# 3 Victoria

## 3.1 Best practice pricing

Water and wastewater businesses should earn sufficient revenue to ensure their ongoing commercial viability while avoiding monopoly returns. To this end, governments agreed the following principles should apply:

- The jurisdictional independent pricing body should set or review prices or pricing processes for water storage and delivery and report publicly.
- To be viable, a water business should recover at least the operational, maintenance and administrative costs, externalities (defined as the natural resource management costs attributable and incurred by the water business), taxes or tax equivalents (not including income tax), the interest cost on debt, dividends (if any) and provision for future asset refurbishment/replacement. If a dividend is paid, it should be set at a level that reflects commercial realities and simulates a competitive market outcome. This is defined to be the lower bound of cost recovery.
- To avoid monopoly rents, a water business should not recover more than the operational, maintenance and administrative costs, externalities (all external costs and benefits), taxes or tax equivalent regimes, and provision for the cost of asset consumption and the cost of capital, the latter being calculated using a weighted average cost of capital. This is defined to be the upper bound of cost recovery.
- In determining prices, the independent pricing body should determine the level of revenue for a water business based on efficient resource pricing and business costs. Specific circumstances may justify transition arrangements to that level. Cross-subsidies that are not consistent with efficient and effective service, use and provision should ideally be removed.
- Where service deliverers are required to provide water services to customer classes at less than full cost, the cost of this should be fully disclosed and ideally paid to the service deliverer as a community service obligation (CSO).
- Asset values should be based on a deprival value method unless an alternative approach can be justified, and an annuity approach should be used to determine medium to long term cash requirements for asset replacement/refurbishment.
- Transparency is required in the treatment of CSOs, contributed assets, the opening value of assets, externalities (including resource management costs), tax equivalent regimes and any remaining cross-subsidies.

**Future reform:** Metropolitan water systems should continue movement toward the upper bound of cost recovery by 2008. Rural and regional water systems should achieve the lower bound of cost recovery, and continue to move towards the upper bound where practicable. Where upper bound pricing is unlikely and a CSO is necessary, it should be publicly reported and the government should consider alternative management arrangements. Jurisdictions' approaches to pricing and attributing the costs of water planning and management should be consistent by 2006. Water prices should be set on a consumption basis, comprising a fixed component and a variable use component, where this is cost effective.

**References:** 1994 Council of Australian Governments (CoAG) water reform agreement, clauses 3(a)–(d); guidelines for the application of section 3 of the CoAG strategic framework and related recommendations in section 12 of the expert group report (1998 CoAG pricing principles); Intergovernmental Agreement on a National Water Initiative

# Cost recovery and consumption based pricing by rural water service providers

**Assessment issue:** Victoria is to demonstrate that government-owned irrigation schemes and government-owned suppliers of bulk water are setting prices based on the principles of full cost recovery and consumption based pricing. Government-owned water businesses must also show that they are managing any subsidies consistent with efficient and effective service provision and use. In the 2003 National Competition Policy (NCP) assessment, Victoria reported that some of its rural water authorities were not operating on a commercially viable basis (as defined by the CoAG pricing principles), but it did not transparently report subsidies to these rural water authorities. Victoria indicated that prices for regulated rural water services reflected consumption based pricing principles, but that it was restructuring Goulburn–Murray charges. For the 2004 NCP assessment, the National Competition Council has looked for Victoria to demonstrate that its five rural water authorities have substantially achieved lower bound full cost recovery (consistent with all elements of the CoAG pricing principles). Where an authority would not achieve full cost recovery by 30 June 2004, the Council has looked for Victoria to show that the authority has made substantial progress towards lower bound cost recovery and to advise when lower bound cost recovery is likely to be achieved. Victoria has also needed to demonstrate that any CSOs supporting these schemes are transparent. In addition, the Council has looked for Victoria to report on the outcome of Goulburn–Murray Water's restructure of charges, including showing how the restructured charges reflect consumption based pricing principles.

**Future reform:** Governments should apply consumption based pricing, achieve lower bound pricing for all rural systems and continue towards upper bound pricing. Any subsidies must be transparent, and alternative management arrangements aimed at removing the need for a continuing subsidy must be introduced where practicable.

**References:** 1994 CoAG water reform agreement, clauses 3(a) and (d); 1998 CoAG pricing principles; Intergovernmental Agreement on a National Water Initiative

## Cost recovery

Rural water services are delivered by five rural water authorities: Goulburn–Murray, Gippsland and Southern, Sunraysia,[1] First Mildura, and Wimmera–Mallee.[2] These authorities manage irrigation systems and services, manage stock and domestic systems, manage headworks such as large dams, licence private diversions from waterways and the extraction of groundwater, and conduct environmental management activities. Water use in Victoria is dominated by irrigation, which uses 77 per cent (or about 3.7 million megalitres) of the total volume of water extracted each year. Goulburn–Murray Water is by far the largest authority, accounting for 90 per cent of all entitlements used for irrigation and supplying bulk water services to two other rural water authorities and several regional urban water areas.

[1] Sunraysia Rural Water merged with Lower Murray Water to form the Lower Murray Urban and Rural Water Authority on 1 July 2004.

[2] Wimmera–Mallee Water and Grampians Water mergred to form the Grampians Wimmera Mallee Water Authority on 1 July 2004.

Victoria advised that all water authorities set revenue targets that aim to recover lower bound costs in accord with the CoAG pricing principles. Authorities use normalised revenues based on 10-year rolling averages of sales. While they can experience minor fluctuations between profit and loss from year to year (where there are unforeseen or seasonal variations in expenses and/or revenues) this method aims to ensure they achieve financial self sufficiency without earning monopoly rents over the long term.

Victoria reported that most of the state's rural water authorities recovered operating, maintenance and administration costs, finance charges and a renewals annuity in 2002-03. Where externalities are directly attributable to water users, and rural water authorities have incurred costs to undertake remedial works to address them, these costs are also recovered from rural water users. Natural resource management costs are generally not separately identified in the authorities' corporate plans or reported in rural water authority annual reports. Rural water authorities have been operating under the national tax equivalent regime since 1 July 2002. Table 3.1 indicates the 2002-03 revenue and cost recovery outcomes for the five rural water authorities.

**Table 3.1:** Cost recovery by rural water authorities, 2002-03

| | *First Mildura Irrigation Trust* | *Gippsland and Southern* | *Goulburn–Murray* | *Sunraysia*[a] | *Wimmera–Mallee*[b] |
|---|---|---|---|---|---|
| | $'000 | $'000 | $'000 | $'000 | $'000 |
| **Revenue** | | | | | |
| Bulk, service and use | 4 782 | 16 720 | 63 467 | 12 140 | 12 258 |
| Other | 878 | 1 768 | 32 619 | 1 641 | 7 333 |
| *Total revenue* | *5 660* | *18 488* | *96 086* | *13 781* | *19 591* |
| **Expenses** | | | | | |
| Operations, maintenance and administration | 4 349 | 16 480 | 85 438 | 9 311 | 9 857 |
| Finance charges | 0 | 0 | 200 | 0 | 0 |
| Renewals annuity | 987 | 2 145 | 14 569 | 2 471 | 3 455 |
| Other | 131 | 905 | 3 569 | 556 | 3 343 |
| *Total Expenses* | *5 467* | *19 530* | *103 776* | *12 338* | *16 655* |
| **Surplus / deficit** | **193** | **–1 042** | **–7 690** | **1 443** | **2 936** |

[a] Sunraysia Rural Water merged with Lower Murray Water to form the Lower Murray Urban and Rural Water Authority on 1 July 2004. [b] Wimmera–Mallee Water and Grampians Water merged to form the Grampians Wimmera Mallee Water Authority on 1 July 2004.

*Source*: Government of Victoria 2004

Victoria explained that Goulburn–Murray Water's poor financial result for 2002-03 reflected the impact of the sixth consecutive year of drought. Low water availability due to the drought had restricted allocations on the Murray

and Goulburn systems. This had reduced sales revenue while also increasing operations costs. Gippsland and Southern Water also recorded a deficit in 2002-03.

During 2004 Victoria confirmed its commitment to rural lower bound cost recovery (DSE 2004). In the Water Industry Regulatory Order 2003, the government prescribed cost recovery principles that all water authorities must comply with. The principles require water authorities to set prices to recover operating, maintenance and administration costs, capital expenditure to renew and rehabilitate assets, and finance costs associated with new investments (including the cost of debt or equity). The government has decided to exempt rural authorities from generating a return on past investments (those made before 1 July 2004). In line with this policy the government will phase out by 1 July 2005 the requirement to earn a 4 per cent return on assets providing bulk water services to regional urban authorities. The government considers this approach appropriately recognises that much of the existing rural infrastructure is sunk (and the costs are either already recovered or not expected to be recovered).

The Essential Services Commission assumed responsibility for water industry economic regulation on 1 January 2004. The *Water Industry Act 1994* as amended by the *Water Industry (Essential Services Commission and other Amendments) Act 2003* establishes the broad framework for the commission's regulation of the water industry pricing. The commission must make pricing decisions in accord with the Water Industry Regulatory Order 2003, which prescribes the principles of full cost recovery. It must also monitor and report publicly on the performance of the regulated water industry.

The government has also confirmed that it will introduce arrangements for the water authorities to make an environmental contribution (separate from establishing the base cost of delivering water services). This contribution will add to funding for sustainable water management to help address any adverse environmental impacts from the use of water. From 1 July 2005 to 30 June 2008, rural water authorities will be required to pay an amount equivalent to 2 per cent of their existing revenues as an environmental contribution. The government considers that the lower rural contribution (urban water providers will contribute 5 per cent) recognises irrigators' role in working towards better environmental outcomes, and will assist them to make the necessary adjustments. Goulburn–Murray Water, however, will not be required to contribute funding to environmental initiatives until 1 July 2007 in recognition of the reforms to the sales water allocation framework and the drought. Each rural water authority will be able to pass on its environmental contribution by increasing the tariffs and charges for its services.

Victoria considers that its environmental contribution approach appropriately recognises the difficulty in quantifying some of the environmental impacts of water use and, in turn, estimating the costs associated with those impacts. It considers that the approach also reflects the difficulty of determining the extent to which those using and paying for services are responsible for adverse environmental impacts.

Victoria anticipates that environmental contributions will generate approximately $225 million by June 2008, but has not indicated the proportion that would come from rural water authorities. Before 1 July 2008 and every four years thereafter, Victoria will review the amount of funds raised through environmental contributions and each rural water authority's environmental contribution.

## Transparent reporting of subsidies

Under the *Financial Management Act 1994*, regional urban and rural water authorities must report CSOs in their annual reports. All authorities do this. Several rural water authorities provide price concessions for pensioners, reporting these concessions in their annual reports — for example, Goulburn–Murray Water and Sunraysia Rural Water.

## Consumption based pricing

All rural water authorities apply consumption based pricing principles. The fixed component of the charge reflects costs that do not vary with use (such as access fees), while the variable component is linked to the volume of water used. Table 3.2 outlines rural water authorities' fixed and variable charges in 2003-03 and the proportions of revenue raised by each element of the charge.

Goulburn–Murray Water restructured its irrigation service charge in 2004. The restructured tariffs comprise a fixed service charge and entitlement storage fee and a variable infrastructure use charge. The service charge is designed to recover the costs of water resource administration — including billing, debt collection and metering — and is levied on each customer according to the number of service points on the customer's property. The entitlement storage fee recovers from customers the bulk water cost attributable to their water entitlement. The infrastructure use fee recovers the costs that the rural water authority incurs in operating the infrastructure that delivers the service, and is charged on the basis of the volume of water delivered. The infrastructure access fee recovers the costs of items such as infrastructure maintenance and renewals.

**Table 3.2:** Fixed and variable charges by rural water authorities, 2002-03

| *Rural water authority* | *Tariff component* | *Nature of component* | *Proportion of revenue (%)* |
|---|---|---|---|
| Goulburn–Murray[a] | Service fee | Fixed | 3.9 |
| | Entitlement storage fee | Fixed | 20.0 |
| | Infrastructure access fee | Fixed | 48.8 |
| | Infrastructure use fee | Variable | 26.3 |
| | Additional service point fee | Variable | 1.0 |

(*continued*)

**Table 3.2** continued

| *Rural water authority* | *Tariff component* | *Nature of component* | *Proportion of revenue (%)* |
|---|---|---|---|
| Sunraysia[b] | Access fee | Fixed | 67.0 |
| | Bulk water charge | Fixed | 5.2 |
| | Drainage and salinity fee | Variable | 27.8 |
| Wimmera–Mallee | Domestic and stock access charge | Fixed | 82.0 |
| | Usage fee | Variable | 18.0 |
| First Mildura | Access fee | Fixed | 26.7 |
| | Bulk water diversion charge | Fixed | 10.3 |
| | Salinity levy | Variable | 1.7 |
| | Delivery fee | Variable | 61.2 |
| | Drainage fee | Variable | 0.02 |
| Gippsland and Southern | Irrigation services charge | Variable | 100.0 |

[a] The tariff components reported for Goulburn–Murray Water are for 2003-04. [b] Now the Lower Murray Urban and Rural Water Authority.

*Source*: Government of Victoria 2004

# Discussion and assessment

## Cost recovery

Under the 1994 CoAG water reform agreement and the National Water Initiative, Victoria needs to show its rural water services are setting prices that achieve at least the lower bound of cost recovery in accord with the CoAG pricing principles. The lower bound of cost recovery should recover at least the operational, maintenance and administrative costs, externalities (defined as the natural resource management costs attributable and incurred by the water business), taxes or tax equivalents (not including income tax), the interest cost on debt, provision for future asset refurbishment/replacement, and dividends (if any).

Victoria uses normalised 10-year averages to provide an appropriate basis for ensuring the ongoing commercial viability of water businesses. Its rural water authorities set prices to recover all lower bound costs. This is now overseen by the Essential Services Commission, which adds rigour and transparency to the way Victoria determines efficient water service prices.

The requirement that water authorities pay an environmental contribution to the government, which they are permitted to pass on through price increases, is a step towards ensuring that appropriate natural resource management costs are (transparently) reflected in water prices. This reform is consistent with the direction of the externality cost element of the CoAG pricing principles. The transparency of the price setting process would be further improved, however, by requiring rural authorities to separately report all natural resource management costs.

