



Issues Paper

**Gladstone Area Water Board:
Framework for the Pricing of Monopoly
Business Activities**

April 2001

FOREWORD

The Premier and Treasurer (the Ministers) declared certain business activities of the Gladstone Area Water Board (GAWB) to be government monopoly business activities and have referred their pricing practices for investigation by the Authority.

GAWB is responsible for the supply of raw and treated water to industrial and local government customers in the Gladstone area. It operates the Awoonga Dam, and an associated distribution network, which is presently being augmented to increase safe yield from 49,400ML to 89,500ML.

This paper seeks to establish a basis for consultation on the appropriate framework for the pricing of monopoly business activities, against which GAWB's pricing practices can be assessed.

COAG defines an upper limit for water prices, to protect customers from the potential abuses of monopoly power, as being "operational, maintenance and administrative costs, externalities, taxes or TERS, provision for the cost of asset consumption and cost of capital".

This may be achieved by a number of approaches and including the establishment of either revenue or price caps. A revenue cap offers advantages in flexibility for the business while a price cap is more effective where sales volumes are uncertain and volatile. Regardless of which approach is adopted, prices based on the adoption of marginal cost pricing offer the most potential to achieve efficient outcomes.

Alternative approaches also need to be assessed in terms of their effectiveness in pricing for excess capacity and capacity augmentation. The Authority has identified three alternatives for pricing for excess capacity, involving variations on SRMC and LRMC pricing.

In determining a pricing framework for a monopoly business activity, account must also be taken of the trade-offs between using a single price for all users (postage stamp tariffs) and applying differential pricing to reflect cost differentials (nodal pricing). GAWB has identified customer groups for its treated and untreated water services that may be used as a basis for differential pricing.

In the event that incentive measures are applied to GAWB, there are a number of matters that will require attention. These include whether any escalation factor is required, the choice of a cost index and the basis for determining an X factor. The potential need for further review, and the timing of such a review is also an issue. Finally, there are options for how outperformance of cost benchmarks by GAWB could be passed on to customers (for example, by a glide-path), and conversely, how unexpected costs might be passed through to customers.

Submissions are invited on any of the matters raised in this Issues Paper and, in particular, on those matters on which the Authority has identified (see over).

Summary of Major Issues for Comment

The issues on which comment is invited are:

1. whether the cost of service, incentive regulation or hybrid approach is the most appropriate for ensuring that GAWB adopts acceptable pricing practices;
2. whether a revenue or price cap is most appropriate for GAWB's monopoly business activities;
3. in relation to GAWB:
 - (i) whether pricing should be based on SRMC or LRMC;
 - (ii) whether price differentials should apply between existing (pre-augmentation) users and new users; and,
 - (iii) the appropriate treatment of excess capacity for pricing purposes;
4. whether prices should be averaged or differentiated according to either geographic zones or customer groups, or both;
5. whether, if differentiated:
 - (i) prices should be based on four customer classes for untreated water, with all current treated water users forming discrete regional customer groups;
 - (ii) prices should reflect the difference in distribution costs, with storage costs allocated according to the users' share of demand for water attributable to existing and committed projects;
6. whether peak and off-peak pricing is an issue for GAWB;
7. whether GAWB's prices should be reviewed in 3 years from the date on which the initial recommendations are submitted;
8. whether, if incentive structures are to be established:
 - (i) the CPI be used as a cost index by which to adjust prices;
 - (ii) an X factor based on benchmarked costs be used to adjust the CPI adjustments; and,
 - (iii) the impact of GST needs to be recognised;
9. whether GAWB should retain the benefit of out-performance between pricing reviews, and whether any gains should be passed to customers by a glide path following any subsequent review;
10. the need for cost pass-through measures and the appropriate mechanisms and triggers for such arrangements; and,
11. any matters of public interest identified in section 26 of the *QCA Act 1997* which may be relevant to GAWB's pricing.

SUBMISSIONS

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

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The **closing date** for submissions is **18 May 2001**

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. If a person making a submission does not wish that submission to be public, that person should claim confidentiality in respect of the document or any part of it. 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 may be made publicly available. It would also be appreciated if submissions could be provided in electronic form (on disk in Microsoft Word format) or by e-mail. If this is not possible, it would be appreciated if two printed copies could be provided. 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 *QCA Act*, the Authority must take all reasonable steps to ensure information is not disclosed without the person’s consent, provided the Authority is satisfied the person’s belief is justified and disclosure of the information would not be in the public interest.

Public Access to Submissions

Subject to the above, submissions will normally be made available for public inspection at the Brisbane office of the Authority, or on its website at www.qca.org.au

Information on the role and current activities of the Authority, including copies of reports, papers and submissions are located on the Authority’s website.

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GLOSSARY

ACTEW	Australian Capital Territory Electricity and Water
COAG	Council of Australian Governments, consisting of the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Local Government Association
CPI	Consumer price index
DEA	Data Envelopment Analysis
DNR	Department of Natural Resources
GAWB	Gladstone Area Water Board
GST	Goods and Services Tax
IPARC	Independent Pricing and Regulatory Commission – ACT regulatory body
IPART	Independent Pricing and Regulatory Tribunal – NSW regulatory body
LRMC	Long run marginal cost, or the cost of providing an additional unit when all production factors are variable.
Ofwat	Office of the Water Regulator – UK water industry regulatory body
OLS	Ordinary Least Squares (regression analysis)
ORG	Office of the Regulator General – Victorian regulatory body
SCARM	Standing Committee on Agriculture and Resource Management
SRMC	Short run marginal cost, or the cost of increasing production by one unit when at least one factor of production is held fixed
TER	Tax equivalents regime
TFP	Total factor productivity
WACC	Weighted Average Cost of Capital

1. EXECUTIVE SUMMARY

1.1 Introduction and Objectives

The Direction

The Premier and Treasurer (the Ministers) declared certain business activities of the Gladstone Area Water Board (GAWB) to be government monopoly business activities and have referred their pricing practices for investigation by the Authority. The Ministers' also required an investigation of the appropriate pricing of excess capacity, capacity augmentation and contributed assets.

Monopoly Prices Oversight

In undertaking pricing investigations, the Authority is required to follow the requirements of Part 3 of the *Queensland Competition Authority Act 1997* (the *QCA Act 1997*). In particular, Section 26 (1) of Part 3 requires that the Authority must have regard to:

- the need for efficient resource allocation, to promote competition and protect consumers from abuses of monopoly power;
- the cost of providing the goods and services in an efficient way and the actual cost of providing the goods and services;
- the standard of the goods and services including quality, reliability and safety; and,
- the appropriate rate of return on government agency assets.

In addition, Section 26 requires that the Authority take into account a range of public interest matters such as: the impact on the environment of prices charged; demand management; social welfare and equity implications; the promotion of investment and innovation by government agencies; ecologically sustainable development; workplace health and safety requirements; and, economic and regional development.

Efficiency, Competition and Protection of Consumers

To promote efficiency, competition, and protect consumers from the abuses of monopoly power the Authority considers it necessary to ensure that prices should reflect certain principles, namely they should be: cost reflective; forward looking; ensure revenue adequacy; promote sustainable development; ensure regulatory efficiency. Such prices should also take into account matters relevant to the public interest.

Objectives

The purpose of this Issues Paper is to establish a basis for consultation on the appropriate framework for the pricing of monopoly business activities, against which GAWB's current pricing practices can be assessed. Key issues include:

- the general approach to pricing, for example, whether *cost-of-service*, *incentive regulation* or a *hybrid form* should be adopted;
- the nature of the preferred approach to pricing - *revenue* or *price caps*;
- the basis on which the general approach to pricing is to be set including the treatment of excess capacity;

- whether any disaggregation of customer groups should be adopted; and,
- whether any appropriate incentive structures should be applied.

1.2 Gladstone Area Water Board

The Gladstone Area Water Board (GAWB) is responsible for the supply of both raw and treated water to industrial and local government consumers in the Gladstone region.

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

To meet expected growth in demand for water over the next 50 years, GAWB has commenced raising the fixed spillway level of Awoonga Dam and is also planning to further augment its raw water distribution system.

1.3 General Approach to Pricing for GAWB

Approaches to Pricing

To protect customers from the potential abuses of monopoly power, GAWB's revenue must reflect no more than the "operational, maintenance and administrative costs, externalities, taxes or TERs, provision for the cost of asset consumption and cost of capital" (COAG).

General approaches to achieve such a level of revenue include:

- *cost-of-service*, or *rate of return* pricing – where the revenue required in order to recover its variable and other fixed costs plus an allowed rate of return on the business asset base is established;
- *incentive regulation* – where adjustments to existing prices or revenues are imposed, without direct reference to the costs of service provision; or
- *hybrid approaches* – where cost of service pricing is combined with incentive regulation.

The *cost-of-service* approach may ensure revenue adequacy, but on its own, may not provide the entity with an incentive to attain best practice. *Incentive regulation* was developed to redress this shortcoming, by providing incentives to achieve cost savings and to share in the benefits. However, incentive regulation may embed past inefficiencies because it does not address pre-existing cost inefficiencies or may result in a failure to ensure revenue adequacy.

A *hybrid* approach applies *incentive regulation* to total revenues as established by either a 'building block' or *NPV* or *IRR* model. Most Australian regulators employ a *hybrid* approach based on the 'building block' model. Alternative models for establishing revenue adequacy are discussed in the accompanying paper, *GAWB: Elements of the Pricing Framework*.

As GAWB is undergoing a transition to a fully commercialised footing, with pricing based on full cost recovery, the *cost-of-service* or *hybrid* approaches are both feasible. They are also both consistent with the need to address the weighted cost of capital and rate of return required by the Ministers and the *QCA Act 1997*.

<p>1. The Authority seeks comment on whether the cost of service, incentive regulation or hybrid approach is most appropriate for ensuring that GAWB adopts acceptable pricing practices.</p>
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Revenue Caps and Price Caps

Revenue caps apply to the revenues of the monopoly business activity. They may be established for different customer groups, for categories of service or for the business as a whole.

