



Issues Paper

**Gladstone Area Water Board:
2004 Investigation of Pricing Practices**

April 2004

Queensland Competition Authority

Issues Paper

Gladstone Area Water Board: 2004 Investigation of Pricing Practices

April 2004

Level 19, 12 Creek Street Brisbane Qld 4000
GPO Box 2257 Brisbane Qld 4001
general.enquiries@qca.org.au
www.qca.org.au

SUBMISSIONS

Public involvement is an important element of the decision-making processes of the Queensland Competition Authority (the Authority). Therefore submissions are invited from interested parties relating to the Authority's 2004 investigation of the Gladstone Area Water Board's pricing practices, in accordance with the Ministerial Direction referred to the Authority on 16 April 2004. The Authority will take account of all submissions received.

Written submissions should be sent to the address below. While the Authority does not necessarily require submissions in any particular format, it would be appreciated if two printed copies are provided together with an electronic version on disk (Microsoft Word format) or by e-mail. Submissions, comments or inquiries regarding this paper should be directed to:

Queensland Competition Authority
GPO Box 2257
Brisbane QLD 4001
Telephone: (07) 3222 0544
Fax: (07) 3222 0599
Email: gawb.investigation@qca.org.au

The **closing date** for submissions is 2 July 2004.

Confidentiality

In the interests of transparency and to promote informed discussion, the Authority would prefer submissions to be made publicly available wherever this is reasonable. However, if a person making a submission does not want that submission to be public, that person should claim confidentiality in respect of the document (or any part of the document). Claims for confidentiality should be clearly noted on the front page of the submission and the relevant sections of the submission should be marked as confidential, so that the remainder of the document can be made publicly available. It would also be appreciated if two copies of each version of these submissions (ie the complete version and another excising confidential information) could be provided. Again, it would be appreciated if each version could be provided on disk. Where it is unclear why a submission has been marked "confidential", the status of the submission will be discussed with the person making the submission.

While the Authority will endeavour to identify and protect material claimed as confidential as well as exempt documents (within the meaning of the *Freedom of Information (FOI) Act 1989*), it cannot guarantee that submissions will not be made publicly available. As stated in s187 of the *Queensland Competition Authority Act 1997* (the QCA Act), the Authority must take all reasonable steps to ensure the information is not disclosed without the person's consent, provided the Authority is satisfied that the person's belief is justified and that the disclosure of the information would not be in the public interest. Notwithstanding this, there is a possibility that the Authority may be required to reveal confidential information as a result of an FOI request.

Public access to submissions

Subject to any confidentiality constraints, submissions will be available for public inspection at the Brisbane office of the Authority, or on its website at www.qca.org.au. If you experience any difficulty gaining access to documents please contact the office (07) 3222 0555.

Information about the role and current activities of the Authority, including copies of reports, papers and submissions can also be found on the Authority's website.

TABLE OF CONTENTS

| | PAGE |
|--|-------------------|
| <i>Glossary</i> | <i>iii</i> |
| 1. EXECUTIVE SUMMARY | 1 |
| 1.1 The Direction | 1 |
| 1.2 Background and Purpose | 1 |
| 1.3 Issues | 1 |
| 2. BACKGROUND | 3 |
| 2.1 The Direction | 3 |
| 2.2 Background | 3 |
| 3. BUSINESS OVERVIEW | 4 |
| 3.1 Services provided by GAWB | 4 |
| 3.2 Water Supply Issues | 4 |
| 3.3 Water Demand Issues | 5 |
| 3.4 Cost-effectiveness of Supply and Demand Management Initiatives | 6 |
| 4. GAWB'S PRICING FRAMEWORK | 8 |
| 4.1 Introduction | 8 |
| 4.2 Estimation of LRMC | 8 |
| 4.3 Pricing Over Time | 9 |
| 4.4 Pricing for Council Customers | 9 |
| 4.5 GAWB's Drought Management Plan | 10 |
| 5. ELEMENTS OF THE MAXIMUM REVENUE REQUIREMENT | 11 |
| 5.1 Introduction | 11 |
| 5.2 The Asset Base | 11 |
| 5.3 Rate of Return | 12 |
| 5.4 Return of Capital | 13 |
| 5.5 Operating Expenditure | 14 |
| 6. PRICE REVIEW AND MONITORING ARRANGEMENTS | 15 |
| 6.1 Efficiency | 15 |
| 6.2 Review Triggers and Cost Pass-Through | 16 |
| 6.3 The Monitoring Framework | 17 |
| APPENDIX A: RECOMMENDATIONS FROM PREVIOUS INVESTIGATION | 19 |
| REFERENCES | 22 |

GLOSSARY

| | |
|---------------|--|
| Capex | Capital Expenditure |
| CAPM | Capital Asset Pricing Model |
| COAG | Council of Australian Governments |
| CPI | Consumer Price Index |
| DORC | Depreciated Optimised Replacement Cost |
| DMP | Drought Management Plan |
| DNRME | Department of Natural Resources, Mines and Energy |
| FOI | Freedom of Information |
| FSL | Full Supply Level |
| GAWB | Gladstone Area Water Board |
| HNFY | Historic No Fail Yield |
| LRMC | Long run marginal cost |
| ML | Megalitre |
| NPV | Net Present Value |
| OFWAT | Office of Water Services, UK |
| QCA Act | <i>Queensland Competition Authority Act (1997)</i> |
| ROP | Resources Operations Plan |
| SMEC | Snowy Mountains Engineering Corporation |
| the Authority | The Queensland Competition Authority |
| WACC | Weighted Average Cost of Capital |

1. EXECUTIVE SUMMARY

1.1 The Direction

The Premier and the Treasurer have referred the declared monopoly business activities of the Gladstone Area Water Board (GAWB) to the Queensland Competition Authority (the Authority) for investigation.

