2 New South Wales

Outstanding assessment issues

Pricing and cost recovery

Consumption-based pricing

Outstanding issue: Review the level of ringfencing of bulk water services provided by the Hunter Water Corporation, Gosford and Wyong

Next full assessment: The Council will assess urban pricing reforms in 2003.

Reference: Water reform agreement, clause 3(c)

Background

In the 2001 NCP assessment, the Council had not received information on bulk water services offered by Hunter Water Corporation, Gosford City Council and Wyong Shire Council. In particular, it was not known whether these bodies provided bulk water services and, if so, whether there was sufficient separation from their retail service businesses to enable them to calculate an efficient bulk water price (that is, there needs to be an internal capacity to price bulk water efficiently).

The identification of bulk water costs, and charging for these costs at an appropriate rate and in an appropriate manner, can be a catalyst for change in the water industry, including through increasing competition in the supply of water. Identification increases transparency and the efficiency of pricing and resource allocation. It also assists in identifying cross-subsidies between customer classes.

For the 2002 NCP assessment, the Council is reviewing bulk water services provided by Hunter Water Corporation, Gosford City Council and Wyong Shire Council. Where such services are provided, adequate levels of ringfencing should be in place.

New South Wales arrangements

New South Wales reports that Gosford City Council and Wyong Shire Council do not have bulk water supply businesses, so the ringfencing issue does not arise for these councils.

The Hunter Water Corporation supplies bulk water services to Dungog Council and Mid Coast Water. Dungog Council and Mid Coast Water are ranked 10th and 250th respectively in Hunter Water Corporation's customer base. Dungog Council is charged a location based price that is discounted, as it does not draw on any reticulation infrastructure.

All large volume users of water supplied by Hunter Water Corporation (including Dungog Council and Mid Coast Water), are charged prices determined by the Independent Pricing and Regulatory Tribunal. These charges are consumption-based and structured as two-part tariffs.

Discussion and assessment

This issue of ringfencing bulk water services arose in the 2001 NCP assessment due to insufficient information. In light of additional information provided by New South Wales, the Council considers that the outstanding 2001 NCP assessment issue has been addressed.

Consumption-based pricing

Outstanding issue: Significant progress (primarily by Tweed Shire), in reviewing the cost effectiveness of two-part tariffs, winding back free water allowances, and a commitment to action if reforms are cost effective.

Next full assessment: The Council will assess urban pricing reforms in 2003.

Reference: Water reform agreement, clause 3(b)

Background

In the 2001 NCP assessment, the Council had concerns about the rate of progress towards consumption-based pricing by some nonmetropolitan urban water service providers, and particularly with Tweed Shire. At the time, Tweed Shire had a 250 kilolitre free water allowance which increased with consumption above the minimum amount. Many customers, therefore, did not face a volumetric charge for water. Tweed Shire had not conducted a review to demonstrate the cost effectiveness of implementing two-part tariffs.

The New South Wales Government undertook to continue to approach Tweed Shire with a view to a more appropriate pricing mechanism being adopted.

The fee setting cycle meant that, at the time of the 2001 NCP assessment, charges for 2001-02 had been set. Further negotiation was taking place in advance of the next management planning cycle and public exposure of the intended pricing was not required until March 2002. The pricing reforms could be either a further reduction of the free water allowance or a move to a two-part tariff.

For the 2002 NCP assessment, the Council is to assess the progress of nonmetropolitan urban water service providers (and primarily Tweed Shire), in reviewing the cost effectiveness of two-part tariffs, winding back free water allowances, and action if reforms were found to be cost effective.

New South Wales arrangements

New South Wales reports that nonmetropolitan urban water service providers may be divided into three categories. These are:

- large providers (those with annual revenues of more than $2 million);
- medium providers (those with revenues of $1–2 million); and
- small providers (those with revenues of less than $1 million).

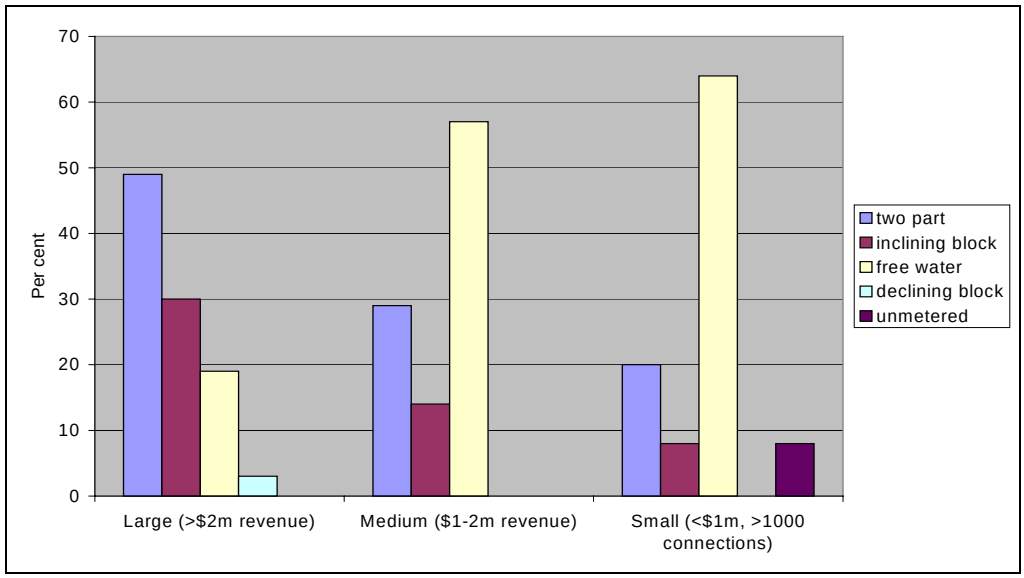
New South Wales has given priority over the past 12 months to encouraging noncomplying large nonmetropolitan urban providers to move to two-part tariff pricing. The large nonmetropolitan urban providers targeted include Tweed Shire Council, Orange City Council, Parkes Shire Council, Ballina Shire Council, Kempsey Shire Council and Griffith City Council.

For the smaller nonmetropolitan urban providers, New South Wales has committed to continuing its policy of encouraging the move to two-part tariff pricing, where cost effective. New South Wales will review the outcomes of this process in the first quarter of 2003.

New South Wales provided the Council with a report titled *NSW Water Supply and Sewerage Performance Comparisons 2000/01*. Whilst this report contains considerable information of interest to the Council, information outside the scope of this assessment will not be considered in detail until the 2003 NCP assessment.

The proportions of local government water providers using various tariffs arrangements have been separated into size categories suggested by New South Wales and summarised (using performance report material) in chart 2.1.

Chart 2.1: Tariffs in use – water service providers in New South Wales, 2001-02



Source: Department of Land and Water Conservation (2002, unpublished)

Chart 2.1 indicates that for 2001-02 approximately 49 per cent of large nonmetropolitan water service providers (eighteen of 37 providers) were using a two-part tariff for customer water charges. A further 30 per cent (eleven providers) were using a tariff structure that contained an inclining block, 19 per cent used a free water allowance, and 3 per cent were reported as using a declining block tariff.

Chart 2.1 indicates that for the medium sized nonmetropolitan water service providers 29 per cent (eight of 28 providers) were using two-part tariffs, 14 per cent (four providers) used inclining block tariffs, and 57 per cent (sixteen providers) used a free water allowance.

For the smaller nonmetropolitan urban water providers 20 per cent (five of 25 providers) used two-part tariffs, 8 per cent (two providers) used an inclining block tariff, 64 per cent (sixteen providers) used free water allowances, and 8 per cent (two providers) were unmetered.

The total number of the above nonmetropolitan urban water suppliers that incorporated a free water allowance as part of their tariff structure in 2001-02 was 39 providers. Attachment 1 indicates the providers using free water allowances during 2001-02 and the volumes of free water allowances offered.

New South Wales has received written notification from Ballina Shire Council, Tweed Shire Council, Forbes Shire Council, and Parkes Shire Council confirming the elimination of across the board free water allowances and the implementation of full usage-based tariffs from 1 July 2002. Orange City Council has eliminated its general water allowance of 350 kilolitres per

annum.[1] Bathurst Council implemented a fixed annual charge and an inclining block tariff during 2001-02.

Kempsey Shire Council and Griffith City Council are yet to advise the Government of their pricing policy intentions for 2002–03, but have confirmed that a cost-benefit analysis of two-part tariff pricing has been, or is being, conducted. Kempsey is undertaking a much larger review of water services and, hence, there is a delay in considering pricing issues.

The remaining local governments are progressively considering the cost effectiveness of two-part tariffs in the context of wider reviews looking primarily at the performance of their water service assets. The New South Wales Government will report on whether these reviews have included the elements of full cost pricing by the end of 2002.

New South Wales will continue to encourage all remaining nonmetropolitan urbans (including those with revenues of less than $1 million) to adopt full usage based pricing policies and to adopt two-part tariffs, where cost effective.

The summarised data from chart 2.1 indicates that during 2001-02 31 nonmetropolitan urban water providers (in the above three categories) were applying two-part tariffs and another twelve were applying modified full usage tariffs. In addition, a further five small utilities with under 1000 connections have simple two-part tariffs.

In total, New South Wales has advised that 59 of the 112 non-metropolitan urban water providers have a pay-for-use tariff with no water allowance. Of these, 37 have a simple two-part tariff, 21 have an inclining block tariff and one has a declining block tariff. Some 48 non-metropolitan providers had a water allowance and five providers did not have domestic water metering.

The Minister for Land and Water Conservation has released a brochure for local water utilities on best practice *Water Supply, Sewerage and Trade Waste Pricing*, with a view to moving remaining medium sized councils and smaller councils (where it is cost effective) to full usage based pricing. The Minister has also arranged for the preparation of software and pricing guidelines for New South Wales water utilities. The Department of Land and Water Conservation will be conducting a series of regional training workshops for utilities on best practice *Water Supply, Sewerage and Trade Waste Pricing* from October to December 2002.

Discussion

The Council's focus for the 2002 NCP assessment is whether Tweed Shire, one of the State's largest nonmetropolitan urban water providers, has

[1] A 150 kilolitre per annum allowance has been introduced for landowners who take responsibility for the maintenance of nature strips on public land.

conducted a robust assessment of the cost effectiveness of two-part tariffs. New South Wales has reported that Tweed Shire is committed to eliminating free water allowances and the implementation of full consumption-based tariffs from 1 July 2002. The Council is satisfied that this issue has been met resolved for this assessment. Further, New South Wales continues to make progress with a number of the larger local councils on this issue.

In broader terms, however, New South Wales reports that 59 of 112 nonmetropolitan urban water providers are applying pay-for-use charging, that is, two-part, inclining block or declining block tariffs. The Council notes that this is the same result reported in the 2001 NCP assessment. At that time, the Department of Local Government forecast 69 local governments would adopt two-part tariff regimes for 2001-02. While a number of local governments[2] have provided commitments in this assessment to implement reform, there are still a significant number of non-metropolitan urban providers who are yet to do so.

Assessment

The Council is satisfied that New South Wales has made progress on the outstanding 2001 assessment issue, which required progress, primarily in relation to Tweed Shire Council, in reviewing the cost effectiveness of two-part tariffs and winding back free water allowances. Tweed Shire Council and other large councils, which had previously not moved to full usage based pricing, have provided commitments which satisfy these requirements.

The Council, however, notes that a significant number of councils with more than 1 000 connections are yet to satisfy the CoAG commitment in relation to two-part tariffs, which was due for completion by the end of 1998. The Council expects this commitment to be virtually complete by the time of the 2003 NCP assessment. In particular, by the time of the 2003 NCP assessment the Council would expect all remaining nonmetropolitan urbans with more than 1000 connections to:

- have made a commitment to introducing two-part tariffs or adopting other usage based pricing policies which meet the CoAG requirements[3] within an appropriate timeframe where cost effective;
- provide copies of any cost effectiveness studies where the provider chose not to implement reform; and

[2] For example, Ballina, Bathurst, Bombala, Coolah, Forbes, Parkes, Richmond Valley and Tweed Council. Orange City Council has adopted two part tariff pricing with a reduced allowance for landowners responsible for nature strip maintenance.

[3] The Council will look at the structure of these other tariff arrangements in 2003 to ensure they are consistent with CoAG commitments.

- have significantly reduced the use of free water allowances and property based value charging.

Because of the low rate of compliance among smaller local governments, it is the Council's view that New South Wales needs to pursue a strategy to improve performance of these councils over the next 12 months. The Council notes in this regard that New South Wales has taken positive action by releasing the *Water Supply and Trade Waste Pricing* brochure. In order to meet the requirement to have implemented two-part tariffs by June 2003, New South Wales will need to implement such a strategy by the end of 2002 at the latest, in order for local governments to be in a position to make the necessary commitments by June 2003.

Consumption-based pricing – trade waste

Outstanding issue: For nonmetropolitan urban service providers, progress in the use of trade waste charges and winding back property value based charges.

Next full assessment: The Council will assess urban pricing reforms in 2003.

Reference: Water reform agreement, clause 3(b)

Background

The Council has recognised that, in most cases, volumetric charging for wastewater will not be cost effective. For large dischargers or businesses with high strength waste, however, volumetric pricing should be considered. In the 2001 NCP assessment, the Council found that trade waste charges were not extensively used in New South Wales and the absence of trade waste charges could lead to nontransparent and inefficient cross-subsidies. The Council undertook to re-assess this issue in the 2002 NCP assessment.

New South Wales arrangements

The discharge of trade waste into council sewers is regulated under the *Local Government Act 1993* and the *Local Government (Approval) Regulation 1999*. Any discharges require the approval of councils and the concurrence of the Department of Land and Water Conservation.

In determining whether to impose trade waste charges, local councils consider the extent to which discharges are likely to impose costs on the system. In general, councils will levy waste charges when trade waste discharges from commercial or industrial premises reach certain threshold levels. New South Wales has stated that the discharge of waste will impose costs that should be recovered.

The Minister for Land and Water Conservation has released a brochure for local water utilities on best practice *Water Supply, Sewerage and Trade Waste*

Pricing. The brochure complements existing materials including interactive modelling software to support business planning. It focuses on water supply, sewerage and trade waste pricing, and is intended to comply with the CoAG pricing guidelines. The Council was provided with a copy of this brochure. The brochure refers local governments to new water supply, sewerage and trade waste pricing models that have been developed as part of the interactive modelling software. Pricing guidelines are being finalised and will shortly be released with the pricing software to the water utilities. Revised state guidelines for council management of liquid trade waste discharges to sewerage systems have also been provided by the Department of Land and Water Conservation.

Most nonmetropolitan urban providers have reduced or eliminated the use of property based rates from water service revenues. The pricing brochure referred to above and guidelines recommend the removal of charges based on land value from all water supply and sewerage tariffs.

Discussion and assessment

The Council has found the absence of trade waste charges reduces the incentive for people to minimise waste and can lead to nontransparent and inefficient cross-subsidies between large and small dischargers. The Council notes the recent release of new guidelines for the operation of trade waste sewerage services and streamlined administrative arrangements for trade waste regulation in New South Wales. However, evidence that thresholds are being set in a manner that promotes efficiency was not provided by New South Wales.

The new pricing guidelines for water supply, sewerage and trade waste are an advance in the processes used by New South Wales. The Council, however, ultimately needs to assess the outcomes of reform. For this reason, the Council will revisit the extent of adoption of trade waste charges in the 2003 NCP assessment for urban pricing. New South Wales has made sufficient progress in winding back property value based charges for nonmetropolitan providers for this assessment.

Consumption-based pricing

Outstanding issue: For Sydney Water Corporation, progress in eliminating property values in determining water charges

Next full assessment: The Council will assess urban pricing reforms in 2003.

Reference: Water reform agreement, clause 3(b)

Background and New South Wales arrangements

In 1996, Sydney Water Corporation eliminated domestic property value based charges for water services and commenced phasing out the use of property values for commercial water charging.

The 1999 NCP assessment reported that remaining property value based tariffs for Sydney Water Corporation were estimated to be $61 million and would be eliminated by 2002. In the 2001 NCP assessment, New South Wales provided Independent Pricing and Regulatory Tribunal data that revenue from property based tariffs was projected to decrease to $12 million by 2003.

Independent Pricing and Regulatory Tribunal determinations for the Sydney Water Corporation have progressively reduced property value based charges for wastewater and stormwater services, and it is likely that this will continue. The next determination for Sydney Water Corporation is expected in June 2003. New South Wales states that it expects there would be a further decline in the use of property values for pricing in the next determination.

Discussion and assessment

The Council is satisfied that the 2002 NCP commitment has been met. New South Wales is making progress on the elimination of property based values by Sydney Water Corporation in the determination of water and wastewater charges.

Full cost recovery – rural price paths

Outstanding issue: New South Wales is to provide guidance on price paths for achieving full cost recovery for rural water.

Next full assessment: The Council will next assess rural pricing reforms in 2004.

Reference: Water reform agreement, clauses 3(a) and (d)

Background

In the 2001 NCP assessment, the Council concluded that New South Wales had not formally met its commitment to provide a timetable for when rural schemes will reach full cost recovery.

The commitment to adopt rural water supply pricing regimes based on the principle of full cost recovery is made under part 3(d) of the CoAG water agreement. The commitment in this agreement was further defined at the tripartite meeting in January 1999, where general pricing principles for rural water supply were agreed. The tripartite meeting required the Council to

assess jurisdictions as having complied with CoAG full cost recovery commitments where they:

- have achieved full cost recovery; or
- have established a price path to achieve full cost recovery beyond 2001 with transitional community service obligations made transparent; or
- for schemes where full cost recovery is unlikely to be achieved in the long term, that the community service obligation required to support the scheme is made transparent; and
- have made cross-subsidies transparent.

The Council was not provided with a price path in the 2001 NCP assessment, The Council therefore committed to re-assess the issue of a price path for achieving rural full cost recovery in the 2002 NCP assessment.

New South Wales arrangements

In December 2001, the Independent Pricing and Regulatory Tribunal announced caps on annual price rises for bulk water supplied by State Water, a ringfenced business unit within the Department of Land and Water Conservation.

The Tribunal capped price increases at 15 per cent a year (plus CPI) for bulk water from regulated rivers, while charges for water from unregulated rivers and groundwater will rise by no more than 20 per cent each year (plus CPI). Because the current levels of cost recovery vary between rivers, many users (particularly on regulated rivers), are estimated by the Independent Pricing and Regulatory Tribunal to face real price increases of 8.5 per cent or less for full cost recovery to be achieved. The new price structure operates from October 1, 2001 until June 30, 2004, and allows State Water to extend its two-part tariff (fixed charges plus a variable charge based on usage) to unregulated rivers. As both prices and the level of cost recovery are much lower for users of water from unregulated rivers and groundwater, the Tribunal felt steeper increases would be inappropriate for these systems.

The Independent Pricing and Regulatory Tribunal estimated that the proposed maximum prices would result in an increase in the proportion of recovered costs from 61 per cent in 2000-01 to 74 per cent in 2003-04. Table 2.1 shows the overall level of cost recovery across the valleys varies significantly, from 96 per cent in the Murray Valley to 19 percent in the South Coast by 2003-04.

Table 2.1: Percentage of costs recovered by valley (all water sources)

Region	*2000-01 (per cent)*	*2003-04 (per cent)*
Barwon Region (Border, Gwydir, Namoi, Peel)	66	82
Central West (Lachlan, Macquarie)	81	89
Far West	20	33
Murray	77	96
Murrumbidgee	78	88
North Coast	12	20
Hunter	30	45
South Coast	12	19
Total NSW	**61**	**74**

Source: Independent Pricing and Regulatory Tribunal (2001)

Table 2.2 shows levels of cost recovery are far higher for regulated rivers than unregulated rivers or ground water in all valleys except the North Coast. The proposed price increases will result in full cost recovery on the majority of regulated rivers by the end of the three year determination period. Most of the required annual price rises for regulated rivers to reach the full cost recovery objective are significantly lower than the 15 per cent maximum. Levels of cost recovery will improve for all sources between 2000-01 and 2003-04 as shown in table 2.2.

Table 2.2: Percentage of allocated costs recovered from tariffs in 2003-04.

Region	*Regulated Water (per cent)*	*Unregulated Water (per cent)*	*Ground Water (per cent)*
Border	100	42	
Gwydir	100	89	Barwon region
Namoi	100	43	37
Peel	55	Included in Namoi	
Lachlan	100	28	Central West
Macquarie	107	71	35
Far West	No regulated rivers	33	34
Murray	100	33	56
Murrumbidgee	100	71	28
North Coast	11	21	22
Hunter	53	31	21
South Coast	35	20	8
Total	**94**	**31**	**32**

Source: Independent Pricing and Regulatory Tribunal (2001)

There are several reasons for the continuing low level of cost recovery in some valleys. In the Far West, there are no regulated rivers, and current prices for unregulated water and ground water in this area are low relative to costs. In the coastal valleys, most of the bulk water used is from unregulated rivers

and groundwater with current prices well below the management costs. In addition, current prices on coastal regulated rivers are low relative to costs, due to relatively few extractors to share the costs of infrastructure.

The Independent Pricing and Regulatory Tribunal is of the view that it is possible that the costs on some coastal valley rivers may result in a need for a significant community service obligation to support these valleys. This approach is consistent with the CoAG principles for full cost recovery in the medium to long term. The price increases translate into an increase in State Water's total revenue of approximately $6.9 million over the determination period. However, the Tribunal's proposed prices still result in a shortfall in State Water's revenue of $16.12 million in 2003-04. Whilst the largest portion of revenue comes from regulated river tariffs, the bulk of State Water's revenue shortfall comes from tariffs for unregulated water ($7 million) and groundwater ($6.4 million).