Victoria's treatment of assets accords with the lower bound cost recovery requirements of the CoAG pricing principles. The lower bound does not require water businesses to account for the opportunity cost of capital, so does not require them to earn a return on the value of infrastructure assets. Victoria's approach also accords with its commitment under the National Water Initiative to move towards upper bound pricing for all rural systems where practicable.

### Transparent reporting of subsidies

Acknowledging that rural water authorities report CSOs and pension concessions in their annual reports, the Council considers that Victoria has met its water reform commitments relating to transparent reporting of subsidies.

### Consumption based pricing

In the 2001 NCP assessment, the Council was satisfied that pricing of regulated services by Victoria's rural water authorities appropriately reflects the principle of consumption based pricing. Goulburn–Murray Water's refinement of its irrigation service charges better reflects the costs of service provision and the way in which these costs are incurred, and accords with consumption based pricing obligations.

## Murray–Darling Basin Commission costs — River Murray Water and water resource management cost allocation

**Assessment issue:** The River Murray Basin states have different policies on passing on River Murray Water costs and water resource costs to water users. In the 2003 NCP assessment, Victoria indicated that it allocates its share of River Murray Water costs among irrigators, who bear the cost of irrigator services, and taxpayers, who bear the cost of providing services that deliver broad community benefits. Victoria indicated that it will refine its approach after the future commercial reform of River Murray Water. For the 2004 NCP assessment, the Council has looked for Victoria to demonstrate that River Murray Water and MDBC water resource management costs are transparently reported, and to advise on any development since the 2003 NCP assessment in its approach to allocating its share of River Murray Water costs.

**Future reform:** Signatories to the National Water Initiative are to achieve lower bound pricing for all rural systems in line with existing NCP commitments, and bring into effect by 2006 consistent approaches to pricing and attributing costs of water planning and management. This should involve the identification of all costs associated with water planning and management, and the identification of the proportion of costs that can be attributed to water access entitlement holders, consistent with the principle of linking charges as closely as possible to the costs of activities or products.

**References:** 1994 CoAG water reform agreement, clauses 3(a) and (b); 1998 CoAG pricing guidelines; Intergovernmental Agreement on a National Water Initiative

Victoria contributed approximately $21 million to the Murray–Darling Basin Commission (MDBC) in 2002-03. Of this amount, $14.2 million was the contribution towards River Murray Water's annual costs. These costs are met by the government (about $5.7 million) and Goulburn–Murray Water ($8.4 million).

Victoria has not developed its approach to allocating its share of River Murray Water costs since the 2003 NCP assessment. In that assessment, Victoria advised that it distinguishes between costs relating to services that deliver broad community benefits and those relating to services that benefit primarily irrigators. Under this approach, the Victorian Government bears the costs relating to broad community benefits, while Goulburn–Murray Water's customers bear the cost of irrigator services.

Victoria indicated that it supports transparency in reporting contributions to the costs of operating the MDBC and River Murray Water. It has reported, however, only its contribution to the total cost of operating the MDBC, rather than disaggregating this amount to show separately its contributions to River Murray Water and MDBC costs, and the respective state and Goulburn–Murray Water shares of the contribution to River Murray Water costs. Given that River Murray Water is an internal water business of the MDBC, Victoria considers that the primary responsibility for reporting participating jurisdictions' contributions to that business should fall to the MDBC through its annual report.

Goulburn–Murray Water reports the value of its share to the relevant irrigators, who ultimately bear this cost through their service charges. The MDBC reports contributions by contracting governments in its annual reports.

## Discussion and assessment

Under the 1994 CoAG water reform agreement and the National Water Initiative, Victoria committed to implement best practice water pricing and institutional arrangements. These are arrangements that, among other things:

- promote the economically efficient and sustainable use of water resources and water infrastructure, and government resources devoted to water management
- facilitate the efficient functioning of water markets (including interjurisdictional markets) in both rural and urban settings
- apply user pays principles and achieve pricing transparency for water storage and delivery in irrigation systems
- achieve cost recovery for water planning and management, with consistent approaches to attributing planning and management costs by 2006.

In 2002-03, the Victorian Government allocated all MDBC costs relating to resource management and approximately 40 per cent of River Murray Water costs to taxpayers. Goulburn–Murray Water paid approximately 60 per cent of River Murray Water costs.

The MDBC's independent audit of cost sharing arrangements (Langford and Scriven 2002) argued that the following actions are necessary to provide clear price signals to water users:

- All River Murray Water costs need to be recognised and all subsidies and CSOs need to be disclosed.
- Financial and pricing information for River Murray Water should be publicly available.
- State governments should disclose (on a megalitre basis) the level of subsidy and/or the CSO provided to each water business that receives bulk water from River Murray Water.

The Council accepts that some disclosure is a state responsibility and some is the responsibility of the MDBC. Full disclosure of MDBC and River Murray Water costs is important because the states have different policies on passing on River Murray Water costs to water users. All governments need to ensure River Murray Water and any relevant MDBC costs are appropriately (and consistently) allocated to users.

While Victoria has satisfactorily addressed its rural pricing obligations for this assessment, it has committed under the National Water Initiative to implement (Murray Darling Basin state) consistent approaches to pricing by 2006 and to attribute (also by 2006) the costs of water planning and management. This work should involve the identification of all costs associated with planning and management (including the costs of underpinning water markets) and the identification of the proportion of costs that is attributable to water access entitlement holders, consistent with the principle of linking charges as closely as possible to the costs of activities and products. This information should be publicly reported. Victoria will need to address these matters to comply with rural water pricing obligations.

## Cost recovery in issuing licences for water extraction

**Assessment issue:** Victoria is to demonstrate that it recovers appropriate costs in setting fees for water licences, in accord with the CoAG pricing principles. In the 2001 NCP assessment, Victoria provided the Council with a copy of Goulburn–Murray Water's licence fee schedule for unregulated catchments but did not report more broadly on its water licence fee arrangements and cost recovery outcomes. For the 2004 NCP assessment, the Council looked for Victoria to provide information on water licence fees for applications, renewals, amendments, and permanent and temporary transfers, and show how the user fees reflect costs.

(*continued*)

**Future reform:** Signatories to the National Water Initiative are to bring into effect consistent approaches to pricing and attributing costs of water planning and management by 2006. This should involve (i) the identification of all costs associated with water planning and management and (ii) the identification of the proportion of costs that can be attributed to water access entitlement holders consistent with the principle that charges are linked as closely as possible to the costs of activities or products.

**References:** 1994 CoAG water reform agreement, clauses 3(a) and (b); 1996 ARMCANZ paper; 1998 CoAG pricing guidelines; 1999 tripartite meeting; Intergovernmental Agreement on a National Water Initiative

Victoria reported that four rural water authorities have a delegated licensing function under the *Water Act 1989*. Rural water authorities are required to maintain registers of all holders of water right entitlements in irrigation districts and all individuals who are licensed to divert from rivers and streams. Rural water authorities must also maintain registers of use for irrigation or commercial purposes from farm dams. Victoria advised that it sets all fees to fully recover the cost of all activities associated with the licensing function.

### Discussion and assessment

The 1994 CoAG water reform agreement commits governments to ensuring that charges for rural water supply recover at least the lower bound costs of supplying water to users. It commits governments to progressively reviewing charges so that they comply with the principle of full cost recovery with any subsidies made transparent. The Council considers that Victoria has met obligations relating to recovering the costs of issuing licences for water extraction.

## 3.2 Water access entitlements

**Assessment issue:** Victoria is to institute a statutory water access entitlement system and support systems for the consumptive use of water, separate from land. The water access entitlement system should be specified as a perpetual or open-ended share of the consumptive pool of a water source. These arrangements should be in place by 2006.

At the time of the 2003 NCP assessment, Victoria was implementing a system of bulk entitlements defining the volume of water that its rural and urban water authorities may take from a river or storage, the rate at which water may be taken and the reliability of the entitlement. (Individual water entitlements in the irrigation districts are listed in a schedule to the bulk entitlement.) In unregulated river systems, water entitlements are provided through licences that allow the holder to divert water. Licences are also required to extract groundwater. Water licences and entitlements are specified in volumetric terms. Only land owners may hold water licences and individual water entitlements (with a transfer detaching the licence or entitlement from the seller's landholding and re-attaching it to that of the buyer). While bulk entitlements are held in perpetuity, water licences are issued for 15 years with a presumption of renewal. (Sunraysia Rural Water reduced the tenure of private diverters' licences to five years but had agreed to review its decision.) The bulk entitlements and the stream flow and groundwater management plans specify the reliability of supply. The Department of Sustainability and Environment maintains a public

(*continued*)

register of bulk entitlements. Rural water authorities maintain registers of water entitlements in irrigation districts and of licences for diversions from unregulated rivers.

For the 2004 NCP assessment, the Council has looked for Victoria to ensure its water access entitlements system and supporting arrangements are consistent with the state's commitments under the National Water Initiative. Victoria will need to:

- specify its water access entitlements as perpetual shares of water available for consumption
- remove the restriction on who can hold water licences and entitlements or demonstrate that the restriction is in the public interest and consistent with CoAG water reform obligations
- finalise the bulk entitlement conversion process and the stream flow and groundwater management plans to determine the reliability of supply.

**References:** 1994 CoAG water reform agreement, clause 4; 1999 tripartite meeting; Intergovernmental Agreement on a National Water Initiative

Under the Water Act, Victoria issues bulk entitlements to rural and urban water authorities. A bulk entitlement is a legal entitlement to water. It defines the volume of water that an authority is entitled to take from a river or storage, and may include the rate at which water may be taken and the reliability of the entitlement. Bulk entitlements are granted to rural water authorities for the regulated river systems and to urban authorities irrespective of whether they are supplied by regulated or unregulated rivers. When fully implemented, bulk entitlements will cover almost 80 per cent of water allocated for consumptive use in Victoria.

The majority of water entitlements in Victoria are within regulated irrigation districts. In these districts, bulk entitlements are issued to the rural water authorities as the basis for providing water to irrigators. Individual water entitlements in the irrigation districts are listed in a schedule to the bulk entitlement.

In the unregulated river systems, water entitlements are provided via bulk entitlements to urban water authorities and by licences that allow irrigators to divert water.[3] Unregulated rivers provide less than 10 per cent of the water for consumptive use in Victoria. Stressed unregulated rivers that have high environmental value are managed via stream flow management plans, which Victoria is developing on a priority needs basis (see section 3.3). Stream flow management plans include rules for allocating new water licences and flows (including environmental flows). Lower priority rivers will be subject to statewide management rules rather than a formal plan. Victoria is in the process of developing the rules.

Irrigators, mostly in northern Victoria, are also generally entitled to additional water (termed 'sales' water) when there is sufficient water to meet basic entitlements in the current and subsequent years. Sales water is usually offered as a proportion of the basic entitlement, subject to a maximum

[3] Licences are not required for water extraction for basic domestic and stock rights.

allocation (typically 100 per cent of the basic entitlement). Licences for industrial, domestic and stock purposes do not attract sales water. In addition, licensed private diverters in most of northern Victoria do not receive the first 30 per cent allocation of sales water made to district irrigators.[4]

Licences are also required to extract groundwater. Groundwater provides around 11 per cent of the water for consumptive use in Victoria. Where an aquifer is highly allocated or stressed, the government establishes a water supply protection area and develops a groundwater management plan (see section 3.3).

Water licences and entitlements are specified in volumetric terms. Only land owners may hold water licences and individual water entitlements (with a transfer detaching the licence or entitlement from the seller's landholding and re-attaching it to that of the buyer). While bulk entitlements are issued in perpetuity, water licences are generally issued for 15 years with a presumption of renewal. In 2001 Sunraysia Rural Water (now the Lower Murray Urban and Rural Water Authority) reduced the tenure of private diverters' licences to five years, to provide greater flexibility in managing environmental issues (particularly drainage and salinity), but undertook to review its decision. The Minister for Water has reserve powers under the Water Act to amend water entitlements in the event of a water shortage. The Act provides for compensation in certain circumstances.[5]

In accord with the Water Act, the Department of Sustainability and Environment maintains a public register of bulk entitlements. Rural water authorities are required to maintain registers of water entitlements in irrigation districts and of licences for diversions from unregulated rivers and use from farm dams. The bulk entitlements and stream flow and groundwater management plans specify the reliability of supply. Third party interests can be noted on the registers.

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4 Irrigators on regulated rivers may also be allowed to take 'off-quota water' in times of 'surplus' flow (that is, water that flushes down a river and cannot be harvested in public storages). Off-quota water is not permitted to be traded. Victoria intends to abolish off-quota water, which is no longer available on the River Murray and soon will not be available on the Goulburn River.

5 A water management plan can specify compensation payments for losses or expenses incurred as a result of an authority directing works to be carried out or works (other than a private dam) to be removed. If the enforcement of a plan confers a benefit on one person to the detriment of another, then the person suffering the loss is entitled to seek compensation from the other party.

## Reform progress

In its White Paper released in June 2004 (DSE 2004), the Victorian Government announced the following changes to water entitlement arrangements:

- The state's water allocation system will be extended to provide for secure, tradable entitlements to recycled water and stormwater. By managing all water within the same framework, Victoria is aiming to encourage integrated management by, for example, allowing trading and substitution of water from different sources.
- Water entitlements will be:
  - granted unlimited tenure, given that they are shares of the consumptive pool and that there is an ability to review the pool[6]
  - simplified, with just two types of water share in each supply system (high reliability and lower reliability water entitlements)
  - unbundled into a water share, a share of delivery capacity and a licence to use water on a site
  - able to be held by non-water users, up to a limit of 10 per cent of entitlements in each supply system (such as the Goulburn system).
- A new lower reliability water entitlement will be created, initially by converting the current sales water allocations in northern Victoria into a legally recognised, tradable entitlement. It will be specified as a share of the resource available for consumption, retain the lower reliability of the original sales water and have ongoing tenure. The government will allocate 20 per cent of the new entitlement (an estimated 120 gigalitres) to the environment. Once implemented, the benefits of introducing similar arrangements in the south of the state will be discussed with water authorities and users.
- Domestic and stock rights in irrigation districts (which account for about 5 per cent of water entitlements in the districts) will be merged with other water entitlements and made tradable (via permanent trades). This change is aimed at giving farmers greater choice about the minimum volume of water to hold and to facilitate the rationalisation of distribution channels.