The investigation is to address the pricing practices relating to the declared activities and the appropriate framework for monitoring pricing practices (including prices and contractual arrangements).

1.2 Background and Purpose

The Authority previously recommended pricing practices for GAWB in September 2002. These were accepted by the Ministers on 4 August, 2003.

The purpose of this Issues Paper is to provide a basis for stakeholders to comment on issues that should be considered by the Authority in the current investigation. In particular, the Authority is inviting submissions as to whether previously recommended pricing practices need to be amended or extended to accommodate issues previously identified as requiring further attention in any future investigation and subsequent changes in GAWB's circumstances.

1.3 Issues

A summary of the Authority's previous recommendations on GAWB's pricing practices forms Appendix A. Key recommendations included that:

- GAWB take into account relevant demand scenarios and alternate supply options;
- GAWB's asset base be determined using the depreciated optimised replacement cost approach, with the value of contributed assets to be recognised where there was evidence that the contribution was made with the intent of obtaining future price benefits;
- capital costs of future augmentation for both the raw and treated water systems be based on the optimal scale and timing of augmentations;
- the maximum revenue requirement be based upon an estimate of the return on capital based on WACC/CAPM, depreciation, efficient operating costs and taxation adjusted for imputation. Prices by class of customers were to be smoothed over a 20 year period;
- prices be differentiated for each customer, with treated water to Gladstone City Council and Calliope Shire Council to be priced as a separate class;
- GAWB transition the introduction of its new prices over a three year period with full prices to apply from 2005-06;
- GAWB's pricing practices be reviewed by the end of December 2004, unless triggered earlier by a variation in revenue of more than fifteen percent; and
- monitoring be limited to within period reviews, consistent with recommended review trigger mechanisms and pass-through of approved costs.

There were several issues that were foreshadowed in the Authority's previous investigation as requiring further consideration, either by the Authority or GAWB. Key issues included:

- ensuring a consistent approach to the application of the pricing framework between successive regulatory periods;
- a review of GAWB's drought management options with results to be incorporated into prices as appropriate;
- use of renewals annuities in lieu of depreciation;
- the need for an activity based analysis to enable allocation of general administration costs; and
- further review of incentive mechanisms.

Since the Final Report, changes in GAWB's circumstances indicate that the following matters may also need to be taken into account:

- the revised yield of Awoonga Dam and alternative sources of supply;
- changes in demand projections;
- the cost-effectiveness of supply and demand management initiatives;
- whether the asset base identified and established for the purposes of the last investigation is still relevant in view of changed supply and demand conditions; and
- revisiting review triggers and cost pass-through items.

Other issues which may also warrant consideration include:

- the most appropriate method for estimating long-run marginal cost (LRMC);
- establishment of current WACC/CAPM parameters; and
- a framework for on-going price monitoring and dispute resolution.

For ease of reference, these and other related issues are outlined in this Issues Paper in the format adopted in the Authority's report on its previous investigation *Gladstone Area Water Board: Investigation of Pricing Practices*, September 2002.

2. BACKGROUND

Summary

The Authority has been directed by the Ministers to undertake an investigation into the pricing practices relating to the declared activities of GAWB and an appropriate framework for monitoring pricing practices (including prices and contractual arrangements).

The purpose of this Issues Paper is to provide a basis for stakeholders to comment on issues that should be considered by the Authority in the current investigation.

2.1 The Direction

On 16 April 2004, the Premier and the Treasurer (the Ministers) referred the following notice under Sections 23 and 24 of the *Queensland Competition Authority Act 1997* to the Authority.

As the Premier and the Treasurer of Queensland, we hereby refer under Section 23 of the *Queensland Competition Authority Act 1997* the declared government monopoly business activities of the Gladstone Area Water Board (GAWB) to the Queensland Competition Authority (QCA) for the following:

- (a) an investigation about the pricing practices relating to the declared activities; and
- (b) an investigation of an appropriate framework for monitoring pricing practices (including prices and contractual arrangements) relating to the declared activities.

Under Section 24 of the *Queensland Competition Authority Act 1997* we direct the QCA in relation to this referral to:

1. provide a Draft Report on the investigation by 31 December 2004, with the final report to be provided by 21 March 2005;
2. consult with GAWB, GAWB's customers and other relevant stakeholders; and
3. advise, on a confidential basis, individual customers of indicative prices consistent with the Authority's recommended pricing practices.

2.2 Background

Gladstone is a region of particular economic significance from both a state and a national perspective because of its major metals processing industries, power generation and port facilities. GAWB's water supply services are a critical input to the existing major industries and local communities in the Gladstone region and for significant future industrial development.

In September 2000, the Ministers declared GAWB's bulk water supply and delivery services as government monopoly business activities and directed the Authority to investigate GAWB's pricing practices.

The Authority recommended pricing practices for GAWB in its September 2002 Final Report *Gladstone Area Water Board: Investigation of Pricing Practices*. On 4 August 2003, the Ministers advised that the Authority's recommendations had been accepted without qualification.

3. BUSINESS OVERVIEW

Summary

GAWB is responsible for the supply of raw and treated water to industrial and local government customers in the Gladstone area.

GAWB and its customers have experienced some significant changes in circumstances since the Authority's previous investigation in 2002, including a downgrade of hydrological supply capacity of Awoonga Dam and changes to existing and future demand expectations.

3.1 Services provided by GAWB

GAWB owns the Awoonga Dam located on the Boyne River to the south west of Gladstone and operates a network of pipelines, pump stations, terminal reservoirs and treatment plants.

GAWB provides water to industrial customers and Gladstone City Council and Calliope Shire Council. The major industrial customers include CS Energy, Queensland Alumina Limited (QAL) and Gladstone Power Station.