Submissions

The Council has received a number of submissions that raise rural water pricing issues.

The New South Wales Irrigators Council (2002, submission 12) argues the irrigation industry has serious concerns about the impacts of the current bulk water price determination. It has called on the Council to ascertain whether the existing determination is appropriate in terms of legacy costs, impactor pays etc. The submission also argues for a formal process to identify relevant instances of community service obligations, otherwise community service obligations will never be a part of pricing. It is asserted that there is a conflict of interest if the government is both identifying and paying for community service obligations and unless there is a formal and transparent process, no community service obligations are likely to be paid.

Robert Caldwell (2002, submission 5), an irrigator in the Lachlan Valley, argues the basis for full cost recovery is flawed, and full cost recovery should not be fully attributable to irrigation as some costs are sunk because dams were constructed by governments for social reasons. Other issues raised include:

- Public good and cost sharing – irrigators are being asked to pay far in excess of their full share (all research costs, for example). He argues irrigators only divert 13–19 per cent of their allocation with the remainder being for environmental flows. He believes 50 per cent of costs should be attributed to the public good and irrigator charges reduced accordingly.

- Fixed charges form two-thirds of Mr Caldwell's water bill. Mr Caldwell believes this is contrary to CoAG pricing guidelines. In some years the Department of Land and Water Conservation will be charging for delivering no water as general security licences can receive zero allocations. It is his view that charges should be on a usage basis only.

- Full cost recovery and moving water to highest value uses will completely reorganise allocations in the Lachlan within a few years, with resources being sold to 10–20 large cotton growers and this will have socio-economic impacts for the town of Forbes.

The World Wide Fund for Nature (2002, submission 13) raised the following rural water pricing issues in New South Wales. Price paths for rural full cost recovery should be completed, and full costs should include an appropriate return to capital and an allowance for dividend payments. Valleys that are unable to recover costs should be identified, subsidies provided, and transparently reported. Continued supply to these valleys should be justified on a cost-benefit analysis including externalities.

The use of beneficiary versus impactor pays is significant for cost recovery. The World Wide Fund for Nature argues it would be helpful for the Council to document the use of these principles by different States.

The World Wide Fund for Nature raised the following issues with the Independent Pricing and Regulatory Tribunal for the Council to consider:

- appropriate levels of natural resource management costs for the Department of Land and Water Conservation's bulk water management need to be determined on the basis of best science and in consultation with environment groups. Further progress is needed to define a method to allocate an appropriate share of natural resource management costs to users;

- the natural resource management costs of other agencies should be included in the cost base for pricing decisions;

- socio-economic studies should be done to understand the impact of increased prices on the community and structural adjustment; and

- the potential for using revenue from an environmental tax to fund structural adjustment in light of full cost pricing needs to be investigated.

The Council, it was argued, must ensure a New South Wales price path determines a full cost recovery path including these factors. The submission asserts that the Department of Land and Water Conservation and State Water are under recovering funds to manage environmental aspects given the findings of the State of Environment Report and hence the true cost of supplying bulk water in New South Wales is understated. Further, State Water does not have an operating licence in place from the Department of Land and Water Conservation and hence compliance with set standards does not exist.

Discussion and assessment

The Council recognises that New South Wales' current processes for determining rural water price paths has several strengths. In particular:

- the Independent Pricing and Regulatory Tribunal provides an independent and transparent process for determining the move towards full cost recovery; and

- through this process New South Wales is taking a broad and comprehensive approach to full cost recovery, including environmental costs, in rural water prices.

The Independent Pricing and Regulatory Tribunal's 2001 bulk water price determination indicates that New South Wales has not yet achieved full cost recovery in the rural sector and an end date has not been set to indicate when full cost recovery will be achieved (for those schemes where the objective can be met).

For the purposes of the 2002 NCP assessment, the Council has satisfied itself that New South Wales will achieve full cost recovery within a reasonable timeframe. In making this assessment the Council recognises that the New South Wales approach is characterised by the degree of independence in price setting, and the degree to which water resource management (environmental) costs are included in setting those prices.

The Council also recognises the New South Wales Government's commitment to pursue full cost recovery through several mechanisms. For example, the 2001 Independent Pricing and Regulatory Tribunal bulk water determination states:

> *One of the Tribunal's primary considerations for the 2001 bulk water prices determination was the need to set maximum prices for bulk water services that more adequately recover the costs that the Department of Land and Water Conservation incurs in providing these services, in line with a Government commitment to achieve full cost recovery for provision of bulk water.* (IPART 2001, p. 3)

In determining rural price paths, however, the Tribunal is also charged with the responsibility of balancing the New South Wales Government commitment with capacity to pay considerations including:

> *…the ability of bulk water users to absorb the price rises required to achieve full cost recovery.* (IPART 2001, p. 3)

The New South Wales Government has also reinforced its commitment to reaching full cost recovery in reasonable time by including a statement in the interim State water management outcomes plan that was publicly released in October 2001. Whilst the plan is yet to be finalised at the time of writing this assessment, the plan does set a target that the Government is pursuing full cost recovery in all practicable cases, except where capital infrastructure cannot reasonably be funded by small numbers of water users.

The above processes have lead to the Independent Pricing and Regulatory Tribunal's 2001 three year bulk water determination setting an increase in State Water's recovery of costs from 61 per cent in 2000-01 to 74 per cent in 2003-04. Further, the Council has found in conducting this assessment that

when this figure is disaggregated by water source, the regulated rivers (80 per cent of all water use in New South Wales) will be achieving 94 per cent of costs by the end of the determination period. Only 31 and 32 per cent for unregulated and groundwater sources respectively, however, will have met full cost recovery commitments. The Council recognises that full cost recovery for rural water supply will be largely an issue for unregulated and groundwater sources in the future.

The Council also notes that the Independent Pricing and Regulatory Tribunal has advised that this cost-base is likely to increase over time, due to the increasing need to mitigate environmental impacts. New South Wales has argued that this added variable makes an end date for full cost recovery difficult to determine. Whilst New South Wales has not proposed an end date for reaching full cost recovery, the Council has confidence in the above mechanisms, particularly the independent role of the Tribunal, in reaching full cost recovery which is tempered by the ability of customers to absorb these costs.

Overall, the Council is satisfied that New South Wales' approach has led to improvements in the level of cost recovery consistent with CoAG reform commitments, and that the mechanisms in place will continue to deliver improvements within appropriate timeframes. The Council will, however, review this situation in 2004 where it will expect New South Wales to have continued to pursue rural full cost recovery with the same previously displayed rigor.

Institutional reform

Outstanding issue: Further consideration of the transparency in the relationship between the Department of Land and Water Conservation and State Water.

Next full assessment: The Council will next assess rural pricing reforms in 2004. Institutional reform issues will be assessed in 2003.

Reference: Water reform agreement, clauses 3(a) and (b)

Background and New South Wales arrangements

The Council's progress report on institutional reform outlines the current issues in structural separation between State Water and the Department of Land and Water Conservation and the NSW Government's response to those issues. One of the practical consequences that arise from a lack of separation was identified in the Council's 2001 assessment of rural pricing. In that assessment the Council had concerns about the level of transparency in reporting CSOs.

CSO payments are not provided to State Water and because State Water is a ring-fenced unit within the Department of Land and Water Conservation, it is difficult for the Council to be sure that there is full transparency in the relationship between the Department and State Water.

Discussion and assessment

The New South Wales Government's proposal to conduct an independent review of the governance structure of State Water goes some way to addressing the Council's concerns. Consequently, the Council will delay its assessment of whether New South Wales has met this commitment until 2003. This will be a significant issue for New South Wales in the 2003 NCP assessment.

In 2003, the outcome of the review and the State Government's responses will be considered by the Council in its assessment of institutional reform. In that assessment the Council will consider whether this review has fully considered the structural separation issues identified by the Council in its previous two assessments and whether the government has adopted the recommendations of that review.

Water allocations and property rights

Outstanding issue: In 2001, New South Wales provided an action plan for property rights reform. In accordance with that plan, New South Wales is to demonstrate progress against the following outstanding property rights issues:

- conversion of current licences from five-year to 15-year access licences;
- a register of entitlements;
- the targets in the State water management outcomes plan; and
- the outcomes in the first round of water sharing plans.

Next full assessment: The Council will assess water allocations and property rights reforms in 2004.

Reference: Water reform agreement, clause 4(a)

Background

In 2001, the Council had insufficient information to be certain that New South Wales had fully addressed its property rights obligations. Irrigators did not know the rules that determine the reliability of entitlements; rather, water sharing plans would set the rules and reliability of supply for 10 years. The water sharing plans, the lack of detail on a proposed register of entitlements, the process of converting five-year licences to new 15-year access licences, and transitional issues causing concern among stakeholders meant the Council could not conclude that New South Wales had met its 2001 property rights commitments.

The Council considered suspending the State's NCP payments for 2001-02, given the importance of property rights reforms and the delays in finalising these arrangements. The New South Wales Government, however, committed to a comprehensive action plan to address the property rights reforms. The timetable of the individual property rights components gave the Council

confidence that New South Wales was giving high priority to this issue. The Council therefore considered that the best approach was to allow an additional period for New South Wales to implement the proposed action plan.

Given the delays to date and the importance of ensuring sufficient surety in New South Wales property rights arrangements, the Council called for a re-assessment of progress in a supplementary assessment (January 2002) and as a key issue for the June 2002 NCP assessment. The Council signalled its intention to consider payment suspension recommendations if New South Wales had made insufficient progress by this time.

The January 2002 supplementary NCP assessment considered the proposed form of the register of entitlements. New South Wales will establish a water titles register as a Torrens title system administrated by the Land and Property Information Office (formerly the Land Titles Office). The register will include procedures for transactions, protection procedures and the ability to register third party interests, and it will require the consent of the third party interest before a transaction. It will develop rules and procedures for water title that are as similar as possible to the land titles protocols. The assessment concluded New South Wales was developing a sound register model and that the reforms and the consultation undertaken met the concern raised in the 2001 NCP assessment.

The timetabled property rights elements that require assessment in 2002 are:

- the water sharing plans;
- the State water management outcomes plan;
- the information systems for the interim register to be operational in July 2002, including the regulations to be in place; and
- licence conversions (writing to all licence holders to confirm details of proposed new licences), and completed licence and approval policies and processes.

By the 2002 NCP assessment, New South Wales was expected to demonstrate progress against the property rights action plan, including the register. The Council's approach to property rights looks for all States to deliver certainty in ownership of a right and surety as to its characteristics. The registry system is important, particularly for ownership. Further, the State water management outcomes plan, the water sharing plans and the licence conversion process are all important parts of defining property rights. New South Wales is in the process of finalising some 39 water sharing plans that will lock in water sharing arrangements (including those for the environment) by July 2002 for the next 10 years.

New South Wales arrangements

Licence conversion

New South Wales is converting the current five-year water licencing system to a new system of 15-year access licences under the *Water Management Act 2000*. Priority is being given to the conversion of licences for water sources for which water sharing plans are being prepared because these licences account for over 80 per cent of water use in rural New South Wales. The conversion of these licences is scheduled for completion in January 2003. Conversion of the remaining licences for the unregulated rivers and groundwater systems will be undertaken progressively. During 2000, most irrigation licences on unregulated rivers were converted from an area basis to an annual volume basis. All other river licences are in the process of conversion to annual volume entitlements.

New South Wales is undertaking a 'data cleaning' of the records for the existing licences. This is a large, complex and time consuming task. At the time of writing, the task was approximately 75 per cent complete for those licences covered by water sharing plans and 50 per cent complete for all other licences.

The current licensing provisions of the *Water Act 1912* are still in effect. The New South Wales Government anticipates the licensing provisions of the Water Act will be repealed by the licensing provisions of the Water Management Act at a target date of 1 January 2003. The new access licences and renewal of licences will be made in accordance with the provisions of the Water Management Act and its Regulations.[4] As reported in the 2001 NCP assessment, water licences will be known as access licences and may be divided into two parts: a share component and an extraction component. The share component entitles the holder to a specific share in the available water from a specified water source. The extraction component entitles the holder to take water at specified times, rates and circumstances. Access licences will be issued either as a single access licence or with separate share and extraction components, and can be bought or sold by anyone. It will not be necessary to own or occupy land to hold an access licence. The new system aims to provide clearer rights, improve flexibility for business and facilitate licence trading. The new licensing and approvals system is expected to be ready for implementation for the 1 January 2003 start.

A Regulation under the Water Management Act will provide the basis for the operation of chapter 3 of the Act. Under the transitional provision, current licences will be deemed to be a licence under the Act for two years or the period of the licence, whichever is greater, to allow time to complete the conversion process and to allow current licence conditions to continue to apply to water users. The water sharing plans therefore will be implemented under

[4] The new licensing system will replace parts 2, 5, 8 and 9 of the Water Act.

the terms and conditions of existing licences during the transitional period, with the issue of new licences on renewal also being subject to the plan provisions.

The Act's Regulations will define the rollover or renewal provisions for access licences. Existing licences will be given priority in renewal, and current licence holders can apply for renewal before a licence expires. The licences are expected to be renewed subject to standard environmental assessments.

The register

Work is continuing on the development of a water property rights register that will give licence owners certainty in property rights and allow water licences to be used as mortgage security in the same way as property. The Land and Property Information Office will administer the water property rights register in the same way as land titles. The pilot register will be set up in the third quarter of 2002 and a fully operational register will be in place by January 2003. A memorandum of understanding is being developed between the Department of Land and Water Conservation and the Land and Property Information Office to refine the information that will be included on the register.

The Department of Land and Water Conservation has continued to consult key stakeholders including the Australian Bankers Association, the Primary Industries Banking Association, the New South Wales Irrigators Council, the Australian Property Institute and the New South Wales Law Society, on the design of the water property rights register. Stakeholders have generally expressed satisfaction with the model.

State water management outcomes plan

As reported in the 2001 NCP assessment, the Water Management Act provides for the establishment of a State water management outcomes plan to set the overarching policy context, targets and strategic outcomes for management of the State's water resources. The Minister for Land and Water Conservation released an interim plan in October 2001 for public consultation. Box 2.1 outlines the key property rights targets from the interim State water management outcomes plan. The plan sets the direction for all water management action in New South Wales, including the creation of water sharing plans. It sets a number of five year targets for the management of water resources, including extraction limits and environmental flow rules for regulated and unregulated rivers and groundwater systems in accordance with the Murray–Darling Basin Commission cap. It addresses, but is not limited to, water use, drainage management, floodplain management, controlled activities, aquifer interference and environmental protection. The plan will be in effect for five years from gazettal. It will then be reviewed and updated.

Box 2.1: Key property rights targets in the interim State water management outcomes plan

Limits on diversions

T1 Limits on the total volume of water that can be diverted established such that:

- surface water diversions in the Murray–Darling Basin for regulated and unregulated rivers limited to the level of diversion below the Murray–Darling Basin cap;
- surface water diversion limits established in all coastal catchments;
- future floodplain water harvesting diversions in the Murray–Darling Basin capped at 1993-94 levels and at levels consistent with the water diversion limit in other catchments;
- total groundwater diversions not to exceed (or being staged down to):
  - 100 per cent of long-term average annual recharge for an aquifer or aquifer zone (the sustainable yield) where there is no significant ecosystem dependency;
  - 70 per cent of average annual recharge where there is significant ecosystem dependency but no detailed assessment of water level impacts; and
  - such other appropriate percentage where indicated by detailed assessment;
- rules for future adjustments to the volume of water that can be allocated for diversion clearly specified and acted on to ensure exceedance of diversion limits are minimised.

Clear and legal entitlements

T4 Property rights for licensees to water clearly and legally specified in terms of volume or shares and/or works capacities.

T5 The total volume of water specified on licences (entitlements) reduced to no more than 200 per cent of the long term average diversion limit in surface water systems, and to no more than 125 per cent of the sustainable yield in groundwater systems (link to T1).

T6 Daily flow extraction shares specified and tradeable in at least 60 per cent of unregulated subcatchments.

T7 Rights to supplementary water clearly specified and licensed in volume or share terms such that flow thresholds for declaration of supplementary access clearly specified; annual limits on supplementary water diversions established in all systems; rules for sharing between supplementary rights holders explicit; and trading made possible subject to diversion limit and environmental constraints.

T10 Measures in place in all priority systems to protect basic domestic and stock water rights in rivers and aquifers from the impact of other water extractions;

T12 At least 90 per cent of licensed installations for extraction of surface or ground waters (excepting stock and domestic bores) metered and reported in each priority system.

Source: New South Wales Government *(*2001a)

The interim plan has been developed in consultation with the New South Wales Water Advisory Council and local water management committees, and it was given to key stakeholders for comment. Public submissions were also sought, for consideration by a peak stakeholders group.

The interim plan is still to be finalised. As a result of consultation with stakeholders, some of the targets in the interim plan will change. New South Wales has advised that these changes will not affect the viability of the water sharing plans. Rather, the changes are being made to make the intent of the

targets more explicit. The role of the first state water management outcomes plan has also been clarified. The intent is to provide these targets as part of a program of continuous improvement over the first five year term of the plan.

The State water management outcomes plan process is now being run in parallel with the water sharing plan process. New South Wales has advised that the Government is expected to consider the final plan in August 2002.

Water management committees used the interim plan as the basis for developing the water sharing plans. Box 2.1 contains the interim property rights targets to deliver more secure extraction rights.

Water sharing plans

Water sharing plans will specify the rules to apply for the operation of a water source for a defined ten year period. They will define the water available for extraction under access licences, along with the water rights that apply to each category of water access licence. This will allow far greater levels of specification of water users' access rights. Computer models can be used to indicate to access licence holders the probability of water allocations being available in relation to these access rights. This will be an important input to business decisions for the term of the plan.

New South Wales is finalising 39 water sharing plans,[5] covering 51 water sources that will lock in water sharing and operation rules (including water for the environment) for the next 10 years. The first round of plans include the regulated rivers and the key unregulated and groundwater stressed systems for the high priority areas. Attachment 2 lists the plans and the water management committees that have prepared the draft plans in this first round.

Reliability and probability of water availability has traditionally been well understood for the regulated systems. Water users in the Murrumbidgee, for example, have known that historically they have an 82 per cent reliability of receiving their full allocation and a 35 per cent reliability of receiving off-allocation or supplementary water. Reliability for the unregulated and groundwater systems, however, has traditionally been less specific.

A water sharing plan established in accordance with the Water Management Act (s. 20) must make the following provisions.

- Establish environmental water rules for the water source (see section on provision for the environment).

[5] The initial plans address only water quantity issues (thus the term 'water sharing' plans). These plans will not cover aspects of the use of water on land, such as water use efficiency, or other environmental aspects of specific land-based activities or developments. Water quality will be covered only to the extent that it is incorporated in an irrigator's rights to access water.

- Identify, provide and protect water requirements to satisfy basic landholder rights.[6]

- Identify requirements for water extraction under access licences.[7]

- Establish a bulk access regime for the extraction of water under access licence. The bulk access regime integrates the environmental water rules, basic landholder requirements and access licence requirements. A water sharing plan:

  – must recognise and be consistent with any water availability limits that are set for the water sources to which the regime relates;

  – must establish rules according to which access licences are to be granted and managed, and available water determinations are to be made;

  – must recognise the effect of climatic variability on the availability of water; and

  – may establish rules on the priorities according to which access licences are to be adjusted if the availability of water is reduced.

- Establish transfer rules for the water source (see section on trading).

The plans must also comply with the priorities for categories of access licences established under s. 58 of the Water Management Act. The sharing of water from a water source (s. 5(3) and s. 9(1)(b) of the Act) must:

- first and foremost, protect the water source and its dependent ecosystems;

- second, protect basic landholder rights; and

- third, protect all other access rights in the following order of priority

  – town water supply, and licensed stock and domestic use;

  – high security access rights on regulated rivers (permanent crops, industry); and

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6 Three types of basic landholder right under the Water Management Act do not require an access licence. Domestic and stock rights allow landholders with river frontage to extract water for domestic consumption and stock watering purposes. Harvestable rights allow landholders to capture and store overland flow in accordance with a harvestable rights order for an area. Native title holders may extract water in the exercise of native title rights.

7 The Water Management Act recognises access licence categories such as regulated river, unregulated river, local water utility, and domestic and stock access licences. Water sharing plans must identify the requirements of water extraction for each access licence category in the water source.

– other access licences (irrigation).

A water sharing plan may consider:

- the rates, timing and circumstances under which water may be taken from water sources in the area;
- the kinds of water supply work that may be constructed and used in the area;
- the operation of water accounts for the area, such as the carrying over of credits from one accounting period to the next, and the maximum credit that may be allowed to accumulate in any account;
- water sharing measures to protect and enhance the quality of water in the water sources in the area, or to restore or rehabilitate water sources or their dependant ecosystems; and
- measures to give effect to the water management principles and the objectives of the Water Management Act.

Plans may also contain mandatory conditions to apply to access licences and approvals within an area, and to the circumstances in which the Minister may amend a plan during the period for which it is in force.[8]

Water sharing plans must be consistent with the State water management outcomes plan, any State environmental planning policy under the *Protection of the Environment Operations Act 1997*, and Government policy, including the interim environmental flow objectives for water quality and river flow that were considered in the 1999 NCP assessment.

