



Draft Report

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

March 2010

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SUBMISSIONS

This report is a draft only and is subject to revision. Public involvement is an important element of the decision-making processes of the Queensland Competition Authority (the Authority). Therefore submissions are invited from interested parties concerning its assessment of GAWB's proposed pricing practices for 2010-2015. The Authority will take account of all submissions received.

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

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The **closing date** for submissions is 17 May 2010.

Confidentiality

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

While the Authority will endeavour to identify and protect material claimed as confidential as well as exempt information and information disclosure of which would be contrary to the public interest (within the meaning of the *Right to Information Act 2009 (RTI)*), it cannot guarantee that submissions will not be made publicly available. As stated in s187 of the *Queensland Competition Authority Act 1997* (the QCA Act), the Authority must take all reasonable steps to ensure the information is not disclosed without the person's consent, provided the Authority is satisfied that the person's belief is justified and that the disclosure of the information would not be in the public interest. Notwithstanding this, there is a possibility that the Authority may be required to reveal confidential information as a result of a RTI request.

Public access to submissions

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

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

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GLOSSARY

ACCC	Australian Competition and Consumer Commission
ACG	Allen Consulting Group
ACTEW	Australia Capital Territory Electricity and Water
AER	Australian Energy Regulator
AFC	Acceptable Flood Capacity
AHD	Australian Height Datum
AIC	Average Incremental Cost
Aqwest	Aqwest Bunbury Water Board
bp	Basis Points
Capex	Capital Expenditure
CAPM	Capital Asset Pricing Model
COAG	Council of Australian Governments
CPI	Consumer Price Index
CIFR	Contracted Instantaneous Flow Rates
CPM	Callide Power Management
CSC	Calliope Shire Council
CSO	Community Service Obligation
CSE	CS Energy
CSS	Contingent Supply Strategy
Davwil	Davwil Designs and Management Services
DBCT	Dalrymple Bay Coal Terminal
DERM	Department of Environment and Resource Management
DMP	Drought Management Plan
DNRM	Department of Natural Resources and Mines (now DERM)
ECM	Efficiency carryover mechanism
ERA	Economic Regulation Authority
ESC	Essential Services Commission

FOI	Freedom of Information
FSL	Full Supply Level
GAWB	Gladstone Area Water Board
GHD	GHD Pty Ltd
GMW	Goulburn Murray Water
GPC	Gladstone Ports Corporation
GRC	Gladstone Regional Council
Griggs	Alf Grigg & Associates
GSL	Guaranteed Service Level
HNFY	Historic No Fail Yield
ICRC	Independent Competition and Regulatory Commission
IPART	Independent Pricing and Regulatory Tribunal
IFR	Instantaneous Flow Rate
KL	Kilolitre
LRMC	Long Run Marginal Cost
MJA	Marsden Jacob Associates
MIFR	Maximum Instantaneous Flow Rate
ML	Megalitre
MRP	Market Risk Premium
NERA	NERA Economic Consulting
NPV	Net Present Value
NRG	NRG Gladstone Operating Service Pty Ltd
OH&H	Occupational Health and Safety
PAC	Powered Activated Carbon
QAL	Queensland Alumina Limited
QCA Act	Queensland Competition Authority Act (1997)
QER	Queensland Energy Resources Pty Ltd
QR Network	Queensland Rail Network

QWC	Queensland Water Commission
RAB	Regulatory Asset Base
RBA	Reserve Bank of Australia
ROP	Resources Operations Plan
RTA	Rio Tinto Alcan
SAMP	Strategic Asset Management Plan
SCA	Sydney Catchment Authority
SEQ	South East Queensland
SMEC	Snowy Mountains Engineering Corporation
SRMC	Short Run Marginal Cost
SRQ	Southern Rural Water (Victoria)
TCV	Treasury Corporation of Victoria
the Authority	The Queensland Competition Authority
VFD	Variable Frequency Drive
WAC	Water Abstraction Charge
WACC	Weighted Average Cost of Capital
WIRO	Water Industry Regulatory Order
WRP	Water Resource (Boyne River Basin) Plan
WTP	Water Treatment Plant
YWTP	Yarwun Water Treatment Plant

EXECUTIVE SUMMARY

The Direction

The Premier and the Treasurer have referred, under Section 23 of the *Queensland Competition Authority Act 1997* (the QCA Act), the declared monopoly business activities of the Gladstone Area Water Board (GAWB) to the Authority for an investigation about the pricing practices relating to those activities.

GAWB

GAWB is a commercialised statutory authority which has responsibility for providing water storage and delivery services to industrial, electricity generation and local government customers throughout the Gladstone area. GAWB owns and operates the Awoonga Dam, a pipeline delivery system, two water treatment plants (at Gladstone and Yarwun), pumping stations and reservoirs.

GAWB's pricing practices have changed over time and contracts largely reflect arrangements prevailing at the time of their negotiation.

Process of the Investigation

GAWB's proposed pricing practices have been detailed in a series of submissions to the Authority. These submissions deal with GAWB's proposed commercial framework and pricing principles, cost of capital, demand forecasts, capital and operating expenditure proposals and GAWB's pricing model. GAWB's submissions were released for public consultation and stakeholder submissions have been taken into account in the Authority's deliberations.

Key Recommendations

The Authority's key recommendations are that:

- (a) **the form of regulation remain a price cap.** The Authority is concerned that a revenue cap as proposed by GAWB would pass on to existing customers the risk that the estimated take-up of spare capacity does not eventuate. The Authority considers that this is not appropriate. Furthermore, GAWB's revenue risk from variations in demand from existing customers can be managed through other mechanisms such as contracts, review triggers and pricing structures. At the same time, the Authority would be willing to consider a modified revenue cap proposal from GAWB that did not attempt to pass the cost of excess capacity on to existing customers;
- (b) **the planning period remain at 20 years for future pricing periods.** While GAWB proposed to maintain the current 20-year planning period for the current review, it proposed to move to a five-year planning period from 2015. As a general principle, a planning period broadly in line with the expected time required for spare supply capacity to be utilised remains appropriate for water businesses like GAWB. A longer planning period is also consistent with project evaluation conventions for water infrastructure projects;
- (c) **instantaneous flow rate (IFR) charging be further investigated before the next regulatory review.** GAWB's distribution system is currently not experiencing capacity constraints and the net benefits of introducing IFR pricing have not been demonstrated. GAWB should undertake data collection and further investigations on the merits of IFR pricing, including implications for individual customers, well before the next review. This would enable implementation of IFR pricing from the commencement of the next pricing period if the investigations indicated that this was appropriate. A report from the Authority's consultant Davwil Designs and Management Services provides guidance as to the issues that GAWB should address;

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- (d) **GAWB's proposed pricing zones be accepted, except for the proposed amalgamation of the Awoonga to Toolooa and Toolooa to Fitzsimmons St zones.** In line with advice from its consultant Daywil, the Authority proposes that these continue as two separate zones to ensure cost reflective pricing to relevant customers;
- (e) **GAWB's proposal for up to a 25% surcharge on short duration contracts needs further justification.** While the Authority accepts the concept of surcharges on short duration contracts, it requires the proposed level of the surcharges to be justified, with reference to estimated costs and risks incurred;
- (f) **water supply reflect the full historic no failure yield (HNFY) of 78,000ML rather than 70,000ML as proposed by GAWB.** The Authority considers it likely that, in the light of the most recent increases in rainfall, the interim HNFY imposed on GAWB will be removed;
- (g) **demand forecasts reflect existing contracted volumes, anticipated contracted volumes and a component to reflect expected long term growth** GAWB proposed that demand for the 2010-15 period should reflect existing contracts, and that demand would grow to 70,000ML by 2029-30. The Authority has based its demand projections on confidential discussions with customers as well as allowing potential new demand based on historic trend analysis which indicated that demand would reach 78,000ML per year in 2029-30;
- (h) **the asset base be rolled forward from that approved in 2005 to 2010, taking account of capex, depreciation and asset disposals during the period.** Specific recommendations are that:
- (i) the opening asset base should be the value determined by the revaluation undertaken by the Authority for the 2005 investigation, which value was subsequently used by GAWB for pricing purposes;
 - (ii) indexation of asset values from 2005 to 2010 should be based on CPI so as to maintain the return to GAWB in real terms;
 - (iii) the previously optimised Boat Creek Reservoir should be reinstated in the asset base as it provides a cost-effective emergency storage for northern area customers;
 - (iv) \$35.65 million of capital expenditure incurred during 2005-2010 should be included rolled into the asset base for pricing purposes, as compared with GAWB's proposed \$59.6 million. The main difference relates to \$22.65 million incurred on the contingent supply strategy (CSS) after the February 2008 inflow event. This latter amount should be capitalised until a decision is made on the CSS, at which time the expenditure will either be included into the asset base for pricing purposes or written off at GAWB's expense;
- (i) **\$50.5 million of GAWB's proposed \$86.6 million in capex from 2010-15 be taken into account for pricing purposes.** The Authority recommends that:
- (i) the proposed \$26 million investment in a spillway upgrade should be included from 2014-15 rather than 2012-23 as proposed by GAWB. This is in line with the regulatory requirement for it to be in place by 2015;
 - (ii) \$2 million be provided to investigate GAWB's proposed system storage project. GAWB's proposal for a \$22 million project was premature as a full assessment of all realistic options had yet to be undertaken;
 - (iii) \$0.5 million be spent for refurbishment rather than GAWB's proposed \$5.4 million replacement of the Goolegumma Pipeline as this was considered more cost effective;
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- (iv) \$0.3 million should be spent for refurbishment rather than GAWB's proposed \$2 million replacement of the East End pipeline as this was considered more cost effective;
 - (v) \$0.8 million is accepted for ongoing costs of the CSS. GAWB's proposal for \$3.44 million is considered unwarranted given the current supply situation;
 - (vi) the proposed \$2.1 million Gladstone water treatment plant emergency power supply is not included as it was considered unwarranted on a risk and economic assessment;
 - (vii) \$0.5 million should be spent on the QAL pipeline rather than GAWB's proposed \$2.1 million replacement, as this was considered more cost-effective;
- (j) **\$34 million of GAWB's proposed capex of \$105 million from 2015 to 2030 be taken into account for pricing purposes.** The Authority recommends:
- (i) a provision of \$33 million of asset replacement is proposed compared to GAWB's \$92 million. The Authority's estimate was based on the asset lives determined via the 2005 condition based assessments, rather than accounting lives as adopted by GAWB, resulting in deferral of major pipeline replacements;
 - (ii) GAWB's proposed \$12 million on the CSS should not be included given the current supply situation, and should be reviewed for prudence and efficiency in the 2015-20 review period; and
 - (iii) GAWB's proposed \$1 million on smaller replacement items is appropriate;
- (k) **escalation of capital expenditure from 2010 be based on forecast CPI** until the appropriate index for 2010-15 is established;
- (l) **a number of the WACC parameters proposed by GAWB not be accepted, with the result that, as at 23 February 2010, post-tax nominal WACC of 8.93% would apply compared with 10.05% proposed by GAWB.** In particular, the Authority recommends that:
- (i) the risk-free rate should be based on 5-year Commonwealth bonds to reflect the length of the regulatory period;
 - (ii) the debt margin should be based on 5-year BBB rated corporate bonds. As a result of the disruption of global financial markets, this results in a significantly increased margin of 360 basis points above the risk free rate;
 - (iii) gearing should remain at 50% equity and 50% debt;
 - (iv) the market risk premium should remain at 6% to reflect long term averages;
 - (v) the debt beta should remain at 0.11, in line with the estimated debt beta from the 2005 investigation;
 - (vi) the asset beta should remain at 0.4, resulting in an equity beta of 0.65;
 - (vii) gamma should remain at 0.5 to reflect the benefit of imputation to the average investor; and
 - (viii) any changes to general WACC parameters that result from the concurrent review of QR Network's Draft Access Undertaking be taken to account in this review;
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- (m) **the allocation of common costs be on the basis of a weighting of 0.5** for the Awoonga Dam segment, 1.0 for the raw water delivery segments and 2.0 for the treated water segments to reflect changed circumstances. GAWB maintained the previous recommendation of the Authority that 10% of common costs should be allocated on a customer basis (with current levels of costs allocated to smaller customers unchanged), and the remaining 90% allocated on the basis of the above weightings. The Authority proposes that the previous 10% allocation on a customer basis should no longer apply due to expected lower costs per customer as a result of improvements in GAWB's billing system and efficiencies arising from the new control system's remote meter reading;
- (n) **GAWB's proposed operating costs be reduced. In this regard, the Authority has allowed lower operating costs than proposed by GAWB (by 2014-15 this results in an allowance of \$15.5 million, a reduction of \$3.6 million on the level at 2014-15 proposed by GAWB).** In particular, the Authority recommends that:
- (i) operations costs should be reduced by 10% (or around \$120,000 per year) by 2013-14 to reflect identified efficiency savings in water quality testing, ROP monitoring, motor vehicle costs, non-regulatory driven engineering services and general operations costs;
 - (ii) maintenance costs should be adjusted to reflect alternative options for major maintenance proposed for Boyne Island Bridge (reduced by \$1.1 million) and Mt Miller Pipeline (reduced by \$0.95 million). General maintenance should be reduced by 10% by 2013-14 (about \$280,000 per year), on the basis that efficiency gains can be made from more appropriate asset management practices consistent with WSAA benchmarks;
 - (iii) an allowance for other costs of \$2 million per annum is more consistent with efficient costs than the amounts proposed by GAWB, with an additional \$250,000 per annum in 2013-14 and 2014-15 for additional costs associated with the next review;
 - (iv) staffing numbers should be reduced from 55.9 FTEs to 45.37FTEs by 2014-15 (or \$1.0 million lower than proposed by GAWB by 2014-15). Staff savings are achievable due to the wind-down of the CSS, identified efficiencies in land management activities and recreational area management, efficiencies in operations due to the control systems upgrade, and reduced staffing in financial management; and
 - (v) additional benchmarking analysis of GAWB's operating costs be undertaken (by the Authority) prior to the Final Report;
- (o) **GAWB review the basis for escalating the cost of operations, maintenance and chemicals costs over the 2010-15 period, with CPI being used until a more appropriate escalation base is determined.** Operating costs over the 2015-30 period should be escalated at CPI as proposed by GAWB; and
- (p) **the proposal regarding self insurance not be accepted.** The Authority considers that the majority of the risks identified by GAWB are not suitable for self-insurance and should be managed through alternative mechanisms.

Implications for Revenue and Pricing

Table 1 provides a comparison of projected revenues under the Authority's proposals and GAWB's, using GAWB's base demand forecast.

Table 1: Summary of Aggregate Revenue Projections (\$ million)

	2010-11	2011-12	2012-13	2013-14	2014-15	2019-20	2024-25	2029-30
Projected revenue - Authority's recommendations	\$38.1	\$40.6	\$43.1	\$45.8	\$48.6	\$68.4	\$82.3	\$103.8
Projected revenue - GAWB's proposals	\$61.5	\$63.5	\$65.6	\$67.7	\$69.9	\$92.4	\$126.1	\$153.5
Difference	-38.0%	-36.1%	-34.3%	-32.4%	-30.5%	-26.0%	-31.4%	-32.4%

On the basis of the available information, and GAWB's base demand forecast, the Authority estimates that average prices (weighted by demand in each segment) would increase by 43.4% if the Authority's proposals were adopted compared to an increase of 119% if GAWB's proposals were adopted.

The Authority also notes that, while some customers may have the capacity to absorb significant price increases, such increases may be problematic for others, particularly for residential customers. Price transitioning provides a mechanism for moderating price shocks to customers.

However, the Authority also notes that, as the proposed prices reflect the efficient costs being incurred by GAWB, any delay in implementing the new prices in full will impact on GAWB's financial performance and possibly its financial viability.

The Authority proposes to liaise with GAWB (and other stakeholders) regarding transitioning before reaching a final position on this matter.

1. BACKGROUND

1.1 The Direction

The Premier and the Treasurer have referred, under Section 23 of the *Queensland Competition Authority Act 1997* (the QCA Act), the declared monopoly business activities of the Gladstone Area Water Board (GAWB) to the Authority for an investigation about the pricing practices relating to those activities.

Under Section 24 of the QCA Act, the Ministers have directed the Authority to:

- (a) provide a Draft Report by 30 March 2010;
- (b) provide a Final Report by 30 June 2010; and
- (c) consult with GAWB, GAWB's customers and other relevant stakeholders.

1.2 Monopoly Prices Oversight

In September 2000, the Ministers declared the bulk water storage, delivery and treatment services undertaken by GAWB to be government monopoly business activities.

The QCA Act provides for the regulatory oversight of Queensland Government owned monopoly business enterprises (in Part 3) and private sector water monopoly business activities (Part 5A). In relation to Government owned enterprises, such as GAWB, the QCA Act confers on the Authority the responsibility to make recommendations to the Ministers about their pricing practices. Under the QCA Act, pricing practices are defined as the level and structure of prices, or anything that affects the level and structure of prices, including for example, service quality, costs of production and levels of performance relating to the business activity.

Effectively, the Authority is required to recommend pricing practices that GAWB should adopt to ensure that it does not exercise its monopoly power as the sole supplier of bulk water in the Gladstone area.

1.3 Previous Investigations

This is the third review of GAWB's pricing practices, with the first review covering the period until 30 June 2005 and the second review covering the period until 30 June 2010.

Furthermore, the Authority has recently been investigating GAWB's proposed contingent supply strategy in response to drought or unexpected additional demand. That review is currently suspended while GAWB and the Authority focus on this current review.

1.4 Scope of the Current Investigation

Since the last investigation, GAWB has:

- (a) completed a Strategic Water Plan, identifying the range of potential water supply sources and a preferred augmentation option;
- (b) developed a contingent supply strategy as a response to drought. Drought conditions in 2007-08 led to the expenditure on preparatory works for the Fitzroy River Pipeline and the development of triggers for commencement of construction of the augmentation; and
- (c) reviewed its Drought Management Plan (DMP) in response to the Ministers' decisions regarding the Authority's recommendations in relation to the contingent supply strategy.

GAWB's circumstances have also changed in regard to contractual arrangements and long term demand expectations.

1.5 Process for the Investigation

Under the current investigation, GAWB's proposed pricing practices have been detailed in a series of submissions to the Authority, as follows:

- (a) Submission 1 – commercial framework and pricing principles, including details on GAWB's proposed rate of return on capital;
- (b) Submission 2 – expenditure proposals, including 20-year forecasts, regulatory asset base and operating expenditure; and
- (c) Submission 3 – GAWB's pricing model, including confidential information on customer pricing, consumption and capital contributions.

This Draft Report responds to GAWB's proposals as outlined in Submissions 1 and 2. The Authority proposes that the pricing implications of its recommended pricing practices be provided individually to customers.

In undertaking the current investigation, the Authority has:

- (a) publicly released GAWB's proposals, in order to facilitate submissions from interested parties on relevant matters;
- (b) commissioned advice from independent consultants where appropriate on technical issues including risk analysis and pricing frameworks, asset valuations, efficient operating costs and the cost of capital; and
- (c) consulted with GAWB and other stakeholders to gain a further understanding of matters relevant to the investigation.

The Authority has had regard for all of the above as well as its own deliberations when formulating this Draft Report.

1.6 Structure of the Draft Report

The Draft Report is structured as follows:

- (a) Chapter 2 – overview of GAWB's business and contractual arrangements;
- (b) Chapter 3 – regulatory framework;
- (c) Chapter 4 – pricing framework;
- (d) Chapter 5 – GAWB's projected demand and water supply;
- (e) Chapter 6 – GAWB's regulatory asset base;
- (f) Chapter 7 – cost of capital;
- (g) Chapter 8 – operating costs; and
- (h) Chapter 9 – ongoing regulatory arrangements and pricing implications.

2. BUSINESS OVERVIEW

GAWB is a commercialised statutory authority which has responsibility for providing water storage and delivery services to industrial, electricity generation and local government customers throughout the Gladstone area.

GAWB's pricing practices have changed over time and contracts largely reflect arrangements prevailing at the time of their negotiation.

2.1 Nature and Scope

In accordance with the provisions of the *Water Act 2000*, GAWB is a Category 1 Water Authority and registered Service Provider responsible for the supply of raw and treated water to industrial and local government customers throughout the Gladstone area. GAWB operates as a commercialised statutory authority and is required to be efficient and effective in its operations.

GAWB is required to adopt pricing practices consistent with the Council of Australian Governments' (COAG) principles of full cost recovery and consumption based pricing. COAG principles also require the implementation of two-part tariffs for urban water services where cost effective.

In accordance with the provisions of the *Water Act 2000*, GAWB is required to:

- (a) commercially manage its affairs – including managing contracts with suppliers and customers, regulatory prices oversight arrangements with the Authority, debt management and to pursue opportunities to improve its financial performance;
- (b) plan future water supply capacity, reliability and quality – involving identifying demand scenarios and evaluating supply/demand options, including responses to future material reductions in supply;
- (c) develop the treated and untreated water delivery system – involving assessing the network's existing capacity and condition, and identifying planning requirements;
- (d) manage water quality – maintaining acceptable water quality for customers and discharge; and
- (e) manage the water distribution system – involving operating and maintaining a distribution network of pump stations, pipelines and reservoirs.

2.2 Assets

GAWB owns and operates:

- (a) the Awoonga Dam on the Boyne River;
- (b) delivery pipelines, for delivery of untreated water to treatment plants and industrial customers and for delivery of treated water to Gladstone Regional Council's reticulation systems and to other industrial customers;
- (c) two water treatment plants at Gladstone and Yarwun;
- (d) untreated water pumping stations at Awoonga and Boat Creek and treated water pumping stations at Benaraby, Calliope, Glen Eden and Boat Creek;

- (e) untreated water reservoirs at Boat Creek, Gladstone (Fitzsimmons Street) and Toolooa and treated water reservoirs at Boyne Island, East End, Golegumma and South Gladstone;
- (f) the Lake Awoonga Recreation Area adjacent to Awoonga Dam; and
- (g) a fish hatchery in Gladstone.

2.3 Customers

GAWB's major raw water customers are CS Energy, Callide Power Management (CPM), Rio Tinto Alcan (RTA) and Queensland Alumina Limited (QAL). These customers account for 75% of GAWB's total supply. Other industrial customers include Gladstone Power Station (indirectly via Gladstone Regional Council (GRC)), Boyne Smelters, Orica, and the Gladstone Ports Corporation (GPC).

Demand from GRC accounts for the majority of GAWB's treated water supply which represents almost 20% of total supply.

2.4 Commercial Arrangements

Previous Pricing Investigation

GAWB's pricing policy has evolved since its inception, reflecting changes in funding requirements and Government policy.

Following the Authority's investigation of GAWB's pricing practices in 2005, the Ministers accepted the Authority's recommendations that:

- (a) price cap regulation be maintained (as opposed to revenue cap regulation);
- (b) a planning period of 20 years is appropriate;
- (c) a cash-flow model be adopted to calculate GAWB's maximum revenue requirement;
- (d) a five-year regulatory period be adopted;
- (e) prices should incorporate the long run marginal cost (LRMC) of providing infrastructure services and that the Average Incremental Cost (AIC) approach be adopted;
- (f) the adoption of a two-part tariff for each of the storage and delivery services with the tariffs held constant in real terms over the regulatory period;
- (g) prices be differentiated for all customers according to their utilisation of specific components of GAWB's infrastructure; and
- (h) prices should reflect service quality to the extent this involves cost differentials and that GAWB should develop full product descriptions in conjunction with customers.

GAWB's Proposed Commercial Arrangements

Contractual arrangements consist of a separate Water Contract (access to capacity) and Delivery Contract (distribution of water) based upon similar periods with a default term of 20 years and minimum term of five years.

The Water Contract is based upon a set volume – i.e. reservation amount. Contracts reflect the prevailing reference tariff for a particular service constituting a two-part tariff comprised of an

access charge and a volumetric charge. Separate two-part tariffs are applied to both Water and Delivery Contracts with the volumetric charge based on the LRMC of services.

GAWB considers that the major influence on its commercial framework is the planning for drought and/or unexpected additional demand. It is handling this through the development of a Contingent Supply Strategy (CSS), which involves the identification of augmentation options aimed at increasing system wide reliability, including the undertaking of preparatory work. A key aspect of the CSS is ensuring source augmentation costs are reflected in prices only at that time the augmentation is deemed certain. According to GAWB, it is important that the CSS integrates with other aspects of operations, in particular GAWB's pricing practices.

3. REGULATORY FRAMEWORK

3.1 Objectives of Regulation

In the 2005 price investigation, the Authority concluded that, in broad terms, the QCA Act requires the Authority to ensure that: (i) service providers do not take advantage of their monopoly position; (ii) pricing practices must be consistent with the regulatory objectives of economic efficiency and revenue adequacy; and (iii) pricing practices must take account of the public interest. Further, the Authority considered that a properly functioning competitive market is the appropriate benchmark for establishing efficient outcomes.

The Authority notes that the Explanatory Notes accompanying recent (2008) amendments to the QCA Act are consistent with the Authority's interpretation.

GAWB did not comment on regulatory objectives. However, CPM submitted that the regulatory framework should also provide a level of certainty and price stability to customers.

While the legislative framework does not explicitly provide for certainty and price stability, consideration of such matters is consistent with other more explicit obligations under the QCA Act, such as the requirement to take account of the social impact of pricing practices (s26(i)) and the promotion of employment and investment growth (s26(m)).

3.2 Approach to Regulation

In the 2005 investigation, the Authority adopted a hybrid approach to regulation, combining cost-of-service and incentive regulation, with external benchmarking of efficient costs, to avoid embedding past inefficiencies, while still providing incentives for GAWB to achieve efficiency improvements.

Neither GAWB nor any stakeholders commented on the broader approach to price regulation. The Authority therefore proposes no change to the current framework.

3.3 GAWB's Commercial Risks

In the 2005 price investigation, the Authority concluded that, to ensure that least cost of supply is achieved, regulatory and commercial arrangements should allocate risk to those parties best able to manage the risk. In this regard, the Authority concluded that:

- (a) demand risk is best managed by relevant customers (who best know and can manage their requirements);
- (b) planning and infrastructure risks are best managed by GAWB as the owner and manager of the infrastructure;
- (c) hydrology risk is not manageable by any party as it is essentially unpredictable and costs of changes should be to the account of customers;
- (d) drought risk is best allocated to GAWB as it is in the best position to manage overall supply options and any relevant restrictions;
- (e) water quality risk is best managed by GAWB; and
- (f) financial risk is best managed by GAWB.

Further, the Authority considered that contractual arrangements should be put in place that promote the efficient allocation of risks.

GAWB's submission for the current investigation has focused on the mechanisms for managing the various risks. The proposed mechanisms for managing risks are reviewed in relevant sections throughout the Authority's Report.

3.4 Form of Regulation

Background

Incentive regulation aims to provide a regulated business with an adequate return for the services it provides, and incentives to improve productivity. The most common forms of incentive regulation include revenue cap, price cap or a hybrid of the two.

The major difference between price caps and revenue caps centres around who bears the risk of volumes differing from those on which the price or revenue caps are based. Under a price cap, the risk is borne by the asset owner (GAWB in this case) while under a revenue cap, the risk is borne by customers.

In previous investigations, the Authority has proposed a price cap approach. A key reason for this has been to ensure that GAWB manages its demand risk as it relates to future expansion.

GAWB's Submission

GAWB submitted that a revenue cap form of regulation provides a more appropriate allocation of demand risk to customers and ensures that GAWB is not perceived to be proposing a conservative demand forecast for its own financial advantage [a low demand forecast will lead to higher prices and thus higher revenue if demand exceeds that on which the prices are based].

GAWB stated that, in the current regulatory period, it has experienced a significant variance between forecast demand and the actual demand achieved. GAWB expects to under-recover revenue by around \$5.3 million over the 2005-2010 regulatory period, due to (previously envisaged) new demand not occurring and lower demand being realised from established customers. GAWB's estimated shortfalls in total demand and revenue are shown in Table 3.1.

Table 3.1: Expected Demand and Revenue Shortfall

	2005-06	2006-07	2007-08	2008-09	2009-10
Additional (shortfall) in demand (ML)	598	4506	(2936)	(6897)	(8515)
Additional (shortfall) in revenue (\$m)	0.064	0.051	0.355	(1.589)	(3.653)

Note: 2009-10 shortfalls are estimated based on customer forecasts at the time of GAWB's submission.

GAWB submitted that the inclusion of uncertain demand in forecasts poses a significant volume risk given it is not supported by contractual arrangements at the time the forecasts are developed. This demand may not eventuate or be significantly delayed. GAWB indicated that, under a price cap form of regulation, it has no ability to recover this revenue shortfall. In effect, customers benefit from lower prices in the current regulatory period and GAWB has borne all the risk of uncertain demand.

GAWB also submitted that:

- (a) as variable prices are set based on LRMC, there is no difference in the pricing efficiency between the current price cap and the proposed revenue cap approach;

- (b) the proposed side constraints of CPI +5% on the annual price increases will provide customers with certainty regarding the maximum potential price increase during the regulatory period and annual benefits if GAWB's revenue exceeds its forecast revenue requirement;
- (c) a change in the form of regulation to a revenue cap is necessary to ensure that GAWB is not exposed to revenue volatility outside its control and is not perceived to have an incentive to adopt a conservative demand forecast;
- (d) a demand management incentive scheme or similar arrangement to specifically encourage demand management responses from regulated businesses can be incorporated into a revenue cap; and
- (e) there is little difference between the complexity of applying the current price cap and the proposed revenue cap.

GAWB proposed that a revenue cap form of regulation apply from 1 July 2010 where:

- (a) GAWB determines the annual reference tariff during the regulatory control period by taking into account any under- or over-adjustment from the previous year;
- (b) side constraints are used to limit annual price increases on any tariff component to CPI +5%; and
- (c) any balance of the unders and overs account that is greater than the side constraint of CPI +5% in any one year is carried forward and included in prices at the next annual adjustment if possible, subject to the side constraint. Any balance of the unders and overs account at the end of the regulatory period will be adjusted fully at the beginning of the subsequent regulatory period.