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6 While its water entitlements are specified as a volume, Victoria considers that they are already effectively shares of the water available for consumption. In the Goulburn system, for example, irrigators were allocated only 57 per cent of their entitlements in 2003. An entitlement of 300 megalitres, for example, thus means 0.025 per cent of the available water, given that the total Goulburn entitlement is 1200 gigalitres. Victoria considers that the introduction of the term 'share' will not require a significant recasting of existing entitlements (DSE 2004).

- In the limited number of catchments and aquifers in which additional water is available for consumption, entitlements will be allocated by market mechanisms wherever possible (that is, by an auction or tender process, which includes public advertisement of the sale and the setting of a reserve price).

- An environmental water reserve will be established to set aside a share of water in rivers and aquifers across the state for the environment (see section 3.3). The reserve will be legally recognised. In establishing the initial reserve, the government will recognise the rights of existing entitlement holders. Bulk entitlements for the environment will be established in systems where water is to be recovered for the reserve.

- An expert assessment of the state's water resources will be made at 15-year intervals to determine whether the resource base has declined (and if the decline has fallen disproportionately on the environment or water users) and if river health is deteriorating for flow-related reasons. If either outcome is the case, the Minister for Water will establish an open, consultative review of the balance between the water available for consumption and the environmental water reserve, and of necessary corrective action (including the last resort option of the Minister adjusting entitlements using the reserve powers).

- The reserve powers in the Water Act will be clarified to ensure the government can effectively qualify entitlements in times of water shortage (including where river or aquifer health is not sustainable) but must establish a clear process for doing so. The government indicated that the powers will always be available to address emergencies or temporary shortages. It will consider making permanent adjustments to entitlements, however, only in response to long term changes to inflows or river health, and following a recommendation from an expert water resource assessment and an open consultative review (see previous point). Such adjustments would be made no more frequently than once in 15 years. Where there has been a long term change to inflows as a result of natural events such as climate change, the government will restore the relative shares held by the environment and water users, without any payment.

- All significant water use will be metered, including all new licences for commercial and irrigation use. While new licensees will be responsible for the full cost of metering, the government will subsidise the installation of meters for existing unmetered users (up to $400 a meter). To ensure users comply with their licensed entitlements, the government will require water authorities to enforce licence conditions (by requiring users to purchase additional entitlements or adjust their business operations). It will also provide additional funds for monitoring water resources.

- A publicly accessible, web based register will be established, covering all water entitlements in Victoria. It will include water rights, licences and bulk entitlements, and cover regulated and unregulated rivers, groundwater, farm dams, recycled water and stormwater. The register will

record information on the ownership, location and quantity of entitlements (as well as metered use), third party interests (such as mortgages) and water trades. It will also keep track of the links among the new unbundled entitlements. The government will contribute up to $7 million over four years to establish the register.

- Through the new register of entitlements and the metering initiatives, a robust water accounting system will be developed. A publicly accessible, web based water accounts database will be established. It will be used to report annually on compliance with water entitlements at the bulk supply level, as well as with caps at the catchment and aquifer levels. The initial set of accounts will be prepared manually by early 2005. The web based system is scheduled for completion by early 2006 and will be linked electronically to the register of entitlements.

During 2003-04 Victoria continued the conversion of existing water rights to bulk entitlements. By June 2004 Victoria had completed the bulk entitlements for the Wimmera–Mallee system and moved closer to finalising the conversion arrangements for the remaining six water supply systems in its program (table 3.3). In its White Paper, Victoria stated that it expects to complete the implementation of the bulk entitlement system across the state within two years (that is, by mid-2006).

**Table 3.3:** Status of bulk entitlements in Victoria, as at August 2004

| *Water supply system* | *Status of bulk entitlement* |
|---|---|
| Avoca[a] | Environmental requirements met under current management practices |
| Barwon | Finalised 2002 |
| Broken[a] | Negotiation complete. Awaiting applications from relevant water authorities. (Expected completion: September 2004) |
| Campaspe | Finalised 1999–2000 |
| Central Gippsland rivers – urban | Finalised 1997–98 |
| Central Highlands – major urbans | Finalised 2002 |
| Central Highlands region – urban (part) | Finalised 1998 |
| East Gippsland rivers –urban | Finalised 1997 |
| Glenelg region[a] – urban supplies | Finalised 1997 |
| Goulburn | Finalised 1995 |
| Grampians – urbans | Part of Wimmera-Mallee process. |
| Kiewa/Rubicon (Southern Hydro) | Finalised 1997 |
| Latrobe | Finalised 1996 |
| Lerderderg[a] | Managed under the stressed rivers program |
| Loddon[a] | Work progressing. |
| Maribyrnong[a] | Finalised 2000–01 |

*(continued)*

**Table 3.3** continued

| *Water supply system* | *Status of bulk entitlement* |
|---|---|
| Melbourne | Process complete. Awaiting Government resolution of a policy matter. |
| Moorabool | Finalised 1995 |
| Murray | Finalised 1999 |
| North East region – urban | Finalised 1995–99 |
| Otway rivers – urban | Finalised 1997–98 |
| Ovens | Negotiation complete. Awaiting applications from relevant water authorities. |
| Snowy[a] | Managed under Snowy Rescue Plan. |
| South Gippsland rivers – urban | Finalised 1997 |
| Tarago System | Dependent on Melbourne system. |
| Thomson/Macalister[a] | Finalised 2001. The bulk entitlement will be modified as part of the implementation of the flow rehabilitation plan for the Thomson and Macalister river systems. |
| Werribee | Finalised 1997 |
| Wimmera-Mallee[a] | Finalised 2004 |

[a] Priority rivers identified on the 1999 implementation program.

*Sources*: Government of Victoria 2004

For unregulated rivers, Victoria committed in the White Paper to:

- ban the issuing of new licences that allow the diversion of water from November to June (inclusive)
- only issue new licences for the July to October period where there is spare water under the sustainable diversion limit for the catchment
- introduce statewide management rules for licensees who take water in summer, to protect the environmental water reserve (with detailed rules to be released by December 2004).

Victoria also committed in the White Paper to manage the use of groundwater through its licensing regime and, where necessary, to restrict use to maintain groundwater levels to meet the requirements of the environmental water reserve. It will establish water supply protection areas and prepare groundwater management plans in aquifers that are highly allocated or stressed, or that have strong interconnections with stressed surface water systems. Other water planning developments, including Victoria's progress in developing stream flow and groundwater management plans, are reported in section 3.3.

## Discussion and assessment

In previous NCP assessments, the Council found that Victoria's Water Act establishes a comprehensive system of water entitlements that are separated from land title (although able to be held only by land owners), specified in volumetric terms and tradable. Bulk entitlements are issued in perpetuity and water licences are issued for 15 years with a presumption of renewal. The Department of Sustainability and Environment and the rural water authorities maintain publicly accessible registers of bulk entitlements and water licences, which include provision for recording third party interests.

The National Water Initiative commits participating states and territories to introduce perpetual water access entitlements, with similar status to freehold land, and to have compatible, publicly accessible and reliable systems for registering entitlements (including any encumbrances) and (permanent and temporary) trades.

Under the changes announced by Victoria in its White Paper, all water entitlements will be specified as shares of the consumptive pool — which Victoria considers will not require a significant recasting of existing entitlements — and granted unlimited tenure. The move to perpetual entitlements will address the short tenure of Sunraysia Rural Water's (now the Lower Murray Urban and Rural Water Authority's) licences for private diverters.[7] The conversion of sales water to a new lower reliability entitlement and the clarification of the Minister's reserve powers to amend water entitlements should further improve the security of entitlements. The establishment of an environmental water reserve will also enhance the security of water allocated to the environment. (The benefits of Victoria's unbundling of water entitlements are discussed in section 3.4.) In addition, Victoria will establish a single, publicly accessible, web based register covering all water entitlements in the state and incorporating third party interests. Under the National Water Initiative timetable, Victoria will need to implement its new arrangements by the end of 2006.

Victoria limits the ownership of water licences and individual water entitlements to land owners (with a transfer detaching the licence or entitlement from one landholding and re-attaching it to another). Under the White Paper changes, non-water users (or non-land owners) will be able to hold water licences and entitlements, but only up to a limit of 10 per cent of

[7] One of the sample of groundwater plans provided by Victoria — for the Katunga groundwater — also limits licences to five years. Victoria advised that the limit aligns with the review of the plan after five years. The short planning horizon reflects the limited information on groundwater that was available when the plan was developed (for example, metering commenced only with the planning process). An additional reason for the five-year tenure is the plan's requirement for sleeper licences (licences held but not used) to be retired at renewal. Metering and monitoring programs under the initial plan will enable the sustainable yield of the resource to be determined with greater certainty before the next plan (which will need to provide for perpetual licences) is developed.

entitlements in each supply system. Because the water licences and entitlements are separate from land title, it is arguable that the water entitlement provisions of the 1994 CoAG water reform agreement and the National Water Initiative do not require the removal of this remaining link with land. The restriction may, however, constrain water trading; it is discussed further in section 3.4.

At the time of the 2003 NCP assessment, Victoria expected to complete the bulk entitlement conversion process for all major systems (with the exception of the Loddon and possibly Melbourne systems) by the end of 2003 and to grant all bulk entitlements by the end of 2004. While its progress has been slower than expected, Victoria expects to complete all remaining bulk entitlements by mid-2006, with the process to be completed by mid-2005 for all systems covered by its 1999 implementation program. The reliability of entitlements under licences for private diverters and groundwater users will be affected by the development of stream flow and groundwater management plans. Progress with these plans has also been slower than Victoria expected (see section 3.3).

For the 2004 NCP assessment, the Council considers that Victoria has made satisfactory progress against its CoAG obligations on water access entitlements.

# 3.3 Water planning — providing a better balance in water use

**Assessment issue**: Governments are to establish water allocation systems that provide a sustainable balance between the environment and other uses of water, including by formally providing water in rivers and groundwater systems for use by the environment.

Under the 1994 CoAG water reform agreement, governments committed to determine environmental water requirements using the best available scientific information, wherever possible, and to have regard to the intertemporal and interspatial environmental water requirements needed to maintain the health and viability of river systems and groundwater basins. For river systems that are overallocated or deemed to be stressed, governments committed to provide a better balance in water use to enhance or restore the health of the river systems. Governments also committed to consider establishing environmental contingency allocations and to review allocations five years after they have been determined. In allocating water to the environment, governments agreed to have regard for the ARMCANZ/Australian and New Zealand Environment and Conservation Council (ANZECC) National Principles for the Provision of Water for Ecosystems (see appendix B).

Arising from the 1994 CoAG water reform agreement, each state and territory established a program in 1999 for implementing water allocations for priority river systems and groundwater resources. Governments committed to substantially complete their 1999 programs by 2005 (including allocations for stressed and overallocated rivers by 2001). Under the National Water Initiative, signatory governments confirmed the importance of water planning as a mechanism for assisting water management and allocation decisions. Signatory governments committed to prepare water plans for surface water and groundwater systems in which entitlements are issued, to assist with water management and allocation decisions to meet productive, environmental and social objectives. They agreed that management and allocation decisions would involve judgments informed by the best available science, socioeconomic analysis and community input. Signatory governments committed to substantially complete allocation arrangements by 2005 for

(*continued*)

overallocated and overused surface and groundwater systems covered by their 1999 implementation programs, and to prepare water plans by the end of 2007 for other systems that are overallocated, fully allocated or approaching full allocation and by the end of 2009 for other systems that are not approaching full allocation.

At the time of the 2003 NCP assessment, Victoria was still to determine its approaches to providing environmental flows in three of the state's five priority stressed rivers — the Thomson and Macalister river systems and the Maribyrnong River. Given that Victoria was continuing to make progress and noting the work foreshadowed by CoAG on the National Water Initiative may have implications for Victoria's approach, the Council deferred this element of the 2003 NCP assessment.

The Council conducted the deferred 2003 NCP assessment in May 2004, concluding that while Victoria was yet to make a decision on implementation of the recommended environmental flows for the Thomson and Macalister river systems it had made sufficient progress to demonstrate that it had addressed its obligations for the 2003 NCP assessment.

For the 2004 NCP assessment, the Council looked for Victoria to progress its bulk entitlements program, stream flow and groundwater management plans and demonstrate that its arrangements address the obligations in the CoAG water reform agreement and the ARMCANZ/ANZECC National Principles for Provision of Water to Environment. The Council also looked for Victoria to have completed its flow rehabilitation plans (and related arrangements) for the Avoca, Broken, Glenelg, Loddon, Snowy and Wimmera rivers. It also looked for progress with the plan for the Loddon River. Victoria identified additional rivers that are likely to be stressed or overallocated in its White Paper on water.

**References:** 1994 CoAG water reform agreement, clauses 4(b)–(f); 1999 tripartite meeting; Intergovernmental Agreement on a National Water Initiative

Victoria allocates water to consumptive uses and the environment through the bulk entitlements regime for regulated rivers (section 3.2). For unregulated rivers, environmental flows are governed by stream flow management plans or, in lower priority rivers, by statewide management rules. For stressed rivers, Victoria develops flow rehabilitation plans. For groundwater sources where allocations exceed 70 per cent of the sustainable yield, Victoria establishes a groundwater supply protection area and develops groundwater management plans.

Victoria identified 11 stressed and overallocated river systems in its 1999 implementation program. It had not fully addressed its obligation to allocate water to the environment in the state's stressed and overallocated river systems by the time of the 2001 NCP assessment. The Victorian Government committed, however, to a three-year Stressed Rivers Program for improving the health of its stressed rivers. Under this program, Victoria was to have completed flow rehabilitation plans for:

- five stressed river systems — the Thomson, Macalister, Maribyrnong and Lerderderg rivers and Badgers Creek — for the 2003 NCP assessment
- five stressed river systems — the Avoca, Glenelg, Broken, Wimmera and Snowy rivers — for the 2004 NCP assessment
- one stressed river system — the Loddon River — for the 2005 NCP assessment.

In addition to progressing its Stressed Rivers Program, to meet its CoAG obligations Victoria needs to complete its bulk entitlements program, the

stream flow management plans for the 42 systems covered by its 1999 implementation program and the groundwater management plans for the groundwater resources covered by its 1999 implementation program.

