4 Queensland

4.1 Best practice pricing

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

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

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

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

Cost recovery and consumption based pricing of rural water services

Assessment issue: Queensland is to demonstrate that government-owned irrigation schemes and government-owned suppliers of bulk water are setting prices based on the principles of full cost recovery and consumption based pricing. Government-owned water businesses must also show that they are managing any subsidies consistent with efficient and effective service provision and use. In October 2000, Queensland established five-year price paths aimed at ensuring most SunWater schemes achieve the lower bound of cost recovery by 2005-06. Queensland also asked SunWater to reduce its costs by 15 per cent by 2004. In the 2001 NCP assessment, the Council found that SunWater charges for rural water services used a consumption based approach consistent with CoAG commitments. The Council indicated that it would seek in the 2004 NCP assessment for Queensland to provide information on improvements in cost recovery achieved via the rural price paths, SunWater's cost reduction measures, and any changes to its consumption based charging arrangements. For the schemes that will not achieve full cost recovery via the 2000 price path, the Council asked Queensland to provide timeframes for full cost recovery (where full cost recovery is achievable). The Council also asked Queensland to report on the development of new prices to apply from 2005.

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

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

SunWater, a government–owned corporation, is the state's largest water service provider. It supplies nearly half of all the water consumed in Queensland. This is mostly bulk water supplied to 27 irrigation schemes, which provide 40 per cent of all water used for irrigation.

In October 2000, Queensland implemented a plan designed to gradually move SunWater to full cost recovery. It asked SunWater to reduce costs by 15 per cent by 2004 and instituted a five- to seven-year price path (developed in consultation with scheme participants) to better align revenues and costs in 25 of SunWater's 27 schemes (Government of Queensland 2001). Queensland intends these measures to ensure water prices are set to at least recover efficient lower bound costs by 2005-06.

Queensland has advised that water prices for the 25 schemes reflect the October 2000 price path. It advised that:

- most schemes (which account for 97 per cent of SunWater's nominal allocations of rural water) recover at least the efficient lower bound costs, or have price paths set to recover efficient costs by 2005-06
- six schemes (Dawson Channel, the Central Lockyer and Mortonvale pipeline, the lower Lockyer, Pie Creek, Three Moon Creek and Maranoa River) have price paths set to recover at least 50 per cent of efficient lower bound costs by 2004-05 (reflecting the lower capacity of these schemes to absorb price increases).

The two SunWater rural water schemes for which price paths are not yet set are the Callide and the Eden Bann Weir schemes. Queensland proposes to determine price paths for both schemes over the next 12 months.

Each scheme that is not achieving the lower bound of cost recovery is supported by a separately identified and transparently funded CSO. These CSO payments are publicly reported in SunWater annual reports. Queensland has reduced the value of the CSO payments over the period of the price path, based on a model of benchmarked efficient lower bound costs.

SunWater reported that the total cost of its irrigation scheme services has fallen each year since it was corporatised in 2000-01. By 2002-03, for example, its scheme costs were 13 per cent lower than in 2000-01 (SunWater 2004). Queensland has commenced a public process and is aiming to determine and implement new SunWater price paths by July 2005 or shortly there after (Government of Queensland 2004). It has advised that published information will itemise the costs used to determine the price paths and will demonstrate that prices comply with the CoAG pricing principles. Queensland released a discussion paper on future SunWater rural water pricing arrangements in November 2003.

In 2002-03, SunWater paid a dividend of $3.58 million to the Queensland Government. This dividend represented a pay-out ratio of 22.4 per cent of after-tax profits (excluding gains from revaluing noncurrent assets). The board of SunWater recommends the dividend in consultation with 'shareholding Ministers' (the Treasurer of Queensland and the Minister for Natural Resources and Mines) in accord with s159 of the *Government Owned Corporations Act 1993*. The board considers the group after-tax profit position (excluding any unrealised impacts from revaluing noncurrent assets), consolidated group year-end cash position, projected cashflows (including capital investment and long term infrastructure asset replacement and refurbishment) and working capital requirements.

Queensland advised in previous NCP assessments that prices include the natural resource management costs incurred by water businesses, but did not show how prices reflect these costs. Subsequently, in the Review of the Value of Water, Queensland explored issues such as the scarcity value of water, externalities and the costs incurred by the state in undertaking water resource management activities. This review examined the extent to which costs/values are currently reflected in the prices paid for water and the issues associated with further recovering these costs through water charges. Queensland is developing a discussion paper that will seek stakeholder and community comment on the findings of the Review of the Value of Water. It indicated that it will finalise its approach to future water charges before implementing the next price path (July 2005).

Queensland explained that it did not consider asset valuations and a return on assets in the current price path because the price path incorporates only lower bound costs. Rather, it is taking account of asset valuation methods and a return on assets in establishing the rural water price paths that will apply from July 2005.

All SunWater water supply schemes use a two-part tariff water charging model, which includes a volumetric component. Under the current price paths, users are charged a 'fixed' tariff based on the nominal allocation and a 'variable' tariff per megalitre of metered water deliveries. The fixed component represents about 70 per cent of revenue and is designed to meet the fixed costs of operating and maintaining water supply infrastructure and service regardless of water availability. The variable component, which represents 30 per cent of SunWater's revenue, is designed to cover all variable costs of water delivery.

Discussion and assessment

Cost recovery

Under the 1994 CoAG water reform agreement Queensland needs to show its rural water services are achieving at least the lower bound of cost recovery and applying the CoAG pricing principles, or have established a price path to achieve this lower bound. The lower bound of cost recovery should recover at least the operational, maintenance and administrative costs, externalities (defined as the natural resource management costs attributable and incurred by the water business), taxes or tax equivalents (not including income tax), the interest cost on debt, provision for future asset refurbishment/replacement, and dividends (if any).

Queensland's rural water schemes have moved substantially towards achieving the lower bound of cost recovery in recent years as a result of the October 2000 price path. Whereas Queensland estimated that 53 per cent of SunWater's nominal allocations of rural water in 2000-01 were achieving the lower bound of cost recovery, it estimated that 97 per cent of nominal allocations now achieve, or are on price paths to achieve, lower bound costs. While some schemes will not achieve the lower bound of cost recovery under the current price path, and two have no price path in place, Queensland intends to implement new price paths for all Sunwater schemes by July 2005 or shortly thereafter that will recover lower bound costs wherever possible, and consider the potential for achieving a return on assets. Queensland indicated, however, that some schemes may never recover lower bound costs. It supports these schemes via separately funded and transparent CSOs. This approach is consistent with the CoAG pricing principles.

Queensland's Review of the Value of Water considered the scarcity value of water, externalities and (transparent) water resource management costs for SunWater rural water pricing arrangements. Based on the findings of this review, Queensland will determine its future approach to water charges, including the transparent treatment of environmental externalities. The review (and Queensland's undertaking to consider the use of pricing to manage externalities) accords with its commitments under the National Water Initiative to report publicly on cost recovery for water planning and

management, and to implement pricing that incorporates externalities where feasible.

The National Water Initiative best practice pricing obligations require governments to continue to move their rural systems towards the upper bound of cost recovery in accord with the CoAG pricing principles where practicable. By implementing asset valuation methods and a return on assets that accord with the CoAG pricing principles as part of the next rural water price paths, Queensland will move SunWater prices closer to the upper bound of CoAG cost recovery.

Transparent reporting of subsidies

As noted, some SunWater schemes are still to recover lower bound costs in accord with the CoAG pricing principles. For all of these schemes, the government makes a CSO payment to SunWater that is equivalent to the difference between the estimated efficient lower bound cost of providing the services and the revenue that SunWater raises from the water charge to irrigation schemes. These CSO payments, which are transparently reported, have fallen over the period of the price path. Queensland's approach to providing CSO payments for rural water systems appears to accord with the National Water Initiative objective that CSO payments be transitional and transparent.

Consumption-based pricing

Under the 1994 CoAG water reform agreement (confirmed by the National Water Initiative), governments need to adopt pricing regimes based on the principle of consumption based pricing. In previous NCP assessments, Queensland has advised that all SunWater water supply charges comprise a fixed component and a volumetric component. Queensland also explained which components are fixed and which can vary depending on volume, and why. The Council found that SunWater's water charges satisfy CoAG requirements for consumption based pricing.

Cost recovery in issuing licences for water extraction

Assessment issues: Queensland is to demonstrate that fees charged for water licences achieve full cost recovery, in accord with the CoAG pricing principles. In the 2001 NCP assessment, Queensland indicated that it imposed fees for licences to harvest water, but it did not provide detailed information on the extent of cost recovery because these charges were then under review.

(*continued*)

For the 2004 NCP assessment, the Council has looked for Queensland to provide information on the rural water charges levied by the Department of Natural Resources and Mines[1], and on the extent to which the charges appropriately reflect the cost of resource management and licensing of the various licensed water activities.

Future reform: Signatories to the National Water Initiative are to bring into effect by 2006 consistent approaches to pricing and attributing the costs of water planning and management. This should involve identifying all costs associated with water planning and management, including the proportion of those costs that can be attributed to water access entitlement holders, consistent with the principle of linking charges as closely as possible to the costs of activities or products. These approaches should be consistent across sectors and jurisdictions in which water entitlements can be traded.

References: 1994 CoAG water reform agreement, clauses 3(a) and (b); 1996 Agriculture and Resources Management Council of Australia and New Zealand (ARMCANZ) paper; 1998 CoAG pricing guidelines; 1999 tripartite meeting; Intergovernmental Agreement on a National Water Initiative

Queensland sets charges for water use for two categories of water: supplemented and unsupplemented. Irrigators supplied by SunWater (supplemented water) pay a water charge that aims to reflect the lower bound cost of providing the service, including SunWater's water management and licensing costs.

Irrigators using unsupplemented water (pumped straight out of rivers or aquifers) historically paid a one-off water harvesting licence application fee of $77 (sometimes also ad hoc local charges). Some water harvesters (about 1200 of Queensland's 2500 unsupplemented users) also paid a charge for the first 500 megalitres used. Charges for water harvesting (the taking of unsupplemented water) covered about 2 per cent of the estimated cost of Queensland's water management services (Government of Queensland 2003).

On 7 April 2003 Queensland introduced a new pricing structure for water harvesters. It introduced an annual licence fee of $50 for all water licences issued under the *Water Act 2000*, and replaced the existing water harvesting charge (under which water harvesters were charged for only the first 500 megalitres used) with a flat charge of $3 a megalitres for all water used.

The annual $50 licence fee applies to Queensland's 53 000 water licence holders, including the holders of water harvesting licences, groundwater licences and other irrigation licences, but not to landholders who take unsupplemented water for stock or domestic purposes but who do not have a licence, or to authorities (interim water allocations) held by SunWater. The annual fee is payable for new licences and renewals, reinstatements and replacements, amalgamations and subdivisions, and extensions of the licence period.

The charge of $3 a megalitre applies to only those unsupplemented water harvesting licence holders who were already being charged (some 1200 water

[1] Between 13 February–25 August 2004 the department was the Department of Natural Resources, Mines and Energy. Prior to 22 February 2001 it was the Department of Natural Resources.

harvesters). It does not apply if no water is taken (for example, if no water is available during drought). Under this charging arrangement (the $50 licence fee and the $3 a megalitre charge) unsupplemented water licence holders will contribute about 5 per cent of the estimated cost of water management services. The interim $3 a megalitre fee does not affect existing groundwater management charges.

The charge of $3 a megalitre is an interim measure pending the outcome of Queensland's Review of the Value of Water. As discussed in the previous section, the review investigated the scarcity value of water, externalities, and water resource management costs (including licensing, monitoring and enforcement costs). It examined the extent to which the prices paid for water reflect these costs/values, and determined what proportion of these costs should be met by users and how they should be recovered.

In addition to the above review, the Queensland Department of Natural Resources, Mines and Energy, in consultation with key stakeholders, developed a discussion paper on water charging. The discussion paper discusses the broader policy issues associated with setting and implementing water charges (such as tariff structures and phasing-in charges). It will undergo a public consultation period extending to the end of September 2004. The department anticipates providing a submission on water charges policy and price setting to the Queensland Cabinet in late 2004.

Discussion and assessment

The 1994 CoAG water reform agreement envisages that governments ensure charges for rural water supply fully cover the cost of supplying water to users. It commits governments to set charges for water storage and delivery that are based on the principle of full cost recovery, with any subsidies made transparent. The National Water Initiative extends this pricing commitment to bring into effect by 2006 consistent approaches to pricing and attributing costs of water planning and management. This work should involve the identification of all water planning and management costs, and the identification of the proportion of costs that can be attributed to water access entitlement holders consistent with the principle of linking charges as closely as possible to the costs of activities or products.