3.2 Water Supply Issues

GAWB presently sources all of its water from the Awoonga Dam. In 2000-02, GAWB raised Awoonga Dam by ten metres in response to growth in projected demand. The augmentation increased storage capacity from 283,000 ML to almost 800,000 ML with a corresponding increase in the assessed historic no fail yield (HNFY) from 49,400 ML to 87,900 ML.

The HNFY identifies the maximum annual supply available for consumptive use on a sustainable basis and is based on historic rainfall, runoff, storage capacity, evaporation and seepage, and environmental flow requirements.

Following the severe drought in 2002-03, DNRME revised downward the yield of Awoonga Dam in the *Boyne River Basin Resource Operating Plan (July 2003)* by 11.3 per cent. Details of Awoonga Dam's revised total HNFY after the 2000-02 "Stage 1" raising and a potential further "Stage 2" raising are shown in Table 3.1.

Table 3.1: Change in Awoonga Dam supply potential

| Augmentations | Previous Yield¹ (ML) | Revised Yield² (ML) | Percentage change |
|-----------------------------|--|---|------------------------------|
| Stage 1 raising (2000-02) | 87,900 | 78,000 | -11.3% |
| Stage 2 raising (potential) | 113,000 | 97,000 | -16.8% |

Source: 1. *GAWB 2000*; and
2. *Boyne River Basin Resource Operating Plan (July 2003)*, DNRME.

The Boyne River Basin Resource Operations Plan (ROP) places an additional constraint on GAWB's ability to commit to supplying water during the first filling phase of the upgraded Awoonga Dam. The ROP stipulates that until Awoonga Dam has filled to its new full supply level (FSL) of 40m, GAWB may only commit to future water supplies of an amount determined by the Chief Executive of DNRME.

Currently, a ceiling of 67,000 ML has been imposed on GAWB's allocation from the dam, some 18,000 ML or 23 per cent below the rated HNFY of 78,000 ML.

A further issue is whether it is appropriate to anticipate further downgrades in Awoonga Dam hydrology. The potential for this to occur is illustrated by the fact that DNRME has revised downwards the Awoonga Dam hydrology three times since 1985.

The Authority invites comment on:

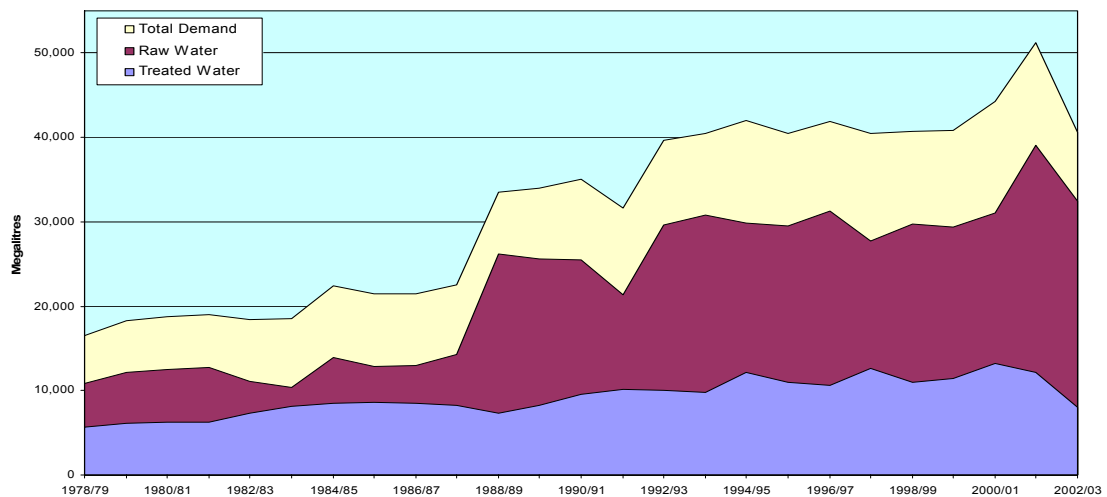
- 1. the reliability of GAWB's supply and its implications for consumers; and**
- 2. the likelihood of further downgrades in Awoonga Dam hydrology, and the implications for alternative sources of supply.**

3.3 Water Demand Issues

Background

Since 1978, actual consumption of water in Gladstone has more than trebled, with an average annual growth rate of 4.8 per cent to 2001-02 (prior to drought restrictions). Annual growth in raw water averaged 5.3 per cent, while growth in treated water averaged 3.2 per cent over the period. Historic consumption of water by product type is shown in Figure 3.2.

Figure 3.2: Actual Consumption of GAWB's Water 1978-79 to 2002-03



Source: QCA Final Report (2002)

The predominantly industrial composition of GAWB's customer base creates particular challenges for projecting likely future demand and for planning appropriate responses, due to the lumpy growth in supply volumes and uncertain timing of new demand associated with the long lead times involved in finalising major industrial developments.

The Authority's previous investigation recommended that, in setting prices, GAWB should take into account different demand scenarios and the role and impact of demand side management.

For its previous investigation, the Authority identified projected demand based on a preferred planning scenario developed independently by SMEC. See Table 3.3.¹

Table 3.3: Preferred Planning Demand Scenario (ML)

| <i>Type of Supply</i> | <i>2002-03</i> | <i>2003-04</i> | <i>2004-05</i> | <i>2005-06</i> | <i>2009-10</i> | <i>2014-15</i> | <i>2020-21</i> |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Raw water | 42,276 | 44,529 | 49,306 | 52,162 | 58,534 | 62,853 | 62,736 |
| Treated water | 14,741 | 15,353 | 16,409 | 16,610 | 17,597 | 18,446 | 19,689 |
| Total demand | 57,017 | 59,882 | 65,715 | 68,772 | 76,131 | 81,299 | 82,425 |

Source: Final Report (2002)

As part of its Drought Management Plan, supply restrictions were placed on consumption during 2002-03. As a result, the total volume supplied during 2002-03 was only 40,550 ML, reflecting a 29 per cent shortfall against the preferred planning scenario expectations of 57,017 ML.

