



South East Queensland Regional Water Supply Strategy

Stage 2 Interim Report

2nd edition

First printed November 2005

© The State of Queensland (Department of Natural Resources and Mines) 2005

QNRM 05497

#27695

Foreword

As South East Queensland is home to one in seven Australians, a secure water supply is essential.

The region is the fastest growing in Australia, which reflects the tremendous opportunities and great lifestyle we have on offer. Sustaining this success presents a challenge both for the government and the community.

It's a big job to balance growth with continued prosperity, while retaining our high standard of living. This has been tackled at a strategic level by the *South East Queensland Regional Plan* and the *South East Queensland Infrastructure Plan and Program*.

Successfully managing future development and maintaining our liveability will hinge on how well we secure water supplies and address the challenges posed by climate change and an increasing population.

Water supplies have been under enormous pressure because of continued drought conditions.

The Council of Mayors (SEQ), representing the 18 councils of South East Queensland, and the Queensland Government are working together to address the water needs of South East Queensland for the next 50 years. The *South East Queensland Regional Water Supply Strategy—Stage 1 Report* was completed in 2004 and provided important baseline data upon which to build the strategic plan for regional water supply.

The *South East Queensland Regional Water Supply Strategy—Stage 2 Interim Report* articulates the Council of Mayors' (SEQ) and the Queensland Government's approach to ensuring that water supplies meet our short and medium-term needs. In particular, it lists the projects that will be fast tracked to address future needs.

The strategy's early release in interim form, demonstrates our commitment to meeting regional, urban and industrial water supply needs, by addressing the immediate challenges of the current drought.

While there is scope to address some rural water supply issues, these will primarily be considered through broader water resource planning processes, and a comprehensive strategy will be outlined in the final report due in 2006.

The *Stage 2 Interim Report* recognises that action taken now, in partnership with the region's main stakeholders, will help us achieve our goals.

Our partnership approach is essential. All of us have a part to play—from those who are passionate about water conservation, to the consumer, and those who supply water to our homes and businesses.

The Queensland Government provides the framework necessary to manage our water resources, establish water supplies and support the implementation of innovations.

Concurrently, water service providers such as SEQWater, SunWater, AquaGen and local governments will have a critical role in ensuring that water needs are equitably met throughout the region, irrespective of jurisdictional boundaries.

With this in mind, the *Stage 2 Interim Report* is a significant step towards achieving coordinated and sustainable growth. Importantly, it addresses short and medium-term water supply issues, which are essential for enabling our region to prosper.



Hon Peter Beattie MP
Premier and Treasurer



Hon Henry Palaszczuk MP
Minister for Natural Resources
and Mines



Campbell Newman
Chairman,
Council of Mayors (SEQ)

Contents

Foreword	iii
Executive summary	1
Background	2
Overall purpose and objectives	3
Geographical extent	4
Relationship to other policy	5
Water planning and management in SEQ	6
Who manages and supplies our urban water in SEQ?	6
How we plan for water	9
Water challenges in SEQ	11
The current challenge—drought	11
Longer-term challenges—population and climate	12
The challenge of institutional arrangements in SEQ	14
Interim Report	15
Summary of short, medium and long-term actions	16
Detailed description of short-term and drought contingency planning projects	18
Interim Report—implementation plan	21
Governance arrangements progressing the Interim Report	21
Finalising the SEQRWSS—Stage 2	21

Maps, tables, figures and graphs

Map 1	SEQ Regional Water Supply Strategy study area and neighbouring local government areas	4
Map 2	SEQ surface water sources	7
Map 3	Water resource plan areas in SEQ	10
Table 1	Major urban water sources in SEQ	8
Table 2	Summary of short, medium and long-term actions	16
Table 3	Effect of reducing consumption	22
Figure 1	Breakdown of current water use in SEQ	6
Figure 2	The water balance	9
Graph 1	SEQ urban and industrial demand projections	12
Graph 2	SEQ urban and industrial supply and demand projections Effect of reducing storage yields	13
Graph 3	Possible infrastructure program to meet future demand	21

Executive summary

Since the 1980s, South East Queensland has experienced unprecedented growth with its population now increasing at around 50 000 people each year. This growth has coincided with the second worst drought on record. If significant inflows to the Wivenhoe, Somerset and North Pine dams are not received by around February 2006, South East Queensland will be in the grip of the worst drought in recorded history.