Queensland has begun to introduce charging arrangements that better reflect the costs of licensing and water resource management. Through the review of the value of water process, it clarified its intention to investigate water licensing and resource management costs, and to implement a new water charging policy and price setting process. While Queensland has not been able to discuss the likely price impact for the 2004 NCP assessment, the Council considers that Queensland's processes appear to be robust and are likely to lead to licence fees that better reflect the private benefits derived from licensing and associated water management within the timeframe envisaged under the National Water Initiative.

For this 2004 NCP assessment, the Council considers that Queensland has satisfactorily addressed obligations relating to cost recovery for water licensing and associated planning and management.

4.2 Water access entitlements

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

At the time of the 2003 NCP assessment, Queensland was converting water licences and/or interim water allocations to new water access entitlements (termed 'allocations' in Queensland). Water allocations are separate from land title, specified in volumetric terms (subject to an annually announced allocation percentage) and guaranteed for the 10-year life of the relevant water resource plan. Existing entitlements are not converted to the new system until the relevant resource operations plan is completed. Also at the time of the 2003 NCP assessment, Queensland had established a water allocations register that is similar to its land titles register and that records third party interests.

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

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

Under the Water Act, Queensland is converting water licences and/or interim water allocations under the *Water Resources Act 1989* to water access entitlements (termed 'allocations' in Queensland). Water allocations are separate from land title, tradable and clearly specified in terms of their ownership, location and nominal volume (which is subject to an annually announced allocation percentage).

Water resource plans specify the rules for water allocation, water entitlement security objectives and environmental flow provisions, and may also include the management of overland flows. They have effect for 10 years. While water allocations provide an ongoing entitlement to access water, the terms and conditions of allocations may change. The government is liable to pay compensation under the Water Act if the terms and conditions are changed during the life of a water resource plan in a way that reduces the allocations' market value.

Resource operations plans give practical effect to the objectives of the water resource plans. They generally contain details on the conversion of existing entitlements to the new system, the granting of new entitlements, the operation of water infrastructure, the rules for trading, and the requirements for water and ecosystem monitoring and reporting. In systems where water is delivered from a dam and/or other infrastructure (termed 'supplemented systems'), system operators (such as SunWater and local governments) must

hold a resource operations licence and comply with the relevant resource operations plan.

Under the Water Act, existing entitlements are not converted to the new system and permanent trading (see section 4.4) is generally not possible in a region until the relevant resource operations plan is completed. Water resource plans and resource operations plans are also required to determine environmental allocations (see section 4.3).

Queensland intends to develop water resource plans and resource operations plans for all of its major water resources. The plans will cover the 20 water sources covered by the state's 1999 water planning implementation program. Until the plans are finalised, two types of water entitlement apply: (1) interim water allocations for the supply of water in supplemented systems;[2] and (2) water licences to take water from systems not supplemented by infrastructure (known as unsupplemented systems). These water entitlements are generally attached to land titles and cannot be permanently traded separately from the land. The water licences and/or interim water allocations under the previous system are converted to water allocations once a resource operations plan commences.

In areas that will not be covered by a water resource plan and resource operations plan, or where a resource operations plan does not provide for the establishment of water allocations, water licences similar to those under the previous Act continue. Queensland intends to amend the licences over time to describe the water entitlement in volumetric terms (rather than the previous approach of describing the area that may be irrigated and the works that may be used to take water). Under a water licence, water remains tied to the land title. Water licences are usually found in areas of limited demand (for example, much of Cape York Peninsula and small coastal streams). Once it implements the water resource plans under its 1999 implementation program, Queensland expects water licences to account for no more than 20 per cent of water use.

Queensland has established its water allocations register, which is operated by the Queensland Resource Registry (which is also responsible for the state's land titles register). The water allocations register records details of the ownership of all water allocations, the nominal volume and any conditions that apply. It also allows for the registration of interests in the allocations (such as mortgages and caveats). When water allocations are created under a resource operations plan (from the conversion of an existing entitlement), parties with an interest in the converting entitlement have the opportunity to register their interest before the allocation is created. All dealings in water allocations are handled in the same manner as land dealings and are subject to the same quality assurance procedures. The public may search the register.

[2] Interim water allocations are usually held by the customers of the scheme but can be held by the scheme operator.

Reform progress

Queensland has completed 11 of the 20 water resource plans and three of the 19 resource operations plans under its 1999 implementation program (table 4.1). During 2003-04, it finalised three water resource plans (the Border Rivers, Moonie and Warrego/Paroo/Bulloo/Nebine plans) and two resource operations plans (for the Boyne and Fitzroy basins). It completed a further two water resource plans in August 2004 (the Condamine–Balonne and Georgina–Diamantina plans).

By June 2005 Queensland expects to complete water resource plans for most of its major river systems, covering 91 per cent of the state's land area. Four water resource plans will not be completed by the end of 2005. Queensland has provided the following information on these plans:

- *The Logan–Albert plan (expected completion in March 2006)* covers a relatively small area of the state but includes significant water sources for agricultural and urban/industrial uses. It is linked to the Moreton plan (through the South East Queensland Regional Water Supply Strategy), which requires the most extensive consultation process in the state.

- *The Moreton plan (expected completion in October 2006)* covers the Brisbane and Pine river systems, which include the water supply storages for Brisbane and surrounding cities. Given the significance of the Moreton catchments and the high level of water development that has already occurred, Queensland is proposing to undertake an 'unparalleled level of consultation, investigation and analysis'.

- *The Wet Tropics plan (expected completion in January 2007)* will cover the major north Queensland coastal rivers, from the Daintree River south to the Herbert River. The river systems are highly significant in terms of their environmental values and as sources of water for urban and agricultural uses. There is a significant water storage in the region, but Queensland has given the plan a lower priority because water in the region is relatively abundant compared with demand.

- *The Whitsunday plan (expected completion in February 2006)* will cover the Proserpine and O'Connell river systems. There is a significant water storage in the region. The planning process is at the stage of data collection and hydrology modelling.

Table 4.1: Status and timetable for water resource and resource operations plans in Queensland, as at March 2004

Water system	*Draft water resource plan released*	*Final water resource plan approved*	*Draft resource operations plan released*	*Final resource operations plan approved*
Atherton Basalts Groundwater	Incorporated into the Barron catchment planning process			
Barron[a]	December 2001	December 2002	August 2004	December 2004
Border Rivers[b]	July 2002	December 2003	March 2005	June 2005
Boyne	May 2000	December 2000	December 2001	June 2003
Brisbane	Incorporated into the Moreton catchment planning process			
Bundaberg Groundwater	Incorporated into the Burnett catchment planning process			
Burdekin[b]	June 2004[f]	December 2004	June 2005	December 2005
Burnett[b,c]	June 2000	December 2000	December 2002	May 2003
Calliope	Jan 2005	July 2005	May 2006	November 2006
Condamine–Balonne[b]	December 2003	August 2004	March 2005	June 2005
Cooper	December 1999	February 2000	–	–
Fitzroy[b,d]	September 1998	December 1999	December 2002	January 2004
Flinders	Incorporated into the Gulf catchment planning process			
Georgina–Diamantina	November 2003	August 2004	December 2004	July 2005
Gulf	October 2004	April 2005	June 2005	December 2005
Herbert	Incorporated into the Wet tropics catchment planning process			
Logan–Albert	March 2005	March 2006	October 2006	September 2007
Marchy	September 2004	June 2005	June 2006	September 2007
Mitchell	October 2004	April 2005	June 2005	December 2005
Moonie	July 2002	December 2003	June 2004f	December 2004
Moreton[b]	March 2006	October 2006	September 2007	May 2008
Pioneer[e]	December 2001	December 2002	August 2004	December 2004
Warrego/Paroo/ Bulloo/Nebine	July 2002	December 2003	June 2004[f]	December 2004
Wet tropics	July 2006	January 2007	2008	2008
Whitsunday	August 2005	February 2006	July 2006	January 2007

[a] The Barron water resource plan includes relevant aquifers. [b] Queensland expects to amend the Border Rivers, Burdekin, Burnett, Condamine–Balonne, Fitzroy and Moreton water resource plans in future to include groundwater. [c] The Burnett water resource plan was amended in 2001-02. [d] The Fitzroy water resource plan was amended in 2003-04. [e] The Pioneer water resource plan is being amended to include groundwater. [f] Not completed by June 2004.

Note: Queensland periodically updates the information on its progress with water planning, maintaining a summary on the Department of Natural Resources and Mines website (www.nrm.qld.gov.au).

Source: Government of Queensland 2004

By June 2005 Queensland expects to complete nine resource operations plans, covering 23 per cent of the state's land area. By the end of 2005, it expects to complete a further four plans, leaving six to be completed by that time. For

the Logan–Albert, Moreton, Wet Tropics and Whitsunday regions (discussed above), the resource operations plans are due to be completed in 2007 and 2008. Queensland has provided the following information on the other two plans that will not be completed by the end of 2005:

- *The Calliope plan (expected completion in November 2006)* covers a catchment that supports little consumptive water use. The resource operations plan will largely define processes for dealing with unallocated water identified as being available in the water resource plan.

- *The Mary plan (expected completion in September 2007)* covers a region that includes significant water sources for agricultural and urban/industrial uses.

Queensland has advised that it undertakes a risk assessment of each aquifer system every two years. The assessments consider the condition of the resource, existing and projected water use, and other relevant information. Based on this approach, Queensland included groundwater in the Barron water resource plan and is amending the Pioneer plan to include groundwater. It expects to include groundwater also in the Border Rivers, Burdekin, Burnett, Condamine–Balonne, Fitzroy and Moreton water resource plans. While Queensland anticipates commencing a water resource plan for the Great Artesian Basin in 2007-08, the basin is not covered by the state's 1999 implementation program. Based on available information, Queensland considers that these plans will cover all of the significant groundwater resources in the state.

Submissions

The Pioneer Valley Water Board requested the Council's support for the National Water Initiative to provide for irrigation water supply businesses to hold bulk entitlements for their schemes, rather than individual irrigators holding entitlements. The board's submission is considered further in section 4.4.

Discussion and assessment

Queensland's Water Act establishes a comprehensive system of water entitlements that are separated from land title and specified in volumetric terms. Queensland's arrangements provide ongoing access to the entitlement to use water, although the terms and conditions of allocations may change. Queensland has also established a water entitlements register similar to its land titles register, which includes the registration of third party interests. Both the system of water entitlements and the register are consistent with 1994 CoAG water reform obligations.

Queensland expects to complete nine of the 19 resource operations plans under its 1999 implementation program by June 2005. By the end of 2005, it

expects to complete a further four resource operations plans, leaving six plans to be completed. The government considers that it would be detrimental to accelerate the water planning process, stating in its 2004 NCP annual report that:

> *While a reasonable body of work will remain outstanding as of June 2005, it is not practicable to accelerate the process without compromising the quality of the science and/or community confidence in the process.* (Government of Queensland 2004, pp. 69–70)

Of the six resource operations plans that will not be completed by the end of 2005, three cover regions that include significant water sources for agricultural and/or urban and industrial uses (specifically, the Logan–Albert, Mary and Moreton plans, which will not be completed until late 2007 or 2008). In addition, Queensland is proposing amendments to several water resource and resource operations plans after 2005 to include groundwater. Queensland's water entitlements will not be separated from land titles and will not be defined in terms of available volumes until the water resource and resource operations plans are complete, although the previous system of licences and interim water allocations will apply in the meantime.

4.3 Water planning — providing a better balance in water use

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

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

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

(*continued*)

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

At the time of the 2003 NCP assessment Queensland had completed six water resource plans and almost finalised a further three. It had also completed one resource operations plan (for the Burnett Basin). Following an independent scientific study in 2003 Queensland is developing water planning arrangements for the Condamine–Balonne Basin, the state's only potentially overallocated river system. It has proposed to finalise the Condamine–Balonne Basin water resource plan (including appropriate environmental outcomes) and the resource operations plan. For the 2004 NCP assessment Queensland should show that it has:

finalised plans for the implementation of the event based environmental flow rules recommended by the scientific review panel

provided appropriate flow for the ecological assets (including the Narran Lakes and Culgoa national parks), in consultation with the local community and stakeholders provided an opportunity for the Murray–Darling Basin Commission Independent Audit Group to comment on the water resource plan and considered the audit group's comments in finalising the plan

explained, in line with the requirements of the Water Act how the final water resource plan addresses issues raised during public consultations, and adopted monitoring arrangements to evaluate the performance of the plan

committed to the further research recommended by the scientific review, particularly to refine the environmental flow requirements.