GAWB, in a supplementary submission in response to customer comments, also noted that its revenue cap proposal does not extend to the recovery of differences between forecast and actual expenditure. Movement in either fixed or variable costs within a regulatory period will have no impact on the prices charged under either the proposed revenue cap or the current price cap form of regulation.

GAWB also submitted that, while a revenue cap will reduce GAWB's exposure to demand risk, it will not allow any additional benefits to GAWB other than allowing it to earn its annual revenue requirement. Any over-recovery would be returned to customers through the revenue cap mechanism.

Other Jurisdictions

When making determinations regarding pricing for government monopoly water supply services, the Independent Pricing and Regulatory Tribunal (IPART) is limited by government regulation to either set the maximum price or determine a methodology to set the maximum price. IPART therefore has adopted a price cap approach.

In its price review of Metropolitan Melbourne Water, the Essential Services Commission (ESC) (2009) sought to achieve a 'reasonable sharing' of demand risks between Melbourne Water and its customers. To this end, ESC approved a hybrid form of price control that combines individual price caps with scope for businesses to apply during the period to adjust their tariff strategies or prices to take account of events that do not fall within the businesses' control. This includes significant differences between actual and forecast demand.

In 2008, the Independent Competition and Regulatory Commission (ICRC) moved away from an average revenue cap approach to a form of price control where prices will be set based on a five-year forecast. If water usage (and therefore revenue) is significantly different from forecast water usage in the first 2.5 years of the period, usage will be re-forecast for the remainder of the period and prices adjusted. In addition, where the volumetric revenue shortfalls/over-recoveries are outside a 3% dead-band range, they will be recovered/repaid in the subsequent regulatory period. The ICRC noted that this approach provided ACTEW with relatively greater certainty and less exposure to demand risk, while providing customers with as much certainty as possible regarding prices.

The ERA (2009) noted that demand risk is generally applied to regulated businesses in an attempt to replicate the pressures that apply to competitive businesses. However, the Economic Regulation Authority (ERA) accepted that, due to the impact of climate change, future demand for water in Western Australia remained highly uncertain. Therefore, ERA decided it was appropriate for water service providers to be compensated where actual demand varies from forecast demand. As a result, customers would continue to bear the demand risk associated with forecasting demand.

In the Draft Decision regarding Queensland Rail's Draft Access Undertaking (2009), the Authority determined that the risk of demand variation is best managed by customers.

Stakeholder Submissions

In its submission, QAL stated that:

- (a) it prefers a price cap to a revenue cap;
- (b) it does not support price increases where demand decreases, as this removes incentives for users to develop and implement water conserving incentives;
- (c) a move to a revenue cap will remove GAWB's exposure to quantity risk; and
- (d) the incentives for productivity and efficiency savings are not present under the proposed revenue cap model.

CPM stated that, while it understands that moving to a revenue cap largely means reducing GAWB's exposure to demand risk, it suggested that GAWB quantify the benefits gained by mitigating demand risk and ensure that this benefit is passed through to the customers. CPM also noted that there is some argument that a transition to a revenue cap approach should be accompanied by a reduction in the allowed regulatory return, on account of the service provider's reduced exposure to market/demand risk.

In addition, CPM raised concerns regarding the side constraints on annual tariff reviews of CPI plus 5%, arguing that this could result in annual increases that are excessive and above the market.

CS Energy did not agree with GAWB's proposal for a revenue cap. It stated that it has a preference for a price cap or, alternately, a price cap for the access charge which, due to its relationship to the capital base, is not volatile. CS Energy submitted that a revenue cap would be more appropriate for the volumetric charge as the variable costs have the potential to be more volatile and would support GAWB's argument about allocating the demand risk to customers to encourage forecasting accuracy.

NRG stated that it supports a price cap methodology as it drives behaviour delivering efficiency gains.

RTA submitted that moving to a revenue cap passes demand risk to customers. RTA stated that, as the sole custodian of the total demand forecast, GAWB is best placed to manage demand risk. Customers have no means through which to manage or mitigate this demand forecast risk and do not have access to the detailed information supporting the demand forecast. As a result, RTA submitted that it does not support the introduction of a revenue cap.

RTA further stated that the transfer of demand and volume price risk to the customer does provide GAWB with revenue certainty. However, any benefit to customers through lower water costs has not been demonstrated. RTA submitted that a price cap continues to be appropriate and notes that the Authority has previously rejected GAWB's proposal for a revenue cap.

GRC submitted that it had no particular preference for either a revenue cap or price cap. However, it did state that whichever option is implemented should not create incentives to overstate demand which would unnecessarily bring forward a supply augmentation and raise the price of water for current and future customers.

Queensland Energy Resources Pty Ltd (QER) stated that GAWB's proposal for a revenue cap was appropriate as it better reflects the prevailing commercial/economic circumstances of the entity. QER further noted that this is particularly the case until a secure augmentation of supply has been provided, after which a further review may suggest a return to price caps.

The Authority's Analysis

The Authority notes that the revenue cap proposed by GAWB would pass on to existing customers the cost of current excess capacity resulting from an augmentation commenced in 2000, prior to the commencement of regulatory oversight.

The Authority also notes that GAWB under-recovered projected revenues during the 2005-10 regulatory period. The Authority has estimated that 75% of the revenue loss is attributable to the fact that uncontracted anticipated new customers and/or new demand from existing customers did not eventuate to the extent anticipated. The revenue implications for this must rest with GAWB. With respect to the risks associated with new demand (from existing or new customers), the Authority has continuously argued that, given the lumpiness of supply and demand for GAWB's water, augmentation should be based on long term contracted demand and that, where GAWB wishes to provide for additional capacity for uncontracted new demand, it must assume the risk for doing so. Accordingly, that cost should be allocated to those customers through contractual arrangements, up-front charges and/or pre-payments of access charges.

The remaining 25% of the 2005-10 revenue loss appears to be the result of responses to a low supply alert which preceded the decline in consumption, and increased prices charged by Calliope Shire Council (now Gladstone Regional Council), presumably to also signal the cost of water. GAWB did not have in place pricing arrangements which compensated it for the revenue impacts of a low supply alert (e.g. increased prices in response to the impending drought – further encouraging demand management by customers).

The risk of existing customer demand being lower (or higher) than expected is driven by such factors as improved efficiency of water use, demographic changes, changed customer preferences and derived demand. The Authority's consultant (Frontier Economics) noted that, although GAWB may be able to implement strategies to manage demand variations in the short term, the risks of unanticipated changes in demand over the long run should be passed through to customers. These observations are consistent with the Authority's 2005 conclusions that existing customers should bear the risk of variations in their own demand, and contracts should explicitly define the basis for variations (including terminations) in contracted amounts.

GAWB's exposure to the risk of demand variations in respect of existing customers is partially limited by the access charges on reservation volumes set out in contracts (which include load factors for varying demand from contracted levels). By this mechanism, customers largely bear the risk of variations in their own existing demand as the fixed charge component typically makes up around about 80% of the total charge.

In respect to the other issues raised by GAWB in support of its revenue cap proposal, the Authority:

- (a) accepts that efficient prices based on LRMC can be implemented through either a price or revenue cap;
- (b) notes that, while GAWB's proposed side constraints to limit annual price increases on any tariff component to CPI +5% would ease price volatility associated with revenue caps, prices are likely to be less stable than under a price cap;
- (c) notes that other mechanisms (fixed charges, load factors, review triggers) are provided to address revenue volatility. Further, while a price cap may encourage more conservative demand forecasts, GAWB also has an incentive to ensure that its demand forecasts justify proposed capital and operating expenditure;
- (d) notes that, although some demand arrangements may be possible under a revenue cap, there is less need for demand management incentives under a price cap as customers already have an incentive to reduce overall costs by reducing volumes ; and
- (e) notes that the price cap approach avoids the complexity of managing unders and overs balances and applying side constraints but at the expense of placing greater emphasis on the need to get volume forecasts right.

Other issues relevant to the allocation and management of demand risk are that:

- (a) the Awoonga Dam augmentation, which was commenced in 2000 prior to regulatory oversight, was driven by the Government's and GAWB's expectations of growth in the Gladstone area and was not based on contracted demand; and
- (b) in the 2002 investigation, the Authority concluded that the scale of the Awoonga Dam augmentation was optimal based on engineering assessments by consultants SMEC and taking into account expected demand growth at the time. However, the Authority also concluded that the risk of unrealised demand should be borne by GAWB and not by existing customers. In other words, GAWB should carry the risk of spare capacity provided to meet new demand growth.

Accordingly, while some potential customers have indicated that the global financial crisis was a key factor in new demand being cancelled or deferred in recent years, GAWB, not existing customers, should carry the cost of those potential customers not taking up the spare capacity created by the augmentation.

The choice between a revenue cap and a price cap is complicated by the competing risks that need to be addressed, as follows:

- (a) existing customers are best placed to manage the risk of their actual demand differing from forecast. This can be managed via a revenue cap or a price cap with a significant fixed access charge;
- (b) GAWB should bear the risk of demand augmentation which is undertaken ahead of actual demand, i.e. GAWB should bear the cost of spare capacity. This can be addressed via a

- price cap (with all available capacity taken into account in determining price), or a revenue cap with GAWB as the “customer” in respect of spare capacity;
- (c) customers should be encouraged to enter into long term contractual arrangements, which assist GAWB with capacity management and the planning of augmentations. This is more of a matter for the structure of prices, with long term demand being priced at a discount to ad hoc demand;
 - (d) GAWB should be discouraged from entering into capacity augmentation in the absence of contracted demand or other risk management arrangements. Arguably, a price cap handles this risk more easily although it is unlikely that any such capital expenditure would be allowed into the asset base for revenue cap determination purposes under a revenue cap arrangement (or a price cap setting process for that matter);
 - (e) a price cap places particular emphasis on the need to get volume estimates correct, a task which is particularly difficult for GAWB, given that the lumpiness of demand increments in both volumes and timing; and
 - (f) a revenue cap keeps revenue constant despite volume variations. To the extent that costs are also volume dependant, a revenue cap will provide a windfall gain or loss on variable costs when volumes vary. At the same time, it is noted that most of GAWB’s costs are fixed, particularly in the short run.

Either approach is capable of effective implementation with GAWB. Indeed, there is not all that much difference between a revenue cap under which GAWB is the customer in respect of spare capacity and a price cap with a high fixed access charge and with future demand factored into the price determination and with appropriate review triggers.

In this regard, however, the revenue cap proposed by GAWB passes on to existing customers the risk that the estimated take-up of spare capacity does not eventuate. The Authority does not accept that this is appropriate.

For the purposes of this draft report, the Authority proposes to retain a price cap approach with GAWB’s exposure to certain downside revenue risk for demand variation being managed through mechanisms such as:

- (a) tariff structures incorporating access charges on reservation volumes, with penalty charges where customers understate proposed usage (Chapter 4);
- (b) regulatory review trigger mechanisms (Chapter 9); and
- (c) other measures such as price differentiation for contract length to encourage customers to contract (Chapter 4).

At the same time, the Authority would be willing to consider a modified revenue cap proposal from GAWB that did not attempt to pass the cost of excess capacity on to existing customers.

Recommendation 1:

The Authority recommends that price cap regulation be maintained for GAWB with appropriate mechanisms to manage GAWB’s exposure to downside revenue risk.

3.5 Planning Period

In the 2005 price investigation, the Authority adopted a 20-year planning period for pricing matters. The Authority considered that time frame of this length dealt with any efficient excess

capacity and provided consistent and stable pricing signals given the lumpiness of water infrastructure investments.

GAWB's Submission

GAWB proposed to move from a 20 year to a five-year planning period commencing from 1 July 2015 but to retain the 20-year planning period for the 2010-15 regulatory review. GAWB indicated that, with prices smoothed over 20 years, it has under-recovered in the early years, and that moving to a five-year planning period will significantly reduce the timeframe for recovering this revenue. GAWB submitted that, in the eight years from 2002-03 to 2009-10, the indicative maximum prices recommended by the Authority have under recovered the economic costs of supply in every year. This planned under recovery (estimated by GAWB at \$35 million – see Chapter 9) is being rolled forward, with interest, for future customers to bear.

GAWB argued that, while there is (currently) excess capacity, GAWB has limited ability to influence the take-up of this capacity and that actual utilisation is dependent on broader economic conditions. GAWB further submitted that one of the unintended consequences of adopting a planning period greater than the regulatory period is that GAWB's prices rely upon forecast demand growth, which itself is subject to significant uncertainty, to recover expenditure that benefits existing users. Given the potential for uncertain rapid growth in demand in the region, demand forecasts for Gladstone have a much greater margin for error than for other predominantly residential centres, exacerbating this uncertainty.

Further, GAWB noted that:

- (a) while adopting a five-year planning period may result in significant price changes between regulatory periods, it will provide more accurate price signals to customers due to the cost reflectivity of the approach;
- (b) a five-year planning period would avoid the uncertainty surrounding long-term forecasts and the supply-demand conditions that are currently used to determine prices;
- (c) adopting a long-term planning period may require customers to pre-pay for augmentations that they will never use or which may never be built; and
- (d) the 20-year planning adopted by the Authority is unique within regulatory practice in Australia and is considered inconsistent with the Authority's approach for other regulated businesses.

Subsequently, GAWB clarified that the proposed five-year planning period relates only to price setting and not to its long term Strategic Water Planning process. GAWB noted that the commencement date of 1 July 2015 was proposed to provide an opportunity to evaluate the impact of the change on customers.

Other Jurisdictions

In the case of Tillegra Dam, IPART (2009) stated that, while the construction of the dam provided significant immediate drought security benefit for current customers, not all of the capacity will be used until after 2050. To ensure affordability of services, inter-generational equity and Hunter Water's financial viability, IPART developed an approach where the costs of capital projects will be recovered from users, proportionate with the benefits they receive over time. Based on this principle, current pricing would incorporate 40% of the proposed capex increasing to 42.4% in 2012-13, and increasing gradually thereafter, to reflect increased utilisation of the dam. The remainder of the asset value would be added as a Deferred Tillegra Dam Revenue asset to the regulatory asset base, with its value calculated as the deferred

revenue and associated holding costs capitalised at the weighted average cost of capital (WACC) of 7%.

Capitalising the value of unused capacity until it is taken up was also applied by the Australian Competition and Consumer Commission (ACCC) (2005) in its final decision regarding the Central Ranges Pipeline access arrangements for gas. Under these arrangements, under-recoveries of revenue in the early years of operation must be offset by over-recoveries in later years. The under-recoveries are to be capitalised into the capital base to be taken into account in future access arrangements. The ACCC did not expect to recover total costs during the initial access arrangement period to 2019.

Stakeholder Submissions

CPM did not support GAWB's proposal to shorten the planning period from 20 years to five years. CPM considered that this change would result in:

- (a) current customers paying for excess capacity installed by GAWB to meet longer term demand;
- (b) significant potential price shocks, depending on the level of excess capacity held at 2015; and
- (c) new customers paying lower charges in the future on account of existing users 'funding' capacity on their behalf.

CPM also noted that, if the price transition period were limited to a single regulatory period as suggested by GAWB, this would limit the opportunity to smooth the impact of a substantial price increase. Further, CPM stated that GAWB's customer base and its capacity augmentations are substantially different to those of other regulated businesses, justifying a longer planning and cost-recovery horizon.

NRG indicated that it does not support GAWB's proposal to move to a five-year planning period. NRG submitted that it requires a reliable water source with certainty of supply and pricing and that a 20 year planning period provides this level of certainty.

CS Energy stated that, if the demand for new customers requires an augmentation, a five-year planning period may be justified. However, CS Energy takes only raw water from Awoonga Dam and rejected GAWB's proposition that existing customers should pay for the augmentation required to supply new customers when the existing customer uses an asset and has no need for any augmentation to meet its requirement.

QER considered that a five year planning period is an appropriate timeframe given the nature of commercial/industrial demand and development within the GAWB domain.

RTA submitted that it does not consider that the attributes of GAWB's customers justify the introduction of increased price volatility through a shorter planning period. Further, RTA stated that a transition from 20 years to a five-year planning period is also inconsistent with GAWB's proposal to incentivise customers to sign long term contracts.

The Authority's Analysis

The Authority's 2005 investigation concluded that, where efficient excess capacity is generated through lumpy infrastructure investments, the cost should be allocated across current and future users. Such an approach was also adopted by IPART for Hunter Water.

The approach of using a planning period aligned with the estimated take-up of spare storage capacity provides a means of allocating costs appropriately between customers over time. While IPART has excised a portion of the asset base for this purpose, the Authority's approach has been to estimate prices smoothed over the life of the asset augmentation.

The effect on prices of the two approaches is similar.

In the initial years, the Authority's approach will result in prices which are lower than if all the costs of spare capacity were to be allocated to the existing customer base. This under-recovery will accumulate and be capitalised into future prices, so that prices in the later years would be higher than they otherwise would have been. GAWB's estimated under-recovery amount of \$35 million is reviewed in Chapter 9.

In regard to issues raised by GAWB, the Authority:

- (a) notes that, while GAWB's comment that adopting a long-term planning period may require customers to pre-pay for future augmentations that they may never use or which may never be built is correct, under GAWB's approach existing customers would pay for the cost of existing spare capacity that they may never need, effectively subsidising new users;
- (b) acknowledges that the uncertainty associated with demand and supply forecasts increases with the length of time under consideration. However, five-yearly reviews provide opportunities for forecasts to be revised and prices adjusted; and
- (c) while planning horizons longer than the regulatory period are not always adopted by regulators, GAWB's circumstances of lumpy demand growth and significant surplus capacity warrant such an approach. Similar approaches adopted by IPART and the ACCC demonstrate that the approach is not unique.

The Authority notes that the majority of stakeholders did not support GAWB's proposal to shorten the planning period from 20 years to five years and is of the view that, as a general principle, a planning period broadly in line with the expected time required for spare supply capacity to be utilised remains appropriate for water businesses like GAWB. A longer planning period is also consistent with project evaluation conventions for water infrastructure projects. Under current circumstances, a 20-year planning period remains appropriate for GAWB. If the Authority were persuaded to approve a move to a shorter planning period, it would consider, inter alia, the approach adopted by IPART with respect to Tillegra Dam.

Recommendation 2:

The Authority recommends that a 20-year planning period is appropriate for GAWB.

3.6 Regulatory Review Period

In response to the Authority's 2005 pricing investigation, Ministers approved a five-year regulatory review period for GAWB.

GAWB did not raise the issue of regulatory review period and no comments were received from stakeholders. Most regulators in Australia continue to adopt a regulatory period of three to five years. A shorter timeframe would not necessarily resolve any uncertainties regarding future demand, yield and augmentation options.

The Authority proposes no change to the current approach.

Recommendation 3:

The Authority recommends that a five-year regulatory period apply to GAWB.

4. PRICING FRAMEWORK

4.1 Background

The Authority has previously considered and recommended the pricing framework that should be applied by GAWB in response to the regulatory objectives required under the QCA Act. Those regulatory objectives require prices to reflect efficient outcomes, provide GAWB with the revenues necessary to promote sustainable investment and take account of public interest matters. The recommendations were subsequently approved by the Ministers.

In summary:

- (a) GAWB is required to base prices on the LRMC, with two-part tariffs applied separately for storage and delivery services and to incorporate take-or-pay access charges on contracted volumes;
- (b) tariffs are to be differentiated between users according to their use of specific components of GAWB's infrastructure;
- (c) penalty load factors are considered appropriate to apply to the total charge to provide the incentive for customers to accurately estimate their consumption;
- (d) the cost of common infrastructure should be allocated to all existing and expected new customers provided the costs represent the least cost to meet projected demand;
- (e) where contributed assets are recognised, they should be included in the asset base for the purpose of determining the revenue requirement and prices;
- (f) unless otherwise specified, rebates for future contributed assets should include the return on capital and return of capital components, provided their contribution is intended to reduce prices in this manner; and
- (g) in general, drought risk is best managed by GAWB and GAWB is entitled to pass on the cost of managing this risk to customers.

4.2 Long Run Marginal Cost and Two Part Tariffs

In response to the Authority's 2005 investigation, Ministers approved that GAWB should base prices on the LRMC, with two-part tariffs applied separately for storage and delivery services, and incorporate take-or-pay access charges on contracted volumes.

LRMC is the cost of providing an extra unit when all production costs are variable (QCA, 2000).

The LRMC pricing of infrastructure services was considered to:

- (a) provide a better signal to consumers than average cost pricing in terms of the long term costs of supply; and
- (b) ensure that customers pay the full costs imposed by their demand (QCA, 2000).

GAWB has not proposed any change to the current pricing arrangement relating to the application of LRMC. However, GAWB has proposed a change from volumetric to instantaneous flow rate (IFR) charging from 2015 for the purpose of estimating the LRMC of the delivery component of the charge. GAWB's proposal for IFR charging is reviewed in section 4.4.

Stakeholders did not provide any comment in relation to LRMC-based two-part tariffs for GAWB.

The Authority notes that the principles of LRMC pricing have been widely accepted among water service providers and regulators both domestically and elsewhere (for recent examples see IPART (Hunter Water) (2009), and ERA (2009)).

The Authority does not currently see any reason to reassess its previous recommendations relating to the appropriateness of using LRMC to estimate usage charges for GAWB.

Recommendation 4:

The Authority recommends no change to the current pricing practices, that:

- (a) prices should reflect LRMC;**
 - (b) LRMC be estimated using the Average Incremental Cost (AIC) method; and**
 - (c) GAWB should apply a two-part tariff for each of storage and delivery services, with the components of the structure held constant over the regulatory period.**
-

4.3 Storage Usage Charges

In response to the Authority's 2005 investigation, Ministers approved that the storage usage charge should be based on LRMC, and applied to volumes sourced from Awoonga Dam. The access charge (the residual amount not recovered through the LRMC-based usage charge) should be based on contracted demand (or the reservation amount) as a key driver of capacity.

Under this approach, customers would need to accurately forecast their long term consumption and any expected variations, in order to ensure a close match between contracted and actual usage.

Neither GAWB nor any stakeholders commented on the basis for storage charges.

The Authority does not currently see any reason to reassess its previous recommendations relating to storage charges.

Recommendation 5:

The Authority recommends no change to the current pricing practices, that:

- (a) the storage volumetric charge be based on LRMC, and applied to volumes sourced from Awoonga Dam;**
 - (b) the storage access charge be based on contracted demand and constitute the residual amount not recovered through the LRMC-based usage charge; and**
 - (c) where LRMC exceeds the current cost of storage services, surplus revenues may be rebated to customers at a later date through a form unrelated to volumetric charges, or may be used as a contribution to future capital costs and offset against future charges.**
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4.4 Charges for Delivery Services

In response to the Authority's 2005 investigation, Ministers approved that delivery charges should be based on actual volume of water delivered to a supply point. GAWB argued for delivery system charges to be based upon the maximum IFR required to service each customer (e.g. litres/second at the customer's connection point), rather than volume.

IFR is a form of peak load pricing to induce individual consumers to shift away from times associated with peak demand and towards times of lower demand. This results in more efficient use of existing capacity and potentially deferral of augmentation where pipeline or pumping capacity is a constraint.

The Authority previously considered that GAWB's proposal to base its delivery system charges on maximum IFR had merit but concluded that it was for GAWB to assess the net benefits.

GAWB's Submission

GAWB proposes to change the basis of pricing for its delivery services from the annual volume of water delivered to IFR charging from 1 July 2015.

GAWB argued that, for network based industries, cost is more closely related to the maximum rate of consumption rather than to total consumption. GAWB noted that IFR charging is analogous to maximum hourly quantity charging that may be used in the electricity and gas industries.

GAWB advised that it has installed metering and telemetry capable of recording flow rates.

In addition, GAWB submitted that the change to IFR pricing:

- (a) would not result in GAWB recovering more than its maximum revenue requirement;
- (b) would result in GAWB recording each customer's metered maximum instantaneous flow rate (MIFR) in each calendar month;
- (c) would result in GAWB continuing to apply the current two-part tariff structure to determine both the access and volumetric delivery price. However, GAWB proposed that:
 - (i) the IFR access charge will be charged monthly, based on the greater of the customers contracted maximum instantaneous flow rate (CIFR) and MIFR;
 - (ii) the IFR volumetric charge will be charged monthly based on the MIFR; and
 - (iii) over-run charges (load factors) will be applied in months that the MIFR exceeds the CIFR.

GAWB proposes to set the IFR volumetric price based on an estimate of the LRMC of aggregate capacity in the particular zone. The IFR access price would be set to recover that part of the average economic cost of supply over the planning horizon not recovered by the IFR volumetric price.

Further, GAWB submitted that an appropriate lead time prior to the introduction of IFR charging was necessary to ensure that customers have sufficient data to enable them to understand their flow rate characteristics, and to make sound business decisions where capacity constraints are identified within the delivery network.

GAWB submitted that the introduction of IFR pricing would involve:

- (a) recording IFR data for all customers for a period of time (likely to be more than a year to capture any customer seasonality) to ensure that indicative prices set are realistic;
- (b) producing ‘dummy’ bills for customers to allow them to assess the costs and benefits of changing their on-site water management and/or their quantity of on-site storage to optimise commercial outcomes under IFR pricing;
- (c) working with customers to ensure any proposed customer investments are efficient;
- (d) reassessing forecast customer CIFRs based on customer responses; and
- (e) setting prices based on revised forecast and initial customer responses.

GAWB argued that this process would enable customers to contract for the correct CIFR and make any economic changes to their process and/or on-site storage arrangements necessary to optimise their commercial outcomes.

GAWB provided further clarification of its IFR proposals in a supplementary submission in response to customer comments. GAWB submitted that there is almost certainly a component of GAWB’s cost of supply that is related to time of day or seasonality, but that the distribution of reservoirs throughout the network reduces the importance of intra-day peaks. GAWB’s proposed IFR charges are to be based on monthly maximum instantaneous flows, to balance efficiency, equity and simplicity objectives. However, if intra-day consumption changes result in changes in costs, GAWB will investigate whether ‘peak and off-peak tariffs might be useful.

Other Jurisdictions

Forms of peak load pricing have been applied in telecommunications, electricity and gas sectors to alter consumption patterns to create ‘efficiency gains’ where service providers maximise profits and make better use of capacity. No examples could be identified of its application in the water sector.

Stakeholder Submissions

CS Energy submitted that the nature of CS Energy’s off-take arrangement, which is directly from Awoonga Dam, does not require an IFR pricing arrangement.

CPM sought clarification that the proposed IFR principles would not apply to Raw Water access contracts from Awoonga Dam. Further, CPM submitted that it would expect that IFR principles would be relevant only to customer water delivery contracts using GAWB’s water distribution network.

QER submitted that the justification for an IFR price signal is appropriate for the alleviation of system and supply stress and for informing and shaping of appropriate customer behaviour. However, QER submitted that there needs to be further work undertaken to fully justify and validate either the level of surcharge or incremental thresholds proposed.

The GRC submitted that it would support IFR pricing or any other measure which attempts to charge customers based on their impact on the network. GRC stated that it has its own storage facilities and, therefore, unlike many industrial customers can take water when it is most advantageous for the efficient operation of the distribution network.

Further, GRC requested that consideration be given to whether there are peak and off-peak periods and, if there are, whether an off-peak rate should be considered. In addition, GRC

stated that measures to delay augmentation benefit all customers that use that infrastructure and thus all customers would support any mechanism which ensures the efficient use of the network.

NRG stated that GAWB's submission did not provide details of where a customer's maximum flow rate would be determined. NRG submitted that, if metering for the proposed IFR pricing occurred within the GRC reticulation system, it would be supplied by and under the control of the GRC. This would create a number of issues, including:

- (a) IFRs at the Gladstone Power Station (GPS) boundary are not appropriate measures of the GPS burden on the network. A reservoir at Jeff Ringland Drive was installed specifically to buffer the GPS's peak demand on the network. Hence, high IFRs occurring at the station boundary are accommodated by the reservoir's buffering capacity;
- (b) if the GPS MIFR is measured, it should not be corrupted by the usage of other customers who are now connected to the reservoir; and
- (c) NRG rejects being exposed to the CIFR and the MIFR of the GRC who purchases potable water on behalf of NRG as part of the GRC's Financial Year water nomination. The MIFR of the GRC is unknown to NRG and NRG is unable to adequately model this scenario to determine the level of risk.

In the absence of comparative data, NRG rejected IFR for the above reasons. Further, NRG requested that the Authority undertake modelling on NRG's behalf to enable NRG to make an informed decision.

RTA submitted that setting water prices on a single, one second, high flow event for the period may not necessarily be an accurate reflection of a customer's use of the system. RTA stated that, by virtue of the number of customers and the inherent variation in instantaneous demand, GAWB's network will see a degree of modulation of any actual 'peak' on GAWB's service provision and infrastructure capability. IFR pricing does not acknowledge the potential offsetting effect that may occur during a peak event from other customers simultaneously presenting less demand.

RTA also stated that, under IFR pricing, customers will construct local buffer capacity to avoid high flow events. Such investments may not be efficient, particularly if all customers undertake this expense independently. IFR pricing may create the perverse outcome whereby customers install buffer capacity to avoid higher water costs for peak consumption events that ordinarily may not have caused additional costs to be incurred on the network.

Further, RTA submitted that the fundamental reasoning and underlying business case for GAWB's proposed change in approach and consequential impact on customer's water costs, is unclear. RTA submitted that IFR requires more detailed analysis before it can be supported.

The Authority's Analysis

The Authority acknowledges that water flow can be measured either at a particular moment (instantaneous flow) or over a specific time (total flow).

As part of the current investigation, the Authority commissioned Davwil Designs and Management Services (Davwil) to review the appropriateness of GAWB introducing IFR pricing from 1 July 2015.