Revenue caps provide the business with the flexibility to vary the level and structure of prices provided the revenue constraint is met. The additional flexibility available to the business under revenue caps may result in cross-subsidies between individual users.

Revenue caps may be in three forms - fixed, variable or average. Fixed revenue caps may not be suited to an organisation that is faced with potentially strong growth. A fixed revenue cap may also not provide any incentive to pursue new customers and sell more water once the cap is reached. Variable revenue caps usually combine a fixed component with variable components that reflect annual cost drivers. Variable caps require considerable information relating to customer numbers, rate and timing of uptake, augmentation costs and other supply and demand factors. Average revenue caps (or the “revenue yield approach”) are typically expressed on a per megalitre basis. There is no effective limit on total revenue as the entity is able to sell as much or as little of its product as it desires. Where significant growth is expected, revenue caps require an accurate estimate of demand.

Price caps control the prices of specific categories of goods and services. Price cap regulation can enable the business to continue to grow by selling capacity and, if based on individual categories, allows most flexibility in the composition of growth.

Typically, when applying price caps, the regulator can specify a price which delivers economically efficient outcomes and reduces the potential for cross-subsidies, although it is noted that prices may also be established in conjunction with average revenue requirements.

A key issue in deciding between the various forms of revenue and price caps is the projected growth of GAWB’s business over the next 10 years, which is significant as a proportion of the current business. Total water yield will more than double on the basis of current projections. Other key issues include the requirements of the Ministers’ Direction; the constraints of existing contractual arrangements between GAWB and many of its customers; the availability of relevant data; and, the implications of GAWB’s move to a commercialised footing.

<p>2. The Authority seeks comment on whether a revenue or price cap is most appropriate for GAWB’s monopoly business activities.</p>

1.4 Basis for Pricing for GAWB

For prices to ensure economically efficient outcomes, they can be set to send appropriate signals to consumers on the costs of an additional unit of water (that is, marginal or incremental costs). This can be achieved by reference to either short run or long run marginal costs.

Short run marginal cost (SRMC) pricing provides the correct economic signals when capacity is fixed. As capacity constraints are reached, SRMC will over time lead to sharp increases, reflecting increased congestion costs (for example, capital costs for leakage repair, plant upgrades, purchase of water from external sources or additional operating costs) and possibly environmental costs. If new capacity is installed, prices based on SRMC would then decline, as congestion costs are relieved. The typically cyclical pattern in pricing is generally not acceptable administratively - customers prefer stable prices over time and may become ‘confused’ by prices rising then falling.

Where optimal capacity decisions are required, LRMC pricing results in smoother prices over time and, by incorporating a component to reflect future augmentation, signals to buyers the future costs of their decisions.

Where the resultant price fails to achieve revenue adequacy, a two-part tariff is considered necessary. Where the resultant price exceeds revenue requirements, it is considered that it is the Shareholding Ministers' decision as to whether any excess remains with GAWB (perhaps for future capacity expansion), or is appropriated through dividend payments.

There are a number of issues, mainly related to the excess capacity created by the current augmentation, that make the LRMC pricing approach potentially inappropriate in Gladstone:

- demand is highly uncertain being based upon the prospects and timing of large projects proceeding;
- most existing industrial customers are large users that are not contributing to increased demand;
- the risk of augmentations ultimately not being required because projects do not proceed are all passed to the existing users; and,
- existing industrial customers hold contracts at prices that cannot be adjusted, and take-or-pay arrangements limit the incentive for water use to be optimised.

There exist many options to allocate such excess capacity based on administrative rules. For example, responsibility could be placed on large new users for the augmentation and past agreements 'grandfathered' from the application of any new rules. Alternatively, all users could be required to share in the costs of the augmentation.

The Authority has identified three main options for addressing excess capacity within the context of efficient price signals:

- **Option 1** - adopt essentially a SRMC pricing approach for existing users with new customers meeting augmentation cost (LRMC). Existing users would be required to pay the new level of charges for any demand in excess of that currently contracted;
- **Option 2** - apply LRMC pricing to all users with estimates of augmentation costs based on committed and expected growth. If demand for a large customer does not eventuate, augmentation is delayed and the LRMC falls. Rebates may be provided to customers if augmentation costs are not incurred, are delayed, or are revised downwards; or,
- **Option 3** - apply LRMC pricing to all users but only incorporate planned capacity with a high probability of being utilised, that is for existing and committed users (together with any capacity required to meet seasonal demand variations or which improve the current service quality in a manner desired by existing customers).

Option 1 generally suffers from the disadvantages associated with SRMC pricing but may be considered more equitable in that only new customers bear the costs of the additional capacity. Under Options 2 and 3, all users would be required to pay the LRMC to ensure all users have an incentive to and adjust water consumption.

Option 3 signals the cost of impending augmentation, minimises the impact of costs on existing users in the event of inappropriate demand estimation and is administratively simple. Under option 3 GAWB would be required to finance the costs of any unallocated capacity but be

allowed to recoup such costs as this capacity was taken up. In this manner, risks would be apportioned to those incurring them and most able to manage them.

Where any excess capacity may be required by Government which is in excess of the commercial risks which GAWB wishes to assume, then there may be a case for the additional costs to be met by Government.

3. The Authority seeks comment on:

- (i) whether pricing should be based on SRMC or LRMC;**
- (ii) whether price differentials should apply between existing (pre-augmentation) users and new users; and,**
- (iii) the appropriate treatment of excess capacity for pricing purposes.**

Differential Pricing

In determining a pricing framework for a monopoly business activity, account must also be taken of the trade-offs between adopting a single price for all users (postage stamp pricing) or whether a different price should be established for each user based on their share of costs.

In general, pricing structures that reflect identifiable and substantial differences in costs of supply between consumers (existing or anticipated), consumer classes, or geographic areas are generally preferred because they are cost-reflective.

GAWB's infrastructure essentially forms a linear network system, with storage, distribution and treatment facilities being used to different degrees by customers. For example, one customer is supplied directly from Awoonga Dam and does not use GAWB's distribution and treatment infrastructure. Price differentiation on the basis of geographic zone or customer group may be appropriate given the nature of GAWB's infrastructure.

It will be necessary, however, to also take into account the availability and cost of obtaining the necessary information, the effectiveness of cost allocation, the administrative disadvantages of a more complex pricing structure and considerations of excess capacity and contributed assets. Furthermore, some customers have indicated a desire for confidentiality.

4. The Authority seeks comment on whether prices should be averaged or differentiated according to either geographic zones or customer groups, or both.

Level of Price Differentiation between Customers

GAWB currently separates its current raw water customers into three groupings, separating out those customers taking water directly from Awoonga Dam, those in the Gladstone area and those located in the industrial area to the north of Gladstone. GAWB has also foreshadowed a potential fourth class of raw water customer based on supply to the new Aldoga industrial area.

GAWB supplies the Gladstone City Council and Calliope Shire Council including services to Calliope and the Boyne Island/ Tannum Sands townships. Although there is an additional cost in meeting Calliope's needs, the treated water charges for the two Councils are the same.

Any differentiation may also need to reflect differences in distribution costs, with storage costs allocated according to the users' share of total demand for water attributable to existing and committed projects.

5. The Authority seeks comment on whether, if differentiated:

- (i) prices should be based upon four customer classes for untreated water, all current treated water users forming discrete regional customer groups; and**
- (ii) prices should also reflect the differences in distribution costs, with storage costs allocated according to the users' share of demand for water attributable to existing and committed projects.**

Peak and Off-Peak Pricing

The main issues in setting seasonally differentiated charges are in determining the seasonal peak periods, establishing who the peak users are, and meeting additional costs of administration and metering if required.

In GAWB's case, based on an examination of recent years' actual consumption, demand by the major industrial customers is generally constant on a monthly basis from year to year. Urban demand also does not appear to exhibit significant seasonal variation, and if justifiable would be more relevant to the Gladstone City and Calliope Shire Council's pricing policies.

6. The Authority seeks comment on whether peak and off-peak pricing is an issue for GAWB.

1.5 Incentive Structures

Measures to ensure parties benefit from on-going efficiency gains can form the basis of contract arrangements. Where an appropriate trading regime is in place and alternative sources of supply from different suppliers exist, efficiencies can be achieved through trading. For a monopoly business activity, prices oversight may provide the only alternative to ensure continued performance improvement.

Having regard to the changing strategic framework for the water industry and the uncertainties associated with the demand for GAWB's water, further reviews of GAWB's prices may be necessary.

To this end, price and revenue caps are generally applied in conjunction with incentive measures designed to provide rewards and penalties to encourage a monopoly business activity to achieve certain desired goals (such as lower costs of production) over any review period.

In order to achieve efficiency gains, the intervals between any reviews of pricing practices must be long enough for management initiatives to be implemented and take effect. In general, periods of between 3 and 5 years provide incentives for efficiency improvements and for realisation of longer-term objectives.

Primarily because of potential changes in the strategic framework to water and the uncertainties related to GAWB's augmentation programme and their implications for pricing, the Authority anticipates that a further review of pricing practices will be necessary in 3 years.

7. The Authority seeks comment on whether prices should be reviewed in 3 years from the date on which the initial recommendations are submitted*The Appropriate Cost Index*

The most common mechanism associated with incentive structures is CPI-X, where X is a pre-determined index reflecting the perceived capacity of the monopoly business activity to realise cost savings.

Incentive measures usually take account of the general movement in prices over the review period to ensure that the business' viability is not exposed to inflation pressures. In the CPI-X mechanism, the CPI is a price inflator that is applied to escalate prices over the period.

Although the CPI is based on a basket of goods and services markedly different to those offered by GAWB, it provides a stable and reliable indicator of inflationary trends. Specific indicators such as materials or wages deflators are likely to be more volatile and lead to unacceptable price variations.