On the basis that the use of water is properly managed and the area's major dams receive minimum recorded inflows, the region has about three years of supply remaining. Only about 75 per cent of water supplies estimated to be available, based on historical rainfall records, are currently being used. Had consumption been more than this, the area's remaining water reserves would be lower than they are.

The current drought has exposed the vulnerability of continuing to use historical approaches to determine available supplies in a region that experiences significant climate variability, and where there is now evidence that climate change is occurring.

The provision of secure water supplies is essential to support the long-term growth in the region as detailed in the *South East Queensland Regional Plan*. To this end, the Queensland Government in partnership with the Council of Mayors (SEQ) has developed this *South East Queensland Regional Water Supply Strategy—Stage 2 Interim Report (the Interim Report)* to outline what is being done to address the challenges associated with population growth, climate variability and climate change.

The *Interim Report* draws on previous planning to develop a long-term water supply strategy for the region. It also considers contingency planning undertaken to address the current drought. The focus on drought contingency measures has been to extend the time over which urban and industrial supplies may be provided by Wivenhoe, Somerset and North Pine dams and to provide additional supply as needed.

The *Interim Report* provides details of shorter-term priority projects and contingency planning initiatives to be commenced in the period 2005–2009 and lists likely medium-term (2010–2020) and possible long-term (2021–2050) initiatives. The medium and long-term initiatives will be

explored in greater detail before formulating the final South East Queensland Regional Water Supply Strategy—Stage 2 Report due at the end of 2006. The shorter-term and priority contingency planning measures are being overseen by a high-level steering committee to fast track project delivery.

The significant short-term initiatives involve measures to reduce the demand on our existing supplies; increase supply as necessary; and better manage the operation of existing supplies. They include:

- water restrictions, water conservation, pressure reduction and leakage management to reduce consumption and water losses
- recycled water substitution to industry and power stations to reduce demand from the Wivenhoe and Somerset dams system
- recommissioning a number of small dams no longer used since the construction of Wivenhoe Dam
- development of minor aquifers
- construction of Cedar Grove Weir on the Logan River and a weir on the Mary River
- investigation of regional desalination facilities
- optimised distribution and management of water supplies.

The *Interim Report* does not address Toowoomba's water supply needs, which are being progressed through the Toowoomba Water Futures initiative, nor does it address rural water supplies. These will be incorporated in the development of the final regional water supply strategy.

Developing the final regional water supply strategy for South East Queensland is a significant task. The area covers 22 420 km² and incorporates 18 local government areas. It stretches 240 km from Noosa in the north, to the New South Wales border in the south, and 140 km west to Toowoomba. The strategy will continue to be developed under existing partnership arrangements between the Queensland Government, the Council of Mayors (SEQ) and a dedicated project team whose work started early in 2003.

Background

From the early days of white settlement, successive governments (both state and local) have planned for and invested in water supply infrastructure for South East Queensland as warranted by population and industrial demands. A number of new proposals have been identified for future development.

Since the early 1990s, the government has embarked on an innovative approach to water planning that has given greater emphasis to environmental and, more recently, climate issues.

Over the past decade the region has experienced significant and rapid growth in water consumption due to:

- population growth in South East Queensland
- changes in the use of water in industry and the home.

This growth has been considerably greater than previously forecast.

For some time now, state and local governments have recognised the need to work together to formulate regional strategies for water supply. To address the water supply issues for South East Queensland (SEQ), the Queensland Government and the South East Queensland Regional Organisation of Councils (SEQROC), now the Council of Mayors (SEQ), began work on the SEQ Regional Water Supply Strategy (SEQRWSS) in early 2003.