Davwil stated that IFR pricing, as indicated by GAWB, has a number of advantages. These include:

- (a) recognising higher cost impacts on the distribution system through higher price signals for customers with high maximum (peak) instantaneous demands compared to annual/average monthly total volume demands;
- (b) providing more efficient price signals to customers when faced with distribution delivery system constraints; and
- (c) the potential to achieve a more efficient distribution system overall by effectively promoting customer opportunities to reduce peak demands.

However, Davwil also noted a number of disadvantages associated with IFR pricing. These include:

- (a) that the pricing system becomes more complicated and requires more interaction with, and understanding by, customers which can increase operating costs;
- (b) an increased reliance on meter accuracy and telemetry functionality, usually requiring more sophistication and expense;
- (c) that expected savings may not eventuate, may occur only for short periods or may be relatively small, as they may be limited to reductions in some operating costs which are a small proportion of total capital and operating costs;
- (d) some customers may not be in a position to take effective advantage of the change. For example, urban water users may require an investment in 'smart' meters;
- (e) many customers having already invested heavily to reduce water consumption. As a result, a strong cost incentive for customers will need to be demonstrated before these customers are likely to consider future investment;
- (f) complexities associated with negotiating the CIFR which is critical to the effective outcomes of the proposed IFR pricing arrangement. Determining a CIFR over a year is more complex than determining a contracted volume amount; and
- (g) significant variation between MIFRs and CIFRs can result in a greater risk to GAWB's revenue stream and less confidence in the pricing arrangements by customers. It is imperative that both GAWB and its customers use a sufficient pattern of reliable MIFR data to determine each CIFR.

Davwil also noted that GAWB has not addressed the net benefits of introducing IFR pricing either to GAWB or to its customers. Davwil noted that customers are unlikely to invest in peak flow reduction works if the cost of their investment is likely to be greater than the IFR price saving.

Davwil considered that an assessment of the financial and non-financial benefits would require a full pricing strategy and analysis including scenarios and customer impacts. Such an analysis would need to be completed prior to undertaking specific consultation with customers and after sufficient maximum flow data for customers has been collected. Davwil noted that it is unclear as to when such data will be available and suggested an adequate data set may potentially be up to two years away.

Davwil also listed a number of key delivery system constraints and specific operating cost issues associated with the introduction of IFR pricing for GAWB. These included that:

- (a) the majority of the asset base (i.e. storage costs) cannot be affected by IFR. Effective demand management practices will still be needed to manage total demand and drought events to ensure the next major storage augmentation is delayed as long as practical;
- (b) the distribution system generally has significant spare capacity and total system demands have actually decreased from 2005-06. As a result, system operations, maintenance and replacements will not be significantly affected by reduced peak demands;
- (c) excluding some performance based maintenance for pumps and electronics, all other maintenance required is not affected by a reduction in peak flows;
- (d) if total annual consumption remains the same or increases while IFR pricing reduces peak demands, cost savings for pump operations will occur only if lower electricity tariffs for pumping can occur; and
- (e) administration of the distribution system is likely to become more complex as a result of, inter alia, the need to interact more closely with customers to achieve the most efficient system operation outcome.

Overall, Davwil concluded that introducing IFR pricing at this stage is likely to provide little, if any, net benefit or lowering of overall costs, given the current significant over-capacity of GAWB's distribution system. Davwil indicated that, based on the Authority's forecast annual demands, resultant peak demands, further system flow data provided by GAWB and initial modelling, there appears to be little potential benefit likely to be realised until after 2030.

In relation to specific stakeholder comments, the Authority notes that:

- (a) in relation to customers such as CSE and CPM, GAWB has advised in a supplementary submission that IFR pricing would apply only to the delivery charge, and would not affect storage and reservation charges;
- (b) in relation to NRG, GAWB advised in a supplementary submission that IFR charging would not apply to NRG as it is a customer of GRC, not GAWB. IFR would apply to GRC connections on GAWB's delivery network, not individual connections off GRC's reticulation system;
- (c) in relation to RTA's comments, the Authority notes circumstances could arise where a customer with a high peak flow rate for a short period could be required to pay a high flow rate charge, while other customers have offsetting lower flow rates. Customer flow rate variability may therefore be an issue in the effective operation of IFR charging; and
- (d) customer investments in storage buffers or other flow reduction works would only be efficient if the savings outweigh the costs. If all customers undertake such works, it may be a less efficient outcome than if GAWB undertook its own investment. Hence, IFR charges should be carefully set to provide appropriate pricing signals.

In principle, the Authority sees merit in IFR pricing if it can cost effectively defer augmentation where delivery capacity is a constraint. Further, the Authority notes that GAWB has installed the appropriate metering required to facilitate IFR pricing.

However, the Authority notes that GAWB's distribution system is currently not experiencing capacity constraints and the net benefits of introducing IFR pricing have not been demonstrated.

Over the coming regulatory period, the Authority recommends that GAWB should collect information in regard to customers' peak period and seasonal demands, and undertake further assessment of the merits of IFR pricing. Furthermore, in order to enable IFR pricing to be introduced from 1 July 2015 if it is deemed appropriate, the assessment needs to be completed within the next 3 years, and the earlier the better.

Recommendation 6:

For the current review, the Authority recommends that GAWB's maximum indicative prices continue to be based on contracted volumes for delivery purposes.

The Authority also recommends that GAWB should undertake data collection and further investigations on the merits of IFR pricing, including implications for individual customers well before the next review, in order that the proposals can be implemented as from the next review.

4.5 Load Factors (Over-Run Charges)

In response to the Authority's 2005 investigation, Ministers accepted GAWB's proposal for penalty charges to apply to the total charge as an incentive for customers not to understate anticipated demand and the associated contract reservation volumes.

The penalty charges were as follows:

- (a) where actual demand exceeds the contracted/reservation volume for industrial customers, unless otherwise negotiated with GAWB, a surcharge of:
 - (i) 25% applies to the total charge for incremental volumes where actual consumption is between 110% and 125% of the contracted amount (first over-run charge); and
 - (ii) 50% applies to the total charge for incremental volumes where actual consumption is higher than 125% of the contracted amount (second over-run charge); and
- (b) where actual demand exceeds the contracted/reservation volume for Local Government Authority customers, unless otherwise negotiated with GAWB, a surcharge of 10% will apply to the total charge for incremental volumes where actual consumption exceeds 125% of the contracted volume.

GAWB's Submission

GAWB proposed no change to over-run charges for the 2010-15 regulatory period. However, GAWB also proposed that over-run charges be adapted to apply in the event it applied IFR charges from 2015. For example:

- (a) where MIFR exceeds the CIFR rate for industrial customers, unless otherwise negotiated with GAWB, a surcharge of:
 - (i) 25% applies to the sum of the IFR access and volumetric price where the MIFR is between 110% and 125% of the CIFR (first over-run charge); and
 - (ii) 50% applies to the sum of the IFR access and volumetric price where the MIFR is higher than 125% of the CIFR (second over-run charge); and

- (b) where MIFR exceeds the CIFR for Local Government Authority customers, unless otherwise negotiated with GAWB, a surcharge of 10% will apply to the IFR access and volumetric price where MIFR exceeds 125% of the CIFR.

GAWB also proposed to retain its sole discretion to waive or reduce over-run charges in exceptional circumstances or where there is no consequential cost incurred by GAWB.

Stakeholder Submissions

QER submitted that it does not support GAWB's proposed over-run charges as there is no evidence validating either the level of surcharge or incremental thresholds proposed. QER submitted that the over-run of industrial demand by one customer may have no adverse impact on GAWB's supply and distribution if the over-run occurs at a time when other customers are under-using a network which is not capacity constrained.

QER submitted that, in applying over-run charges under GAWB's proposed IFR charging approach, there may be mechanisms available for customers to notify GAWB if they expect to exceed their CIFR so that this may be accommodated in a window of opportunity without undue system stress and with no additional penalty. QER proposed that there needs to be further work undertaken to fully justify and validate the level of surcharge or incremental thresholds.

The Authority's Analysis

Under current arrangements, the over-run charge applies to the total charge (storage and delivery) if a customer exceeds the thresholds defined in contracts.

In regard to QER's comments, the Authority considers that the over-run charges are necessary to provide incentives for GAWB's bulk water customers to estimate demand accurately rather than understating anticipated demand when estimating their contracted amounts. Furthermore, at any point in time, it cannot be assumed that an excess of contracted volume by one customer is matched by another customer's under-use. At the same time, the Authority supports GAWB's proposal to apply discretion in applying over-run charges in extraordinary circumstances or where there is no consequential cost impact on GAWB.

The Authority also considered in 2005 that specific contractual arrangements may be negotiated between GAWB and individual customers in regard to penalty charges or where the customers' usage exceeds the contracted amount.

The Authority accepts that over-run charges could be adapted to GAWB's proposed IFR charges. However, the details of how these charges would apply should be addressed as part of GAWB's review of the framework for IFR charging.

In conclusion, the Authority proposes no change to its previous recommendation in regard to over-run charges, for the 2010-15 regulatory period.

Recommendation 7:

The Authority recommends that GAWB retain the current methodology for determining over-run or penalty charges where:

- (a) actual demand exceeds the contracted/reservation volume for industrial customers, unless otherwise negotiated with GAWB, an additional load factor or surcharge of:**
 - (i) 25% applies to the total charge for incremental volumes where actual consumption is between 110% and 125% of the contracted amount (first over-run charge); and**
 - (ii) 50% applies to the total charge for incremental volumes where actual consumption is higher than 125% of the contracted amount (second over-run charge); and**
- (b) actual demand exceeds the contracted/reservation volume for Local Government Authority customers, unless otherwise negotiated with GAWB, a load factor or surcharge of 10% will apply to the total charge for incremental volumes where actual consumption exceeds 125% of the contracted volume.**

The Authority also recommends that:

- (a) GAWB apply discretion in applying over-run charges in extraordinary circumstances or where there is no consequential cost impact on GAWB; and**
- (b) details of how these over-run charges would apply in relation to proposals for the introduction of IFR charging should be addressed as part of GAWB's review of the framework for IFR charging.**

4.6 Differential Pricing

Differentiation between Councils

In its 2005 price investigation, the Authority recommended that the issue of price pooling was a matter for the Gladstone City Council (GCC) and the Calliope Shire Council (CSC) to determine. The Ministers accepted this recommendation.

GAWB's Submission

GAWB noted in its submission that the Authority recommended in its 2005 price investigation that Calliope Shire Council (now part of the amalgamated Gladstone Regional Council (GRC)), which also incorporates the former Gladstone City and Miriam Vale Shire Councils, be charged only one price for potable water, even though off-take connections were across several pricing zones.

GAWB submitted that GRC prices should not be averaged between connections and that charges should be based on the zonal price for each respective connection, similar to the treatment of other customers that maintain multiple connections. This is to ensure that GAWB's prices are cost reflective and equitable to all customers.

Further, GAWB stated that the averaging of potable water prices across multiple connections should be the responsibility of GRC, not GAWB.

Stakeholder Submissions

NRG noted that, in the past, GAWB managed the averaging of water pricing across connections. However, GAWB now proposes to move to a zonal pricing system with prices reflective of particular zones and that the GRC be responsible for managing the averaging of potable water prices. NRG argued that it should not be exposed to cross-subsidisation or equalisation schemes.

Further, NRG stated that the price of water charged to the Gladstone Power Station (of which NRG is the operator) by the GRC should consist of the:

- (a) Glenlyon Road Junction zonal price for potable water; and
- (b) GRC reticulation charges.

The Authority's Analysis

Since the Authority's 2005 investigation, the two Councils have amalgamated.

The Authority also notes that the Gladstone Power Station has a tripartite Treated Water Supply Agreement between NRG, GAWB and GRC. As a result, the pricing arrangements for NRG's potable water supply are a commercial matter for the parties involved. GAWB advised in a supplementary submission that, as NRG is a customer of GRC, it has no ability to determine the prices charged by GRC to its customers.

The Authority accepts that, as a matter of general principle, GAWB should charge the relevant zonal prices for GRC connections. Whether these charges are passed through to customers, or averaged across all customers, is a matter for GRC.

Recommendation 8:

The Authority recommends that GAWB should charge the relevant zonal prices for GRC connections.

Geographic Differentiation – Zonal Pricing

In response to the Authority's 2005 investigation, Ministers approved that geographically differentiated prices or nodal prices be adopted for each of the identified geographic segments of GAWB's water delivery network. Such an approach reflected the characteristics of GAWB's water supply system, which displays a number of clearly defined components and involves specific infrastructure to supply customers located within defined geographic areas, and ensures that customers are cognisant of the costs associated with their location decisions and levels of service.

The establishment of prices for each class of customer is more cost reflective than equalised or system wide charges and does not add to administrative costs or complexity, as GAWB already identifies costs on such a basis.

GAWB's Submission

GAWB proposed to retain geographic differential pricing for all customers based on their utilisation of specific components of the infrastructure network.

However, GAWB also proposed changes to the current pricing zones to achieve more cost reflective pricing.

GAWB proposed changes to the:

- (a) source zone. GAWB proposed to maintain a single pricing zone for source assets comprising the Awoonga Dam (as previously) and now also the efficient preparatory costs associated with GAWB's Contingent Supply Source (CSS);
- (b) raw water delivery zones. GAWB proposed:
 - (i) extending the current Awoonga to Toolooa zone to the Fitzsimmons Street Reservoir. This zone would now incorporate the Toolooa to Mount Miller Junction zone and Mount Miller Junction to Gladstone zone, that is three zones combined into one. GAWB submitted that this change was necessary for cost reflectivity purposes, as all raw water delivery customers benefit from the Fitzsimmons Street Reservoir;
 - (ii) reinstating the previously optimised-out Hanson Road Pipeline zone as another raw water pricing zone. GAWB submitted that this pipeline would form part of a larger raw water zone known as the North Industrial Raw zone comprising the Hanson Road Pipeline, the Boat Creek Reservoir, the Mount Miller Pipeline zone and a portion of the previous Boat Creek zone. GAWB submitted that this raw water zone was appropriate because it ensures that customers within a geographical area benefiting from the same infrastructure are within the one pricing zone;
 - (iii) that the Yarwun zone and the Yarwun Water Treatment Plant (YWTP) zone be sourced from the North Industrial Raw zone. This implies that the previous separate Yarwun zone supplying Australian Magnesium would be removed and combined with the YWTP zone; and
 - (iv) a Fishermans Landing raw water zone commencing from the RTA Yarwun connection;
- (c) potable water delivery zones. GAWB submitted that the YWTP be separated into its own zone. The outlet from the YWTP and pipe work would now be included in the North Industrial Potable zone because no customers can connect to the pipeline between YWTP and the Mount Miller Reservoir (part of the North Industrial Potable zone). Further, GAWB proposed that:
 - (i) the Mount Larcom zone be renamed the Boat Creek Pump Station to East End Reservoir zone;
 - (ii) the Cement Australia Potable zone be renamed the Fisherman's Landing Potable zone;
 - (iii) the end point of the North Industrial Potable zone now be the intake to Boat Creek Pump Station and the Fisherman's Landing Potable zone commence at the junction before the pump station;
 - (iv) the Gladstone Water Treatment Plant (GWTP) zone be separated into two zones, that being a zone for the GWTP only, and the GWTP to South Gladstone zone; and
 - (v) the GWTP to Toolooa be renamed the South Gladstone to Toolooa zone with some small end point adjustments to the GWTP to South Gladstone zone.

Other Jurisdictions

In its 2009 price review of Hunter Water, IPART accepted location-based water usage charges, on the grounds of cost reflectivity, for large customers consuming more than 50,000 kl per annum and who are located in specific zones close to the water source.

In its 2009 review of Melbourne Water, ESC accepted uniform bulk water usage charges for water headworks to apply for the three metropolitan retailers and Western Water to reflect the common security of supply provided. ESC (2009) also accepted that usage charges for the transfer component of bulk water remain differentiated to reflect the different cost of delivering water to each retailer.

Stakeholder Submissions

CPM submitted that it is generally comfortable with GAWB's proposal to retain geographic differential pricing for its customers, provided that the 'source zone' does not change.

QER submitted that it agrees with GAWB's proposed rezoning as it supports an appropriate industrial supply and basis for price setting.

The Authority's Analysis

The Authority notes that GAWB and its customers generally agree on the principle of geographic differentiated pricing.

The Authority engaged Davwil to assess GAWB's proposed changes to its delivery system segments or zones to be used for pricing purposes.

Davwil stated that the primary assessment criterion to determine appropriate geographic distribution of price zoning is that customers should pay for components of the network they use and from which they derive a realistic service benefit.

Applying this criterion, Davwil provided a number of recommendations and clarifications regarding GAWB's proposed zone boundaries. With regards to the:

- (a) Source Zone – Davwil agreed with GAWB's proposed source zone, incorporating both Awoonga Dam and the contingent supply strategy preparatory expenditure;
- (b) Raw Water Delivery Zones – Davwil responded to each of GAWB's proposed changes. With regards to:
 - (i) extending the current Awoonga to Toolooa zone to the Fitzsimmons Street Reservoir – Davwil considered that GAWB's proposal to combine the previously identified two zones from Awoonga Dam to Fitzsimmons Street Reservoir zone into one zone was not appropriate. Davwil considered that a single zone would limit the ability to provide cost-reflective pricing arrangements for Boyne raw water customers, noting that Boyne raw water customers did not use the pipeline service from Toolooa Reservoir to the Fitzsimmons Street reservoir. Even if Boyne Raw water customers did receive some form of emergency supply service, it should not attract the full asset value of the Toolooa Reservoir to and including Fitzsimmons 50ML Reservoir infrastructure.

Davwil recommended that two zones be created, one being the Awoonga to Toolooa zone, with the second zone starting after the Toolooa Reservoir and ending at the Fitzsimmons Street Reservoir. Further, Davwil recommended that no

share of costs associated with the Toolooa Reservoir to Fitzsimmons Street Reservoir should be assigned to the Boyne Island Raw zone;

- (ii) the northern industrial raw water zone – Davwil noted that GAWB’s current system operating approach is to strengthen the reserve and emergency raw supply capacity. GAWB’s proposed approach consists of a combination of reconnecting the Boat Creek Reservoir and including the total length of the Hanson Road pipeline as a raw water supply to service several customers and provide limited but valuable emergency supply.

On this basis, Davwil considered that it was appropriate to combine the Mount Miller Pipeline and the Hanson Road Pipeline into the North Industrial Raw zone. However, this depended upon whether GAWB’s decision to retain the Hanson Road pipeline to provide emergency raw water services was justified. For example, evidence is required that the Mount Miller Pipeline is not meeting the current required standard of service or that customers are seeking a higher standard of service.

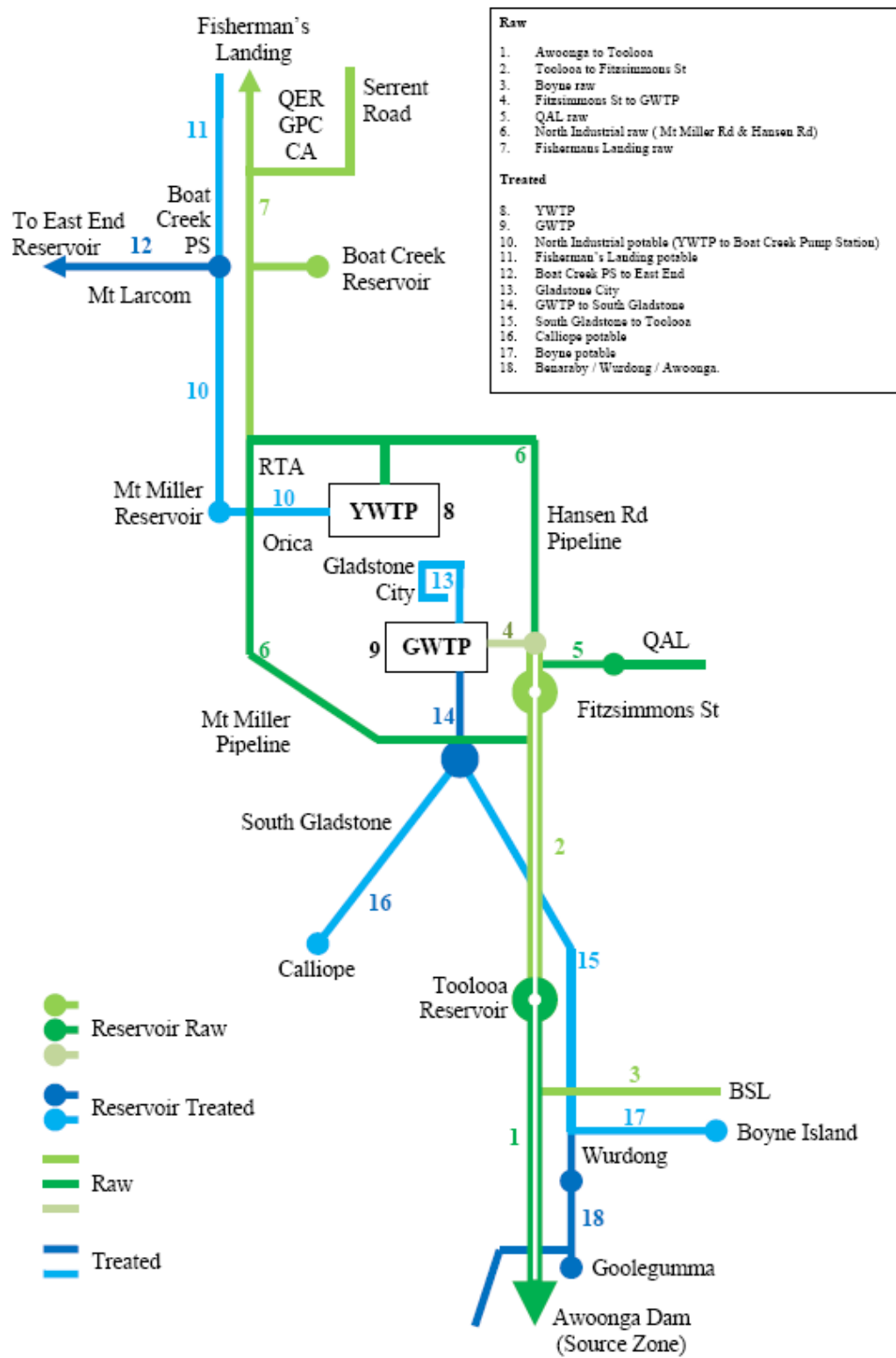
Davwil considered that this new North Industrial Raw zone should have contiguous infrastructure to the Boat Creek Reservoir included to enable reserve and emergency supply. As a result, Davwil argued that the section of 500mm diameter pipe from the RTA customer off-take to the junction to Boat Creek Reservoir should be included in the North Industrial Raw zone, as should the new works which are required to reconnect the Boat Creek Reservoir. Davwil advised that inclusion of these works would add \$0.9 million to the depreciated optimised replacement cost (DORC), while inclusion of the Hanson Road pipeline would add \$1.2 million;

- (iii) the Yarwun zone and YWTP – Davwil agreed with GAWB’s proposal that the Yarwun zone is unnecessary as the Australian magnesium raw supply has been dismantled leaving only the supply to the Yarwun WTP in the zone. Consequently, Davwil recommends that the Yarwun zone should be incorporated into the YWTP zone. However, Davwil advised that this zone should include the short inlet pipeline to the Treatment Plant; and
- (iv) the Fishermans Landing Raw zone – Davwil agreed that the zone should start from after the RTA Yarwun connection to match the end change of the North Industrial zone. This zone includes the Serrent Road Pipeline; and

- (c) Potable Delivery Zones - Davwil agreed with GAWB’s proposed potable delivery zones.

The Authority recommends that geographic differentiation of prices remains appropriate for GAWB. The actual zones are shown in Figure 4.1.

Figure 4.1: Raw and Treated Water Delivery Zones



On the basis of advice from Davwil, the Authority:

- (a) accepts that the efficient preparatory costs associated with the contingent supply strategy should be incorporated into the storage zone as these cost are common to users;
- (b) does not accept GAWB's proposal to combine the current two zones from Awoonga Dam to Fitzsimmons Street into one zone. The Authority considers that there should be two zones – one from Awoonga Dam to Toolooa Reservoir (Zone 1), and one from Toolooa Reservoir to Fitzsimmons Street Reservoir (Zone 2). These zones therefore remain unchanged from the 2005 review;
- (c) accepts GAWB's proposal to form a larger north industrial raw water zone, including Hanson Road pipeline and Boat Creek Reservoir should these assets be re-instated into the asset base (Zone 6);
- (d) accepts GAWB's proposal to remove the previous Yarwun raw water zone. This zone is now combined with the YWTP zone (Zone 8);
- (e) accepts GAWB's proposal for the Fishermans Landing raw water zone (Zone 7). Compared to 2005, the zone start point is slightly changed; and
- (f) accepts GAWB's proposals in regard to potable water zones. The only significant changes compared to 2005 are that the GWTP is separated into its own zone (Zone 9) and the YWTP zone now includes the connection to the north industrial raw pipeline.

Recommendation 9:

The Authority recommends that prices be differentiated for all customers according to their utilisation of specific components of GAWB's infrastructure network in accordance with zones proposed by Davwil Consulting.

Differentiation between Existing and New Customers

In response to the Authority's 2005 investigation, Ministers approved that new and existing customers pay the same price for use of the common infrastructure providing water.

Further, the Authority considered that, where a facility requires expansion in response to the demand of a new user, both the existing and new users are in a position to adjust their demand to minimise the extent to which the augmentation is required. Thus, to the extent that customers utilise common infrastructure, both new and existing customers should receive the same price signal to review their demand for water.

The Authority also noted that, where an augmentation results in lower average costs, all customers would benefit from the reduced cost of service.

However, the Authority also concluded that access charges and queuing strategies are valid commercial arrangements.

GAWB's Submission

GAWB proposed no change to the recommendation that the cost of common infrastructure should be allocated to all existing and new customers.

Other Jurisdictions

IPART (2009) recently considered the issue of cost recovery for Hunter Water Corporation's new Tillegra Dam which will be constructed mostly during the 2009-14 determination period to provide improved drought security for current customers and to service projected population growth in the region through to 2050. IPART did not differentiate between existing and future users for pricing purposes, i.e. charges at any point in time do not vary between customers according to the timing of their connection. This approach aims to achieve intergenerational equity and ensure the costs of the dam are recovered from its beneficiaries.

In its investigation of urban prices for Gosford and Wyong Councils, IPART (2009) decided to defer the recovery of a significant portion of Wyong Council's forecast growth-related capital costs and recover these costs through future periodic charges and developer charges. These costs relate to new assets to service the development area of Warnervale plus other redevelopment areas to accommodate future increases in population. This approach is designed to strike a balance between protecting current customers from substantial price increases, encouraging economic efficiency, and ensuring that Wyong Council's water, sewerage and drainage operations are financially viable.

From 1 July 2008, new urban water arrangements commenced for South East Queensland (SEQ). At this stage, no differential pricing scheme is proposed to recover the costs associated with new bulk water infrastructure being built in SEQ. The Queensland Water Commission (QWC) has published details on proposed new bulk water prices, which show a 10-year price path for all 10 SEQ local governments.

In some other utility sectors, where service providers deliver services to a small number of large customers under contract, the additional costs of an augmentation are charged to the new customers responsible for triggering the augmentation.

Stakeholder Submissions

QAL submitted that existing users should not pay increased charges as water is sourced from an additional source (Fitzroy River) and that only those users whose new or increased demand requires the augmentation should be charged. QAL further noted that, as the Queensland Government promotes Gladstone as an industrial hub, the Government should support and contribute to development costs where augmentation becomes necessary.

CS Energy submitted that existing customers should not bear the cost of augmentations based on indicated demand from potential customers. Further, CS Energy stated that, if potential customers were required to fund the cost of their new demand and to pay an up-front charge (rebated against actual water usage once they commence drawing water), GAWB would have a sound mechanism for achieving accurate forecasts. CS Energy considers that a user pays approach is the most efficient way to refine demand projections.

CPM noted the approach adopted by IPART with regards to deferring recovery of a significant portion of Wyong Councils forecast growth-related capital costs and considered that a similar approach would be appropriate for GAWB. Further, CPM stated that this would ensure that costs of current spare capacity developed by GAWB for the benefit of future users are not transferred to current users through higher water prices.

The Authority's Analysis

As a general regulatory principle, the Authority considers that water prices should reflect the LRMC of supply for all customers, regardless of the timing of their connection to the system. This ensures that the marginal pricing signal is transmitted equally to all customers to encourage efficient water use practices. In circumstances where an augmentation is imminent, customers

would face a higher volumetric charge and water will be directed to those uses where it is most highly valued (allocative efficiency).

In response to QAL's concerns, sharing common-infrastructure costs between existing and new customers promotes efficient development as it keeps the aggregate costs of common infrastructure to a minimum as all users respond to higher prices. New customers would be confronted with higher prices that relate to any customer-specific infrastructure provided to meet their requirements. If the Queensland Government wishes to reduce costs further, it is Government's prerogative to compensate GAWB for lower prices through an appropriate community service obligation (CSO).

In response to CS Energy's concerns relating to basing augmentation on indicated demand, the Authority notes that under the current arrangements GAWB should only take into account demand expressed in the form of long term contracts (with GAWB responsible for the risk associated with any augmentation based on uncontracted demand). In respect to CS Energy's suggestion that potential customers should fund the cost of their new demand and pay an up-front charge, the Authority notes its response to QAL above.

CPM noted the approach adopted by IPART with regards to deferring recovery of a significant portion of Wyong Council's forecast growth-related capital costs and considered that a similar approach would be appropriate for GAWB. Further, CPM argued that this would ensure that costs of current spare capacity developed by GAWB for the benefit of future users are not transferred to current users through higher water prices.

The Authority considers the IPART approach for Wyong Council is actually a developer charge designed to recoup the costs associated with specific assets to service new development areas. It provides for a capital charge to be levied directly on developers as the population grows, minimising the price impacts on existing users.

By contrast, IPART's approach for Hunter Water's proposed Tillegra Dam is to allocate the cost of spare capacity to a deferred asset fund and gradually re-introduce the cost into the regulatory asset base as demand grows. There is no differentiation between existing and new users at any point in time as the Tillegra Dam is seen as a common asset providing benefits to all users.

