This model run, number B56740, indicates Victoria obtains $334m worth of agricultural output a year from 1,639 GL of Murray water on average, whereas NSW obtains $227m from 2,053 GL.)

Diagram 6: Reliability of Victorian and NSW entitlement, Murray gravity districts
High-reliability water might be used as the “common currency” in which adjustments are made across borders. 53 This is the method that has been used in the pilot scheme. For a particular trade, the State of origin must cede the same amount of water every year from then on, only cut back when SA entitlement is restricted. In bad seasons this could cause pain - supposedly cancelled out over time.

Another method would be for the original 100 ML to be sent across the border to SA, but at the relatively low reliability of the seller’s (i.e. the NSW) system (so one year in ten, less than 50 ML would be sent across). It could then be up to SA, perhaps, to apply an exchange rate to determine what lower volume of high-reliability rights could be issued to the buyer.

This method would suit the seller’s system. For the buyer’s system it offers some diversification of resources - in a locally bad season, there could be better allocations from the seller’s system - but with low-reliability water being transferred, in bad droughts the buyer’s system could suffer. And while the buyer’s system is the one gaining development, the risks of longer-term deterioration of seller-system reliability would be borne by buyer-system water users, who have no say in any policy changes involved.

Neither of these two methods (common-currency payment by seller’s system, and conversion by buyer’s system) is ideal, given the potential for innocent third parties to be affected. The only alternative might be to look once more at the tagging approach, i.e. where the individual buyer gets an entitlement that retains its system-of-origin reliability.

The tagging approach has so far been considered especially awkward for interstate trade, since it would seem to require entitlements, or at least allocations, under one State’s law to apply in another State. There would be several other questions to sort through, as well: e.g., would diversions of traded water be counted against the Cap in the valley of origin…?

C. Overcoming bans on water trading out

Many irrigation districts in NSW and SA have protective trading rules - e.g. Western Murray does not allow its farmers to trade any water out permanently. 54 Victoria turned a blind eye to this in supporting inclusion of districts from Nyah downstream in the pilot scheme, but could not do the same when it comes to the big gravity districts.

Such restrictions are a serious impediment to trade, not just across State borders. In some years 40% of permanent transfers in Victoria have been out of Goulburn-Murray Water’s gravity districts to private diverters in Sunraysia. If restrictions like those in other States existed in Victoria, trade would be just about halved.

When private companies or trusts were being set up in NSW and SA to take over districts, it was decided that irrigators were going to receive water from the new bodies, so shouldn’t hold entitlements independently of them. Irrigators were given shares in the companies, but lost their statutory rights to water, together with the associated rights to trade, appealable to a tribunal.

Apparently the Commonwealth Trade Practices Act 1974 is now of no help in making trade between farmers in these districts and the outside world two-way. Company directors are entitled, indeed they have a duty, to protect their company’s assets.

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53 NSW in 2001 re-introduced scope for 1 ML of general security to be changed into 0.5 ML of high security, up to annual limits. First-cut MDBC modelling has indicated that 1:0.65 or 1:0.7 could be adopted without eroding the reliability of high security water. It might be okay to leave it to each State to decide on exchange rates inside its borders to and from the common currency – though there is scope for manipulation to stop water leaving a State. Adjustments must be made to States’ Caps, as well as their water. At present these adjustments are based on the rights traded being 90% used in both States. In the example above, an increase in SA’s Cap of 63 ML (90% of 70 ML) looks right, but a decrease in NSW’s Cap of 90 ML (90% of 100 ML) is too steep: maybe this would be better based on common-currency water. (Cap share can help in calculating how to convert rights – see attachment 4.)