Water management committees had submitted 36 draft water sharing plans by December 2001. These committees balance the wide ranging views and opinions of stakeholder groups with the technical information provided. About half the draft plans have committee consensus while the remainder represent a majority view. During January 2002, a panel of senior government officials from the Department of Land and Water Conservation, the Environment Protection Authority, New South Wales Agriculture, the National Parks and Wildlife Service and New South Wales Fisheries assessed the drafts to ensure compliance with the Water Management Act and various policy instruments.

A number of plans include dissenting reports from committee members. Where the recommendations in draft plans are not consistent with

[8] Section 42(2) of the Water Management Act allows for rules within a water sharing plan to be adjusted or altered during the life of a plan, provided the plan sets out the circumstances and the extent of any changes. These circumstances may include changes to system inflows resulting from inter-basin transfers, changes to system infrastructure that affect system operation, legislative changes (Federal or State), the operation of other existing Acts (such as that covering threatened species), and legal decisions that force changes in water sharing plan rules.

Government policy, Minister's notes have been inserted and public comment has been sought through a 40 day exhibition period. All submissions are being referred to the water management committees to consider in formulating final recommendations.

Water sharing plans, once finalised and gazetted under the Water Management Act, will be legally binding for the next 10 years. The aim of the plans is to provide a decade of security for all water users and to secure provisions for the environment. To gazette final plans, the Minister for Land and Water Conservation must have the concurrence of the Minister for the Environment. The final water sharing plans are intended to be gazetted and operational for the 2002-03 water year.

Implementation programs

On finalisation of the water sharing plans, the Department of Land and Water Conservation will prepare an implementation program for each water sharing plan in accordance with s. 51 of the Water Management Act. The implementation program sets out the means by which the plans provisions will be achieved. Matters to be covered by implementation programs include timetables for:

- the measuring and monitoring of water extraction, river flows, river health and other indicators stated in the plan;
- group licence registration;
- water accounting;
- the trading of water access licences;
- enforcement of the plan; and
- licence conditions.

At the time of writing, draft implementation programs were being progressively provided to the water management committees for review.

Water policy advisory notes

The New South Wales Government prepared 15 water policy advisory notes to assist the water management committees in developing the water sharing plans. The advice applies to all water sources, including specific notes for regulated rivers, unregulated rivers, groundwater sources and coastal/estuarine areas. Attachment 3 contains a summary of the water advisory notes given to water management committees.

The policy advisory notes illustrate how the new property rights system will work via the development of water sharing plans for the regulated rivers, unregulated rivers and groundwater systems. For unregulated rivers,

allowable water extraction is dependent on flow classes established for the river (see box 2.2). The policy position is that up to 30 per cent of a flow class can be made available for extraction. If current extraction levels are already above this then up to 70 per cent is allowed.

Where extraction is greater than 30 per cent of flow in a class, a water sharing plan will provide strategies for reducing extraction after consideration of the impact on licence holders. These strategies could include:

- not allowing transfers into a subcatchment;
- implementing a staged contraction of bulk extraction volumes during the period of the plan;
- allowing a licence holder affected by reduced low flow access to apply for unallocated C class daily flow shares;[9] and
- providing for licence holders to hand in A class daily flow shares in return for C class daily flow shares that are greater in magnitude.

New South Wales has advised that it will take some years to fully implement these daily flow share arrangements and that this degree of sophistication will not be required in small creeks where only a few licences are present.

[9] Strategies involving the issue of greater annual entitlements in return for retirement of low flow access are not an option in the Murray–Darling Basin. Plans for coastal systems may include such strategies after the impact on downstream users and the environment is assessed.

Box 2.2: An example of the New South Wales model for unregulated systems

The scenario: For a perennial river, the assessed very low flow is 10 megalitres per day. The calculated current peak demand is 80 megalitres per day. An additional 20 megalitres per day is pumped to off river storages where opportunities arise. Full development peak daily demand is an additional 15 megalitres per day.

Based on the proposed method:

- *Very low flows.* A field assessment shows 7 megalitres per day is required to maintain connectivity between pools in the river and provide for low flow environmental requirements. An additional 3 megalitres per day is required to provide for basic water rights, giving a total of 10 megalitres per day to be protected before licenced pumping is allowed.
- *A class flows.* For low flow periods, when flows are between 10 megalitres per day and 50 megalitres per day (80th percentile). Current peak demand less 10 per cent is well in excess of the maximum allowed bulk extraction volume of 60 per cent of the flow sharing index (50 megalitres per day), or 20 megalitres per day. The bulk extraction volume therefore should be 30 megalitres per day, all of which would be initially allocated to licences.
- *B class flows.* When median flows occur between 50 megalitres per day (80th percentile) and 200 megalitres per day (50th percentile). Current peak daily demand less 10 per cent is 72 megalitres per day, which is between 60 megalitres per day (30 per cent of the flow sharing index of 200 megalitres per day) and 120 megalitres per day (60 per cent of the flow sharing index of 200 megalitres per day). The bulk extraction volume therefore should be 72 megalitres per day, all of which would be allocated to licences.
- *C class flows.* When moderate to high flows occur — that is, above 200 megalitres per day (50th percentile). Current peak daily demand (including the 20 megalitres per day pumped to off river storages) less 10 per cent is 90 megalitres per day, which is well below the 144 megalitres per day (30 per cent of the flow sharing index of 480 megalitres per day).

In this case, 144 megalitres per day could be determined as the bulk extraction volume to all full peak daily demand of 95 megalitres per day plus 20 megalitres per day for those who pump to off river storage to be allocated to licences, and 29 megalitres per day to remain unallocated for new (embargo exempted) licence applications and some growth in town water use.

For an individual licence this would mean:

A licence in this subcatchment has an annual entitlement of 100 megalitres (2 per cent) out of a total of 5500 megalitres of entitlement in the subcatchment. The licence currently has full flow range access and does not pump into off river storage. As a result of the implementation of the water sharing plan, the licence would have the following conditions:

- no pumping permitted when the river flow is less than 10 megalitres per day;
- pumping of up to 0.6 megalitres per day when the flow is in A class (daily flow share of 2 per cent of the allocated bulk extraction volume of 30 megalitres per day);
- pumping of up to 1.4 megalitres per day when the flow is in B class (daily flow share of 2 per cent of the allocated bulk extraction volume of 72 megalitres per day);
- pumping of up to 1.8 megalitres per day when the flow is in C class (daily flow share of 2 per cent of the allocated bulk extraction volume of 95 megalitres per day).

It should be noted that these daily flow shares are not cumulative; for example, when the river is flowing in the B class range, licences can take up to 1.4 megalitres per day, not 2 megalitres per day (1.4 B class + 0.6 A class).

Source: New South Wales Government (2001b)

Total use of groundwater is to be managed within the sustainable yield[10] so groundwater is available for future generations. Current use in some sources is above the sustainable yield for the source overall or in particular zones. In such cases, a water sharing plan must specify the mechanism to reduce overuse to the sustainable yield level by the end of the 10-year period. Water sharing plans must also identify and protect significant groundwater-dependent ecosystems (see section on provision for the environment) and recommend an environmental proportion.

The total volume of water specified on licences is to be reduced to no more than 125 per cent of the sustainable yield in groundwater systems. Where adjustment of entitlements is required, all current licences (excluding the town water supply, and stock and domestic uses) will be adjusted proportionally rather than on the basis of history of use. Committees have been advised to provide for this early in the plan term to enable licence holders to have a clear understanding of their long term extractable rights, and to allow transparent operation of the groundwater transfer market.

The key aims of water sharing plans are to reduce overall water use to sustainable yield levels and to achieve a reduction in licensed entitlements closer to sustainable yield over the 10-year planning period.

Box 2.3: An example of the New South Wales model for groundwater systems

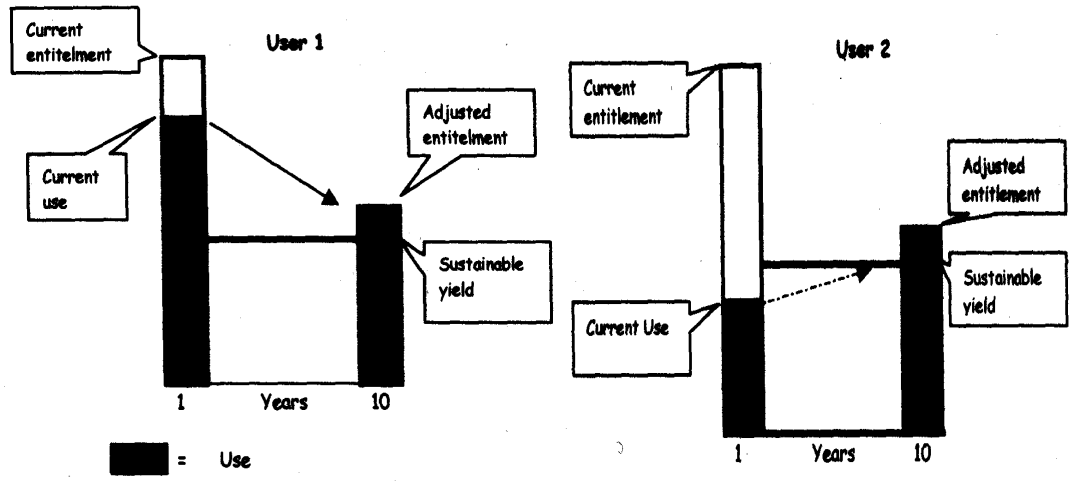
A system has a sustainable yield less than overall existing use levels, and the long-term use needs to be reduced to 50 per cent of current licence entitlements. The committee has recommended a linear phase-down of overall water use over the term of the plan, and a reduction in all licence entitlements to their long-term levels at the commencement of the plan.

Consider two licence holders who each have a current licensed entitlement of 1000 megalitres per year (see diagram below).

- At the start of the plan, user 1 has an adjusted licence entitlement of 625 megalitres per year. This user has a history of use of 800 megalitres per year and will be allowed to phase in the use adjustment over the planning period. Licence conditions will allow the licence holder to take additional water during the plan term: up to 780 megalitres in year 1, 765 megalitres in year 2, 745 megalitres in year 3 etc down to 625 megalitres maximum in year 10.
- User 2, has used only 425 megalitres of the licensed entitlement in the past and would have use limited to the adjusted entitlement during the planning period. That is, user 2 could use up to 625 megalitres in any year.

Both users will have an expectation of long-term use of 500 megalitres per year, but could use up to the 625 megalitres if overall use for the aquifer system remained below the sustainable yield level.

[10] 'Sustainable yield' is the long-term average amount of groundwater available for extraction without compromising the integrity of the aquifer or the surface ecosystems that it supports. It is measured as the estimated long-term annual average 'natural recharge' to the aquifer, less a portion set aside for the environment (see section on provision for the environment).



Note: User 2 can move to the final adjusted entitlement at any time during the plan term.

Source: New South Wales Government (2001b)

Submissions

The Council has received submissions on various aspects of New South Wales property rights arrangements from the New South Wales Irrigators Council (2002, submission 12), Robert Caldwell (2002, submission 5) and the World Wide Fund for Nature (2002, submission 13). The New South Wales Irrigators Council (submission 12) argued that the term 'allocation' is not the right word to use for property rights because allocations refer to the proportion of one's entitlement available in any one year. Irrigators are seeking property rights for their entitlements. The submission noted that the 2001 NCP assessment stated that:

> *New South Wales argued that the security of ownership of property rights will be addressed in a registry system, which records the nature of the right and the share of the available water to which the licensee is entitled.* (NCC 2001, p. 21)

The submission argues that while the register of water entitlements is important to establish a strong property rights system, it describes only the nature of the right and does not address tenure and duration concerns. In effect, the register will give a detailed description of something not owned by the irrigator. The Council has been more concerned with the ability of New South Wales to develop a list of actions and timeframes than with looking at the gaps and flaws in the Water Management Act and its implementation against the CoAG principles. The Act does not provide guarantees because most of these will be covered by regulation/orders, so the Council cannot assess the State's property rights regime until the regulations are finalised. The New South Wales Irrigators Council submission contained a table that compares water rights under the Act with previous entitlements under the *Water Act 1912*.

Robert Caldwell (submission 5), a Lachlan irrigator, raised property rights concerns in relation to the Lachlan system in central New South Wales. Environmental flows have relegated general security allocations in the Lachlan to least priority, so irrigators are ranked last. In dry years, Mr Caldwell asserts, there is only enough water for the environment, high security licences and carryover. Zero irrigation allocations for general security licences occur in dry times (40 in every 100 years), reducing reliability to unworkable levels.[11] Mr Caldwell further asserts that there is a growing gap between high value use requiring high investment and high reliability, and traditional low cost supplementary irrigation. He argues that the activation of sleeper licences will reduce allocations by half and have an impact on farm viability and value: allocations for the Lachlan system could be reduced by 45 per cent with no compensation for the loss of rights. Trade, according to Mr Caldwell, drives up the value of all water, adds to the cost of production, and avoids paying compensation for property rights for the impacts of allocation reductions to the economy. Water reductions, in Mr Caldwell's opinion, will reduce productivity and will impact on the economy when the economy cannot afford reductions in production.

The World Wide Fund for Nature (submission 13) raised concerns about the development of the register of water entitlements and the overallocation targets contained in the State water management outcomes plan. The World Wide Fund for nature did not support a register that codifies and clarifies property rights at this stage. It considered that any register should outline who owns what rights, and that register information should be matched with sustainable water requirements so rights can be reduced to sustainable levels. The submission noted that a Parliamentary inquiry into the allocation of water resources in Victoria found 'the bulk entitlement conversion process is converting pre-existing, poorly defined entitlements of authorities to well-defined entitlements. Generally, it does not, nor does it aim to, increase water for the environment'. The submission argued that codifying property rights in New South Wales may lead to the same outcome.

In relation to overallocation, the World Wide Fund argued that entitlements in many catchments in New South Wales are overallocated by 400 per cent of what they should be, without even accounting for the environment. Entitlements are above use levels that are assumed to be sustainable yield. The interim State water management outcomes plan sets an overallocation target to restrict allocations to 200 per cent of the long-term average diversion limit. The environmental groups in New South Wales are seeking a target of 150 per cent. They argue that if property rights are to be implemented in overallocated systems, then a clearly defined mechanism needs to be in place to indicate the changes needed.

Finally, the World Wide Fund argued that licence compliance is neglected in New South Wales. There are no property or licence audits. A compliance

[11] For the Lachlan system, high priority water is only a small proportion of the total water supplied (see attachment 2, table 2.5). The result of zero allocations for general security licences is a result of climatic variations.

system would require a policy, audit and review process to be put in place. The submission considered that New South Wales should ensure licence compliance before strengthening the property rights system.

Discussion

At the time of writing, some groups were continuing to express serious concerns about aspects of the New South Wales system of implementing water property rights reform. The Water Management Act provides a framework which guarantees a 15 year access licence backed by a register, and a 10 year statutory water sharing plan with compensation provisions. Irrigators are still concerned about the property rights systems, however, including the impact on certainty of their water allocation at the end of the water sharing plan and the rollover of licences. The rollover provisions for water access licences will be defined in regulations under the Water Management Act (to be in place by the end of 2002). The Act is quite explicit about the rollover of licences from the old to the new Act. Schedule 9 makes it clear that current licences will be deemed to be licences under the Water Management Act for two years or the remaining term of the licence, whichever is the longer. Finalisation of this regulation is a major component of property rights. Ongoing monitoring and the yearly implementation programs will ensure licence holders know how the plan is performing and its likely impact on their licence in the future.

Regarding the licence conversion process, around 10 per cent of cases have involved problems in establishing who owns the licence and who has an interest in the licence. The banking sector is concerned about mortgage security with the conversion of licences because the owner of the land may not be the owner of a water licence. New South Wales is considering mechanisms to deal with this issue.

Stakeholders have asked for a register to be established similar to the Land Titles Office to lock in property rights. The President of the Australian Bankers Association, in responding to the clawbacks of nominal entitlements by up to 85 per cent in some areas, argued that New South Wales water reform has failed to deliver adequate tenure of water property rights and to consider structural adjustment mechanisms. The Association is interested in water property rights as security for lending and has called for a structural adjustment package to offset negative impacts. The Australian Properties Institute argued that New South Wales is trying to invent title for water property rights, and that the Water Management Act is flawed until the nexus between land and water can be broken so their values can be quantified.

New South Wales is continuing to develop a register of access licences that will operate along the same lines as the existing register for land title, giving licence owners certainty and allowing water licences to be used as mortgage security in the same way as property. The pilot register will be set up in the third quarter of 2002 and is intended to be fully operational in January 2003.

In April 2002, CoAG re-affirmed the importance of water property rights issues in dealing with the nation's salinity and water quality problems, noting the need to consider the implications of changes to water property rights for investment and for water users, particularly farmers. To clarify these issues, jurisdictions agreed to report to CoAG by September 2002 on opportunities for, and impediments to, better defining and implementing water property rights regimes (including water trading markets and, where appropriate, the responsibilities of water users). Jurisdictions will also report on how they are addressing uncertainties about property rights. CoAG has attached a high level of importance to the establishment of an effective and efficient system of property rights for water, and to the need for water users to have certainty of access to water.

In May 2002 the National Farmers Federation released a position paper on water property rights. The federation is seeking water property rights that have a title that triggers compensation if removed or impaired, and that are granted in perpetuity, flexible, exclusive, transferable, and divisible or capable of being shared or subdivided. It wants secure water property rights for farmers that would essentially trigger compensation and is seeking an intergovernmental agreement where the Commonwealth requires the States to implement appropriate protection of property rights. Under such an agreement, the States would be required to implement appropriate protection for property rights as a condition for Commonwealth funds being made available for national environmental programs such as the National Heritage Trust and the National Action Plan on Salinity and Water Quality. A national review committee (similar in structure to the Council) would ensure compliance by the States and would validate the extent to which States comply with the Commonwealth standard of property right protection. The Commonwealth would review its own legislation (specifically, the Environmental Protection and Biodiversity Conservation Act) to ensure compensation to landholders where their property rights are reduced to generate environmental benefits for the public. Further, a transparent public benefit test process should be applied for all environmental legislation.

In relation to the reform process in New South Wales, the National Farmers Federation argues there has been inadequate consultation on the draft water sharing plans. It cited the case of the Namoi where nominal entitlements may be cut by up to 73 per cent.

The New South Wales Irrigators Council has formed an alliance with the New South Wales Farmers Association, Cotton Australia, the Ricegrowers Association, the Local Government and Shires Association, and the Australian Bankers Association. In response to the draft water sharing plans, the alliance has called for quantitative socio-economic assessments of the proposals to provide a baseline for the five-year review of plans and to provide information for decision-making. It noted that the Water Management Act requires the committees to have due regard to social and economic impacts. The alliance has called for:

- a 40-day period for public consultation on all water sharing plans;

- clear definition and enforcement from July 2002 of Regulations that set the property rights provisions of the Water Management Act;
- the adoption and implementation of a public benefits test involving environmental, economic and social impacts, to be applied to all new government environmental legislation;
- the provision of a structural adjustment package based on the results of the public benefits test, to offset any negative impacts on water users and regional communities from changes to water allocations;
- a post-implementation independent panel to assess the findings of the public benefit test, to ensure the findings are accurate;
- a commitment to improving the scientific understanding of the environmental needs of rivers and the sustainable yield for groundwater;
- a commitment to meeting environmental needs first through better management and structural works, then through buy-back via trade, and finally through reduced allocations resulting in compensation to affected landholders; and
- the development of a register for water licences based on the Torrens Title system that exists for land.

In this climate, the New South Wales Irrigators Council has submitted the property rights table in its submission. The Council notes that the State's property rights system is predicated on clearly defined access rights, and has concluded in previous NCP assessments that the 15-year access licences and 10-year water sharing plans comply with CoAG commitments.

In relation to exclusivity, the table asks what "statutory provision for water accounts and enhanced account management means in the [2001 NCP assessment] table". In New South Wales, temporary transfers of allocation water occur through water accounts. A water account will be established for each access licence. Water may be moved from one account to another subject to the transfer rules of a water sharing plan. If a water user wishes to obtain the right to water on an ongoing basis, the user must either purchase or lease an access licence, which is then recorded on the public register. The Water Management Act requires the Minister to maintain a record of volumes held in water accounts and movements of water between accounts; the Act does not require the register to incorporate these records. New South Wales has noted that the access licence register may include general information about water accounts and where licence holders can obtain information. The peak stakeholders group is considering the type of connection to apply between Department of Land and Water Conservation records and the register.

The State water management outcomes plan will set a target to address unsustainable growth and overallocation. The interim target is to reduce (or phase down) the total volume of water specified on licences to no more than 200 per cent of the long-term average diversion limit in surface water systems, and to no more than 125 per cent of the sustainable yield in groundwater systems.

Boxes 2.4 and 2.5 identify the priority surface water and groundwater systems in terms of the current status of licensed entitlements relative to the likely diversion limits. The targets are expected to affect about 10 per cent of surface water areas across New South Wales. Four management areas will need to reduce total entitlements by up to 30 per cent to meet the target, and another three will need to reduce by 30–50 per cent to meet the target. The groundwater target affects nine priority groundwater systems.