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

In the 2001 NCP assessment, the Council concluded that the draft water resource plan for the Condamine–Balonne Basin did not adequately address identified environmental problems. Given that the draft plan contained evidence that the basin may be stressed, the Council expected Queensland to complete a water resource plan that delivered appropriate environmental flows reasonably quickly. Queensland's approach to water management planning is complicated, and there has been debate about the health of the lower Balonne River. This delayed the completion of the final water resource plan and the development of the associated resource operations plan. Queensland's progress with the water management arrangements for the Condamine–Balonne Basin is discussed below.

Queensland has completed three resource operations plans — for the Burnett, Fitzroy and Boyne basins (table 4.1). In the 2003 NCP assessment, the Council concluded that the Burnett Basin resource operations plan met CoAG environmental flow requirements. This 2004 NCP assessment considers the Fitzroy Basin and Boyne Basin plans against the CoAG obligation to allocate appropriate water to the environment.

The Condamine–Balonne Basin

The Condamine–Balonne catchment in southern Queensland represents approximately 12 per cent of the Murray–Darling Basin (approximately half

of the Queensland portion of the basin). The Condamine has its headwaters near Warwick and flows through the Darling Downs, where it becomes the Balonne River. The Balonne River flows into the Barwon River and ultimately the Darling and Murray rivers. The lower Balonne River also contains two nationally significant wetlands — the lower Balonne River floodplain and the Culgoa River floodplain — and is connected to the Narran River, which terminates in the internationally recognised (Ramsar listed) Narran Lakes in New South Wales.

Historically, grazing activities have been the dominant land use in the catchment. Since the early 1990s, however, cotton cropping has become the dominant industry in the Queensland portion of the lower Balonne. Cubbie Station, Australia's largest private irrigation development, lies between the Culgoa River floodplain and the Narran River.

In June 2000, the former Department of Natural Resources released a draft water allocation and management plan (WAMP) for the Condamine–Balonne catchment. Environment groups, the Murray–Darling Basin Commission (MDBC) and New South Wales regulators criticised the plan because they considered it was unlikely to meet its ecological sustainability objectives. The irrigation sector, on the other hand, considered that the science did not show the system was stressed, and it criticised the draft WAMP for placing an unsustainable economic burden on agriculture in the region (Smartrivers 2002).

On 20 September 2000, Queensland imposed a moratorium on the starting of new works in the Condamine–Balonne catchment that would result in an increase in water taking, either from watercourses or overland flows. The moritorium includes a hold on new works associated with (1) developing overland flows and (2) existing water entitlements, and the issue of new allocations.

In 2002, in response to the criticisms of the draft WAMP, Queensland commissioned an independent scientific review of the science underpinning the assessment of ecological condition of the lower Balonne River system. The independent scientific review identified four key ecological assets within the Condamine–Balonne system — the channels of the lower Balonne River, the Culgoa River floodplain, the Narran Lakes and the lower Darling River. The review report, released in January 2003, found that the system's rivers and wetlands were in reasonable ecological condition, but would deteriorate if the existing infrastructure for extracting water were used to capacity. The review report also noted that a significant lag between exercising diversions and ecological impacts is likely and, as such, the lower Balonne has probably not yet experienced the full impact of current diversions.

The independent scientific review recommended close community consultation to achieve a target of wetting on average every 3.5 years for the Narran Lakes and at an appropriate frequency for the Culgoa national parks. It also recommended that the Queensland Government undertake further research to refine the environmental flow requirements of these assets, and that the government use an events based management system, focused on the

ecologically important flow events, for the Balonne. The Queensland Government committed to implement in full the recommendations of the review in a new water resource plan for the Condamine–Balonne system, to be developed by the middle of 2004. In the 2003 NCP assessment, the Council accepted that these commitments satisfactorily addressed Queensland's NCP obligations for 2003 regarding the allocation of water to the environment.

In August 2004, the Queensland Government released the final water resource plan (subordinate legislation 2004 no. 151). While the plan applies to the surface waters of the Queensland portion of the Condamine–Balonne catchment only, it includes some provisions for taking account of interstate interests and views and extends the environmental flow rules to the part of the lower Balonne floodplain that is located downstream of the Queensland border.

The plan will be implemented via a resource operations plan. Queensland announced its intention to commence preparation of a draft resource operations plan on 3 December 2003, advising that it will finalise the plan by June 2005. The resource operations plan will include details of water licensing and volumetric allocations. This information will also be used in determining Queensland's Murray–Darling Basin Ministerial Council cap.

The water resource plan covers water in watercourses, lakes and springs, and overland flows in the catchment. It converts existing water licences to tradable water allocations and introduces licences to collect water from overland flows. The plan does not include groundwater, but the government envisages incorporating groundwater management during the 10-year life of the first water resource plan. As an interim measure, Queensland has declared groundwater management areas in the upper Condamine area to prevent the expansion of groundwater use and to regulate extraction from existing bores.

When preparing the water resource plan, Queensland accounted for the report of the independent scientific review and work by the Lower Balonne Community Reference Group (2003). The community reference group comprises local representatives of irrigators and graziers from Queensland and New South Wales, local government, the Indigenous community and environmental interests. Queensland also considered representations from community groups located in the upper and middle catchments. The water resource plan proposes the establishment of advisory councils as a means of providing ongoing consultation. It includes provision to establish a Lower Balonne Council to increase community awareness and involvement in water resource management, and provision for establishing other councils to help develop the resource operations plan.

Queensland has advised that it was necessary to establish the Lower Balonne Council as a priority because the Lower Balonne Community Reference Group was dissolved when the final water resource plan was completed. While the Upper and Middle Condamine Ministerial advisory committees do not have statutory recognition, these bodies can continue to contribute to the development of the resource operation plan.

The water resource plan proposes that the volume of water authorised for diversion, on average, should not increase over that supported by current infrastructure. It continues the September 2000 moratorium on water resource development in the Condamine–Balonne catchment, but provides exemptions for diversions for stock and domestic users, licence renewals, water permits for short term activities such as mineral exploration, and town water supplies.

As recommended by the scientific review, the water resource plan adopts an events based approach to managing environmental water provisions. It sets flow objectives for five flow events: low flow, summer flow, beneficial flooding flow, a one in two year flood and one in 10 year flood. To manage these events, extractions in the lower Balonne must be reduced by up to 10 per cent for a specified maximum number of days (usually 5 or 10 days) so changes in flow are restricted to 66–133 per cent of the natural flow (as measured at specified nodes or reaches).

The plan includes measures to improve the security of water allocations. Security will be improved by the establishment of a water bank so farmers can extract additional water during less-critical flow events. The plan sets performance indicators for determining when and how much of the water bank users may take. This approach aims to ensure a minimal impact on the environment and equitable sharing of any additional water among the entitlement holders.

There has been further research to refine the system's environmental flow requirements, as recommended by the scientific review. The Cooperative Research Centre for Freshwater Ecology conducted a scoping study on the Narran Lakes and released a preliminary report on the hydrology of these wetlands (CRCFE 2003). There is no indication as yet, however, on the volume of water needed to achieve adequate wetting and drying regimes for the lakes. Queensland has advised that it is undertaking a 12 month investigation to identify priority areas for detailed research in the Culgoa floodplain. In addition, Queensland and New South Wales agencies have submitted a joint proposal for funding under the National Heritage Trust program to build on the findings of the Narran Lakes scoping study.

The plan proposes arrangements for monitoring water quality, hydrology and extraction, as well as the ecosystem health indicators of the inchannel, floodplain and wetland habitats. Responsibility for monitoring is invested in water infrastructure operators, who must provide annual written reports to their chief executives. Five years after the commencement of the plan, the Minister must prepare a report on the accuracy of hydrology, community views, the appropriateness of performance indicators, progress in research on the environmental requirements of the Culgoa floodplain and Narran Lakes, and the effectiveness of flow event management. Based on this report, the Minister can decide to initiate a formal review of the water resource plan.

Best available science

The environmental water requirements for the Condamine–Balonne river system were developed using a holistic method and involved an expert multidisciplinary technical advisory panel (DNR 1999). The technical advisory panel considered the floodplain and receiving wetlands as well as inchannel habitats, and accounted for the water requirements for physical and biological processes and a range of different species. It used IQQM (Integrated Quantity Quality Model) for hydrological modelling and AusRiVAS for analysing outcomes for macroinvertebrate communities. The Cooperative Research Centre for Freshwater Ecology (Whittington 2000) endorsed the use of the IQQM model and the ecological health assessments used in the environmental flows assessment. Similarly, the independent scientific panel stated that the IQQM model was appropriate for determining the river's environmental water requirements.

The final water resource plan implements the independent scientific review's recommendation that water use in the Condamine–Balonne system be managed using an events based water management system. The Murray–Darling Basin Commission Independent Audit Group's analysis of the draft plan indicates that the impacts of development under (September 2000) moratorium conditions may be significant compared with the impacts under predevelopment conditions (IAG 2004). In commenting on the draft plan the Independent Audit Group stated that the plan 'endeavours to maintain current economic and social outcomes without adequately addressing environmental outcomes …and downstream flows. … [T]he precautionary principle has been applied only in terms of minimising impacts on irrigators' (IAG 2004, pp. 13–14).

The final water resource plan contains some significant changes from the draft. These changes are documented in the consultation report published by Queensland in August 2004. In summary, the final plan:

- tightens the criteria for establishing the licensing controls designed to limit overland flow extractions in the lower Balonne
- includes new provisions to clarify that the plan is not promoting further leveeing on the lower Balonne floodplain
- both strengthens and simplifies the conditions for triggering reductions in water users' access during environmentally-important medium flow events
- broadens the provisions for taking account of interstate interests and representations in processes relating to the implementation and review of the plan.

The final plan contains flow rules estimated to provide 73 per cent of the predevelopment events sufficient to fill the Ramsar-listed portion of the Narran Lakes (Clear lake and Black Lake) only. Because of a paucity of data, the flow management rules do not explicitly address the other three ecological

assets identified by the independent scientific review (the Culgoa River floodplain, the channels of the lower Balonne River and the lower Darling River), although Queensland advised that application of the Narran rule will benefit other distributary streams. (The independent scientific review was not asked to recommend an appropriate water regime for the significant ecological features of the lower Balonne River.) The final water resource plan provides for further research to determine the flows required to maintain the ecological health of the Narran Lakes and Culgoa floodplain in accord with the recommendations of the independent scientific review. Queensland advised that this work has commenced.

The environmental flows assessment that supports the plan made only generalised references to the influences of groundwater (DNR 2000). The technical advisory panel considered the effect of groundwater extraction on the health of the system to be beyond the framework of the WAMP process. However, in its 2002 submission to the independent scientific review, the Department of Natural Resources and Mines indicated that it was developing a groundwater flow system map for the Queensland Murray–Darling Basin and an integrated groundwater and surface water modelling technique to help manage water resources.

Balancing economic, environmental and other interests

The water resource plan provides rules for managing low and medium flows and Narran Lakes filling events, and provides for the regulation of the taking of overland flows. Under the Queensland legislation, the resource operations plan, to be prepared by the chief executive, must comply with the objectives and requirements of the water resource plan approved by the Governor-in-Council. Although Queensland announced that it would commence drafting the resource operation plan in December 2003, it has not indicated the content or extent of the flow management rules.

Queensland committed to implement the recommendations of the independent scientific review. These recommendations centred on the four key ecological assets and included a wetting regime of one in 3.5 years (60 per cent of predevelopment events) for the Narran Lakes. The independent scientific review also recommended that Queensland work with the lower Balonne community to find a sustainable balance.

As discussed above, the flow management rules for the lower Balonne are estimated to provide 73 per cent of predevelopment events sufficient to fill the Ramsar listed portion of the Narran Lakes only. The rules do not, however, explicitly address the other three ecological assets identified by the independent scientific review, given the paucity of the data. The independent review panel considered that the dominant consideration in the lower Balonne system is to ensure the Narran Lakes receive an appropriate flow regime to maintain the vegetation and bird communities. If this is achieved, the flow regime in the Narran River will be sufficient to maintain the river

and distributary channels in good condition. The independent review panel, when asked to comment on the flow management rules, concluded that the wetting regime for the Narran Lakes is appropriate until further information is available (Cullen *et al*. 2003b).