It was envisaged that the strategy would be a staged process and would be developed through a partnership arrangement.

A SEQRWSS Steering Committee was established with state and local government representation. Stage 1 of the SEQRWSS was completed in 2004 and is an important contribution to better understanding the water supply issues in SEQ. The results from the Stage 1 report included:

- collating important baseline data on water availability, water use patterns in rural and urban areas and urban water supply systems
- exploring possible options for improving regional water supply
- providing an important forum for major stakeholders in the study area to express their concerns and identify their interests and preferred options for future action.

Stage 1 has provided a sound base for further development of the strategy.

As work on Stage 2 of the strategy began, it became apparent that priorities for the strategy would have to change owing to the immediate concerns initiated by the current drought—the second worst drought on record. This and unexpectedly high population growth has resulted in historically low water storage levels.

In view of the magnitude and urgency of the drought-related challenges, the Queensland Government announced on 23 August 2005 that it would take a lead role in drought contingency planning and addressing the threats to longer-term water security in SEQ. The Queensland Government will continue to work with local governments and SEQWater on these matters.



Overall purpose and objectives

The purpose of Stage 2 of the SEQRWSS is to provide advice to the Council of Mayors (SEQ) and the Queensland Government on strategies to augment the supply and distribution of water to meet future needs from 2005 to 2050.

Because of the critical challenges caused by the extended current drought, it has been agreed that an *Interim Report* should be released earlier than the anticipated SEQRWSS Stage 2 Report. Many of the proposed projects will continue to be reviewed and refined according to needs as the drought either continues or breaks. The objectives of the *Interim Report* are to:

- recommend specific short-term actions to meet drought contingency planning requirements
- identify medium-term proposals that will contribute to longer-term water security in the region
- identify possible measures that will contribute to longer-term water security in the region.

These objectives will be explored further in the final SEQRWSS Stage 2 Report to be completed towards the end of 2006.

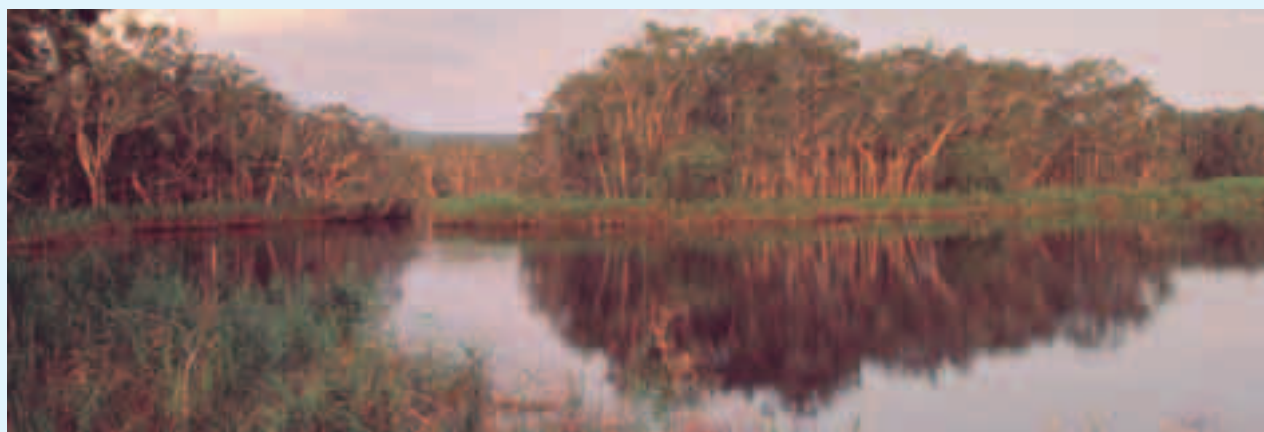
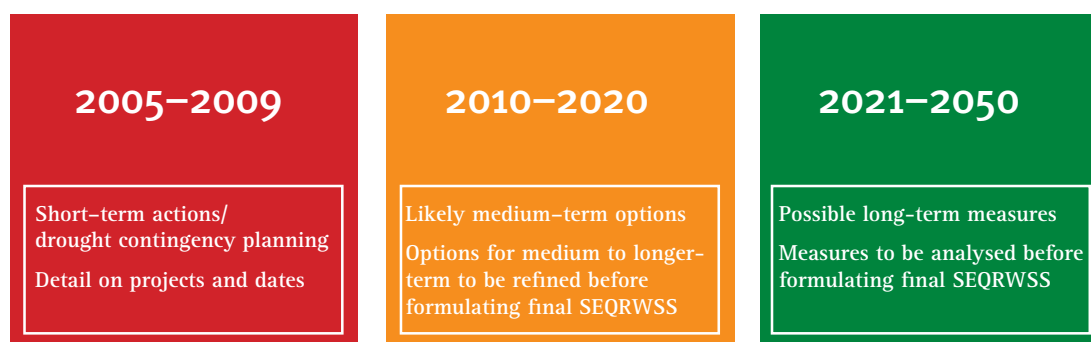
A final SEQRWSS Stage 2 Report is planned for release in late 2006. The final report will have more information on the medium and longer-term proposals identified in the *Interim Report*.