54 In SA, and so also within the pilot scheme zone, Renmark Irrigation Trust has no individual trade at all, and Central Irrigation Trust does have individual trade, but with a limit of 2% on net permanent trade out ever. The large gravity-supplied system in NSW upstream of the pilot zone is run by Murray Irrigation Ltd, whose articles of association say there will be no net trade out, and where only a skerrick of trade out has been approved.
Murray Irrigation CEO George Warne is quoted in *The Australian* of 19 May 2001 speaking honestly: “Despite all the bullshit from the Government about the water trade, everyone wants to trade water in, but no-one wants to trade water out because they quite rightly perceive it as taking away their community’s money.”

In Victoria there is uneasiness and rumbling about the water being lost to some communities. Some farmers have argued that they would be better off with the NSW system. By comparison, the “2% rule” provides very mild protection.

If trade out of districts is to be kept free in Victoria, and made freer in other States, it may well be important to look at alternative ways of providing reasonable protection for the assets of districts (see chapter 12). Again, though, care is needed: exit fees and the like could quickly become another trade impediment.

It is instructive to consider the Pyramid-Boort area’s recent turnaround to become a net importer of water. The area’s successive losses of entitlement galvanised local people and Goulburn-Murray Water into action: identifying parts suitable for development, then facilitating any development. Districts that are strong have little to fear from being open.

Meanwhile, it is clear that prohibitions on trade out of districts (especially from Murray Irrigation Ltd, where so much entitlement is held) are an obstacle to wider interstate trade. Now that such companies exist, it is not easy to march in and order them to change. At least in the first instance, it is necessary to use persuasion.

All States need to be wary about extending the problem. In devolving responsibility for districts, or setting up new, privately funded delivery systems like the potential Deakin development around Mildura, a hard look is needed at ways of retaining rights to water / decisions about trade in the hands of individual farmers.
10. Trade in bulk or special entitlements

Urban authorities’ water

Many country towns, with some hundreds of inhabitants, use no more water than a single irrigator. Urban authorities were keen, however, to have entitlements with stronger tenure and more status than, say, a licence - so under the Water Act 1989 they are granted “bulk entitlements”, like rural water authorities.

In the big regulated supply systems, these entitlements may simply be to have a certain volume of water delivered by the rural water authority which runs that big supply system. Elsewhere, urban entitlements may be to pump water out of an unregulated stream, or to harvest water via an onstream storage that is owned by the urban authority itself.

Urban entitlements are tradeable in accordance with practically the same rules as irrigators’ rights. (One difference is that, on unregulated streams north of the Divide, entitlement can transfer between towns managed by the same authority without being subject to the downstream-only, 20%-cut rule that normally applies.)

Trade requires the approval of the Minister, unless it is temporary trade to or from irrigators - when approval can be given by the authority delivering water to the water users, just as with any other temporary trade. Examples of trading activity - and the issues it raises - are:

Temporarily selling to water users

Entitlements set in 1995 for towns supplied by the Goulburn system were based on the capacity of the urban authority’s pumps and other infrastructure, so were generous. This explains why Goulburn Valley Water has been the most active of the 15 urban authorities outside Melbourne, in selling excess water temporarily to irrigators. It has been selling about 9,000 ML a year.55

Another seller is Gippsland Water, which has even more water to spare - its projections of urban and industrial usage have turned out to be too high - but is faced with weak demand from rural buyers on the Latrobe River. Here, the authority owns a share of water in Blue Rock Dam, and when some of this is sold it has to be translated into delivery of water to farmers.56

Demand is greater in the nearby Macalister system. In spring 1997, when rights there were otherwise in danger of not being 100% met, Melbourne Water agreed to allocate an extra 49,500 ML from Thomson Dam to Southern Rural Water - 17,250 ML to be paid back over the next three years or paid for at $65 a ML, the rest in parcels priced at $80 to $120 a ML. Without this, the cost of the drought to dairy farmers - some $40,000 per farm in extra feed etc - would have been much higher.57

This deal pre-dated bulk entitlements for either Melbourne or Southern, and came after some political pressure on Melbourne - which was resisting any increased risk of restrictions in future years. One-on-one trades like this can be difficult, there can be a need for third-party mediation. If individual irrigators could buy direct from Melbourne, they would have less market power, though the market would be more transparent.