These examples are consistent with the general principle applied by the Authority in the previous investigation that, to the extent that customers use common infrastructure, both new and existing customers should receive the same price signal to review their demand for water. Shared augmentation costs are driven by system-wide demand and all users have the ability to respond, not just the incremental user. It is noted, however, that the ability to respond by some existing industrial users may be more limited than for other existing customers or new users.

In GAWB's case, customer contracts may from time to time constrain GAWB from charging increased costs to existing customers. Over time, as customers' contracts expire, prices would be adjusted to the standard regulatory price.

The Authority notes that, while the general principles are widely accepted, GAWB may find that an appropriate way of managing infrastructure risks associated with new demand is to seek up-front payments, capital contributions, pre-payment of access charges or other commercial arrangements. Such arrangements are not precluded under the Authority's general principles.

Recommendation 10:

The Authority recommends that, as a general principle, the cost of common infrastructure should be allocated to all existing and future new customers.

The Authority notes this does not preclude GAWB from applying commercial arrangements to manage infrastructure risks associated with new demand, in the form of capital contributions, access charges or similar in a manner which does conflict with the overarching principle for the pricing of common infrastructure.

Differentiation by Service Quality

GAWB's existing contracts with customers reflect the 'historic no fail yield' (HNFY) of Awoonga Dam. In response to the Authority's 2005 investigation, the Ministers approved that prices should reflect service quality to the extent this involves cost differentials, and that GAWB should develop full product descriptions for contractual purposes, in conjunction with customers.

Further, the Authority considered that customers should pay prices that reflect their individual risk profiles and required reliability tolerances, and identified a number of relevant issues that could form the basis of commercial negotiations between GAWB and its customers. These included:

- (a) continuity of service, and the level of reserve or back-up supply where system outages or breakages occur, e.g. hours of supply available;
- (b) water quality and level of chemicals in treated water;
- (c) pressure requirements for customers' needs and specialised purposes such as fire-fighting; and
- (d) capacity and time taken to respond to system breakages and failures, such as lightning strikes and pump or pipeline failures.

GAWB's Submission

GAWB submitted that in broad terms, the level of service refers to the ability of GAWB's water supply to meet customers' requirements. GAWB submitted that it has adopted a single level of service objective for water supply that reflects customer requirements for a highly reliable supply.

GAWB stated that its commercial framework includes the use of a standard customer contract that enables customers to tailor their exposure to supply risk. That is, customers are able to set their desired levels of service and appetites for risk by:

- (a) trading their reservations with other customers facilitating the best use of available water;
- (b) proposing demand management measures in times of low storage levels including the potential to sell back a portion or all of their demand to GAWB;
- (c) participating in the process prior to a source augmentation whereby alternative supply solutions and/or demand management measures can be proposed; and

- (d) reducing their reservation levels or terminating supply where a source augmentation option or alternative will result in greater than a 50% price increase to the standard reservation price.

In the absence of such contracts, benchmarks are outlined in GAWB's Strategic Asset Management Plan (SAMP).

Further, GAWB indicated that its base product included:

- (a) the imposition of uniform 10% restrictions, four years from supply failure; and
- (b) conditional upon the receipt of ex ante regulatory approval, the use of the contingent supply strategy to avoid the imposition of emergency restrictions. In the absence of such approval, at six months from supply failure emergency restrictions are declared imposing a 50% supply restriction for Local Government Authority customers and complete cessation of supply for industrial customers.

GAWB stated that reliability of supply is an important issue to customers given the low levels of customer on-site storage, social impacts and the crucial role that water plays in industrial customer processes.

Other Jurisdictions

Water products based on differentiated service quality tend to occur in regions where demand is diversified – i.e. where demand is from irrigation, industrial and urban sectors. High priority water is usually allocated to urban and industry with medium priority assigned to irrigation.

As an example, SunWater provides differentiated entitlements whereby high-priority entitlement holders receive their entitlements in most years (say, 95 out of 100) with low-priority entitlement holders receiving their entitlements in fewer years (say, 40 out of 100). Higher priority water entitlement holders experience a greater benefit from the scheme and, as a consequence, incur greater costs.

Southern Rural Water (SRW) (Victoria) (2007) in its MID 2030 Strategy proposes to adopt the 'opt-in/opt-out' approach for its Macalister Irrigation District. SRW proposes large capital projects to achieve permanent water savings, with existing customers being given first right of refusal for additional volumes, proportional to their current entitlements. Volumes not accepted by customers would be made available in a second round offer to all potential customers (intending or existing entitlement holders) expressing interest in additional volumes. This provides an example of customers only paying for new infrastructure to enhance their own supply security.

SRW's strategy involves some irrigators receiving higher service standards than others. Accordingly, SRW proposes to move to prices differentiated according to service quality, taking account of such factors as flow rate and variability in the ordered flow rate, interval required prior to order delivery, supply pressure for pumpers operating off pipelines and out-of-season requirements.

Stakeholder Submissions

Stakeholders did not provide any comment with regards to service quality standards.

The Authority's Analysis

Given customer concerns arising from the potential costs and the benefits associated with GAWB's contingent supply strategy, the Authority engaged Marsden Jacob Associates (MJA)

to evaluate differential pricing with regards to service standards (focusing on reliability and supply security) within the context of GAWB's supply regime.

Following discussions with GAWB and GAWB's customers, MJA concluded that:

- (a) customers universally require high reliability supplies and, as a result, have no interest in GAWB providing multiple products defined by customers' required levels of service (LOS);
- (b) customers are concerned about the price impacts and timing of decisions associated with the next augmentation. In the event that the price impacts are high, customers indicated that they would examine by-pass opportunities in more detail;
- (c) GAWB's existing water product is not well defined due to a reliance on the HNFY method for establishing system yields. MJA suggested stochastic LOS modelling to provide better information to GAWB and its customers;
- (d) a number of customers have a preference for the 'opt-in/opt-out' model. MJA noted that, if customers are convinced that GAWB's preferred augmentation option is efficient and they are paying for reliability benefits (as opposed to paying for capacity for new customers), they are more likely to opt in; and
- (e) there is limited scope for customers to change the effective reliability characteristics of the Awoonga supply product through trading.

The findings of the MJA review indicate that the level of service quality differentiation between GAWB's customers is narrower than that apparent in irrigation supply schemes, where differentiated products are widely accepted.

However, the Authority notes that, in contrast to the overall findings of MJA, MJA's analysis did indicate that some customers would consider trading small volumes of their allocations, while other customers had some interest in buying allocations to restrict the impact of restrictions. This implies marginal differences between the levels of service desired by customers.

The Authority also notes that, in the past, residential customers were able to adopt greater restrictions in supply for protracted periods and potentially should be compensated in terms of lower prices. In this regard, it is likely that residential customers can absorb a higher level of restriction than the 10% level nominated in the Drought Management Plan (DMP).

However, despite these observations, it is noted that GRC on behalf of residential customers did not avail themselves of trading and curtailment opportunities during the recent drought event.

In the absence of any stated preferences relating to differential qualities of products, the Authority notes that the 'opt-in/opt-out' approach is favoured by some customers as a basis for establishing a differential cost/reliability product where different products reflect access to different supply sources.

This approach requires that GAWB provide indicative pricing implications for the alternative supply options, to enable customers to reassess their by-pass options and/or demand management strategies. This issue is largely being dealt with under the Authority's current Contingent Supply Strategy investigation.

Recommendation 11:

The Authority recommends that, as a general principle, prices should reflect service quality to the extent this involves cost differentials. GAWB should continue to monitor customer demand for the scope for water supply products to be differentiated on the basis of reliability, including through an ‘opt-in/opt-out’ approach where additional supply can be provided from new sources.

Differentiation by Contract Length

In response to the Authority’s 2005 investigation, the Ministers supported price differentiation on the basis of contract length, where there are differences in identifiable risks and costs, as part of the commercial process.

GAWB’s Submission

GAWB proposed to apply a price differentiation surcharge to short-term contracts for the supply of its reservation and storage and delivery products from 1 July 2010. GAWB defines a short term contract as one which has an original term of less than two years, with a sliding scale up to 20 years.

GAWB submitted that, in the event that all customers required very short term contracts, GAWB would incur higher costs associated with financing, contracting costs and sub-optimal network capacity expenditure. In the absence of longer term demand signals, GAWB may over- or under-develop parts of its network, leading to poor asset utilisation and/or the need for expensive ‘catch-up’ investments. GAWB also cited the hazard of opportunistic counterparty behaviour, where once infrastructure is established, the customer attempts to negotiate subsequent supply at lower than the average cost of supply.

GAWB identified the high concentration of its demand in a relatively small number of non-municipal customers as a risk to the security of its long run operations.

As a result, GAWB proposed that all contracts that have an original term of 20 years or more will not be subject to the short duration surcharge regardless of the remaining term of the contract.

GAWB submitted that a surcharge apply to compensate GAWB for potential costs which would progressively decrease as the length of the contract commitment approaches 20 years (see Table 4.1). In a supplementary submission, GAWB advised that the surcharges would be based on the original contract terms, not the remaining term of contracts.

Table 4.1: GAWB's Proposed Surcharges for Contract Duration

	<i>Less than 2 years</i>	<i>2 to 5 years</i>	<i>5 to 10 years</i>	<i>10 to 15 years</i>	<i>15 to 20 years</i>
Surcharge	25%	20%	10%	5%	3%

GAWB noted that, in retail markets, there are many instances where customers receive a discount if they lock-in to a future contract for a product or service. Common examples include:

- (a) electricity and gas retailing (on the beginning of retail competition in the National Electricity Market (NEM), retail customers could achieve 5% to 20% savings on the default tariff by signing a multi-year contract); and
- (b) telecommunications contracts (toll, data and mobile services are typically offered at a higher price for casual use than for long-duration contracts).

The service provider's benefits from long-duration contracts arise because certainty of demand helps the service provider to plan (operationally, financially and strategically) and purchase more effectively.

GAWB submitted that, under its proposed revenue cap, any over-recovery of target revenue would be returned to customers through lower prices in future years.

In a supplementary submission to the Authority in response to stakeholder comments, GAWB noted that there may be situations where waiving the surcharge may be in the best interests of GAWB and its customers. GAWB submitted that the current regulatory framework is consistent with commercial practices in that the Authority recommends pricing practices for setting maximum prices and there is nothing to prevent GAWB setting a lower price in exceptional circumstances.

Stakeholder Submissions

CS Energy submitted that it agrees with GAWB's view that long term customers should obtain a price benefit over short term customers. However, CS Energy noted that there may be occasions where it is commercially sensible for GAWB (and is therefore beneficial for its other customers) to provide water for a short term project at a price that covers variable costs plus a small margin.

Further, CS Energy submitted that there should be no surcharge for contracts in excess of seven years.

CPM sought clarification of GAWB's statement that "a short term contract is one which has an original term from less than two years to 20 years". CPM interpreted the statement to mean that current contracts which initially had a term of 20 years or more, but where the remaining contract term is less than 20 years, would not be considered a short term contract.

Further, CPM stated that many of GAWB's customers initially would have executed such long term agreements, and the benefit to GAWB of this should be recognised. In addition, CPM submitted that it was unrealistic to expect customers to maintain 'evergreen' 20-year agreements to avoid any price surcharge.

[GAWB has since indicated that the original term of a contract would be used to determine the appropriate surcharge].

QER submitted that, while it would be appropriate to have a surcharge mechanism based on contract length, there needs to be further validation of the proposed rationale and price surcharge premiums before adoption. Further, QER stated that, given the lack of evidence provided, it is debateable as to the justification for the levels of price surcharge and it could be construed as price gouging, as any over target recovery would only be returned to customers in future years.

For example, QER stated that an un-contracted small volume and short run customer of industrial raw water should not bear the significant price surcharge of 25% when there is residual oversupply (as presently prevails) and the supply is physically able to be provided within the existing operating cost parameters and without any capacity expenditure.

QER also submitted that it does not support GAWB's proposed method for setting the surcharge with regards to contract length. QER suggested that GAWB should further review and justify the mechanism and the levels of surcharge. QER submitted that some of GAWB's perceived risk and administrative costs could be recovered from a proportionately returnable deposit which is cost reflective of the costs borne to GAWB.

GRC submitted that, in principle, they would support the proposal to include a price surcharge based on the current contract and the length of the contract. However, GRC stated that it would appear that GAWB has done very little to negotiate new contracts with their long term customers whose previous contracts have lapsed. GRC noted that a number of issues need to be resolved prior to it entering a new contract. GRC submitted that it could be argued that GAWB is coercing customers to sign a contract or face the consequences of significantly higher water prices.

NRG submitted that contracts with an original term greater than 20 years be allocated 0% surcharge throughout the entire term of the contract.

RTA submitted that it supports a mechanism that differentiates water costs according to contract term. However, RTA stated that GAWB's proposed price differentiation surcharge method should be structured as a discount for long term contracts as opposed to a premium for shorter term contracts. Further, RTA stated that a surcharge style structure may just invite new costs to accommodate short term contract flexibility.

While acknowledging the difficulties associated with determining the appropriate surcharge or discount, RTA submitted that the quantum of the price discount over longer terms requires further examination.

RTA also submitted that GAWB has not explained how price differentiation may work under a price cap regulatory framework without causing an over-recovery of regulated revenue. RTA requested more information on this issue be provided by GAWB.

The Authority's Analysis

The establishment of long-term contracts is a well accepted mechanism for managing demand risk in network industries where capital is large and lumpy, particularly where there are relatively few buyers. Discounts to customers that enter into long-term commercial arrangements reflect the decline in risk as a result of the long-term contractual arrangement.

GAWB's proposal involves a surcharge on short term contracts rather than a discount for long term contracts. In advice to the Authority, Frontier advised that, in considering such a surcharge, the Authority would need to be satisfied that current prices or contracts do not already include an allowance for demand risks. The Authority would need to consider the level of risk accounted for by other contractual arrangements, such as early termination provisions, take-or-pay clauses and upfront funding.

Frontier also noted that GAWB's proposed surcharge makes no reference to the relative size of a customer's consumption or to the degree of asset specificity associated with a customer. Both size and specificity affect the level of risk associated with particular customers. Frontier further noted that prices should reflect the efficient costs of providing services. Frontier also noted that it is common practice to provide discounts to customers that enter into long term contractual arrangements for the provision of services.

Overall, the Authority considers that:

- (a) given the lumpiness of demand and supply, long term contracts form an appropriate basis for infrastructure and operational planning for GAWB;
- (b) under current circumstances where there is excess capacity and contracts are lapsing, there is little incentive for companies to seek to reach agreement on contracts which provide the necessary certainty to GAWB;
- (c) the opportunity may exist for GAWB to allow a discount in certain commercial circumstances such as that noted by CS Energy. GAWB confirmed this view in its supplementary submission; and
- (d) the term of the contract used for the purposes of determining any discounts should be the original term, not the remaining term, as to do otherwise would imply a changing discount over time (administratively difficult) . GAWB agreed that the original term is more relevant in its supplementary submission to the Authority.

At the same time, the Authority notes that:

- (a) GAWB's proposal for a 25% premium has not been justified relative to identifiable costs;
- (b) a graded scale, reducing over time, may be unduly complex and a flat rate may be appropriate;
- (c) the surcharge should be applied to any contracts under 20 years as such a term would seem to align with reasonable planning requirements of the predominant industrial customers and GRC, and GAWB's planning period; and
- (d) any revenues gained from this surcharge that exceed additional previously unexpected costs should be taken into account in setting prices for the next regulatory period (or the next year in the case of a revenue cap).

Recommendation 12:

The Authority recommends that:

- (a) GAWB provide justification for the proposed level of the surcharge, with reference to the costs/risks likely to be incurred as a result of shorter contract terms; and**
 - (b) any revenues gained from this surcharge that exceed additional previously unexpected costs should be taken into account in setting future prices.**
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4.7 Contributed Assets

Contributed assets are those assets that are funded or otherwise provided by a water user, or group of users, for their own benefit, or for the collective benefit of water users associated with a particular supply system.

Recognition of past contributions for pricing purposes is justified on equity and efficiency grounds in that future investment could be discouraged if those waters users who make capital contributions do not receive a benefit proportionate to their contributions.

The Authority has previously (2005) concluded that:

- (a) contributed assets should be recognised where there is appropriate evidence of a contractual or policy nature, and provided the contribution is not a prepayment for services, has not been fully repaid or rebated, and the associated assets have not expired or have been replaced at the service provider's expense;
- (b) where contributed assets are recognised, they should be included in the asset base for the purpose of determining the revenue requirement and prices, with an appropriate rebate provided to the customer(s) making the contributions;
- (c) unless otherwise specified, rebates for future contributed assets should include return-on-capital and return-of-capital components, provided their contribution was intended to reduce prices in this manner;
- (d) in some circumstances, particularly where contracts stipulate, the rebate may be equal to the return-on-capital component only; and
- (e) where the capital contribution attracts a tax liability, this would be included in customers' charges.

GAWB's Submission

GAWB proposed a principle-based capital contribution framework, to provide clarity to its customers regarding the treatment of past and future capital contributions. The framework proposed no changes to the way in which pricing benefits are calculated for past capital contributions. This involves a DORC valuation of the contributed asset with rebates based on return of capital and return on capital, unless otherwise specified in a contract. However, GAWB proposed to revise the pricing benefits for the original capital contributing customer to the extent it is required due to a change in circumstances (such as the asset being used by another customer).

Further, GAWB stated that, in the event that a new customer begins using a contributed asset, GAWB would consider:

- (a) refunding the entire capital contribution amount, or any part thereof, to the original capital contributing customer. GAWB would not seek any capital contribution from the new customer;
- (b) seeking a capital contribution from the new customer and using some or all of this contribution to refund the entire capital contribution amount, or any part thereof, to the original capital contributing customer; and/or
- (c) not returning any amount to the original capital contributing customer. This option would only be pursued if it can be demonstrated that there was no detrimental impact to the agreed pricing benefit owed to the original capital contributing customer.

Irrespective of how GAWB proceeds in this circumstance, GAWB has proposed to ensure that:

- (a) the value owed to the original capital contributing party is preserved, with reference to the calculation methodology of the current pricing benefit; and
- (b) the rebate provided to a customer is no greater than the return-on-capital and, if appropriate, return-of-capital components of the price.

With regards to new capital, GAWB stated that it may seek capital contributions from customers in order to manage the risks associated with construction of significant new infrastructure. At the time a new capital contribution is made, contributed network assets must

be identified by GAWB as a dedicated connection asset, an extension asset or a shared network asset.

For new capital contributions, GAWB proposed to use a pricing agreement to explicitly state:

- (a) whether a pricing benefit is appropriate;
- (b) the quantum of the pricing benefit and how it will be calculated over the life of the contributed asset; and
- (c) the arrangements that will apply in the event a contributed asset is subsequently used by other customers.

Stakeholder Submissions

QER supported GAWB's proposed framework for the treatment of past and future capital contributions.

The Authority's Analysis

The Authority agrees with GAWB's proposed framework to revise the pricing benefits for the original capital contributing customer to the extent that it is required due to a change in circumstances. The Authority considers that, where agreements in regard to capital contributions are renegotiated between GAWB and its customers, this would be treated as a commercial arrangement and would be recognised for pricing purposes.

Regarding new capital contributions, the Authority agrees with GAWB's proposed principles to the extent that they comply with the Authority's previous recommendation on contributed assets. In particular, the Authority considers that the rebate must include both the return on and return of capital.

Where other customers use assets contributed by another customer, GAWB should ensure that the price paid by the customer includes recovery of a return on and of capital in respect of the assets contributed by the other customer.

In summary, the Authority accepts GAWB proposed framework on the treatment of past and future capital contributions.

Recommendation 13:

In relation to contributed assets, the Authority recommends no change to its previous statement of pricing principles in that:

- (a) contributed assets should be recognised where there is appropriate evidence of a contractual or policy nature, and provided the contribution is not a prepayment for services, has not been fully repaid or rebated, and the associated assets have not expired or have been replaced at the service provider's expense; and**
- (b) where contributed assets are recognised, they should be included in the asset base for the purpose of determining the revenue requirement and prices with an appropriate rebate provided to the customer(s) making the contribution.**

The Authority further recommends that GAWB's proposals to the following effect be adopted:

- (a) unless otherwise agreed with the contributor, rebates for future contributed assets should include return-on-capital and return-of-capital components, provided their contribution was intended to reduce prices in this manner;**
- (b) in some circumstances, particularly where contracts stipulate, the rebate may be equal to the return on capital component only;**
- (c) where the capital contribution attracts a tax liability, this would be included in customers' charges; and**
- (d) where customers use assets contributed by another customer, GAWB should ensure that the price paid by that customer includes recovery of a return on and of capital in respect of the assets contributed by the other customer.**

4.8 Pricing for Drought Circumstances

A key issue in terms of the pricing framework is what costs (if any) of drought management should be included in prices, particularly whether forgone revenues arising from supply restrictions should be included.

In response to the Authority's 2005 investigation, Ministers approved that GAWB is entitled to pass on the cost of managing this risk to customers. The Authority noted that, if GAWB is not compensated for prudent drought supply restrictions, there is no incentive for GAWB to apply such restrictions in order to prolong supplies for the benefit of customers. Furthermore, without compensation for revenues lost through supply restrictions, GAWB would not achieve its expected return on its investment over time.

The Authority recommended that:

- (a) prices should incorporate the costs of investment, operational and managerial responses where:**
 - (i) the risk is commercially relevant;**
 - (ii) GAWB has acted prudently and could not have acted any earlier to address the risk at lower cost;**
 - (iii) GAWB is the most appropriate party to bear the risk; and**

- (iv) the response is cost-effective;
- (b) higher prices are justifiable during droughts to promote efficient water use; and
- (c) until GAWB releases its DMP, no provision be provided in prices for related costs.

The Authority also indicated that prices in excess of full cost recovery could be imposed in the short term to reflect scarcity values and to ensure that available supplies are allocated efficiently.

GAWB's Submission

While GAWB did not comment on pricing for drought, its proposal for a revenue cap would allow revenue foregone when drought supply restrictions are applied to be recovered. A revenue cap would however not compensate GAWB for drought related costs as alluded to in paragraph (a) above. GAWB did, however, comment on the merits of using scarcity pricing as an alternative to water restrictions during times of drought.

GAWB questioned the benefits of using scarcity pricing and concluded that it did not consider scarcity pricing an appropriate option for bulk water supply in the Gladstone region. In support of this position, GAWB noted that:

- (a) more than 80% of water supplied by GAWB is used by industrial customers who have a uniformly highly inelastic demand in the short run. Water forms a small part of input costs for these customers and the price of water would have to increase significantly (perhaps 10 to 20 times the current price) to obtain a significant short run demand response;
- (b) if customers expected very high prices to persist for several years, they could individually or collectively bypass the system. While such a sustained price rise would be a significant burden on the municipal customers, it may result in some of the larger customers bypassing GAWB's supply by investing in supply alternatives; and
- (c) to its knowledge, no other bulk water supplier had implemented scarcity pricing in Australia. GAWB suggested that any move to scarcity pricing would be at least five years away in practice.

GAWB stated that its commercial framework allows customers to trade water reservations at any time, thereby providing a mechanism to overcome the potential inefficiencies caused by mandatory water restrictions. However, GAWB's industrial customers may be unwilling to forego water reservations during drought periods.

Further, GAWB stated that its commercial framework includes a detailed mechanism to ensure that, if an augmentation is deemed necessary, it is the least cost option and customers are willing to pay the higher price of water following the augmentation. GAWB noted that, unlike other water providers that typically have thousands of residential customers, GAWB has a small number of large customers and is able to communicate directly with them regarding the level of service they prefer, the values they place on reliability and their willingness to pay for an augmentation.

Further, GAWB stated that its commercial framework is appropriately tailored to its customers and supply environment. GAWB believes that the Contingent Supply Strategy, which provides a 'historic no fail' supply at the least cost, best meets its customers' needs of a stable and predictable water supply. Scarcity pricing may deliver some customers uninterrupted supply but only at very high prices. According to GAWB, it is also not clear that scarcity pricing could

be sufficiently predictable in the sense that the price of water in two years time could be reasonably certain.

Other Jurisdictions

ERA (2009) recently recommended the adoption of LRMC pricing for long term management of supply and demand and to reflect the relative scarcity of water. However, due to practical difficulties such as complex tariff structures and changing household preferences over time of various pricing mechanisms, ERA subsequently recommended the use of water restrictions to balance supply and demand in the short run.

In its 2009 price review of Sydney Catchment Authority (SCA), IPART highlighted the benefits of prices reflecting their relative scarcity or value and subsequently indicated that it was interested in potentially introducing a form of scarcity pricing as part of its 2012 price determination. IPART prefers a form of scarcity pricing that complements, rather than replaces, the water restriction regime. Further, IPART favours a scarcity pricing model that protects non-discretionary levels of water consumption from large price rises – if variations in SCA's prices are passed through to Sydney Water's retail customers.

The ESC noted (2009) that, because of relatively inelastic demand for water, restrictions were likely to be more effective than price at managing short term supply shortages.

Scarcity charges are in use in some States of the USA. For example, Denver Water applies short term surcharges to increase water prices during droughts to raise awareness of the value of water and to reduce water use. These surcharges, also in use in California and Nevada, are complemented by supply restrictions.

Stakeholders Submissions

QER supported GAWB's proposal to exclude scarcity pricing at this stage.

The Authority's Analysis

Under the current DMP, GAWB proposes to apply restrictions of 10% four years before projected dam failure based on demand forecasts and minimal inflows. Where there is only six months supply remaining, all non-municipal customers will have no access to water and municipal customers will have 50% restrictions.

A scarcity charging approach would require prices to be set to achieve a 10% overall reduction in demand, without imposing supply restrictions. Some customers may be able to reduce demand by more than 10% in response to the scarcity price while others may choose to maintain demand levels.

With a small number of customers, GAWB can communicate directly with customers and undertake studies of the likely demand responses (price elasticity of demand) and determine the required scarcity charges.

However, a drawback evident in applying scarcity pricing for GAWB is that, as noted by GAWB, the price elasticity of demand of large industrial customers is low and the price of water may have to increase substantially to have the desired effect of reducing the demand for water.

Evidence that GAWB's customers may not respond to scarcity prices is apparent in the lack of interest in the options of curtailment of demand or trading that are already available to customers. According to GAWB, its industrial customers have expressed that they would prefer a supply augmentation rather than a reduction in demand.

The Authority considers that some customers may be able to respond more effectively than others (GRC for example) and, given an appropriate price incentive, would be willing to do so. If so, this would reduce the pressures of restrictions on other customers with less elastic demand. The Authority acknowledges, however, that in GAWB's circumstances, scarcity charges are likely to be appropriate as a complement to supply restrictions rather than a substitute.

The Authority is aware that scarcity pricing as a substitute for short-term supply restrictions has not been implemented in Australian jurisdictions. Nevertheless, the Authority agrees with the National Water Commission's view that scarcity charges should be examined for future application.

In the interim, the Authority recommends that, during periods of supply restrictions under GAWB's DMP, the volumetric tariffs should be adjusted to recoup foregone revenues and any efficient drought related costs incurred that were not already incorporated in prices. Hence, when supply restrictions of 10% are applied, the volumetric charges for storage and delivery services should be increased by at least 11% (1/0.9). This approach ensures that the revenue risk associated with drought is not borne by GAWB. A necessary pre-condition of this arrangement is that GAWB's DMP is developed following a detailed consultation process with customers.

Recommendation 14:**The Authority recommends:**

- (a) no change to the current pricing principle that the direct costs of GAWB's drought contingencies should be included in the revenue requirement as they represent a real cost to GAWB, provided the risks to which they relate are commercially relevant, GAWB has acted prudently and is the most appropriate party to bear the risk and the response is cost-effective;**
 - (b) scarcity pricing not be considered at this time but that GAWB should re-evaluate the potential for scarcity pricing in future; and**
 - (c) when supply restrictions are triggered, the volumetric charge for storage and delivery services be adjusted to maintain revenues for GAWB and to recoup any efficient drought related costs incurred that were not already incorporated in prices.**
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4.9 Counterparty Risk

In response to the Authority's 2005 investigation, Ministers approved that GAWB's proposal for price differentiation to reflect counterparty risk negotiated on an individual customer basis was acceptable as it reflected established commercial practices. The Authority had recommended that price differentiation on the basis of credit risk and other differences was appropriate to the extent that the proposed response was commensurate with the cost/risk of service provision.

GAWB's Submission

GAWB identified two forms of counterparty risk – credit risk and contract default risk. GAWB stated that counterparty credit risk is the risk that GAWB will not recover payment for water already supplied to a customer, while default risk refers to the risk that GAWB cannot recover revenue from an insolvent customer.

In regard to credit risk, GAWB proposed that, if a customer does not have a credit rating of BBB or better and is not a subsidiary of a company with credit rating BBB or better, the customer must provide GAWB with:

- (a) a guarantee of payment from a related company with a credit rating BBB or better; or
- (b) a bank guarantee for payment of three months' water charges.

GAWB therefore does not propose to introduce price differentiation surcharges for counterparty credit risk.

In the case of default risk, GAWB proposed that, under a revenue cap, the lost revenue would be recovered from remaining customers by raising the price to ensure that GAWB does not suffer any loss. GAWB stated that it would not introduce price differentiation surcharges for counterparty contract default risk under revenue cap regulation.

Under the current price cap regime, however, GAWB would have to forgo the revenue from an insolvent customer as it would not be able to raise prices above a certain level. To counteract this, GAWB proposed a self-insurance premium to cover the risk of counterparty insolvency and loss of revenue unable to be recovered through the regulatory framework.

Stakeholder Submissions

QER supported GAWB recovering some of its administrative costs from a proportionately returnable deposit which is reflective of the costs borne by GAWB. QER state that this would go some way towards supporting GAWB's proposal regarding managing default risk.