The *Interim Report* does not specifically address Toowoomba water supply needs. In response to concerns about potential water shortages, the Toowoomba City Council has initiated the Toowoomba Water Futures proposal.

Toowoomba City Council is continuing to refine its supply options and this work will be incorporated into the development of the final report.

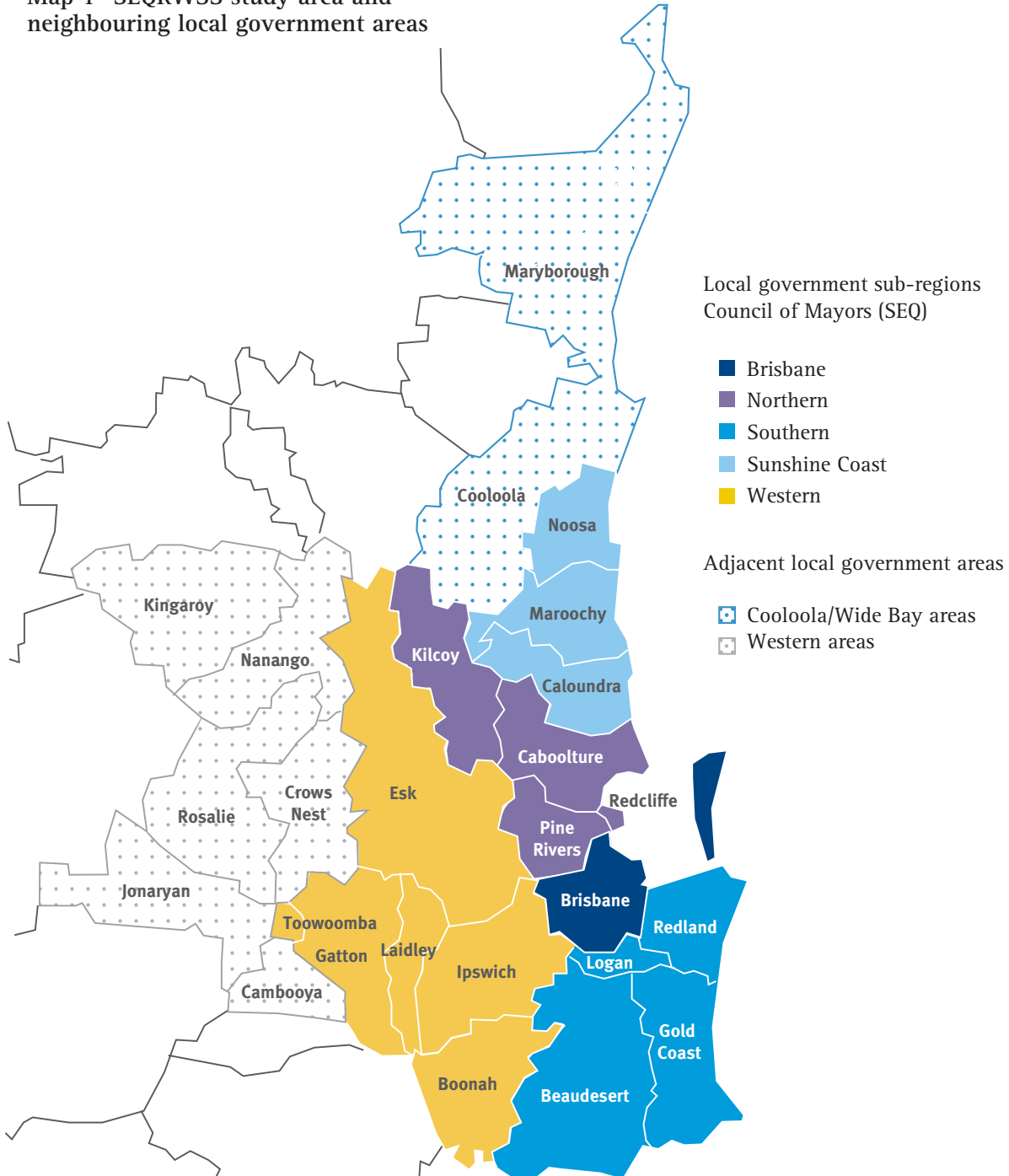
The *Interim Report* does not specifically address the broader rural water issues across the region. The challenging rural water issues are being considered through broader water resource planning processes and other elements of the strategy that will be incorporated into the development of the final SEQRWSS.