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55 About 5,000 ML of this is from towns like Alexandra in the Greater Goulburn zone. About 4,000 ML is from Shepparton etc on the lower Goulburn. To sell to the Greater Goulburn it must be a dry season (and the overall limit is 5,000 ML), or else it must be back trade. (In early 2001/02 net permanent trade from the Goulburn to the Murray jumped to over 6,000 ML, and this is now permitted to support temporary trade back to the Goulburn.)

56 These farmers are normally supplied partly from unregulated flows, but to ensure no cut in annual flows to the Gippsland Lakes, for every bit of water bought, a corresponding volume must be released from the Dam.

57 See "The Drought. Lessons for the Victorian Water Industry – notes on workshop 8/10/98", NRE. Some of the extra water ended up not being required for meeting 100% of water rights; about 10,000 ML of it was offered to individual farmers, at $80 a ML to Melbourne Water and (after losses etc) $100 a ML to farmers.
Temporarily buying from water users

An urban authority needs a highly reliable supply, so one might not think that it would resort to the temporary market. However, for the last few years Western Water has been buying about 1,000 ML annually from irrigators along the Werribee River, to augment water supplies provided out of Lake Merrimu to Melton, a fast-growing satellite of Melbourne. This particular practice is now being reviewed. Located on a tributary of the Werribee River, Lake Merrimu is used mostly as a drought reserve for irrigators, not to supply them with water every year: the trade may have been eroding the reliability of their supplies. As well, Western Water has tended to buy in autumn, water that irrigators cannot carry over and so is cheap: it has to use what it buys by season’s end, but can carry over more of its other entitlement.

Selling water permanently to users / recycling wastewater

Provision for trading permanently to water users was introduced in late 1995, a few months after the other urban authority / water user trading provisions (reflecting anxiety that authorities might claim more entitlement than they needed, then immediately sell at a profit). As it has turned out, the provision has yet to be used: any spare water has been held for future growth.

Urban authorities have, though, been developing schemes for recycling and on-selling used water. Treated effluent from Ararat, for instance, is being piped about 15 kilometres to Great Western for vineyard development. Melbourne is committed to recycling 20% of its wastewater by 2010. Legal tools for allocation and trading of this water are being looked at.

Authorities can, under their entitlements, apply for a credit for water returned to a distribution system or river - which would mean they could resell it as normal water right or licence. The returned water has to be treated to a high standard, and its sale have no adverse impacts.

North of the Divide, where the Cap limits diversions to 1993/94 levels, a credit might be possible if the effluent was disposed of to land in 1993/94. But if the effluent was disposed of to a river, it should really stay there, with no credit possible - even though it is slightly polluting, or (at the Environment Protection Authority’s insistence) very expensively treated.58

Buying permanently from water users, to augment urban entitlements

Water can be converted from agricultural to, say, mining use, while remaining under a licence, i.e. not under any urban authority. On the other hand, food-processing factories usually want potable water. Milk processor Bonlac, for instance, has bought water from irrigators, and has transferred this entitlement to Goulburn Valley Water, in order to receive a treated supply.

Lower Murray Water has bought water directly from irrigators, to provide for the expansion of Mildura and other centres, including the new wineries and other processing plants springing up in that region. Moreover, this authority has acquired water (or funds to buy water) to supply new subdivisions, just by imposing a levy on developers.59

When an urban authority wishes to buy water rights or licences, under section 47C of the Water Act it must apply to the Minister to set terms and conditions - e.g., as to the locations to be targeted, or how the water is to be transported. Acquiring water from irrigators could well be a sensible way of meeting growing urban demand, but this can be a touchy matter, even though the volumes involved may be quite small.

58 The Environment Protection Authority has tended to press authorities into land disposal, which does not always fit well with the Cap. Most early bulk entitlements did not deal explicitly with existing returns. However, the process of defining the Cap for Canberra, which returns about half its water, has highlighted the importance of controlling net diversions.