Issues

It is understood that GAWB is currently reviewing its demand projections. The Authority proposes to review these projections for consistency with those of existing and prospective customers. Future demand is highly problematic and is exacerbated by changes in demand caused by increased water use efficiency.

The Authority invites comment on:

- 3. appropriate approaches to projecting GAWB's demand including how to deal with uncertainty regarding prospective customers and the timing and magnitude of their demand;**
- 4. the permanent impact of demand management measures adopted by customers in response to the recent drought;**
- 5. the appropriateness of the length of the planning period; and**
- 6. implications of alternative demand scenarios.**

3.4 Cost-effectiveness of Supply and Demand Management Initiatives

Background

Supply management initiatives essentially contribute to extending the longevity of existing supply sources by service providers reducing unaccounted for losses and customers substituting

¹ The Final Report noted that, in developing this scenario, SMEC reviewed the potential impact of alternative sources of water, including the use of wastewater, reductions in urban distribution system losses, trading of water entitlements and diversion of stormwater. Demand management options identified by SMEC included removal or relaxation of disincentives for users to save water such as take-or-pay contracts, adoption of water use efficiency technology, and support for public education on efficient use of water.

alternative sources of supply. Demand management initiatives are strategies which are designed to alter consumer behaviour, traditionally to reduce consumption. They include public education campaigns and subsidies for the installation of water efficient technology.

The Authority's previous investigation noted that a number of options were available to GAWB in relation to increasing its available supply through supply and/or demand management. The Authority accepted SMEC's advice that such opportunities were expected to materialise from 2009-10 and specifically allowed additional costs for a demand management programme. Specific supply initiatives identified by SMEC included wastewater reuse, reduction in urban distribution system losses, trading of water entitlements and diversion of stormwater. Demand management initiatives included removal or relaxing of disincentives for users to save water such as the take-or-pay contractual arrangements, adoption of water use efficiency technology and support for public education on efficient use of water.

Issues

The changed circumstances of GAWB may require the options identified by SMEC to be re-evaluated, particularly given that the range of supply options is being reviewed by GAWB and many of GAWB's customers have introduced on-site water use efficiency measures in response to drought restrictions.

The Authority invites comment on:

- 7. opportunities for further supply management initiatives;**
- 8. opportunities for the adoption of further demand management measures by existing and prospective customers; and**
- 9. ensuring cost-effective supply and demand management initiatives are adopted and appropriately reflected in prices.**

4. GAWB'S PRICING FRAMEWORK

Summary

The Authority's previous investigation made recommendations on GAWB's pricing framework. Some aspects of the pricing framework have subsequently been identified as warranting re-consideration in the 2004 investigation, including the appropriate method for calculating LRMC, the need for a consistent approach to cash flow analysis over time and the issue of pricing for the two council customers.

The Authority's 2002 Final Report also foreshadowed that further review is required of drought management options, including GAWB's Drought Management Plan, with results to be incorporated into prices as appropriate.

4.1 Introduction

The Authority's previous investigation noted that marginal cost pricing is considered to provide the correct economic signals for water use and best reflects the outcomes of a competitive market environment.

In its Final Report, the Authority recommended that price caps, incorporating a two-part tariff structure for each customer, be adopted by GAWB, with the volumetric charge for the two-part tariff based on LRMC. The second part of the tariff was to be a fixed access charge, calculated to recoup the residual difference between the maximum revenue requirement and the revenue recovered from the volumetric charge.

The Authority considers that a range of related issues may warrant further consideration in terms of estimation and application in the circumstances related to GAWB.

4.2 Estimation of LRMC

Regulators have generally selected the average incremental cost (AIC) approach or the Turvey method to estimating LRMC, with some, such as OFWAT, allowing service providers the choice of either. There has been limited recent debate or research beyond the traditional Turvey and AIC methodologies for the calculation of LRMC.

The central argument of the Turvey method is that it is not the total costs of a system augmentation that are relevant to the LRMC measure, but rather the consequences of a marginal change in the rate of demand growth on the timing of the next augmentation. The Turvey method provides a net present value cost impact of delaying or bringing forward expenditure on augmentation by one year. It gives an estimate of LRMC that becomes larger as the augmentation becomes imminent.

The AIC method bases LRMC on a measure of the total incremental cost of a system augmentation. AIC provides an annualised value for capital costs, which effectively generates an average marginal capacity cost as the LRMC. The AIC method provides an average cost per year and per megalitre of the expected capex. It essentially brings forward an average revenue requirement measure and adopts it as a proxy for marginal cost.

The Authority has become aware that, in a number of instances (not related to GAWB), the Turvey and AIC methods have been applied with significant differences in estimates of LRMC being derived. These methodological issues are considered to warrant further attention to ensure the most appropriate approach to estimating LRMC is adopted.

The Authority invites comment on:

- 10. the most appropriate approach for estimating LRMC.**

4.3 Pricing Over Time

The Authority’s previous investigation noted GAWB’s concern that prices derived from a 20 year cash flow analysis may result in a lower effective return on assets in the initial years and higher return in the later years.

In its Final Report, the Authority noted that *“as a general principle, any future review should take into account the basis used for the current pricing recommendations, so that GAWB is able to achieve a commercial return on its assets over the life of its assets. Regulatory consistency in approach for subsequent reviews is a desirable objective. However, as regulatory principles and methods are still evolving, it is recommended that no specific constraints be placed on the basis for future investigations.”*

The key issue is to establish a pricing framework that is consistently applied between successive regulatory periods so that GAWB is able to achieve a full rate of return on its asset base over time.