In relation to GST impacts, the Authority proposes to monitor developments during the course of the investigation, having regard to Commonwealth Treasury forecasts and the underlying inflation rate.

The X Factor

The X-factor represents an annual downwards adjustment to the business's forecast prices or revenue caps to reflect the ability of the business to achieve cost savings while preserving its financial viability. The X factor is often based on observed previous rates of productivity growth in an industry. The X factor is usually applied to a business' operating expenditure.

The determination of an X factor for the GAWB pricing recommendation raises issues including: the impact of augmentation of the asset base on operating expenditure; the potential for efficiency gains from economies of size; and, the difficulties of undertaking effective benchmarking comparisons.

8. The Authority seeks comment on whether if incentive structures are to be established:

- (i) the CPI be used as a cost index by which to adjust prices;**
- (ii) an X factor based on benchmarked costs be used to adjust the CPI adjustments; and,**
- (iii) the impact of GST needs to be recognised.**

Glide Paths

Incentive measures also involve consideration of how the monopoly business activity and consumers should share the benefits from unexpected 'out-performance' of cost benchmarks. Consideration is then given to how such benefits should be shared in the future, and whether price adjustments should be made on a reducing basis over time, commonly referred to as a 'glide path', or passed through to consumers through one-off adjustments.

- 9. The Authority seeks comment on whether GAWB should retain the benefit of out-performance between pricing reviews, and whether any gains should be passed to customers by a glide path following any subsequent review.**

Cost Pass-Through

In addition to sharing unexpected benefits from efficiency improvements, arrangements need to accommodate unexpected (exogenous or otherwise) deteriorations in costs. A cost pass-through arrangement allows a monopoly business activity to increase its price or revenue cap in response to an unforeseen and unavoidable legitimate increase in input cost that is typically beyond the monopoly business' control.

The Authority expects to be able to identify potential areas of cost risk as part of its modelling exercise.

- 10. The Authority seeks comment on the need for cost pass-through measures and the appropriate mechanisms and triggers for such arrangements.**

Public Interest

There are a number of public interest matters which the Authority is required to consider in making recommendations about pricing practices. A number of such matters are identified in the *QCA Act 1997* and are raised in a preliminary manner in chapter 7.

- 11. The Authority invites submissions on any matters of public interest identified in section 26 of the *QCA Act 1997* which may be relevant to GAWB's pricing.**

2. INTRODUCTION AND OBJECTIVES

2.1 The Direction

On September 13 2000, the Premier and the Treasurer (the Ministers) declared certain business activities of the Gladstone Area Water Board (GAWB) to be government monopoly business activities under Section 23 of the *Queensland Competition Authority Act 1997 (QCA Act)*.

On the same date, under Section 23 of the *QCA Act 1997*, the Ministers referred the declared government monopoly business activities of GAWB to the Queensland Competition Authority (the Authority) for:

- (a) an investigation about pricing practices relating to the declared activities; and,
- (b) investigations for monitoring the pricing practices relating to the declared activities.

Under Section 24 of the *QCA Act 1997* the Premier and Treasurer also directed the Authority to:

- (a) investigate:
 - (i) the weighted average cost of capital proposed by the Gladstone Area Water Board;
 - (ii) appropriate pricing for excess capacity and capacity augmentation; and
 - (iii) identification and pricing of contributed assets; and,
- (b) report on progress of the investigation to Ministers within three months of this referral.

The Authority has completed and submitted the progress report to the Ministers.

Responsibility for setting prices rests with the Queensland Government.

2.2 Objectives of this Paper

The purpose of this Issues Paper is to establish a basis for consultation on the appropriate framework, for the pricing of monopoly business activities, against which GAWB's current pricing practices can be assessed. Key issues include:

- the general approach to pricing, for example, whether *cost-of-service* or *incentive regulation* or a *hybrid form* should be adopted;
- the nature of the preferred approach to pricing - *revenue* or *price caps*;
- the basis on which the general approach to pricing is to be set including the treatment of excess capacity;
- whether any disaggregation of customer groups should be adopted; and,
- whether any appropriate incentive structures should be applied.

2.3 Procedural Issues

This paper constitutes one of four issues papers which the Authority has, or proposes, to issue as a basis for public consultation prior to the finalisation of its recommendations. The other papers include:

- *GAWB: Projected Demand for Water - 2000/01 to 2019/20*;
- *GAWB: Elements of the Pricing Framework*; and,
- *GAWB: Draft Recommendations*.

Under Part 3 of the *QCA Act 1997*, the Authority must report the results of its investigation to the Ministers while a copy of the report must also be provided to the agency carrying out the government monopoly business activity (GAWB). The Authority's report must include reasons for its recommendations and must be made available publicly. The Ministers must consider the Authority's recommendations and make a decision within 90 days.

Under Part 6 of the Act, there is provision for the Authority to respect confidential information provided as part of the investigation, but this information can be made available to the Ministers, members of the Authority and employees and consultants engaged by the Authority in the course of their duties.

2.4 Structure of the Paper

Chapter 3 provides a brief overview of GAWB's business. Chapter 4 provides a review of alternative approaches to the pricing of monopoly business activities, and compares their advantages and disadvantages. Chapter 5 deals with the basis for pricing including the issue of price differentiation between customer groups and geographical areas. This chapter also covers the issues of excess capacity and pricing relativities between new and existing customers. Chapter 6 reviews incentive structures including escalation factors, X factors and cost pass-through issues. Chapter 7 addresses public interest matters.

3. GLADSTONE AREA WATER BOARD

3.1 Description of the Business

GAWB is responsible for the supply of both raw and treated water to industrial and local government consumers in the Gladstone region.

GAWB owns the Awoonga Dam located on the Boyne River to the south west of Gladstone. The dam consists of a 45 metre high concrete faced rockfill wall and has a storage capacity of 283,000 ML. In 1999, the dam's assessed "historical no failure" annual yield was 49,400 ML. GAWB also operates a network of pipelines, pump stations, terminal reservoirs and treatment plants to supply water to customers.

Five major customers, CS Energy, Queensland Alumina Limited, Gladstone City Council, Calliope Shire Council and Gladstone Power Station use almost 38,000 ML of water annually, or 88 per cent of GAWB's total water supply. GAWB supplies eight other industrial customers and a number of other small customers.

Augmentation of Capacity

To meet expected growth in demand for water over the next 50 years, GAWB has undertaken extensive investigations for raising Awoonga Dam from its current full supply level (spillway level) of 30 metres up to a possible maximum of 61.8 metres. It has commenced raising the fixed spillway level from 30 metres to 40 metres (Stage 1), with a subsequent raising of the spillway to 45 metres (Stage 2) by the installation of floodgates also envisaged. The initial raising, which is already in progress, will increase Awoonga Dam's annual safe yield from 49,400ML to 89,500ML. If the subsequent raising proceeds, presently proposed for 2009, the annual safe yield would rise to 112,600ML.

In 1997, the Queensland Government approved capital expenditure of \$34 million. In accordance with this, GAWB has undertaken major new works during the last two years, including refurbishment of the Awoonga pump station, 16 kilometres of new pipeline between Awoonga Dam and Gladstone and a new 50 ML reservoir at Toolooa. These works were completed in mid-2000.

GAWB has budgeted for further augmentation of the raw water distribution system and has provided for expenditure of \$30 million in 2001/02. Proposed works include a new Kirkwood Road pipeline to supply a new terminal reservoir and pump station at Mt Miller and a new pipeline to the Aldoga industrial area where Comalco is proposing to locate its aluminium processing plant.

The present augmentation of the dam requires a substantial outlay in relocating rail, road, electricity and telecommunications infrastructure.

Commercialisation

GAWB was reconstituted as a Category 1 Water Authority under the *Water Act 2000* on 1 October 2000. Under the Queensland Government's commitments to the Competition Principles Agreement, GAWB is required to move to full cost recovery.

Approximately 64 per cent of GAWB's total annual supply of water is for raw water subject to long-term contracts with CS Energy and QAL (based on 1998-99 water deliveries). About 21 per cent of annual supply is for treated water to Gladstone City Council and Calliope Shire Council for which there are no formal contracts. The balance of supply, to customers including Gladstone Power Station, Orica Australia, and Boyne Smelters is subject to contracts.

3.2 Customers and Geographic Areas

GAWB currently identifies three major categories of customer in its existing water business:

- customers taking water directly from the dam, incurring storage costs only and meeting their own delivery infrastructure and transmission costs;
- customers who take raw water delivered by the Board's pipeline network, incurring storage, pumping and delivery costs; and,
- customers who take treated water delivered by the Board's pipeline network, incurring storage, pumping, delivery and treatment costs.

GAWB's water supply system has a number of clearly defined components and involves specific infrastructure to supply to customers in defined geographic areas.

The major geographic areas for the supply and distribution of raw water by GAWB are:

- Awoonga Dam. Currently, this is GAWB's only source of raw water. Water is supplied directly from the dam for transmission by SunWater to CS Energy. Callide Power Management will source its requirements in a similar manner;
- Gladstone. This includes the distribution system from Awoonga Dam to the terminal reservoirs at Gladstone. From this part of the system, raw water is distributed to the Gladstone Water Treatment Plant, to QAL, to Boyne Smelters and to the Hansen Road pipeline for distribution to industrial customers to the north of Gladstone;
- Yarwun Industrial Estate and Fisherman's Landing. From this part of the system, raw water is supplied to the Yarwun Water Treatment Plant, Ticor, Stuart Shale Oil, and to QCL and the Gladstone Port Authority at Fisherman's Landing. It also supplies the pipeline to Mt Larcom; and,
- Mt Larcom. Where raw water is supplied to the QCL Mine and Mt Larcom township.

It is proposed that the new Aldoga Industrial Area, where Comalco is to be located, will be supplied with raw water by the proposed Kirkwood Road pipeline from Toolooa and a new reservoir at Mt Miller.