Total water storage (at September 2000 capacity) on the Balonne floodplain is about 1160 megalitres, which is equivalent to the mean annual flow in the Balonne River at St George (Whittington *et al.* 2002). Cullen *et al.* (2003a) projected median annual flows in the Culgoa River and Narran River at the New South Wales border to be 24 per cent and 32 per cent of simulated natural flow respectively. The Cooperative Research Centre for Freshwater Ecology predicted the following ecological responses to full use of current (2000) infrastructure (Whittington *et al*. 2002):

- a contraction of floodplain woody vegetation to a riparian fringe
- changes in the composition and distribution of other floodplain and wetland vegetation
- a decrease in floodplain productivity
- a reduction in permanent pool habitat (that is, refuges for obligate aquatic species such as fish)
- reduced water quality in remaining pools (including fluctuations in temperature and dissolved oxygen)
- effects on longitudinal connectivity between the Condamine–Balonne and Murray–Darling systems.

The independent review panel considered that the health of the lower Balonne system and the interests of irrigators would be better served if Queensland were to use a more appropriate measure of the required wetting regime than mean annual flow. It recommended adopting event-based targets for water and environmental management in the lower Balonne. The final water resource plan incorporates an event based management approach.

Queensland has advised that it analysed a small–medium flow event that occurred in the lower Balonne during January–February 2004 to compare the difference between the volume of water that could be taken before the final water resource plan was in place and the volume that could be taken under the plan. Queensland reported the following findings:

- If the full extractive capacity of all water infrastructure in the lower Balonne had been exercised, then the water that could have been potentially extracted during the recent flow event was estimated to be around 480 gigalitres.
- The volume of water actually extracted by river and floodplain harvesters during the January–February 2004 flow event was 430 gigalitres.

- If extractions had been in accord with the limitations and rules in the water resource plan (not then in place), then total allowable extractions would have been an estimated 380 gigalitres, some 100 gigalitres (20 per cent) less than the potential total extraction before the plan.

Queensland has advised that it will review the water resource plan after five years, and this review would consider the results of monitoring the ecological health of the significant assets. The Lower Balonne Community Reference Group proposal states that if monitoring indicates a downward trend in river health attributable to water development, then the event management rules may require adjustment.

Monitoring and adaptive management

While a detailed monitoring program is yet to be developed, the water resource plan contains provisions that provide the foundation for a robust system for assessing the effectiveness of the plan. The monitoring includes aspects of hydrology and ecosystem health, and is linked to the objectives of the plan. The Minister must report annually on monitoring outcomes, and the plan provides for a more comprehensive report after five years. The plan adopts the adaptive management approach contained in the Water Act, and Queensland confirmed that it will review the plan after five years, accounting for the results of ecological monitoring. Queensland water resource plans have a maximum life of 10 years and must be reviewed before renewal.

Stakeholder consultation and transparent processes

The Queensland Government prepared the water resource plan with the assistance of the Lower Balonne Community Reference Group, comprising local representatives of irrigators and graziers from Queensland and New South Wales, local government, the Indigenous community and environmental interests. Queensland also considered representations from community groups located in the upper and middle catchments and sought input from the Upper and Middle Condamine Ministerial advisory committees and the Condamine–Balonne WAMP Indigenous Working Party.

In general, Queensland's water planning processes are transparent. The Department of Natural Resources and Mines publishes (including via the Internet) relevant material, including public notices, media releases, submissions, information and technical papers and draft and final plans. In the case of the Condamine–Balonne, Queensland has published a consultation report, which summarises the views expressed at meetings and in submissions. In line with Queensland's policy approach on privacy matters relating to public submissions on water resource and resource operations plans, it did not release the submissions responding to the draft water resource plan. These submissions can be sought from the department via requests under the *Freedom of Information Act 1992*.

The Fitzroy Basin

The Fitzroy Basin is a large catchment of 142 600 square kilometres incorporating the Callide, Dawson, Comet, Nogoa–Mackenzie, Isaac and lower Fitzroy subcatchments. It is a coastal river system draining into an estuarine zone and, ultimately, a marine environment that includes the Great Barrier Reef.

Queensland developed the Fitzroy Basin water resource plan in 1999[3] to manage the intensive water use areas areas of the Fitzroy Basin. The plan initially covered surface water contained in stream and waterways only, but Queensland has released for public consultation a draft amendment to the plan to incorporate overland flows. The water resource plan and resource operations plan do not cover groundwater. The Queensland Government has advised, however, that the most recent biennial assessment of groundwater capacity and extraction indicated that the plans will soon need to incorporate groundwater. It intends to extend the plans to cover the remainder of the basin in 2005.

The 2003 Fitzroy Basin resource operations plan is the means by which Queensland implements the water sharing arrangements to meet the water security and environmental objectives in the water resource plan. It seeks to ensure the water in the plan area is managed in an integrated and sustainable way, providing for both the needs of the community and the natural environment. The resource operations plan contains arrangements for:

- converting existing water entitlements to tradable water allocations
- making new entitlements available
- the operation of infrastructure and management of water;
- trading water allocations
- water and ecosystem monitoring.

The resource operations plan adopts the water resource plan measures for each of the managed river systems in the Fitzroy Basin. At this stage the resource operations plan largely maintains the water allocations that were in place immediately before the release of the water resource plan in 1999. Only the allocation for consumptive use appears to have increased, by 62 802 megalitres a year in the Fitzroy Barrages.

Queensland has advised that the resource operations plan implements all the environmental water provisions in the water resource plan. The water sharing rules and environmental water allocations in the plans were based on ecological and economic assessments conducted by the former Department of

[3] Water resource plans were then known as water allocation management plans.

Natural Resources (DNR 1998a–l). That department used a technical audit panel to determine the basin's environmental flow requirements, develop and model flow management strategies, and determine the environmental implications of those strategies. The panel comprised eight experts in fish ecology, floodplain and wetland ecology, hydrology, geomorphology and estuarine processes. The Fitzroy Basin WAMP Community Advisory Panel, which comprised representatives from industries and community interests across the basin, provided advice on community values.

The technical audit panel adopted a 'whole of catchment' approach encompassing the surface water system from the headwaters to the estuarine mouth. It considered both flow and non-flow environmental requirements and management strategies for maintaining river health. It proposed three flow management options.

1. Base flows — implement flows to maintain a riffle habitat to facilitate the transport of nutrients and carbon and allow biota to travel between pools during low flow.

2. Trigger flows — allow the first post-winter flows to pass through the system (October–April) for a minimum of three weeks to support the spawning activities of native fish.

3. Waterhole management — maintain pools as refuges for aquatic life during times of low flow and drought.

The technical audit panel recommended base and trigger flows at 15 nodes across the basin. It recommended that waterholes be managed on a reach-by-reach basis, to adjust for specific local conditions (such as the shape, size and depth of pools and water use). The water resource plan adopts the recommended environmental flow objectives and the performance indicators or standards for meeting those objectives. The timing and duration of trigger flows are as recommended by the panel, although flow magnitude is expressed in height rather than volume. For waterholes, the water resource plan adopts the maximum drawdown of 0.5 metres recommended by the technical audit panel. In aggregate, roughly 75 per cent of the water flow in the Fitzroy Basin is provided to the environment.

The resource operations plan contains operational rules governing the management of base flows, first post-winter trigger flows and waterholes. First post-winter flow management strategies are provided for the Dawson Valley and Nogoa–McKenzie water supply schemes, but not for the lower Fitzroy or Fitzroy Barrage water supply schemes. Queensland has advised that it will meet the post-winter flow objectives for the two Fitzroy systems through passive management (that is, flows will be delivered without the need for intervention).

In addition to setting environmental flow objectives, the water resource plan allocates water for future development. The plan includes rules for determining the actual volume of water to be delivered under the resource operations plan, by setting priorities for water sharing, seasonal assignments

and associated water allocation security objectives. The provisions for new development increase annual consumptive water allocations by 247 800 megalitres — a 50 per cent increase on the existing (pre-plan) entitlements. The future development related allocations are:

- 190 000 megalitres in the Dawson River from installation of the Nathan Dam
- 3000 megalitres in the McKenzie from the raising of Bingegang Weir
- 300 megalitres in the Dawson from the raising of Moura Weir
- up to 300 000 megalitres (estimated) in Isaac/Connors and lower Fitzroy Rivers
- up to 40 000 megalitres (estimated) from the Comet/Nogoa–Mackenzie River system
- up to 11 500 megalitres (estimated) from the upper Dawson River.

Modelling by the department showed that anticipated development would have a negligible or minor impact on the ecological health of most of the river systems in the basin. The exceptions to this are the Dawson, upper McKenzie and Comet rivers. The development scenario in the water resource plan exceeds environmental flow limits in the Dawson and upper McKenzie rivers for a number of flow indicators and in the lower Fitzroy for mean annual flow and upper riparian zone impacts.

While implementation of the proposed developments in the Fitzroy Basin risks some ecological degradation of the system, the department estimates that increased development will provide significant economic and social benefits. The department found that there would be a small adverse impact on commercial and recreational fishing, but estimated that increasing regulated development on the Dawson and Comet rivers would almost double returns (gross margins) to agriculture in the area (DNR 1998i, 1998k). The department estimated that implementation of the environmental management strategies in the water resource plan would lower annual returns by about 5 to 6 per cent only. This resulted from some reduction in water supply reliability. The department also presented figures indicating that direct benefits from increased irrigation and farming activity from major development, such as the proposed Nathan Dam on the Dawson River, could be of the order of $210–244 million (in net present value terms) and generate over 700 permanent jobs (DNR1998a). Adopting environmental management strategies was estimated to reduce these benefits by around 30 to 40 per cent. While these figures are not directly comparable to those above, they do provide an indication of the possible magnitude of benefits and costs. The department did not, however, estimate the economic costs associated with the ecological degradation arising from further development of the Fitzroy Basin, apart from the costs to the commercial and recreational fishing industries.

Under the water resource plan, there is monitoring of flow, water quality, macroinvertebrates, geomorphology, habitat condition and biological trigger

processes. Responsibility for monitoring natural ecosystems rests with Queensland Government agencies. Holders of Resource Operations Licences must monitor flow and water quality, including environmental water provisions and fishway operations. Licence holders must report results to the Chief Executive of the Department of Natural Resources and Mines. The monitoring that government agencies and holders of Resource Operation Licences must undertake is detailed in the resource operations plan.

There are provisions for reporting on the outcomes of the water resource and resource operations plans each financial year. The Water Act requires the Minister for Natural Resources and Mines to amend a water resource plan and associated resource operations plan if the results of monitoring indicate that the environmental flow objectives are not appropriate or are not being met. Any amendments to the plans must result in equivalent or improved outcomes for the environment without adversely affecting water security allocation objectives.

Best available science

Queensland used a holistic method — IQQM and hydrological modelling based on daily flows — and an expert multidisciplinary technical audit panel to conduct the environmental flow assessment. In its work on the lower Balonne system, the independent scientific review endorsed this approach as a water management tool suitable for variable river systems (Cullen *et al.* 2003a).

The flow analysis considered the floodplain and receiving estuary as well as inchannel habitats and included the water requirements for physical and biological processes and a range of different species. While the benchmarking using a river within the Fitzroy Basin (the McKenzie River) added value, the water resource plan used the McKenzie benchmark to set the 'environmental flow limit' for the whole system. This appears to be inconsistent with the technical audit panel's advice that benchmarks be used only as a guide to risks within a system.

Queensland has advised that its Water Assessment Group has a quality assurance program for its hydrological modelling, involving internal and external peer review of the modelling framework, flow analysis and the associated technical reports. The Fitzroy Basin analysis does not, however, present margins of error and confidence limits on data, and the supporting technical reports do not cover data quality or validation. The independent scientific review found, for example, that for floods, inaccuracies in stream gauging data in variable systems, such as the Fitzroy Basin, could be 10 per cent to as high as 25 per cent (Cullen *et al.* 2003a). In addition, the water resource plan does not source the reference trigger flow or explain how the flow conditions for unsupplemented water are determined.

Queensland informed the Council that it set the flow conditions for allocating unsupplemented water (using IQQM modelling) with the aim of achieving the

environmental flow objectives determined by the technical audit panel. It has advised that the technical audit panel had reviewed the environmental provisions in the water resource plan. Queensland stated that the panel considered the environmental water provisions to be broadly consistent with the overarching objective of the water resource plan and that the plan accurately estimates the likely environmental implications of the provisions.