The Authority invites comment on:

- 11. ensuring a consistent approach to the application of the pricing framework between successive regulatory periods.**

4.4 Pricing for Council Customers

In its Final Report, the Authority recommended that, given GAWB’s infrastructure layout, its clearly defined products and geographically separated off-take points, that differentiated prices be applied to distinct classes of customer, but with treated water to Gladstone City Council and Calliope Shire Council to be priced as one class.

In making this recommendation, the Authority noted that, while there were significant differences in the cost of providing services to the two Council customers (Calliope Shire and Gladstone City), it had accepted the Councils’ proposal for a single treated water price as a matter of equity and to reflect historical arrangements for the supply of water on a regional basis. The greater focus upon commercial management of risks associated with the supply of these may warrant a reconsideration of this approach.

The Authority invites comment on:

- 12. the appropriateness of treating Gladstone City Council and Calliope Shire Council as one customer class.**

4.5 GAWB's Drought Management Plan

A Drought Management Plan (DMP) refers to an agreed set of operational, supply and pricing procedures to apply during a period of declared drought.

GAWB's current DMP triggers supply restrictions at threshold levels, namely when two years supply (at current demand) remains, in order to extend supply to three years and to cover another wet season. In managing its drought risk, GAWB relies on the specification of historic no failure yield, but has also adopted a precautionary DMP to contribute to the longevity of the residual supply.

The Authority's previous investigation recommended that GAWB, in consultation with its customers and the Authority, review drought management options available and incorporate its implications into prices as appropriate.

The Authority understands that GAWB's development of a new DMP is scheduled for completion by July 2004. There may be a need to modify the previously recommended pricing practices for GAWB to reflect the final plan agreed with customers.

The Authority invites comment on:

- 13. the appropriate arrangements to be incorporated in a Drought Management Plan including:**
 - **thresholds at which restrictions are triggered;**
 - **the basis for allocating supplies of water (including administrative arrangements, relevant standards of service, pricing for priority access and provisions for customers to determine their own responses); and**
- 14. the approach for incorporating the costs of GAWB's Drought Management Plan in prices including any adjustments to pricing practices applying otherwise.**

5. ELEMENTS OF THE MAXIMUM REVENUE REQUIREMENT

The maximum revenue requirement establishes the maximum amount of revenue that an efficiently operated business would need to remain commercially viable, but not enjoy monopoly profits.

The Authority invites comment on key issues in relation to GAWB's:

- *asset base – establishing the opening asset value, changes in hydrology and demand assumptions, and assessment of the actual capital costs of the Mt Miller pipeline;*
- *return on capital - the specification of WACC and correct identification of WACC parameters;*
- *return of capital - GAWB's asset management plan and application of renewals annuities; and*
- *operating expenditures - allocation of general administration costs, insurance expenditures and the costs of managing force majeure events or extraordinary circumstances.*

5.1 Introduction

The maximum revenue requirement establishes the total amount of revenue that an efficiently operated business would need to remain commercially viable, while not achieving monopoly profits. The maximum revenue requirement is comprised of three key building blocks, return *on* capital, return *of* capital and operating expenditures. The determination of the regulatory asset base is a key element in estimating the return *on* and *of* capital.

5.2 The Asset Base

Background

The Authority's previous investigation recommended that Depreciated Optimised Replacement Cost (DORC) should be used for establishing asset values as a basis for setting maximum prices for customers. DORC ensures that over-capacity, over-engineered and over-designed assets are not included in the asset base and consequently are not paid for by customers. It allows for technological change as assets can be valued in a way that reflects current technology. Sub-optimal excess capacity and redundant assets are excluded from the asset base.

For the previous investigation, the Authority provided for prudent staging costs, adoption of "just-in-time" planning and development strategies, and reflected projected demand.

The value for GAWB's assets may have changed since the previous investigation as a result of movements in the unit costs of replacing assets and differences in actual versus planned capital expenditure. Further, changes in supply and demand conditions and augmentations options may have impacted upon the optimal scale and future configuration of the existing network.

Opening asset value

Relevant issues in determining the appropriate approach to establishing the value of GAWB's assets to apply at the commencement of the next pricing period are whether a full revaluation of all assets is required or whether previously established values can be rolled forward. In the

latter case, the selection of an appropriate index for roll-forward of previously estimated replacement costs is an issue.

Optimisation

Since completion of the Final Report, changed circumstances in regard to water supply (hydrology) and projected demand may have implications for the appropriate asset base for pricing purposes. This may require consideration of:

- the consistency of GAWB’s proposed supply configuration with least-cost long-term planning principles and revised hydrology estimates;
- the nature and timing of future supply augmentations for Awoonga Dam and/or alternative sources, taking into account lead times for development approval, construction, and for achieving full supply capacity; and
- options for addressing the future risk of drought, including assessment of supplementary supply options.

Mt Miller pipeline augmentation

GAWB is currently completing construction of the Mt Miller trunk main to increase its capacity to deliver raw water to the northern industrial areas at Yarwun, Fishermans Landing, and eventually to Aldoga. It was envisaged that the existing Hansen Road pipeline would become redundant on completion of the Mt Miller trunk main.

Issues that may warrant further consideration include actual costs incurred as opposed to previous estimates, and the impact of any changes in projected demand on the utilisation the Mt Miller trunk main and the future use of the Hansen Road pipeline.

The Authority invites comment on:

15. the value of GAWB’s asset base for pricing, including:

- **the approach to establishing an opening asset value;**
- **the net impact of revised hydrology and demand on the appropriate asset base for pricing purposes; and**
- **the impact of recent circumstances on the utilisation of the Mt Miller and Hansen Road pipelines.**

5.3 Rate of Return

Allowing for a rate of return in the maximum revenue requirement recognises that there is an opportunity cost associated with funding GAWB’s assets, as measured by the cost of debt finance and shareholding equity. The cost represents the return expected by investors in capital markets for investments of a given level of risk.