SEQRWSS timeframes



Geographical extent

Map 1—SEQRWSS study area and neighbouring local government areas



Map 1 shows the area being investigated as part of the SEQRWSS. Detailed consideration is being given to the areas covered by Council of Mayors (SEQ) member councils, but there are a number of significant connections across these boundaries and, where relevant, these have been taken into account.

Relationship to other policy

The *Interim Report* has been developed in a coordinated manner to ensure consistency and compatibility with the other recently released strategic planning documents. These include:

SEQ Regional Plan

On 30 June 2005, the Queensland Government released the *SEQ Regional Plan* after extensive public consultation on the work undertaken in partnership with SEQ councils. It identified the following five strategic priorities for water in the region:

1. ensure more efficient management and use of water
2. increase the supply of water to accommodate growth in the region
3. diversify water supplies to address climatic variability, climate change and other supply risks
4. ensure policy frameworks and subsidies support more sustainable and total water cycle management
5. review institutional arrangements to ensure efficient, sustainable and equitable bulk water supply and treatment services.

The Queensland Government's support for these actions was underscored with a commitment to provide \$860 million over the next 20 years under the *SEQ Infrastructure Plan and Program*, either directly or through local government subsidies, for strategic water projects.

SEQ Infrastructure Plan and Program

The *SEQ Infrastructure Plan and Program* outlines the Queensland Government's infrastructure priorities to support the *SEQ Regional Plan*. It establishes priorities for regionally significant infrastructure over the next 10 years in an appropriate and timely manner, but within the 20-year planning horizon.

Regional Drought Strategy

In partnership with its customers and the Queensland Government, SEQWater has been working to address the needs of the current drought, while setting the scene for longer-term water use efficiency gains. The development of the *Regional Drought Strategy* enables water

service providers in SEQ to conform to the recently enacted requirement that drought management plans be prepared. Key elements of the drought strategy are water restrictions; permanent water conservation measures; source recommissioning; pressure reduction and loss management; substitution of potable supplies with recycled water in appropriate 'fit for purpose' applications; minor aquifer development; desalination; and new source developments.

Many of these initiatives will be implemented by local governments in a coordinated program for delivery outlined in the *Regional Drought Strategy*. Some measures, particularly those requiring statutory approvals, will need Queensland Government support. Infrastructure solutions are being advanced in partnership with the Council of Mayors (SEQ) under the *Interim Report*.