Balancing economic, environmental and other interests

The water resource plan applies the environmental management recommendations from the scientific assessment. The resource operations plan provides for active management to achieve base flows that mimic the natural seasonal patterns within a band of plus or minus 20 per cent. A similar approach is adopted to ensure critical trigger events occur with reasonable frequency and for achieving medium flows that should be sufficient to maintain river health. Because Queensland is meeting all other environmental objectives through passive management, there is no need for specific strategies.

The water resource and resource operations plans maintain existing (pre-plan) water entitlements and broadly similar levels of water security. Implementation of the environmental management strategies may, however, reduce the reliability of the water supply for some groups of water users compared to historical usage. The outcome will depend on future rainfall levels and distribution patterns.

The plans provide for an increase in current and future water allocations for consumptive use accommodating a degree of future development. Queensland scaled back some planned future developments, however, because the scientific assessment indicated that these may impose an unacceptable risk of harm to the river ecology in parts of the basin. The government proposes to conduct further detailed studies before proceeding with proposed developments for the area.

Overall, the environmental objectives for the Fitzroy Basin appear to have been achieved while largely maintaining existing entitlements for consumptive uses. The water resource and resource operations plans are clear about the likely outcomes for the environment, and supported by an assessment of the likely impact on agricultural, commercial and recreational fishing interests.

Monitoring and adaptive management

Monitoring covers aspects of the natural environment as well as water resource use. It involves reporting on environmental flows and fishway operations as well as aspects of catchment health. There are programs for each subcatchment detailing site locations, required parameters, frequency,

timing, data validation and the methods to be used. The programs are designed to be repeatable and to provide results that are comparable over time and between subcatchments.

Arrangements for monitoring programs are comprehensive and well considered. The detailed design of the monitoring programs includes aspects of quality control and data standards and should enable meaningful interpretation over time and between subcatchments. The resource operations plan states that the results of monitoring are to be used in compiling the annual report. The Water Act requires the Minister for Natural Resources and Mines to amend a water resource plan and associated resource operations plan if the results of monitoring indicate that the environmental flow objectives are not appropriate or are not being met. Any amendments to the plans must result in equivalent or improved outcomes for the environment and water users. As such an adaptive management framework is in place.

Stakeholder consultation and transparent processes

Queensland developed the water allocation provisions in the water resource and resource operations plans through extensive consultation, using open and transparent processes. The advisory committee included a broad representation of the major stakeholders in the catchment. The consultation process was supported by rigorous economic and scientific assessments. While the water resource and resource operations plans are complicated, they are supported by published technical reports that are comprehensive, easy to understand and readily accessible to the public. The draft resource operations plan also provides for ongoing consultation, and economic and scientific assessment.

The Boyne Basin

The Boyne River catchment includes the unregulated streams and creeks above Awoonga Dam and the regulated Boyne River downstream of the dam. The water from the catchment eventually drains into an estuarine zone at Port Curtis before entering the waters of the Great Barrier Reef Marine Park.

The Gladstone Area Water Board is the main water user in the Boyne Basin. It operates Awoonga Dam and supplies town water for the City of Gladstone. In response to the board's application to raise the Awoonga Dam wall from 30 metres Australian Height Datum (AHD) to 45 metres AHD and increase its existing water entitlement by 34 000 megalitres a year, Queensland prepared the Boyne River Basin water resource plan (DNR 2001). (At the same time the Gladstone Area Water Board prepared an environmental impact statement for the proposed dam construction works.) The plan covers only the surface water. Extraction of overland flows and groundwater from the catchment is not significant.

The water resource plan restricts the maximum water available to the Gladstone Area Water Board to 63 000 megalitres a year at a dam height of 30 metres AHD and 113 600 megalitres a year at dam height of 45 metres AHD. For other users the plan limits water extraction above the dam to 3000 megalitres a year and sets out rules for replacing the area-based licences with volumetric water licences. The plan makes provision for the release of base flows below the dam when the dam level is above 30 metres AHD and for trigger flows whenever the stream flow into the dam is at least 3210 megalitres a day for four consecutive days. It also specifies water security and environmental objectives.

Queensland has implemented the water resource plan arrangements via the 2003 Boyne River Basin resource operations plan (DNRM 2003). The resource operations plan seeks to ensure the water in the Boyne Basin is managed in an integrated and sustainable way that provides for the needs of the community and the natural environment. Under the resource operations plan the annual allocation for the Gladstone Area Water Board is set at 63 000 megalitres. This provides the board with an additional water allocation of 15 000 megalitres a year to accommodate the raising the dam wall from 30 to 40 metres AHD. It also allows for a further allocation of 19 000 megalitres a year once the dam wall is raised to 45 AHD. (After the dam wall is raised any water entitlements attached to the flooded land that have been purchased by the Gladstone Area Water Board will be cancelled.)

The Gladstone Area Water Board and the former Department of Natural Resources undertook ecological and economic assessments that were used to determine the water sharing rules and environmental water allocations in the plans. That department used a technical audit panel to determine the basin's environmental flow requirements, develop and model flow management strategies, and determine the environmental implications of those strategies. The panel comprised experts in fish ecology, aquatic ecology, river morphology and botany. A community liaison group comprising 18 representatives from local stakeholder groups provided feedback and assistance during the development of the water resource plan. The Peak Reference Group comprising representatives of local authorities, government agencies and a conservation group helped with the planning processes for both the water resource plan and the environmental impact statement for Awoonga Dam.

The technical audit panel considered the ecological condition of the river downstream of Awoonga Dam to be in degraded condition based on existing information and a brief site visit. The panel assessed flow scenarios using the IQQM model and developed a rating system based on river morphology, aquatic biology, riparian vegetation and fish The technical audit panel recommended that downstream of Awoonga Dam:

- base flows should be increased by reinstating low flows and reducing duration and frequency of dry spells.

- trigger flows should be provided by reinstating some measure of variability into the system to encourage fish breeding and allow fish passage.

The water resource plan adopts the recommended environmental flow objectives and the performance indicators or standards for meeting those objectives. It slightly improves the timing and duration of trigger flows compared to those recommended by the panel. Key flows will be maintained at between 41–61 per cent of predevelopment flow patterns. (This, however, provides less variability of flow in the river than before the raising of the dam wall.) Upstream of the dam, the plan provides for flows to be maintained at between 85 and 99 per cent of predevelopment levels. The resource operations plan contains operational rules governing the management of base flows, and trigger flows as defined by the water resource plan. In addition, the resource operations plan requires all water users with a volumetric licence to install water meters.

The environmental assessments for the water resource plan and the Awoonga Dam Environmental Impact Statement noted that raising the dam wall would reduce freshwater flows and associated nutrient input to the estuary. This was predicted to have an adverse impact on species composition and diversity.

The Queensland EPA concluded that the water flow provisions contained in the water resource plan are unlikely to meet the conditions for ecological sustainability because of the adverse impacts on downstream habitats, including the estuary. It also considered that implementation of the plan would be likely to further degrade the condition of downstream habitats (EPA 2000). Queensland considered the economic and regional prosperity provided by the plan, however, justified accepting a higher use of the Boyne Basin's water resources than in some other Queensland catchments (DNR 2001).

Under the water resource plan, there are provisions for monitoring flow, water quality, macroinvertebrates, phytoplankton, geomorphology, habitat condition and biological trigger processes. Queensland Government agencies and holders of resource operations licences are responsible for this monitoring. Licence holders must report their monitoring results on flow and water quality to the Chief Executive of the Department of Natural Resources and Mines. The details of the monitoring requirements are included in the resource operations plan. Queensland advised that its monitoring of the effects of releases from Awoonga Dam in 2004 (the first releases since 1996) showed that these triggered the movement of fish, which was the objective of the management strategy.

There are provisions for reporting on the outcomes of the water resource and resource operations plans each financial year. The Water Act requires the Minister to amend a water plan and associated resource operations plan if the results of monitoring indicate that the environmental flow objectives are not appropriate or are not being met. Any amendments to the plans must result in equivalent or improved outcomes for the environment and water users.

Best available science

Queensland used a holistic method (IQQM and hydrological modelling based on daily flows) and an expert multidisciplinary technical audit panel to conduct the environmental flow assessment. The EPA audit, however, criticised the former Department of Natural Resources' selection of technical audit panel because none of the members had expertise in estuarine and marine systems or experience in assessing flow impacts (EPA 2000).

The EPA was also critical of the technical audit panel's methods for assessing catchment condition. It noted that the technical audit panel's analysis lacked detail on data sources and did not describe available data, particularly for the upper catchment. It considered that the technical audit panel's methods for comparing the predicted impacts of flow scenarios were too subjective. The EPA considered that the technical audit panel should have estimated environmental flow limits. Without using such an approach the EPA considered that it was not possible to determine whether water allocations for consumptive use would remain within sustainable limits. It thus recommended that future water resource plans use benchmarking techniques for assessing and comparing the projected impacts of different water use scenarios. (Queensland adopted this approach in the Fitzroy Basin water resource plan.)

Balancing economic, environmental and other interests

The water resource plan applies the environmental management recommendations from the scientific assessment. The resource operations plan applies an active management approach to achieving the recommended base and trigger flows. In addition, the resource operations plan contains provisions to ensure downstream releases are from the off-take that has the least impact on downstream users and the aquatic environment.

The water resource and resource operations plans provide for an increase in current and future water allocations for consumptive use to accommodate future development. The Gladstone Area Water Board's allocation will increase from 63 000 megalitres a year to 78 000 megalitres a year once construction on the dam wall is complete. There will be a further increase to 97 000 megalitres if the dam wall is raised to 45 metres. This is expected to meet the specified economic and social outcomes, but degrade the downstream aquatic environment.

The EPA criticised the environmental provisions in the draft water resource plan (which are also reflected in the final plan) because it considered that these place a higher emphasis on economic and social values than the ecological health of the catchment and receiving estuary. As such, the EPA recommended that the stated objectives in the final plan be recast to more

accurately reflect the economic, social and environmental outcomes being sought. This recommendation was not adopted for the final plan.

Monitoring and adaptive management

The monitoring programs for the river and creeks cover all important aspects of the freshwater environment as well as water use. They set out site locations, required parameters, and the frequency and timing of monitoring. They define responsibilities for each monitoring task. Licence holders must measure and report on flow and water quality. State agencies are responsible for monitoring and reporting on catchment health, which requires specialist ecology skills.

The program for the receiving estuary monitors fish populations only. The EPA identified this habitat to be at greatest risk from reduced flows in the Boyne River and considered that Boyne plans should have placed greater emphasis on monitoring this ecosystem. It recommended that the Port Curtis bay be included in the monitoring program in addition to the estuary and that the monitoring program should aim to measure the influence of reduced freshwater inflows on the structure of the entire ecological community.

The resource operations plan states that the results of monitoring are to be used in compiling the annual report on the performance of the plans. The Water Act requires the Minister to amend a water plan and associated resource operations plan if the results of monitoring indicate that the environmental flow objectives are not appropriate or are not being met. Any amendments to the plans must result in equivalent or improved outcomes for the environment and water users. As such an adaptive management framework is in place.

Stakeholder consultation and transparent processes

Queensland developed the water allocation provisions in the water resource and resource operations plans through extensive consultation, using open and transparent processes. The advisory committee included a broad representation of the major stakeholders in the catchment. The consultation process was supported by publicly available economic and scientific assessments, and interested stakeholders had an opportunity to make submissions during the development of the draft and final water resource plan. The published technical reports, which provide much of the evidence to support the provisions in the water resource and resource operations plans, are comprehensive, easy to understand and readily accessible. The resource operations plan also provides for ongoing consultation, and economic and scientific assessment.

Stakeholder comments

In early 2003 the East End Mine Action Group provided the Council with information that suggests the activities at the QCL-Holcim East End Mine have depleted the aquifer in the Mt Larcom area with consequent adverse effects on the availability of water to some users, including the environment. The East End Mine Action Group is in dispute with QCL and the Queensland Government about the extent and cause of water depletion from the aquifer.