3.3 Projected Growth

Projections of growth in the demand for water have been addressed in the paper, *Gladstone Area Water Board : Projected Demand for Water - 2000/01 to 2019/20*, prepared by the Authority and circulated for comment in March 2001. Copies are available from the Authority.

4. GENERAL APPROACH TO REGULATORY PRICING FOR GAWB

4.1 Background to Pricing for Monopoly Business Activities

The Authority's responsibilities in relation to water are linked to the Council of Australian Governments' (COAG) strategic framework for water industry reform involving pricing reform, the clarification of property rights, the allocation of water for the environment, the adoption of trading arrangements for water, and institutional reform. The key elements of the framework in relation to water pricing are:

- the adoption of pricing regimes based on the principles of consumption-based pricing, full-cost recovery and desirably the removal of cross-subsidies which are not consistent with efficient and effective service use and provision; and,
- where service deliverers are required to provide water services to classes of customer at less than full cost, that the cost of this be fully disclosed and ideally be paid to the service deliverer as a community service obligation.

Among other principles, the COAG guidelines indicate that 'to avoid monopoly rents, a water business should not recover more than the operational, maintenance and administrative costs, externalities, taxes or TERs, provision for the cost of asset consumption and cost of capital, the latter being calculated using a WACC'. Externalities were given to mean environmental and natural resource management costs attributable and incurred by the water business.

In applying these principles, economic regulators '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'.

4.2 Monopoly Prices Oversight

Requirements of the QCA Act 1997

In undertaking pricing investigations, the Authority is required to follow the requirements of Part 3 of the *QCA Act 1997*. In particular, Section 26 (1) of Part 3 requires that the Authority must have regard to:

- the need for efficient resource allocation;
- the need to promote competition;
- the protection of consumers from abuses of monopoly power;
- the cost of providing the goods and services in an efficient way;
- the standard of the goods and services (including quality, reliability and safety); and,
- the appropriate rate of return on government agency assets.

In addition, Section 26 requires that the Authority take into account a range of public interest matters such as: the impact on the environment of prices charged; demand management; social welfare and equity implications; the promotion of investment and innovation by government agencies; ecologically sustainable development; workplace health and safety requirements; and economic and regional development. These matters are further discussed in Chapter 7 below.

Efficiency, Competition and Protection of Consumers

With the presence of monopoly characteristics in the delivery of water infrastructure services, suppliers potentially enjoy market power. Such monopoly or near-monopoly suppliers may restrict services, increase prices, lower quantities of water available for sale or provide a lower standard of service or product quality, without the threat of competitive sanction.

Over-pricing may result from efforts to maximise profits, or from charges being based on unnecessary costs. Revenue derived may be dissipated in the form of excess rewards to owners or employees, through inefficient cost management or through the “gold plating” of infrastructure.

Problems also may arise when owners of certain “essential” infrastructure facilities are in a position to inhibit or distort competition in upstream or downstream markets. Where they are vertically integrated, the owners of such facilities may have incentives to restrict competitors’ access to the facilities’ services, or to offer discriminatory terms and conditions of access.

Such practices can result in excess resources being diverted to the water distributor and its employees and thus distort the allocation of resources, prevent competition by being able to cross-subsidise activities and result in overpricing, under-provision or poor quality of service provision.

To promote efficiency, competition, and ensure that consumers receive relevant services at appropriate prices, the price of water should generally adhere to certain principles and should:

- be *cost reflective* - that is, reflect the costs of providing the service and, usually where the demand for water exceeds its supply, potentially incorporate a value for the resource;
- be *forward looking* - in that it represents the least cost which would now be incurred in providing the requisite level of service over the relevant period;
- ensure *revenue adequacy* - the revenue needs of the business must be addressed where possible;
- promote *sustainable investment* - where the services are to be maintained into the future, the investor must be given the opportunity to enjoy an appropriate return on investment;
- ensure *regulatory efficiency* - the pricing method which minimises regulatory intrusion and compliance costs relevant to a particular circumstance should be adopted; and,
- take into account matters relevant to the *public interest*.

Matters relevant to these principles have been detailed in the *Statement of Regulatory Pricing Principles for the Water* recently prepared by, and available from, the Authority.

4.3 Approaches to Pricing

General Regulatory Approaches

Monopoly price regulation is typically aimed at protecting customers from abuses of monopoly power by establishing a maximum allowable return to the service provider. Such a maximum is set by reference to the outcomes that could reasonably be expected from the operation of competitive markets.

In addition, it is necessary to ensure sustainable service provision. Thus, the financial viability of GAWB needs to be maintained wherever past decisions are deemed to be commercially justifiable. To achieve such financial viability, or revenue adequacy, it is recognised that pricing should reflect “operational, maintenance and administrative costs, externalities, taxes or TERs, provision for the cost of asset consumption and cost of capital” but to avoid monopoly rents, it should not exceed this amount (COAG).

Nevertheless, there are a number of means by which this broad objective can be achieved. Broadly, monopolies’ prices may be regulated directly, or indirectly by setting constraints on the revenues they are able to earn. Each approach has different advantages and disadvantages.

General approaches to the regulation of prices applied by monopolies providing infrastructure services include:

- *cost-of-service*, or *rate of return* regulation – where regulators determine the revenue required in order to recover variable and other fixed costs plus an allowed rate of return on the business asset base;
- *incentive regulation* – where adjustments to existing prices or revenues are imposed, without direct reference to the costs of service provision; or
- *hybrid approaches* – where cost of service regulation is combined with incentive regulation.

The *cost-of-service* approach may achieve revenue adequacy but, on its own, may not provide the regulated entity with an incentive to attain best practice, with any increases in costs being passed to consumers. *Incentive regulation* was developed to redress this shortcoming, by providing incentives for the business to achieve cost savings and to share immediately in the benefits of such gains during the regulatory period. However, incentive regulation itself may embed past inefficiencies because it does not address pre-existing cost inefficiencies and may fail to achieve revenue adequacy. In addition, the *QCA Act 1997* specifically requires that account be taken of the efficient and actual costs of service provision.

A *hybrid* approach essentially applies *incentive regulation* to total revenues as established by a ‘building block’ or *NPV* or *IRR* model. Most Australian regulators employ a *hybrid* approach based on the ‘building block’ model. The different approaches to revenue determination are outlined in an accompanying paper (*GAWB: Elements of the Pricing Framework*).

As GAWB is undergoing a transition to a fully commercialised footing, with pricing based on full cost recovery including a return on capital, and augmentation costs are recent, the *cost-of-service* or *hybrid* approaches are both feasible. They are both consistent with the need to address the weighted cost of capital and rate of return required by the Ministers and the *QCA Act 1997*.

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| <p>1. The Authority seeks comment on whether the cost of service, incentive regulation or hybrid approach is the most appropriate for ensuring that GAWB adopts acceptable pricing practices.</p> |
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4.4 Revenue and Price Caps

To realise the above approaches, either revenue or price caps can be applied.

Revenue Caps

Revenue caps apply to the revenues of the monopoly business activity. They may be established for different customer groups, for categories of service or for the business as a whole.

Revenue caps provide the business with the flexibility to vary the level and structure of prices provided the revenue constraint is met. Where it is difficult for the business to predict the volume of water sold, there is potential for the revenue cap to be exceeded or for revenues to fall short of the cap. An 'unders and overs' facility can be established so that surpluses and shortfalls can be addressed in subsequent review periods.

The additional flexibility available to the business under revenue caps may result in cross-subsidies between individual users.

Revenue caps may be in three forms - fixed, variable or average.

Fixed Revenue Caps

A fixed revenue cap sets a maximum revenue that the water service provider can collect over a designated period. The cap operates as both a ceiling and a guarantee of gross revenues from services, and may be applied to customer groups or to the business as a whole. Revenue caps are based on a projection of water volumes sold and adjustments are made in the following year if actual revenues exceed the cap.

The water business is unable to pass on cost over-runs to consumers, and conversely, cannot benefit from implementing cost-saving strategies. Fixed caps also provide a water business with the opportunity to earn a set level of income, regardless of the actual level of demand. Low volume sales can be offset by adjusting prices within the cap.

However, fixed revenue caps may not be suited to an organisation that is faced with potentially strong growth. A fixed revenue cap may also not provide any incentive to pursue new customers and sell more water once the cap is reached.

Variable Revenue Caps

Variable revenue caps usually combine a fixed component with variable components that reflect annual cost drivers.

The main difficulty with the variable cap is determining the cost drivers so that cost changes can be effectively tracked. Variable caps require considerable information relating to customer numbers, rate and timing of uptake, augmentation costs and other supply and demand factors.

Average Revenue Caps

Average revenue caps (or the "revenue yield approach") are typically expressed on a per megalitre basis. There is no effective limit on total revenue as the entity is able to sell as much or as little of its product as it desires.

However, there may be incentives to raise prices for customers with low responsiveness to prices, that is where water is a necessity, and lower prices for customers with high responsiveness of demand, resulting in cross-subsidies.

To avert the potential for cross-subsidies, it is possible to set an average revenue cap for each customer or customer group. This would mean that the average revenue cap is essentially a

price cap. IPART (1999) notes that revenue yield controls are sometimes referred to as a form of average price control.

Price Caps

Price caps directly control, in one form or another, the actual prices for goods and services provided by a monopoly business activity.

Price caps offer the following advantages over revenue caps:

- the monopoly business activity remains able to increase total revenues by selling more water, that is, the approach is appropriate for growth businesses where revenue growth is difficult to predict; and
- price structures can be established which provide certainty for the regulated business and its customers, and ensure efficient outcomes.

Price caps are typically linked to the costs of operation and are particularly relevant for an initial pricing investigation. Price caps control the prices of specific categories of goods and services. Price cap regulation can enable the business to continue to grow by selling capacity and, if based on individual categories, allows most flexibility in the composition of growth.

Typically, when applying price caps, the regulator can specify a price which delivers economically efficient outcomes and reduces the potential for cross-subsidies, although it is noted that prices may also be established in conjunction with average revenue requirements.