At the time of the 2003 NCP assessment, Victoria was still to determine its approaches to providing environmental flows in three of the state's five priority stressed rivers (the Thomson and Macalister river systems and the Maribyrnong River). While Victoria had not completed water management arrangements for the Maribyrnong River, it had made improvements to the environmental flows in most reaches of the Maryibynong River. It no longer regarded the Maribyrnong River as a priority because it considers the statewide return in terms of environmental outcomes from further investing in flow restoration activities would be greater for other rivers. Given that Victoria was continuing to make progress, and noting that the work foreshadowed by CoAG on the National Water Initiative may have implications for Victoria's approach, the Council deferred this element of the 2003 NCP assessment.

The Council conducted the deferred 2003 NCP assessment in May 2004. By that time, Victoria had made the following progress.

- The Thomson and Macalister Environmental Flows Task Force had reported its environmental flow recommendations to the government. The government had commenced some river restoration projects pending its decision on the task force report as part of the Victorian White Paper on water.

- The Port Phillip and Westernport Catchment Management Authority had started developing a draft regional river health strategy for the Port Phillip and Westernport region, containing proposed actions for the Maribyrnong River over the short and medium to long term, in line with regional priorities being established through the regional strategy.

- The Victorian Government had provided funds to the Port Phillip and Westernport Catchment Management Authority to investigate options for managing summer stress in Jacksons Creek and to conduct on-ground habitat works to protect the low flow aquatic habitat in Deep Creek.

- The Victorian Government had allocated $280 000 from its Stressed Rivers Program to the Goulburn Broken Catchment Management Authority to: assess the impact of implementing a minimum environmental flow of 12 megalitres a day rule on domestic and stock users; identify options for protecting water supplies should the rule be implemented; develop a revised stream flow management plan to establish the environmental flow; develop a compliance and education program; and implement the agreed environmental flow package. Since the release of the draft stream flow management plan Goulburn–Murray Water has been managing the creek through a minimum flow of 20 megalitres a day over the winter fill months. Victoria intends to formalise this rule in the final stream flow management plan. Additionally, Victoria has established a groundwater management area for the region around Kinglake, which

includes the King Parrot revised stream flow management plan area. It intends to develop a groundwater management plan for the area in 2006-07. In the meantime Goulburn–Murray Water has placed an embargo on issuing further groundwater licences.

- The government was progressing its environmental water planning processes for the remaining six stressed rivers covered by its 1999 implementation program. It had identified another six rivers as being at significant risk of flow stress, and had signalled that it would take action to address this stress.

In the deferred 2003 NCP assessment for Victoria the Council noted that its 2004 NCP assessment would consider Victoria's progress in implementing water management arrangements for river and groundwater sources against the 2005 CoAG deadline for substantial completion of allocations on governments' 1999 implementation programs. The Council thus intended to consider:

- Victoria's progress with its bulk entitlements program and in finalising stream flow and groundwater management plans, to ascertain that the state is on track to achieve substantial completion of all plans and implementation arrangements by 2005

- a sample of completed stream flow management plans (and related arrangements), to determine the extent to which they address the obligations in the 1994 CoAG water reform agreement

- flow rehabilitation plans (and related arrangements) for the Avoca, Broken, Glenelg, Loddon, Snowy and Wimmera rivers to ascertain that the plans address the obligations in the 1994 CoAG water reform agreement.

In addition, the Council considered that Victoria should finalise its water management arrangements — including the state's proposal for development and implementation of a comprehensive regional river strategy for the Port Phillip and Westernport region (containing actions for the Maribyrnong River) by 2005. The strategy should address the deficiencies in the existing flow rehabilitation plan, including consultation on the appropriate trade-offs between consumptive and environmental uses, and the implementation of an effective monitoring and review process. By the 2005 NCP assessment, the Council expected Victoria also to have finalised a stream flow management plan for King Parrot Creek that addresses all data gaps identified in the draft plan, clearly explains the effect of trade-offs between the environment and the rights of existing users, and determines appropriate environmental flows for the creek.

# Developments since the deferred 2003 assessment

Victoria's White Paper on water proposed a new sustainable water allocation framework for the state. The extension of Victoria's Crown rights to include stormwater and recycled water brings all water (regardless of its source) within a single management framework. The government committed to invest an extra $100 million over the next four years to protect and repair the health of the state's rivers and aquifers. This funding will be used to accelerate the water management planning process, improve the water management system, and recover water for the environment primarily by investing in water savings.

As discussed in section 3.2, Victoria proposes to establish a new environmental water reserve, which will be a legally recognised share of water to be set aside to maintain the environmental values of a water system. This will formalise the approach being taken in Victoria's River Health Strategy. In the White Paper, however, the government made clear that the initial reserve may not be sufficient to maintain a healthy river or aquifer in some overallocated systems. Future decisions about enhancing the environmental water reserve will be made within Sustainable Water Strategies. Victoria proposes to use these strategies as the framework for deciding large-scale long-term changes in water use. In addition, the government will amend legislation to institute a requirement for an expert assessment of the state's water resources every 15 years to determine whether the resource base has declined or if river health is deteriorating for flow related reasons. If either is the case, the Minister will establish an open and consultative review of the balance between consumptive use and the environmental water reserve including any necessary corrective measures. This would be complemented by an improved compliance and accountability system. Actions to achieve this include, for example, requiring all significant water uses to be metered, requiring water authorities to enforce licence conditions and by preparing annual water accounts.

The White Paper provides a timetable for implementing water plans for the rivers and streams identified as stressed and/or overallocated. The timetable includes some rivers and groundwater systems covered by Victoria's 1999 implementation program, as well other rivers that the government has only recently identified as stressed and/or overallocated. Victoria's progress in completing its water plans is discussed below.

## Victoria's Stressed Rivers Program

Under its Stressed Rivers Program, Victoria committed to completing flow rehabilitation plans for the Avoca, Glenelg, Broken, Wimmera and Snowy rivers for this 2004 NCP assessment, and for the Loddon River for the 2005 NCP assessment. Victoria reported that it has made the following progress.

## Avoca River

SKM completed an environmental flows assessment of the Avoca River in 2002. It found the river to be in good condition and that the recommended environmental flows were already being met (SKM 2002). In light of this Victoria has decided not to prepare a stream flow management plan for the Avoca River. Instead, it has decided to provide an additional 1500 megalitres a year of the water savings from the Wimmera–Mallee pipeline and use statewide/regional management rules to implement the environmental flows.

Victoria is also investigating options for improving the watering regime of the terminal lakes of the Avoca system in line with the recommendations in the environmental flows assessment. The watering regimes of these wetlands have been affected by a range of factors, including groundwater extraction and the construction of levee banks. Victoria has established the hydrology of the system and is assessing vegetation and groundwater links. The North Central Catchment Management Authority expects to complete and commence implementation of the Avoca wetlands salinity and water management plan covering possible management options (including management of the levee banks) in 2005 (NCCMA 2004).

Victoria has completed a draft river health strategy for the Avoca River, which it is integrating into a set of regional priorities for river protection and restoration. It is also implementing the water quality plan for the Avoca River. The North Central Catchment Management Authority released its draft regional river health strategy in August 2004. The strategy identifies the Avoca River as a high value waterway. Its health downstream of Charlton is at high risk because of problems related to poor water quality and stock access. The strategy sets management actions and targets over the next five years to address these threats.

## Broken River

The Cooperative Research Centre for Freshwater Ecology (CRCFE) completed an environmental flow assessment for the Broken River in 2001. Victoria advised that via the bulk entitlement process it will use some of the water savings from decommissioning Lake Mokoan to provide the recommended environmental flows for the Broken River. This is expected to significantly improve the ecological health of the Broken River and enhance native fisheries by restoring a more natural flow regime and through improved water quality. Victoria planned to complete the bulk entitlement process by September 2004.

In addition, Victoria has supplied additional funding from the Victorian Water Trust to accelerate progress towards improving the ecological health of the Broken River. This effort focuses on benchmarking river health, improving water quality; protecting and enhancing riparian and floodplain vegetation and associated values, ensuring the ongoing protection of frontages and riparian lands, creating significantly enhanced aquatic refuges; managing recreational fishing; increasing the length of stream accessible by

native fish species and flagship species, and building community capacity. It has also provided for fish passage at the following weirs on the Broken Creek: Rice's, Kennedy's and Shier's and at Lake Benalla on the Broken River. Victoria is investigating whether to provide for fish passage or remove the Gowangardie and Holland's weirs.

### Loddon River

Victoria completed the environmental flows investigation for the Loddon River in June 2002. Using the holistic FLOWS method the assessment found that priority should be given to reviewing the minimum flows and provisions for fresher flows.

Victoria is modelling the impact on security of supply of meeting the recommended environmental flows as part of finalising the bulk entitlement conversion process. It advised that it anticipates the bulk entitlement will provide substantial improvements in the environmental condition of the Loddon River and the lakes, and that several of the environmental flow recommendations should be able to be met through the bulk entitlement process. Victoria initially considered that a stream flow management plan may be required to protect stream flows in the upper catchment and provide adequate environmental flows, but now considers that the same outcomes can likely be achieved through statewide/regional management rules.

Victoria has completed a draft river health strategy for the Loddon River. It has provided additional funds from the Stressed Rivers Program to implement this strategy, which aims to maximise the environmental benefits of the anticipated flow improvements provided through the bulk entitlement process. The strategy also seeks to address the river health issues associated with the lower Loddon River, issues that could constrain the river health benefits of any flow improvements.

In addition, Victoria has constructed a fishway on Kerang Weir to provide fish passage through the river up to the Loddon Weir. Using risk analysis and assessment the government has identified about 36 priority wetlands (of 105 studied) in the Loddon–Murray region for which it plans to develop management options with a focus on community involvement.

### Snowy River

In a joint initiative the Victorian, New South Wales and the Australian governments are implementing the Snowy River rescue plan, which aims to return 21 per cent of the flow (212 000 megalitres) to the Snowy River over 10 years. Consistent with the expert panel of scientist's recommendations, the governments plan to restore 28 per cent of original flow levels to the Snowy River eventually. The governments have established a joint government enterprise to invest in water savings projects to meet the plan's objectives.

The Snowy River rescue plan is complemented by the lower Snowy River rehabilitation plan, which aims to return crucial instream and riparian habitat features to the lower Snowy River over 10 years. The government is developing a physical model to test the likely impact of introducing large woody debris structures to the river.

## Thomson and Macalister river systems

Victoria is aiming to progressively restore the health of the Thomson and Macalister rivers by providing an average environmental water reserve of 18 000 megalitres a year to the Thomson River and 7 000 megalitres a year to the Macalister River over the next 10 years. The government proposes to implement the environmental flows in the Thomson and Macalister river systems using a staged approach. Three months after it lifts Melbourne water restrictions and introduces permanent water saving measures it will establish a bulk entitlement of 10 000 megalitres a year in the Thomson River. Within 10 years the government will supply the additional 8 000 megalitres a year for the Thomson River obtained from water efficiency and system savings.

By 2006 Victoria will provide an additional 5000 megalitres a year to the Macalister River via a $5 million program of infrastructure improvement. It has committed another $3 million to improve and modernise the water supply system of the Macalister Irrigation District to recover another 2000 megalitres a year within the next 10 years. To maintain a reliable water supply for irrigators and urban users, the environmental flows to be provided in the Macalister River will be subject to climate-based trigger rules. In drier years (about 15 per cent of years) the environmental flow provisions will not be fully implemented. Sufficient water will be provided, however, to at least maintain base flows and pool environments. The Department of Sustainability and Environment is advised that the trigger rules do not pose a threat to the environmental objectives for the system. It has also modified the bulk entitlement to reduce the existing environmental base flow (from 60 to 30 megalitres a day) to provide a water bank to be used to provide freshes during the dry years when environmental flows are reduced.

The process and schedule for achieving and implementing water efficiency and system savings over the 10 year period will be identified in the 2005 Central Region Sustainable Water Strategy. The West Gippsland Catchment Management Authority has responsibility for preparing the operating strategy for managing the environmental water reserve for the Thomson and Macalister river systems. The West Gippsland Catchment Management Authority must develop the operating strategy in consultation with Melbourne Water, Southern Water, the Gippsland Coastal Board and the Department of Sustainability and Environment. It must submit the strategy to the Minister for Environment and the Minister for Water by March 2005 for endorsement. The West Gippsland Catchment Management Authority also has responsibility for managing, monitoring and assessing the adequacy of the improved environmental flow arrangements.

Victoria's approach represents a reduction in the volume of environmental flows provided to the Thomson and Macalister rivers (by about 3 per cent over the medium term) and some extension in the period of implementation compared to the approach recommended by the Thomson Macalister Environmental Flows Task Force. Victoria will use an adaptive approach to maximise the ecological benefits of the environmental flows and undertake a 10 year monitoring program to inform effective management of the environmental water reserve. Within 10 years the government will review the health of the Thomson and Macalister rivers against the task force objectives and, if necessary, will consider additional action.

### Wimmera and Glenelg rivers

Victoria commissioned consultants SKM to determine environmental flow recommendations for the Wimmera (SKM 2002) and Glenelg rivers (SKM 2003). SKM used Victoria's holistic FLOWS method.

The Government has implemented the MDBC Cap to prevent further extraction and degradation of the Wimmera River. It has committed 34 690 megalitres of water savings a year from the Northern Mallee pipeline for environmental flows, to be shared between the Wimmera and Glenelg rivers. In addition, Victoria is seeking a partnership approach with the Australian Government on a second Wimmera–Mallee pipeline, which could provide an additional 65 000 to 85 000 megalitres of water a year to the environment. The two pipeline projects should provide sufficient water savings to meet most of the environmental flows recommended for each river.

Victoria completed the bulk entitlement process for the two rivers in June 2004 providing a specific entitlement for the environment. It has provided additional funding from the Stressed Rivers Program to the Glenelg–Hopkins Catchment Management Authority to plan for the increase in environmental provisions that are expected to result from the Wimmera–Mallee pipeline and to maximise the effectiveness of the improved flow provisions. Victoria will develop an integrated Wimmera–Glenelg operating strategy for the environmental bulk entitlement, as well as a specific Glenelg environmental flow plan. The Wimmera Catchment Management Authority will also consider complementary issues, such as assessing whether Huddleston's Weir can physically pass environmental flows.

### Other stressed systems

The White Paper identified the Moorabool, Goulburn, Campaspe, Yarra, Barwon and Latrobe rivers as very likely to be stressed or at some risk of being stressed (DSE 2004). The Barwon and Moorabool rivers are covered by Victoria's 1999 implementation program, but were not identified as stressed at that time. The other rivers are not part of Victoria's 1999 implementation program. In signing the National Water Initiative, Victoria committed to prepare water plans by the end of 2007 for other systems that it identifies as being overallocated, fully allocated or approaching full allocation.