The Department of Natural Resources and Mines is developing a draft water resource plan for the Calliope River catchment, which incorporates the Mt Larcom groundwater sources. Its Proposal to Prepare Draft Water Management Plans for the Calliope and Boyne River Catchments Notice (no. 1) 1999[4] states that in developing the draft plan the Minister must have regard for underground water levels and that it is intended the plan will apply to underground water in subartesian aquifers. However, in an amending moratorium notice (Draft Water Resource (Calliope River) plan, *Water Act 2000*, Amending Moratorium Notice and Public Notice) published in February 2004, Queensland changed the scope of the proposal for the draft plan. It is now Queensland's intention that the Calliope River plan apply to all surface water within watercourses and to overland flow water in the catchment, but not to subartesian groundwater (DNRME 2004). Following the release of the amended moratorium notice, the East End Mine Action Group wrote to the Queensland Government and to the Council to express its concerns about the exclusion of groundwater.

The circumstances described by the East End Mine Action Group (depleted aquifer levels and reduced availability of water for users) indicate that the groundwater source may be overused, and therefore appropriate for inclusion in Queensland's water resource planning process. Accordingly, in March 2003 the Council wrote to the Department of Natural Resources and Mines seeking advice as to why it proposed to exclude groundwater from the Calliope River water resource plan.

In response the Queensland Treasury explained that while originally the Calliope plan was not to cover groundwater, the new process for water resource planning in Queensland (specified in the Water Act) means there is scope for the Minister for Natural Resources and Mines to include groundwater in the Calliope plan. The Treasury indicated that the Minister would seek public comment on this matter before announcing a decision on the scope of the plan.

As noted above, the Minister decided against inclusion of groundwater in the Calliope plan. The department's information paper indicates that knowledge of groundwater in the catchment is limited and that groundwater in the Calliope catchment is not regulated or controlled and licences are not required for installing or using bores (DNRME 2004). The report does not

[4] The department released the proposal under the *Water Resources Act 1989*. Queensland has replaced this Act with the *Water Act 2000*.

assess interconnection between surface and groundwater in the catchment, water levels in the aquifer, recharge rates or water use. Queensland advised, however, that it conducts such assessments during its biennial aquifer risk assessments. It noted that the most recent assessment concluded that the risks associated with groundwater use in the Calliope Basin are low.

Under the National Water Initiative, signatory governments including Queensland committed to recognise connectivity between surface water and groundwater and to manage connected systems as a single resource. To meet with this commitment Queensland needs to incorporate groundwater management into its water planning (including in the Calliope catchment) or, alternatively, demonstrate that connectivity between surface water and groundwater is not sufficient to warrant the inclusion of groundwater.

Assessment

Queensland has completed 11 of the 20 water resource plans and three of the 19 resource operations plans for the water systems covered by its 1999 implementation program. Queensland is operating broadly in line with its agreed timetable, although it will not complete several resource operations plans until after 2005. The completed plans mostly cover surface water. Further amendments will be required to some of these plans to cover overland flows, less intensive water uses and groundwater. Material provided to the Council by the East End Mine Action Group raised issues related to the allocation of groundwater.

The Council indicated in the 2003 NCP assessment that it would look as part of the 2004 NCP assessment for Queensland to have finalised the Condamine–Balonne water resource plan (including providing an opportunity for the Murray–Darling Basin Commission Independent Audit Group to comment on the draft plan) and the resource operations plan in line with the government's undertakings. The Council noted the finding of the independent scientific review that the rivers and wetlands of the lower Balonne system were in reasonable ecological condition, but that the system would deteriorate if the existing infrastructure for extracting water is used to capacity. In this regard, the Council noted the review finding that there is likely to be a significant lag between exercising diversions and ecological impacts and the probability that the lower Balonne has not yet experienced the full impact of current diversions.

Queensland finalised the water resource plan for the Condamine–Balonne system in August 2004. It is still developing the resource operations plan, which must comply with the objectives and rules in the finalised water resource plan. Queensland provided information to show that, under the plan, the volume of water used could be as much as 20 per cent less than the volume that could have been taken under pre-existing arrangements. Nevertheless, there are some questions about the extent to which the water resource plan addresses the CoAG obligation to provide appropriate allocations to the environment. Although Queensland had committed to

implement the recommendations of the independent scientific review (which covered the four key ecological assets, including a wetting regime for the Narran Lakes), the water resource plan provides a wetting regime for a portion of the Narran Lakes only. The independent scientific panel considered, however, that the plan provides a reasonable interim solution until further information is available from the research currently underway on the flow requirements of the Narran Lakes and Culgoa floodplain. Moreover, the flow management rules in the water resource plan do not explicitly address the other three ecological assets — the lower Balonne River, the Culgoa River floodplain and the Darling River. The Council notes, however, the view of the independent scientific review that the dominant consideration in the lower Balonne system should be to ensure the Narran Lakes receive appropriate flows to maintain the vegetation and bird communities.

The (then) Department of Natural Resources, Mines and Energy sought input to the draft water resource plan from a range of stakeholders, including interests from New South Wales. In line with its policy approach on privacy matters relating to water planning, Queensland did not to publicly release the submissions in response to the draft plan although it did release a consultation report that outlines how it addressed the issues raised in submissions on the draft plan. Queensland has committed to review the water resource plan after five years and incorporate groundwater during the plan's 10-year life. It has also committed to monitor the impacts of water use, in accord with the requirements specified in the water resource plan, and is developing the monitoring program as part of developing the resource operations plan.

In addition to the Condamine and Balonne water resource plan the Council has considered all completed resource operations plans. In the 2003 NCP assessment the Council looked at the resource operations plan for the Burnett Basin and concluded that it satisfactorily addressed CoAG obligations on the provision of water to the environment. This year the Council considered the water resource and resource operations plans for the Fitzroy and Boyne basins. Queensland revised its future development plans for the Fitzroy Basin in light of the evidence that the developments proposed could have unacceptable adverse consequences for river health. In the final water resource plan for the basin, Queensland presented modelling evidence to demonstrate that its revised approach would largely be ecologically sustainable, although it recognised there could be further degradation in certain areas. Queensland advised that its revised approach was assessed by the independent technical advisory panel (which assessed the results of the modelling).

The plans for the Boyne Basin permit a significant increase in consumptive water use linked to extension of the Awoonga Dam. Queensland estimated this would deliver significant benefits to the local economy, although at some cost to the aquatic environment below the dam, including the estuary. The Queensland evidence raises a question as to whether the ecological sustainability objectives outlined in the Boyne Basin plans will be achieved.

Further Queensland's monitoring program for the Boyne River estuary covers fish only and does not extend to Port Curtis bay area. These constraints on monitoring may make it difficult for Queensland to identify environmental problems and implement appropriate responses.

All plans considered in this 2004 NCP assessment focus on the economic and social interests of water users, while accepting the potential for some decline in environmental health. At this stage, however, it is too early to determine the environmental outcomes because the plans have not been in place long enough for monitoring information and reporting on outcomes to be available. Given Queensland's commitments on monitoring and the Water Act requirement that the Minister for Natural Resources and Mines to amend plans if monitoring results show environmental flow objectives are not being met, the Council considers that Queensland has satisfactorily addressed its obligations for this 2004 NCP assessment.

For the 2005 NCP assessment Queensland should demonstrate that it has substantially implemented plans for the systems covered by its 1999 implementation program. This should include completing the resource operations plan for the Condamine–Balonne River (in accord with the undertaking given by Queensland in 2003 to finalise the water resource plan during the first half of 2004). Noting the advice of the independent scientific review, Queensland should be expected to have significantly advanced the research on the system's flow requirements currently under way. Consistent with its approach under other water plans, Queensland should also be expected to have implemented a program against which the outcomes of using water in accord with plans for the Condamine–Balonne system can be monitored, and commit to appropriate adaptive management should monitoring information indicate action is needed.

4.4 Water trading

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

In the 2003 NCP assessment, which considered intrastate trading arrangements, the Council found that Queensland had developed an effective framework for water trading but was in the early stages of implementation. Permanent trading generally depends on the finalisation of a resource operations plan for each basin. At the time of the 2003 NCP assessment, Queensland had finalised only one resource operations plan. Pending development of the trading provisions in the resource operations plans, Queensland implemented interim permanent trading arrangements through a water trading trial in several water supply schemes.

(*continued*)

Queensland needs to finalise its resource operations plans and ensure the trading rules in the plans facilitate trading where systems are physically shared or hydrologic connections and water supply considerations permit trading. It also needs to develop arrangements for interstate water trade with New South Wales.

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

Under the Water Act, Queensland is implementing arrangements for the permanent trading and leasing of water allocations through the preparation of resource operations plans. Permanent intrastate trade generally depends on the finalisation of a resource operations plan for each basin. Interstate trade depends on the completion of resource operations plans for the cross-border basins and of administrative arrangements with the other Murray–Darling Basin states.

Pending development of the trading provisions in the resource operations plans, Queensland implemented permanent intrastate trading arrangements for 'interim water allocations' through a water trading trial in the Mareeba–Dimbulah and some other water supply schemes.

Water may be traded temporarily via 'seasonal assignments' of part or all of the water available under a water entitlement for a water year. Seasonal assignments are permitted in supplemented systems subject to the approval of the scheme operator. In unsupplemented systems, seasonal water assignments require the approval of the Department of Natural Resources and Mines and are allowed only in areas where water entitlements are adequately specified (including in terms of volume) and the environmental risks are understood. Seasonal assignments in unsupplemented systems are limited to areas where a water resource plan, resource operations plan or regulation permits.[5]

Trading of allocations under resource operations plans

In areas covered by a water resource plan and resource operations plan, water allocations generally are separated from land title and may be traded permanently or leased. Resource operations plans provide for several types of dealing in water allocations:

- The 'transfer' of a water allocation involves a change in the ownership of the allocation. A transfer is lodged with the registrar (the Queensland Resource Registry) for recording the new ownership and does not require the approval of the resource manager (the Department of Natural Resources and Mines). If the allocation is in a supplemented system (that

[5] Before irrigating land under a seasonal assignment for two (or two out of three) consecutive water years, the purchaser must have a land and water management plan approved by the department.

is, a system where water is delivered from a dam and/or other infrastructure), the registrar will not register the transfer without evidence of a supply contract between the water allocation holder and the resource operations licence holder (for example, SunWater). Parties with a registered interest must be notified of proposed transfers, and their consent is required before a transfer can be registered.

- A 'change' to a water allocation involves a change in the nature of the allocation (such as the location from which water may be taken, the purpose for which the water may be used or the priority of the allocation) rather than a transfer of ownership. To change a water allocation, the holder must apply to the department for a water allocation dealing certificate. The department assesses the change against the rules in the resource operations plan. A certificate must be lodged with the registrar to record the change on the water allocation register. If the allocation is in a supplemented system, the registrar will not register the change without evidence of a supply contract between the water allocation holder and the resource operations licence holder.

  - To sell a water allocation to a downstream buyer, for example, the seller (or, after the event, the buyer) may need to apply to change the location of the water allocation to reflect the new downstream location. (Sales within the same zone generally do not require a location change.) A dealing certificate and a transfer document (to transfer the allocation to the new owner) must then be lodged with the registrar to record the change and transfer.

- Water allocations can also be 'subdivided' or 'amalgamated'.

Trading rules — referred to as 'water allocation change rules' — are usually specified in the resource operations plan for each basin. Typically, the rules specify permitted changes and prohibited changes. For physical reasons, trading is limited to the catchment covered by the resource operations plan. The plan area may be disaggregated into zones, based on hydrological considerations. Generally, a water allocation will allow the holder to take water from anywhere within the zone. The resource operations plan will usually include pre-tested volumes of water that may be traded between zones without affecting the reliability of supply and the achievement of environmental flow objectives. If the change can be made within these limits, it will be approved. If the change would cause the limits to be exceeded, the application must be advertised and assessed by the Department of Natural Resources and Mines. Refusal of the application may be appealed to the Land Court. Purchasers of water allocations require department approval of a land and water management plan before using the water for irrigation.

Trading of interim water allocations under the trading trial

A trial of permanent water trading commenced in the Mareeba–Dimbulah water supply scheme in 1999. With the new water trading framework in the Water Act, the trial continued under interim trading arrangements established by a Regulation under the Act. Following an evaluation in 2002, Queensland continued the trial in the Mareeba–Dimbulah scheme and extended it to parts of the Nogoa–McKenzie and Mary River schemes. It extended the scheme in response to the demand for water trading in these areas and because it expects that trading will not adversely affect environmental values.

The trial involves the trading of interim water allocations. Trade is restricted to landholders whom the relevant water supply scheme can supply — because the interim water allocations must re-attach to land — and to interim water allocations used for stock, domestic or primary production purposes. Transfers require the approval of the Department of Natural Resources and Mines, which may set conditions to avoid adverse environmental impacts. Applicants must provide evidence of a supply contract between the purchaser and the scheme operator, as well as the written consent of parties with a financial or other interest in the seller's land. Purchasers need to have a land and water management plan approved by the department before using the water for irrigation.