The Authority’s previous investigation recommended that GAWB’s allowed rate of return be established by applying the capital asset pricing model (CAPM) approach for determining the

cost of equity. It was also recommended that the resulting Weighted Average Cost of Capital (WACC) be applied in post-tax, nominal terms using the Officer WACC3 specification which accounts for dividend imputation, but assumes equivalent tax treatment of interest income and capital gains.

The Authority is presently reviewing its approach to the cost of capital. To this end, the Authority has released for comment an independent report by Associate Professor Martin Lally, entitled *The Cost of Capital for Regulated Entities*. Dr Lally's study is not specific to GAWB and at this time has not been considered by the Authority. The document is available on the Authority's website for stakeholders to consider.

The Authority invites comment on:

- 16. the rate of return, including determination of the WACC/CAPM parameters applicable to GAWB from 1 July 2005.**

5.4 Return of Capital

Return of capital is a measure of the rate of consumption of the service potential of assets. The Authority's previous investigation recommended that straight-line depreciation be used for all GAWB's assets. It was also recommended that, in principle, the Authority would prefer to apply a renewals annuity approach to long-lived infrastructure. This was not possible at the time as GAWB did not have the necessary asset management plan to provide the basis for such an approach. However, GAWB is presently finalising an asset management plan which may provide the information necessary to allow a renewals annuity to be implemented.

In considering the application of renewals annuities to GAWB, it may also be necessary to consider whether a renewals approach should be adopted only for certain components of GAWB's asset base and, if so, whether GAWB's asset management plan is appropriate for the determination of renewals annuities.

The Authority invites comment on:

- 17. return of capital, and in particular whether renewals annuities should be implemented;**
- 18. which components of GAWB's network are more suited to the application of a renewals annuity;**
- 19. the standards against which the comprehensiveness of annual maintenance, replacements and capex should be assessed and how to ensure that GAWB does not over maintain the assets; and**
- 20. the manner in which GAWB would manage a renewals annuity account to ensure a capacity to fund major refurbishments over time.**

5.5 Operating Expenditure

Operating expenditures are included as an element of the revenue requirement at an amount reflecting the efficient cost of undertaking the activities.

Allocation of general administration costs

Cost allocation involves the identification of verifiable relationships between expenditures required for service provision and the consumption of an individual product or service by a customer or group of customers. The Authority's previous investigation recommended that GAWB's general administration costs be allocated according to an approach proposed by SMEC:

- 90 per cent allocated by administrative effort (with weightings of 0.5, 1 and 2 for storage activities, raw water delivery and treated water delivery respectively); and
- 10 per cent allocated by customer.

The Final Report noted that further analysis of general administration costs, on an activity basis, was warranted. Any further development by GAWB of its accounting information may provide the basis for an improved activity based cost allocation system. Relevant issues include the appropriateness and justification of any cost drivers, their administrative complexity and cost.

Insurance

The Authority's previous investigation recommended that:

- the cost of insurance premiums for insurable force majeure events, and the administration and contract management costs associated with force majeure in general, should be incorporated into cash flow estimates;
- the potential cost of uninsurable force majeure events not be incorporated into cash flows given that they cannot be estimated with any degree of accuracy or certainty. When such events occur, prices should be renegotiated;
- the Authority's role in force majeure events should be limited to assessing pricing practices when such events occur; and
- GAWB should adopt a consistent treatment of force majeure in its customer contracts.

Since completing its previous investigation, the Authority has released a Draft Report on *General Pricing Principles for Infrastructure Investments made in response to Extraordinary Circumstances* which provides a basis for further development of relevant principles.

The Authority invites comment on:

21. GAWB's operating expenditure, particularly in relation to:

- **the allocation of general administration costs; and**
- **insurance costs, including those associated with extraordinary circumstances.**

6. PRICE REVIEW AND MONITORING ARRANGEMENTS

Summary

A key issue for review is whether to maintain the existing approach of incorporating expert based estimates of future efficiency gains in prices or if some form of a CPI-X factor approach to escalating base year allowances should be adopted. In addition, comment is sought on whether an efficiency carry-over mechanism would be appropriate for GAWB and how this could be practically implemented.

Further issues relate to whether additional review trigger mechanisms or cost-pass-through items should be identified and how these would operate.

The Authority has specifically been directed to investigate an appropriate framework for monitoring pricing practices (including prices and contractual arrangements). Additional measures to those previously recommended include prior approval of proposed contractual arrangements, reporting arrangements including disclosure of findings to Ministers and customers on a confidential basis and appropriate arrangements for dispute resolution.

6.1 Efficiency

Measures are typically introduced to promote improvements in efficiency over a regulatory period. This can be achieved by incorporating expectations of future gains in estimated future costs (based on expert opinion), specifying desired efficiency gains through means such as CPI-X and/or establishing mechanisms for sharing unanticipated gains (typically referred to as efficiency carryover mechanisms).

The Authority's previous investigation of GAWB recommended that expected savings in operating costs be directly reflected in allowed operating expenditures rather than via an X-factor adjustment. It was considered that as GAWB's operating cost base was relatively small, costs savings not explicitly identified were likely to be insignificant in pricing terms.

Efficiency carry-over mechanisms (ECMs) typically reward service providers by allowing them to carry-over some proportion of their out-performance for a specified period of time.

The Authority did not make any specific recommendations concerning an incentive mechanism or the carry-over of efficiency gains. However, it did recommend that a review of incentive mechanisms be undertaken as part of the next review of GAWB's prices.

The Authority also recommended that GAWB's price caps be adjusted annually by the consumer price index (CPI) each year between price reviews, but was not explicit about whether GAWB should apply the national CPI (based on eight capital cities), or the CPI for Brisbane (as a proxy of price movements within Queensland).