59 S.268 of the Water Act allows for contributions from property owners towards the costs of works used to service those properties – but not the costs of buying water. In considering an amendment to this section, some officers argued that water costs should be borne by all users, not just newcomers. Meanwhile, Lower Murray Water’s legal advice was that they could use the general power in s.264.
Trading between urban authorities

To help service development around Phillip Island on the eastern side of Melbourne, Westernport Water has been buying water annually from South Gippsland Water, using a 10-kilometre pipeline that links reservoirs of the two authorities.

Similarly, to supplement supplies from the Maribyrnong system to the metropolitan satellite of Sunbury, Western Water has entered into a contract to obtain water from Melbourne’s system, again via a 10-kilometre pipeline built for the purpose.

The potential for more interconnection between authorities and catchments is emerging rapidly, especially around Melbourne. Thus, in the 1999/00 summer, a temporary transfer of water was considered from Lal Lal Reservoir, which services Victoria’s two largest provincial cities, Ballarat and Geelong, across to the Werribee system, to supply metropolitan satellite Melton. No new infrastructure would have been required.

In the longer term, Western Water is interested in connecting Melton, like Sunbury, into Melbourne’s supply system. This could free up some Werribee resources for transfer to Ballarat, which has limited choices for the future, or Geelong. Geelong needs new supplies in the next ten years or so, and has given thought to a pipeline direct from Melbourne. Melbourne, liking to look a long way ahead, is looking at augmentation options outside its catchment to the north and east (e.g. little used water in Blue Rock Dam).

From amongst all these possibilities, the most rational arrangements are unlikely to materialise simply through “the market”. About half a dozen authorities/catchments are jockeying for position, and there is probably an important role for centrally facilitated planning, as well as for commercial bargaining between individual authorities.

Melbourne entitlements and access rights

Right in the middle of this growing interconnection is the Yarra system, the main source of Melbourne’s water, where bulk entitlements have not yet been set. In the interim, Melbourne Water, which owns the storages, acts as wholesaler to the three government-owned retailing companies.

There has been some interest in seeing if it is possible to divide up the space in storages, and the inflows to them, between the three retailing companies. This kind of “capacity sharing” is being used to good effect in other places, e.g. at Lal Lal Reservoir (two-thirds Ballarat’s, one third Geelong’s), and for the Murray system (half Victoria’s, half NSW’s).

Each share holder can manage their water as they wish, independently of other share holders. Thus, we have seen how Victoria and NSW can pursue quite divergent reliability policies. In the case of Melbourne, it is argued that choices about whether to hold more water in reserve (e.g. by pumping and treating unregulated flow in the Yarra) are best made by the entities closest to the consumers. And that three entitlement holders would be better for water trading, e.g. more competition when it came to selling water to other authorities or farmers.

One of the thorniest problems in supplying Melbourne is transport of water from east (where most of the storages are) to west across the city: there would probably need to be a sharing up of the pipes and other works involved, which could create inefficiencies. Similarly, it may be extravagant for each retailing company to hold water in reserve in case of serious drought. Another issue to be worked through is whether having three separate entitlement holders would improve augmentation decisions.

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In the meantime, some elements of competition between what are otherwise monopoly service providers, are available at the borders between them, and through access provisions. The MMBW Act 1958 (s.68A) and the Water Industry Act 1994 (s.65A) give subdivisions, factories, etc, access to the works of Melbourne Water or any of the retailing companies, for transporting water that they may have bought somewhere else. The price is as negotiated or arbitrated.