Queensland Water Plan 2005–2010

The *Queensland Water Plan 2005–2010* sets out strategies for improving water management and actions that will deliver on sustainable management over the next five years. Queensland's water reforms reflect the national agenda being pursued through the National Water Initiative 2004.

The implementation of these reforms will be progressed as a whole-of-government initiative encapsulated in the following seven strategies:

1. securing water for the environment and end users
2. planning for future water needs
3. smarter use of existing supplies
4. pricing water for sustainability
5. protecting water quality
6. compliance to protect users and the environment
7. investing in science and technology.

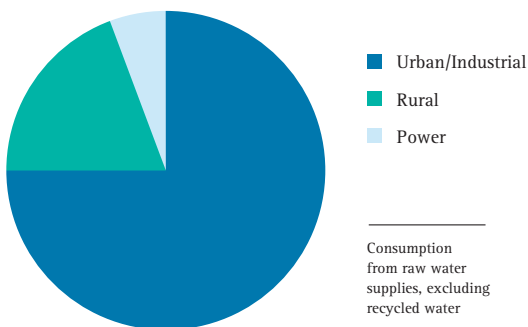
Water planning and management in SEQ

The SEQ water supply area extends from Noosa, south to the New South Wales border and west to Toowoomba. It includes a number of other shires reliant on water from the Wivenhoe-Somerset dam system and the Mary River. The major surface water sources in SEQ are shown in Map 2.

Approximately 2.6 million people—64 per cent of the state’s population—live in SEQ.

Total urban and industrial consumption in SEQ is about 460 000 ML/a, or about 450 litres per person per day. This includes commercial and industrial use, with about a tenth of total use unaccounted for—mostly through water losses and unmetered use. Domestic consumption accounts for about two-thirds of urban consumption, while rural water use amounts to 150 000 ML/a. About 40 000 ML/a is consumed by power industries in the study area.

Figure 1—Breakdown of current water use in SEQ



Who manages and supplies our urban water in SEQ?

Local governments and SEQWater are generally responsible for providing water to homes, businesses and industry. SunWater, a government-owned corporation, supplies most of the region’s irrigation and rural water and some water to industry including power stations. The State Government currently oversees water supply and management arrangements through:

- catchment planning and preparation of water resource plans, which provide for environmental and consumptive use
- legislative requirements on water service providers to ensure continuity of supply and that environmental, public health and service delivery standards are met.

SEQ urban communities rely on water from 19 surface water storages (dams and weirs) with limited use of groundwater (see Map 2). The 19 major urban surface water storages are operated by 12 separate owners. These are SEQWater, SunWater, local governments and a local government cooperative. The region’s major water sources are detailed in Table 1. The largest sources of urban water supply are the:

- Wivenhoe, Somerset and North Pine dams (owned by SEQ Water)
- Hinze and Little Nerang dams (owned by Gold Coast City)
- Baroon Pocket Dam (owned by AquaGen)
- Cressbrook, Perseverance and Cooby dams (owned by Toowoomba City Council)
- North Stradbroke Island groundwater bore system (owned by Redland Shire).

The systems above represent about 95 per cent of total available urban water supply in SEQ with the bulk of supply coming from Wivenhoe, Somerset, North Pine, Hinze and Baroon Pocket dams.