The Authority's Analysis

The Authority notes that guarantees for payments reflect established commercial practices to dealing with potential credit risk. The Authority accepts that there may be circumstances where such action is appropriate, to ensure that the expected costs of providing services are recovered.

However, the Authority does not agree with GAWB's proposal that lost revenue (from a counterparty becoming insolvent) should be recovered from GAWB's other customers. The Authority also does not agree with the principle that existing customers should pay a penalty for a separate customer being unable to pay GAWB for its water consumption. This is a matter to be resolved solely between GAWB and the customer. This is a risk which is within GAWB's control.

GAWB's proposals for self-insurance are reviewed in Chapter 9.

Recommendation 15:

In relation to counterparty risk, the Authority recommends that:

- (a) **price differentiation on the basis of credit risk is appropriate to the extent that the proposed response is commensurate with the cost/risk of the service provision; and**
 - (b) **loss of revenue resulting from a counterparty becoming insolvent should not be recovered from existing customers. The risk of counterparty default can be commercially managed by appropriate contractual arrangements within GAWB's control.**
-

5. GAWB'S WATER SUPPLY AND DEMAND

5.1 Introduction

Historically, estimates of the supply capability of the main water source, Awoonga Dam, have been overestimated with successive downgrades in yield. Moreover, demand has also been typically over-estimated, with a number of anticipated projects, and associated demand for water, not being realised. The downgrades of demand and supply have not necessarily occurred in a synchronised manner.

5.2 Supply

Supply is a key variable as it defines the level of capacity available for future growth and, together with demand, defines the timing of supply augmentations.

GAWB presently sources all of its water from the Awoonga Dam which, following an augmentation in 2000-02, has a storage capacity of approximately 770,000ML.

The total allowable yield from Awoonga Dam is based on an estimate of HNFY. This amount represents the maximum annual supply available for extraction on a sustainable basis.

For Awoonga Dam, the HNFY is based on a computer simulation using historical monthly rainfall and estimated monthly flows in the Boyne River since 1891. The HNFY is the volume of water delivered annually by the Dam with near 100% monthly reliability over this historical period.

However, HNFY does not represent 100% daily reliability of supply as there may be periods within a month where inflows are insufficient to meet an average daily yield. Further, as HNFY is historically based, it will change over time in response to changing rainfall patterns.

Under the *Water Resource (Boyne River Basin) Plan (WRP) 2000*, GAWB is notionally restricted to a yield of 78,000ML per year from the Awoonga Dam. However, the *Boyne River Basin Resource Operations Plan (ROP) 2003* stipulates that, until the Dam has filled to its new full supply level (FSL) of 40m, GAWB may only commit to future water supplies of an amount determined by the Chief Executive of the Department of Natural Resources and Mines (DNRM) (now Department of Environment and Resource Management (DERM)), currently 70,000ML.

GAWB's Submission

GAWB has not proposed any change to water supply estimates. However, GAWB submitted that, as the HNFY of Awoonga Dam has been reduced over the past two decades, future severe droughts may further reduce the water volumes that can be delivered from current infrastructure. In its pricing modelling, GAWB has applied the current supply limit of 70,000ML per year.

Stakeholder Submission

No stakeholder comments were received in relation to water supply estimates.

The Authority's Analysis

Since the last investigation, GAWB experienced drought conditions which ended in February 2008 with major inflows then boosting Awoonga Dam's storage level from about 36% to 59%. Furthermore, as of 18 March 2010, dam levels stood at 711,000ML or 91.5% of capacity.

The Authority also notes that there is the possibility that the Awoonga Dam hydrology may be revised in future years. However, the direction of such change cannot be predicted and it is appropriate that it be incorporated in price modelling on an ex post basis.

Nevertheless, in the light of the most recent increases in rainfall, which mean that GAWB has almost 10 years of supply¹, the Authority considers it reasonable to expect that the restrictions imposed by the Chief Executive of DERM will be removed and that a HNFY of 78,000ML per year will be appropriate for pricing purposes, consistent with GAWB's Strategic Water Plan.

Recommendation 16:

The Authority recommends that planning and prices for services provided by Awoonga Dam be based on a HNFY of 78,000ML.

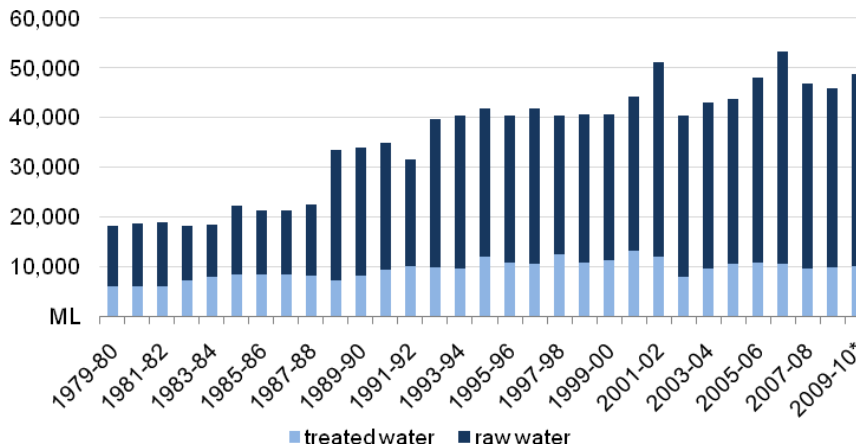
5.3 Demand

Historical Water Demand

Between 1978-79 and 2001-02, the demand for water in Gladstone more than trebled, rising from approximately 16,500ML to 51,000ML (Figure 5.1). The majority of this increase was in the demand for raw water, which rose from 10,800ML to 39,100ML. In comparison, demand for treated water rose from 5,700ML to 12,100ML over the period.

This growth was driven by major project developments, including the Callide B power station in 1988 which underwent further expansion in 2001. More recently, Stage 1 of Rio Tinto's Yarwun alumina refinery boosted demand for raw water.

Figure 5.1: GAWB's water demand, 1978-79 to 2009-10 (ML/year)



* estimate for 2009-10 (GAWB)

The 2005 Investigation

In the 2005 investigation, the Authority noted the nature of GAWB's commercial environment, in which there are relatively few customers, lumpy demand increments and a large sunk investment cost in infrastructure.

¹ This estimate is based on current demand forecasts and assumes inflows will offset evaporative losses and environmental releases.

The Authority also observed a past propensity for optimistic demand forecasts, further noting that forecasts based on estimates of likely demand independent of contracts with customers would provide a poor basis for future planning. The Authority concluded that, in regard to demand forecast risk, customers are best placed to assess their own demand.

Accordingly, estimates of demand adopted by the Authority would be those that reflected the most likely amount customers could be expected to contract. To ensure that only demand which could be reasonably expected to be contracted was incorporated in demand forecasts, the Authority engaged independent consultants.

However, the Authority also accepted GAWB's proposal to incorporate a volume of demand to allow for 'undetermined' projects. An additional 300ML was incorporated in 2013-14, increasing annually by 300ML per year to 3,600ML in 2024-25. The Authority noted that, under the proposed pricing framework, GAWB would be responsible for the commercial risks of incorporating unrealised demand.

GAWB subsequently adopted the Authority's forecast in determining its prices over the 2005-10 period.

GAWB's Submission

GAWB submitted that the demand forecast adopted for pricing purposes in the 2005 review overestimated demand over the five-year regulatory period (Table 5.1). This was due to shortfalls in the uncertain demand component (new customers and new projects by existing customers), and variations or reductions in existing customer demand.

Table 5.1 shows GAWB's own forecast from 2005, the Authority's forecast, and actual demand.

Table 5.1: Comparison of 2005 Demand Forecasts with Actual Demand (ML/year)

<i>Demand (ML/year)</i>	<i>2005-06</i>	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>
GAWB 2005 forecast	46,462	51,128	52,522	57,639	62,790
QCA 2005 forecast	47,606	48,807	49,606	52,764	58,177
Actual demand	48,204	53,313	46,970	45,867	49,662*
Difference (GAWB forecast and actual demand)	-1,742	-2,185	5,552	11,772	13,128
Difference (QCA forecast and actual demand)	-598	-4,506	2,936	6,897	8,515

* estimate for 2009-10 (GAWB)

For the 2010-15 regulatory period, GAWB proposed a demand forecasting regime that uses different demand forecasts for specific purposes. These are:

- (a) 'Base case' demand – to be used for determining capital works expenditure (including source augmentation), price setting and revenue forecasting. Base case demand comprises demand from existing customers which is highly certain and underpinned by customer contracts. For existing customers not signed to long term contracts, GAWB

proposed to use current and historical demand, customer sourced forecasts and external information to derive a forecast of demand;

- (b) 'Upper bound' demand – to be used for defining the capacity capable of deployment within a defined timeframe under the contingent supply strategy (CSS). Upper bound demand comprises base case demand and uncertain, but sufficiently credible, demand for industrial projects that have been the subject of substantial pre-feasibility expenditure (in excess of \$10 million) and are well progressed towards receiving all necessary government approvals; and
- (c) 'Potential' demand – to be used for long term planning purposes. Potential demand comprises upper bound demand and demand for projects where the proponent has made direct contact with GAWB (or indirect contact through government) seeking an indication that GAWB could meet its water requirements.

The base case demand forecast submitted by GAWB was comprised two parts: the next regulatory period (2010-11 to 2014-15) and the remainder of the planning period (2015-16 to 2029-30).

For the forthcoming regulatory period, GAWB proposed that forecast demand be based solely on contracted demand from existing customers or expected demand for existing customers not signed to long-term contracts. A growth trend for GRC was incorporated to account for expected increases in urban demand due to population growth.

To account for possible changes by mid-2010, GAWB also submitted two alternative base case demand scenarios which included some possible new demand identified in its 'upper bound' demand forecasts. These are:

- (a) Scenario 1 – incorporates the base case demand and additional demand from current customers who have discussed their requirement with GAWB and are well advanced in negotiations towards securing this demand (by 30 April 2010) through a long term water supply contract; and
- (b) Scenario 2 – incorporates demand from Scenario 1 and demand from two projects where publically available information suggests the financial close will be reached within the coming months.

GAWB applied the alternative scenarios in sensitivity tests of the pricing implications of its proposals.

The current base case demand forecast and the two alternative scenarios submitted by GAWB for the next regulatory period are summarised in Table 5.2.

Table 5.2: GAWB's proposed base case demand forecasts (ML/year)

<i>Base case demand</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>
Current estimate	48,923	49,128	49,338	49,553	49,772
Scenario 1	55,895	56,100	56,522	57,337	57,556
Scenario 2	58,391	59,428	61,867	63,514	63,733

For the remainder of the planning period (2015-16 to 2029-30), demand from existing customers was forecast on the basis of contracted or expected volumes.

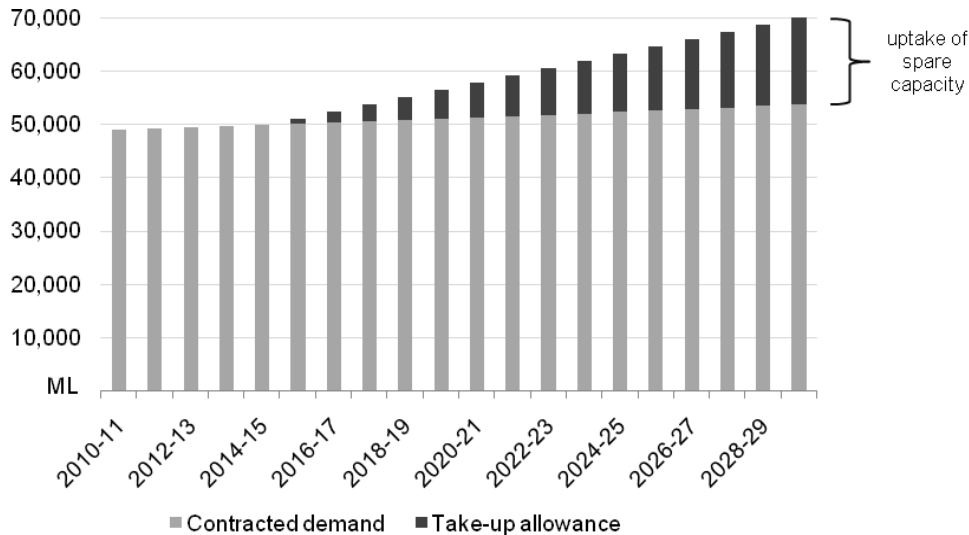
Hence, for years six to 20 of the planning period, GAWB proposed to set an aggregate demand forecast for 'future industrial growth' which assumes that existing spare capacity is fully utilised by 2029-30. Based on the current interim yield of 70,000ML, this is achieved by including an annual incremental take-up allowance for raw and treated water combined of 1084ML.

In adopting this approach, GAWB noted that the 'spare capacity take-up allowance' was not an attempt to predict future demand, but rather a mechanism to equitably assign the cost of spare capacity in Awoonga Dam between existing and future users.

GAWB has advised that, should the HNFY be revised, GAWB's end-point demand forecast would also be revised.

GAWB's current base case demand forecast for contracted demand, along with the uptake of spare capacity by future industrial growth, is shown in Figure 5.2.

Figure 5.2: GAWB's Base Case Demand Forecast (ML/year)



GAWB engaged NERA Economic Consulting (NERA) to review its proposed demand forecasting approach.

NERA concluded that the proposed approach for forecasting demand in the 2016-30 period is consistent with the Authority's original objectives for the 20-year planning period, and the desirability of spreading the cost of today's excess capacity so that it is shared with future anticipated customers.

NERA supported setting an aggregate demand forecast for 2016-2030 that assumed the entirety of GAWB's existing spare capacity was fully utilised by the end of the planning period.

Stakeholder Submissions

QER supported GAWB's demand forecast methodology given GAWB's customer base and future augmentation planning.

CSE submitted that GAWB has relatively few customers, who have reasonably stable annual requirements. This should allow a very high degree of accuracy in forecasting and provide less divergence between projected and actual off-take in a year. However, CSE was concerned that potential customers are able to make imprecise projections of water needs since they are not bearing any cost if they don't proceed. CSE submitted that 50,000ML a year is a realistic forecast for demand.

CPM noted that GAWB has undertaken significant storage augmentation in the past decade, yet subsequent demand has been much lower than anticipated, CPM submitted that they are not supportive of GAWB's conservative base case demand scenario as it will result in existing customers continuing to pay for spare capacity that will only benefit future prospective users.

GRC submitted that previously GAWB has overstated forecast demand. GRC proposed that future demand projections need to include some level of contingency but, in reality, only a small percentage of possible projects will ever reach fruition.

QAL submitted that, given the industrial growth prospects for Gladstone, any demand forecast approved by the Authority should include a component for future growth to ensure price is more equitably shared between current and future users.

RTA submitted that demand forecasting is a critical element of the service provided by GAWB. RTA encouraged greater transparency on the key assumptions on which demand forecasts are formulated. RTA submitted that GAWB's demand scenario 2 (Table 5.2) appears to include all known information about demand increases and is within 1% of the start and end points of the Authority's 2005 demand projections for 2009-10 and 2014-15.

Therefore, RTA recommended that the Authority maintain the 2005 demand forecasts in the absence of any independent assessment showing a different demand forecast. RTA submitted that, should the Authority decide to update their 2005 demand forecasts, it should be based on Authority-procured independent advice, similar to the process undertaken in 2005.

The Authority's Analysis

Review of the 2005 Forecast

As noted above, the Authority's methodology for demand forecasting established in the 2005 investigation was based on estimating anticipated contracted demand and including a component for uncertain demand as nominated by GAWB.

The adopted 2005 forecasts underestimated demand in the first two years and over-estimated demand in the last three years (Table 5.1). Demand in 2006-07 was higher than forecast largely due to the unexpected requirements of one of GAWB's customers. Lower than expected demand in the later years was due to:

- (a) new customer demand that did not eventuate or was deferred, some [perhaps most] of which was due to the global financial crisis and its effect on commodities markets and the financing sector (about 75% by revenue of the reduction);
- (b) reduced demand from Councils, particularly the then Calliope Shire Council. This may have been due to the low supply alert triggered in 2007-08, and may also reflect price increases for bulk treated water arising from the previous review; and
- (c) reduced demand from some existing customers, likely due to the low supply alert in 2007-08, or for customer-specific reasons.

Forecasts for 2010-30 Planning Period

For the 2010-30 planning period, GAWB's proposed base case demand forecast incorporates:

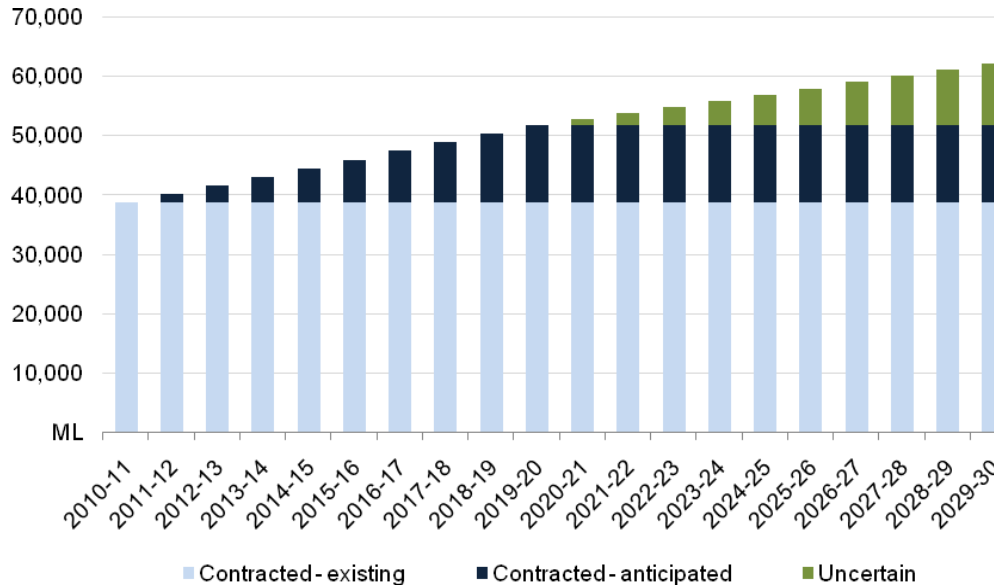
- (a) contracted demand by existing raw water customers;
- (b) a component for long term uncertain demand growth for raw water from 2015 to 2030. GAWB's end-point demand growth in 2029-30 is currently set by the interim HNFY of 70,000ML; and
- (c) an annual increase in treated water demand in line with expected population growth.

The Authority has reviewed GAWB's forecast for raw water demand and notes that:

- (a) GAWB's anticipated raw water contracted demand is essentially flat over the 2010-15 period. However, based on consultations with GAWB's customers, the Authority identified current contracted raw water demand and estimated likely new raw water demand from new projects that are anticipated to be contracted over the 10 years to 2019-20. Based on this information, raw water demand should reach 51,726ML per year by 2019-20 (Table 5.3). However, for confidentiality reasons, the Authority cannot identify specific projects;
- (b) GAWB's approach to long term raw water demand growth is quite arbitrary. The Authority proposes that an estimate of long term uncertain demand should be based on historical growth trends. A linear regression approach using raw water demand volumes over the period 1978-79 to 2008-09, adjusted for the recent effects on demand of drought restrictions, provides a more objective basis than that used by GAWB for the uncertain demand component. The Authority used this regression approach to determine the expected demand growth from 2009-10 to 2029-30 and established that raw water demand would reach 62,060ML per year by 2029-30 (Table 5.3). The Authority then assumed straight line demand growth from 51,726ML per year in 2019-20 (which is based on customers advice as to expected contracted demand) to 62,060ML per year in 2029-30; and
- (c) for treated water, which is less susceptible to large, lumpy increments in demand, the Authority accepts GAWB's proposed approach incorporating a growth trend to account for projected increases in urban demand due to population growth. It is noted, however, that significant price increases could lead to reduced demand from urban water customers, although this could not be readily quantified.

The Authority's estimates for raw water demand growth are summarised in Figure 5.3.

Figure 5.3: Indicative Demand forecast for raw water



The indicative raw and treated water demand projections based on the proposed forecasting methodology are summarised in Table 5.3. GAWB’s base case demand forecast is also shown for comparison. Compared to GAWB’s forecast, the Authority’s approach would result in demand growth of about 13% over the first 5 year period, reaching around 78,000ML/year by 2029-30. Under the Authority’s forecast, an augmentation would be triggered in the latter part of the forecasting period.

Table 5.3: Comparison of Indicative Demand Forecasts

<i>Demand</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2019-20</i>	<i>2024-25</i>	<i>2029-30</i>
<i>QCA Method</i>								
Treated	10,230	10,435	10,645	10,860	11,079	12,567	14,193	15,976
Raw	38,693	40,141	41,589	43,037	44,486	51,726	56,893	62,060
Total	48,923	50,576	52,234	53,897	55,564	64,293	71,086	78,036
<i>GAWB Forecast</i>								
Treated	10,230	10,435	10,645	10,860	11,079	12,567	14,193	15,976
Raw	38,639	38,639	38,639	38,639	38,639	43,805	48,917	54,024
Total	48,923	49,128	49,338	49,553	49,772	56,372	63,110	70,000
Difference	0	1,448	2,896	4,344	5,793	7,921	7,976	8,036

The Authority’s estimates are consistent with the long term growth trends expected at the time of the Awoonga Dam augmentation, with adjustments due to the effects of drought and the impacts of the global financial crisis on the timing of new developments. The Authority’s estimates are below GAWB’s scenario 1 and 2 forecasts, though above the base case scenario.

The Authority notes that its pricing principles require customers to bear the risks of their own demand forecasts and for GAWB to bear the risks of uncontracted demand. In a sense, the Authority's main role is to ensure that the forecasts on which GAWB seeks to base its maximum allowable revenue are not excessive as the forecasts do affect individual customers' prices even if GAWB bears the revenue risk associated with uncontracted new demand.

Nevertheless, the Authority considers that its forecasts are based on the best available information and fall within the range of scenarios identified by GAWB and therefore represent a reasonable basis for estimating indicative prices.

Recommendation 17:

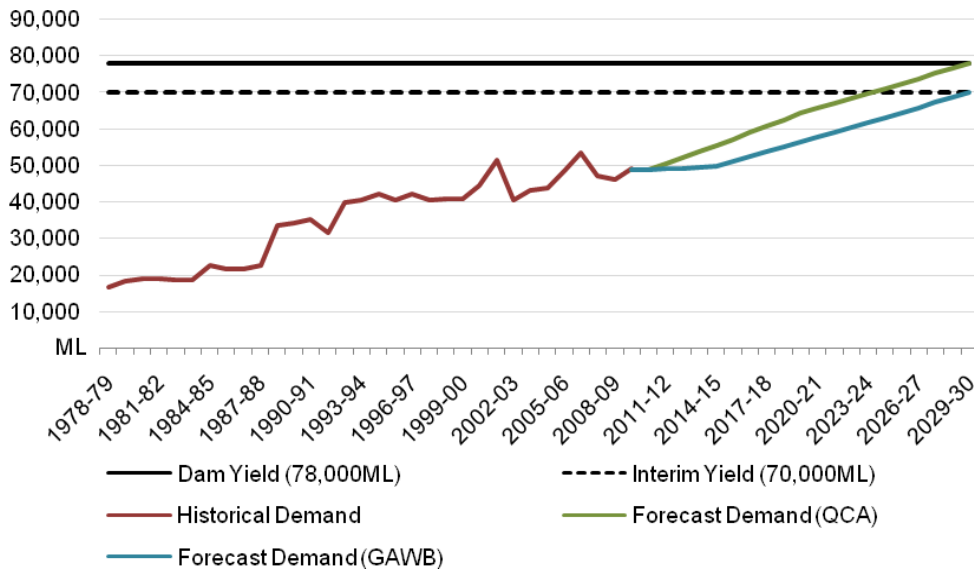
The Authority recommends that, for pricing purposes, the demand scenario for the regulatory pricing period commencing 1 July 2010 should reflect existing contracted volumes, anticipated contracted volumes and a component to reflect expected long term growth as outlined in Table 5.3.

5.4 Supply and Demand

Based on current yield and demand projections, GAWB has sufficient supply capacity to meet projected demand until 2029-30, assuming that the current maximum HNFY remains at 78,000ML per year.

The supply demand balance is shown in Figure 5.4.

Figure 5.4: Summary of GAWB's Supply Capacity and Demand (ML)



6. ASSET BASE

6.1 Introduction

The value of the regulatory asset base is a key input to the building blocks model and underpins the return on and return of capital. GAWB's key assets include the Awoonga Dam, pipelines, treatment plants, reservoirs, pump stations, buildings, land and easements.

6.2 Asset Valuation Methods

In the 2005 investigation, the Authority recommended a DORC approach to valuing GAWB's assets, on the basis that DORC best approximates the cost of a new entrant the market. DORC is also applied in most regulatory asset valuations in Australia.

However, while DORC was adopted as the general approach, the Authority recommended alternative approaches for certain asset categories, as follows:

- (a) land held by GAWB for buildings, reservoirs, treatment plants as well as areas submerged or adjacent to Awoonga Dam was valued at market value;
- (b) easements, mainly for pipelines, were valued at indexed historical cost; and
- (c) relocated assets (GAWB's previous Awoonga dam raising included costs associated with relocation of road, rail, telecommunication and electricity assets) were included at the actual cost of relocation (historical cost).

GAWB's Submission

GAWB proposed no changes to the previously recommended methods of asset valuation.

Stakeholder Submissions

QER supported continued use of DORC.

The Authority's Analysis

The Authority notes that GAWB proposes no change to the asset valuation approach, with DORC for infrastructure assets, market value for land and indexed historical cost for easements. Stakeholders have not raised any concerns.

Recommendation 18:

The Authority recommends that infrastructure assets continue to be valued at DORC, land be valued at market value, and easements be valued at indexed historical cost.

6.3 Asset Revaluation or Roll-Forward

For each price investigation, a key issue is whether the asset base at the commencement of the regulatory period should be revalued or simply rolled forward.

Under a roll-forward approach, the DORC values (and market values for land and historical values for easements) are indexed forward using a relevant index, depreciated where appropriate, and adjusted for new and redundant or disposed assets.

In the 2005 investigation, the Authority was generally supportive of the roll-forward approach on the basis that:

- (a) rolling forward asset values is simpler and less costly. In many cases, the revaluing of assets is not justifiable on cost-benefit grounds; and
- (b) if regulated assets are subject to an ongoing risk of being revalued downwards, this can affect the incentive to efficiently invest.

However, the Authority noted that there were significant changes in GAWB's circumstances following the 2002 drought, particularly in relation to revised dam hydrology and permanent reductions in demand by major customers, which would affect asset values. The Authority also noted that GAWB had not yet implemented prices based on the 2002 regulatory asset value.

Accordingly, it was considered that the 2005 investigation was effectively the first asset valuation which fully reflected the circumstances within which GAWB must operate. Further, the 2005 valuation coincided with GAWB's proposed contractual pricing reviews. Accordingly, the Authority revalued the assets rather than rolling-forward past values.

The revaluation resulted in a small adjustment to the asset base, with a total asset valuation of \$355.63 million compared to a valuation of \$364.06 million that would have applied had the previous 2002 valuations been rolled forward using the CPI.

The Authority anticipated that a roll-forward approach would be appropriate in future price investigations, but the case for revaluation should be examined at each regulatory review in order to determine whether the relevant circumstances justify the complexity and cost of revaluation.

GAWB's Submission

GAWB submitted that there have been no material changes in circumstances to warrant a DORC revaluation of its assets and that the opening regulatory asset base for 2010 should be based on a roll-forward approach.

Other Jurisdictions

In its review of prices for the Sydney Catchment Authority and for Hunter Water, IPART (2009) adopted a roll-forward approach to adjust the asset base from 2005 to 2009.

The ESC (2009) also adopted a roll-forward approach for its review of the four metropolitan Melbourne water businesses including the bulk supplier, Melbourne Water.

The ICRC (2008) adopted a roll-forward approach for ACTEW, although ACTEW proposed a revaluation of assets.

Stakeholder Submissions

No stakeholder commented on whether GAWB's asset base should be revalued or rolled forward.

The Authority's Analysis

In the 2005 review, the Authority foreshadowed that a roll-forward of asset values would likely be appropriate in the future, following the revaluation in 2005.

The Authority's general approach is to optimise assets only once, at an initial asset valuation (usually at the commencement of regulation) and when new capital expenditure is incurred. Exceptions to this are if a regulator had previously been misled, there are actual bypass options available or there are issues in relation to customers' capacity to pay.

There is no suggestion that any of the exceptions apply in the case of GAWB and so it is not proposed to consider optimising the asset base on these grounds. While demand from Awoonga Dam has been lower than anticipated when the dam was raised in 2000-02, the demand projections were reasonably held at the time. Indeed, demand has in a number of years exceeded the supply that would have been available had the dam not been augmented. Furthermore, technical advice is that the augmentation was the least cost option available in the anticipated demand scenario.

Furthermore, the Authority cannot identify any material changes in GAWB's circumstances that could justify a revaluation. Recent drought conditions have not resulted in changes to hydrology and there has been no significant change in GAWB's customer base.

The Authority therefore concurs with GAWB that a roll-forward approach is appropriate for the 2010-15 regulatory period.

Recommendation 19:

The Authority concurs with GAWB that a roll-forward approach is appropriate for the 2010-15 regulatory period, rather than a full revaluation.

6.4 Roll-forward of GAWB's Regulatory Asset Base

The roll-forward of GAWB asset base should take into account:

- (a) the opening value as at 1 July 2005;
- (b) indexation for inflation in asset values;
- (c) depreciation using the asset lives estimated in 2005;
- (d) removal of redundant assets and assets sold during the 2005-10 regulatory period; and
- (e) addition of efficient capital expenditure incurred during the 2005-10 regulatory period.

In addition, certain optimisation decisions made during the 2005 investigation need to be revisited given proposed utilisation of assets previously optimised out.