Price caps may be set for individual goods or services or grouped into ‘tariff baskets’, according to separate customers, groups of customers, services and products, and geographical areas. The level of price differentiation required generally reflects the nature and purpose of the pricing investigation and the issues involved. For example, a monopoly pricing investigation for a particular customer group may require individual prices to be determined.

Prices for groups of services may be determined as a weighted average of the basket of services. The price cap applies to the weighted average price, providing the business with some scope to adjust prices within the tariff basket. Weights are usually based on revenue or volume shares of each service. Groups of customers may be ‘bulked together’ in the same way.

A disadvantage of price caps is that the service provider is exposed to volume risk and business viability may be affected if volumes decline and price caps prevent the business from adjusting its pricing.

Approach to Regulatory Pricing for GAWB

There are a number of considerations that will determine the appropriate general approach to regulatory pricing to be adopted in respect to GAWB. These involve both the intrinsic merits of any approach, as described above and, the circumstances relevant to GAWB and requirements of the Ministers’ direction and the *QCA Act 1997*.

Regulatory approaches in other jurisdictions reveal that water industry pricing has been mostly based on either price or unit revenue caps (Table 4.1).

Table 4.1. Summary of Approaches Adopted in other Regulatory Decisions

Regulatory Decision	Approach used	Comment
IPART, NSW water service providers (2000)	Price caps	Revenue caps not adopted due to seasonal variations. Included tariff structures and nodal pricing ¹
IPARC, ACTEW (water and electricity) (1999)	Average revenue caps	Side constraints on rate of increase to any customer.
Ofwat, UK water and sewerage companies (2000)	Average revenue caps	Based on projected average household bills.
QCA, electricity distributors draft determination, (2000)	Fixed revenue cap	Pricing side constraints imposed.
QCA, below rail coal network draft determination (2000)	Price caps	Provides incentive to maximise traffic.
ORG (Victoria), electricity distributors	Price caps – tariff basket approach.	Previously used revenue yield approach.

A key issue in deciding between the various forms of revenue and price caps is the projected growth of GAWB's business over the next 10 years, which is significant as a proportion of the current business. Total annual water yield will more than double on the basis of current projections from 39,500ML to 89,400ML. Other key issues are:

- the requirements of the Ministers' Direction, specifically that issues relating to pricing for excess capacity and capacity augmentation must be addressed;
- the constraints of existing contractual arrangements between GAWB and many of its customers;
- the availability of relevant data; and,
- the implications of GAWB's move to a commercialised footing as part of structural reform.

2. The Authority seeks comment on whether a revenue or price cap approach is most appropriate for GAWB's monopoly business activities.

¹ IPART's determination gave specific service charges varying according to meter size and usage charges per kilolitre. In the case of the Hunter Water Corporation, the tariff structure included a third tier for users in excess of 50,000kL in certain locations.

5. BASIS FOR DETERMINING PRICES

5.1 Introduction

A variety of approaches can be employed to establish revenue or price caps which meet the requirements of the entity and the need to establish prices which provide appropriate signals for an appropriate allocation of resources within the community.

Generally, a maximum revenue requirement is initially established as a measure of the total cost of providing the services by the entity. It is typically set by reference to the costs of an efficient service provider and thus limits the possibility that the monopoly service provider has ‘gold plated’ its assets or set charges which do not reflect costs. The manner by which the maximum revenue requirement is set is outlined in an accompanying paper *GAWB: Elements of the Pricing Framework*.

Prices and tariff structures are then established on the basis of desired principles as detailed in 4.2 above. Depending on whether such prices will also achieve the maximum revenue requirement certain other adjustments may be required. For example, where industries experience decreasing costs as output increases a two-part tariff may be put in place. Additional considerations may also arise where prices are to be established for existing as distinct from new users, or where different prices are to be established for different categories of users.

5.2 Marginal Cost Pricing

Pricing principles are relevant to the resolution of issues related to the treatment of excess capacity for new and existing users, and become particularly relevant where price caps are to be applied.

Efficient prices provide signals to consumers on the costs of an additional unit of water (marginal or incremental costs). An issue arises as to how the price is to be set to ensure that efficient pricing is achieved. Two broad options exist to set prices - the short run marginal cost and the long run marginal cost.

Short run marginal cost (SRMC) is the additional cost associated with increasing production by one unit, in a period in which at least one factor of production is fixed. Typically, capital costs are unable to be altered in the short run, and are considered fixed. *Long-run marginal cost* (LRMC) is the change in total costs when an additional unit of output is produced, and where all inputs are adjusted optimally. The long run therefore includes a component for the unit capital costs of expansion.

SRMC pricing provides the correct economic signals when capacity is fixed. As capacity constraints are reached, SRMC will over time lead to sharp increases, reflecting increased congestion costs (for example, capital costs for leakage repair, plant upgrades, purchase of water from external sources or additional operating costs) and any environmental costs. If new capacity is installed, prices based on SRMC could then decline, as congestion costs are relieved. SRMC pricing therefore results in prices fluctuating widely, producing a ‘saw-tooth’ pattern. The typically cyclical pattern in pricing is generally not acceptable administratively – customers prefer stable prices over time and may become ‘confused’ by prices rising then falling.

Where optimal capacity decisions are required, LRMC pricing results in smoother prices over time and, by incorporating a component to reflect future augmentation, signals to buyers the future costs of their current decisions. In practice, the estimation of LRMC can be difficult and is usually estimated by the sum of marginal operating costs (itself a proxy for SRMC) and marginal capacity costs. Turvey (1976) and Hanke (1981) provide a method for estimating the marginal capacity cost. For a particular year, it is found by taking the present value of an

expected future capital outlay, and subtracting from it the present value of the same capital outlay if delayed to the next year and then dividing by the annual increment in water use. It is effectively the unit cost of delaying augmentation one year.

Calculation of the marginal capacity costs depends on the ‘increment’ being considered. Usually a large combined increment in units of consumption *collectively* warrants future augmentation, and the costs of this augmentation should then be spread over *all* of these units. This approach is really an “average marginal” capacity cost measure, although is relatively easy to measure and accordingly would generally be suitable as a practical pricing compromise.

Marginal capacity cost may increase with each successive augmentation, as the optimal expansion path typically involves the exploitation of least cost supply options first, with the unit cost of each new supply source increasing over time. However, technological advances may help to offset the rising trend in marginal capacity cost while cost savings may be achievable elsewhere through size economies.

The application of either SRMC or LRMC pricing requires in principle that all users pay the same price for a given product or service. All users are required to adjust their consumption and in the event of supply limitations this ensures that water is directed to those who place the highest value on it, thus ensuring the best outcomes for the community as a whole.

Under LRMC pricing, the planned augmentation may need to be deferred if consumers reduce their level of demand in the face of increasing costs. If the marginal cost of future augmentations decreases, an early price signal to this effect would promote this fundamental competitive advantage to prospective industries more effectively.

Where an activity exhibits decreasing unit costs at a particular level of output, both SRMC and LRMC pricing approaches may result in under-recovery of total costs, as the resulting prices will be below average costs.

This revenue deficiency may be addressed by adopting a combination of average cost pricing and marginal cost pricing, such as in a two-part tariff design, incorporating a fixed charge in the tariff as a balancing item. Alternatively a regulator may adopt price discrimination (eg Ramsey pricing or differential pricing) thus charging more than marginal cost for some services.

Ramsey pricing involves applying greater price mark-ups on marginal cost to those customers likely to respond least to higher prices, that is, those with inelastic demand. Customers with a more elastic demand profile would receive lower prices. The use of Ramsey pricing requires knowledge of demand elasticities.

Other forms of price discrimination may include price differentials by geographic zone, location, infrastructure share, or even by timing of water uptake. Mechanisms may include differential access charges or surcharges.

The typical solution in the water sector is the adoption of two-part or multi-part tariffs, with a usage charge set to SRMC or LRMC, and a fixed charge as a balance item.

Where an activity exhibits increasing unit costs, an excess above that necessary to maintain revenue adequacy may accrue to the entity. This in effect is a measure of the scarcity value of water. It is considered that whether any excess revenue is retained by GAWB and allocated for future capacity expansion (as it would signal such capacity is required), or whether it should be appropriated for shareholders, is a matter for the Shareholding Ministers.

5.3 Application of Pricing Principles to GAWB

Pricing for Excess Capacity and Capacity Augmentation

A key issue in determining prices based on marginal cost pricing procedures for GAWB is the impact of capacity augmentations currently being planned. GAWB has initiated an expansion of its total annual water yield from the current 49,400ML to a total of 89,500ML by 2002 (Stage 1 expansion) and currently proposes to extend this to 112,600ML by 2009-10 (Stage 2 expansion). This represents a substantial increase in the Board's operating capacity.

The Stage 1 augmentation is already in progress. The Stage 2 augmentation is presently planned for 2009-10. There are a number of issues that make the LRMC pricing approach potentially inappropriate in Gladstone:

- Stage 1 augmentation is already underway and capacity-related signals are irrelevant;
- demand is highly uncertain being based upon the prospects and timing of large projects proceeding;
- the risk of augmentations ultimately not proceeding are potentially all passed to the existing users;
- most existing industrial customers are large users that are not contributing to increased demand;
- existing industrial customers hold contracts at given prices that cannot be adjusted, and take-or-pay arrangements limit the incentive for water use to be minimised; and,
- the allocation of marginal capacity costs to customer groups or nodes presents a difficulty where augmentations are based on projects for which there exists uncertainty as to whether they will be proceeding.

There are also significant measurement problems relating to the optimum scale of plant to be put in place, the relevant planning period and the associated demand projections. In addition, the imposition of unnecessary costs related to uncertain demand projections upon existing users raises social welfare and equity concerns.

These issues primarily relate to how the risks of uncertain and lumpy demand, combined with the risks implied by lumpy capital intensive supply increments, are shared between existing customers, future customers and the shareholders.