## Stream flow management plans

For unregulated rivers, including unregulated portions of regulated systems, Victoria manages environmental flows and water allocations for consumptive purposes using stream flow management plans. Victoria's 1999 implementation program indicated that the government would develop 42 stream flow management plans. Victoria has completed two stream flow management plans — for Diamond and Hoddles creeks (these plans are discussed below). Both plans adopt a standard approach using the new procedures and guidelines Victoria developed to improve its rate of progress. Victoria is reviewing a further 10 plans to ensure they are consistent with its new standards and plans to release the revised plans in 2004.

In light of the 2004 White Paper, Victoria reviewed its arrangements, determining 21 priority catchments where the government will provide ecologically sustainable environmental water reserves by:

- developing stream flow management plans that will provide a water regime that sustains agreed ecological objectives within 10 years
- co-investing in implementing stream flow management plans that seek to provide the enhanced environmental water reserve in a shorter timeframe
- moving diverters from summer to winter diversions when this will reduce ecological damage
- co-investing with farmers to assist them to implement measures to apply the stream flow management plan, including the building of off-stream winter fill dams.

### Diamond Creek stream flow management plan

Victoria implemented the Diamond Creek Water Supply Protection Area Stream Flow Management Plan 2003 in November 2003 (Melbourne Water 2003a). The plan applies to the surface water of the 311 square kilometre Diamond Creek catchment. It encompasses Diamond Creek (which rises on the Kinglake Plateau and flows into the Yarra River in suburban Melbourne) and the tributaries of Running Creek, Arthur's Creek and Watery Gully. The aim of the Diamond Creek plan is to manage the water resources of the catchment in an equitable manner, so as to ensure the long term sustainability of those resources.

Melbourne Water established an advisory committee — comprising representatives of the EPA Victoria, the Department of Sustainability and Environment, the Port Phillip and Westernport Catchment Management Authority, Environment Victoria, Melbourne Water, local government, and licensed water users — to assist in preparing the Diamond Creek plan. The committee based its recommendations on an environmental flows assessment for Diamond Creek (Zampatti and Lieschke 1999) and a study on the impact

of farm dams in the catchment (SKM 2000a). It published a draft plan and sought submissions from interested parties.

Consultants Zampatti and Lieschke, from the (then) Department of Natural Resources and Environment, conducted the environmental flow assessment for the Diamond Creek catchment using the instream flow incremental method (IFIM). IFIM is a habitat model that does not explicitly consider other aspects of the ecology or geomorphology. The consultants based their assessment on the requirements of two native fish species: river blackfish (*Gadopsis marmoratus*) and mountain galaxias (*Galaxias olidus*) (Zampatti and Lieschke 1999). These species are ubiquitous to many creeks in the area, but are considered threatened in Victoria. Although the consultants did not consider lateral connectivity (that is, movement of water across the floodplain), they included aspects of longitudinal connectivity (along the stream channels) for fish migration in their assessment. The environmental flows assessment recommended the following provisions to maintain the ecological health of Diamond Creek:

- minimum (cease to pump) flows at six sites ranging from 0.3 megalitres a day at the mid to upper reaches to 1.5 megalitres a day further down the catchment at the Diamond Creek gauging station

- a limit on winter fill diversions to flows exceeding the 80th percentile, to protect winter flows

- a review of the winter fill diversions during May and possibly June, to protect ecologically significant first high flows following the summer low flow period.

Zampatti and Lieschke considered that these recommendations would maintain habitat for the river blackfish and mountain galaxias, as well as other fish species, invertebrates and aquatic vegetation in the catchment.

SKM assessed the impact of farm dams on the Diamond Creek catchment using the TEDI (Tool for Estimating Dam Impacts) model. The model uses data on the current hydrological conditions, projections of natural conditions, and inputs from aerial photographs of the size, nature and distribution of dams in the catchment to assess the impact of farm dams on water flows. SKM (2000a) estimated that unlicensed diversions from the Diamond Creek catchment — mostly rainfall run-off into farm dams for domestic and stock use — account for around 740 megalitres a year. Its results indicated that current diversions reduce low and medium flows by approximately 15 per cent and high flows by 4 per cent. The report concluded that the capture of run-off into dams had a larger impact on stream flow than did licensed diversions.

The water allocation provisions of the Diamond Creek plan:

- set the permissible annual volume of all licensed diversions at 790 megalitres a year

- prohibit pumping during the first flush after low flow periods and extraction of water between July and October when flows are less than 13 megalitres a day

- prohibit extraction when flows are less than 1.5 megalitres a day.

These provisions do not allow any increase in the all-year licences or the current allocation (393 megalitres a year), but incorporate an additional allowance for registered and licensed farm dams. The plan provides for an increase in winter fill licences, from 250 megalitres a year to 397 megalitres a year. These provisions accommodate existing users and aim to encourage users to take water for storage in winter, when availability is higher, for use over the summer.

In addition, the committee recommended banning the construction of dams on waterways and limiting the volume of water that may be taken from or collected in farm dams, to reduce the impact of catchment dams on stream flows. To the extent possible, the plan also implements the recommendations in the technical studies. It obliges Melbourne Water to use rosters, restrictions and bans on water extraction to equitably achieve the water allocation limitations.

In the plan, the committee noted that upper Diamond Creek relies on groundwater springs to maintain base flows, and that excessive extraction of groundwater could reduce these flows. It states that 'if extraction approaches "sustainable limits", a groundwater management plan is usually developed …' (Melbourne Water 2003a, p. 11).

The committee proposed that the Diamond Creek plan be reviewed at least every five years. It nominated Melbourne Water to develop and implement a monitoring program to measure the plans effects on the reliability of supply and the maintenance of environmental flows. It considered that the program should include instream environmental indicators and indicators for assessing Melbourne Water's performance in implementing the plan. (The plan requires Melbourne Water to report annually on the implementation of the plan and its effectiveness.)

### Hoddles Creek stream flow management plan

The Minister for Water approved the Hoddles Creek Water Supply Protection Area Stream Flow Management Plan 2003 in November 2003 (Melbourne Water 2003b). The plan applies to the surface water of the 34 square kilometre Hoddles Creek catchment, encompassing Hoddles Creek (a tributary of the Yarra River located to the east of Melbourne) and the tributaries of Wombat Creek, Black Leather Creek and Wet Lead Creek. The aim of the Hoddles Creek plan is to manage the water resources of the catchment in an equitable manner, so as to ensure the long term sustainability of those resources.

In 1999 Melbourne Water established an advisory committee to assist with the development of the Hoddles Creek plan. The committee comprised representatives of Melbourne Water, the EPA Victoria, the Department Sustainability and Environment, the Department of Primary Industry, the Port Phillip and Westernport Catchment Management Authority, Environment Victoria, local government and licensed water users. In making its recommendations, the committee took account of environmental flows assessments and a number of hydrological investigations of Hoddles Creek. It published a draft plan and sought submissions from interested parties.

Zampatti and Raadik (1997) conducted the environmental flow assessments for Hoddles Creek using IFIM and, like the Diamond Creek assessment, they based their assessment on the requirements of river blackfish and mountain galaxias. The authors also took account of other fauna and flora in their study through field surveys. The investigations recommended minimum summer flows of 6.9 megalitres a day to maintain sufficient habitat for juvenile and adult blackfish. The authors considered that the minimum flows would also maintain habitat for the other fish species, invertebrates and aquatic vegetation.

In a follow-up study, Zampatti and Koster (2001) confirmed the conclusions of the 1997 study. They noted, however, that flows of less the 6.9 megalitres a day occur naturally, but are suboptimal. They considered that irrigation diversions that artificially prolong low flow periods could lead to poor recruitment of fish in the river. (At that time, restrictions on water use were applied when flows fell to 4 megalitres a day.) The authors recommended that the frequency and duration of low flow periods not be extended beyond what would naturally occur (Zampatti and Koster 2001).

On behalf of the committee Melbourne Water employed and SKM (2000a, 2000b, 2001) to conduct hydrological investigations to assess flow scenarios, assess the impact of farm dams on the Hoddles Creek catchment and compare the frequency and duration of low flow periods under natural and current conditions. For its investigations SKM used the Resource Allocation Model (REALM), TEDI model and Spell analyses, respectively. (These tools, which the Technical Audit Panel has endorsed, are widely used in Victorian water resource planning.) The results of hydrological modelling indicated that current water extraction has reduced the frequency and duration of low flow events by 11.5 per cent, medium flows by 1.5 per cent and high flows by 2 per cent.

The Hoddles Creek plan contains the following provisions aimed at balancing environmental flows:

- a permissible annual volume of all licensed diversions of 1207 megalitres plus the volume for certain registered or licensed farm dams

- summer (December to May) flow rules restricting extraction when flows are less than 4 megalitres a day until 31 July 2004, but then 5 megalitres a day thereafter

- winter (June to November) flow rules restricting extraction when flows are less than 10 megalitres a day, except during the transition month of November, when the trigger value is 6.9 megalitres a day.

These provisions do not allow any increase in the all-year licences or the current allocation (457 megalitres a year). They increase substantially, however, the winter fill licence allocation (from 68 megalitres a year to 750 megalitres a year). The provisions accommodate existing users, but aim to encourage users to take water for storage in winter to prevent ecological stress from direct pumping during summer. The advisory committee anticipated that maintaining the summer flow trigger (4 megalitres a day) for the first year of the plan would also allow users time to improve on-farm water use efficiency improvements or implement other offset measures.

The advisory committee considered that the summer flows restriction should occur at the 6.9 megalitres a day limit recommended by the scientific investigations. However, this limit would significantly reduce reliability of supply. The advisory committee thus considered that implementation of this recommendation should be contingent on the government funding water users to make on-farm changes. In its White Paper, Victoria committed to ensure scientifically determined environmental water provisions will be implemented in the Hoddles Creek catchment within five years. The government announced that it will co-invest with farmers to assist implementation of offset measures, such as off-stream winter fill dams.

The plan provides for review every five years. It nominates Melbourne Water to develop and implement a monitoring program to measure the effects of the plan on the reliability of supply and the maintenance of environmental flows. The program must include instream environmental indicators, as well as indicators for assessing Melbourne Water's performance in implementing the plan. Melbourne Water must report annually on the implementation of the plan and its effectiveness.

## Discussion

### *Best available science*

The IFIM method used to determine environmental water requirements for Diamond and Hoddles creeks was the accepted environmental flows method in Victoria at the time, but no longer reflects best practice in this evolving scientific field. The approach focused primarily on the requirements of only two species of fish. Further the recommendations were predominantly for minimum summer flows and reflected the needs of inchannel fauna rather than the entire ecosystem. Nevertheless, the environmental assessments considered aspects of the water regime, such as the timing, duration and magnitude of flows. In addition, the stream flow management plans provide for the development of environmental benchmarks and a review that aims to ensure the needs of instream ecosystems are being delivered.

The Technical Audit Panel independently reviewed the Hoddles Creek plan and the environmental flows and the other technical investigations on which it is based. The panel concluded that the methods used were appropriate and adequately applied. The panel considered that data inadequacy in the hydrological modelling impaired the accuracy of outputs and recommended that the monitoring program address data needs. The Diamond Creek and associated technical reports have not been peer reviewed. There are, however, many similarities between the Hoddles Creek and Diamond Creek plans and associated technical investigations.

### *Balancing economic, environmental and other interests*

In setting the water allocations in the stream flow management plans, the advisory committee considered environmental and economic impacts. The plans maintain existing allocations but, through the prohibition on increasing all year licences, include a gradual adjustment process to reduce the summer flow stress by encouraging greater reliance on extraction of water in winter.

A key issue in relation to Diamond Creek is the capture of runoff into the smaller catchment dams (less than 1 megalitre). While the plan addresses this issue as far as possible, the inability to fully regulate dams through the planning process may hinder the achievement of the plan's environmental objectives.

In the case of the Hoddles Creek, the plan proposes implementation of the environmental flows recommended in the scientific assessment, subject to the government funding being available to assist with adjustment. The government announced that it will provide some funding, so the Hoddles Creek plan is likely to fully achieve its stated long term ecological objectives.

### *Monitoring and adaptive management*

The plans for Diamond and Hoddles creeks provide for monitoring and adaptive management. They make Melbourne Water responsible for developing and implementing stream flow monitoring and it appears that the monitoring results will be used in subsequent reviews of the plans.

### *Stakeholder consultation and transparent processes*

Victoria adopted a comprehensive, robust and open consultative process in developing the water management arrangements for the Diamond and Hoddles creeks catchments. The advisory committees overseeing the development of the plans included representatives of all major stakeholders in the catchments, including representatives of environmental, government and irrigator interests. The technical assessment documents and draft and final plans are readily available to the public, and monitoring reports will be publicly released.

## Groundwater

Victoria determines permissible annual volumes (the estimated volume of groundwater that can be extracted on a sustainable basis over the long term) for its groundwater management areas. When groundwater allocations reach 70 per cent of the permissible annual volume, it triggers the mechanism for establishing a water supply protection area for which a water management plan must be developed. (A number of the groundwater supply protection areas identified on Victoria's 1999 implementation program, such as Denison, Katunga, Murrayville and Yangery, have licensed allocations that exceed the estimated sustainable yield of the groundwater area.) A consultative committee, comprised mainly of farmers but representing all relevant interests, is responsible for developing the management plan. The plan must address issues such as metering and monitoring, allocation arrangements including transferable water entitlements, environmental allowances for groundwater dependent ecosystems and costs associated with implementing the plan.

Victoria has established 29 water supply protection areas for groundwater resources it has identified as highly allocated or stressed (appendix A, table A.9). Ten of these water supply protection areas were included on Victoria's 1999 implementation program. Others were identified on the program for future development as a water supply protection area. Victoria has groundwater management plans in place for nine of the 29 areas. A further nine draft plans have been completed, five of which are awaiting ministerial approval. Victoria expects to complete all 11 of its outstanding groundwater management plans by 2005.