Recent trading activity

Before the commencement of the Water Act, there was limited scope for water trading in Queensland. Trade was effectively limited to temporary transfers via seasonal assignments (mostly in regulated systems) and, since 1999, to the pilot for permanent transfers, initially in the Mareeba–Dimbulah scheme. Trading is likely to remain relatively constrained pending the finalisation of water resource plans and resource operations plans.

Queensland advised that data on interstate trading are not available.

Seasonal assignments

In 2002-03 seasonal assignments or temporary transfers in water supply schemes managed by SunWater amounted to over 250 000 megalitres (table 4.2). This volume was more than twice that traded in the previous year and almost four times that traded in 2000-01. The number of temporary transfers almost trebled over this period. In 2002-03, around 40 per cent of transfers (by volume) were in the Burdekin–Haughton scheme.

Table 4.2: Temporary transfers in SunWater schemes

Water supply scheme	*2000-01*		*2001-02*		*2002-03*	
	no.	*ML*	*no.*	*ML*	*no.*	*ML*
Awoonga–Callide pipeline	–	–	–	–	–	–
Barker–Barambah	39	2 370	50	3 100	104	5 691
Bowen–Broken rivers	1	40	1	675	22	922
Boyne River and Tarong	54	2 342	6	1 010	32	1 935
Bundaberg	237	4 761	460	6 842	269	16 101
Burdekin–Haughton	23	7 222	118	29 905	327	103 858
Callide Valley	19	453	12	258	13	345
Central Lockyer Valley	9	230	–	–	–	–
Chinchilla Weir	19	490	16	399	2	30
Cunnamulla Weir	2	52	2	70	5	421
Dawson Valley	79	7 407	84	5 256	88	2 788
Julius Dam	–	–	–	–	–	–
Logan River	16	901	29	1 777	81	4 594
Lower Fitzroy	–	–	–	–	1	1
Lower Lockyer Valley	22	471	35	437	12	125
Macintyre Brook	41	2 907	68	7 618	53	3 571
Maranoa River	–	–	–	–	–	–
Mareeba–Dimbulah	54	2 917	149	10 236	292	27 041
Mary River	17	1 132	53	2 246	175	3 463
Nogoa–Mackenzie	45	20 957	90	28 424	230	42 904
Pioneer River	–	–	5	472	11	2 064
Proserpine River	–	–	2	1 020	120	9 331
St George	45	5 608	90	11 235	71	8 301
Three Moon Creek	13	448	17	553	8	649
Upper Burnett	36	787	50	1 379	43	1 800
Upper Condamine	62	4 800	65	2 181	4	2 845
Warrill Valley	35	1 130	59	433	5	2 971
Total	**872**	**67 651**	**1 490**	**118 776**	**2 462**	**253 184**

ML Megalitres.

Source: Government of Queensland 2004

Trading trial

Since commencement of the trading trial in the Mareeba–Dimbulah scheme in 1999, there have been over 80 permanent transfers in the scheme, amounting to almost 2800 megalitres (table 4.3). A similar volume was permanently transferred in the Nogoa–Mackenzie scheme between the extension of the trial in 2002 and its cessation in January 2004 (on commencement of the resource operations plan for the Fitzroy Basin, which includes the scheme).

Before amendments to the transfer process in May 2003, the Department of Natural Resources and Mines used to take from one to 12 months to process applications for transfers under the trial. Queensland has advised that the new requirement for applications to include evidence of a supply contract with the scheme operator has significantly improved processing times.

While it does not collect official data on prices, Queensland has indicated that the price range for permanent transfers of interim water allocations has been $300–1000 a megalitre in the Mareeba–Dimbulah scheme, and the price has exceeded $1000 a megalitre in the Nogoa–Mackenzie scheme.

Table 4.3: Permanent transfers in the Mareeba–Dimbulah and Nogoa–Mackenzie water supply schemes

	Mareeba–Dimbulah		*Nogoa–MacKenzie*	
Water year	*Applications*	*Transfers*	*Applications*	*Transfers*
	no.	*ML*	*no.*	*ML*
1999-2000	4	164	na	na
2000-01	9	275	na	na
2001-02	25	912	3	637
2002-03	35	1 001	8	1 147
2003-04[a]	12	434	14	1 159
Total	**85**	**2 786**	**25**	**2 943**

[a] From 1 July 2003 to 14 January 2004. **na** Not applicable. The trading trial was extended to the Nogoa–MacKenzie scheme in 2001-02.

Source: Government of Queensland 2004

Trading under resource operations plans

Permanent trading in the Burnett Basin has been possible since May 2003, following the completion of the resource operations plan for the basin. From 1 July 2003 to 13 October 2004, there were 46 permanent water allocation transfers totalling over 2600 megalitres. The typical price paid for permanent transfers in the Burnett Basin is $1000 a megalitre.

Permanent trading in the Fitzroy Basin has been possible since January 2004, following the completion of the resource operations plan for the basin. From 12 January 2004 to 13 October 2004, there were 21 permanent water allocation transfers totalling almost 3000 megalitres. The typical price paid for permanent transfers in the Fitzroy Basin is $1700 a megalitre.

Queensland advised that permanent transfers involving a change to the water allocation have generally been approved (and a dealing certificate issued) within 14 business days.

Reform progress

Following Queensland's completion of the resource operations plan for the Fitzroy Basin in January 2004, permanent trading in water allocations is now permitted in the Fitzroy and Burnett basins.[6] As with the Burnett plan, the resource operations plan for the Fitzroy Basin includes trading rules that specify permitted and prohibited changes, including the location from which water may be taken, the purpose for which the water may be used and the priority of the allocation. The plan also includes pre-tested volumes of water that may be traded between zones without affecting the reliability of supply and the achievement of environmental flow objectives. Changes outside these limits require public advertisement and individual assessment by the Department of Natural Resources and Mines.

The trading trial ceased in the Nogoa–Mackenzie scheme once the resource operations plan for the Fitzroy Basin commenced. It will continue in the Mareeba–Dimbulah and Mary River schemes until the relevant resource operations plans are completed. The plan for the Barron Basin (which includes the Mareeba–Dimbulah scheme) is expected to commence in early 2005.

In areas for which resource operations plans will be completed or extended after 2005 (the deadline under the 1994 CoAG agreement for substantial completion of trading arrangements), Queensland has provided the following information on the expected level of demand for trading. Where plans are to include overland flows and groundwater, it has noted that physical constraints may limit the possibility of trading, irrespective of demand.

- *The Calliope plan (expected completion in November 2006).* There is no immediate need for water trading because less than 10 per cent of the available water is being used.
- *The Logan (expected completion in September 2007), Mary (expected completion in September 2007) and Moreton (expected completion in May 2008) plans.* Preliminary analysis indicates that future demand for trading will be low to moderate, given reasonable opportunities for improvements in intra-sector water use efficiency.

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6 The resource operations plan for the Boyne Basin (completed in July 2003) does not provide for permanent trading (separate from land sales). Most of the water entitlements in the basin are held by the Gladstone Area Water Board and have been converted to water allocations. There are around 30 other existing water licences, which Queensland has decided not to convert to tradable water allocations (but which will be converted from an area basis to a volumetric basis). Some of the water licences upstream of the Awoonga Dam will be cancelled when the dam is raised. As there is additional water to be made available via new water licences, Queensland advised that 'there is no immediate need for water trading' in the Boyne Basin (Government of Queensland 2004).

- *The Wet Tropics (expected completion in 2008) and Whitsunday (expected completion in January 2007) plans.* The expected demand for water trading is low, particularly in the Wet Tropics where water is abundant relative to demand.

- *The Burnett plan.* The existing resource operations plan covers those areas with the highest demand for trading in surface water. The Barker Barambah and Boyne and Tarong water supply schemes are likely to be included in 2005. The resource operations plan will be amended in 2005 to establish significant allocations for the Burnett River Dam and Eidsvold Weir. In the Three Moon catchment (which is to be included in the plan in 2006), the demand for trading is expected to be low. The plan is also to be amended after 2005 to include groundwater. Queensland monitors overland flow development impacts annually to determine if the plan's objectives are being achieved. Moderate demand for trading in groundwater is expected in some areas (such as the Bundaberg subartesian area). Outside of these areas, little demand for trading in groundwater is expected. There is limited demand for trading in water from overland flows.

- *The Fitzroy plan.* The existing resource operations plan covers those areas with the highest demand for trading in surface water. Outside these areas, demand for trading in surface water is likely to be relatively low. The plan is to be amended after 2005 to include overland flows and groundwater (a draft was released for consultation in October 2004). Moderate demand for trading in water from overland flows is expected in some areas (such as the Comet and Nogoa–Mackenzie subcatchments). Moderate to high demand for trading in groundwater is also expected in some areas (such as the Callide Valley subartesian area). Outside of these areas, little demand for trading in overland flows or groundwater is expected.

In June 2004 the Department of Natural Resources and Mines released for public consultation an options paper on approaches to dealing with the 'stranded assets' problem that may arise from trading out of water supply schemes. The paper indicates that the department is further investigating exit fees and/or the development of separate markets in reticulation infrastructure capacity. The department expects a final policy position to be determined by late 2004. Queensland has advised that it has not implemented caps on trade out of irrigation schemes. However, in one case (Avondale Water Board in the Burnett Basin), tradable allocations were not granted to end users, pending finalisation of the policy on trading out of schemes.

In mid-2003, the Department of Natural Resources and Mines released a series of information brochures as part of a water trading information kit. The brochures explain the different types of water entitlement and the trading arrangements that apply to each type, as well as the separation of water from land (including the impacts on land valuations). In December 2003 the department held workshops in Rockhampton and Emerald in the lead-up to the release of the resource operations plan for the Fitzroy Basin.

The sessions were targeted at water entitlement holders, lawyers, accountants, solicitors and financial institutions.

For areas covered by completed resource operations plans, the department is providing up-to-date data on its website on the volume of water in each trading zone and on the corresponding minimum and maximum limits for pre-tested trades. It is also considering options for reporting trading data online. It intends to publish periodic reports and annual summaries of permanent transfers on its website. The data will include changes to the location of water use (arising from trades) and the price paid a megalitre, for each water management area or scheme. In addition, the department is providing access to raw data to a private organisation that processes data for clients on land transfers.

Queensland has not advised of any developments on interstate trade.

Submissions

As noted in section 4.2, the Pioneer Valley Water Board requested the Council's support for the National Water Initiative to provide for irrigation water supply businesses to hold bulk entitlements for their schemes, rather than individual irrigators holding entitlements. It noted that water allocations will be separated from land titles and fully transferable once the resource operations plan for the Pioneer catchment commences (scheduled for late 2004). The board, which is a statutory authority, is proposing to convert its irrigation scheme into an irrigator-owned cooperative. Under the proposed arrangements, individual entitlements would be converted to shares in the cooperative. Each share would attract an annual fixed charge (to meet the loan repayment and fixed costs of the scheme). Water trade would occur through trading of the shares, subject to any trading restrictions required to address the hydrological and physical constraints of the system. The board considered that providing for the irrigation water supply businesses to hold bulk entitlements would help to ensure the financial viability of irrigation schemes (when water is traded out of a scheme's area) and simplify arrangements for trading.

Queensland rural water boards (representing nine irrigation water supply boards) also supported irrigation water supply businesses holding bulk entitlements under arrangements similar to those proposed by Pioneer Valley Water Board. The organisation considered that such an approach would ensure the financial viability of irrigation schemes while fully complying with CoAG obligations on water trading.

Payne Butler Lang Solicitors and Fergus Duncan Real Estate have been heavily involved in the trading of water entitlements in the Burnett region, the latter as a water broker. In a joint submission, they raised the following concerns about the arrangements for water trading under the Burnett Basin resource operations plan.

- The number of river zones (13 in the upper Burnett alone) is excessive. There should be only three or four zones set with reference to water infrastructure and the practical limits on water movement.

- The minimum and maximum nominal volumes (that is, the pre-tested trading limits) specified in the plan were set too conservatively and are severely hampering water trading. A significant number of trades were made in the upper Burnett in the second half of 2003 but trading has effectively ceased because the limits have been reached. The plan should allow 10–20 per cent of the allocations in each zone to be traded, compared with the average limit of 3.8 per cent on the volume of allocations imported into a zone.