There exist many options to allocate such excess capacity based on administrative rules. For example, responsibility could be placed on large new users for the augmentation and past agreements 'grandfathered' from the application of any new rules. Alternatively, all users could be required to share in the costs of the augmentation.

The Authority has identified three main options for addressing excess capacity within the context of efficient price signals:

- **Option 1** - adopt essentially a SRMC pricing approach for existing users with new customers meeting augmentation cost (LRMC). Existing users would be required to pay the new level of charges for any demand in excess of that currently contracted;
- **Option 2** - apply LRMC pricing to all users with estimates of augmentation costs based on committed and expected growth. If demand for a large customer does not eventuate,

augmentation is delayed and the LRMC falls. Rebates may be provided to customers if augmentation costs are not incurred, are delayed, or are revised downwards; or,

- **Option 3** - apply LRMC pricing to all users but only incorporate planned capacity with a high probability of being utilised, that is for existing and committed users (together with any capacity required to meet seasonal demand variations or which improve the current service quality in a manner desired by existing customers).

Option 1 results in different prices for existing and new users and suffers from the general disadvantages of SRMC pricing. It fails to provide an incentive to existing users to adjust consumption in response to changing demands, by not passing through any augmentation costs. A mechanism for separate capital charges for new users is also required, potentially adding to administration costs.

However, by allocating risk entirely to new customers and GAWB, Option 1 may be considered to be more equitable. Appropriate mechanisms for allocating the additional costs may include capital charges or access charges in addition to the annual charges paid by all customers. The relevance of Option 1 depends upon the materiality of cost differences pre- and post-augmentation, and hence whether differential pricing is an issue on equity grounds.

With Option 2, all excess capacity is included in the asset base for pricing purposes and the same price applies to all customers. Initially, all costs are borne by existing users and, if future demands are not realised, they will rest with existing users. Further, because risks are allocated to users and not to the operator, this option reduces incentives for the water business to optimise its excess capacity in future and to seek new customers to take up excess capacity.

Under Options 2 and 3, all users would be required to pay the LRMC to ensure all users have an incentive to adjust water consumption. However, under Option 3 the LRMC would only be determined by reference to existing demand and planned excess capacity required to meet the needs of committed prospective users. Some additional pricing margin may be justifiable if the current augmentation improves service quality, or provides some system-wide benefits in terms of the safety and integrity of the system.

Option 3 signals the cost of impending augmentations, minimises the impact of costs on existing users in the event of inappropriate demand estimation and is administratively simple.

There are some further issues that need to be considered in determining which of the pricing options is most appropriate. These include complications which result from new customers also partly drawing on existing supplies and the existence of contractual arrangements.

Furthermore, if the augmentation necessary to meet the needs of existing and committed users is also that which most efficiently meets the needs of prospective users, some further cost-sharing arrangement between committed users and GAWB may be warranted.

Where any excess capacity may be required by Government which is in excess of the commercial risks which GAWB wishes to assume, then there may be a case for the additional costs to be met by Government.

Tariff Structures

The application of SRMC or LRMC pricing may result in issues of revenue adequacy for the water business, as prices may be below average cost. The application of a two-part tariff structure, incorporating a volumetric charge to reflect SRMC/LRMC and an access charge for the revenue shortfall, is a common response to this problem. Two-part tariffs are widely used by water service providers, particularly at the retail level by local governments.

3. The Authority seeks comment, in relation to GAWB as to:

- (i) whether pricing should be based on SRMC or LRMC;**
- (ii) whether price differentials should apply between existing (pre-augmentation) users and new users; and,**
- (iii) the appropriate treatment of excess capacity for pricing purposes.**

5.4 Differential Pricing

In determining a pricing framework for a monopoly business activity, account must also be taken of the trade-offs between adopting a single price for all users (postage stamp pricing) or whether a different price should be established for each user based on their share of costs.

Postage stamp pricing is one option under which all users pay the same price per unit of water, regardless of pipeline distances and cost shares. Such a pricing approach is acceptable if costs are not distance-sensitive or if costs do not vary substantially between customers. They may also be necessary if there are difficulties in identifying and measuring cost differentials between the sub-network areas (London Economics 1999).

In general, pricing structures that reflect identifiable and substantial differences in costs of supply between consumers (existing or anticipated), consumer classes, or geographic areas are generally preferred because they are cost-reflective.

Underlying this matter is whether the benefits of such disaggregation result in more efficient outcomes based upon the greater cost reflectiveness of service usage and as a result of the reduced possibility of cross-subsidies between customer groups. The existence of contributed assets, if any, may augur for some differentiation of prices.

GAWB's infrastructure essentially forms a linear network system, with storage, distribution and treatment facilities being used to different degrees by customers. For example, one customer is supplied directly from Awoonga Dam and does not use GAWB's distribution and treatment infrastructure. Price differentiation on the basis of geographic zone or customer group may be appropriate given the nature of GAWB's infrastructure.

However, there are other practical considerations. Some GAWB customers have indicated a desire for confidentiality in relation to service costs and pricing and would prefer that they not be separately identified. Accounting arrangements may not be structured. Data availability for further disaggregation may be an issue, and allocation of joint costs, if any, is made more complex. There are administrative costs in terms of structuring and implementing a charging regime which recognises such cost variations. Complex pricing structures also may be less readily understood by consumers, with consequent community opposition to pricing reforms.

4. The Authority seeks comment on whether prices should be averaged or differentiated according to either geographic zones or customer groups, or both.

5.5 Categories of Customers

Untreated Water Customers

The untreated water segment of GAWB's business makes up the majority of the business, and with augmentation, will make up an increasing percentage of the total business. GAWB has identified four groups of users of untreated water, as shown in Table 5.1. The four categories may be further subdivided, for example, with the separation of customers served by the Boyne Island pipeline, the QAL spur-line, and those in the Yarwun and Fishermans Landing areas.

However, the practicality of differentiation depends on the magnitude of costs in each category, whether these cost shares are defrayed by contributed assets or specific cost recovery arrangements, and the customers' own views.

GAWB has indicated that further disaggregation of prices along the delivery system could encourage development closer to the dam, which is undesirable for environmental and social reasons. Furthermore, GAWB's cost data is premised on the existing customer groupings. Any further differentiation may also mean that individual customer confidentiality requirements are compromised.

Treated Water Services to the Urban Centres

GAWB owns and operates a water treatment plant at Gladstone, which serves the Gladstone City Council and Calliope Shire Council's services to Calliope and the Boyne Island/ Tannum Sands townships. Treated water is supplied by pipeline from the Gladstone treatment plant to the Calliope Shire. Although there is additional cost in infrastructure and operating costs in meeting Calliope's needs, the treated water charges for the two Councils are presently the same.

Consistent with the principle of cost-reflectivity, a case exists for revenue or price caps to be set for each discrete regional group. However:

- both Councils regard themselves as serving one regional community and consider that urban water prices should be standardised. There is apparent agreement for pooled prices for treated water; and
- treated water makes up around only 20 per cent of the volume of water delivered by GAWB, a percentage that is expected to decline as further industrial development occurs.

In addition, Councils have indicated that an alternative configuration may well have meant that cost differences did not exist or indeed may have been weighted in the opposite direction.

A further category could arise with the supply of treated water from the proposed Toolooa water treatment plant to Miriam Vale and Hummock Hill. It is expected that a separate treated water price would need to be determined for these customers, as these are outside GAWB's present service area and require dedicated infrastructure.

Potential Further Categories

While further potential classifications can be envisaged there is a practical limit to the degree of price differentiation between customer groups. A large number of customer groups will result in different prices for potentially quite small volumes of water, adding to administration costs. Further, actual costs may be found to differ only slightly between some groups. GAWB's customer classes form Table 5.1.

Table 5.1 – GAWB’s Customer Classes

Class	Costs Covered	Customers
Raw water delivery – Awoonga Dam	Storage costs, share of administration	CS Energy, Callide Power Management and Biloela Shire Council.
Raw water Delivery - Gladstone	Above costs plus delivery from Awoonga Dam to Gladstone, share of administration.	Industrial customers include QAL, QCL, Boyne Smelters.
Raw water delivery – North	Above costs plus delivery to the northern industrial area and to Mt Larcom, plus additional share of administration.	Customers in the northern industrial area. (Suncor Energy, QCL, Ticor)
Raw water delivery – Aldoga (proposed)	Above costs plus additional costs of delivery through proposed Kirkwood Road main and associated reservoirs to the proposed Aldoga industrial area, plus share of administration.	New customers in the Aldoga industrial area.
Treated water delivery	Raw water delivery costs to Gladstone plus additional costs of treatment and delivering potable water plus additional share of administration.	Gladstone City Council, Calliope Shire Council, NRG, Orica, Boyne Smelters, Gladstone Port Authority.

Any differentiation may also need to reflect differences in distribution costs, with costs allocated according to users’ shares of total demand for water attributable to committed projects.

<p>5. The Authority seeks comment on whether, if differentiated:</p> <p>(i) prices should be based upon four customer classes for untreated water with all current treated water users forming discrete regional customer groups; and</p> <p>(ii) differentials should also reflect the differences in distribution costs, with storage costs allocated according to the users’ share of demand for water attributable to existing and committed projects.</p>

5.6 Pricing for Seasonal Demand Variations

Where consumption is volatile due to water use variations, either seasonally or annually, a water business may be justified in implementing peak and off-peak tariff structures.

In off-peak periods, the system exhibits excess capacity. In peak periods, additional consumption signals a bringing forward of augmentation. The demand of peak users drives the expansion of the system and efficiency requires that they receive a signal which incorporates operating costs as well as capacity costs. If demand exceeds capacity, so that there is insufficient capacity to meet demand at the existing price, then the price should be raised to the market clearing level. It is generally contended that efficiency objectives would be met by charging all customers on the basis of SRMC in off-peak periods and LRMC in peak periods. (Campbell, 1999).