Most of the groundwater management plans implemented in Victoria to date contain only preliminary analysis that identifies groundwater dependent ecosystems, interconnectivity with surface water systems and sustainable yields. Recommendations in the plans centre on improving data collection and information (through installation of metres and monitoring bores, for example) so that permissible annual volumes and extraction rates can be accurately determined. Where necessary some reallocation or rationing of water entitlements has occurred to ensure extraction is within estimated sustainable limits. Groundwater management plans must be reviewed after five years and take account of any new information available.

## Submissions

Environment Victoria provided a submission to the 2004 NCP assessment, commenting on Victoria's approach to providing water to the environment. Some of Environment Victoria's comments focus on the arrangements for the Thomson and Macalister rivers, so the Council took account of these comments in the deferred 2003 NCP assessment of Victoria. In summary, Environment Victoria noted deficiencies in the process for preparing the flow

rehabilitation plan for the Thomson and Macalister rivers. It was concerned that:

- important information was lost in the progression through to the final report
- the task force did not receive important information until very late in the process
- the task force did not consider all possible information and, as a result, was looking at problems rather than solutions.

Environment Victoria also expressed concerns about the decision making process that Victoria adopts for developing stream flow management plans. (The Council did not account for these issues in the deferred 2003 NCP assessment.) Environment Victoria noted that the Water Act (s29(2)(b)) requires that at least one half of the membership of the stream flow management plan consultative committees (body that makes recommendations on the water allocations in a stream flow management plan) must consist of persons who are owners or occupiers of land in the area concerned. Additionally, s29(2)(a)(i) of the Act also requires the Minister to make sure, as far as possible, that all relevant interests are fairly represented on the committee.

Environment Victoria pointed to the representation of landholders on stream flow management plan consultative committees. It noted that the Minister for Water has recently declared stream flow management plan consultative committees that give landholders more than double (and sometimes triple) the representation required under the Water Act. Examples include the committees for Olinda Creek catchment, Steels, Pauls, Dixons and Stringybark Creek catchments. The environment is represented on these committees by a single Environment Victoria volunteer. Environment Victoria considers that the imbalance in stakeholder representation means that committees are unlikely to allocate sufficient water to meet the needs of the environment.

While landholder representation has been substantially strengthened, the role of government employees with skills in natural resource management has been weakened. Environment Victoria posed the following questions:

- Why are the Flora and Fauna Division staff of the Department of Sustainability and Environment not members of the stream flow management plan consultative committees?
- Why have all agencies except Melbourne Water been relegated to the role of observer/advisor and have not retained their membership of the stream flow management plan consultative committees?
- Why does the Minister for Water continue to appoint chairs of the stream flow management plan consultative committees from the already

disproportionately advantaged landholder representatives, rather than more neutral committee members?

## Assessment

Victoria has completed the bulk entitlement conversion process for 19 of its 25 water supply systems. It has completed flow rehabilitation plans for five of the 11 stressed and overallocated river systems covered by its 1999 implementation program and is progressing management arrangements for the remaining six river systems. Victoria has implemented two of 42 stream flow management plans for systems covered by its 1999 implementation program. Following the White Paper, Victoria has reviewed its approach, determining 21 priority catchments where it has undertaken to provide ecologically sustainable environmental water reserves.

Victoria has implemented nine groundwater management plans and expects to complete plans for its other 13 water supply protection areas by 2005. Most of the groundwater management plans implemented in Victoria to date contain only preliminary analysis, but must be reviewed within five years taking account of any new information available.

The key environmental water obligation for Victoria for this 2004 NCP assessment was to determine flow rehabilitation strategies that provide appropriate environmental provisions for the five priority stressed river systems (the Avoca, Glenelg, Broken, Wimmera and Snowy rivers) and to implement the environmental flow recommendations for the Thomson and Macalister rivers. While Victoria has adopted robust processes and has made significant progress it has not yet completed the water planning and allocation process for any of these five priority river systems.

Victoria announced its decision on the Thomson and Macalister river systems as part of the White Paper. It has undertaken to implement the recommendations of the Thomson and Macalister Environmental Flows Task Force with some modification. It has decided to reduce by approximately 15 per cent during drier years the volume of water that the task force recommended be provided to the environment in the Macalister River, and delay implementation of the environmental provisions. Along with proposed adjustments to the bulk entitlement for the system, Victoria expects this regime will at least meet the short to medium term river health objectives for the rivers.

The West Gippsland Catchment Management Authority (in consultation with key stakeholders) is developing an operating strategy for managing the environmental water reserve for the Thomson and Macalister river systems. It will provide the strategy to the Victorian Government in March 2005 for endorsement. Within 10 years the government will review the health of the Thomson and Macalister river systems against the task force objectives and, if necessary, consider whether further action is required to maintain or improve the health of the rivers.

In relation to unregulated surface water systems, Victoria is adopting rigorous, consistent and systematic processes for determining the volume of water to be provided to the environment. The stream flow management plans for Diamond and Hoddles creeks demonstrate due regard for the ARMCANZ/ANZECC national principles. While Environment Victoria is concerned about imbalances in stakeholder representation on some stream flow management plan consultative committees, the Council found no evidence from the completed plans for Diamond and Hoddles creeks that the volume of water proposed for the environment is not supported by a rigorous assessment of available scientific, economic and social information. The Council has not, however, considered any of the plans that concern Environment Victoria because these plans are not finalised.

The Council considers that Victoria has achieved satisfactory progress in implementing its CoAG water management objectives for the 2004 NCP assessment. The 2005 NCP assessment will need to consider Victoria's progress in implementing the environmental flows for the Thomson and Macalister river systems and finalising arrangements for the stressed rivers and for all other systems covered by its 1999 implementation program.

## 3.4 Water trading

**Assessment issue:** Trading arrangements in water entitlements are to be instituted to maximise water's contribution to national income and welfare, where systems are physically shared or hydrologic connections and water supply considerations permit trading. Under the 1994 CoAG water reform agreement, trading arrangements were to be finalised by 2005. However, the National Water Initiative extends to 2007 the timeframe for establishing institutional and regulatory arrangements that facilitate intra- and interstate trade, and requires the removal of certain barriers to trade.

Under the National Water Initiative, governments are to immediately remove all restrictions on temporary trade. Also, in the southern Murray–Darling Basin, the relevant governments (including Victoria) are to take all necessary steps to enable exchange rates and/or tagging of water access entitlements by June 2005, and establish an interim annual threshold limit of 4 per cent on permanent trade out of water irrigation areas, with a review in 2009 to consider raising the interim annual limit.

In the 2003 NCP assessment, which considered intrastate trading arrangements, the Council found that Victoria had developed an effective framework for water trading. It identified, however, constraints on trading that are inconsistent with CoAG obligations, including:

- restricting the holding of water licences and individual water entitlements to land owners (with a transfer detaching the licence or entitlement from the seller's landholding and re-attaching it to that of the buyer)
- in regulated systems, the possibility that a transfer may be refused if it would result in more than 2 per cent (net) of the total water entitlement being transferred out of selected irrigation districts in any given year
- in unregulated systems, the restrictions applying north of the Great Dividing Range that prohibit trade upstream and impose a 20 per cent reduction on trade downstream (unless under a winter fill licence), and the statewide restrictions that limit downstream trade from an unregulated system to a regulated system to the amount of upstream trade

(*continued*)

- water trading market distortions that arise from the differential return on assets incorporated in the price charged for bulk water supplied by rural water authorities to regional urban customers and irrigators (which results in the charge for supply to country towns being higher than the charge to irrigators for water from the same system).

Victoria was considering several of these constraints in developing a White Paper on the water industry. It was also developing stream flow management plans for unregulated rivers and groundwater management plans, which may include trading rules. Permanent interstate trade is permitted only in high security water entitlements in the area covered by the MDBC's pilot interstate trading project. Victoria bans late-season temporary transfers into New South Wales.

Victoria needs to:

- make substantive progress towards removing constraints on trade, including out of irrigation districts, consistent with its National Water Initiative commitments
- ensure the trading rules in stream flow and groundwater management plans facilitate trading where water systems are physically shared or hydrologic connections and water supply considerations permit trading
- develop arrangements for interstate water trade beyond the MDBC's pilot interstate trading project.

**References:** 1994 CoAG water reform agreement, clause 5; 1999 tripartite meeting; Intergovernmental Agreement on a National Water Initiative

Victoria has a well-established trading market for high security water. The Water Act and associated Regulations provide the basis for water trading within the state, with different arrangements applying to regulated, unregulated and groundwater systems. Permanent interstate trade is permitted only in high security water entitlements in the area covered by the MDBC's pilot interstate trading project.

## Regulated systems

The water entitlements of irrigators in the regulated irrigation districts are aggregated under the bulk entitlements held by the rural water authorities. The entitlements are transferable, but only among land owners.[8] A transfer detaches the entitlement from the seller's landholding and re-attaches it to that of the buyer.

Water may be transferred into or out of an irrigation district, although a transfer may be refused if it would result in more than 2 per cent (net) of the total water entitlement being transferred out of selected irrigation districts in a given year. Irrigation districts that may employ the 2 per cent rule are: Torrumbarry; the Murray valley; Shepparton; Central Goulburn; Rochester; Pyramid and Boort; Campaspe; Nyah and Tresco; Woorinen; Merbein, Red Cliffs and Robinvale; and the First Mildura Irrigation Trust. Victoria regards the 2 per cent rule as a loose rein on the pace of change, noting there has been three times the amount of permanent trade in the Goulburn–Murray district

[8] The Act also permits the permanent or temporary trading of bulk entitlements.

than in New South Wales. Before 2003-04, the rule had been invoked twice in recent years — in the Torrumbarry system in 1998-99 and the Nyah district in 2000-01 — with the effect of only delaying trade for several weeks.

Trade generally requires the approval of the rural water authorities (and/or the Minister) and is subject to a range of rules and guidelines. The rules typically aim to minimise any adverse effects of trade on other water users (for example, through the physical constraints of the system) and the environment.[9] Apart from the 2 per cent rule, Victoria advised of two exceptions where trading out is not permitted for financial reasons: the Coliban channel system in the Campaspe catchment and the Wimmera irrigation system. The systems are minor (accounting for only 0.5–1 per cent of irrigator entitlements) and dispersed, making them hard to keep viable. Victoria intends to review the rules for the two systems and to consider exit fees and reconfiguration plans.

Water entitlements cannot be permanently transferred without the approval of third parties with an interest in the entitlements. The seller is also required to advertise its intention to sell four weeks before applying for a permanent transfer.

The trading of 'sales' water (water available only once there is sufficient to meet basic entitlements in the current and subsequent year) by private diverters is not permitted. The trading of more than 30 per cent of sales water by gravity irrigators is also not permitted. In addition, private diverters are not permitted to use any sales water if they temporarily transfer any of their entitlements. Gravity irrigators lose access to all sales water above 30 per cent if they temporarily transfer any of their water entitlements or any of the first 30 per cent of sales water.[10] Victoria considers that permitting trading of larger allocations of sales water would create windfall gains for irrigators who do not take up offers of sales water and do not have to pay for it. It would also require lower sales allocations to ensure use remains within the Murray–Darling Basin Ministerial Council cap on diversions. Victoria noted that sales water has not been an issue in the pilot interstate trading project, because there is virtually no sales water downstream of Nyah.

Apart from the above constraints on water trading in regulated systems, Victoria's pricing arrangements for bulk water supply may distort the water trading market. The rural water authorities (Goulburn–Murray Water, Southern Rural Water and Wimmera–Mallee Water) have been required to incorporate a 4 per cent return on assets in the price charged for bulk water supplied to regional urban customers, but not for water supplied to irrigators.

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9 The rules are set out in Victoria's guide to water trading (DNRE 2001, pp. 48–50).

10 Trading of 'off-quota water' (water able to be taken in excess of an irrigator's allocation in times of surplus flow) is also not permitted. Victoria advised that off-quota water, as with sales water, has been an offer to irrigators rather than a proper legal entitlement. As noted in section 3.2, Victoria intends to abolish off-quota water.

As a result, the charge for supply to country towns is higher than the charge to irrigators for water from the same system. Victoria's review of water industry legislation (Marsden Jacob Associates 2001) concluded that this differential in returns distorts the temporary market for water trading.

## Unregulated systems

Victoria permits water trade in unregulated river systems on a similar basis to trade in regulated systems. Water licences are transferable, but only among land owners.

Generic trading rules are in place for unregulated systems. North of the Great Dividing Range, there is a prohibition on trade upstream and a 20 per cent reduction in trade downstream (unless under a winter fill licence). In addition, across the state, downstream trade from an unregulated system to a regulated system is limited to the amount of upstream trade. The stream flow management plans that Victoria is developing for priority unregulated rivers (see section 3.3) may set alternative trading rules for these rivers, following detailed investigation of the requirements of each catchment. The generic rules will continue to apply to other unregulated rivers.

For the stream flow management plans completed to date, Victoria has advised that the trading rules are generally designed to safeguard the health of the river and to protect water availability to downstream users. It has indicated that the plans tend to confirm the generic trading rules but may include additional constraints, given they are for stressed streams. It noted that the trading rules are intended to support the environmental flow objectives of the plans, which mostly require the environmental flows to be improved over the planning period, including via reductions in entitlements over time. Victoria provided the Council with copies of two stream flow management plans (the plans for Diamond and Hoddles creeks) that it considered to be representative of such plans. Box 3.1 summarises a selection of the trading rules in these plans, along with Victoria's rationale for the rules.

**Box 3.1:** Examples of trading rules in stream flow management plans in Victoria

**Diamond Creek**

- **Rule.** A licence cannot be transferred upstream into the catchment of the upper Diamond Creek (above the confluence with Arthurs Creek).
- **Rationale.** The Yarra basin is an unregulated stream. After reviewing environmental requirements, the hydrology, the level of existing commitments and the potential for new development, the plan's advisory committee recommended that there be no trading into upper Diamond Creek, to protect environmental flows and existing users' security of supply. The upper Diamond Creek is highly ephemeral and highly unreliable compared with Arthurs Creek. The potential for new development in upper Diamond Creek is limited due to topography and the extent of vegetative cover. Licences may be traded between Diamond Creek and the Yarra River subject to assessment and the requirement that any new licence issued is winter fill only.

(*continued*)

**Box 3.1** continued

**Hoddles Creek**

- **Rules.** Water licences may be transferred out of the plan's area but not into it until the target environmental flow has been achieved. Licences above Yellow Gum Road may be transferred only downstream.
- **Rationale.** The transfer rules and restrictions in the plan primarily apply to 'all year' licences (typically pumped from a stream directly to crops during the low flow summer months). The advisory committee recommended the rules in recognition of the overallocation of all year licences and the need to improve environmental flows and the security of supply for existing all year licences.