Water planning and management in SEQ

Map 2—SEQ surface water sources



Table 1—Major urban water sources in SEQ

Source	Storage yield / water allocations # (ML/year)	Owner/operator	Council area currently serviced from source
Surface water			
Caboolture Weir	3 600 ** HP	Caboolture City	Caboolture
Cressbrook Dam / Perseverance Dam	9 500	Toowoomba City	Toowoomba, Crows Nest, Jondaryan, Rosalie
Cooby Dam	3 180	Toowoomba City	Toowoomba, Crows Nest, Jondaryan, Rosalie
Lake Kurwongbah	4 100 ***	Pine Rivers Shire	Pine Rivers
Moogerah Dam	9 400 HP 20 700 MP	SunWater	Boonah
North Pine Dam	61 000*	SEQWater	Brisbane, Redcliffe, Pine Rivers, Caboolture
Wivenhoe Dam/ Somerset Dam	374 000*	SEQWater	Kilcoy, Gatton, Laidley, Esk, Nanango, Ipswich, Brisbane, Logan, Gold Coast, Redcliffe, Pine Rivers, Caboolture
Baroon Pocket Dam	34 750	AquaGen	Caloundra, Maroochy
Borumba Dam	10 200 HP 21 900 MP	SunWater	Noosa, Cooloola, Maryborough
Lake MacDonald	4 210	Noosa Shire	Noosa
South Maroochy (includes Wappa Dam and Cooloolabin Dam)	9 100	Maroochy Shire	Maroochy
Ewen Maddock	5 160	Caloundra City	Currently not in use
Hinze/Little Nerang Dam	69 800 ****	Gold Coast City	Gold Coast
Leslie Harrison Dam	7 600	Redland Shire	Redland
Maroon Dam	9 900 HP 13 600 MP	SunWater	Beaudesert
Groundwater			
Bribie Island	2 000	Caboolture Shire	Caboolture
North Stradbroke Island	37 900	Redland Shire	Redland

Figures in table are yields unless a HP or MP allocation is shown.

HP High Priority water allocations (usually urban water supply)

MP Medium Priority water allocations (usually rural water supply)

ML/year = Megalitres per year

Storage yields are subject to review in the water planning process and do not provide for reserves for droughts worse than those recorded historically.

Yield is the volume that can be extracted on an annual basis at a particular reliability. The yields shown in the table are where possible historical no failure yields exclusive of any buffers unless otherwise stated.

* The combined allocation from North Pine, Wivenhoe and Somerset Dams to SEQ Water is 345 000 ML/annum, which includes 59 000 ML/annum coming from North Pine Dam.

** Council expects to be able to access up to 3000 ML/year following augmentation.

*** Council expects at times to extract up to 7000 ML/year.

**** This figure incorporated a buffer capacity which Gold Coast City Council has adopted for hydrologic and supply security reasons. Exclusive of the buffer the yield of Hinze Dam is estimated at 76 000 ML/year.

Water planning and management in SEQ

How we plan for water Water resource planning and management

The surface and groundwater supplies listed in Table 1 with associated water allocations and yields were developed over many years. The water entitlements associated with the water supplies are established in law. However, the rivers involved have not yet been subjected to modern sustainable water resource planning.

Water resource plans (WRPs) are now being developed in consultation with communities in all areas of SEQ and involve robust assessment of a catchment's hydrology and the water needed for environmental and consumptive purposes. The plans allow water availability to be more precisely defined than in the past.

They also provide a framework for specification of water entitlements. Map 3 shows the plan areas for water resource plans in SEQ. The planning process establishes the appropriate balance between water consumption and water retained for environmental health.

Water resource plans are implemented through resource operations plans (ROPs), which, among other things, specify operational and management rules for water service providers and allow for water trading.

Commencement of a WRP for the Moreton area was officially announced in May 2005 and the Gold Coast WRP was announced in October 2005. WRPs are well under way for the Logan and Mary basins.

Planning for ROPs for the Logan, Mary, Moreton and Gold Coast is due to begin in 2006.

Water supply planning

Effective water supply planning requires the balancing of supply and demand including requirements for the environment. It requires the assessment of the magnitude of gains possible through demand management so that the new supply arrangements necessary to meet any shortfall can be implemented as the need arises.

The balancing occurs by way of:

Supply initiatives—through construction of infrastructure, to lift the total volume of water available

Demand initiatives—through greater efficiency in water use.

The water balance diagram (Figure 2) summarises the supply and demand strategies readily available to address future water needs.

Figure 2—The water balance