Box 2.4: Priority surface water systems

Total entitlement of 200–300 per cent of diversion limit
Lachlan regulated river
Barwon–Darling unregulated river*
Upper Border unregulated rivers*
Upper Lachlan unregulated rivers
Total entitlement of 300–400 per cent of diversion limit
Lower Gwydir unregulated rivers
Castlereagh unregulated rivers
Total entitlement over 400 per cent of diversion limit
Far West intersecting unregulated streams*

* These areas will be considered in the second round of water sharing plans.

Source: New South Wales Government (2001a)

Box 2.5: Priority groundwater systems

Total entitlement of 125–200 per cent of sustainable yield
Great Artesian Basin*
Lower Murrumbidgee
Lower Lachlan
Total entitlement of 200–300 per cent of sustainable yield
Lower Namoi
Upper Namoi
Gwydir
Total entitlement over 300 per cent of sustainable yield
Lower Murray
Lower Macquarie

Note: Another nine aquifers not on the current list are likely to have total volume entitlements exceeding 125 per cent of sustainable yield.

* Developed in accordance with the intergovernmental Great Artesian Basin strategic management plan to be implemented over the next 15 years.

Source: New South Wales Government (2001a)

The tables are only indicative and final numbers depend on the diversion limits determined in each water sharing plan.

The interim State water management outcomes plan argues that the short-term economic impact of any reductions in volumes specified on licences

depends on the degree of adjustment required. The economic impact is expected to be largely limited to the fully active water users and can be managed by announcing higher annual allocations in the first few years to give irrigators time to adjust. New South Wales concludes that some short-term economic impacts may result from reductions in entitlements, but that these should not be large and can be mitigated through appropriate management of announced allocations and carryover provisions.

In setting the targets, New South Wales has argued that it is reasonable to expect the total volume specified on licences to exceed the diversion limit for a system, particularly for surface water sources. This is because the diversion limit is specified as a long-term average volume while licence volumes are maximum volumes that can be extracted in any one year due to climatic variability and the water demands of crops or stock. Water users have treated the volume specified on a licence as a buffer against drought or reduced water availability. In most years, however, water diversions will be less than the total volume of water licences. The Murray–Darling cap also works to keep diversions significantly below licensed entitlements.

The State water management outcomes plan targets have not been finalised. New South Wales will not be able to confirm any targets until the Government has finalised the plan. The current target to reduce (or phase down) the total volume of water specified on licences to no more than 200 per cent of the long-term average diversion limit in surface water systems is still under consideration. The targets are being developed in consultation with communities, having regard to social and economic factors as well as scientific factors. If a large number of committees raise concerns about the same target then New South Wales may need to revisit the targets in finalising the State water management outcomes plan. The Council will need New South Wales to provide information to indicate that the final cap target is reasonable given the natural variability in the availability of water and high variability of use.

In the draft water sharing plans, water management committees have advised of the existence of the New South Wales Rural Assistance Authority's Irrigated Agricultural Water Use Efficiency Scheme and Special Conservation Loan Scheme. The first scheme improves the efficiency of water use in irrigated agriculture by providing 80 per cent of the costs (up to $12 000) of irrigation and drainage management planning, 50 per cent of the costs (up to $15 000) of water efficiency works and 50 per cent of the costs of crop water use monitoring. The second scheme provides loans of up to 90 per cent (up to $100 000) of the cost of works that have a beneficial impact on the environment, the land or community. Loans are available at special rates of interest. These programs are to assist water users to adopt the new water sharing arrangements in plans.

The Namoi groundwater committee recommended that a structural adjustment package is essential to alleviate the social and economic impacts of entitlement reductions. New South Wales has announced that $112 000 is available to individual water users in a structural adjustment package to generate 30 per cent water efficiency savings in the Namoi region: $12 000 to review on-farm efficiencies, a $50 000 grant to implement efficiencies and a

$50 000 interest-free loan. The New South Wales 2002-03 provided $20 million in structural adjustment assistance for the clawback of overallocations for the Namoi groundwater plan. Matching funds are being sought from the Commonwealth Government.

In relation to the draft water sharing plans, at the time of writing, 36 of the 39 draft water sharing plans had been publicly exhibited on the Department of Land and Water Conservation website, inviting public submissions. The last round of plans had a closing date for submissions of 31 July 2002. Two weeks after submissions close on the draft plans, the Government will make available to the water management committees:

- the public submissions on the committee's plan and a summary of the issues raised in submissions;
- an analysis of the plan's compliance with the State water management outcomes plan;
- a draft of the legislation that will give effect to the plan; and
- a draft of the first implementation program for the plan.

Water management committees will then have approximately seven weeks to make final recommendations on their plan to the Minister. A Government committee will consider the water management committee's final recommendations. If the final plans do not comply with the State water management outcomes plan, then the Government will need to decide how to deal with differences in finalising the first round of the Minster's plans.

The water sharing plans are expected to be progressively finalised and gazetted between September and November 2002. In the interim, water management committees will be asked to recommend provisional rules to apply for the irrigation season between 1 July and final gazettal of the plans. An important issue will be whether other elements of the plan need to be triggered during the interim period. Given drought conditions in New South Wales, the general licences on some major rivers will be carefully considered by the Government including the need for a zero allocation. Water availability will be monitored and the allocation level increased if conditions improve.

The Council has examined a number of draft plans during the course of this 2002 NCP assessment. In relation to the regulated systems, the draft plans seem to comply with the property rights approach in terms of setting a plan and cap limit, and then comparing current developments against the long-term average modelled diversions. A response trigger has been developed. If the long-term average annual diversions have increased by 3 per cent or more above the plan limit, or half the difference between the plan limit and cap limit, then year two data are to be collected and analysed to see whether this rise is a 'one off''. If the rise is not a 'one off', then response measures are to be implemented in year three to return the long-term level of water diversions to those set by the plan and to constrain further growth in diversions. The primary response is a reduction in the maximum amount of water that supplementary water access licence holders can take. Water

available to high and general security licences will be reduced only once all access to supplementary water has been eliminated and assessments indicate that water availability needs to be reduced further to stay within water use limits.

For the unregulated systems, water management committees have been asked to recommend adjustments to the proposed flow access management arrangements for a particular subcatchment. Matters that may be addressed include whether the proposed flow classes are workable, whether particular environmental needs are being met and whether the level of impact on licensed users is within reasonable bounds. Committees can look at different boundaries for flow classes, revised amounts for very low flows, and revised bulk extraction volumes after a consideration of social and economic costs.[12]

Other issues raised for the unregulated systems include concerns that the growth of basic landholder rights from rural subdivisions threaten the health of the river and existing businesses. Committees have proposed restricting domestic and stock landholder rights in a number of plans. The Minister's note states that a whole-of-government approach is needed on this issue, and a report is expected to be available in late 2002. This issue may be addressed as a target in the final State water management outcomes plan.

Assessment

The Council's approach to property rights looks for all states to deliver certainty in ownership of the right and surety as to its characteristics. The registry system is important, particularly for ownership. Further, the State water management outcomes plan, the water sharing planning process and the licence conversion process are important for defining property rights.

The Council is satisfied for this 2002 NCP assessment that New South Wales continues to meet the rollout of the new water property rights arrangements and is making every effort to comply with its CoAG commitments. For the 2001 NCP assessment, New South Wales provided a timetable of property rights commitments to be implemented over two years. An examination of this timetable shows that New South Wales is on track with implementing each element.

A key issue for this assessment has been the property rights arrangements — to be established by the State water management outcomes plan and in the 39 water sharing plans — that will lock in allocations and environmental provisions for the next 10 years. The Council considers that there is insufficient information to conclude that New South Wales has complied with its NCP commitments in this area. There have been further delays, although New South Wales has

[12] The New South Wales Government allocated $20 000 per committee to conduct socio-economic assessments of the impacts of the development of water sharing plans.

been doing all it can to address this particularly difficult issue, and is making significant progress in meeting each of the relevant requirements.

The Council has examined the draft water sharing plans and considers that some of the draft plans are likely to change significantly before they are finalised. The preparation of water sharing plans represents a necessary and significant step for the future management of water resources in New South Wales. Water management committees have undertaken considerable work in considering the gamut of issues raised and the nature of trade-offs that may be required. It is a difficult process to balance the wide ranging views and opinions of interest groups with the technical information required for decision-making.

Water sharing plans, once finalised and gazetted under the Water Management Act, will be legally binding for the next 10 years. The plans will provide security of access for environmental water and for all water users during the 10-year term. Further, water access licence holders will be able to claim compensation if water access is reduced during a plan's term where the plan's bulk access regime is varied for unspecified purposes. A number of draft plans contain Minister's notes where the recommendations are inconsistent with the Water Management Act, Government policy or the targets contained in the State water management outcomes plan. The Council notes that there have been some problems with the process involved in implementing this first round of plans, but recognises the enormity and complexity of the task of reforming the New South Wales water management system. Some committees, for example, have had insufficient opportunity to incorporate adequately water policy advice and State water management outcomes plan targets into the initial draft plans. These imperfections in the process have complicated the transition to a new property rights system. The concerns of stakeholders warrant consideration against this background. The Council therefore intends to conduct further assessments of New South Wales on this issue.

- First, the Council will conduct a supplementary assessment by the end of 2002 to consider the final State water management outcomes plan, the final water sharing plans and the implementation programs. As part of that assessment, the Council wants to discuss with New South Wales the process and timeframe to develop the next round of water sharing plans. The Council notes that the next round of plans are still for stressed systems and that the 1999 tripartite meeting commitment required action on stressed river systems to be in place by June 2001.

- Second, progress against the property rights timetable will continue to be a key issue for New South Wales in the 2003 NCP assessment. The next key date for water property rights for New South Wales is January 2003, when the new access licence system will be introduced, the regulations to the Water Management Act will be in place to establish the renewal systems for the new licences, and the register will go live. The register will give licence owners certainty of ownership in property rights and allow water licences to be used as mortgage security in the same way as property.

Provision for the environment: the State water management outcomes plan

Outstanding issue: New South Wales is developing a State water management outcomes plan that will set targets to increase environmental flows across the State. The Council is to assess the scientific basis for the level of the targets set.

Next full assessment: The Council will assess allocations for the environment in 2004 and provide a stocktake of progress against a jurisdiction's implementation program to identify remaining areas for assessment in 2005 when the program is to be complete.

Reference: Water reform agreement, clause 4(b–f)

Background

In the 2001 NCP assessment, New South Wales had notified its intention to develop a State water management outcomes plan to set the overarching policy context, targets and strategic outcomes for the development, conservation, management and control of the State's water resources. The plan would set the clear direction for water management action and ensure environmental, economic and social river flow objectives are specifically addressed. In 1997, the New South Wales Government asked the water management committees to recommend a package of environmental flow rules. An upper limit on the impact the rules could have on irrigation supplies was set at 10 per cent of the long term average cap figure. Flow targets set by the State water management outcomes plan would be referred to water management committees to ensure the water sharing plans comply. If an environmental target is adopted, the Council would need to be convinced of the scientific basis for the target. The Council undertook to assess this issue in the 2002 NCP assessment.

New South Wales arrangements

The interim State water management outcomes plan explicitly identifies the protection and enhancement of the environment and aquatic ecosystems as a key objective of water sharing plans. The interim State water management outcomes plan establishes environmental flow rules for regulated, unregulated and groundwater systems, in accordance with the Murray–Darling Basin Ministerial Council cap and the 1997 New South Wales interim environmental flow policies. The key environmental targets contained in the interim State water management outcomes plan are shown in box 2.6.

Box 2.6: Key environmental targets set in the interim State water management outcomes plan

T2 Ensure all water management plans seek to identify appropriate opportunities for improving diversity and abundance of native aquatic animals and plant species, with particular reference to threatened species.

T3 Environmental flow rules and/or extraction limits established in regulated and priority unregulated rivers such that:

- frequency of 'end of system' high flows improved by at least 10 per cent where they would be less than 60 per cent of predevelopment levels without environmental flow rules or limits;
- frequency of 'end of system' daily low to median flows increased by at least 10 per cent where that would be less than 60 per cent of predevelopment levels;
- frequency of 'end of system' daily flows up to the predevelopment 95th percentile protected or restored;
- limits on daily supply volumes in lower river and effluent systems of regulated rivers set below 80 per cent of channel capacity for 90 per cent of the irrigation supply days so as to reduce the impact of unseasonal flows; and
- a proportion of the natural drying phases are reinstated in the core areas of terminal wetlands.

Other environmental targets contained in the interim State water management outcomes plan are:

- assessing and mapping groundwater aquifers, consistent with the draft groundwater-dependent ecosystems policy;
- completing the review of existing weirs to ensure there is no net increase in the number or total capacity of weirs, consistent with the New South Wales Weirs Policy 1997, and to remove at least 10 and structurally modify 15 priority weirs;
- improving temperatures below major dams within 2 degrees of natural temperatures between July and April by structural or operational changes, consistent with the New South Wales cold water pollution program;
- increasing native vegetation along waterfront land by 5 per cent where it is currently less than 50 per cent of the natural cover in each catchment, consistent with the New South Wales Salinity Strategy and draft New South Wales native vegetation conservation strategy; and
- mapping, assessing and acting on high salinity risk irrigation areas to reduce accession rates, in accordance with the New South Wales salinity strategy.

Source: New South Wales Government (2001a)

The outcomes and targets have been set on the basis of continuous improvement and do not attempt to be exhaustive. The targets selected are those likely to achieve the greatest gains towards outcomes in the short term. A few are 'enabling' targets which typically require mapping and assessment to be completed within five years as a prerequisite to an expected management action. The environmental aspects of the State water management outcomes plan were developed considering the results of monitoring such as the integrated monitoring of environmental flows program.

Water sharing plans must provide for the monitoring of performance of relevant local management targets. Statewide programs will undertake monitoring and assessment of the long-term outcomes.

Regulated rivers

The regulated systems support important ecosystems and aquatic species, especially in the mid to lower sections. River regulation and associated extraction has reduced flows, with consequent declines in ecological processes, species and biodiversity. The State water management outcomes plan states that:

> *'Given the degree of impact on flow frequency in their lower reaches experienced by most regulated rivers and the increasing evidence of decline in the ecology of these rivers, a target requiring a 10 per cent improvement where flows have been reduced by greater than 40 per cent is not unreasonable.'* (New South Wales Government 2001, p. 17)

In preparing water sharing plans, the committees are required to review the 1998 environmental flow rules in meeting the State water management outcomes plan targets and to modify the rules. Table 2.3 shows the current flow volumes for the regulated rivers as a percentage of predevelopment levels with and without the 1999-2000 environmental flow rules.

Table 2.3: Interim environmental flow rules (EFRs) for the regulated rivers

River	*High — 10th percentile*		*Medium — 50th percentile*		*Low — 95th percentile*	
	No EFR	Current EFR	No EFR	Current EFR	No EFR	Current EFR
Murrumbidgee	50	49	19	30	30	52
Lachlan	71	82	61	44	100+	zero flow (natural)
Macquarie	87	90	34	47	100	100+
Namoi	58	61	51	48	29	14
Gwydir	48	50	55	66	81	100

Source: New South Wales Government (2001a)

The current (pre water sharing plan) environmental flow rules are estimated to have the following impact on total long-term average annual diversions compared to cap levels:

River	*Percentage reduction on total long-term average annual diversion from cap levels (per cent)*
Murrumbidgee	3.5
Lachlan	4
Macquarie	17
Namoi	3
Gwydir	5

Source: New South Wales Government (2001a)

The interim environmental flows provide the basis for the targets set in the State water management outcomes plan. The plan therefore concludes:

> '*... it is likely that in most cases the targets could be achieved within the 10 per cent limit on the impact on diversions adopted for the interim environmental flows in 1998.' (These figures are the best available at the time of preparation of this plan).* (New South Wales Government 2001, p. 18)

Where systems already meet the targets, environmental flow rules can be set to address specific environmental outcomes or to improve flows to go beyond the minimum targets.

Unregulated rivers

For the unregulated systems, hydrological stress was defined in 1998 as the proportion of the daily low to medium flow that licensed water users extracted during peak irrigation periods. Subcatchments that have a significant proportion of low to median flows extracted during the irrigation season are typically likely to exhibit evidence of environmental stress.

Of the 700 unregulated subcatchments across New South Wales:

- approximately 25 per cent were assessed as having their flows reduced to less than 40 per cent of natural flow (high stress category);
- another 10 per cent were assessed as having their flows reduced to less than 60 per cent of natural flow (moderate stress category); and
- about 30 per cent of subcatchments had unresolved assessments due to lack of streamflow data.

The State water management outcomes plan notes that the flow frequency targets are consistent with the policy paper on daily flow extraction shares for unregulated river water sharing plans. This paper proposes that flows that have been reduced to less than 40 per cent of natural flow should be increased by 10 percentage points (or at least to 40 per cent). Flows that are less than 60 per cent of natural flow should be improved by at least 10 percentage points. Where flows are better than 60 per cent of natural flow, subcatchments should be maintained at current levels or improved.

Groundwater

Access to groundwater is to be managed within the sustainable yield to ensure the resource is sustained for future generations and dependent ecosystems remain viable.

To ensure groundwater extractions do not exceed average annual recharge minus a volume to prevent further decline in the condition of any groundwater-dependent ecosystems, where detailed information is not available the State water management outcomes plan sets the volume at 30 per cent of the average annual recharge. In aquifers where few significant groundwater-dependent ecosystems can be identified, this volume may be reduced. Groundwater-dependent ecosystem protection zones will be mapped for all priority aquifers, water level sensitivity will be assessed to enable extraction rates to be limited and/or sustainable yields will be revised to protect these ecosystems.

Delivery of regulated supply

In regulated rivers, the supply of allocation water downstream from the headworks storage during the irrigation season can result in quite stable flows for long periods. These flows eliminate natural water level variation and flow pulses that otherwise would trigger important ecological processes. New South Wales has found that the higher the supply flows are relative to channel capacity, the more often damage is done. River flows typically break out into adjacent wetlands when the flow level is in the top 10–20 per cent of the channel, for example, so the State water management outcomes plan therefore aims to keep supply flows below this level to reduce the damage.

Natural drying of terminal wetlands

The major terminal wetlands of the Gwydir, Macquarie and Lachlan systems have been receiving unnatural flows during dry periods resulting in unnaturally wet central areas of these wetlands and preventing the natural drying cycle. To restore drying phases in these core wetland areas, the State water management outcomes plan calls for more stringent management of regulated water and pulsing or piping of stock and domestic supplies.

Submissions

The New South Wales Irrigators Council (2002, submission 12) raised the following issues with the environmental targets contained in the interim State water management outcomes plan. It argued there had been a lack of consultation, and expressed serious concerns about the timing and the nature of the targets. The submission argued that the Council should consider the State water management outcomes plan's relationship with the water sharing plans. Concern was expressed that water management committees were allowed to complete at least 75 per cent of their local planning process before

the overarching State plan of targets, which the committees need to address in finalising their plans, was released. It was argued that, either local plans should have been finalised and implemented before the State water management outcomes plan was developed, or the overarching plan should have been developed and provided to the committees before they started their processes. The New South Wales Irrigators Council claims that it cannot comment on specific State water management outcomes plan targets without the definitive scientific data that the Department of Land and Water Conservation and others used to identify and justify most of these targets or to understand the specific (and measurable) environmental benefits the targets will deliver.

The World Wide Fund for Nature (submission 13) queried whether the water sharing plans may be finalised before the overarching state plan. It considered that the lower level water sharing plans must be an interim measure until the higher level plan (the State water management outcomes plan) is finalised. The State water management outcomes plan is five years in duration, while the water sharing plans are in force for 10 years. The World Wide Fund for Nature argued that the review processes should be coordinated.

Discussion

New South Wales has advised that the targets for the State water management outcomes plan have been developed with regard to:

- flow and water diversion impact analysis using integrated quantity and quality modelling;[13]
- current scientific literature and advice including the findings of the 1998 statewide stressed rivers assessment undertaken across 500 subcatchments;
- State and national policies and guidelines;
- impact/cost considerations, including the relative importance of the different targets; and
- the views of the peak stakeholder group representatives and relevant New South Wales Government agencies.

While the annual diversion limit targets in the State water management outcomes plan are essential for slowing or limiting environmental degradation, they cannot address the more localised impacts of extraction on

[13] The integrated quantity and quality modelling approach is used by the Murray–Darling Basin cap, the Queensland Government, the Mekong River Basin Commission and the global water engineering corporation, Lyonnaise Des Eaux Astran.

the pattern and frequency of high, moderate, low and seasonal flows. The New South Wales interim environmental objectives released in 1999 identified low flow protection (objective 2), the restoration of high flows (objective 3) and flow variability (objective 6) as three of the most critical aspects of the flow regime, and there is increasing evidence that variable flow regimes are critical to water-dependent ecosystems. The water sharing plans are intended to address these local impacts.

The State water management outcomes plan also recognises that the greatest impact of water extraction is typically at the end of a river system, given the cumulative effects of upstream dams and pumps. The recommended flow targets therefore apply to the end of each system or, in the case of those systems that terminate in a wetland or estuary, the estimated inflows to that wetland or estuary. In the case of unregulated rivers, the end of system is the downstream point of each nominated management unit or subcatchment. The targets refer to the daily flow frequencies based on the whole-of-year statistics. A water sharing plan may seek to improve either the whole-of-year statistic and/or those for critical months beyond these levels.

The New South Wales water reform process recognises that the science of water management is constantly improving. A truly scientific approach must therefore adopt an active adaptive management approach. The Water Management Act and the water sharing plans being developed reflect this approach by incorporating:

- explicit assumptions about the nature of the system being managed;
- substantial decisions to provide for learning about systemic responses;
- decisions that are fixed for a reasonable period of time to discern systemic responses from natural variation; and
- monitoring and auditing to quantify outcomes and reject or accept hypotheses.