*Sources*: Melbourne Water 2003a, 2003b

## Groundwater systems

Trade in groundwater within an aquifer is legally possible. In the 2003 NCP assessment, however, Victoria advised that it is exercising considerable caution before permitting widespread trading in groundwater because the resource is harder to assess and has been built up over decades rather than being annually renewed.

In general, Victoria requires that a groundwater management plan (see section 3.3) be developed before it allows trade. It advised that the completed plans include controls on transfers to ensure water use is managed within the sustainable limit of the resource and to minimise any adverse effects of trade on other water users. Groundwater protection areas are typically divided into zones, reflecting the extent of drawdown that might occur if bores in each zone were to pump their licensed volume. The controls may include:

- restrictions on temporary trade, to prevent sleeper licences being activated by trading or where a water shortage is declared under the Water Act
- restrictions on permanent transfers into particular zones that may be overallocated or overused, or into the groundwater management area if it is allocated above the sustainable limit.

Victoria provided the Council with copies of two groundwater management plans (the plans for the Murrayville and Katunga water supply protection areas) that it considered to be representative of such plans. Box 3.2 summarises a selection of the trading rules in these plans, along with Victoria's rationale for the rules.

**Box 3.2:** Examples of trading rules in groundwater management plans in Victoria

**Katunga groundwater**

- **Rule.** Permanent licence transfers for irrigation are restricted to transfers accompanying land sales or to persons confirmed to have used groundwater without a licence before August 1998. As a condition for approving a licence transfer, the annual capacity of a bore listed on the transferor's licence must be equal to or greater than the entitlement to be transferred.

- **Rationale.** The plan committee recommended both measures to limit the activation of sleeper allocations, to maintain the security of existing active irrigators' entitlements. In view of the urgent need to have the plan in place before the 2003-04 irrigation season, to protect the sustainability of the resource, the plan was approved in August 2003, subject to the condition that it be reviewed within two years with a view to freeing up permanent trade.

**Murrayville groundwater**

- **Rule.** Groundwater extraction licences are issued only on the establishment of a bore and project infrastructure, to prevent trading of licences that have not been used.

- **Rationale.** Under the provision, existing and future licence holders may not transfer any of their entitlement if it has not been used. The provision is a development clause for new licences. It prevents Wimmera–Mallee Water from granting a licence to a new developer unless the proposed project (that is, the bore, pumping equipment etc.) is established. Since the plan commenced, approximately 7000 megalitres of entitlements have been granted, with approximately 670 megalitres of the total cap on extractions yet to be allocated.

*Sources*: KWSPACC 2003, MGSPACC 2001

## Interstate trade

Victoria participates in the MDBC's pilot project for permanent interstate water trading (see chapter 10). The pilot project is limited to the permanent transfer of high security water entitlements in the Mallee region of South Australia, Victoria and New South Wales (downstream of Nyah).

Victoria permits temporary interstate trade anywhere in the Murray, Goulburn and Campaspe systems, but not into New South Wales after February each year. It has advised that the late-season ban on temporary transfers into New South Wales is a means of preventing trade distortions resulting from the divergent carryover policies in the two states.[11] Victoria considers that if water is not permitted to be carried over in the state of origin, the state of destination should not allow it to be carried over there.

[11] In Victoria, an individual farmer's unused water goes back into the pool for re-allocation the following year, whereas New South Wales generally permits some carryover.

## Recent trading activity

Most water trade in Victoria occurs among irrigators in regulated systems. These systems account for the vast majority of water entitlements. Almost 90 per cent of all permanent trade occurs in the large regulated systems in northern Victoria. Unregulated rivers account for less than 10 per cent of total water entitlements, and trade is correspondingly smaller. Temporary transfers (which average 3–8 per cent of total water entitlements) significantly exceed permanent transfers (generally less than 1 per cent). Trade within Victoria substantially outweighs interstate trade.

Victoria has advised that the nature of water trade in 2003-04 was similar to that in previous years, except for a surge in trade out of irrigation districts to new horticultural developments between Swan Hill and Robinvale. It attributed the surge to the cumulative effects of the drought and the reduced profitability of the dairy industry. The 2 per cent annual limit on permanent water trading out of certain districts was reached, or was close to being reached, in four out of Goulburn–Murray Water's six areas in 2003-04 (DSE 2004). It was reached in Pyramid–Boort (in 2003-04 and 2004-05) and in Rochester (in 2003-04). In recent drought years, temporary trade has represented as much as 15 per cent of total water use. Temporary intrastate trade was over 300 gigalitres in 2002-03.

Since the establishment of the MDBC's pilot project for interstate water trading in 1998, net permanent trade out of Victoria has amounted to around 10.6 gigalitres (in total over the period). This is, however, less than 0.5 per cent of the total entitlements held in northern Victoria. Most permanent trade has been to South Australia (a net 7.9 gigalitres) (see chapter 10).

Temporary interstate trade has significantly exceeded permanent transfers (table 3.4). The overall direction of temporary interstate trade was into Victoria from 1997-98 until two years ago, when it reversed.

**Table 3.4:** Net temporary trade into Victoria, 1997-98 to 2003-04

| *Trading period* | *New South Wales to Victoria* | *South Australia to Victoria* |
|---|---|---|
| | *Megalitres* | *Megalitres* |
| 1997-98 | 9 199 | 5 020 |
| 1998-99 | 11 098 | 4 445 |
| 1999-2000 | –4 571 | –348 |
| 2000-01 | –633 | 50 |
| 2001-02 | 231 | –990 |
| 2002-03 | –12 804 | 2 852 |
| 2003-04 (to 31 January) | –390 | –2 979 |
| **1997-98 to 2003-04** | **2 130** | **8 050** |

*Source*: DSE 2004, p. 80

Victoria has advised that the price of permanent trades increased by about 50 per cent to around $1200 a megalitre in 2003-04. On the temporary market, the price in the Goulburn system rose to an unprecedented $500 a megalitre at the height of the drought in 2002-03, but had dropped to around $60 a megalitre by March 2004.

## Reform progress

Victoria's White Paper announced the following changes to water trading arrangements (DSE 2004). (Further details on some of the changes are provided in section 3.2.)

- The new entitlements covering recycled water and stormwater will be tradable. They will allow trading of water from different sources (including surface water, groundwater, recycled water and stormwater).
- Water entitlements will be:
  - granted unlimited tenure
  - unbundled into a water share, a share of delivery capacity and a licence to use water on a site
  - able to be held by non-water users, up to a limit of 10 per cent of entitlements in each supply system (to be able to hold more water shares than they would normally need for their land, irrigators will be able to hold twice the volume permitted to be used under their water use licences).
- The new lower reliability water entitlement, initially applying in northern Victoria to replace sales water, will be tradable.
- Domestic and stock rights in irrigation districts will be merged with other water entitlements and made tradable (via permanent trades).
- Stranded assets will be addressed by the introduction from 1 July 2005 of annual charges for shares of delivery capacity that are tied to land. The government stipulated, however, that delivery access charges must not become a barrier to trade.
  - Delivery access charges must be based on costs, with irrigators given the option to pay the charges as a lump-sum exit fee. The Essential Services Commission will scrutinise annual charges and exit fees.
  - In locations where the authority has formally decided to phase out irrigation, it must not apply delivery access charges if a farmer has stopped irrigating and does not wish to retain a right to be supplied.
  - Delivery access charges must not be applied if a landowner or the water authority finds a new customer to take over the delivery capacity share, or if terminating the delivery capacity share would relieve over-commitment of the infrastructure. While delivery capacity shares

will be tied to a property, they will be able to be untied and moved to other properties.

  - If charges have been applied to non-irrigated properties for 10 years and the owners do not wish to retain the right to be supplied, the authority should consider whether remaining irrigators should take on responsibility for paying for the service or whether the service should be closed down.

  - The government will establish a formal process for water authorities to rationalise or reconfigure their distribution systems, including ceasing to provide a service. The process will involve agreement with all affected customers or the development of a reconfiguration plan by an expert panel in consultation with the affected community.

- When water entitlements are unbundled and delivery access charges are introduced, the annual 2 per cent rule on permanent trade out of irrigation districts will be removed. Victoria expects this removal to occur in around two years time.

- When water entitlements are unbundled, the government will permit permanent trade to another state only when water entitlements in that state (including in irrigation districts) can move to Victoria as freely as Victoria's can move there. The government indicated that it is looking for the National Water Initiative to overcome interstate barriers to trade, including those barriers imposed by irrigation corporations and trusts in other states.

- Rules covering trading between surface water and groundwater will be developed where there is a high degree of connectivity.

- The new publicly accessible, web based register of entitlements will record trades and register third party interests (such as mortgages). It will facilitate trading by covering all water entitlements in Victoria (irrespective of the type of entitlement or the nature of the water source).

- If a bulk entitlement for the environment is held in storage, all or part of it will be able to be traded on the temporary water market, provided the trade will not affect the achievement of the objectives of the environmental water reserve. Trades will be subject to approval by the Department of Sustainability and Environment, following an annual assessment of the environmental condition of the ecosystems targeted by the bulk entitlement. Funds from temporary trading will be used for specific purposes, including the temporary purchase of water for the environmental water reserve when necessary.

- The 4 per cent rate of return required on assets providing bulk water services to regional urban authorities will be phased out by 1 July 2005, to align with the government's policy of exempting rural authorities from generating a return on past investments. The government will forgo the dividend paid by rural authorities that is attributable to the 4 per cent return in 2005-06, and will implement alternative arrangements by 1 July 2005 for activities previously funded by the return.

## Discussion and assessment

In previous NCP assessments, the Council found that Victoria's legislation and related arrangements provided an effective framework for water trading, although it identified constraints on trading that are inconsistent with CoAG obligations. Victoria is also still to develop arrangements for interstate trade beyond the MDBC's pilot project.

Under the 1994 CoAG water reform agreement, trading arrangements were to be substantially implemented by 2005 for the water sources covered by governments' 1999 implementation programs. The National Water Initiative extends to 2007 the timeframe for establishing institutional and regulatory arrangements that facilitate intra- and interstate trade (although barriers to temporary trade are to be removed immediately). In the southern Murray–Darling Basin, the relevant governments (including Victoria) committed to take all steps (including legislative and administrative changes) to enable by June 2005 exchange rates and/or tagging of water access entitlements traded from interstate sources to buyers in their jurisdictions.

In the 2003 NCP assessment, the Council indicated it was satisfied that water entitlements in Victoria are sufficiently specified to enable efficient trade. Bulk entitlements are issued in perpetuity, and water licences are issued for 15 years with a presumption of renewal. Under the changes announced by Victoria in its White Paper, all water entitlements will be granted unlimited tenure. While Victoria's registry arrangements do not provide indefeasibility or surety of title, trades may not be approved without the agreement of third parties with an interest in the water entitlement. Victoria's decision to establish a single, publicly accessible, web based register covering all water entitlements in the state (including third party interests) will further facilitate trade.

Victoria's trading arrangements contain measures to protect the water entitlements of other users and the environment. In approving trades, the water authorities and/or the Minister are required to account for any likely adverse impacts on existing water uses, waterways or aquifers, and the environment. Within the Goulburn–Murray system, for example, transfers can be approved only on the basis of supply feasibility, channel capacity, and salinity and drainage criteria. While Victoria has not provided information on the time taken to process trades, the Council is not aware of any problems with the timeliness of approvals.

Permanent and temporary water trading in Victoria are undertaken through a variety of mechanisms, including private trades, brokers and water exchanges. The Watermove exchange, for example, caters for permanent and temporary transfers throughout the state and to and from southern New South Wales. Information on the water market and trading rules is available in Victoria's guide to water trading (DNRE 2001) and through Watermove (which reports the trading rules and information on prices and volumes). Market information and trading mechanisms, therefore, do not constrain water trade in Victoria.

## Restrictions on trading

The CoAG water agreement places responsibility on the Victorian Government to facilitate trading in water, subject to protecting the environment and third party interests. The government acknowledged this responsibility in the National Water Initiative, committing to remove barriers to temporary trade immediately and to take all necessary steps to facilitate by June 2005 permanent trade out of water irrigation areas (up to an interim annual threshold limit of 4 per cent). A review in 2009 is to consider raising the threshold.

Several of the changes announced by Victoria in the White Paper will facilitate water trading:

- The unbundling of water entitlements into a water share, a share of delivery capacity and a licence to use water on a site will facilitate trade by separating tradable elements from other elements. Victoria also expects the unbundling to:
  - reduce borrowing costs, by enabling mortgages directly over water
  - assist leasing, by recording the shares of delivery capacity of both users leasing out and users leasing in
  - enable brokers to tailor products to irrigator demand
  - make it easier for irrigators to adjust the reliability of water supplies or the timeliness of deliveries by, for example, arranging more timely delivery without having to buy additional water
  - enable better management of delivery system congestion, by allowing well specified shares of delivery capacity to be traded (DSE 2004).
- The introduction of the new lower reliability water entitlement, replacing sales water, will provide irrigators in northern Victoria with a more secure title to this water and with the additional flexibility to trade it.
- Domestic and stock rights in irrigation districts will become tradable (via permanent trades).
- The potential stranding of irrigation scheme assets, caused by water trading out of irrigation districts, will be addressed by the introduction (from July 2005) of annual charges for shares of delivery capacity that are tied to land. Irrigators will have the option of paying the charges as a lump-sum exit fee. Conditions (including scrutiny by the Essential Services Commission) will apply to ensure the charges do not become a barrier to trade. In addition, new arrangements will enhance the ability of water authorities to rationalise or reconfigure their distribution systems.
- Rules covering trading between surface water and groundwater will be developed where there is a high degree of connectivity.

- Bulk entitlements held in storage for the environment will be able to be traded temporarily, provided the achievement of environmental objectives is not compromised.

The announced changes also include the removal or easing of several constraints on trading that the Council previously identified as likely to be inconsistent with CoAG water trading obligations:

- The requirement for water entitlements to attach to land will be eased. Non-water users (or non-land owners) will be able to hold up to 10 per cent of the entitlements in each system. Irrigators will be able to hold twice the water shares that they are permitted to use under their water use licences.