The main issues in setting seasonally differentiated charges are in determining the seasonal peak periods, establishing who the peak users are, and meeting additional costs of administration and metering if required. Seasonal pricing is only feasible where there is significant variation in demand between peak and off-peak periods and this variation is consistent from year to year. It is also practical where the increase in demand for water occurs mostly on a seasonal basis.

In GAWB's case, based on an examination of recent years' actual consumption, demand by the major industrial customers is generally constant on a monthly basis from year to year. Any peak demands that do occur are not consistently during the same months between years. Although there are likely to be some seasonal variations in use, these are not substantial and are generally offset by market-driven or process-related demand variations. Urban demand also does not appear to exhibit significant seasonal variation. Further, augmentation of storage is not driven by peak demand pressures, but by new industrial developments.

6. The Authority seeks comment on whether peak and off-peak pricing is an issue for GAWB.

6. INCENTIVE STRUCTURES

6.1 The Need for a Review Period

Measures to ensure parties benefit from on-going efficiency gains can form the basis of contract arrangements. Where an appropriate trading regime is in place and alternative sources of supply from different suppliers exist, efficiencies can be achieved through trading. For a monopoly business activity operating in the absence of such a trading regime, price oversight may provide the only alternative for this purpose.

The Ministers have requested the Authority to undertake investigations for monitoring the pricing practices relating to the declared activities.

Having regard to the changing strategic framework for the water industry and the uncertainties associated with the demand for GAWB's water, a subsequent review of prices may be necessary.

In order to achieve efficiency gains, the intervals between any reviews of pricing practices must be long enough for management initiatives to be implemented and take effect. The period must also be long enough to discourage measures to improve the profitability of the business in the short term at the expense of longer term considerations. For example, sharp reductions in system maintenance would increase the profitability of an urban business in the short term, but at the expense of system degradation and risk of failure.

Longer term objectives, such as more efficient network operation and utilisation, must be allowed a sufficiently long period to return benefits in the review period.

Generally, the longer management is able to retain the benefits of increased efficiency in the business through higher profits, the greater the incentive to pursue those initiatives but the longer customers must wait to share in the benefits. In general, review periods of between 3 and 5 years provide incentives for efficiency improvements and for realisation of longer-term objectives. Recent regulatory decisions have covered this range.

IPART's price determination for water service providers covered three years to 2002-03 inclusive. The basis for the short regulatory period was uncertainty about environmental standards and capital expenditures post-2003 for the water businesses. IPARC's direction for ACTEW applied for a 5-year period from 1999-2000 to 2003-04 inclusive. Five year periods also were adopted by Ofwat for the UK water supply industry and by ORG for electricity distributors in Victoria. QCA adopted a 4-year period for its electricity determination and 3 years for the below-rail coal network draft determination.

In the case of GAWB, there are uncertainties as to the strategic framework most relevant to GAWB and level of growth of the business over the next 5 years. There are also some risks in appraisal of operating costs given the substantial change in GAWB's infrastructure and business.

7. The Authority seeks comment on whether GAWB's prices should be reviewed in 3 years from the date on which the initial recommendations are put forward.

6.2 The Appropriate Cost Index

Revenue and price caps are generally applied in conjunction with incentive measures designed to provide rewards and penalties to encourage a monopoly business activity to achieve certain

desired goals (such as lower costs of production) over a specific review period, while providing the entity with some discretion in achieving those goals (Lewis and Garmon 1997).

The most common mechanism associated with incentive structures is CPI-X, where X is a pre-determined index reflecting the perceived capacity of the regulated business to realise cost savings. Where the business is able to deliver real cost savings in excess of X, it is able to retain the additional funds generated for some period. This provides the business with the incentive to devote effort to achieving efficiency gains for the benefit of both the business and its customers.

In applying the CPI-X adjustment mechanism, the main issues are the choice of cost index (escalation factor) and the measurement of the X factor.

Incentive regulation involves taking account of the general movement in prices over the regulatory period to ensure that the business' viability is not exposed to inflation pressures. In the CPI-X mechanism, the CPI is a price inflator that is applied to escalate prices over the period.

The issues relevant to the adoption of an escalation factor are:

- whether to use CPI or another industry-specific factor if available;
- the timing of escalation during the regulatory period; and,
- whether the inflationary impact of the GST should be isolated from the CPI.

Traditionally, Australian utility regulators have adopted the Consumer Price Index (CPI) as a basis for price/revenue cap escalation. However, the CPI was not designed for the purpose proposed. It is based on a representative basket of products and services for household consumption and cost changes therein bear little resemblance to actual cost changes relevant to the urban water business.

For electricity distribution businesses, although the CPI is used in jurisdictional regulatory price/revenue determinations, there is growing support for the use of some industry average cost index. A difficulty with industry-based cost indices is that, being more narrowly based, they are potentially more variable on a year-to-year basis than CPI.

Despite the limitations of CPI, it is widely recognised as a general measure of inflation for the purposes of macroeconomic policy management. In addition, it is widely used for general indexation of public and private sector contracts and charges. The Australian Bureau of Statistics (ABS) suggests that although conceptually inappropriate for many of these applications, the CPI offers three major advantages, namely, it is widely available, it is timely and it is not subject to revision.

To the Authority's knowledge, there is not a reliable and published specific water industry index that could be used in place of CPI, despite its shortcomings. A wage deflator, materials deflator or combination of such deflators would likely result in more volatile indices over time, be more subject to industry cycles. They are not widely recognised for this purpose.

The implementation of the GST commenced in July 2000. Consequent temporary inflation effects may be reflected in the published CPI rates in the form of a spike over a number of quarters in excess of the underlying inflation rate. The spike arises because the introduction of the GST will only be partially offset by the removal of wholesale sales taxes on final consumption items.

Other regulators have treated the GST issue in different ways. IPART's determinations for the major water supply and sewerage businesses allow for the specific impacts of GST on the business, but not the economy-wide impacts. Because water services are GST free and GST on inputs are rebated, the inclusion of an escalation factor incorporating the GST spike would be effectively double-dipping.

IPARC's regulatory decision for ACTEW preceded the introduction of the GST but made allowances for the effect of the GST to be later adjusted subject to verification by an independent auditor. ORG's review of Victorian gas distribution and retail businesses used a series of annual adjustments throughout the regulatory period. This includes an adjustment to the pass-through amount in 2001, based on the CPI spike estimated for that period (3.75% using the September 2000 quarter CPI), and an annual adjustment for each subsequent year when the headline rate is less than the ongoing rate.

In the case of GAWB, the GST will not apply to its water sales or to its input costs. Accordingly, if the underlying CPI is used, this would mean recognising the impact of the GST on the underlying rate to arrive at an appropriate adjustment for inflation. The Authority proposes to monitor developments during the course of the investigation, having regard to Commonwealth Treasury forecasts and the underlying inflation rate.

6.3 The X Factor

The X-factor represents an annual downward adjustment to the business's forecast prices or revenue caps to reflect the ability of the business to achieve cost savings while preserving its financial viability. The X factor can be set by using either cost-independent or cost-dependent measures. Regulators often base the X factor on observed previous rates of productivity growth in an industry or use national benchmarks. The X factor is usually applied to a business' operating expenditure.

Relevant issues include:

- the capacity of the monopoly business activity to reduce costs without compromising customer service quality requirements;
- the opportunities available to the monopoly business activity to increase the value of its business;
- the advantages and opportunities to encourage growth in the market and to manage planned excess capacity;
- the ability of the organisation to finance its operations;
- the impact of asset valuation approaches, in particular the impact of optimisation, on realistic productivity improvement capabilities; and,
- desired transitional paths, for example, to allow a period of adjustment to new rates.

The X factors applied by other regulators indicate that there are usually two components:

- an initial adjustment to remove operational inefficiencies that exist at the start of the regulatory period, to bring the regulated business into line with accepted industry benchmarks; and,
- an annual adjustment to allow incremental efficiency gains to be achieved during the regulatory period.

The initial adjustment typically is employed for the first regulatory determination and may not appear in future decisions unless circumstances change significantly. Rather than a one-off adjustment, the regulator may allow the regulated business to achieve these gains over the regulatory period or part of the regulatory period. This may be to reflect any institutional constraints that make large one-off efficiency gains difficult to achieve.

Assessments of efficiency may or may not be linked to an analysis of actual operating costs.

Cost-linked approaches to determining the X factor have generally been embraced by Australian regulators. The X factor is set with reference to the individual characteristics of the regulated business, and its unique capacity to reduce or contain costs. Revenue or price caps are linked to the actual costs of the business and an assessed potential for efficiency gains to be made.

Ofwat, for instance, uses a form of “cost-linked” incentive regulation, with individual estimates of X for each regulated water and water and sewerage company. This approach relies on financial modelling being used to develop a profile for revenue requirements for each year of the regulatory period. The chief drawbacks of the cost-linked approach are the need to obtain detailed cost information for the business, which may be seen as intrusive, and the need to develop a method for measuring realistic efficiency savings targets. These efficiency targets may be derived on the basis of benchmarking key performance indicators with comparable organisations.

The cost-independent measures of efficiency, such as total factor productivity (TFP), are not directly related to the entity’s operating costs. These approaches, sometimes referred to as “unlinked” approaches, provide strong long-term incentives to firms and reduce the informational requirements of the regulator in relation to costs. Other “unlinked” approaches include data envelopment analysis (DEA) and Ordinary Least Squares regression analysis (OLS). Limited sample size and wide variations in the nature of businesses mean that these approaches have not been widely adopted by Australian water industry regulators.

Approaches of other regulators

IPART’s water price determinations for the four major urban water providers incorporated a CPI-X approach, with the CPI adjusted for GST impacts. The X factor was applied to operating expenditure on the basis of cost efficiency benchmarking studies commissioned by the regulator.