The Council's 1999 NCP assessment forecast a 7 per cent reduction in diversions in the long-term as a result of the interim environmental flow rules. The interim State water management outcomes plan shows the actual impact on diversions of the flow rules ranges from 3 per cent (for the Namoi River) to 17 per cent (for the Macquarie River), and up to 5 per cent for the remaining rivers. The plan contains targets that call for a 10 per cent improvement in the frequency of 'end of system' flows where this is less than 60 per cent of predevelopment levels. At the time of writing, draft water sharing plans for the Namoi, Lachlan, Murrumbidgee, and Gywdir regulated rivers provide a marginal improvement in environmental allocations, but still are some way from reaching some of the targets in the State water management outcomes plan.

At the time of writing, the targets in the State water management outcomes plan (including the environmental targets) are being reviewed. This review is to address issues raised during consultation with stakeholders and the use of the plan by water management committees. Some changes to the plan are

expected, with many of the changes designed to clarify the intent of the targets. The revised targets will to go back to water management committees for their recommendations with a view to the State water management outcomes plan being finalised in September 2002. The Government believes that the changes made in finalising the State water management outcomes plan will not affect the viability of the water sharing plans.

The State water management outcomes plan sets both long term outcomes and five year management targets for water resource management. It is a guide for planning. The targets do not seek to establish an ultimate position or standard for each water sharing plan but rather to establish a significant but practical step in the process of continuous improvement. Not all targets will be relevant to every plan. The State water management outcomes plan process is being run in parallel with the water planning process on an iterative basis.

Assessment

Given likely further movement on the targets between the interim State water management outcomes plan and the final plan, the Council has insufficient information to conclude that the State water management outcomes plan targets meet the State's NCP commitments. The Council does, however, support the direction the plan is taking. It will assess the final State water management outcomes plan as part of a 2002 NCP supplementary assessment to be conducted by the end of the year, including how the plan's targets are incorporated in the final water sharing plans.

Provision for the environment: water sharing plans

Outstanding issue: The Council is to assess the timeliness and the quality of the reforms achieved in the first round of water sharing plans (covering 51 water sources) against the national principles for the provision of water for ecosystems.

Next full assessment: The Council will assess allocations for the environment in 2004 and provide a stocktake of progress against a jurisdiction's implementation program to identify remaining areas for assessment in 2005 when the program is to be complete.

Reference: Water reform agreement, clause 4(b–f)

Background

A key requirement of the CoAG water agreement is to ensure action is taken where river systems are overallocated or stressed, to provide a better balance in water resource use. Such action includes appropriate allocations to the environment to enhance or restore the fundamental health of river systems.

New South Wales is in the process of finalising some 39 water sharing plans for areas of high stress or high conservation that will lock in water sharing arrangements (including for the environment) for the next 10 years. The development of these water sharing plans is a significant undertaking. The government has been active in seeking ways in which to develop its understanding of relationships between flows and ecological health.

In the 1999 NCP assessment, the Council assessed the 1998 New South Wales interim environmental flows for all regulated rivers. The Council was then satisfied that New South Wales had met its minimum commitments to act on stressed rivers for the 2001 NCP assessment. These environmental allocations were in year three of the original five-year flow settings.

For the 2002 NCP assessment, the Council will examine the outcomes of New South Wales water sharing plans, which are to improve outcomes of the original environmental flows from 1998, and establish new environmental flow provisions for key unregulated and groundwater systems. The Council will assess these plans against the national principles in terms of the timeliness and quality of the reforms achieved.

New South Wales arrangements

Section 8 of the Water Management Act specifies three classes of environmental water. The core provisions of a water sharing plan must deal with the establishment of environmental water rules in relation to:

- **environmental health water** — water that is committed for fundamental ecosystem health at all times and may not be taken or used for other purposes;

- **supplementary environmental water** — water that is committed for specific environmental purposes at specific times or circumstances, but may be taken at other times and used for other purposes; and

- **adaptive environmental water** — water that is committed for specific environmental purposes through an access licence.

Plans may also contain provisions dealing with the preservation and enhancement of water quality in the water source in the region, and with the monitoring and reporting requirements to be imposed as conditions of approval within an area.

New South Wales released water policy advisory notes (see attachment 3) to assist the water management committees in developing the water sharing plans. The policy advisory notes relevant to the provision of water for the environment cover:

- water extraction volumes and daily flow shares in unregulated rivers;

- groundwater-dependent ecosystems;

- integration of water quality and river flow objectives in the water sharing plans;
- conservation of aquatic and riparian biodiversity, and threatened species management; and
- incorporation of the weir review program results in the water sharing plans.

New South Wales has agreed to broad river flow objectives (see table 2.4) to be applied to all river systems in water sharing plans. These objectives aim to safeguard river flows for environmental health.

Table 2.4: New South Wales river flow objectives

Objective 1	Protect natural water levels in pools or creeks and rivers and wetlands during periods of no flow.
Objective 2	Protect natural low flows.
Objective 3	Protect or restore a proportion of moderate flows, 'freshes' and high flows.
Objective 4	Maintain or restore the natural inundation patterns and distribution of floodwaters supporting natural wetland and floodplain ecosystems.
Objective 5	Mimic the natural frequency, duration and seasonal nature of drying periods in naturally temporary waterways.
Objective 6	Maintain or mimic natural flow variability in all rivers.
Objective 7	Maintain the rates of rise and fall of river heights within natural bounds.
Objective 8	Maintain groundwaters within natural levels and variability, critical to surface flows or ecosystems.
Objective 9	Minimise the impact of in-stream structures.
Objective 10	Minimise the downstream water quality impacts of storage releases.
Objective 11	Ensure river flow management provides for contingencies.
Objective 12	Maintain or rehabilitate estuarine processes and habitats.

Source: New South Wales Government (2001b)

All plans identify the ecological features and high conservation zones, and their water requirements. These requirements include those wetlands, water plants, riparian vegetation, floodplain and channel connectivity, fish, water birds, macro-invertebrates and other aquatic species and fauna. Additional extractions from high conservation zones are prohibited.

The committees were also required to consider threatened species where known. A number of plans provide for collecting new scientific information on the potential effects of current or proposed flow regimes on threatened species, and for examining these effects during the review of plans (including preliminary determinations). Attachments to the plans set out the current knowledge on threatened species.

Floodplain harvesting reduces the amount of water reaching or returning to rivers resulting in impacts on the environment and downstream users. New South Wales intends to license and manage the taking of water from

floodplains over the next couple of years. Water sharing plans, however, specify that floodplain harvesting in their area is not subject to the provisions of the plan and has not been included in the diversion limit.

Most plans have been on public exhibition from regional offices across the state and on the Department of Land and Water Conservation's website. Public consultation on these plans was originally expected to be largely complete by the end of May 2002. Three committees (for the Orara River, Lower Murray Aquifer and Great Artesian Basin) have been given an extension of time to undertake additional studies and consult with affected communities before their plans are publicly exhibited. The Government intends all remaining plans to be in operation for the 2002-03 water year.

The following discussion considers the general approaches to providing for the environment in the water sharing plans for regulated and unregulated rivers and groundwater systems. The water advisory notes (attachment 3) contain further details on what is to be achieved for the environment in the first round of plans.

Regulated rivers

For the very low flows in regulated rivers, environmental health water will be set aside for environmental requirements consistent with river flow objectives 1 and 2. The environmental provisions vary with the features of each water source and typically include minimal flow targets at key points, "translucent dam" management rules (passing a proportion of the dam inflows) and environmental contingency allowances (a volume held in storage used to meet specified environmental outcomes).

For the regulated systems, the water sharing plan sets an average annual diversion limit as part of the bulk access regime after accounting for water requirements for achieving environmental health. If extractions exceed the diversion limit, then such growth will undermine the plan's environmental objectives. Supplementary water access must be granted only after all environmental flow requirements specified in the plan and the demands of all high priority right holders have been met. Wherever possible, plans should specify the thresholds that must be satisfied before access can be permitted, along with the basis for calculating available volumes and the rules for allowing water sharing.

Unregulated rivers

New South Wales is establishing daily flow shares for the unregulated rivers. Consistent with the precautionary principle, New South Wales is generally allocating 70 per cent of the water to the environment and 30 per cent to extraction, and giving priority to defining environmental health flows. The water sharing plans for the unregulated rivers will generally provide for three flow classes (A, B and C) and then set daily flow shares based on a daily flow

regime. Water extraction volumes will form the basis for protecting river health and for sharing available flows among competing users.

For some unregulated rivers, however, the whole-of-year 95th percentile may be a relatively high volume, and setting very low flows up to this level could have significant effects on irrigation. The whole-of-year 95th percentile could be higher than the 80th percentile critical month flow, for example, resulting in the elimination of any A class flow. In these cases, the 95th percentile for the critical month only (or some value in between) may be used to define the very low flow level.

For the unregulated systems, water sharing plans describe flow sharing rules in terms of flow outcomes for end-of-system reference points. The first stage of setting flow extraction volumes is to decide on the amount of flow in each flow class that can be extracted without threatening river health or reducing (below reasonable levels) access to existing users. Bulk extraction volumes are then used to establish the total amount of water that can be extracted each day from each flow class by all users in a subcatchment. These limits ensure an appropriate level of protection for the environment. Water sharing plans must determine peak daily demand for current and full development of licences. Current demand is used to determine bulk extraction volumes. Full development demand may be used to distribute bulk extraction volumes to licences as daily flow shares.

Pending better information, diversion limits in coastal systems that are already subject to a licence embargo should be set at the total annual licensed volumetric entitlement for all licence holders. In unembargoed systems, the limit will be the target level at which an embargo would be put in place. Where assessment indicates that full development of all current entitlements would be a significant threat to the environment, a diversion limit lower than the sum of licensed entitlements may be determined.

Flow classes and the bulk extraction volumes are intended as the means to deliver river flow objectives, particularly the protection of low flows and the mimicking of natural flow variability. An assessment of pool habitats and low flow connectivity should be conducted to verify that the proposed flow limit is achieving the required environmental objectives. This assessment could be based on a range of sources, including expert opinion; ideally, it should be from field valuation. For each subcatchment, there is a need to tune the extent of the very low flows and class boundaries for local hydrology, identified conservation values, specific environmental requirements and practical considerations to ensure delivery of the flow objectives.

Groundwater

For groundwater systems, the use of groundwater in a water source or zone is to be managed within the sustainable yield. Water sharing plans must identify and protect significant groundwater-dependent ecosystems and recommend a proportion of the natural recharge to be allocated for environmental purposes. The environmental provision will vary according to

the system characteristics and the significance of dependent ecosystems. Localised rules for protecting groundwater-dependent ecosystems may also apply and may relate to establishing buffer zones around dependent ecosystems, maximum limits to which water levels can be drawn down, and a minimum distance from a connected river, creek or other dependent ecosystem from which a bore could be sited.

Submissions

The Council has received submissions on the environmental aspects of the water sharing plans from the World Wide Fund for Nature (2002, submission 13), the New South Wales Irrigators Council (2002, submission 12), and Robert Caldwell (2002, submission 5). The World Wide Fund for Nature (submission 13) argued that it should be a high priority for the Council to determine whether plans meet the national principles for the environment. It noted dissenting reports on the proposed environmental outcomes for the Murrumbidgee and Gwydir water sharing plans.

The New South Wales Irrigators Council (submission 12) argued that many plans contain little scientific data and that planning decisions have been made using the precautionary principle. Unless committees are rigorous in target setting and benchmarking, and committed to monitoring, it was argued they will be no wiser in decision-making in 10 years: allocating 10–20 per cent more to the environment using the precautionary principle does not mean a committee has decided to more actively and adaptively manage environmental needs. The assumption in the process, it was argued, is that more for the environment is better when there are no science or environmental health targets, and this is not in line with shifting water to highest value uses. The submission argued that the Council should consider the scientific basis for environmental provisions and examine whether the plans identify specific environmental values or characteristics to be enhanced or protected. It was alleged that the draft plans fail to describe the current status of environmental health benchmarks, and lack performance indicators and monitoring requirements.

Robert Caldwell (submission 5) argued that it is unrealistic for the environmentalists to ask for the environment to be restored to pristine condition while rural communities are paying for 95 per cent or more of the Government's environmental strategies.

Discussion

At the time of writing, 36 of the 39 draft water sharing plans had been put out for public consultation. For the latest round of consultation, submissions closed 31 July. Ten working days after the close of submissions, the Government is making available to the committees the public submissions on their plan and a summary of the issues raised. The Government also provides: an analysis of the plan's compliance with the State water

management outcomes plan; a draft of the legislation that will give effect to the plan; and a draft of the first implementation program. The committees will be given six to seven weeks for deliberation (including efforts to resolve the Minister's notes) before making the final recommendation to the Minister. Committees must also recommend interim arrangements to apply from the start of the irrigation year until the final plans are gazetted. The New South Wales Government advised that it intends plans to be finalised and gazetted between September and November 2002.

The Council has examined the range of draft plans. There are numerous Minister's notes in a number of plans. The Council considers that some plans may change significantly between the draft and the finals, particularly given that the State water management outcomes plan targets are still to be finalised and that the Minister's notes raise a range of issues. The Council is therefore not in a position to assess whether the final water sharing plans comply with CoAG commitments. This is not due to lack of effort on the part of New South Wales, but because the plans must be finalised before the Council can reach a definitive conclusion. The Council's 2001 NCP assessment raised this issue:

> '*The prime concern the Council has with the New South Wales system is to ensure that while it is important for bulk access regimes to be established quickly, they must be done properly including the basis for determination of environmental flows to reflect the new 10 year timeframe under the* [*Water Management*] *Act. Otherwise, if the bulk access regime and environmental flow requirements are poorly addressed, the issues for the environment will not be addressed for another 10 years. Given the system New South Wales has adopted, and the extent of the problems, the Council is of the view that where a review of the implementation of a plan identifies the environmental objectives are not being met, there should be a change within the 10 year life and compensation (as required under the Act) paid where the identified change is significant.*' (NCC 2001d,pp. 94–5)

The water sharing plans will build on the environmental flow rules already in place on the regulated rivers. The Council therefore thinks it is not unreasonable, given the State's efforts, to give New South Wales extra time to properly complete this important reform. These efforts include embarking on the most comprehensive stressed rivers assessment process in the country, passing legislation capable of providing significant outcomes for the environment and progressing a process for delivering water plans for more than 80 per cent of the State's water use. The Council will defer assessment of the final plans to a supplementary NCP assessment by the end of 2002. All issues raised in submissions will remain under consideration for that assessment.

To aid all parties in the possible directions of the 2002 supplementary assessment, the Council believes it is useful to point out some observations on the process so far and to identify where a number of plans may evolve in a way that might not comply with CoAG commitments. The Council notes that the plans have not been finalised and that the New South Wales Government

is working with committees to address these issues. The Council has limited its comments to those aspects of plans that are considered to be problematic.

The CoAG time frame calls for allocations to be in place by 2005. The Council notes, however, that some plans do not propose to deliver changes to existing licensed entitlements until year nine of the plan (such as the draft water sharing plan for the Lachlan groundwater source).[14] While the water management rules would take effect immediately for these groundwater systems, including water for the environment, the provisions to reduce licensed entitlements is proposed to be delayed by the plans for these particular systems. These provisions have attracted a Minister's note. Further, the Council has found Minister's notes in a number of plans, where the provisions are 'contrary to ss 5(3) and 9(1) of the Act which prescribes the priority for water sharing is firstly to protect the water source and its dependent ecosystems'. The Council will pay particular attention to these issues in the end of 2002 supplementary assessment, to ensure adequate environmental provisions will be provided in the required time frame.

The plans for unregulated rivers provide for environmental health water by allocating a proportion of flows for very low flows and for the A, B and C class flows proposed to be established. They also provide cease and commence pump levels. In many plans, the basis for setting a particular flow level is not clear. While hydrological modelling has occurred, some plans do not clearly specify how environmental requirements have been identified or how the proposed flow rules will satisfy those requirements. New South Wales has advised that there was no modelling for these water sources as there is very poor data available. A decision was therefore taken to allow a proportion of each flow class as defined by points on a flow duration curve to be established (see attachment 3, figure 2.2). The proportions have been well debated in the committee for its socio-economic impacts and takes account of known environmental features. Field verification of very low flows will also take place. The interim State water management outcomes plan, however, identifies a number of unregulated rivers where entitlements greatly exceed 200 per cent of the average annual long-term diversion limit. The current round of unregulated river plans do not adequately indicate where entitlements under the plan would be in relation to this diversion limit or what environmental outcomes may be expected from the proposed flow sharing rules.

The draft groundwater plans examined by the Council appear to provide allocations for the sustainable management of associated groundwater-dependent ecosystems where ecosystems have been adequately described and their water requirements have been identified. Where the extent of ecosystem dependence is unclear, the plans allocate up to 100 per

[14] For the Lachlan groundwater sharing plan, the committee recommended that 20 per cent of the long term annual average recharge be set aside as an environmental provision for the aquifer and 80 per cent be available for extraction. The plan proposes waiting until the final year of the plan, however, to implement reductions in extractions.

cent or more of the sustainable yield to consumptive use.[15] The Council has been unable to find a definition of a 'significant' groundwater-dependent ecosystem. This approach seems counter to the fourth principle of the New South Wales groundwater-dependent ecosystems policy, which states that:

> *Where scientific knowledge is lacking, the precautionary principle should be applied to protect groundwater dependent ecosystems. The development of adaptive management systems and research to improve understanding of these ecosystems is essential to their management.* (Department of Land and Water Conservation 1998, p. 8)

The committees developing some plans acknowledged a lack of information concerning groundwater use by ecosystems, and they have proposed further work to address this knowledge gap. The outcomes of this work can be taken into account at the five-year review of the plan.

In examining the draft plans, the Council's main emphasis has been on the regulated rivers where 80 per cent of diversions in New South Wales occurs. The Council notes that the plans provide, at best, for a marginal improvement in environmental allocations above existing levels for the Murrumbidgee, Lachlan, Namoi and Gwydir rivers, based on the principle of continuous improvement. New South Wales has indicated that the first round of water sharing plans is unlikely to deliver all of the water needed for the environment within the first State water management outcomes plan.

The Council is concerned that some water management committees have been unable to address water allocation-related environmental issues in their initial draft plans. As an example, specific concerns have been raised about the Namoi River and the Murrumbidgee River plans. These issues have also been raised in Minister's notes.

The draft water sharing plan for the Namoi River indicates that the overall health of the river is not good, and suggests that a significant improvement is required. The recommendations of the draft plan, however, would result in preserving the existing balance of water shares between the environment and water users, which resulted from the 1998 application of the first set of environmental flow rules. The draft plan indicates that these environmental provisions make only a marginal improvement to flow conditions compared with the base case (the 1993-94 conditions under the Murray–Darling Basin cap on water diversions). The interagency assessment panel that reviewed the plan concluded that it is unlikely to maintain the ecological health of the Namoi River.

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[15] Where groundwater-dependent ecosystems are not expected to exist in any significant form, the draft plans allow consumptive use to be allocated to the full natural recharge of the aquifer. New South Wales has advised that only the Namoi groundwater plan does this. In all other groundwater systems, the environmental provision contained in the draft plan varies between 15–80 per cent. Where the extent of ecosystem dependency remains to be confirmed, further research is proposed. The Namoi, Mid North Coast and Lachlan groundwater management committees, for example, have proposed further studies within the life of the plans.

The draft plan for the Murrumbidgee River if implemented in its current form also would result in preserving the balance of existing shares between the environment and consumptive use, which similarly resulted from the 1998 application of the environmental flow rules. The environmental provisions will make a marginal improvement to flow conditions compared with the base 1993-94 year. Some water management committee members clearly considered that the relative shares between the environment and water users are unlikely to maintain or improve the ecological health of the Murrumbidgee River. This was also the view of the interagency assessment panel that reviewed the draft plan. The plan seems to lack clearly defined environmental management objectives, triggers and rules for the release of water for environmental purposes. Further, the environmental water rules in the draft plan focus on providing flows to wetlands in the middle reaches of the river system. The Minister's notes in the draft plan indicate that significant wetlands on the lower river floodplain below Maude are not targeted for allocations by the plan and receive a greatly reduced water supply. The plan does not address water for other ecological requirements, and does not fully maintain the mimicking of natural flow variability below Burrinjuck Dam.

For the 2002 NCP assessment, the Council found transparency issues in ascertaining how the committees developed the outcomes they have recommended. There is little technical information available to the broader community on how the flow volumes in the plans have been set. While hydrological modelling was used, it is often difficult to see how the proposed flow rules and allocations are linked to achieving environmental outcomes, or the extent to which those outcomes may be achieved. The manner in which environmental science has been considered and incorporated is not transparent. Examples arise in the Hunter River plan, which establishes a 22 gigalitre annual contingency allowance for managing critical (contingent) environmental events such as algal blooms, fish migration, stoney bed scouring and chemical spills. It is unclear to the Council from the draft plan how the volume was determined and how it will be used. The Hunter draft plan also establishes a rule that allows no more than 50 per cent of the flow measured at designated sites in each river reach to be extracted on any day, and that sets an absolute volume on access so no more than 30 per cent of the natural high flows on average will be extracted in a year. It is not clear how the committee arrived at this rule.[16]

In the 2001 NCP assessment, the Council deferred its assessment of New South Wales progress on stressed rivers against the national principles for the provision of water for ecosystems. For this 2002 NCP assessment, the Council has again decided to defer an assessment of progress against the national principles until the final water sharing plans are in place. A full

[16] New South Wales ahs advised that the various combinations or rules resulted from debate on issues and options within committees. The committees consider impacts and determines a recommendation over an 18 month period.

assessment of this area of the final plans will occur in the NCP supplementary assessment to be conducted by the end of 2002.