The Authority engaged Davwil to assist in its evaluations of GAWB's proposals in regard to the above matters.

Opening Value 2005

For the previous investigation, the Authority identified a regulatory asset base (RAB) value at 1 July 2005 of \$356 million. This value was based on a DORC valuation performed by SMEC and land valuations performed by Herron Todd White. These values were estimated at 1 July 2004 and indexed forward to obtain 2005 values.

GAWB's Submission

GAWB noted that SMEC also undertook a DORC valuation of assets in 2005 for GAWB. However, GAWB advised that it has been unable to reconcile the information obtained from the SMEC valuation with the summarised information provided by the Authority regarding the 2004 valuation.

GAWB submitted that, as a result, it has been unable to roll-forward the value of specific assets and that an alternative starting point for the RAB is required. GAWB proposed to use SMEC's 2005 valuation for the forthcoming regulatory review, adjusted to account for the optimisations determined by the Authority in the previous price investigation.

GAWB noted that, in the case of the Hanson Rd pipeline and Boat Creek Reservoir optimisations, it could identify the specific assets optimised by the Authority and has replicated this optimisation. However, in the case of the other optimisations (Mt Larcom pipeline, Calliope and Wurdong/Benaraby potable zone infrastructure) GAWB was unable to find the SMEC details necessary to reconcile them with the specific assets optimised by the Authority. Therefore, GAWB adopted the estimates provided by the Authority.

The resulting opening value for the RAB proposed by GAWB is \$372 million, some \$16 million higher than the value recommended by the Authority for the 2005 investigation.

Stakeholder Submissions

RTA submitted that GAWB's request to have the opening value of the RAB reset has not been sufficiently justified and is inconsistent with the regulatory goals of consistency and price stability.

CPM submitted that GAWB's proposal to increase the starting RAB by \$16 million was inappropriate and represented an attempt to double-dip in customer charges – firstly, through a nominal rate of return amount, which already includes an allowance for asset indexation, and secondly through an upwards revaluation. CPM recommended that, if the Authority were to accept the revaluation, then the uplift should be offset against any revenue target for the coming regulatory period.

QAL submitted that a revaluation would represent the acceptance of a principle that there is an indefinite period in which previous pricing decisions can be challenged and reconsidered. QAL considered it unreasonable to base the opening value of the RAB on any value different to that determined and approved by the Authority for the 2005 investigation.

The Authority's Analysis

As indicated by RTA, consistency and stability are key reasons behind the Authority's use of a roll-forward approach rather than a revaluation approach to the determining the asset base. If there is to be a change, the onus is on GAWB to justify it. Therefore, unless GAWB is able to identify (and justify) the source of the difference in the asset valuations (which it has been to date unable to do), it is not appropriate to adjust the asset base adopted in the Authority's 2005 review

Therefore, until such time as GAWB can identify and justify the difference, the Authority proposes that the opening values should be consistent with those applied by GAWB (not the SMEC 2005 asset valuation) to establish prices over 2005-10.

Recommendation 20:

The Authority recommends that the opening asset value (as at 1 July 2005) remain unchanged from that adopted in the 2005 review (approximately \$356 million).

Indexation

In the previous investigation, the Authority used CPI as a basis for indexing asset values over the period 2005-10 in its pricing model.

GAWB's Submission

GAWB proposed to use the Brisbane All Groups CPI for the roll-forward of the 2005 asset values.

Other Jurisdictions

IPART (2009) applied CPI to escalate capital values forwards in its reviews of the major NSW water businesses.

The ESC (2009) used CPI for indexation of the asset values of the four metropolitan water businesses on the basis that it provides a reasonable average outlook over the whole regulatory period. The ESC noted that there was arguably a case for increases in construction costs to be lower than CPI during the global economic crisis, but preferred a broader perspective.

The ICRC (2008) used CPI for indexing asset values carried forward.

Stakeholder Submissions

No stakeholders commented on the method of indexation.

The Authority's Analysis

The options for indexation of asset values effectively range from a broad-based inflation index such as CPI to a specific industry input index or combination of input indices.

Industry input indices should provide a more accurate estimate of replacement cost-based asset values and could provide a reasonable substitute for a full revaluation. However, such indexes may be subject to significant step changes, and would be expected to rise and fall in line with market conditions. This could lead to significant price variations within and between regulatory periods.

The CPI provides a broader and more stable indicator of inflation and has been the preferred indexation method for regulators.

The Authority also notes that GAWB has proposed CPI indexation.

Accordingly, for the 2010-15 regulatory period, the Authority recommends that CPI be used as the indexation factor for the roll-forward of the opening asset base for GAWB.

The Authority also proposes that forecast inflation should be used to escalate prudent capex through the 2005-10 regulatory period. Any variations subsequently found between the forecast amount and the actual amount can be taken into account at the commencement of the next regulatory review.

Recommendation 21:**The Authority recommends that the CPI be used to roll-forward 2005 asset values.**

Depreciation

In the 2005 investigation, the Authority used the straight-line depreciation method for determining the return of capital.

GAWB's Submission

GAWB proposed that the asset base should be depreciated from 2005 based on the straight-line method over the remaining lives as estimated in 2005.

The Authority's Analysis

Straight-line depreciation has been the preferred method for determining asset consumption charges in previous investigations. Accordingly, GAWB's assets as at 1 July 2005 should be depreciated for roll-forward purposes using the straight-line method over remaining useful lives as defined in the 2005 revaluation by SMEC.

Recommendation 22:**The Authority recommends that assets be depreciated on a straight-line basis using the remaining lives determined in the 2005 revaluation.**

Review of Previously Optimised Assets

In determining the 2005 DORC asset base, a number of assets which were redundant, either on a temporary or permanent basis, were optimised out. These included:

- (a) Boat Creek Reservoir, which was considered redundant and not included in the asset base; and
- (b) GAWB's proposed further expenditure of \$1.1 million to upgrade the Yarwun Treatment plant. It was considered that, as treated water demand from the northern area increased, it would be more economic to moth-ball the Yarwun Treatment Plant and supply treated water from Gladstone Water Treatment Plant through the converted Hansen Road main. Accordingly, the Authority allowed \$600,000 in costs to upgrade this main.

GAWB's Submission

GAWB advised that the costs associated with converting the Hanson Road pipeline to supply treated water from GWTP would be higher than expected due to higher costs of connecting and disinfecting the pipeline for potable water use. GAWB further advised that refurbishment and upgrade of the existing YWTP would be the least cost option for supplying treated water to the northern industrial area.

On this basis, GAWB proposed that the Hanson Road pipeline should be re-instated in the asset base for 2010-15. GAWB added that, by retaining the Hanson Road pipeline as a raw water pipeline rather than converting it to treated water:

-
- (a) customers in the northern industrial area can source raw water from the pipeline. GAWB advised that a customer already has a raw water connection to the pipeline and, under the upper bound demand forecast, additional demand is likely by 2015; and
 - (b) while limited, the pipeline could provide an alternative feed to the northern industrial area to reduce the risk of non-supply in the event of failure or maintenance requirements of the Mt Miller pipeline.

GAWB submitted that re-inclusion of Hanson Road pipeline would add \$3.08 million to the asset base.

GAWB also proposed to re-instate the Boat Creek Reservoir to the asset base (\$70,000). GAWB advised that this reservoir would provide additional raw water storage for customers in the proposed north industrial raw water and Fishermans Landing raw water pricing zones.

Stakeholder Submissions

No stakeholder submissions were received in regard to previously optimised assets.

The Authority's Analysis

GAWB's proposal in regard to the YWTP involves additional capital expenditure and has therefore been reviewed in the next section in the context of capital expenditure for 2005-10.

In regard to the Boat Creek Reservoir, the Authority's consultant Davwil advised that the reservoir should be re-included into the RAB at the beginning of 2010-11, at which time the new pumps and associated connecting pipework is scheduled to be completed. In this regard, Davwil considered that reconnection to the reservoir was a cost effective way of providing a two to three-day reserve/emergency storage for all the northern industrial raw water area taking the pressure of Fitzsimmons Street 50ML Reservoir and, to a lesser extent, Toolooa 50ML Reservoir.

The Authority accepts Davwil's conclusions regarding the review of previously optimised assets.

Recommendation 23:

The Authority recommends that the Boat Creek Reservoir be reinstated into the regulatory asset base for the 2010 price investigation.

Review of Capital Expenditure 2005-10

In the 2005 investigation, GAWB proposed some \$44 million of capital expenditure over a 10-year period. The Authority engaged SMEC to review the proposed expenditure, and accepted \$20 million over the 20-year planning horizon.

GAWB's Submission

GAWB submitted that capital expenditure during the period 2005-10 was approximately \$59.6 million. Annual expenditure by major project is summarised in Table 6.1.

Table 6.1: GAWB's Submitted Capital Expenditure 2005-10 (\$)

<i>Project (\$)</i>	<i>2005-06</i>	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10*</i>	<i>Total</i>
Northern supply assets purchase	1,927,504					1,927,504
Yarwun WTP upgrade		23,141	1,757,141	806,466		2,586,738
Control systems upgrade			392,166	2,326,989	100,000	2,819,155
Awoonga Dam HV switchgear upgrade			162,007	695,920	801,089	1,659,016
Land and catchment management	393,432	82,195	124,787	543,359	1,200,000	2,343,773
Fitzsimmons St/Mt Miller connection				91,985	993,000	1,084,985
Fitzsimmons St Reservoir refurbishment				44,572	1,001,151	1,045,723
Contingent supply strategy	196,193	2,161,241	5,958,710	14,066,477	10,945,352	33,327,973
Other (including office refurbishment)	1,311,482	1,774,803	1,879,351	2,512,013	5,289,164	12,766,813
Total	3,828,611	4,041,380	10,274,162	21,087,771	20,329,756	59,561,680

* *budgeted expenditure*

GAWB submitted that the following criteria were used to assess the reasonableness of capital expenditure:

- (a) risk mitigation: the project addresses a credible risk in GAWB's current operating environment that would have a high or extreme consequence as assessed in accordance with GAWB's Risk Management Policy;
- (b) end-of-life replacement: the project replaces assets that are assessed as being at the end of their useful life or which are assessed as being non-maintainable;
- (c) regulatory obligation: the project is undertaken to meet compliance with a requirement of law or regulation;
- (d) capacity: the project is required to meet increased customer demand through the augmentation of the delivery network or source of water supply; and
- (e) business process improvement: the project is justified by reference to the efficiencies that it will bring to GAWB's operations.

The specific justification for each item, and the Authority's analysis, are detailed below.

Stakeholder Submissions

QAL noted that the Authority supported expenditure on the CSS based on the possibility of failure of inflows in the 2007-08 wet season, yet GAWB continued to spend money following

significant rainfall in February 2008. QAL submit that any expenditure on the CSS after February 2008 should not be included in the next five year pricing period.

With regard to land and catchment management, QAL submitted that GAWB has not provided sufficient evidence to justify that this expenditure represents best practice, will reduce water costs or is a requirement of government legislation or regulation. Further, given that 80% of GAWB's water supply is untreated for industry, the benefit of additional catchment management expenditure aimed at reducing water treatment costs is questionable.

The Authority's Analysis

The Authority sought advice from Davwil in regard to the prudence and efficiency of GAWB's capex over the 2005-10 period.

To ensure capital expenditure, both past and future, is efficient from a pricing/customer perspective, yet maintains the financial viability of GAWB, Davwil established principles against which expenditure could be assessed for appropriateness and cost-effectiveness. The key principles were:

- (a) Principle 1 – asset acquisition, upgrades, replacements, etc should be included when:
 - (i) a robust business case, developed in accordance with GAWB's Business Case Development Guidelines (BCDG), has assessed all realistic options, using net present value (NPV) analysis of cost over the life of the asset;
 - (ii) all realistic options have been identified and sufficient assessment (including conceptual design) has been undertaken, resulting in obvious or highly likely justification for a preferred solution; or
 - (iii) where necessary, a separate assessment undertaken by Davwil indicates the expenditure is likely to be the most effective option, or an alternative level of expenditure (as determined by Davwil) is likely to be the most cost effective option; and
- (b) Principle 2 – the investigative expenditure for potential projects should be included in accordance with GAWB's BCDG and capitalisation policy. Such investigations should include design, approvals, consultation and other assessment to select a preferred option.

Other principles highlighted by Davwil were that effective customer consultation should be undertaken and that projects for existing asset replacement or rehabilitation should be identified through appropriate asset management practices.

Following a review of documentation provided by GAWB, and additional assessment where necessary, Davwil's conclusions in regard to each element of capex is detailed below.

North industrial area asset purchase – \$1,927,500

GAWB submitted that the former Calliope Shire Council's northern industrial area assets were purchased to improve infrastructure management of the Mt Miller Reservoir and potable water supply mains in the Mt Miller and Yarwun areas. GAWB noted that, because the former Calliope Shire Council had proposed charging GAWB a DORC-based price for the use of these assets, acquiring the assets at DORC would have no impact on 2011-15 regulatory period prices.

Davwil concluded that the purchase was appropriate as it would improve efficiency of operations and clarity of responsibilities. Davwil noted, however, that the split between the two

organisations still requires significant cooperation to achieve the most efficient overall supply strategy for the Gladstone Water Treatment Plant.

The Authority proposes that cost of GAWB's northern industrial area assets purchase be included in the asset base.

Yarwun water treatment plant (YWTP) upgrade – \$2,587,000

In the 2005 review, SMEC advised the Authority that the most cost effective option for meeting the demand for potable water in the northern industrial water was the temporary conversion of the Hanson Road pipeline to treated water delivered from Gladstone Water Treatment Plant (GWTP) and mothballing the YWTP until water demands increased above the Hanson Road pipeline capacity.

In 2006, GAWB undertook a further review and, based on revised demand projections, concluded that the Hanson Road pipeline capacity would be exceeded in two years. The SMEC option was considered uneconomic as the costs of converting the Hanson Road pipeline had increased from \$400,000 to \$1.3 million. GAWB subsequently upgraded the capacity of YWTP by 5ML/day to 8.6ML/day in 2008.

Davwil reviewed GAWB's preferred option to that originally proposed by SMEC and advised that GAWB's proposed upgrade of the YWTP was the better option, although the NPVs were very similar for both options under GAWB's business case demand assumptions.

Davwil also noted that the option of upgrading the YWTP avoided potential issues with pipeline disinfection and the potential greater reliance for emergency back-up from Boat Creek reservoir. It also meant that coal facilities could be supplied with raw water from Hanson Road rather than being supplied with treated water at raw water prices.

Davwil therefore concluded that GAWB's expenditure was appropriate. The Authority therefore proposes that the costs of the YWTP upgrade be included in the asset base.

Control systems upgrade - \$2,819,000

This expenditure included a radio telemetry technology upgrade and replacement of flow meters to comply with GAWB's System Leakage Management Plan. Expenditure commenced in 2006-07 and continued until 2009-10.

Davwil has advised that the upgrade would provide GAWB with extensive flexibility in managing the system, including remote operation of pump stations, water treatment plants and some pipelines. It would also enable operations to be tied into asset and maintenance management (including leakage and bursts), improving emergency management customer response and minimising overtime.

The Authority notes that a provision of \$1.3 million was made in the 2005 investigation for telemetry upgrades to be completed in 2005-06, based on SMEC estimates. GAWB's actual expenditure was substantially higher at \$2.8 million and delayed for several years. Davwil advised that the SMEC estimate was preliminary as the requirements of an effective system for GAWB had yet to be determined.

Overall, Davwil considered that, although expenditure was higher than suggested in the 2005 investigation, reasonable value for money was achieved. Further, the upgrade will become a key tool for improving existing and new asset management and achieving future cost savings. However, Davwil noted that, to maximise its effectiveness and thus efficiencies, it needs to be fully utilised in strategic planning, system modelling, customer involvement, option evaluation and decision making.

The Authority proposes that the costs of the control systems upgrade be included in the asset base.

Awoonga Dam high voltage switchgear upgrade – \$1,659,000

GAWB indicated that the high voltage switchgear, which was installed during the construction of the Awoonga Dam pump station in 1978, had reached the end of its design life and required replacement. The project is scheduled to be completed in 2009-10. It included the purchase and installation of two switchboards, installation of transformer, switchgear and switchroom building improvements and fire protection including fire resistant barriers.

GAWB informed Davwil that, as a major component of the organisation's most critical infrastructure, the upgrade was necessary given that the switchgear did not meet today's electrical standards and that parts for maintenance were becoming increasingly difficult to obtain. On this basis, Davwil considered that the expenditure was appropriate and cost effective.

The Authority proposes that the costs of the switch gear upgrade be included in the asset base.

Land purchase – \$2,344,000

GAWB has advised that its objective is to acquire all freehold land within the adopted boundary of Awoonga Dam to ensure long term security of tenure and to reduce risk to public safety, water quality and the environment. This boundary was determined as a water level of 47m AHD, or 45m AHD plus a 200m buffer, whichever is the greater (Awoonga Dam's full supply level is currently 40m AHD). This buffer includes land required for environmental and recreational purposes, and takes account of potential flood levels.

Land acquisitions commenced in 2007-08 and are forecast to be completed in 2011-12.

Davwil considered that GAWB's management policy for land around Awoonga Dam is consistent with generally accepted practice and is in line with DERM water quality management requirements.

With regard to the concern raised by QAL that additional catchment management expenditure is questionable given that 80% of GAWB's supply is untreated for industry, Davwil noted that it is common practice in Australia for water supply storages to have buffer zones for environmental and flood surcharge requirements, regardless of whether treated or raw water is supplied. Davwil concluded that it is difficult, and not considered appropriate, to attempt to attribute purchased land to raw and treated supplies.

Davwil concluded that the land purchases were obtained at least cost, but noted that GAWB should further review land management to ensure purchases are efficient. Davwil considered that GAWB's proposal was appropriate.

The Authority proposes that the costs of the land purchase for catchment management be included in the asset base.

Fitzsimmons Street/Mt Miller pipeline cross-connection – \$1,085,000

GAWB proposed that interconnection of the pipelines is required to facilitate the installation of flow meters and to allow for maintenance.

Following a review of operational issues in the system, and recognising the need to maximise flexibility of supply at this critical point in the system, Davwil confirmed that this expenditure was necessary and appropriate.

The Authority proposes that the cost of the pipeline cross-connection be included in the asset base.

Fitzsimmons Street Reservoir refurbishment – \$1,046,000

Where Macalloy bars in the reservoir wall had failed, GAWB proposed a short-term repair which, if successful, would prolong life of the reservoir beyond the 20-year planning horizon. Otherwise, GAWB indicated that further expenditure may be required at the next review.

Davwil advised that the use of carbon filaments to take up the structural integrity provided by the failure of Macalloy bars was the most cost effective approach. The alternative was likely to be the replacement of the reservoir at a cost of approximately \$5 million. Davwil noted that, in taking this approach, GAWB will need to undertake regular comprehensive inspections of the filaments and Macalloy bars in the reservoir.

The Authority proposes that the cost of the Fitzsimmons Street Reservoir refurbishment be included in the asset base.

Contingent supply strategy – \$33,328,000

GAWB submitted that \$33.3 million of capital expenditure was incurred on the contingent supply strategy. This expenditure, which included preparatory works for Gladstone-Fitzroy Pipeline, Lower Fitzroy project and desalination, is summarised in Table 6.2.

GAWB noted that the preparatory works for the Fitzroy Pipeline were intended to be completed by November 2008 to enable a response if low inflows into Awoonga Dam continued. After significant inflows in February 2008, GAWB elected to continue the preparatory works, defer the planned deadline and postpone some work to a later stage. GAWB submitted that the deferral allowed further optimisation of the design and improved procurement practices.

GAWB engaged Harrington Construction Consultants (HCC) to review the efficiency of the expenditure. HCC concluded that GAWB had complied with the Authority's Part (a) recommendations, the work was appropriate and the cost reasonable.

GAWB proposed that this expenditure be capitalised using the WACC applicable to GAWB's other regulated assets, as recommended in the Authority's Part (a) report for the contingent supply strategy investigation. Using a WACC of 7.73% for 2005-10, the capitalised value to 1 July 2010 was estimated to be \$37.346 million.

Table 6.2: GAWB's Submitted Contingent Supply Strategy Expenditure (\$ million)

<i>Expenditure item</i>	<i>2005-06</i>	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>Total</i>
Gladstone Fitzroy Pipeline	0.196	1.825	4.903	10.878	4.29	22.092
Lower Fitzroy River Infrastructure		0.01	0.159	2.25	6.073	8.493
Desalination		0.006	0.478	0.351	0.3	1.135
Regulatory submissions		0.32	0.419	0.147	0.163	1.049
Decision tool				0.44	0.12	0.56
Total	0.196	2.161	5.959	14.066	10.945	33.328

The Authority's Part (a) Final Report (Dec 2007) approved continued preparatory expenditures on the CSS on the basis of continued low inflows, but that the level and timing of capital expenditure should be reconsidered if time allows for other options to be considered. Preparatory expenditures were to be subject to ex-post reviews before being incorporated into the asset base.

Significant inflows occurred in February 2008, requiring GAWB to reassess CSS preparatory expenditures under the Minister's decision. However, GAWB spent \$14 million in 2008-09 and submitted a further budgeted expenditure of \$10.95 million for 2009-10. Of this, \$15.2 million was allocated to preparatory works for the Fitzroy Pipeline, \$8.2 million on the Lower Fitzroy Infrastructure Project (initial planning for Fitzroy supply), \$0.65 million on desalination planning and \$0.9 million on other costs.

GAWB advises that it had expended approximately \$14 million as at February 2008 and \$18.3 million to the end of 2007-08.

Davwil concluded that the February 2008 inflow event provided GAWB with significant time to take stock and review options. However, Davwil did not provide a specific recommendation as to how the Authority should treat the CCS expenditure in its pricing review. Instead Davwil suggested options, including accepting GAWB's full claim, accepting only the \$24.8 million foreshadowed in the Part (a) report or accepting expenditure as at 2007-08 plus a provision for contractual commitments, mothballing and holding costs. Davwil noted that the total expended as at 30 June 2009 could provide an equivalent allowance for the amount expended or contracted at February 2008, i.e. \$22.3 million.

In this regard, notwithstanding that the expenditure was appropriately reviewed (as indicated by the Harrington report), Davwil considered that a prudent interpretation of the Authority's Part (a) report would have seen a more cautious and rigorous assessment before proceeding. Davwil considered that scope existed for GAWB to halt or scale back its investigations and preparatory works after the February 2008 inflow event.

The Authority notes that some expenditure after the February 2008 inflow event is warranted in view of prior contractual arrangements, and that expenditure on approvals and regulatory processes is also relevant.

In principle, it is proposed to include only expenditure incurred as at February 2008 plus previously committed expenditure incurred after that date. In addition, completion of investigations into desalination is warranted as recommended in the Authority's Part (a) report. It is also considered that expenditure on approvals processes to 2009-10 should also be completed to maximise the benefit of the remaining investment in preparatory works.

This produces a total cost of \$20.65 million. This cost is made up of \$2.73 million for project management, \$4.18 million for approvals, \$0.13 million for land acquisition, \$0.36 million for communication and consultation, \$11.24 million for engineering and technical, \$1.13 million for desalination investigations and \$0.89 million for regulatory submissions.

GAWB submitted that the \$10 million Commonwealth contribution was offset against preparatory works incurred as at July 2008. The Authority therefore proposes to include a total of \$10.65 million into the regulatory asset base for the CSS. This amount would be capitalised from 2008 to 2010 at the relevant WACC rate.

The Authority notes that a considerable amount of capital expenditure has been excluded for pricing purposes under this approach. This expenditure may be relevant in the future, depending on future demand and supply and provided the CSS remains the most appropriate augmentation option. However, it is not appropriate that customers meet these costs until that is

the case. The expenditure itself was considered by Davwil to have met appropriate procurement practices and was efficiently incurred (in a technical if not an economic sense). Therefore, it is appropriate that the remaining amounts be capitalised until a decision is made on the CSS, at which time the expenditure will either be included into the asset base for pricing purposes or written off at GAWB's expense.

Gladstone office refurbishment – \$470,000

GAWB submitted that no significant work had been undertaken on the head office since the 1990s. Work undertaken included internal reconfiguration, some refurbishment, new carpets and electrical switchboard upgrade.

After taking into consideration the increase in staff levels and the configuration and age of the internal fit out, Davwil concluded that the refurbishment was appropriate.

The Authority proposes that the cost of the Gladstone office refurbishment be included in the asset base.

Other works – \$12,297,000

GAWB identified a number of other smaller scale replacement and improvements such as access, operation buildings and equipment, information and communication technology upgrades, recreation and hatchery facilities and OH&S upgrades.

Davwil reviewed the various cost items in detail. The key items (totalling \$6.18 million) which Davwil accepted include:

- (a) equipment for the Brisbane office and other administration equipment, including Ethernet switches, photocopiers, and printers (\$0.27 million). This was considered necessary to meet increasing staff levels and was complementary also with the Gladstone office refurbishment;
- (b) information and communication technology replacements, due to requirements for compliance with Queensland Government Information Standards (\$0.95 million);
- (c) Awoonga Dam intake crane upgrade (\$0.45 million), to meet safety standards;
- (d) replacements and refurbishments of the GWTP (\$2.12 million). Davwil identified 53 equipment and structural replacements and minor upgrades;
- (e) replacement of South Gladstone reservoir roof (\$0.96 million), part of the asbestos replacement programme;
- (f) flow meter upgrades and replacements (0.66 million), dovetailing with the control systems upgrade; and
- (g) Boat Creek raw water network costs (0.77 million).

Of the remaining \$6.12 million, Davwil was able to identify 343 separate procurements averaging less than \$15,000 each and totalling \$4.89 million. These included:

- (a) replacements and improvements at Awoonga Dam, including signage, fencing, upgrading of the algae laboratory, security grates, grids, an auxiliary intake tower crane, recreational facilities, fire equipment, boats, hatchery shade, fibreglass tanks, flow meters, groundwater monitoring bores, water quality profiler, gauging station and mowers (\$1.62 million);

- (b) replacement items for Awoonga pump station and pipeline to Fitzsimmons St (\$2.2 million). These items included cooling water filters, capacitors, lightning protection, actuator butterfly valves, pump station window covers, cathodic protection, non-return valves, security fencing and other items;
- (c) replacements at Benaraby (\$0.22 million), including a chlorination unit, switchboard, pump booster, and water analyser;
- (d) replacement of air compressor, clarifier and turbidity meters at GWTP (\$0.17 million); and
- (e) replacements of pipeline fittings and valve components throughout the system (\$0.68 million).

Davwil's assessment was that these expenditures were justified but that there is scope for improved asset management practices by GAWB.

In addition, Davwil noted that there were a further \$1.23 million in assets that were acquired and disposed of during the period, that is, short life assets. No adjustment to the asset base is needed on account of these items.

The Authority therefore proposes to include \$11.067 million of other assets.

Conclusion

The Authority recommends that a total capital expenditure of \$35.654 million over the 2005-10 period be included in the regulatory asset base (Table 6.3).

Table 6.3: Review of Capital Expenditure (2005-10 (\$m))

<i>Project</i>	<i>GAWB Proposal</i>	<i>Dawwil</i>	<i>Authority Recommendation</i>
Northern supply assets purchase	1,927	1,927	1,927
YWTP upgrade	2,587	2,587	2,587
Control systems upgrade	2,819	2,819	2,819
Awoonga Dam switchgear upgrade	1,659	1,659	1,659
Land and catchment management	2,344	2,344	2,344
Fitzsimmons St/Mt Miller connection	1,085	1,085	1,085
Fitzsimmons St reservoir refurbishment	1,046	1,046	1,046
Contingent supply strategy	33,328	22.3	10.65
Office refurbishment	0.47	0.47	0.47
Other	12,297	11,067	11,067
Total	59,562	47,304	35,654

Recommendation 24:

The Authority recommends an indicative estimate of capex to the value of \$35.654 million be included in the asset base and rolled forward to 1 July 2010.

Removal of Redundant and Disposed Assets

GAWB's Submission

GAWB submitted that land to the value of \$3.05 million is to be removed from the RAB as of 30 June 2010. This land was identified as surplus to GAWB's requirements.

Stakeholder Submissions

No stakeholder submissions were received in regard to the removal of redundant and disposed assets from the regulatory asset base.

The Authority's Analysis

The Authority accepts GAWB's proposal.

Recommendation 25:

The Authority recommends that land to the value of \$3.05 million be removed from the regulatory asset base as of 30 June 2010.

6.5 Prudence of Proposed Capital Expenditure 2010-30

The Authority considers that reasonable capital expenditure that is expected to be incurred over a regulatory and planning period should be taken to account in determining prices.

Proposed Capex 2010-15

GAWB's Submission

GAWB submitted that, over the 2011-15 regulatory period, \$86.6 million of capital expenditure is required on the assets indicated in Table 6.4 below.

Table 6.4: GAWB's Proposed Capital Expenditure 2010-2015 (\$ million)

<i>Project</i>	<i>Total</i>
Saddle Dam No 3 and Awoonga Dam left abutment raising	27.0
System storage project	22.0
Golegumma treated water pipeline	5.4
Awoonga pump station building	2.6
East End pipeline	2.03
QAL pipeline	2.1
Awoonga to Gladstone pipeline	0.8
Other replacements	8.1
Contingent supply strategy	3.441
Gladstone water treatment plant upgrades	3.0
Gladstone water treatment plant emergency power supply	2.1
Gladstone water treatment plant sludge dewatering	1.2
Fitzsimmons St Reservoir roof replacement	1.3
Awoonga Dam variable frequency drive	1.2
Other (including recreational area upgrades and hatchery relocation)	4.2
Total	86.6

GAWB's justification for these projects and the Authority's analysis is addressed further below.

Stakeholder Submissions

QAL submitted that insufficient data have been provided to demonstrate that the new embankment at Saddle Dam No 3 needs to be completed by 2012-13. Further, the possibility that the Queensland Government will subsidise the upgrade needs to be taken into consideration. QAL recommended that the business case be made available for review, the subsidy issue be resolved and appropriate priority for this project be considered in the context of other dam safety projects in Queensland.