IPARC’s direction for ACTEW used a CPI-X approach, with X set to –2% per year for the regulatory period for the electricity business. In the water business, X was set to +4% for the first two years and +3% for the next 3 years enabling a real growth in unit revenues, primarily to meet capital expenditure and the new water abstraction charge. In both industries, the X adjustments were applied to the average revenue caps and were supplemented with side constraints on the annual increase in prices that could be charged to customers.

This Authority’s draft determination for electricity distributors incorporated efficiency gains in the annual operating cost building block components by estimating an X factor directly using performance indicators and unit cost measures (for example, operating expenditure per network kilometre and per GWh). The Authority noted that the limited availability of historical information on each distributor’s productivity track record ruled out estimation methods such as econometric modelling. The analysis resulted in X factors ranging from 2 to 3% for the regulated businesses. The Authority’s rail determination adopted a 15% X factor over the three-year regulatory period.

In their recent price determinations for UK water companies, Ofwat observed that significant efficiency savings had followed the combination of regulation and privatisation. Ofwat

considered that further efficiency gains were achievable, and established an average saving of 2.7% per year in operating expenditure through to 2004-05.

Apart from Ofwat, which employed a combination of cost linked and comparative analysis, all X factors used in regulatory decisions were cost-linked, reflecting assessments of achievable cost efficiencies for the businesses in question.

Issues for the GAWB investigation

Operational costs for GAWB involve maintenance and operation of infrastructure, salaries and wages, administration and overheads, electricity and chemicals.

The determination of an X factor for the GAWB pricing recommendation raises some unique and complex issues. The main issue is the identification of additional operating costs generated by the expanded business. This will require an assessment of the impact of efficiency gains from economies of size, particularly in overhead and administration costs which could be expected to be achieved as a natural outcome of augmentation. According to GAWB, administration and overhead costs will not increase substantially with augmentation, implying that unit costs may decline as a result of augmentation.

In assessing efficient costs, care must be taken to ensure that required service quality and technical standards are defined. Costs should allow for minimum standards such as water quality, probability of failure, risk levels, downtime and environmental requirements to be met.

- 8. The Authority seeks comment on whether, if incentive structures are to be established:**
- (i) the CPI be used as a cost index by which to adjust prices;**
 - (ii) an X factor based on benchmarked costs be used to adjust the CPI adjustments; and,**
 - (iii) the impact of GST needs to be recognised.**

6.4 Adjusting the Price Caps

Glide Paths

Incentive measures also involve consideration as to how the monopoly business activity and consumers should share the benefits from unexpected 'out-performance' of cost benchmarks. Consideration is then given to how such benefits should be shared in the future, and whether price adjustments should be made on a reducing basis over time, commonly referred to as a 'glide path', or passed through to consumers through one-off adjustments.

Under a glide path cost improvements are passed on to consumers either entirely (full glide path) or partially (partial glide path) over time, thereby allowing the business to realise benefits of efficiency gains for a period beyond the next price review. The full glide path approach has been accepted by IPART for revenue regulation for NSW electricity distribution businesses, and supported by NSW Treasury for application to urban water sector regulation.

IPARC adopted a glide path approach for its direction for ACTEW's electricity, water and sewerage businesses. The Authority's approach to the below rail coal network determination

was similar, but provided for a review of the sources of out-performance before the glide path is applied.

A recent development in the United Kingdom is the proposal that efficiency improvements be 'rolled forward' for five years, allowing regulated water and water and sewerage companies to gain the benefits of any unexpected efficiency gains for a full five years, irrespective of where in the regulatory cycle these occur. Ofwat has adopted this approach so that any gains achieved in the later years of a regulatory period would be retained for a full 5 years before being passed through to customers. This provides a greater incentive for the regulated business to outperform the regulatory requirements, even late in the regulatory period.

In summary, there are three general approaches to glide paths, essentially varying according to the timing of sharing arrangements for efficiency gains:

- one-off reductions – gains in excess of the stipulated X factor in a specified period are passed through to consumers in new service prices at the next price review (a Po adjustment);
- a glide path – whereby gains are passed through to customers either entirely (full glide path) or partially (partial glide path) over time, allowing the water business to realise profit benefits of efficiency gains for a period beyond the current review period; and
- roll forward – the efficiency gains in excess of X are retained by the service provider for a pre-specified time (for example, a 5-year period), regardless of the timing of any subsequent regulatory review, whereupon efficiency gains are passed onto customers in a on-off or phased reduction.

In practice there are any number of variations on these three main approaches, aimed at exploring the trade-off between the passing on of efficiency gains to customers and the incentive for the water business to outperform the prescribed X factors. The roll forward method, as used by Ofwat, provides for uniform incentives for outperformance throughout the regulatory period.

9. The Authority seeks comment on whether GAWB should retain the benefit of out-performance between pricing reviews, and whether these gains should be passed to customers by a glide path following any subsequent review.

Cost Pass-Through

In addition to sharing unexpected benefits from efficiency improvements, arrangements need to accommodate unexpected (exogenous or otherwise) deteriorations in costs. A cost pass-through arrangement allows a regulated business to increase its price or revenue cap in response to an unforeseen and unavoidable legitimate increase in input cost that is typically beyond the monopoly business' control. Cost pass-through arrangements shift the risk from the business to the customer, but protect the viability of the business. Exogenously derived cost savings may also be passed through to the customer.

Ofwat, for example, allows utilities to pass-through the costs of increased compliance costs arising from European Union-mandated quality standards through its RPI±K formula. In Australia, the ACCC allows 100 per cent pass-through of those direct costs relating to Government-mandated airport security requirements (ACCC 1998b).

Cost pass-through arrangements may have unintended and undesirable impacts on incentives. For example, if one category of costs is to be automatically passed-through to consumers, there may be a bias towards this expenditure at the expense of any appropriate substitute.

One approach, which has been used in Australia for electricity distribution businesses, is to define *ex ante* generic “pass through events”. Such events could include changes to taxes, required service standards or other legislative requirements and these would provide a trigger for the regulated entity to apply to the regulator for additional costs to be passed through to consumers. The suitability of this approach would need to be considered in the context of the relevant regulatory circumstances. Any ‘pass-through’ mechanism would need to be designed to avoid undue windfall gains or losses to the regulated business.

In the case of GAWB, one area of risk in relation to unexpected costs is in terms of compliance with legislation such as the *Water Act 2000*. However, the major risk relates to the augmentation of the business and the potential for unforeseen costs to become evident as the construction development proceeds. There is potential for additional costs in overheads and in providing services to new customers.

The Authority expects to be able to identify potential areas of cost risk as part of its further investigation.

10. The Authority seeks comment on the need for cost pass-through measures and the appropriate mechanisms and triggers for such arrangements.

7. PUBLIC INTEREST MATTERS

The Authority is specifically required, under section 26 (1) of the *QCA Act 1997* to take into consideration a number of matters. Those relating to resource allocation, promotion of competition, protection of consumers, the bases for costing, rate of return and inflation have already been specifically raised. To promote early consideration of such matters by stakeholders the Authority makes the following observations.

Impact on the Environment of Prices

The impact of prices on the environment is not considered to be an issue for GAWB as the WAMP process has defined available supplies. Furthermore, some approaches being considered provide for the signalling of anticipated augmentations and this should defer augmentations by reducing demand at least until a strong economic case exists for an expansion of the infrastructure base.

The cost of environmental externalities may be incorporated in GAWB's operating costs where these can be specifically valued. An example is the net cost of managing the fish hatchery operated by GAWB in conjunction with the Gladstone Port Authority.

Considerations of Demand Management

Demand management typically involves the establishment of efficient price structures such as two part tariffs and non-price demand management strategies. As noted above, some approaches being considered should signal the impacts of consumption to users and encourage the adoption of demand management as a cost-effective alternative to future infrastructure augmentation.

Social Welfare and Equity Implications

Prices based on consumption allow parties to adjust their usage according to their own priorities while taking into account the broader implications of growth in demand. Some approaches seek to establish an equitable, as well as efficient, basis for pricing of augmentations and associated excess capacity.

Another social welfare issue relates to the entitlement of citizens to receive minimum supplies of domestic water for essential purposes.

The Need for Pricing Practices not to discourage Investment and Innovation by Government Agencies.

Investment and innovation should be promoted under various options being considered. Early signals relating to costs for augmentation should stimulate an integrated resource planning approach for the region to identify least cost supply options which best meet environmental goals.

Ecologically Sustainable Development

Attention to environmental concerns has to date in Queensland been achieved by way of improved natural resource management legislation and the establishment of local planning processes.

These processes include the Water Allocation and Management Planning (WAMP) and Water Management Planning (WMP) initiatives currently underway for Queensland's key river basins. Relevant environmental issues are effectively incorporated in the management conditions and

safe yield assumptions for storages. The Department of Natural Resources has completed a draft Water Management Plan (DNR, 2000) for the Boyne River Basin which defines the volumes of water available to GAWB subject to minimum environmental flow requirements.

The draft WMP for the Boyne River limits high security water supply from a raised Awoonga Dam at 112,800ML per year, compared to the current 49,400ML. Should the dam be raised, an environmental release requirement is triggered providing for a flow of 3210 ML per day over a downstream weir when such flows occur naturally for four days or more as inflow to the dam.

Occupational Health and Safety and Industrial Relations

There are no evident implications of the pricing practices for these matters. Any costs will be incorporated as cost elements in the operating and administration costs.

Economic and Regional Development

Economic and regional development is promoted when the competitiveness of existing industry and new entrants is enhanced. Gladstone's industries are all price takers in the international markets and any predisposition to favour prices of new entrants over those of existing industries, or vice versa, can undermine the competitiveness of the other.

The Authority's general approach is to revisit these public interest matters as part of the eventual recommendation and determine whether there are any specific implications. Relevant public interest matters will be highlighted as part of the investigation process.

<p>11. The Authority invites submissions on any matters of public interest identified in section 26 of the QCA Act 1997 which may be relevant to GAWB's pricing.</p>

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