On the basis of the draft water sharing plans that have been released for public exhibition, the Council can infer that some plans in their present state may not meet the requirements of a number of the national principles. A particular concern to the Council is how the requirements of national principles 4 and 5 are being addressed. Principle 4 states that where there are existing users in a system, the provision of water for ecosystems should go *as far as possible* to meet the water regime necessary to sustain the ecological values of aquatic ecosystems while recognising the existing rights of other water users. The draft plans are what the committees consider to be what is possible at this time recognising the existing rights of other water users. The Council also recognises that for most of the draft plans, what is being considered is a significant improvement for the environment on the past. Principle 5 states that where existing users prevent environmental water requirements from being met, action (including re-allocation) should be taken to meet environmental needs. New South Wales has advised that every draft plan is explicitly providing for some level of environmental gains.

The interim environmental flow rules established in 1998 have achieved, on average, a 3–5 per cent improvement in environmental flows for the regulated river systems. The Council, on reviewing the draft plans for the regulated rivers, considers it unlikely that the plans will be able to provide all the water needed by the environment to meet the interim State water management outcomes plan targets, but would nonetheless go some way towards providing the necessary environmental water. The Council observes that the proposed plans may contribute a further 2 per cent above present conditions. In aggregate, the total flows returned to the environment between 1998 and 2012 will be between 5–7 per cent.

The environmental allocations proposed in the draft plans for regulated rivers such as the Murrumbidgee and Namoi rivers would be unlikely to meet the national principles for the provision of water for ecosystems. In these draft plans, the requirements of existing users seem to have been the predominant factor in determining allocations to the environment. New South Wales has acknowledged that some plans are problematic and are working with the committees to look at options.

The Murrumbidgee draft plan essentially would preserve the existing balance of current water shares between the environment and water users, which resulted from the environmental flow rules applied in 1998. The Minister's foreword to the draft plan states that some committee members consider that the relative shares between the environment and water users are unlikely to maintain or improve the ecological health of the Murrumbidgee River. This was also the view of a Government assessment panel reviewing the draft plan. The plan's environmental water rules focus on providing flows to wetlands in the middle reaches of the river and ignore significant wetlands on the lower river floodplain. Further, the plan does not allocate water for other ecological requirements.

This draft plan does not specify environmental management objectives, triggers or rules for the release of water for environmental purposes. It states that the environmental condition of 38 per cent of the length of the Murrumbidgee River has been significantly impaired. Some 61 per cent of the impaired sections has since been moderately modified and 37 per cent has been significantly modified. Further, in December 2001, the aquatic ecology of the Lower Murray River Catchment was declared an endangered community under the *Fisheries Management Act 1994*. This area includes the Murrumbidgee River downstream of Burrinjuck and Blowering Dams.

A further concern is that some rules for environmental water provisions are made contingent on supplies to water users and are generally tied to the resource availability for water users rather than need. The draft plan treats all flows to the Lowbigee — the major wetland area associated with the river system — as supplementary access water, which has the lowest priority of all water in the water source. The Council considers that there are considerable problems with the draft plan. The draft Murrumbidgee plan notes that water user representatives do not support reductions in general security water access to provide for the Lowbidgee wetland. This approach is contrary to the Water Management Act, which specifies that the environment has first priority.

The Minister's notes for some of the regulated systems point out that the drafts do not define the triggers and rules for the delivery of supplementary environmental water, or the environmental considerations for the declaration of access to supplementary water. Without this information, the availability of water for both river health and extraction by irrigators will remain ill defined and subject to discretion. New South Wales is working with the committees to address this issue.

For the unregulated systems, the Kangaroo River draft water sharing plan contained a social and economic study — conducted by consultants on behalf of the committee — on the immediate impact of the 'cease to pump' rule on local irrigators and dairy farmers. The study included a cost–benefit analysis of the nonconsumptive water users of the plan. The committee agreed to gradually introduce the 'cease to pump' levels over the first three years to allow water users to introduce water management practices consistent with the 'cease to pump' level at year three. The committee also agreed to allow licensed water users access to very low flows after seven days of cease to pump (drought access) for a limited period to ensure crop survival. The committee agreed that drought access should be phased out in the last month of the plan.

The recommendations in the draft plan would allow water users to extract water from the very low flow range during drought years, when river flows are less than the 'cease to pump' levels. The measure is proposed to continue until the last month of the plan's term — an approach that is not consistent with the Water Management Act, which prescribes the first priority for water sharing plans as being to protect the water source and its dependent ecosystem. These provisions in the plan have attracted a Minister's note that

the recommendations do not comply with the Act and conflict with the Government's flow objectives, which target the protection of low flows.

A number of problems have arisen in the processes that New South Wales has been using to establish the State water management outcomes plan and the water sharing plans. A number of submissions to the Council raised concerns with the timing of the State water management outcomes plan, which has not yet been finalised.

It was the original intention of New South Wales to finalise the State water management outcomes plan in advance of the water sharing plans. This has not occurred. The timing of the release of the interim State water management outcomes plan and delays in its finalisation has affected the water sharing planning process. New South Wales has advised that the targets in the interim State water management outcomes plan were fed into the water sharing planning process and, therefore, most of the plans will comply with the State water management outcomes plan. In some cases, local committees have not addressed all relevant targets. These committees will justify their decisions and the reasons will be considered by the Minister in finalising the plans. Nevertheless, the targets in the State water management outcomes plan are still changing and it is unclear how the changes will be reflected in the final water sharing plans.

There has also been a question concerning the timing of the release of key sources of technical and scientific information in the development of the process. For example, the Council notes the following in the Kangaroo River draft water sharing plan.

> *The New South Wales Government has prepared a State water management outcomes plan and advisory notes to water management committees...The outcomes plan and advisory notes have been prepared to provide strategic direction and guidance to the Committee in preparing recommendations on water sharing. They were, however, not made available to the Committee in time to influence deliberations.* (Kangaroo draft water sharing plan 2002, p. A2)

The New South Wales Irrigators Council argue there have been deficiencies in the public consultation process in developing the State water management outcomes plan targets and do not accept that a genuine attempt to involve all stakeholders in the development of the State plan has occurred. They argue that assessing the water sharing plans for compliance with the State water management outcomes plan targets and then asking committees to justify or amend their position is not 'consultative'. It would have been better to ask the committees whether the targets in the State water management outcomes plan were achievable and appropriate for their river systems.

New South Wales has indicated that there are some areas where the planning process could be improved, for example, the early availability of technical and scientific information. There may be a need to look at how the committee process operates due to the tremendous pressure on committee members. A survey of the committees is currently taking place to assess the existing planning process. This will lead to improvements for the next round of plans.

In the case of the unregulated rivers, New South Wales is considering whether the daily flow shares model may be too detailed and complex for rivers where there is little environmental risk and whether a more simplified approach may be more appropriate.

New South Wales has advised that the timeframe for the next round of plans is under review and that a commencement date is not known. There may need to be a formal review of the process from the first round of plans before consideration of the next round of water sharing plans. While this first round of water plans covers 80 per cent of all water use, the next round will target the remaining unregulated and groundwater stressed systems.

Assessment

In this 2002 NCP assessment, the Council has examined some of the draft water sharing plans proposed by the water management committees. It has raised its concerns about timeframes for achieving sustainable resource use and the lack of transparency in water sharing decisions. The New South Wales government will need to address these matters in finalising the plans, and they will be key areas for consideration in the 2002 NCP supplementary assessment to be conducted by the end of the year.

The Council believes that the proposed provisions in some draft plans may lead to a marginal improvement in the conditions of stressed river ecosystems. For the end of 2002 NCP supplementary assessment, the Council expects to see final plans contain environmental allocations that ultimately provide for an improvement in the condition of the rivers. The Council draws particular attention to the Namoi and Murrumbidgee river draft water sharing plans as needing modification before the Council can be satisfied the State has met its NCP obligations.

In relation to monitoring and performance indicators for the plans, at the time of writing the New South Wales Government was yet to develop generic performance indicators for each water source,[17] and so all drafts contain Minister's notes that these indicators are still to be finalised. These performance indicators have implications for the development of monitoring arrangements to deliver the objectives of the water sharing plans. These performance indicators will also be assessed in the 2002 supplementary assessment, as a key issue for the delivery of the final water sharing plans.

[17] These are being developed and will include indicators for low flows, moderate to high flows, ecological health (generally or for specific ecological communities or habitats), water quality, the economic benefits of consumptive water use, equity among licence classes, basic rights, and town water supplies.

Progress report issues

Full cost recovery: urban

Progress report: A review of any updated nonmetropolitan urban pricing guidelines

Next full assessment: The Council will assess urban pricing reform in 2003.

Reference: Water reform agreements, clauses 3(a) and (b); CoAG pricing guidelines

Background and New South Wales progress

The Council has previously raised concerns about the approach used by nonmetropolitan urban service providers with regard to asset renewals and optimisation of asset values, inclusion of externalities in water prices and the identification and reporting of cross-subsidies. The Council noted that one mechanism for addressing this issue would be to expand the 1996 nonmetropolitan urban pricing guidelines that were developed by the Independent Pricing and Regulatory Tribunal.

Externalities and cross-subsidies are discussed in the following sections. In the case of asset values it is not clear that local governments use a depreciated optimised replacement cost (DORC) approach. Similarly, the Council has insufficient information on the methods local governments are using to provide for asset renewals.

In 1996, the Independent Pricing and Regulatory Tribunal published common pricing principles for determination of local water supply and sewerage charges by local governments. New South Wales has advised that these principles have ongoing relevance. While the tribunal has no regulatory responsibilities for nonmetropolitan urbans, water activities are ringfenced from all other local government activities.

New South Wales reports that there are other instruments that complement the nonmetropolitan urban guidelines including:

- ongoing training and information programs operated by the New South Wales Water Directorate;
- financial management advice and software development provided by the Department of Land and Water Conservation in support of the various handbook materials;
- statutory requirements for local government management planning and service accountability to ratepayers and residents;
- financial oversight provided by the Department of Local Government; and

- management guidelines including a strategic business planning manual (Public Works Department 1993), environmental management guidelines (DLWC 1997) and a water wise management manual (DLWC 1998).

The New South Wales 2002 NCP annual report states that the Department of Land and Water Conservation and the Independent Pricing and Regulatory Tribunal agree there is no urgent need to update the guidelines or business planning documents, as the general pricing principles continue to apply to nonmetropolitan urban water activities. However, New South Wales has not proposed any alternative mechanisms for dealing with the concerns raised by the Council

Full cost recovery: externalities

Progress report: Developments in factoring externalities into pricing by urban service providers

Next full assessment: The Council will assess urban pricing reform in 2003.

Reference: Water reform agreements, clause 3(a)(i); Expert Group report on externalities

Background

The CoAG pricing guidelines require externalities to be incorporated into prices. The Council recognises that this is a complex and difficult area, particularly in the urban sector. The Council views the first step as ensuring prices reflect an appropriate proportion of the costs of mitigating environmental problems of water use. The more advanced stage is a holistic approach to dealing with externalities, where pricing is only one component. As noted by the High Level Steering Group on Water (2000), externalities need to be addressed using a 'portfolio of decision tools'. Implementation of the Water Management Act is a significant step that applies both regulatory and cooperative planning approaches to support the pricing tool.

Metropolitan providers

A 5 cent per kilolitre catchment levy, to be used to fund improved catchment management, was considered as part of the Independent Pricing and Regulatory Tribunal's 2000 Sydney Catchment Authority determination. The Tribunal concluded, however, that the determination provided sufficient revenue for the Sydney Catchment Authority to undertake its current and known future activities. The Council suggested that this matter could be revisited in the future at which time potential arrangements for passing through such costs to final customers could be considered.

All Hunter Water Corporation customers (with the exception of pensioners) pay an environmental improvement charge of $40 per year. The charge assists with the funding of the Hunter sewerage project (IPART 2000b).

Nonmetropolitan urban providers

There is limited guidance to the nonmetropolitan urban water service providers on externalities. The Council noted it would monitor advice on provisions for externalities in the future. The 1996 Independent Pricing and Regulatory Tribunal guidelines for nonmetropolitan urban providers were released before the CoAG pricing guidelines were developed. While the tribunal's guidelines are consistent with the intent of the CoAG water reforms, the Council has suggested there may be advantages in updating these guidelines.

New South Wales progress

New South Wales advises that pricing determinations by the Independent Pricing and Regulatory Tribunal have generally included externality costs where efficient expenditure is actually incurred by an urban provider to address such externalities. For example, the Sydney Catchment Authority's bulk water charge to the Sydney Water Corporation includes a significant component for catchment management and remediation. Similarly, in reviewing the cost base of the other urban providers it regulates, the Tribunal has generally allowed efficient costs for the management of environmental externalities.

The extent of externalities covered by water and sewer prices is linked to the standards set by regulators. This is best illustrated in terms of environmental externalities. Over the last decade, there has been a considerable tightening of the environmental standards applying to wastewater discharges and to raw (bulk) water extraction. The Hunter Water Corporation, for example, has incurred higher operating costs for the new wastewater treatment facilities to meet new Environmental Protection Authority standards. The older wastewater treatment plants were simple gravity-fed trickling filter processes with limited pumping (and energy use), aeration and chemical requirements. Modern wastewater plants require significant inputs of energy and chemicals and incur other costs such as those associated with transporting biosolids off-site for recycling and/or disposal. This illustrates how new regulatory and standard setting processes are addressing environmental externalities. These processes have the effect of "internalising" externalities with the cost now borne by utilities and their customers through the pricing of water and sewer services.

Sydney Water Corporation and Hunter Water Corporation's current price path ends in 2003 when the Tribunal will again consider quantifiable costs, including externalities in determining a new price path.

As noted earlier, the New South Wales 2002 NCP annual report states that the Department of Land and Water Conservation and the Independent Pricing and Regulatory Tribunal are in agreement that there is no urgent need to update the nonmetropolitan urban guidelines or business planning documents, as the general pricing principles continue to apply to

nonmetropolitan urban water activities. The strategic business planning guidelines require utilities to identify their existing and proposed levels of service and to prepare a 30-year financial plan to demonstrate the long term sustainability of their business. The capital works program input into the utility's financial plan needs to be based on the utility's best assessment of required new capital works and renewal of existing infrastructure. A clear requirement is that they take account of any new environmental or regulatory requirements, including the requirements of the Water Management Act. The strategic business plan is the utility's principal planning document for water supply and sewerage and needs to be updated after three years. New South Wales argues that these updates would reflect changed environmental requirements in catchment and water management plans.

Full cost recovery: tax equivalent regimes

Progress report: Report on developments to implement tax equivalent regimes for metropolitan service providers

Next full assessment: The Council will assess urban pricing reform in 2003.

Reference: Water reform agreements, clause 3(a)(i); Expert Group report on tax equivalent regimes

Background and New South Wales progress

For the 1999 NCP assessment, the Council found that neither Gosford nor Wyong councils made provision for tax equivalent regime payments as recommended by the CoAG pricing guidelines. In the 2001 NCP assessment, the Council raised a concern that no further progress had been made on this issue. Further, very few nonmetropolitan urban providers pay tax equivalents.

New South Wales has advised that statutory requirements for ringfencing currently prevent the direct implementation of tax equivalent regimes and shareholder dividend payment regimes by local government water services. New South Wales has not provided the Council with any information on how it intends to meet the CoAG requirement that taxes or tax equivalents are included in water prices.

Cross-subsidies

Progress report: Progress in implementing reforms and identifying and reporting cross–subsidies

Next full assessment: The Council will assess urban pricing reform in 2003.

Reference: Water reform agreement, clause 3(a)(i).

Background

For the 2001 NCP assessment, New South Wales reported considerable progress in eliminating cross-subsidies in metropolitan service provision.

Sydney Water Corporation's remaining nonresidential property value based charges are being phased out, with only $12 million in revenue from these charges estimated to remain by 2003. Developer charges were used to recover the full costs of providing water and sewerage infrastructure to new development areas. These charges had reduced the scope for cross-subsidies in relation to new developments.

Both Sydney Water Corporation and Hunter Water Corporation had location-specific developer charges, which aimed to address locational cross-subsidies. Hunter Water Corporation had also introduced a location-based water usage charge for customers with usage exceeding 50 000 kilolitres per year.

For nonmetropolitan urban water service providers the Independent Pricing and Regulatory Tribunal guidelines note that property based charges and free water allowances provide the greatest potential for cross-subsidies. Therefore, the Council noted that in future assessments it would look for continued progress with removing property based values and free water allowances from service charges. Alternatively, evidence would need to be provided that these allowances and values do not lead to nontransparent cross-subsidies.

The 1996 nonmetropolitan urban guidelines, however, do not provide detail on identifying and reporting cross-subsidies. The Council noted that expanding these guidelines might be one way to address this issue for the nonmetropolitan urban sector.

New South Wales progress

For the 2003 NCP assessment, the Council will be looking for information on the mechanisms nonmetropolitan urbans are using to identify and transparently report cross-subsidies.

New South Wales has advised that almost all local government water services have conducted water service reviews over the past six years. These reviews have incorporated elements of strategic business planning, pricing reform, performance, service quality and the use of cross-subsidies. These reviews have generally led to the identification of full cost recovery pricing strategies, the adoption of full usage pricing and the elimination of cross-subsidies, where cost effective. The reviews do not seem to address the reporting of remaining cross-subsidies.

New South Wales has advised that the Department of Land and Water Conservation and the Independent Pricing and Regulatory Tribunal are in agreement that there is no urgent need to update the pricing guidelines or business planning documents. However, the best practice water supply,

sewerage and trade waste pricing guidelines are now being finalised by the Department of Land and Water Conservation, and these will include provision relating to the identification and disclosure of any remaining cross-subsidies.

Institutional reform: structural separation

Progress report: Progress to ensure that decision making in State Water is sufficiently separate from decision making on regulatory issues.

Next full assessment: The Council will next formally assess institutional reform in the 2003 assessment.

Reference: Water reform agreements, clause 6

Background

The Council's 2001 NCP assessment raised concerns about the level of separation between the Department of Land and Water Conservation and State Water. While New South Wales has argued that State Water's operating authority, statement of corporate intent and access authority would improve the level of separation and transparency these documents were still being finalised and, therefore, the Council could not consider them as part of the 2001 assessment.

The Council recognised that New South Wales had improved the level of information that was available to the Independent Pricing and Regulatory Tribunal as part of the most recent pricing review. However, changes were necessary not only to maintain the integrity of independent prices oversight but also to assist in the separation between the Department and State Water on natural resource management and regulation. While State Water is within a division of the Department the mechanisms that provide for separation need to be highly transparent and accountable to avoid real and perceived conflicts of interest. The approach outlined by New South Wales may assist the Independent Pricing and Regulatory Tribunal in undertaking its pricing review, however, it does not assist in dealing with broader structural reform issues that have been raised by the Council. A key concern is that much of the information appears to remain confidential between State Water, the Department of Land and Water Conservation and the Independent Pricing and Regulatory Tribunal.

The 2001 NCP assessment concluded that in order to meet its reform commitments, New South Wales will need to demonstrate to the Council that decision making in State Water is sufficiently separate from decision making on regulatory issue so as to avoid conflicts between regulation and service provision.

New South Wales progress

A minor restructuring of the Department of Land and Water Conservation has taken place. In its submission New South Wales argued that:

> *'Transparency in the operations of State Water as a business unit within the Department of Land and Water Conservation has been pursued through separate accounting entities and reporting lines. Arrangements are to be formalised through formal operating instruments.*
>
> *The Minister for Land and Water Conservation has agreed to a review of the governance structure of State Water prior to finalising the proposed operating instruments.*
>
> *It is intended that the review will:*
>
> - *utilise an independent consultant;*
> - *be completed in mid 2002; and*
> - *be overseen by Deputy Director General, Mary Jacobson, who has a private consulting accountancy background.'*[18] (New South Wales Government 2002, p.3)

Submissions

The Council again received submissions that raise concerns about the level of structural separation between State Water and the Department of Land and Water Conservation.

The New South Wales Irrigators Council argues that there is a need for more detail in the separation of the commercial water delivery business of State Water from the regulatory role of the Department of Land and Water Conservation.

The World Wide Fund for Nature also states that it has concerns about the close relationship between the Department of Land and Water Conservation and State Water. It raises three issues. First, when agencies other than the department that incur environmental costs these costs are not invoiced to State Water. Second, the relationship can lead to a reluctance to undertake expenditure that may be needed to protect the environment. Third, responsibility for particular issues does not appear to be adequately

[18] The Council has been advised that since the submission was made, Deputy Director General Jacobson has left the Department of Land and Water Conservation and alternative arrangements are being made to conduct the review. Progress has therefore been delayed.

demarcated and as a consequence neither State Water nor the Department of Land and Water Conservation is taking responsibility for some important issues.

Progress report: Implementation of mechanisms to improve the transparency in setting service standards and water quality in NMU service provision.

Next full assessment: The Council will assess institutional reform in 2003.