QAL also submitted that GAWB has not provided sufficient supporting evidence to justify the scale and need for investment in system storage. QAL noted that the Due Diligence Report conducted by R2A Pty Ltd found that the desalination and Gladstone-Fitzroy pipeline project address the long term credible threats that the system storage project is intended to address. QAL suggested that this risk is sufficiently mitigated by these other projects and the risk of pump failure sufficiently mitigated by the installation of back up pumps at a much lower cost.

CPM submitted that GAWB's expenditure proposal represents a significant and fundamental departure from prior expenditure proposals and, if approved, will result in a significant 'price shock' for existing customers. CPM noted that most activities/expenditure initiatives are presented as necessary to meet certain regulatory or other requirements or to 'correct' past practices. However, CPM considered that there appears to be little reference back to enhanced efficiencies in water supply, customer service standards or lower risk outcomes for the customer. CPM also questioned whether any alternative and potentially lower cost strategies have been investigated.

GRC submitted that, if replaced, the Golegumma treated water pipeline would only be required to supply water to Awoonga Dam and fourteen customers in the Pikes Crossing area. Hence, customers in the South Gladstone to Toolooa and Benaraby potable zones should not bear the cost of servicing these properties, which were originally provided with water in lieu of compensation for GAWB easements running through their properties.

RTA identified the following issues with regard to GAWB's proposed age- and condition-based replacement expenditure over the period 2011-15:

- (a) robust planning and procurement processes are not utilised for some project types;
- (b) the incorporation of asset data into management systems is sub-optimal;
- (c) further work is required on condition and performance assessment to improve the accuracy of expenditure forecasts;
- (d) much of forecast renewals expenditure is derived from replacement costs and asset lives established in the Authority's 2005 SMEC asset valuation and is not based on specific asset condition assessment and performance data; and
- (e) average annual renewals expenditure of 30 other water utilities (identified for benchmarking purposes) averaged between 0.5-0.6% per annum compared to GAWB's proposed 0.79% for the 2009-10 to 2018-19 period.

RTA considered that these problems highlight the need for further independent examination. In particular, the condition of relevant assets needs to be inspected and the details within the asset database (including in relation of asset life assumptions) should be subjected to rigorous benchmarking. RTA recommended that a suitable proportion of any proposed future allowable price increase be deferred until such actions are completed by GAWB and certified and independently qualified.

With regard to the contingent supply strategy, CPM submitted that GAWB's proposed expenditure shows a disregard for the direction of preceding investigations by the Authority. CPM noted that GAWB has continued to incur costs without customer approval and despite augmentation works not being required in the near term. Further, there has been no assessment as to whether the expenditure will now generate benefits for customers versus an alternative strategy of deferring work to a future period.

CS Energy noted that the only capital expenditure relevant to its water supply is the flood capacity obligations and the Awoonga recreational area. CS Energy submitted that, with regard to these items, GAWB should demonstrate that the proposed expenditure is the most cost effective solution. Further, CS Energy submitted that it should not bear the cost of any other capital expenditure proposed by GAWB.

GPC submitted that the overarching principles of cost efficiency and prudence should be applied when assessing GAWB proposed capital expenditure. GPC expressed concern that the proposed increase in price which is due, in part, to GAWB's proposed capital expenditure, does not appear to deliver improved service outcomes for the Port or Port users.

With regard to the Gladstone Water Treatment Plant emergency power supply, GRC questioned the need for this infrastructure when Council maintains significant downstream storages and would be able to supply water for a number of days in the event of an emergency.

NRG supported the capital expenditure program in so far as the projects undertaken mitigate risks preventing the delivery of a reliable supply of water. Further, price impacts from capital expenditure should only be borne by those who receive a material benefit from that expenditure.

The Authority's Analysis

As with 2005-10 capex, the Authority engaged Davwil to review GAWB's proposed capital expenditures for efficiency and prudence. Davwil used the principles outlined earlier to assess capital expenditure and major maintenance expenditure for inclusion in the next price setting period.

New embankment at Saddle Dam No 3 (\$26 million) and Awoonga Dam left abutment raising (\$1 million)

GAWB submitted that a new embankment at Saddle Dam No 3 was identified as the most cost-effective, environmentally-sound and lowest risk option for meeting DERM's acceptable flood capacity requirements. This work must be completed by 1 October 2015 and includes raising the left abutment of Awoonga Dam by 2025 to comply with dam safety requirements. GAWB proposed that the expenditure would be included in the storage segment of the asset base.

Davwil identified several key issues relating to this project – the basis for the regulatory requirement, the timing and urgency of works and the identification of the most cost effective option.

Acceptable Flood Capacity (AFC) Guidelines issued by DERM require the Saddle Dam No 3 to be upgraded to:

- (a) at least 50% AFC by 1 October 2015 (currently 37% AFC);
- (b) at least 75% AFC by 1 October 2026, along with the left abutment raising to at least 75% (currently 62% AFC); and
- (c) 100% AFC by 1 October 2035.

DERM indicated that the upgrade schedule is government policy and is unlikely to change. Hence, the strict regulatory timeline placed on the project means that the upgrade will essentially need to be completed within the next pricing period.

Davwil noted that GHD assessed a range of upgrade options, concluding that the most cost effective would be the replacement of the Saddle Dam at a cost of \$26 million.

Davwil reviewed the feasibility of a staged upgrade, noting that one option used by dam owners is to install a re-usable parapet wall on top of the existing wall. However, Davwil considered that the current “fuse plug” design of the dam raised considerable doubt that a high enough parapet wall could be effectively placed on the existing saddle dam to achieve 50% AFC. The environmental concerns expressed by DERM with regard to the preferred (and all other) assessed options would also apply to the interim parapet wall option. Davwil advised that the resolution of the environmental concerns will take time and is likely to increase costs.

Davwil considered that, while there is some uncertainty about the most cost-effective option, all current information points to the replacement of the saddle dam or at least a similar cost option.

Davwil recommended acceptance of the \$26 million proposed by GAWB for the Saddle Dam No 3 upgrade in the next pricing period, but also extension of the time of completion of the project to 2014-15, rather than GAWB’s proposed 2012-13.

The Authority’s support for this proposal is subject to GAWB confirming through a sufficiently rigorous assessment that there is no effective staged or interim solution such as the parapet wall option. If the assessment indicated that a staged or interim solution is likely to be effective, then it should be adopted. To the extent that the cost of this differed from that current being incorporated in prices, future pricing would be adjusted.

With regard to the Awoonga Dam left abutment raising, Davwil noted that there is no regulatory requirement to have this completed in the next pricing period as it is not required until 2025. There is also a possibility of a further raising of the dam for water supply augmentation but, under current demand projections, this would not be required until 2030. Davwil recommended reducing the proposed expenditure to zero for the next pricing period, and to defer it until 2024-25, unless further robust investigation by GAWB indicates that it is an appropriate business risk reduction.

Based on Davwil’s advice, the Authority considers that further work needs to be undertaken on the assessment of alternative options and potential staged responses for the Saddle Dam No 3 upgrade before an appropriate solution can be identified that addresses environmental and other concerns. However, it is apparent that a significant expenditure is required to meet dam safety standards within the next regulatory period.

The Authority considers that the Saddle Dam embankment dam safety upgrade, or an alternative option to address the requirements, should be included in the 2005-10 capex. This investment, or similar, must be in place by 2015.

It is proposed that an indicative cost estimate of \$26 million be taken into account for pricing purposes, but to exclude the \$1 million left abutment raising.

System storage project – \$22,000,000

GAWB noted that presently it only has 12 to 16 hours of storage available in the delivery network, which is low relative to other water service providers. GAWB proposed that a storage facility and associated pump station are required to address the risk of a pump station failure for up to 14 days. Based on risk assessment advice from R2A and pre-feasibility cost estimates from Connell Wagner, the proposed storage would be located between Awoonga Dam and Toolooa Reservoir and filled with supply from Awoonga Dam for storage until required. GAWB proposed that all customers supplied through GAWB’s delivery network would share in this cost.

On the basis of information provided by GAWB, Davwil considered that a comprehensive evaluation and full risk assessment of options had not been undertaken. Davwil noted that a

number of options for providing emergency system storage are available and require evaluation, including:

- (a) emergency use of the SunWater pumping station;
- (b) diesel generator at Awoonga Dam Pump Stations, which could be shared with SunWater and running costs offset by selling back to the grid when the generator is periodically tested;
- (c) isolation capability of the higher and lower level intake towers, allowing each to be separately shut down for maintenance (which at the same time solves the issue of separation of the SunWater pumping station);
- (d) duplication of the pipeline under the spillway;
- (e) acceptance and agreement by customers of a certain level of risk and associated improvement works; and
- (f) providing key backup inventory properly housed and regularly tested.

Davwil therefore recommended that the proposed expenditure (\$22 million) not be included in the next pricing period but that the full cost of necessary investigatory work (\$2 million) be included.

The Authority proposes that an amount of \$2 million be allowed for further investigative work on the range of options to improve system storage capability.

Golegumma treated water pipeline replacement – \$5,400,000.

Based on advice from Alf Grigg and Associates (Grigg), GAWB submitted that sections of the pipeline are at risk of failure and propose a staged replacement over nine years, with a sum of \$5.4 million allocated to 2010-15. This would affect prices in the South Gladstone to Toooloa and Benaraby treated water zones.

Davwil noted that the assessment by Grigg estimated the residual life of the pipeline to be 0-5 years. However, after taking into account the number of breaks, the extent of storage reserves, the ability to provide effective repairs and manage service interruptions and other supply solutions, Davwil considered that replacement of the pipeline is unlikely to be required in the next five years.

Davwil recommended that the proposed replacement expenditure not be included in this pricing period, and instead be considered at the next price review once a rigorous business case has been completed and the most efficient solution identified in consultation with GRC. Davwil recommended that \$0.5 million be included to allow for small critical lengths of the pipeline to be replaced and minor works to be undertaken to manage break risks.

The Authority proposes that \$0.5 million be taken into account for pricing purposes for small critical lengths of the Golegumma treated water pipeline to be replaced during 2010-15.

Awoonga pump station building – \$2,600,000.

Based on advice from GHD, GAWB submitted that the building is at the end of its life and proposes it be replaced. GAWB submitted that there is a risk of failure during a major event (e.g. cyclone) which could lead to electrical equipment or pump failure. This expenditure would affect prices to all customers supplied through the delivery network.

Davwil noted that the Awoonga Dam Pump Station building has major maintenance and structural issues which require prompt attention. Davwil considered that, although replacement involves higher short-term costs, it ensures protection against cyclones and improves OH&S issues with the current building.

The Authority's analysis of the Worley Parsons report commissioned by GAWB in support of its proposals indicated that GAWB's preferred option is in fact one of the highest NPV options with the highest initial capital cost, but with lower ongoing costs. The basis for choosing this option was that it would protect all internal equipment against a 1 in 2000 year cyclone and would provide an opportunity to design out all present operational shortcomings and OH&S issues.

Davwil indicated that the Awoonga pump station is a critical asset and that evaluation of options should be based on a multi-criteria analysis rather than solely financial criteria. In this regard, Davwil considered that GAWB's proposal was appropriate on the criteria of risk management, operational efficiency and OH&S issues. This proposal is consistent with the requirements of the *Building Code of Australia and Australian Standard AS1170.2 – Wind Loads*.

The Authority proposes that \$2.6 million for the Awoonga pump station building be taken into account for pricing purposes.

East end pipeline – \$2,000,000.

GAWB submitted that sections of the pipeline have corroded and require replacement, noting that parts of the East End treated water pipeline were at the end of their useful life and at risk of immediate failure.

Davwil found that, on available information, the last break occurred in 2005. However, further investigations may need to be undertaken to enable a robust business case to be developed, and particularly for identifying the extent of badly corroded sections.

Davwil recommended that the proposed replacement expenditure not be included in this pricing period, and instead be considered at the next price review once a rigorous business case has been completed and the most efficient solution identified in consultation with customers. Davwil recommended that \$0.3 million of expenditure be included over the next pricing period to allow for small critical lengths to be replaced and minor works to be undertaken to manage break risks and supply adjustments to RTA.

The Authority proposes that \$0.3 million for the repair of small critical lengths of the East end pipeline be taken into account for pricing purposes.

QAL pipeline – \$2,100,000.

Based on advice from Grigg, GAWB submitted that the pipeline is at the end of its useful life and requires replacement. This pipeline is dedicated to supplying QAL.

Davwil noted Grigg's recommendation that the pipeline should be protected against external corrosion by installing electrical continuity straps between pipes to achieve an electrically continuous pipeline and then installing cathodic protection. Davwil concluded that this would be far less costly than constructing a parallel pipe and would be likely to extend the asset's life for decades.

Davwil also noted QAL's preference to avoid shutting down the pipeline when leaks are detected and their subsequent offer to pay for a relatively expensive (but equally effective) external pipe clamp solution.

Davwil concluded that cathodic protection, clamping of all joints or additional onsite storage for QAL appear to be the most cost effective solutions for this critical pipeline. Davwil recommended that the proposed replacement expenditure not be included in this pricing period or the remainder of the planning period, and instead be considered at the next price review when a rigorous business case has been completed and the most efficient solution determined and agreed with QAL. Davwil recommend that \$0.5 million be included over the next pricing period to allow for at least cathodic protection and appropriate joint clamping.

The Authority notes that the QAL pipeline is a dedicated pipeline supplying QAL only and was contributed by QAL. Accordingly, the appropriate solution is a matter to be negotiated between GAWB and QAL, giving QAL the opportunity to evaluate the risks of the alternative options.

The Authority proposes that \$0.5 million for cathodic protection of the pipeline be taken into account for pricing purposes.

Awoonga to Gladstone pipeline – \$800,000.

GAWB submitted that parts of the duplicated pipeline are at risk of failure and proposed a strategy for reactive maintenance and repair. This involves purchasing spare pipe and additional pipe fittings to facilitate inspection of the pipe.

Davwil noted that quantities of cement lining from the pipe have been discovered in the Fitzsimmons St Reservoir, leading to the conclusion that there has been some loss of the cement lining in the pipe. Davwil concluded that GAWB's proposed reactive maintenance and repair approach (\$0.8 million) is more cost effective than replacing the pipeline (\$15 million).

The Authority proposes that \$0.8 million for reactive maintenance and repair of the Awoonga to Gladstone pipeline be taken into account for pricing purposes.

Other replacements – \$8,100,000.

This comprises specific planned projects with a value less than \$750,000 and general replacement of assets generated directly from the asset database based on remaining lives assessed for the DORC valuation.

All smaller replacement projects were checked by Davwil to ensure appropriate useful lives had been used and that specific assets had reached the end of their useful life. The items included flow meters, valves, seal replacements, recreational area facilities and hatchery related items. Davwil noted that GAWB had used accounting based asset lives for the replacement costs which were around 15 to 20% less than design lives incorporated in the original SMEC valuations. When corrected, the replacement expenditure component reduces from \$4.8 million to \$4 million.

Davwil considered the proposed expenditure on new planned projects (\$3.3 million) was also appropriate. These items included remote operation of river discharge valves (\$0.34 million), Awoonga Dam access roads, pontoons and dam-site buildings (\$0.614 million), a chlorinator and pump station access at Toolooa (\$0.51 million), fish hatchery costs (\$0.2 million), a new water sampling facility at the GWTP (\$0.2 million), Mt Miller inlet modification (\$0.1 million) and installation of a roof over the clarifier at YWTP (\$0.23 million).

The Authority proposes that a \$7.3 million be taken into account for pricing purposes.

Contingent supply strategy – \$3,440,820

GAWB proposed additional expenditure on the CSS to achieve a target state of preparedness and to maintain that state of preparedness. This would include holding costs, a risk review in

the middle of the regulatory period and a full review of all components prior to the 2015 price review. Of the proposed total, most would be spent in 2010-11 (\$1.4 million) and in 2014-15 (\$1.6 million);

Davwil initially considered that any remaining preparatory expenditure should be streamlined and mothballed as quickly as possible and only a small holding project continue over the regulatory period. The outcome of Davwil's conclusion was for an expenditure of \$1.3 million rather than \$3 million, comprising \$0.4 million on desalination and other options, \$0.4 million for mothballing of the project and \$0.5 million for a watching brief.

However, in view of recent significant inflows (since GAWB's submission), Davwil considered that the expenditure on the watching brief could also be removed and changed to an internal periodical strategy review. This leaves a total of \$0.8 million for the CSS for 2010-15.

The Authority proposes that \$0.8 million for the CSS be taken into account for pricing purposes.

Gladstone Water Treatment Plant (GWTP) upgrades – \$3,000,000

GAWB submitted that the upgrades include:

- (a) replacement of powdered activated carbon (PAC) and polyelectrolyte dosing plants (primary reagents used in the water treatment process). The current PAC system is 16 years old and has some efficiency related issues. The polyelectrolyte system is 25 years old, has insufficient capacity and is unreliable;
- (b) installation of a new roof over the Plant 2 flash mixer and clarifiers, to reduce algae growth, maintenance and chemicals costs; and
- (c) replacement of the main building roof, which is structurally inadequate for cyclonic wind loads.

Davwil conducted an on-site assessment of the proposed upgrades, concluding that all expenditures were appropriate.

The Authority proposes that \$3.0 million for the GWTP upgrades be taken into account for pricing purposes.

Gladstone Water Treatment Plant emergency power supply – \$2,100,000

GAWB submitted that, in the event of an extended power outage with the destruction of electrical supply infrastructure caused by a cyclone or severe storm, the plant would be unable to produce and deliver potable water. GAWB proposed a diesel powered emergency power supply of sufficient capacity to operate Plant 1 and either a high-lift or low-lift pump which will allow the plant to continue to produce potable water during emergency situations should the existing power supply network fail.

Davwil noted that, while power supply to the GWTP is a key issue, GAWB did not provide evidence of a business case (including risk and economic assessment) to warrant the investment. Davwil concluded that the proposed expenditure (\$2.1 million) or any other proposed option should not be included in this pricing period unless GAWB can provide a rigorous business case, developed through consultation with GRC, prior to the price setting.

The Authority therefore does not propose to incorporate any provision for the GWTP emergency power supply in determining prices for 2010-2015.

Gladstone Water Treatment Plant sludge dewatering – \$1,200,000

GAWB submitted that, according to the charges for trade waste published on the Gladstone Regional Council's website, the cost of disposing the sludge generated by the plant will increase from approximately \$40,000 per annum to \$240,000 per annum.

In response, GAWB proposed to install a sludge dewatering facility at the plant, which would separate the solids from the effluent stream to produce a cake suitable for truck transport to an off-site disposal facility. The water component would be returned to the plant's water system as saleable raw water for industrial customer consumption. The proposed system is intended to reduce trade waste discharge costs.

Davwil considered the expenditure to be appropriate on the basis that GAWB's cost-benefit analysis GAWB indicated a NPV saving due to the high increase in trade waste fees required by GRC.

The Authority proposes that \$1.2 million for sludge dewatering be taken into account for pricing purposes.

Replacement of Fitzsimmons St Reservoir roof – \$1,300,000

GAWB noted that the integrity of the Fitzsimmons St Reservoir is important for maintaining both a continuous and a safe supply of raw water. In particular, the roof of the reservoir protects the water from wildlife and the elements and prevents algae growth being stimulated by sunlight.

GAWB submitted that the roof is constructed from corrugated fibro sheeting which contains asbestos. This material was recommended for removal in the 2009 asbestos audit.

Davwil concluded that the roof presented a significant OH&S issue and that early replacement was appropriate as part of an asbestos replacement programme.

The Authority proposes that \$1.3 million for the replacement of the Fitzsimmons St Reservoir roof be taken into account for pricing purposes.

Awoonga Dam variable frequency drive and control building structure – \$1,200,000

GAWB submitted that the roof sheeting, fasteners, purlins and rafters in the Variable Frequency Drive (VFD) Building, as well as the door locking mechanisms and windows, are inadequate to withstand cyclonic wind loads.

An investigation by WorleyParsons showed that the roof sheeting on the Awoonga Dam control building had reached the limit of its useful life after 30 years of service. It was also determined that the rafters and hanger beams did not have sufficient strength to withstand cyclonic wind loads, as calculated from the latest versions of the *Building Code of Australia and Australian Standard AS1170.2 – Wind Loads*.

Davwil determined that GAWB's proposal was in line with the business case documentation and that no other option would have been more cost-effective.

The Authority proposes that \$1.2 million for the Awoonga Dam variable frequency drive and control building structure be taken into account for pricing purposes.

Other – \$4,200,000

GAWB proposed \$880,000 for recreational area upgrades, including a walkway pontoon (\$145,000), road resurfacing (\$288,000), residential house renovations (\$155,000), new and upgraded facilities and a new shelter (\$194,000).

GAWB also submitted that the fish hatchery needs to be relocated at a cost of \$318,000. The hatchery is currently located on land owned by Gladstone Ports Corporation, who have indicated that they expect to require vacant possession of the land within the next regulatory control period. The tank heating system and electricity mains are obsolete and need replacing.

GAWB submitted that \$3 million of expenditure was also required on a range of other projects valued at less than \$750,000 each.

Davwil considered whether appropriate useful lives had been used and whether the assets had reached the end of their useful life. Davwil found that, in all cases, replacement was the most likely cost efficient option or a business case had been developed sufficient to confirm a replacement outcome. Hence, Davwil accepted all expenditure as appropriate but noted that business cases should be completed for all replacements prior to the next price investigation.

However, Davwil noted that the sludge dewatering proposal had been double counted by GAWB in this category, and proposed that it be excluded. This reduces the proposed capex from \$4.2 million to \$3.0 million.

The Authority proposes that an amount of \$3.0 million for other expenditure be included in the asset base.

Conclusion

The Authority recommends that a total of \$50.5 million in planned capital expenditure during the 2010-15 regulatory period (Table 6.5) be taken into account in determining 2010-15 prices.

Table 6.5: Capital Expenditure 2010-15 (\$ million)

<i>Project</i>	<i>GAWB</i>	<i>Davwil</i>	<i>Authority Recommendation</i>
Saddle Dam No 3 and Awoonga Dam left abutment raising	27.0	26.0	26.0
System storage project	22.0	2.0	2.0
End-of-life asset replacement			
Golegumma treated water pipeline	5.4	0.5	0.5
Awoonga pump station building	2.6	2.6	2.6
East End pipeline	2.03	0.3	0.3
QAL pipeline	2.1	0.5	0.5
Awoonga to Gladstone pipeline	0.8	0.8	0.8
Other	8.1	7.3	7.3
Contingent supply strategy	3.441	0.8	0.8
Gladstone water treatment plant upgrades	3.0	3.0	3.0
Gladstone water treatment plant emergency power supply	2.1	0	0
Gladstone water treatment plant sludge dewatering	1.2	1.2	1.2
Fitzsimmons St Reservoir roof replacement	1.3	1.3	1.3
Awoonga Dam variable frequency drive	1.2	1.2	1.2
Other (including recreational area upgrades and hatchery relocation)	4.2	3.0	3.0
Total	86.6	50.5	50.5

Recommendation 26:

The Authority recommends estimated capital expenditure of \$50.5 million over the 2010-15 period be included for pricing purposes.

Proposed Capex 2015-30

GAWB's Submission

GAWB proposed capital expenditure of \$105 million over the period 2015 to 2030, which includes expenditure on:

- (a) Ongoing age-based and condition-based replacement – \$92,000,000

GAWB submitted that asset replacement expenditure comprises specific planned projects valued at \$10 million, including the replacement of the Boyne Island potable water pipelines (\$6 million) and the completion of the Golegumma potable water pipeline replacement and Hanson Rd raw water pipeline replacement projects. The remaining \$82 million is for general replacement, with the asset replacement program generated directly from the asset database based on remaining lives assessed for the DORC valuation.

(b) Contingent supply strategy – \$12,000,000

GAWB also proposed that it will incur \$12 million in capex to maintain the preparedness of the contingent water supply strategy, including risk reviews every 2.5 years, reviews of components (excluding engineering design) every five years, and reviews of engineering design in year 10.

(c) Other expenditure – \$1,000,000

Stakeholder Submissions

No stakeholders commented specifically on the proposed capital expenditure for 2015-30. However, general comments made in regard to capital expenditure for 2010-15, particularly in relation to the contingent supply strategy, are relevant to the assessment of GAWB's proposal.

The Authority's Analysis

Davwil assessed GAWB's proposed asset replacement program for 2015-30 using the capital expenditure principles and process used for the period 2010-15.

(a) Ongoing age-based and condition-based replacement

Davwil recommended deferral of major pipeline replacement (including part Boyne Island treated water, Hanson Road and Goolegumma Pipelines totalling \$10 million) and the removal of approximately \$30 million in replacement items until robust asset management and demand growth better identifies the need and timing for replacement. Davwil also adjusted asset lives from the accounting basis used by GAWB to useful design lives as defined in the original SMEC valuation on the basis that these were more appropriate for asset replacement decisions.

These adjustments resulted in an asset replacement program of \$33 million compared to GAWB's proposed \$92 million.

The Authority proposes that \$33 million be taken into account for pricing purposes.

(b) Contingent supply strategy – \$12,000,000

Davwil concluded that no allowance for the contingent supply strategy should be included in this investigation for the period 2015-30. Davwil recommend that any expenditure that is required to maintain the preparatory works should be recovered in the next pricing period after proving prudence, appropriateness and efficiency, as per the capital expenditure principles.

The Authority accepts Davwil's recommendation.

(c) Other – \$1,000,000

Davwil's assessment indicated that expenditure was likely to be efficient but noted that rigorous businesses cases need to be undertaken. Davwil recommended that the amount be included as it is a small amount compared with what is likely to be required for small capital items.

Davwil's proposal is accepted by the Authority.

Conclusion

The Authority recommends that a total of \$34 million be accepted for the 2015-30 planning period for price modelling purposes. It is noted that these estimates are indicative only and will be subject to ongoing review and re-assessment by GAWB.

Recommendation 27:

The Authority recommends that estimated capital expenditure of \$34 million over the 2015-30 period be included for price modelling purposes.

The Authority recommends that no expenditure be included for the contingent supply strategy.

6.6 Escalation of Forward Capex

GAWB's Submission

For escalation of forecast capital expenditure expected to be incurred between 2011 and 2030, GAWB proposed that:

- (a) the three-year average (2007-09) of the property and services wage price index should be used for contingent supply strategy expenditure where consulting engineering costs dominate expenditure. The estimated escalation factor was 4.63%;
- (b) the three-year average (2007-09) of the general Queensland construction index should be used for capital expenditure dominated by construction costs. The estimated escalation factor was 6.3%; and
- (c) the inflation forecast based on CPI should be used for all other expenditure. Synergies provided an estimate of 2.43%.

Other Jurisdictions

While the ICRC (2008) used CPI for indexing asset values carried forward, it used forecasts for increases in construction and engineering costs in the water and sewerage sector to escalate forecast capital expenditures over the regulatory period.

Stakeholder Submissions

RTA submitted that, if historical averages are adopted, a longer term average is a more appropriate estimate. RTA suggested that an independent, defensible forecast for escalation factors, where available, is more appropriate.

The Authority's Analysis

GAWB's proposal regarding escalating planned future capital expenditure relies on forecasts for specific indexes using prior three-year averages. The Authority considers that a three-year historical average will not provide a reliable indication of cost escalation over the planning period as market conditions may now be markedly different from those in that period.

Therefore, the Authority considers that more attention needs to be given to a more appropriate forward-looking approach. In the interim, the Authority has adopted CPI as the index for 2010-15.

Recommendation 28:

The Authority recommends that:

- (a) GAWB review the basis for escalating capital costs over the 2010-15 regulatory period, with CPI being used until a more appropriate escalation basis is determined; and**
 - (b) CPI should be applied to capex over 2015-30.**
-

6.7 Working Capital

Working capital comprises the cash asset tied up in the running of the business. In the 2005 investigation, the Authority recommended that a working capital allowance should be included in the asset base, and that this should reflect trade debtors (accounts receivable) less trade creditors (accounts payable) plus inventories. On the basis of advice from consultants, SMEC, the Authority included an allowance of \$18.07/ML. SMEC developed a formula to predict working capital requirements based on business growth and assumed collection and payment cycles. No inventories were included in the working capital requirement as these were not considered significant.

GAWB's Submission

GAWB proposed to include an allowance for working capital, adopting the Authority's previously recommended approach of debtors less creditors plus inventories.

GAWB submitted that its proposed allowance would be based on the average monthly working capital requirement for the 2008-09 year, estimated at \$2.355 million.

The Authority's Analysis

The Authority's consultant Davwil advised that the SMEC formula remained broadly appropriate and that GAWB's submitted working capital requirement of \$2.355 million, calculated on a 12-month average basis, was reasonable.

Recommendation 29:

The Authority recommends that working capital be determined on the basis of debtors (accounts receivable) less creditors (accounts payable) plus inventories.

An indicative estimate of \$2.355 million is considered appropriate.

6.8 Summary of Asset Values used for Pricing Purposes

The asset values proposed to be used for pricing purposes in each of the five years, as well as selected later years, is provided in Table 6.6, as are GAWB's proposals. The reasons behind the variations have been discussed in earlier sections.

Table 6.6: Regulatory Asset Base - GAWB (\$m, opening values)

	2010-11	2011-12	2012-13	2013-14	2014-15	2019-20	2024-25
GAWB Proposed	462.8	469.1	499.2	532.4	533.6	554.4	582.4
QCA Indicative	418.6	422.1	428.0	436.6	452.1	494.3	547.4
Difference (%)	-9.6	-10.0	-14.3	-18.0	-15.3	-10.8	-6.0

6.9 Return of Capital

Depreciation, or the return of capital, is a measure of the rate of consumption of the service potential of assets.

In the 2005 investigation, the Authority acknowledged that no single depreciation profile is consistent with the loss of service potential pattern applicable to all asset classes, as the applicable pattern depends upon the combination of the particular degenerative characteristics of each asset.