The Authority invites comment on:

- 22. whether expected efficient costs based on expert opinion should be incorporated in cash flows;**
- 23. whether a CPI-X type of mechanism be adopted to promote further efficiency gains;**
- 24. whether a mechanism for sharing unanticipated efficiency gains should be adopted and, if so, how to:**
 - distinguish between efficiency gains (attributable to management initiatives) and windfall gains (as a result of favourable external conditions);**
 - avoid the potential for gaming related to over inflation of initial cost estimates, substituting between operating and capital categories, or trading-off of service quality;**
 - validate efficiency gains – either by self assessment by GAWB, third party certification, ex-ante business case submissions by GAWB, detailed assessment by the Authority, or another approach; and**
- 25. the appropriate specification of CPI for annual indexation of prices.**

6.2 Review Triggers and Cost Pass-Through

Arrangements can be made to automatically initiate regulatory reviews or price changes in response to changes in defined relevant circumstances or exogenous factors.

The two main avenues for initiating price changes are:

- review triggers, which prompt unscheduled reviews in response to particular circumstances, usually defined in terms of material changes in regulatory assumptions with a minimum threshold impact on the service provider’s revenues or costs; and
- cost pass-through mechanisms, which allow the direct inclusion of costs into the maximum revenue requirement without significant regulatory oversight.

The Authority’s previous investigation recommended pricing previews only be triggered by:

- a 15 per cent variation in GAWB’s annual revenue in relation to the Authority’s projections; or
- an approved pass-through of a relevant exogenous cost, such as changes in:
 - taxation;
 - regulatory compliance requirements - for example, those related to health, water quality, dam safety, and environmental standards;
 - law or pursuant to a law;

- GAWB’s water allocation and its operating requirements;
- GAWB’s estimated yield resulting from reviews of river hydrology or climate change; or
- other major changes in government policy.

The following additional matters may also need to be considered in establishing relevant review trigger mechanisms:

- whether potential reductions in standards of service or unplanned reductions in operating costs and/or capital expenditure would be captured by the existing trigger or if they warrant a separate trigger;
- whether other changes in circumstances may affect GAWB’s level of profitability or financial viability in a material manner;
- the magnitude of variations in specific circumstances that would constitute justification for a price review; and
- a suitable process for identifying and measuring changes in specific circumstances.

The Authority invites comment on:

- 26. whether additional review trigger mechanisms or eligible cost pass-through items are necessary.**

6.3 The Monitoring Framework

The Authority’s previous investigation recommended that the Authority not actively monitor prices established in contractual arrangements between GAWB and its customers and that any monitoring role should be limited to within-period reviews, consistent with the recommended trigger mechanism and assessment of pass-through costs.

The 2004 Direction to the Authority requires an investigation of an appropriate framework for monitoring GAWB’s pricing practices (including prices and contractual arrangements) relating to the declared activities. Recent changes in GAWB’s circumstances may warrant an alternative approach.

A range of additional matters may require consideration in the event that an alternative approach is adopted.

Should it be considered appropriate to monitor proposed contracts and therefore proposed pricing practices, then consideration may also be necessary to appropriate reporting arrangements including the disclosure of findings to Ministers and customers on a confidential basis.

The Authority invites comment on:

- 27. the framework for monitoring GAWB's prices and pricing practices and in particular whether it:
 - be limited to monitoring prices after contractual arrangements have been entered into; or
 - monitor contractual arrangements prior to contracts being entered into;**
- 28. the appropriate means for monitoring contractual arrangements, for example by audit, periodic reporting or exception reporting;**
- 29. the appropriate means for reporting the results of monitoring activities undertaken; and**
- 30. the appropriate role for the Authority in regard to disputes relating to individual contractual arrangements.**

APPENDIX A: RECOMMENDATIONS FROM PREVIOUS INVESTIGATION

| Section # | Recommendation(s) |
|------------------|---|
| 4. | <i>Demand projections for GAWB</i> |
| 4.5 | That in setting prices, GAWB take into account relevant demand scenarios including demand side management and alternate supply options. |
| 5. | <i>The framework for monopoly prices oversight</i> |
| 5.2 | That, subject to the revenue adequacy requirements of GAWB, GAWB's prices be based on the long run marginal costs of providing services, on the basis of the Turvey method. |
| 5.3 | That the cash flow method be used as the appropriate basis for ascertaining the revenues necessary to maintain the provision of services by GAWB. |
| 5.4 | That: <ul style="list-style-type: none"> • the cost of insurance premiums for insurable force majeure events, and the administration and contract management costs associated with force majeure in general, be incorporated into cash flow estimates; • the potential cost of uninsurable force majeure events not be incorporated into cash flows given that they cannot be estimated with any degree of accuracy or certainty. When such events occur, prices should be renegotiated; • the Authority's role in force majeure events should be limited to assessing pricing practices when such events occur; and • GAWB should adopt a consistent treatment of force majeure in its customer contracts. |
| | That: <ul style="list-style-type: none"> • the impact of drought should be included in the cash flow estimates; and • GAWB, in consultation with its customers and the Authority, review the drought management options available, with the results to be incorporated into prices as appropriate. |
| 5.5 | That differentiated prices be adopted, but that the proposal of Gladstone City Council and Calliope Shire Council to be treated as one entity be accepted. |
| | That the costs of common infrastructure be allocated to all users provided they represent the least cost option to meet envisaged demand. |
| | That GAWB should be responsible for the costs of any excess capacity not considered optimal. |
| 5.6 | That seasonal pricing and peak/off-peak pricing refinements are not currently justifiable. |
| 6. | <i>The asset base</i> |
| 6.1 | That DORC be used as the basis for establishing initial asset values for GAWB. |
| 6.2 | That the incremental optimisation approach be adopted. |
| | The storage infrastructure asset base of GAWB be optimised. |