- The Department of Natural Resources and Mines undertook to review the river zone limits in late 2003 and early 2004, but has not done so. It has promised to complete a review by June 2005. A six-monthly review process should be established.

- The department has taken an inflexible approach to assessing land and water management plans. This has resulted in farmers limiting their estimates of water requirements, increasing crop loss risks in dry years.

- There is no online service providing information on water sales (via trading) in Queensland. A comparable system to that for land sales is required for efficient water trading to develop.

Discussion and assessment

Queensland has developed arrangements to enable permanent intrastate trade in water allocations (including leasing) but is in the early stages of implementation. Resource operations plans are required to enable permanent trading (outside the schemes covered by the trading trial) and to define the trading rules, but Queensland has completed only three (of 19) plans. Temporary trade, via seasonal assignments, is permitted in supplemented systems and in other areas where water entitlements are adequately specified and the environmental risks are understood. There is no restriction on the number of consecutive periods in which water can be temporarily traded.

Pending the completion of the relevant resource operations plans, under the trading trial in the Mareeba–Dimbulah and Mary River schemes, permanent trade is limited to landholders in the schemes and to water used for stock, domestic and primary production purposes. These interim arrangements are inconsistent with the CoAG water trading obligations.

Interstate trade involving Queensland depends on the completion of the resource operations plans for the Border Rivers, Condamine–Balonne, Moonie and Warrego/Paroo/Bulloo/Nebine basins. The completion of the plans will enable Queensland's Murray–Darling Basin Ministerial Council cap on diversions to be finalised. Queensland will also need to finalise administrative

arrangements with the other Murray–Darling Basin states (particularly New South Wales) to enable permanent trading to occur.

In previous NCP assessments, the Council was satisfied that water allocations in Queensland will be sufficiently well specified to facilitate trading once the resource operations plans are in place. Water allocations are being progressively separated from land title as the plans are completed: holders of water allocations are not required to own land or have the ability to use the water. Further, allocations are recorded on a water allocations register, which provides security of title and includes details of third party interests. The consent of registered interests is required before a change to an allocation can be registered.

The arrangements for water trading in Queensland include measures to ensure trade does not adversely affect the environment or other water users. The underlying principle for the trading rules in the resource operations plans is that transfers must not compromise the achievement of the key environmental flow and water allocation security objectives of the relevant water resource plan. In addition, irrigators are generally required to prepare land and water management plans before water obtained via trading can be used. With respect to the Burnett Basin, Queensland advised that there have been issues concerning the ability of some applicants to supply the information required by the Department of Natural Resources and Mines for approval of land and water management plans.

Queensland advised that the trading restrictions in resource operations plans typically relate to the physical constraints of the supply system and to the flows necessary to ensure the achievement of environmental and water allocation security objectives. In response to concerns about the limits on trading between zones in the Burnett Basin resource operations plan (including concerns in the submission from Payne Butler Lang Solicitors and Fergus Duncan Real Estate), Queensland has advised that the Department of Natural Resources and Mines is undertaking further work to amend the pre-tested limits if it is possible to do so while still complying with the water resource plan. (It has briefed Mr Duncan on its actions.) Queensland has also indicated that the resource operations plan will be amended to include new infrastructure in 2005, when additional water will become available and all zones and limits will be amended accordingly. For other resource operations plans, Queensland is aiming for zones to be as broad, and trading rules to be as flexible, as possible while meeting the water allocation security objectives and the environmental flow provisions of the relevant water resource plan. The Council notes that Queensland has a process to enable trade to occur outside the pre-tested limits in the resource operations plans if that trade complies with the water resource plan.

Based on the Council's consideration of the resource operations plans for the Burnett and Fitzroy basins, constraints on trading in the trading rules appear to reflect environmental and physical constraints. Queensland will need to ensure the trading rules in subsequent plans also facilitate trading where water systems are physically shared or hydrologic connections and water supply considerations permit trading.

Queensland has released an options paper on approaches to managing assets that may become stranded as a result of trading water permanently out of irrigation schemes, and expects to determine its final policy position by late 2004. It has indicated that it may delay (until the policy is settled) the release of draft resource operations plans for catchments where the stranding of assets could occur (such as the Pioneer catchment). Queensland has an opportunity to consider the issues raised by the Pioneer Valley Water Board and Queensland rural water boards as part of this process.

Given the experience in southern states, Queensland needs to be wary of the potential for irrigation cooperatives or corporations to introduce their own restrictions on trade out of irrigation areas (irrespective of whether they hold bulk water entitlements). As a signatory to the National Water Initiative, Queensland has committed not to impose new barriers to trade (including barriers in the form of arrangements for addressing stranded assets) and to ensure mechanisms such as access and exit fees do not become an institutional barrier to trade. It has also committed to implement measures to facilitate the rationalisation of inefficient infrastructure or unsustainable irrigation supply schemes, and to consider the need for structural adjustment assistance in such cases. The introduction of arrangements that restrict water trading, for reasons other than the physical or hydrological constraints of systems or to protect the environment, would contravene these commitments.

Under the 1994 CoAG water reform agreement, trading arrangements were to be substantially implemented by 2005, for the water sources covered by governments' 1999 implementation programs. The National Water Initiative extends to 2007 the timeframe for establishing institutional and regulatory arrangements that facilitate intra- and interstate trade. By the end of 2007, Queensland expects to have completed 17 of the 19 resource operations plans under its implementation program (although groundwater and/or overland flows may still need to be included in some cases). The two remaining plans (Moreton and Wet Tropics) are scheduled for completion in 2008. Queensland expects little demand for trading in the Wet Tropics and low to moderate demand in the Moreton region.

The Department of Natural Resources and Mines confirmed that demand for trading is low in the areas not intended to be covered by water resource and resource operations plans. It will consider implementing water management and trading arrangements in these areas if the demand for trading increases. It will consider water trading in advance of water resource planning, however, only if environmental impacts are adequately understood and can be managed.

Given the infancy of permanent trading in Queensland, water trading mechanisms are still developing. Trading is possible, however, through private trades, brokers and a private web based water exchange. Information on prices, quantities and locations has been limited but is improving. The Department of Natural Resources and Mines has improved the availability of information on water allocations and the process and rules for trading. It is also expanding the scope of the trading information included on its website.

Queensland is in the early stages of implementing its arrangements for permanent water trading, both intra- and interstate. Noting the National Water Initiative commitments on trading and Queensland's expected progress with water planning by 2007, the Council considers that Queensland has made satisfactory progress against its CoAG obligations on water trading for the 2004 NCP assessment.

4.5 Investments in new rural water schemes

Assessment issue: Investments in new rural water schemes or extensions to existing schemes are to be undertaken only after appraisal indicates the scheme or extension is economically viable and ecologically sustainable.

In the 2003 NCP assessment, the Council concluded that Queensland had met CoAG obligations relating to economic viability and ecological sustainability for the Burnett Water Infrastructure Project, except for the raising of the Ned Churchward Weir, for which the environmental processes were still to be completed.

If the raising of the Ned Churchward Weir proceeds, Queensland will need to demonstrate compliance with the CoAG obligation on ecological sustainability.

References: 1994 CoAG water reform agreement, clause 3(d)(iii); Intergovernmental Agreement on a National Water Initiative

The $210 million Burnett Water Infrastructure Project in Queensland involves the construction of the 300-gigalitre Burnett River Dam, Eidsvold Weir and Barlil Weir, and the raising of the Jones Weir and Ned Churchward (formerly Walla) Weir. In the 2003 NCP assessment, the Council concluded that Queensland had met CoAG obligations relating to the project's economic viability and ecological sustainability, except for the raising of the Ned Churchward Weir, for which the environmental processes were still to be completed.[7] In that assessment, Queensland provided independent economic analyses[8] that showed the project would be economically viable and confirmed

[7] Subsequent to the Council completing the 2003 NCP assessment, the Australian Government Minister for the Environment and Heritage listed the Queensland lungfish as a vulnerable species under the *Environment Protection and Biodiversity Conservation Act 1999*. The Minister thus imposed additional conditions on the Burnett project relating to the lungfish.

[8] The main economic analysis was by Network Economics Consulting Group and is publicly available (NECG 2001). Additional studies considered the prospects for Burnett primary producers (ACIL Consulting) and the capacity and willingness of potential users to pay for new water allocations (PricewaterhouseCoopers). These additional studies contain commercial-in-confidence material and have not been made public. However, Queensland reported the main findings of the studies in its 2003 NCP annual report (Government of Queensland 2003) and provided the Council with a copy of each of the studies on a commercial-in-confidence basis.

that the project (except for the Ned Churchward Weir) met Queensland's and the Australian Government's environmental approval processes.

Developments since 2003

Burnett Water Infrastructure Project

Construction of the Burnett River Dam and Eidsvold Weir commenced in late 2003 and early 2004 respectively. Queensland has indicated that construction of the Barlil Weir and the raising of the Jones Weir are scheduled to commence as soon as outstanding planning matters are resolved. It has advised that the environmental impact assessment process for the raising of the Ned Churchward Weir remains on hold, pending the completion of environmental studies on a species of turtle.

Nathan Dam

The proposed Nathan Dam is an 880-gigalitre dam project within the Dawson subcatchment of the Fitzroy River in central Queensland. A private sector proponent, Sudaw Developments Ltd, proposes to construct the dam at an estimated cost of $150 million.

Queensland has advised that the state environmental impact assessment processes for the project are complete but the project has been designated a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth). The Australian Government Minister for the Environment and Heritage determined the project to be a controlled action in September 1992, finding that it was likely to have a significant impact on certain listed threatened species and ecological communities, but no significant impact on the heritage values of the Great Barrier Reef World Heritage Area. In December 2002, the Minister determined that the dam proponent would need to assess these impacts of the project through a public environment report.

The Queensland Conservation Council and WWF Australia sought a Federal Court review of the Minister's determinations. In December 2003 the Federal Court determined that the Minister was required to have regard for not just the immediate impacts of the dam, but also other effects, including the effects of the irrigated agriculture (such as cotton growing) and other developments likely to be permitted by the dam. The court's determination obliges the Minister to reconsider the project. The Australian Government appealed the determination to the full bench of the Federal Court. The Federal Court has rejected the appeal. The Queensland Government has advised the Council that it is not aware that any of the elements of the Nathan Dam case would have implications for the Burnett project.

Submissions

In its submission to the 2004 NCP assessment, the Queensland Conservation Council has reiterated the view in its submission to the 2003 NCP assessment that the Burnett Water Infrastructure Project is neither ecologically sustainable nor economically viable. It also expressed concern with the National Competition Council's approach and findings on the project in the 2003 NCP assessment.

The Wide Bay Burnett Conservation Council has raised similar concerns with the Burnett project and supported the Queensland Conservation Council's submission.

The submissions from WWF Australia and the Queensland Conservation Council have raised issues regarding cost recovery and community service obligations for the Burnett project, as considered in section 4.1.

Discussion

In the 2003 NCP assessment, the Council finalised its assessment of Queensland's compliance with CoAG obligations relating to the economic viability and ecological sustainability of the Burnett Water Infrastructure Project (except for the raising of the Ned Churchward Weir). It concluded that Queensland had met its CoAG obligations.

If Queensland proceeds with the raising of the Ned Churchward Weir, it will need to demonstrate that the project is ecologically sustainable. In the 2003 NCP assessment, the Council expressed its view that approval of the weir raising under Queensland's and the Australian Government's environmental approval processes, and a commitment by Queensland to meet all conditions imposed as a result of these processes, would constitute compliance with the CoAG obligation.

The submissions from the Queensland Conservation Council and the Wide Bay Burnett Conservation Council have argued that the Burnett Water Infrastructure Project does not meet the economic viability and ecological sustainability tests. However, the National Competition Council explored these matters in the 2002 and 2003 NCP assessments (NCC 2002, 2003a), and the 2004 submissions have raised no new issues and provided no additional information on the Burnett project. The submissions have misunderstood the nature of the CoAG obligation relating to the appraisal of new water infrastructure, and the National Competition Council's role in assessing governments' compliance (see chapter 1).

If the Nathan Dam proceeds, Queensland will need to demonstrate that this project is ecologically sustainable. As with the Burnett appraisal process, Queensland will need to demonstrate that the Nathan Dam project is approved under Queensland's and the Australian Government's

environmental assessment processes and that any conditions imposed by those processes are met. The obligation under the NCP to demonstrate that the project is economically viable is not relevant because the Nathan Dam is a private sector project.