Reference: Water reform agreement, clause 6

New South Wales progress

Because New South Wales has decided that independent regulation is not appropriate for smaller service providers, it is difficult to achieve full separation in this sector. As a result the Council is looking for transparency in standards and reporting to place pressure on local governments to improve their service standards and water quality. While there is an independent complaints mechanism, there is no requirement for a customer service charter or other mechanisms to inform customers of the obligations of their service provider or how they can make a complaint.

The New South Wales Government has noted that there is a water service regulation that sets out, in very broad terms, guidance and guidelines to move local councils to more customer responsive operations. Each year local governments are required to develop and publicly exhibit a management plan for their council's activities for at least the next three years, together with detailed budgets for the upcoming year. The management plan must include water service activities, objectives and performance targets, the means proposed to achieve objectives and targets and the processes by which the performance of the local government's water services will be evaluated.

However, the Council has not been provided with any further detail on these management plans. Consequently, the Council is not in a position at this stage to report on whether these management plans provide a suitable mechanism to set service standards transparently, inform customers of those standards and how they can make complaints.

Water trading

Progress report: Progress in resolving the limitation on trade out of regulated systems.

Next full assessment: The Council will assess intrastate trading arrangements in 2003, and interstate trading arrangements in 2004.

Reference: Water reform agreement, clause 5.

Background

In the 2001 NCP assessment, the Council found there are significant volumes of water transferred in New South Wales each year. The Water Management Act proposed to streamline the trading process and remove a number of key impediments. The Act was a clear improvement on the previous trading arrangements that contained a number of impediments to trade.

The Council identified some outstanding issues it would consider in the 2002 NCP assessment. It noted that as the new arrangements are progressively implemented, further assessments would be necessary to ensure New South Wales fully complies with NCP commitments. The 2002 NCP assessment would focus on property rights and their effect on trade, and the roll out of water sharing plans and the embodied trading rules. The Council would also look for progress in the resolution of the limitation on trade out of regulated systems.

Limitations on trade out of regulated systems

In the 2001 NCP assessment, the Council considered that the restrictions on trade out of irrigation districts was a key impediment to the expansion of water trading both within New South Wales and interstate. There should be minimal restrictions on the transfer of water. The Council notes that the CoAG water agreements place responsibility on New South Wales to remove impediments to trade. The reform framework, states:

> '*that constituents be given a greater degree of responsibility in the management of irrigation areas, for example, through operational responsibility being devolved to local bodies, subject to appropriate regulatory frameworks being established.*' (clause 6(g))

While the Council supports the devolution of irrigation management, appropriate regulatory controls should be kept to ensure irrigation areas function effectively. This should include the ability to require change within the irrigation schemes where necessary to avoid market failure. New South Wales argues that there does not appear to be any firm evidence that the current arrangements are in fact restricting trade. Trades in and out of the corporations have occurred although no empirical data has been provided by New South Wales for this progress report. These corporations are privatised entities, whose articles of association are determined internally. New South Wales is not considering any moves to force such entities to remove any

aspects of their articles of association which might be deemed potentially restrictive.

Roll out of water sharing plans

The 2001 NCP assessment recognised that further development of trading arrangements would occur once the water sharing plans were finalised. Uncertainty over the changes necessary to develop and then implement these plans will continue to be an impediment to trade until they are implemented.

New South Wales progress

Limitations on trade out of regulated systems

In the 2001 NCP annual report, New South Wales noted that:

> '*With one exception, restrictions on trade in New South Wales are in place to deal with water delivery issues, environmental issues and/or potential adverse impacts upon other water users.*' (NCC 2001d, p. 104)

The exception in question is the prohibition on trade out of irrigation districts by the irrigation corporations. This restriction limits trade out of an irrigation district so there is no net loss of water. New South Wales also suggests that the Department of Land and Water Conservation has no powers to forcibly remove this restriction, but is working with the corporations to address the issue.

This restriction is in place due to concern that trade out of the district will result in:

- a negative impact upon local production;
- reduction in the rate base for local governments;
- corresponding regional decline; and
- the loss of economies of scale for irrigation infrastructure, with remaining members required to assume a greater proportion of the fixed costs.

New South Wales has advised that the privatisation of irrigation schemes was a New South Wales reform commitment. Shareholders were directly involved in determining the rules under which the corporations would operate. The shareholders decided that trades would be limited to those approved by the boards of corporations on behalf of the shareholders. There have been permanent trades both in and out of the irrigation areas.

At this stage, New South Wales does not intend to re-regulate these private corporations so as to remove restrictions on trading in the absence of

convincing empirical evidence that the benefits of such regulation to New South Wales would outweigh the costs to the corporations and their shareholders.

Roll out of water sharing plans

Thirty six out of the 39 draft water sharing plans have now been put out to public consultation. The Council was provided with a copy of policy advisory note no. 15 – *Water Transfers*. This note was provided to the water management committees to be used as the basis for their recommendations on water trading in the water sharing plans. All water sharing plans will have trading principles built into them based on the transfer principles advice provided to water management committees in finalising the plans.

Submission

The World Wide Fund for Nature (2002, submission 13) raised the following issues. Water sharing plans should consider the environmental impacts of trades. These should be monitored, based on good science, and enforced. The submission also argues that trading has ambiguous net environmental impacts and hence trade should be undertaken with regard to the precautionary principle.

Discussion

New South Wales timetable for the completion of the current round of water sharing plans will mean that their detail, including provisions that affect trading, will be locked into place by the end of 2002. As a result, if the Council left formal assessment of this issue until June 2003 it would be too late to deal with any issues that emerge. Consequently the Council considers that it is most appropriate to assess the trading components of water sharing plans at the same time it looks at the issues pertaining to property rights, water allocation and provisions for the environment. These issues will be considered in the 2002 supplementary assessment.

To aid all parties in the possible directions of the 2002 supplementary assessment, the Council believes it is useful to point out where a number of plans may evolve in a way that might not comply with CoAG commitments. The Council notes that the plans have not been finalised and that the New South Wales Government is working with committees to address these issues. The Council has limited its comments to those aspects of plans that are considered to be problematic.

Many of the draft water sharing plans are not consistent with the transfer principles. The Council notes, for example, that the draft Lower Murray plan currently states that no permanent interstate trade of entitlements should occur without an equal trade from another State having already occurred.

There are also some significant trading impediments in the Lachlan draft sharing plan. The Department of Land and Water Conservation will need to negotiate with the Committees to resolve these differences.

Other issues raised by submissions

Integrated Catchment Management

The New South Wales Irrigators Council (2002, submission 12) raised a number of concerns with regard to integrated catchment management in New South Wales. It is argued that the proposed Catchment Management Amendments Bill may impact on the statutory requirements for the community process for the water sharing plans, and on integrated catchment management at a catchment level. Catchment management plans, it was claimed, will specify targets and objectives that are likely to become statutory and enforceable documents. The Irrigators Council is also uncertain about the relationship between catchment blueprint plans and the water sharing plans. The provisions in the national action plan for salinity and water quality call for an improved governance framework in the long-term including property rights and compensation to assist adjustment where property rights are lost in developing catchment plans. The submission argues the current New South Wales catchment management plans are not fully costed to deliver compensation where appropriate.

The World Wide Fund for Nature (2002, submission 13) also raised concerns with regard to the implementation of integrated catchment management plans. There are enormous differences in the scope and adequacy of catchment management plans across Australia. All jurisdictions should provide clear pathways to enable catchment planning to progress from a patchy knowledge base to targeted and effective management activities.

Council Comment

New South Wales has advised that there is no intention for the targets contained in catchment management plans to become statutory and enforceable. As the plans will not be statutory, the issue of compensation is not relevant. Further, the relationship between the catchment blueprint plans and the water sharing plans will be addressed in the Catchment Management Bill. The Council will be assessing the progress of devolution of irrigation scheme management across all jurisdictions in the 2003 NCP assessment in accordance with the timetable for assessments set by the Senior Officials 2001 agreement.

Devolution of irrigation scheme management

The World Wide Fund for Nature (2002, submission 13) argued the appropriate regulatory frameworks to ensure devolution meets environment

needs is not in place. The transitional arrangements for licences under the Water Management Act, it was claimed, will not be in place before 1 July 2004 and the Council may have insufficient time to assess this issue for the 2005 NCP assessment. In the interim, bulk licences for irrigation areas are exempt under the Act for environmental assessment under the *Environment Planning and Assessment Act 1979* and individual licences will not be reviewed until 2003.

Further, it is argued that the land and water management planning process is inadequate and produces marginal overall environment outcomes from bulk water licences for irrigation management areas. Land and water management plans are voluntary and focus on lowest common denominator targets that are inadequate to meet environmental objectives for these areas. The World Wide Fund for Nature would be concerned if the new water use approvals under the Water Management Act duplicate the standards contained in the land and water management planning process.

Council Comment

New South Wales has advised that land and water management plans are statutory and these plans have resulted in significant improvements. The Council notes that irrigation corporations will be subject to the environmental provisions of the Water Management Act to the same extent all other licence and approval holders. It will be assessing the progress of devolution of irrigation scheme management across all jurisdictions in the 2003 NCP assessment in accordance with the timetable for assessments set by the Senior Officials 2001 agreement.

Attachment 1: Free water allowances – local government councils, 2001-02

Local government council	*Free water allowance (kilolitres)*
Large councils (> $2 million in revenue)	
Tweed	250
Bathurst	45
Kempsey	200
Orange	305
Parkes	364
Griffith	634
Medium councils (between $1-2 million)	
Young	265
Deniliquin	1000
Wellington	548
Gunnedah	440
Cobar	550
Berrigan	250
Parry	350
Corowa	700
Yass	375
Cootamundra	219
Forbes	1300
Coonabarabran	683
Glen Innes	230
Murray	250
Wentworth	250
Harden	300
Yarrowlumla	280
Small (< $1 million revenue, > 1000 Connections)	
Wakool	300
Hume	400
Bogan	700
Quirindi	500
Manilla	400
Tumbarumba	500
Parry	350
Cabonne	500
Carrathool	500
Dungog	230

Gloucester	350
Coonamble	775
Crookwell	300
Rylstone	370
Barraba	300
Hay	300
13 other small councils with under 1000 connections have an allowance	

Source: New South Wales Government (2002, unpublished)

Attachment 2: 2002 Water sharing plans

DLWC Region	Water Management Area	Name of Committee	Name of Water Sharing Plan
North Coast	Northern Rivers	Northern Rivers WMC	Coopers Creek
			Upper Brunswick River
			Alstonville Aquifer
	Upper North Coast	Upper North Coast WMC	Dorrigo Plateau including Dorrigo Basalt Aquifer
			Orara River
	Mid North Coast	Mid North Coast WMC	Apsley River
			Commissioners Waters
			Torumbee Creek
			Stuart's Point Aquifer
Hunter	Lower North Coast	Lower North Coast WMC	Karuah River
	Hunter	Hunter RMC	Hunter River including Patterson River
			Wybong River
		Tomago-Tomaree GMC	Tomago-Tomaree-Stockton Aquifer
	Central Coast	Central Coast Unregulated RMC	Jilliby Jilliby Creek
			Ourimbah Creek
		Kulnura/Mangrove Mt GMC	Mangrove Mountain Aquifer
Sydney Sth Coast	Southern	Shoalhaven/Illawarra WMC	Kangaroo River
	South East	South Coast WMC	Wandella Creek
Barwon	Border Rivers	Border Rivers Unreg R & G MC	Tenterfield Creek, Tenterfield
	Gwydir	Gwydir (Reg) RMC	Gwydir River
		Gwydir Unregulated RMC	Upper & Lower Horton River, and Cobbodah & Rocky Creeks
		Gwydir GMC	Gwydir Aquifer
	Namoi	Namoi Reg RMC	Namoi River
		Namoi Unreg RMC	Mooki River and Phillips, Quirindi & Warrah Creeks
		Namoi GMC	Upper and Lower Namoi Aquifers
	Border Riv's, Central West, Gwyder, Namoi Western	Great Artesian Basin GMC	Great Artesian Basin
Central West	Central West	Macquarie RMC	Macquarie-Cudgegong Rivers
		Central West Unreg Streams MC	Castlereagh above Binnaway
		Macquarie GMC	Lower Macquarie Aquifer
	Lachlan	Lachlan RMC	Lachlan River
		Lachlan Unreg RMC	Mandagery Creek
		Lachlan GMC	Lower Lachlan Aquifer
M'bidgee	Murrumbidgee	Murrumbidgee Reg RMC	Murrumbidgee River
		M'bidgee Unreg Streams MC	Adelong Creek
			Tarcutta Creek
		M'bidgee GMC	Lower Murrumbidgee Aquifer
Murray	Murray	Murray Unreg RMC	Upper Billabong Creek
		Murray GMC	Lower Murray Aquifer
	Murray, Lower Murray-Darling	Murray Lower Darling Community Reference C'tee	Murray River (NSW section including the lower Darling)

Source: New South Wales Government (2002, unpublished)

Attachment 3: Water Policy Advisory Notes

Regulated rivers

Managing diversion limits in regulated rivers

Committees are instructed to set an average annual diversion limit as part of the bulk access regime of a water sharing plan. The diversion limit must not exceed the Murray–Darling Basin Ministerial Cap on diversions.[19] Any growth above the diversion limit will undermine the plan's environmental objectives.

Plans are to contain a trigger (maximum up to 3 per cent of the plan limit) at which a management response to limit diversions will occur. In inland systems, the growth in diversions should also not exceed half the difference between the plan limit and the Murray–Darling Basin Cap limit. If, for three consecutive years, the yearly assessment exceeds the plan diversion limit but does not exceed the 3 per cent trigger, then this will also invoke a management response.

Plans must contain a strategy for reducing diversions if they grow beyond the plan diversion limit during the life of a plan. The first management response when the diversion trigger is exceeded is to reduce the maximum annual volume of supplementary water available for extraction. If further reductions in water availability are required, these should be achieved through reductions in regulated river (general security) licences. Concurrent reductions in water available to high security licences may also form part of the response as long as the reductions are at a lower rate than those applied to general security licences, and the reduction considers the ability of high security licence holders to adapt to reductions. No reductions are to be applied to holders of stock and domestic licences, major utility access licences or local water utility licences.

Supplementary water access

Supplementary water may be available during wet periods or times of low water demand. The Water Management Act requires that access to supplementary water be licensed and these licences have the lowest water access priority. Plans must specify the rules that govern supplementary water licensing and use, and the future basis for distribution of such allocations for

[19] Water sharing plans set two diversion limits. A *water sharing plan limit* is the long-term average water diversion based on the level of water use development in a water sharing plan (including environmental rules, water sharing and management rules). The *Cap* is the long-term average water diversion based on the 1993-94 development and management as per the Murray–Darling Basin Agreement.

new licences to be issued. Supplementary water entitlements may be distributed to normal security entitlement holders on a history of use basis or in proportion to normal security entitlement volumes, or a combination of both. The Act (s.87) excludes holders of supplementary water access licences from compensation for reductions to water allocations arising from variations of a plan. Supplementary water access may only be granted after all environmental flow requirements (specified in a plan) and all high priority right holders demands have been met. Plans should, wherever possible, specify the thresholds that must be satisfied before access to supplementary water can be permitted, the basis to calculate available volumes, and rules to allow the sharing of the water.

All supplementary water access licences in the Murray–Darling Basin should be specified by volume to set the maximum volume licence holders may take each year. For coastal systems, where the diversion limit significantly exceeds current diversion limits, supplementary water access licences may be specified as shares of available water rather than annual volumes. General access to supplementary water during years of low allocation in the Murrumbidgee and Murray and coastal systems should be specified as a component of a normal security licence and not as a supplementary water licence entitlement.

Floodplain harvesting

Floodplain harvesting reduces the amount of water reaching or returning to rivers impacting on the environment and downstream users. The New South Wales Government intends the taking of water from floodplains to be licensed and managed over the next couple of years. Plans must signal the basic principles to govern the process and specify that floodplain harvesting in their area is not subject to the provisions of the plan (and is not included in the diversion limit). The plans will note, however, that the harvesting of floodplain water will be managed on the basis of the following principles. All floodplain harvesting works and extractions will be licensed and a separate category of licence established. Licensing will initially focus on controlling the structure, but will move toward specifying volume limits and access rules including metering. No new works in the Murray–Darling Basin that result in diversion of additional water will be authorised. Floodplain diversion structures in place in the Basin before the 1994 irrigation season are considered to be part of the Cap on diversions. Once licensing is complete, an assessment of long-term use from current structures against those that existed in 1994 will be carried out to keep harvesting within cap levels. Floodplain harvesting rights will not be tradeable.

High security water

High security licence holders receive their full allocation in all but severe drought periods. The Act gives high security access licences priority over general security and supplementary water licences, but a lower priority than local water utilities, major utilities and stock and domestic licences. If water

allocations are to be reduced, high security licences are to be reduced at a lesser rate than the water allocations of lower priority licences. Plans are to contain rules that will govern the granting of new access licences and the allocation of water to these licences. Table 2.5 shows a comparison of high security licences to all other licences in the regulated systems. Plans may also cover the operation of water accounts for the area.

Table 2.5: Comparison of high security to other licence categories

Regulated system	*High Security irrigation licences (megalitres)*	*General Security licences (megalitres)*	*Ratio of High Security licences to General Security licences (per cent)*	*Licences in the highest priority categories* (megalitres)*
Border	1 200	267 000	0.4	1 700
Gwydir	15 000	505 000	3.0	3 600
Namoi	3 500	256 000	1.4	4 400
Peel	800	31 000	2.6	16 500
Macquarie	17 500	633 000	2.8	23 000
Lachlan	27 000	594 000	4.5	31 000
Belubula	7 400	19 000	38.9	200
Murrumbidgee	279 000	2 416 000	11.5	79 000
Murray	151 000	1 954 000	7.7	51 000
Lower Darling	7 400	30 000	24.7	10 700
Hunter	26 000	128 000	16.8	48 500
Paterson	190	9 400	2.0	100
Bega	170	13 900	1.2	760

* Includes local water utility, major utility, stock and domestic licences

Source: New South Wales Government (2001b)

High security licences receive very high levels of supply reliability although the rules and the reliability vary from system to system. In all cases the rules mean the risk of less than full allocation to high security licence holders is small (from less than 1 per cent in most systems to a few percent during drought years). Plans should set rules with reference to the following principles.

- All high security licences should receive a volume commensurate with their high security volume status after basic entitlements have been met.

- The water supplied to high security licences should be set to maintain a repeat of the most severe drought on record to ensure the survival of dependent businesses are not put at risk.

- Plans should only provide for reductions in allocations to high security licences during drought where this will provide a significant benefit to general security allocation reliability. In table 2.5 in the systems where the ratio of high security to general security is low, it is unlikely that reductions in allocations to high security licences during drought would significantly improve the overall reliability of general security allocations.

- Reductions should only occur when the volume of water available to general security licence holders is at unusually low levels. The rules applying to reductions should ensure the frequency and degree of reduction does not significantly depart from existing water allocation arrangements or exceed levels that significantly affect the long-term viability and financial security of high security licensees. The advice suggests that reductions to high security allocations should not occur more frequently than one in ten years and that the maximum level of reduction should not exceed 25 per cent and not occur until general security allocation ceases.

- High security licence holders should not be permitted to carryover unused allocations between seasons unless there is a strong likelihood water will be inefficiently managed if the carryover is not allowed.

- Wherever extraction components are specified on access licences, the rules concerning initial distribution of rights must ensure that high security licences receive extraction rights to satisfy peak demands for water.

- Conversions from general security to high security[20] should be permitted in all regulated systems and plans should provide conversion rates set to protect the long-term reliability of supply to other licence holders.

Unregulated rivers

Managing diversion limits in inland unregulated rivers

Licences on the unregulated rivers have been converted to a volumetric basis, and meters will be progressively installed to measure use.[21] Cap levels and monitoring of diversions against a cap can be applied on unregulated rivers.

The unregulated rivers cap will be managed as a diversion management unit and each unit will have a diversion limit. The cap on the unregulated rivers of the Murray–Darling Basin will be established on a volume basis determined and managed for each defined diversion management unit.

Licence holders are allowed to divert up to twice the licensed annual entitlements in any one year (subject to announced annual allocations), provided the combined total of the licensed entitlement is not exceeded over 3 years. At the end of each year, the cap diversion limit will be compared

[20] Conversions from general to high security entitlements gives licence holders an ability to adjust the supply reliability of all or part of a licence to match business needs. The conversion involves a loss of a portion of entitlement volume in return for an increase in supply reliability.

[21] New South Wales expects most pumps in the Murray–Darling Basin to be metered by mid 2004.

against the average diversions over that year and the preceding two years. A response to exceeding the cap will be triggered when the diversions over the 3 year audit period exceed the cap diversion limit by 5 per cent or greater. The response to any growth in diversions above the cap diversion limit will be by way of announced restrictions to the licensed annual entitlement.

The process of adjustment to be applied to deal with any increase in diversions above the diversion limit must be set out in plans according to the following formula to derive a percentage:

$$\textbf{Adjustment} = 1 - \left(\frac{\textbf{cap diversion limit}}{\textbf{Actual average diversions}}\right)$$

For example, the total licensed entitlements in a system is 25 gigalitres and the cap diversion limit is 20 gigalitres. If the 3 year average diversion is 22 gigalitres, the growth is 2 gigalitres, which exceeds the 5 per cent trigger. The percentage adjustment in annual allocations would be calculated as:

1-(20/22) = 9%.