| | |
|-----------|--|
| | That the scale and timing of raw water distribution augmentation as proposed in SMEC’s analysis be accepted. |
| | That the revised optimal augmentation programme for treated water delivery determined by SMEC be accepted. |
| 6.3 | That capital contributions be recognised where there is evidence that the contribution was made with the intent of obtaining future price benefits - unless there is further evidence that the contribution was a pre-payment for services, was returned through explicit pricing arrangements or applies to assets that have since been consumed and replaced. That contributed assets be included in the asset base for the purpose of determining the revenue requirement, with rebates incorporated in the prices for the relevant customers equal to the return on capital for the contributed assets, and deducted from GAWB’s revenue requirement. |
| 6.4 | That the DORC of the recreational facilities be included in the asset base. |
| 6.5 | That the fish hatchery assets be included in the asset base for GAWB. |
| 6.6 | That working capital be included in the total value of assets. |
| 6.7 | That land and easements be included at historic value indexed for inflation. |
| 6.8 | That the cost of assets necessarily relocated should be incorporated in the asset base at their cost of relocation. |
| 7. | <i>Rate of Return</i> |
| 7.2 | That CAPM should be used in the determination of the appropriate rate of return for GAWB. |
| 7.3 | That a post-tax nominal specification of WACC be used. |
| 7.4 | That a 20-day average of the ten year Commonwealth government bond rate is the appropriate measure of the risk free rate. For this recommendation, a risk free rate of 6.02 per cent has been used. |
| 7.5 | That a market risk premium of six per cent be applied. |
| 7.6 | That a gearing level of 50 per cent be adopted for GAWB. |
| 7.7 | That a debt margin of 160 basis points above the risk free rate be used. |
| 7.8 | That an asset beta for GAWB at 0.45 be used. With a 50/50 debt/equity capital structure and a debt beta of 0.27, the equity beta is equal to 0.63. |
| 7.9 | That a gamma of 0.5 be used. |
| 7.10 | That GAWB’s cost of tax should be included in the cash flow estimates using the statutory rate, currently 30 per cent |
| 7.11 | That an inflation rate of 2.6 per cent be used |
| 8. | <i>Return of capital</i> |
| 8.7 | That straight line depreciation be used for all GAWB’s assets. |
| 9. | <i>Operating expenditure</i> |
| 9.2 | That opex costs be allocated in accordance with the principles outlined below: |

| | |
|------------|---|
| | <ul style="list-style-type: none"> • Direct Costs (operating, maintenance and electricity) – actual costs allocated to segments; • Other Costs (maintenance and staff costs) – allocated to segments by share of Direct Costs, and to users by share of throughput; • General Administration Costs – 90 per cent allocated by administrative effort (with weightings of 0.5, 1 and 2 for storage activities, raw water delivery and treated water delivery respectively) and 10 per cent allocated by customer. <p>That further analysis of general administration costs on an activity basis is warranted.</p> |
| 9.3 | That potential efficiency gains be explicitly included in operating costs. That a further review of incentive mechanisms be undertaken as part of the next review of prices. |
| 9.4 | That fish hatchery operating costs be included in opex. |
| | That a reasonable level of the costs of providing recreational facilities should be recognised in opex. |
| 10. | <i>Public interest and price monitoring</i> |
| 10.3 | That GAWB’s pricing practices should be reviewed by the end of December 2004. An earlier review would be triggered if revenues vary by more than fifteen per cent. |
| | That a price cap approach be adopted, with a two-part tariff set for each user for the initial year of the proposed regulatory period. |
| | That price caps should be adjusted by the CPI each year between price reviews. |
| | That material variations in the following exogenous changes in costs may be passed through to the customer: <ul style="list-style-type: none"> • changes in taxation; • changes in the regulatory compliance requirements - for example, those related to health, water quality, dam safety, and environmental standards; • changes in law or pursuant to a law; • changes in GAWB’s water allocation and its operating requirements; • changes in estimated yield resulting from reviews of river hydrology or climate change; • other major changes in government policy; and • with any pass-through costs requiring formal approval by the Authority. <p>That the Authority not actively monitor prices established in contractual arrangements between GAWB and its customers. Any monitoring role should be limited to within-period reviews consistent with the recommended trigger mechanism and assessment of pass-through costs.</p> |
| 11. | <i>Implications of the recommended pricing practices</i> |
| 11.1 | That, for existing customers, prices should be transitioned over three years (2002-03 to 2004-05) from GAWB’s post-October 2000 prices to the recommended prices, subject to long term contractual limitations. |

REFERENCES

Australian Competition and Consumer Commission (2003), *Draft Discussion Paper - Review of the Draft Statement of Principles for Regulation of Transmission Revenues*.

Booth, L., 1999, *Estimating the Equity Risk Premium and Equity Costs: New Ways of Looking at Old Data*, Journal of Applied Corporate Finance, Vol. 12, No. 1 (Spring): 100-112.

Lally, M. (2004), *The Cost of Capital for Regulated Entities*, prepared for the Queensland Competition Authority, February.

Lally, M. (2002), *Determining the Risk Free Rate for Regulated Companies*, prepared for the ACCC, August.

Queensland Competition Authority (1997), *Criteria for the Identification of Government Monopoly Business Activities*, December.

Queensland Competition Authority (2000), *Statement of Regulatory Pricing Principles for the Water Sector*, December.

Queensland Competition Authority (2002), *Gladstone Area Water Board: Investigation of Pricing Practices*, September.

Queensland Competition Authority (2003), *General Pricing Principles for Infrastructure Investments made in response to Extraordinary Circumstances*, August.

Stern Stewart Research (2001), *The Equity Risk Measurement Handbook*, Evaluation, vol. 3, issue 3.