- When water entitlements are unbundled and delivery access charges are introduced (to address the potential stranding of irrigation scheme assets), the annual 2 per cent rule on permanent trade out of irrigation districts will be removed.

- The differential return on assets incorporated in the price charged for bulk water supplied by rural water authorities to regional urban customers and irrigators will be removed by 1 July 2005. This removal will be achieved via the removal of the 4 per cent return required on assets providing bulk water to regional urban authorities.

While two of the above changes will fully address the relevant trading constraint, 90 per cent of water entitlements will effectively remain attached to land (with a transfer detaching the water entitlement from the seller's landholding and re-attaching it to that of the buyer). In addition, irrigators will be limited to holding twice the water shares that they would normally need to use on their land. Victoria adopted these limits in response to irrigator concerns that non-irrigators could otherwise buy up much of the water and drive up its price. The government noted in the White Paper, however, that:

> *… this risk is more imagined than real. No water will be available to buy unless irrigators choose to sell. In the long-term, the price of water will be based on the value people generate from actually using it.* (DSE 2004, p. 69)

As the Council indicated in previous NCP assessments, the requirement for water entitlements to be attached to land is likely to affect the entry and activities of agents, brokers and other potential participants in the water trading market, and the ability of financial institutions to obtain ownership of a water entitlement in the case of default. As a result, the restriction may reduce the returns available to holders of water entitlements, and may constrain the extent to which water is put to its most profitable use.

Victoria advised that the 10 per cent limit is unlikely to be reached in the near future. Over the 12 years since it commenced, permanent trade in total has not reached 10 per cent of entitlements. In addition, much permanent

trade will continue to be among irrigators. The Council accepts that the 10 per cent limit is unlikely to hinder water trade to a significant extent in the short term. Victoria has indicated that the restriction can be reviewed and modified (for example, to allow a higher limit in a small supply system or to treat leases to an irrigator with an option to buy as water being held by the irrigator) (DSE 2004). Such changes would further mitigate the extent to which the restriction hinders water trade and conflicts with CoAG obligations. Nevertheless, the remaining link between water entitlements and land conflicts with Victoria's commitments under the National Water Initiative. In particular, Victoria has committed to facilitate the operation of efficient water markets and opportunities for trading within and between states where water systems are physically shared or hydrologic connections and water supply considerations permit trading.

For the unregulated rivers, Victoria maintained its generic trading rules that:

- for systems north of the Great Dividing Range, prohibit trade upstream and impose a 20 per cent reduction on trade downstream (unless under a winter fill licence)

- for systems across the state, limit downstream trade from an unregulated system to a regulated system to the amount of upstream trade.

Victoria considers these rules are essential to ensure trading does not cause the ecology of unregulated rivers, and the reliability of existing users' entitlements, to deteriorate. It has advised that the rules recognise the overallocation of 'all year' licences — typically pumped from a stream directly to crops during the low flow summer months — and associated river health risks in many unregulated rivers. The rules allow some trade but bias it to downstream or winter fill outcomes to place less strain on summer flows. For the priority unregulated rivers, Victoria may set alternative trading rules in the stream flow management plans that it is developing, following detailed investigation of the requirements of each catchment.

The Council notes that the unregulated rivers account for less than 10 per cent of water entitlements in Victoria and that the systems in which trading is more likely to be significant will be covered by the trading rules in the stream flow management plans. For the remaining unregulated systems, Victoria's generic rules represent a pragmatic compromise between permitting trading and protecting the environment and the reliability of other water users' entitlements. The Council considers that the generic rules offer an appropriate means of managing trade in the (less significant) unregulated systems, subject to the qualification discussed below regarding the 20 per cent reduction applying to some downstream trades.

For the stream flow and groundwater management plans completed to date, Victoria has advised that the trading rules are generally designed to safeguard the health of the river or groundwater, and to minimise any adverse effects of trade on other water users. It noted that the stream flow management plans tend to confirm the existing generic trading rules but may include additional constraints. The Council's investigation of the trading rules

in a sample of four plans supported Victoria's observations. Some of these plans also include trading rules that appear to be transitional measures targeting various objectives, such as ensuring new licences are used in accord with licence conditions, rather than being traded, and preventing the activation of sleeper licences (via trading) in overallocated systems.

To some extent, the generic 20 per cent reduction imposed on entitlements traded downstream north of the Great Dividing Range (unless under a winter fill licence), along with comparable rules included in the stream flow management plans, is similar to the reduction factors that apply to traded entitlements in some regions interstate. Such measures provide a disincentive to trade and are a less direct influence on water use. The Council considers, therefore, that such measures are likely to be inconsistent with CoAG water trading obligations. Alternative ways of limiting water use that are less likely to adversely affect trade include the government reducing entitlements for all water licence holders in an area by a uniform percentage and/or buying entitlements in the market. Under the National Water Initiative, Victoria will need to ensure the generic trading rules for unregulated rivers and the trading rules in subsequent stream flow and groundwater management plans facilitate trading where water systems are physically shared or hydrologic connections and water supply considerations permit water trading.

## Interstate trade

Victoria is still to develop arrangements for permanent interstate trade beyond the MDBC's pilot project. Under the National Water Initiative, the relevant governments in the southern Murray–Darling Basin (including Victoria) have committed to take all necessary steps to enable by June 2005 exchange rates and/or tagging of water access entitlements. The governments have also committed to establish an interim annual threshold limit of 4 per cent on permanent trade out of water irrigation areas, with a review in 2009 to consider raising the interim annual limit.

As noted, Victoria announced in the White Paper that it would remove its annual 2 per cent limit on permanent trade out of irrigation districts once water entitlements are unbundled and delivery access charges are introduced. It also announced, however, that when water entitlements are unbundled, it will permit permanent trade to another state only when water entitlements in that state (including in irrigation districts) can move to Victoria as freely as Victoria's can move there. The government indicated that it is looking for the National Water Initiative to overcome interstate barriers to trade, including those barriers imposed by irrigation corporations and trusts in other states.

Victoria also maintains a late-season ban on temporary transfers into New South Wales as a means of preventing trade distortions resulting from the divergent carryover policies in the two states. Under the National Water

Initiative, Victoria has committed to remove barriers to temporary trade immediately.

Given the commitments made by Victoria in its White Paper and under the National Water Initiative, the Council considers that Victoria has made satisfactory progress against its CoAG obligations on interstate and intrastate water trading for the 2004 NCP assessment.

# 3.5 Other matters from the 2003 National Competition Policy assessment

## Water legislation review and reform

Governments agreed to review and, where appropriate, reform by 30 June 2002 all existing legislation that restricts competition. Reform is appropriate where competition restrictions do not provide a net benefit to the whole community and are not necessary to achieve the objective of the legislation. Any new legislation that restricts competition must also meet this test.

Victoria completed a review of the Water Act, the *Water Industry Act 1994*, the *Melbourne and Metropolitan Board of Works Act 1958* and the *Melbourne Water Corporation Act 1992* in 2001. This review made nine recommendations, including one (accepted by the government) that required no legislative action. The Council found in the 2003 NCP assessment that Victoria was still to implement several recommendations.

Victoria has since progressed some of the recommended reforms, as follows:

- Victoria accepted the recommendation to retain exclusive licences for the provision of water and sewerage services, subject to the implementation of independent price regulation, contracting out to achieve efficiency benefits and vetted competition for cross-border developments (see below). It considers that its establishment of the Essential Services Commission as the economic regulator of the water industry from January 2004 addresses price regulation issues. Victoria also announced measures to encourage competition for future infrastructure under its Partnerships Victoria policy.

- Victoria accepted aspects of the recommendation on alternative approaches to service delivery.[12] It considers that its new regulatory

[12] Following cost–benefit considerations, Victoria rejected some recommendations in this area.

framework for drinking water (to take effect in July 2004) provides appropriate underpinnings for implementation.

Victoria considered future arrangements in respect of the following recommendations when finalising its White Paper, which was released in June 2004:

- to introduce vetted competition (on the basis of cost efficiency) for the right to supply major new developments on the border of existing businesses
- to develop a single regulatory and legislative framework for Victoria's water businesses
- to review the costs and benefits of establishing third party access rights to essential water infrastructure.[13]

The White Paper review found it would be necessary to refine the government's approach to vetted competition. It stated that vetted competition for the right to supply new subdivisions can provide incentives for individual businesses to develop innovative solutions, but can also inhibit collaboration among authorities. Victoria found that collaboration may be critical to the development of integrated solutions that assess impacts beyond the immediate area, and thus ensure systems and resources are used efficiently (Government of Victoria 2004).

In relation to the legislative framework for Victoria's water businesses and catchment management authorities, the White Paper found a need for reform. Currently, these bodies are subject to multiple Acts, which results in a complex and, at times, unclear picture of respective accountabilities. Victoria considers that new legislation is needed to improve coherence. In particular, it proposes to:

- consolidate governance arrangements for catchment management authorities under one Act, while still allowing the authorities to exercise powers under several pieces of legislation
- apply a new legislative framework to water businesses that recognises the diversity of the sector and clarifies roles and responsibilities. (Government of Victoria 2004)

Victoria has advised that it will address the remaining recommendations from the 2001 review concerning compulsory sewerage connections and by-law making powers through legislation to be introduced in the Spring 2005 Parliamentary sittings. The legislation will establish the new legislative

[13] Action on a fourth recommendation – on impediments to water trading, including the adverse effects on water markets arising from differential rates of return on bulk water supplies to regional urban and rural users – also depended on the outcomes of the White Paper — see the assessment of water trading.

framework for water businesses referred to above. The remaining recommendations specifically relate to:

- the imposition of statutory obligations on property owners to connect to a reticulated sewerage system
- the responsibility of the Minister for making by-laws.

Because the legislative proposal relating to sewerage connection involves a restriction on competition, the Council requested a summary of the legislation's principal features. Victoria provided this information, but requested that it remain confidential to allow further stakeholder consultation on the government's proposal.

### Discussion and assessment

While Victoria is implementing its remaining water legislation reform program, it has not yet completed all elements. To some extent this is understandable, given that Victoria sought to align the reforms with a comprehensive public review of the state's water industry policy, which it only recently finalised. Nonetheless, to comply with NCP legislation review and reform obligations relating to the water industry, Victoria needs to finalise its approach and enact any necessary legislation.

## Institutional role separation

At the time of the 2003 NCP assessment, Victoria was still to complete the CoAG water reform agreement obligation to separate the roles of water standards setting and regulation from service delivery (see section 3.1). The separation of responsibilities is intended to prevent conflicts of interest that might arise if a monopoly water business (or its Minister) has responsibility for both providing water and setting its price and quality. Economic regulation should be independent, given water and wastewater businesses are public monopolies.[14]

The Essential Services Commission became the economic regulator of the Victorian water industry on 1 January 2004. It regulates the prices, service standards and market conduct of the state's 24 businesses that supply water, sewerage and related services. The commission's role was previously limited to monitoring and enforcing service standards and other non-price issues for metropolitan water authorities. (The Department of Sustainability and the Environment was previously responsible for price regulation, and will

[14] Independent economic regulation also addresses CoAG obligations in relation to water pricing, provided that the regulator takes account of CoAG pricing principles and that their recommendations are made available in a public report.

continue in this role until the commission's first price determination, which Victoria advised will take effect on 1 July 2005.)

The Water Industry Act as amended by the *Water Industry (Essential Services Commission and other Amendments) Act 2003* established the framework for the commission to regulate the water industry. The framework includes the Water Industry Regulatory Order and the issue of obligations statements to water businesses.

## Water Industry Regulatory Order

The Water Industry Regulatory Order prescribes the services over which the Essential Services Commission has the power to regulate prices and service quality.[15] It specifies that for those services, the commission must:

- approve or specify price arrangements from 1 July 2005
- specify standards and conditions of service
- monitor and report publicly on the performance of water businesses
- audit businesses' compliance with service standards, conditions of service, regulatory information and asset management obligations
- facilitate dispute resolution.

## Statements of obligations

Victoria reported in 2003 that it intended to develop statements for its regional urban and rural water businesses to formally articulate their business obligations. The statements were not finalised at the time of the 2003 NCP assessment, so the Council undertook to consider progress in 2004.

In December 2003, Victoria published a generic statement covering the services provided by the state's water businesses. It issued customised statements for its 17 urban water businesses in July 2004. It has advised that it will issue statements for the three rural and two rural urban businesses (the newly formed Lower Murray Urban and Rural Water Authority and the Grampians Wimmera Mallee Water Authority) in November 2004. This delay reflects the need to work through a number of outstanding issues.

[15] The services include retail water, retail recycled water, retail sewerage, storage operator and bulk water, bulk sewerage, bulk recycled water, metropolitan drainage, irrigation drainage, connection, and diversion services, as well as services that attract developer charges.

The statements clarify that the Essential Services Commission — rather than water businesses — sets and monitors service standards.[16] In particular, each business must submit a water plan to the commission, setting out its proposed pricing of services and an explanation of how it proposes to meet its obligations under the statement, legislation and regulation. A business must make any price variation required by the commission and any other variation requested by the Minister[17] or relevant regulatory body.[18]

## Drinking Water Quality Regulator

Victoria introduced a new regulatory framework for drinking water quality on 1 July 2004. The Office of the Drinking Water Quality Regulator (within the Department of Human Services) will set quality standards. The framework requires urban water authorities that supply drinking water to the public to:

- adopt an integrated risk management framework for drinking water quality
- comply with water quality standards
- communicate effectively with stakeholders
- publicly disclose water quality information.

## Discussion and assessment

The *Water Industry Act 1994* as amended by the *Water Industry (Essential Services Commission and other Amendments) Act 2003* provides a statutory framework to separate responsibility for water service provision from standard setting and regulation. In particular, the Act establishes a framework for the Essential Services Commission to regulate the water industry. As part of this framework, the Water Industry Regulatory Order vests regulatory powers in the commission to specify prices and service standards and to report publicly on these matters. The obligations statements further clarify that water business must comply with regulatory requirements, including price determinations by the commission. The new regulatory framework for drinking water quality (which commenced in July 2004) establishes an additional layer of separation between responsibilities for service provision and regulation in the water industry.

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16 The Essential Services Commission will work in conjunction with customer input, particularly for rural service standards. Drinking water quality is subject to a separate regulatory framework.

17 Before issuing or amending a statement, the Minister must consult with the Essential Services Commission.

18 For example, EPA Victoria.

The Council considers that Victoria has met its NCP obligations on institutional role separation.