These provisions have not been fully used yet - and a competition policy review of water law suggests they could lead to lucrative bits of water businesses being cherry-picked, making it tougher for the duty to supply other water users to be met. The review considers, given the water industry’s significance for public health and the environment and its natural monopoly characteristics, having single suppliers with exclusive responsibility within a geographical area makes sense.61

Some contesting occasionally occurs at the borders. Thus, one of the metropolitan retailing companies - City West Water - and Western Water both put in bids to supply the new suburb of Caroline Springs, located between them, with the winner being selected by the government. The competition policy review supports this sort of “vetted competition”, noting it must be based on supply costs rather than on prices, since prices tend to be averaged, some cross-subsidies flowing from the easy-to-supply users to the hard-to-supply ones.

**Saved water and environmental water**

**Water from reduction in losses**

If an urban or rural authority makes savings in its delivery losses, it is entitled to trade them. However, if the water is to be sold permanently, the authority must first get the Minister’s approval, and will need to satisfy the Minister that the savings are real and lasting, so there will be no adverse impact on customers.

Sunraysia Rural Water, for example, in 1995 sold by tender 1,200 ML from pipelining of the Carwarp D&S system, and 1,500 ML from pipelining in the Red Cliffs irrigation district, obtaining average prices of around $400 a ML.

In the case of irrigation districts, farmers hold tradeable rights. The bulk entitlement provides water to meet those rights, plus an allowance for losses in the distribution system. This allowance is the only part that is really owned by, and can possibly be traded by, the authority.

The owner of the savings is generally the owner of the entitlement from which they are made. Thus, water freed up by efficiencies on a farm belong to the farmer; and NSW and Victoria share ownership of savings made by stopping unseasonal flooding of wetlands along their part of the Murray. The owner may offer the savings to another party, notably when that party funds them.

Some “losses” consist of water that is outfalling into rivers, or spilling into wetlands in the right season - i.e. they are environmentally valuable. It is important that savings are not made at the expense of the environment.

North of the Divide, water that is spilling into wetlands unseasonably but is not counted against the Cap, cannot be sold off to irrigators unless MDBC agrees to a corresponding increase in the Cap. If any water is being counted against the Cap, and it is saved not for sale to irrigators but to improve environmental flows, then there needs to be a corresponding decrease in the Cap.

Savings are being funded by governments to improve flows in the Wimmera / Glenelg Rivers (as at 2001, commitments made to 50 gigalitres, or GL), and in the Snowy and Murray Rivers (212 GL and 75 GL). Savings in say the Goulburn system for the Snowy, must be transferred there using the same kinds of rules and adjustments as are in place for normal water trading, so as to prevent any adverse repercussions.62

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62 Where a large volume of regulated commitment is terminated, there is a case for the freed up regulatory capacity being allocated to the environment – or else rivers will be more highly regulated than previously. Where it is terminated not by system savings but by buying consumptive rights (the fallback option for Snowy), there is a case also for an amortisation levy, so the remaining right holders do not have to pay more for headworks.
Environmental allocations

The environment’s entitlements that protect instream flows - e.g. minimum flows, and flows left in rivers through the Cap on diversions - are by their nature untradeable. Those that allow water to be taken to off-river locations, e.g. the 27,600 ML flora and fauna entitlement that is used to water Torrumbarry wetlands, are consumptive and in principle can be traded.

The flora and fauna entitlement has been sold temporarily to irrigators in very dry years, when under natural conditions wetlands would have dried out:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sold (ML)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994/95</td>
<td>c. 10,000</td>
<td>20,000 ML put out for tender, for Vic, NSW &amp; SA irrigators</td>
</tr>
<tr>
<td>1997/98</td>
<td>c. 12,000</td>
<td>Most sold by tender (only in Vic), some by a broker</td>
</tr>
<tr>
<td>1999/00</td>
<td>c. 3,000</td>
<td>Some sold on Exchange, most by a broker, about 7,000 ML unsold</td>
</tr>
<tr>
<td>2000/01</td>
<td>380</td>
<td>7,000 ML offered, but most withdrawn for Barmah forest</td>
</tr>
</tbody>
</table>

180 metres high and holding 4,000 GL, Dartmouth Dam is the largest storage in the Murray-Darling Basin. Inflows average just 930 GL a year. Victoria uses its half share of dam space to conserve water for several-year dry spells. The owner of the 150 megawatt power station has full control over the release of 37 GL a year, and has looked to buy more.
Conversely, irrigators’ rights could be *bought* for environmental purposes. Some people have advocated temporary buying for watering wetlands - though in spring, when the water is needed, prices can still be quite high. Buying on the permanent market is the fallback method (after funding savings) to return flows to the Snowy River.