The Department of Land and Water Conservation would advise relevant licence holders that only 91 per cent of licensed annual entitlements will be available for the subsequent 3 years. After the adjustment has been made, there will be no audit or further adjustment for 3 years to allow water users to adjust and reduce water use.

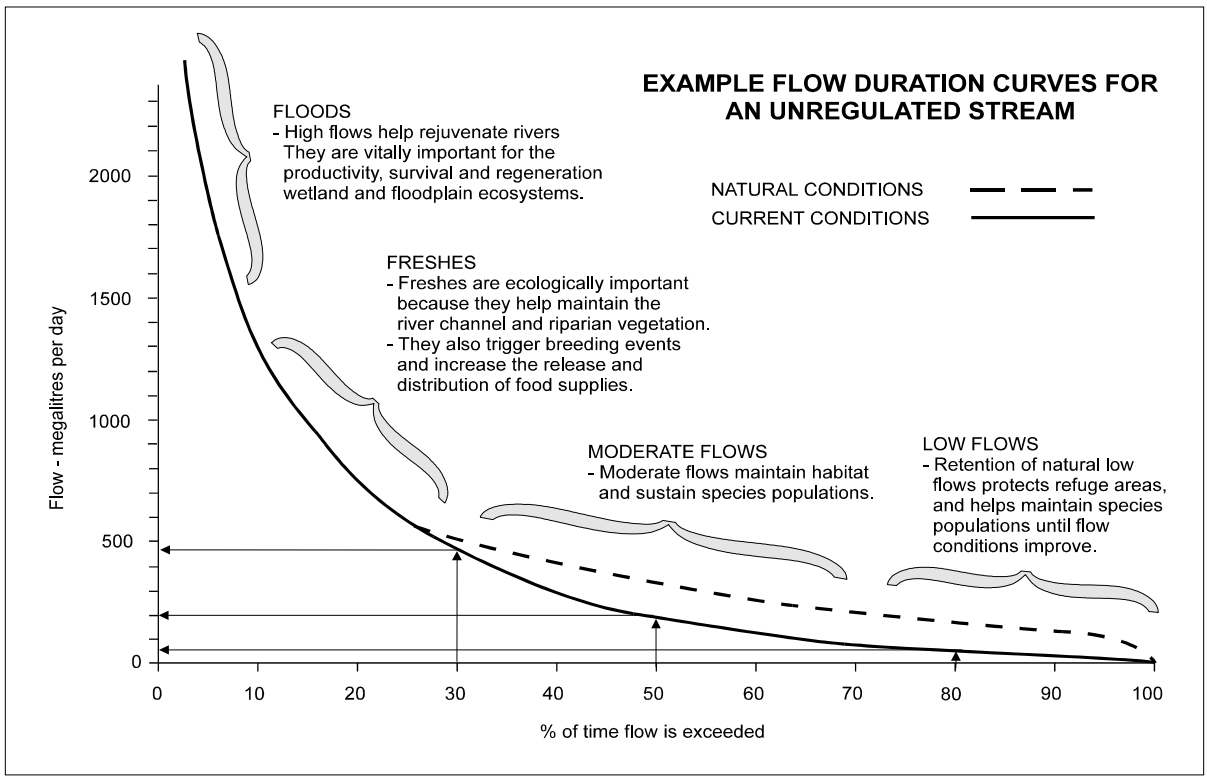
Water extraction volumes and daily flow shares

The yearly diversion entitlement does not fully define users' access to water, nor can it provide sufficient protection for water needed to maintain the health of rivers. Daily extraction limits are also to be set in plans. These limits will set aside a proportion of flow for environmental purposes. Licence holders will not be able to pump until a minimum flow level is reached. Plans will specify shares of all flows above this level.

Water extraction volumes provide a basis for determining a user's extraction rights. The Department of Land and Water Conservation sets when and how much an individual will be allowed to extract from a river. Water users can then better plan their extraction patterns and schedules around the likely volumes of water available at critical times. These extraction volumes will be converted into licence conditions advising water users of the minimum river flow at which they can pump, and the maximum rate of extraction.

The daily flow share procedure takes into consideration important features of the flow regime which play a critical role in the ecological functioning and condition of a regulated river (including high flow events, small flow pulses and low flow periods). New South Wales has standard flow classes across subcatchments to simplify management and operation of the water market. To determine and implement extraction volumes, water sharing plans should divide flows into four sections as shown in figure 2.1.

Figure 2.1: New South Wales unregulated flow classes



Source: New South Wales Government (2001b)

- Very low flows are the lowest flow levels. Water is to be set aside for environmental requirements (see provision for water for the environment section), plus an allowance for basic stock and domestic rights. There is to be no extraction by access licences.

- A class flows are low flows between the 'commence to pump' threshold and the 80th flow percentile.[22] This class would only exist in the permanently flowing streams.

- B class flows are low to moderate flows between the 80th percentile and 50th percentile. This class may not exist in the more ephemeral streams.

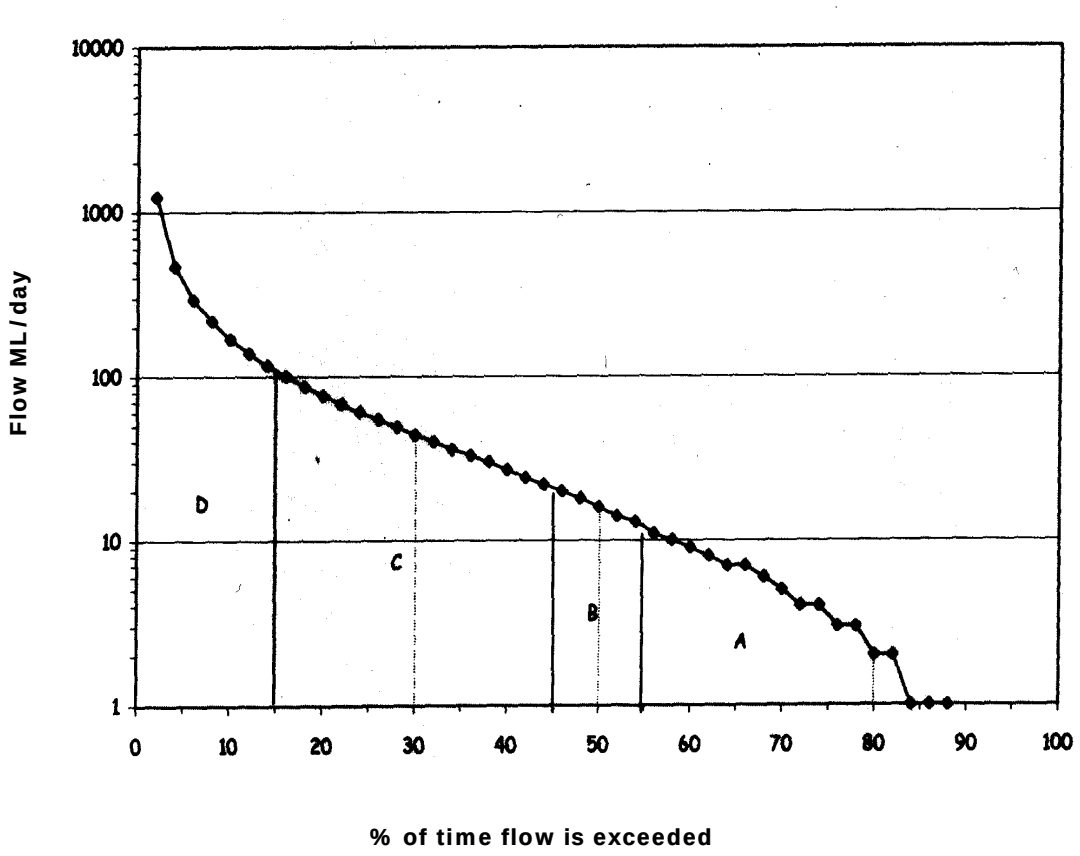
- C class flows are moderate to high flows, freshes and floods above the 50th percentile, and may be further subdivided if water demands are high.

In setting the flow ranges for the A, B, and C classes, a flow duration curve for a whole year, or a month where demand most exceeds water available, can be used. The curve as shown in figure 2.2 below should be set on the most critical time for water sharing. In river systems where there is virtually no water available in the dry season and most extraction occurs in the wetter periods, the full year curve is recommended for more rational sharing of flows

[22] When considering flows, it can be convenient to refer to the level of stream flow in terms of the percentage of time in which that flow is exceeded. Thus the 80th percentile flow is a low level of flow that occurs only 20 per cent of the time and which is exceeded 80 per cent of the time.

in wetter periods. In river systems where extraction is focussed on a few months, a critical month curve is recommended.

Figure 2.2: Flow duration curve for the end of system



Within each flow class, there is a need to establish the point at which the daily flow volumes are to be distributed to licence holders by sharing access to flows if and when they occur. As reported in the 2001 NCP assessment, New South Wales has recommended the following flow sharing indices:

Class	*Recommended flow sharing index*
A	80th percentile
B	50th percentile
C	30th percentile

Water sharing plans must determine peak daily demand for current and full development of licences. Current development peak daily demand is used in determining bulk extraction volumes. Full development peak daily demand may be used to distribute bulk extraction volumes to licences as daily flow shares.

The first stage of the process for setting flow extraction volumes is to decide on the amount of flow in each class that can be extracted without threatening river health or reducing access to existing users below reasonable levels. Bulk extraction volumes must then establish the amount of water that can be

extracted each day from each flow class by users in a subcatchment. These limits ensure an appropriate level of protection for the environment, basic right requirements, end of system flows and downstream water supplies, and are critical to determining whether water transfers can be made.

The starting point for determining bulk extraction volumes is current peak daily demand less 10 per cent (up to a maximum of 60 per cent of the flow sharing index). Bulk extraction volumes should be set to consider environmental and extractive requirements and these volumes should generally range from 0–30 per cent of the flow sharing index. The exception is where demands are already very high in the flow class. Here, the volumes may be set at up to a maximum of 60 per cent of the index.[23]

Where the proposed bulk extraction volume is less than 30 per cent, and the subcatchment is not classed as high conservation value, volumes may be increased to up to 30 per cent to allow for full development of existing licences, transfers, and new licences consistent with the objectives of a plan. However, committees are not encouraged to recommend bulk extraction volumes beyond 30 per cent without clear demonstration of socioeconomic benefits and minimal impacts on river health. For subcatchments that are identified as high conservation value, the bulk extraction volumes should be set at a level to restrict future development of water use and protect conservation values. For subcatchments with no licences, bulk extraction volumes may be set at zero.

The implementation of rostering can minimise the impacts of reductions of daily flow access to water users. The New South Wales Government also has water reform structural adjustment programs to assist licence holders. New South Wales expects it will take up to four years to fully implement daily flow sharing, which will allow time for rostering and other measures to be initiated.

The amount of the bulk extraction volume to be issued to individual licences as daily flow shares depends on a comparison of the full development peak daily demand and the bulk extraction volume in each class:

- Where the full development peak daily demand equals or is less than the bulk extraction volume in a class, the demand can be met, and this volume can be allocated to all licences. In unstressed subcatchments, this is likely in all flow classes. In stressed subcatchments, full peak demand will probably only be met in C class.

[23] New South Wales derived these targets from a 1998 stressed rivers assessment which found that most unregulated subcatchments extract less than 30 per cent of flow. Relatively few extract 30–60 per cent of low flows. In the remaining subcatchments, over 60 per cent of low flows are extracted in peak extraction months resulting in environmental stress and hence the extraction of more than 60 per cent of low flow is unsustainable.

- Where the full development peak daily demand is greater than the bulk extraction volume in a flow class, the full development peak daily demand cannot be met in that flow class, and the bulk extraction volume only will be allocated to licences.

Implementation programs will phase in daily flow shares over a number of year as follows:

Year 1	Issue daily flow shares
	Communicate with water users over new arrangements
	Implement metering
	Install and/or upgrade gauges
Year 2	In consultation with water users, commence daily flow sharing on a trial basis and set up water accounts.
Year 3	Formal compliance with daily flow sharing.

All licences in a subcatchment will initially be 'group registered' with respect to daily flow sharing. That is, the daily flow extraction by all licences in the group will be assessed as a whole against the combined daily flow shares. Licence holders can take more than their individual daily flow share on a particular day provided the group as a whole is within the combined daily flow limit. Rostering arrangements can be used to achieve this. Licence holders will have the option of opting out of group registration at any time.

Diversion limits for coastal unregulated rivers

Some 31 per cent of coastal subcatchments are classified as high stress based on irrigation demands on low flows, meaning extractions are impacting on the health of the river. A further 15 per cent of catchments are classified as high conservation areas. Diversion limits will be applied to diversion management units of one or more subcatchments (usually major river valleys).

Pending better information, diversion limits in coastal systems that are already subject to a licence embargo should be set at the total annual licensed volumetric entitlement for all licence holders. In other words, growth in use up to the total of all annual licensed entitlements will be allowed. In unembargoed systems, the limit will be the target level at which an embargo would be put in place. Where assessment indicates full development of all current entitlements would threaten the environment, a diversion limit lower than the sum of licensed entitlements may be determined.

Groundwater

Groundwater quantity management

Total use of groundwater in a water source or zone is to be managed within the sustainable yield,[24] to ensure water availability for future generations and dependent ecosystems. Water sharing plans must identify and protect significant groundwater-dependent ecosystems (see section on provision for the environment) and recommend an environmental proportion. Where current use is above sustainable yield, the plan must specify the mechanism for reducing overuse to the sustainable yield level by the end of the plan.

The total volume of water specified on licences (entitlements) is to be reduced to no more than 125 per cent of the sustainable yield. Where adjustment of entitlements is required, all current licences excluding town and stock and domestic purposes, will be adjusted proportionally. Committees have been advised to take action sooner in the adjustment period to enable licence holders to have a clear understanding of their long-term extractable rights, and to allow transparent operation of the groundwater transfer market.

The key overall aim of a water sharing plan is to achieve a reduction in licensed entitlements closer to sustainable yield and to reduce overall water use to sustainable yield levels over the ten year planning period. The actual pattern of phase in of reductions should be recommended by each committee on a system-by-system basis. Groundwater access will be managed in a way that does not cause unacceptable local impacts. Artificial recharge of groundwater will be strictly controlled.

Access to groundwater will be managed according to established priority of use after environmental water is provided. The Statewide priority is for landholders to receive basic rights, including stock and domestic requirements first followed by local water utilities, major water utilities, and all other irrigation and industry needs.

All rights (excluding basic rights) to access and extract groundwater must be licensed and metered. In systems that are not subject to a licence embargo or Ministerial order, access licences will be issued on the basis of demonstrated need within the sustainable yield. Access licence holders have resource stewardship obligations and are required to abide by the conditions of licences. Approvals must be obtained before any access licence can be activated at a particular location. All activities or works accessing an aquifer will need an aquifer interference approval.

[24] 'Sustainable yield' is the long-term average amount of groundwater available for extraction without compromising the integrity of the aquifer or the surface ecosystems that is supports. It is measured as the estimated long-term average yearly 'natural recharge' to the aquifer, less a portion set aside for the environment (see provision for the environment).

The environment

Groundwater-dependent ecosystems

In preparing plans, committees will recommend a bulk environmental water provision (a proportion of recharge reserved for the environment), including water level or other management rules to minimise local impacts on dependent ecosystems. The size of the environmental provision will vary according to the characteristics and dynamics of each system and the significance of any groundwater-dependent ecosystems. It may vary from:

- a very small proportion where the aquifer is deep and has little connection to the surface; or
- a significant proportion where the connection is strong; and/or
- high conservation value dependent-ecosystems relying on the aquifer.

Local rules for protecting groundwater-dependent ecosystems may include limiting (or excluding) extractions in buffer zones around dependent ecosystems. Maximum limits for water drawn down from specified distances from a dependent ecosystem may be set including minimum distances from connecting rivers, creeks or other dependent ecosystem where a bore is sited.

The Department of Land and Water Conservation will assist committees in identifying and describing groundwater-dependent ecosystems, including their location and dependency and will draft model provisions to assist committees in developing recommendations. The department will also provide committees with estimates of the average annual recharge and an analysis of current groundwater rules and their effectiveness, and recommend where changes may be of most benefit. The committee will also be supplied with estimates of the impact of proposed water sharing rules incorporating ecosystem protection. The social and economic costs of the recommended water sharing rules will also need to be considered by the committee.

The following principles are to be applied in the management of groundwater-dependent ecosystems in New South Wales.

- Groundwater-dependent ecosystems can have important values for water users, ecosystem managers, scientists and the wider community by protecting biodiversity and cultural heritage. Values should be identified and action taken to ensure ecosystems are protected.
- Groundwater extractions should be managed within the sustainable yield of aquifer systems, so ecological processes and biodiversity of dependent ecosystems are maintained and/or restored. This will involve consideration of threshold levels that are critical for ecosystem health.
- Priority should be given to ensuring sufficient groundwater of suitable quality is available at the times when it is needed.

- Where scientific knowledge is lacking, the precautionary principle should be applied to protect groundwater-dependent ecosystems. The development of adaptive management systems and research to improve understanding of these ecosystems is essential for management purposes.

- Planning, approval and management of development and land use activities should aim to minimise adverse impacts on groundwater systems.

Freshwater flows to estuaries and coastal waters

Water management committees must consider how water is to be provided to protect and meet the environmental needs of estuarine and coastal ecosystems. This will include the importance of freshwater inflow to estuaries and coastal waters, their conservation status, and extraction of water from tidal pools. The need for a limit on extraction from tidal pools should be considered. Conditions may be attached to licenses to protect the functions and integrity of riparian, aquatic and marine ecosystems. Consideration may be given to linking extraction conditions to access conditions applying to rivers until the relationship between freshwater inflow and estuary and coastal functioning is better understood. Opportunities for rehabilitation of estuarine wetlands should be considered by committees before allowing extraction from tidal pools such as management of tidal barrages/floodgates for improved water quality and fish passage. The following principles should apply to managing provisions for flows to estuaries.

- Coastal catchments must be considered and managed as whole systems that extend from the upper catchment down to the offshore waters.

- Water management decisions should recognise that freshwater inflows are essential for the maintenance of estuarine and coastal ecosystems including areas with identified conservation values such as marine protected areas.

- River flows should be managed so that a sufficient share of the total freshwater in a catchment is protected as inflows to estuaries to maintain and protect the biophysical processes and biodiversity of estuarine and coastal ecosystems.

- All water extractions from tidal pools will be licensed and conditions of access carefully assessed and may include limits on diversions linked to river access rules.

- Where there is insufficient scientific knowledge, the precautionary principle should be applied to protect estuarine ecosystems. Adaptive management systems and research to improve understanding of the impacts of freshwater extraction on estuarine and coastal ecosystems is essential for their management.

Integrating water quality and river flow objectives

Committees need to be cognisant of the role that implementation of key river flow objectives can have in protecting the components of the natural flow regime which positively influence water quality. In this way, the protection and enhancement of water quality can be an outcome of water sharing plans.

Conservation of biodiversity and threatened species management

Threatened species legislation provides for threatened animal and plant populations and ecological communities to be listed according to their status. The *Threatened Species Conservation Act 1995* (administered by the National Parks and Wildlife Service) and *Fisheries Management Act 1994* (administered by New South Wales Fisheries) integrate threatened species management into the environmental planning and assessment process under the *Environmental Planning and Assessment Act 1979*.

Water sharing plans will play a key role in the recovery of threatened species that are directly or indirectly dependent on natural river flow regimes. Committees should provide approaches to conserving aquatic biodiversity within water sharing plans as outlined in the following principles.

- Biodiversity to be conserved through an approach that recognises the importance of ecosystems and ecological communities.

- The interim river flow objectives should be used as the basis for developing environmental flow rules that mimic the natural flow regime to which aquatic species have adapted. Any variations in water flow regimes/levels which are significantly outside the natural flow regime, or which occur at the wrong time of year, should be avoided.

- During the development of the bulk access regime and environmental flows, wildlife needs should be understood and the ecological flow requirements of listed threatened species (where known) considered and incorporated (or reasons provided in plans where this is unachievable).

- A precautionary approach should be adopted where there is a paucity of information on species flow requirements, distribution, ecological functions and threatening processes.

- Water sharing plans should be consistent with the objectives and recommendations of established species recovery plans and threat abatement plans.

- High (and other identified) conservation values should be identified and maintained, including areas which have special requirements for the survival of threatened species, populations or ecological communities.

- Socioeconomic assessments of water sharing plans should address potential impacts (positive and negative) on threatened species, populations, ecological communities and critical habitat conservation.

Committees must address the ecological flow requirements of threatened species (where known) including populations, ecological communities and their habitats (including critical habitat), during development of environmental flow rules in water sharing plan.

Incorporating results of the weir review into water sharing plans

Plans may incorporate the findings of the weir review program. The New South Wales Fisheries Department carried out an initial review of licensed weirs in 2001 for all catchments. The review included a desktop assessment, site inspections, and recommendations on the management options to reduce the environmental impacts of each structure. New South Wales Fisheries, in consultation with the State weir review committee, completed a report for each catchment on the outcomes of the initial assessment of licensed weirs. The results and recommendations should be reviewed by committees to determine whether the outcomes proposed have implications that could impact on components of a water sharing plan. The results of the initial weir assessments will be considered within the catchment management planning process and as a component of future water management planning under the Water Management Act. Committees will need to review the findings of the initial weir review for their management area and evaluate whether the findings have any water sharing plan implications, and if so, determine how to accommodate these in the plan.