Overseas, groups like the Royal Ornithologists Association in the UK have been interested in buying water for the environment. And in Victoria, several irrigators have sought, either temporarily or permanently, to donate water that they no longer need, e.g. through an “environmental flows bank”. It would be important to cut the Cap, or the benefit would be eroded by higher use of “sales”.

**Water for hydro power**

Hydro-electricity power stations do not *consume* water: the water remains in the river system, and can potentially be taken out by water users downstream. However, owners of these power stations prefer to have control over the timing of releases, because then they can match generation with periods of high electricity prices. The main advantage of hydro is its ability to respond quickly to demand fluctuations.

A lot of the hydro power generated *within Victoria* comes from Eildon and Dartmouth storages, where almost all releases are controlled by Goulburn-Murray Water and MDBC respectively, primarily to meet irrigator and environmental needs downstream. Power station owner Southern Hydro has little discretion over the timing of these releases, except in relation to hours of the day (since short-term flow changes can be smoothed in pondages just downstream of the dam wall).

Southern Hydro does own small water entitlements at both storages (52 GL at Eildon and 37 GL at Dartmouth, with defined scope for overdraw and carryover), giving it some extra flexibility. In 2000/01, when it was given permission to overdraw some of its 37 GL entitlement at Dartmouth,63 Southern Hydro boosted its earnings through the extra capacity to offer derivative products, e.g. insurance to other generators - even though in this instance it did not proceed with any overdraw.

For the same reasons, Southern Hydro has been interested in temporarily buying additional entitlements from irrigators (though this is not possible for Dartmouth generation in years when no releases need to be made from Dartmouth). Southern Hydro is not allowed to sell its existing entitlements to irrigators, since they are not consumptive, and have no claim on Cap space.

The largest source of hydro power *to Victoria* is the Snowy Mountains Scheme, which includes Lake Eucumbene, which in a wet sequence can accumulate vast amounts of water. Snowy Hydro is obliged to provide 1,062 GL of water (about half of it coming from across the Divide) each year into the River Murray above Hume Dam - though it could reduce this commitment in a particular year, gaining more control over timing of releases, by buying temporarily from irrigators.

Conversely, irrigators have paid to obtain, not extra water from Snowy Hydro, but earlier access. In spring 1999, with seasonal allocations below 20%, quite a few NSW rice-growers (through Murray Irrigation Ltd) agreed to pay $13.75 a ML for advances on their following year’s water (totalling 89 GL including 20% for delivery losses). Additional lots of water were offered at higher prices, but proved unnecessary. NSW also explored the possibility of roll-over, though this was not agreed to.

In the past, balancing the value of water for irrigation and electricity has been a bureaucratic process - and rather ineffectual. The scope for trading of water for hydro power has only begun to be explored. There is likely to be considerable return both for hydro companies, and for water users and irrigation storage operators, in developing commercial arrangements further.

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63 Since the 37 GL is for a power station originally owned by Victoria, Victoria cedes some water each year to NSW as compensation. But at this time, *all* releases being made from Dartmouth were NSW water, aiming to equalise NSW and Victorian resources in Hume. So NSW insisted that Victoria underwrite any NSW resource that subsequently spilt from Hume as a result of the overdraw. Victoria agreed, provided it got *all* the extra revenue that may have come from Southern Hydro. The accounting is to be reviewed: Southern Hydro releases should be Victorian water, to align risks and benefits.