Water supply and distribution assets fall broadly into three categories:

- (a) assets that never need to be replaced, such as land and easements;
- (b) assets that have a very long, useful life and require very low annual maintenance, such as dams, reservoirs and some major pipelines; and
- (c) assets that need a relatively constant or increasing maintenance schedule as the life of the asset increases, such as smaller pipelines, pumps, valves etc.

Dams generally have very long lives and can be maintained indefinitely, provided an appropriate periodic maintenance and renewal programme is put in place. The major threat to dams is likely to be technical obsolescence rather than deterioration. Other long-life assets, such as pipelines, may lose value more evenly over their useful lives, best fitting a straight-line depreciation profile. Assets such as pumps and motors exhibit linear consumption or geometric asset consumption patterns.

In the 2005 investigation, following a review of submissions received, and the practices applied in other jurisdictions, the Authority recommended a straight-line depreciation approach for all assets over their condition-based remaining asset lives as identified by independent consultants, SMEC. A straight-line depreciation approach was considered to best accommodate the average pattern of deterioration or consumption of all types of assets.

GAWB's Submission

GAWB proposed to retain the straight-line depreciation method for determining the return of capital component.

Other Jurisdictions

In its review of prices for Sydney Water and Hunter Water, IPART (2008, 2009) supported the continued use of straight-line depreciation for estimating the return of capital, on the basis of simplicity, consistency and transparency.

In the case of Hunter Water, assets were divided into two groups for the purposes of estimating depreciation. Existing assets were assumed to have a life of 70 years, while new assets were assumed to have a life of 100 years.

The ESC's approach for metropolitan water businesses was to use straight line depreciation.

The ESC (2006) approved Goulburn-Murray Water's (GMW) proposal to discontinue the use of a renewals annuity and switch to a depreciation approach in combination with a regulatory asset value. A key factor in GMW's change was that the depreciation approach provides for more stable pricing outcomes.

In its review of water pricing for the Water Corporation of WA, the ERA (2005) recommended straight-line depreciation but also suggested that a renewals annuity approach should be investigated for future reviews.

Stakeholder Submissions

QER supported the retention of straight-line depreciation.

The Authority's Analysis

The Authority remains of the view that a renewals annuity approach has some merit in regard to long-lived assets such as dams.

However, consistent with the previous investigation, and in line with most other water industry regulatory decisions, the Authority proposes to continue with a straight line depreciation approach.

The Authority also proposes that depreciation should be determined on the basis of the design lives of the assets. For modelling purposes, and in the absence of a condition-based reassessment of assets, the Authority proposes to apply the asset lives determined by SMEC at the time of the 2005 investigation.

Recommendation 30:

The Authority recommends that return of capital be based on straight line depreciation for all GAWB's assets, taking into account the expected lives of specific assets or groups of assets.

7. RATE OF RETURN

7.1 Introduction

Subsequent to determining the asset base, it is necessary to determine the allowed rate of return on those assets.

There are several approaches to calculating the regulated rate of return. Its calculation remains an evolving area, particularly in the context of the implications of recent financial market volatility where estimating market-based parameters (such as the risk-free rate and cost of debt) has drawn particular consideration from regulators, regulated entities and stakeholders.

7.2 General Approach

In the 2005 investigation of GAWB's pricing practices, the Authority's approach was to estimate a nominal post-tax WACC using the Officer (1994) capital asset pricing model (CAPM) for determining the cost of equity (i.e. Officer's WACC 3).

This approach defines cash flows in nominal, post-tax terms and modifies the cash flows, as opposed to the discount rate, for tax and the effects of dividend imputation².

Allowing for the cash flow adjustments described above, the WACC was:

$$WACC = \hat{k}_e(1 - L) + k_d L$$

where L is the firm's leverage (i.e. debt to total value), \hat{k}_e is the cost of equity and k_d is the cost of debt.

The Authority also used the Conine beta levering formula, incorporating the imputation-adjusted corporate tax rate and an estimate of the debt beta, to convert the asset beta to an equity beta.

As a result of the 2005 investigation, the Authority recommended a WACC of 8.05% (the risk free rate at the time was 5.45%).

GAWB's Submission

GAWB submitted that there is a preference by regulators throughout Australia for estimating the WACC using the Officer CAPM for determining the cost of equity.

GAWB therefore did not undertake a detailed review of WACC methodology, preferring to focus on the most appropriate WACC parameters in response to material changes in GAWB's business environment, (prevailing) conditions in financial markets and any relevant developments in regulatory precedent.

Furthermore, while GAWB applied the Conine formula for conversion from the asset beta to the equity beta consistent with the Authority's recent reviews, it noted that the assumption of a debt beta was a key issue with the Conine formula.

² Officer (1994) presents four versions of the model that vary according to the definition of company post-tax net cash flows.

Other Jurisdictions

Other jurisdictions including ERA and IPART apply the Conine formula to convert the asset beta to an equity beta. However, the ESC, ACCC and ICRC favour the Monkhouse formula. The Australian Energy Regulator (AER) considers that the choice of formula ‘does not make a significant difference to the resultant estimates, so long as the same formula is adopted for both de-levering and re-levering (AER 2009)’.

Stakeholder Comment

RTA submitted that the pre-tax cost of debt appears to have been applied in determining the post-tax nominal WACC by GAWB. RTA suggested that the tax saving on debt costs should be captured in the WACC or underlying cash flows.

The Authority’s Analysis

The Authority considers that the WACC/CAPM approach remains appropriate, specified in nominal post-tax terms.

The Authority agrees with the AER view regarding the choice of beta levering formula, but notes for completeness that this is subject to the tax environment remaining unchanged [which is assumed to be the case]. The Authority therefore proposes to retain the Conine formula for converting the asset beta to the equity beta. The issue of debt beta is dealt with separately in a later section.

In response to RTA’s comment, the tax implications of GAWB’s debt are taken into account in GAWB’s cash flows.

Recommendation 31:

The Authority continues to recommend the WACC/CAPM approach using the Officer CAPM for determining the cost of equity capital, in nominal post-tax terms (Officer’s WACC 3). The Authority also proposes to continue using the Conine beta levering formula.

7.3 Cost of Capital for GAWB*Risk-Free Rate*

The risk-free rate represents the rate of return on an asset with zero default risk. In the 2005 pricing investigation, the Authority derived the risk-free rate based on a 20-day average of the 10 year Commonwealth bond yield, at a preset date. On this basis, a risk-free rate of 5.45% was determined as at 4 March 2005.

GAWB’s Submission

GAWB proposed no change from the previous approach of determining the risk-free rate by reference to the 20-day average of the 10 year Commonwealth Government bond rate.

However, GAWB submitted that, if further economic shocks occur during or prior to the reset of the risk-free rate, an adjustment should be considered to take account of any compression in Commonwealth Government bond yields arising from a ‘flight to quality’.

GAWB noted that the quantum of such an impact, or the convenience yield, can be estimated by comparing yields on Commonwealth Government bonds with other appropriate AAA-rated

comparators that have similarly low risks of default, such as State Government bonds or interest rate swaps.

Synergies (GAWB's advisors) noted that a certain level of the convenience yield would always be present, with a long term average of about 40 basis points. Synergies proposed that, if an economic crisis occurs at or about the time of reset and the convenience yield exceeded the long term average, the risk-free rate should be adjusted to ensure that GAWB is not disadvantaged. Synergies proposed no adjustment at this time noting that the Commonwealth Government bond yields have increased from historical lows reached at the end of 2008.

GAWB proposed that the actual reset date and averaging period that the Authority intends to use for determining the risk-free rate to apply in the final recommendations, should be provided confidentially to GAWB at least two months prior to the start of the averaging period.

Other Jurisdictions

IPART (2009) in its reviews of NSW metropolitan water businesses used the 20-day average of the 10 year Commonwealth Government Bond as a proxy for the risk-free rate. The ICRC (2008) and ERA (2009) both used the same approach.

ESC (2009) in its review of Melbourne Water adopted the average yield on nominal Commonwealth Government securities over a 40-day trading period.

Stakeholder Comment

QER supported GAWB's approach but recommended that recent fluctuations in financial markets be taken into account when considering the 10 year Commonwealth Government bond rate.

GRC considered that the '20-day average is too short to provide any consistent rate because (of)...short-term market fluctuations' characteristic of recent market conditions.

CPM considered that the risk-free rate should be based on data at the time of the pricing determination and noted the Authority's recent consideration of QR Network's proposed reference tariffs, where the risk-free rate was estimated with reference to five year, as opposed to 10 year, Commonwealth bond yields. CPM considered that a similar approach should be applied to GAWB.

The Authority's Analysis

In the past, the Authority has estimated the risk-free rate with reference to the yield on 10 year Commonwealth bonds.

At the same time, the Authority has in the past questioned this approach on the basis that it will tend to over- or under-compensate the regulated business depending on the term structure of bond yields. In this regard, it has been argued that the risk-free rate should be set with reference to the length of the regulatory period. This view is supported on the basis that a bond with a term that matches the regulatory cycle satisfies the fundamental principle of regulation, which is that the NPV of the future cash flows of the firm should equal the initial investment.

While the Authority has in the past recognised the appropriateness of benchmarking the risk-free rate on the basis of a bond with a term equivalent to the regulatory period, the differences have not been material and the Authority has accepted the use of a 10-year rate on the basis of regulatory precedent. However, with differences between five year and 10-year bonds now being potentially material, the Authority considers that it should adopt the more appropriate 5-year bond as the appropriate reference.

The Authority notes the issues raised by GAWB and Synergies in regard to the impact of the economic crisis on Commonwealth Government bond yields which fell as low as 4% compared to recent averages in the 5 to 6% range.

Such an approach is in effect moving towards the concept of a long term average measure of the risk-free rate. That is, if economic conditions lead to aberrations in the risk-free rate, GAWB proposes an adjustment to restore the observed rate closer to recent ranges. In response to GRC's comment, the Authority, along with other regulators, has the long-held view that the most recent observations of the risk-free rate provide the best indication of the forward-looking estimates. It is also noted that, in recent months, the Commonwealth bond rates have been less volatile.

For the purposes of the Draft Report, the Authority has estimated the five year risk-free rate using the 20 trading days ending on 23 February 2010, viz 5.19%.

The Authority notes that a 5 year term for the risk free rate was also adopted in the recent Draft Decision in respect of the Draft Access Undertaking submitted by QR Network. The Authority is currently considering stakeholder submissions in response to that decision and the outcome of that consideration will be taken to account in finalising the Authority's view on this matter for GAWB

The Authority proposes to advise GAWB of the reset date that will be used to derive the WACC prior to the Final Report.

Recommendation 32:

The Authority recommends that the risk-free rate be based on the 5 year Commonwealth bond averaged over 20 trading days. An indicative estimate using the 20 trading days ending 23 February 2010 is 5.19%.

Market Risk Premium

The market risk premium (MRP) represents the premium that investors require to accept risk associated with equity investments relative to the return provided by the risk-free rate.

In the 2005 investigation, the Authority adopted an MRP of 6%.

GAWB's Submission

GAWB supported the use of historical averaging to estimate the MRP. However, GAWB considered the recent global financial conditions have introduced a degree of volatility (i.e. a significant downward spike) associated with these estimates. GAWB contended that longer term estimates provide a more 'appropriate benchmark for estimating the MRP' and that this 'volatility' can be overcome through excluding the year 2008 from the dataset. Accordingly, GAWB suggested that a value of between 6% and 7% is a reasonable range for the MRP.

Synergies, in its report to GAWB, considered there is substantial evidence to suggest that the true value of the MRP exceeds the regulatory precedent of 6%. Synergies noted the AER's recent decision to apply a MRP of 6.5% in recognition of the potential impact of the global financial crisis. Synergies recommended the mid-point of GAWB's preferred range (6.5%) as the appropriate long term value for the MRP for GAWB.

Other Jurisdictions

In its review of prices for Hunter Water, IPART (2009) adopted a range for the MRP of 5.5% to 6.5%. The ICRC (2008) applied a MRP of 6% in its pricing review of ACTEW, noting that there was no new evidence to support a move away from this level.

The ESC (2009) considered exclusion of 2008 from the estimation period but concluded that this could overstate the MRP, as it includes the higher than average returns in the years leading up to and including 2007, but does not include the effects of the market correction in 2008. It retained a MRP of 6%. The ERA also applied a MRP of 6%.

In estimating an appropriate MRP, the AER considered historical estimates, cash flow measures (using variants of the dividend growth model) and surveys of market practitioners having regard to each 'tempered by an understanding of the strengths and weaknesses of each measure'. The AER, although acknowledging that recent global financial conditions have introduced a degree of instability to returns associated with the Australian All Ordinaries Index, concluded that a domestic, broad based, accumulation index over a 10 year term constitutes an appropriate historical estimate (AER 2009). The AER adopted a MRP of 6.5%.

Stakeholder Comment

CSE's position is that reference to current global financial volatility is unwarranted when consideration is being given to pricing arrangements associated with existing infrastructure. That is, reference should be made to financial conditions only at the time expenditure associated with the infrastructure is incurred.

QER provided conditional support for GAWB's nominated range of between 6% and 7%. However, given that global market conditions have changed since GAWB's submission was compiled, QER suggested the Authority should 'apply a consideration in regard to potential market direction before setting this rate for GAWB'.

CPM acknowledges that the Authority's recent consideration of QR Network's proposed reference tariffs provided compelling reasons to retain a MRP of 6%.

The Authority's Analysis

Estimating the MRP is problematic. There is a range of estimation methods which have different characteristics. In principle, the MRP should be forward-looking to be consistent with the CAPM, but regulators have relied on historical time series, and often very long time series given the standard errors of the estimates. This questions the reliability of the estimates, as markets today are very different to markets of 100 years ago (e.g. information availability and transactions costs). Also, certain estimation techniques are known to have significant biases.

The Authority considered a range of techniques for estimating the MRP including different forms of historical averaging, forward looking approaches using forecast earnings per share growth and industry surveys (QCA 2009). The historical averaging methods produced MRP estimates ranging from 5.27% to 6.99% while forward-looking measures and surveys provided a range between 3.66% and 6%. The median of the estimates was 5.84%, and the average was 5.63%. On the evidence available, and consistent with regulatory practice, the Authority concludes that an estimate of 6% is reasonable.

The Authority notes that the AER increased the MRP from 6% to 6.5% in its May 2009 decision on WACC parameters for energy networks. The Authority is not proposing to adopt the AER's decision on the basis that:

- (a) the Authority's analysis indicate that 6% is a reasonable estimate and sits above both the median and average estimates;
- (b) any adjustments made to the MRP to accommodate short term market fluctuations are inherently subjective both in the scale of the adjustment and the period over which they would need to be subsequently reversed; and
- (c) increasing the premium now would be inconsistent with past practice that sets the MRP at a level to encourage investment over the medium term and not in response to short term fluctuations.

The Authority also took into consideration the potential inconsistency of estimating the MRP relative to the 10 year Commonwealth bond but using the five year Commonwealth bond for estimating the risk-free rate. The Authority concluded that, in terms of historical averaging, the difference between these bonds is around 20 basis points, well within the standard error of the estimates and the headroom the Authority provided between the 6% allowance and the mean/median estimates arising from the various estimation techniques.

Recommendation 33:

The Authority recommends that the WACC for GAWB be based on an MRP of 6%.

Capital Structure

Capital structure refers to the relative weights of debt and equity that together finance the regulated entity's asset base.

In the 2005 review, the Authority engaged Allens Consulting Group (ACG) to recommend an appropriate capital structure for GAWB. ACG noted that energy companies are typically geared at 60% for regulatory purposes and large water companies are geared at between 50% and 60%. ACG noted that GAWB's operations are characterised by greater periods of excess capacity and weather risks relative to these businesses.

Based on ACG's analysis, the Authority recommended a gearing of 50% for GAWB for regulatory purposes and a credit rating of BBB.

GAWB's Submission

GAWB submitted that its business risk profile has not materially changed since the Authority's last review and that, as a consequence, a gearing level of between 50% and 60% is considered appropriate, and that the BBB credit rating should be retained. Given the implications associated with recent global financial conditions on the ability of BBB-rated firms to raise debt, GAWB considered that the lower bound gearing level of 50% is appropriate.

Other Jurisdictions

In all recent water regulatory decisions, a gearing ratio of 60% was adopted with the exception of ERA's draft decision for Bunbury and Busselton Water Boards. For these water boards, ERA recommended a 40% gearing ratio in recognition of the relatively small sizes of the businesses and exposure to cost variations.

Stakeholder Comment

QER supported GAWB's proposed capital structure, consistent with a BBB credit rating.

RTA considered that a monopoly utility such as GAWB with demand underwritten by contracts with blue-chip companies should have a more aggressive capital structure due to its comparatively modest risk profile. RTA pointed to international water businesses and Australian regulated infrastructure businesses which have significantly higher gearing of 60 to 70%. The consequences of this capital structure would be a reduced WACC.

CPM considered that GAWB's proposed gearing ratio of 50% is inconsistent with the Authority's most recently applied approach to calculating WACC. Specifically, the Authority's recent consideration of QR Network's proposed reference tariffs to apply to the QR network, recommended a gearing ratio of 55%.

The Authority's Analysis

The Authority engaged consulting firm PwC to review the level of gearing and credit rating applicable to GAWB.

PwC noted that the Australian regulatory norm for water businesses is a gearing level of 60% (as also observed by RTA), but considered that GAWB's risk characteristics indicate a lower sustainable gearing level than the average metropolitan water business. This was because the larger metropolitan water businesses have a more numerous and diverse industrial and commercial customer base.

PwC noted that, relative to most other water businesses, GAWB faces concentrated demand risks and weather risks. PwC considered that, taking these risks into account, a 50% gearing is the maximum that could be supported by a business with GAWB's risk profile. Therefore PwC recommended that GAWB's level of gearing (debt to total assets) should be set to 50%.

In assessing the credit rating for GAWB, PwC reviewed credit metrics including the Funds Flow from Operations to interest (FFO/Interest) and FFO/Debt. PwC found that, with GAWB's current gearing levels around 40%, the FFO/Interest cover and the FFO/Debt were relatively weak at 1.9 and 4.2 over the last five years. Such metrics would be even weaker with a 50% gearing level, but were considered consistent with the previously assumed BBB credit rating. This outcome largely reflects GAWB's circumstances where a substantial level of spare capacity is included in the asset base to provide for future demand growth.

Recommendation 34:

The Authority recommends a capital structure of 50% debt and 50% equity, with an associated BBB credit rating.

Debt Beta

The debt beta is a measure of the risk borne by debt holders due to the entity's use of debt financing.

In the 2005 review, the Authority estimated the debt beta by taking mid-point between the range of zero and the upper bound defined by the debt margin including the default premium on corporate debt as a proportion of the equity market risk premium.

The basis for this approach was to minimise potential error. A debt beta at the upper bound attributes the entire debt margin to systematic risk – i.e. it treats both default and liquidity premium allowances as systematic. A debt beta of zero would fail to recognise that an element of systematic risk is incorporated into the debt margin. Accordingly, the selection of a non-zero debt beta at the mid-point was considered to minimise error. The debt beta for GAWB in the 2005 investigation was 0.11.

GAWB's Submission

GAWB's position was that CAPM has been developed in the context of equity, as opposed to debt, markets and, as a consequence, has a tendency to attribute the debt risk premium to systematic risk. According to GAWB, given that a substantial determinant of the cost of debt is non-systematic (i.e. diversifiable) default risk, the CAPM approach will inappropriately inflate the value of the debt beta

GAWB submitted that this discrepancy is 'exacerbated at the current time given the blow-out in credit spreads that has occurred due to conditions in global financial markets'. GAWB also contended that there is no accepted methodology (amongst regulators) of deriving a reliable estimate for the debt beta. GAWB considered that this discrepancy can be managed through applying a value for the debt beta of zero.

Synergies, in its advice to GAWB, highlighted the impact of the debt beta on the equity beta in current circumstances where there is a high observed debt margin. On its analysis, assuming an asset beta of 0.4, gearing of 50% and a gamma of 0.5, a debt beta of zero would give an equity beta of 0.74. Alternatively, a debt beta of 0.11 as used in the 2005 investigation would result in an equity beta of 0.65, while the mid-point estimate of 0.26 for the debt beta would give an equity beta of 0.52.

Other Jurisdictions

In recent water sector decisions, IPART, ESC, ICRC and ERA have preferred to adopt an equity beta without public reference to an asset beta and a debt beta. However, GPOC applied a debt beta of 0.12 in its investigation into the pricing policies of Tasmanian water businesses.

Stakeholder Comment

QER support the adoption of a zero value for the debt beta.

CPM note that, during the Authority's recent consideration of QR Network's proposed reference tariffs, a similar proposal regarding adopting a debt beta of zero was put forward. Given that the Authority, in this instance, dismissed this proposal, CPM supports a debt beta of 0.11.

The Authority's Analysis

The Authority does not accept Synergies proposal for a zero debt beta as research indicates that the debt margin necessarily includes a positive systematic component. However, the Authority notes that, as long as the same value of the debt beta is applied consistently in the de-levering and re-levering process, the effect on the equity beta range should not be material.

The Authority notes that its approach of adopting a mid-point estimate for the debt beta is likely to lead to an over-estimate of the level of systematic risk incorporated into the debt margin under recent conditions in the financial markets.

However, the Authority (consistent with the QR Network Draft Decision) disagrees with GAWB's position that a substantial determinant of the cost of debt is non-systematic default risk and that, as a consequence, the CAPM approach inappropriately inflates the value of the debt beta. The Authority also does not support GAWB's position that there is no 'accepted methodology of deriving a reliable estimate for the debt beta' and that the default position should be the adoption of a zero value.

Consistent with the Authority's approach for QR Network, it is proposed to continue to apply the previous estimate of 0.11 for the debt beta for GAWB.

Recommendation 35:**The Authority recommends a debt beta of 0.11.**

Asset and Equity Betas

The asset beta is a statistical measure of the volatility of the net cash flow of an investment relative to the market as a whole. Specifically, the asset beta measures the business risk arising from the sensitivity, or covariance, of a firm's operating cash flow relative to the market. In effect, the asset beta measures systematic, or non-diversifiable, risk.

The equity beta is a statistical measure of correlation between the returns of an investment and the market as a whole where a combination of debt and equity are used to finance investment. Specifically, the equity beta reflects both the market risk associated with holding an investment and the financial risk associated with the use of debt to finance that investment.

The difference between a firm's asset and equity beta reflects the underlying business risk associated with its assets and the financial risk borne by shareholders due to the use of debt financing.

In the 2005 review, the Authority engaged ACG to analyse the underlying factors and the beta estimates of selected comparators. ACG recommended an asset beta of 0.40, which corresponded to an equity beta of 0.65.

GAWB's Submission

GAWB considered that it is unaware of any 'material change' in systematic risk since the Authority's previous pricing investigation.

GAWB argued that there is no justification for a lower asset or equity beta compared to metropolitan water service providers, given GAWB's exposure to industrial customers. GAWB submitted that, in the absence of a more detailed analysis of comparator firms with appropriate business risks, the asset beta of 0.4 previously used in the 2005 investigation appears reasonable.

GAWB submitted that, based on a debt beta of zero and a gamma of zero, the resulting equity beta is 0.68.

Other Jurisdictions

The ERA (2009) and the ESC (2009) applied equity betas of 0.65 in recent water regulatory decisions. IPART (2009) applied a range of 0.8 to 1.0 for Sydney Water and Hunter Water. The ICRC (2008) used an equity beta of 0.9 for ACTEW. GPOC (2007) applied an asset beta of 0.45 and an equity beta of 0.77 for Tasmanian water businesses.

Stakeholder Comment

QER supported the adoption of an asset beta of 0.40.

CPM recommended the Authority '...reassess the relative systematic risk exposure of GAWB compared to other regulated utilities...to re-determine the asset beta...as necessary'. In addition, CPM supported calculating the equity beta consistent with the Authority's established approach.

QAL consider that the nature of GAWB's demand (i.e. mostly large industrial customers highly reliant on water) indicates that the risk faced by GAWB is modest and this level of risk should be reflected in its WACC.

The Authority's Analysis

Although GAWB is proposing no change to the asset beta, the Authority engaged PwC to review GAWB's asset and equity betas to ascertain whether any change is warranted.

PwC agreed with GAWB that there has been no material change to GAWB's systematic risk profile, but rejected the position that GAWB faces greater systematic risk than metropolitan focussed water suppliers. PwC indicated that, although GAWB's industrial revenue is concentrated in a small number of customers, the revenue is subject to long term contracts with effective take-or-pay components. PwC also concluded that GAWB's revenues do not exhibit material sensitivity to the business cycle.

PwC noted that there is significant variation in the equity betas applied by regulators to water businesses in Australia. PwC concluded that evidence from the United Kingdom and the United States is somewhat supportive of a relatively low beta for water businesses but conceded this evidence is sufficiently diverse to raise substantial uncertainty about where the beta lies.

Accordingly, PwC considered that there is a 'need to exercise professional judgment informed by the available evidence' and concluded that there is no 'compelling case to either raise or lower the equity beta of 0.65'. The Authority accepts the PwC recommendation that there is no case to change the equity beta from the previous investigation.

Recommendation 36:

The Authority recommends an asset beta of 0.4 corresponding to an equity beta of 0.65.

Cost of Debt

The cost of debt is the marginal rate at which a firm can raise debt financing or, alternatively, the cost that a firm's debt holders demand on new borrowings. It is usually expressed as the sum of the risk-free rate and a debt margin.

In the 2005 investigation, the Authority estimated the cost of debt based on the observed margin for BBB-rated bonds over the risk-free rate. Using CBA Spectrum and Bloomberg benchmark data, ACG recommended a mid-point debt margin of 119.5 basis points (bp). With an allowance of 12.5 bp for debt issuing costs, the estimated debt margin was 132 bp.

Accordingly, the Authority adopted a cost of debt for GAWB of 6.77%, based on a risk-free rate of 5.45% and a debt margin of 132 bp above the risk free rate.

GAWB's Submission

GAWB submitted that, in normal financial circumstances, the debt margin would be based on the difference between the yield on 10 year corporate bonds (rated BBB) and the risk-free rate, averaged over the same 20-day period. In calculating bond yield, GAWB noted that reference has usually been made to Bloomberg and/or CBA Spectrum data.

However, GAWB submitted that recent global financial conditions have led to a significant divergence between the yields reported by Bloomberg and those by CBA Spectrum. In addition, it has been difficult for BBB rated businesses to issue securities with a 10 year maturity and, as a result, Bloomberg has not published yields for 10 year BBB rated securities.

GAWB proposed that, in response to this, the alternative Bloomberg approach (an approach adopted by AER) has been to observe the yield on the longest-dated BBB bond (currently eight years) and add the margin between an A-rated 10 year and eight year bond.

Synergies, in its report for GAWB, noted that it is possible that Bloomberg estimates are understating the yields on long term BBB corporate debt, while CBA Spectrum estimates are overstating them. Bloomberg's debt margin of 3.11% was compared to the CBA Spectrum estimated debt margin of 5.56% for the 20-day average ending 30 June 2009. Synergies recommended that a 'reasonable and prudent approach is to take the average of these two' figures, giving a debt margin of 4.34%.

Synergies further noted that, if Bloomberg estimates are used by the Authority, there is a significant risk that the actual cost of long term BBB rated debt is being understated.

In the context of debt issuing costs, GAWB acknowledged that, as a result of the Authority's 2005 review, an allowance of 12.5 bp was included in GAWB's debt margin. On the basis of Synergies' advice, GAWB considered that continuing the 12.5 bp remains reasonable and is indeed, '...likely to be conservative given the difficulties being experienced by firms in the current market'.

Other Jurisdictions

IPART (2009), in its review of Hunter Water, obtained actual and fair value yields from Bloomberg as accepted by Australian banks and businesses seeking to raise funds in the equity and debt capital markets.

IPART undertook further analysis in regard to both the traditional set of securities as well as a set of utility issued securities. The debt margins ranged from 2.7% to 3.5% for the traditional securities, and from 1.1% to 3.5% for utility issued securities, based on a 20-day average to a designated date. For the Hunter Water review, IPART maintained the use of traditional securities, but proposed to consider the potential use of utility issued securities or using some form of hybrid to the two approaches for future reviews. IPART also allowed 12.5 bp for debt issuing costs.

ICRC (2008) noted a substantial increase in corporate bond rates as a result of the global liquidity crisis between its draft and final decisions for ACTEW pricing. ICRC calculated a debt margin based on the Bloomberg eight-year index, a small margin to reflect the difference between eight-year and 10-year rates on A-rated bonds, and a margin for debt raising costs (12.5 bp). The result was a debt margin of 3.024%.

ESC (2009) based its debt margin estimates on advice from Treasury Corporation of Victoria (TCV), because water businesses only borrow through the TCV as opposed to debt markets. ESC identified a range of 1.7 to 2.4%, and preferred an estimate at the upper end of the range to ensure that the nominal cost of debt implied by the WACC is sufficient to cover current borrowing costs. The ESC considered that the corporate bond market for BBB rated bonds is not likely to produce a reliable benchmark and incorporate a factor for the risk of default which is not relevant for the Victorian water industry.

ERA (2009) used the eight year Bloomberg BBB fair yields *plus* the yield spread between eight and 10 year Bloomberg A fair yields to replicate a 10 year BBB benchmark in determining an appropriate cost of debt. In addition, ERA supported an allowance of 12.5 bp to cover debt raising costs. ERA recommended:

- (a) for the Water Corporation, a debt margin of 2.725% above the risk-free rate (which corresponds to an A- credit rating) and debt issuing costs of 12.5 bp; and

- (b) for Aqwest and Busselton Water, a debt margin of 2.925% above the risk-free rate (which corresponds to a BBB+ credit rating) and debt issuing costs of 12.5 bp.

Stakeholder Comment

QER supported GAWB's proposed methodology for estimating the cost of debt but suggested the Authority, in estimating the debt margin with reference to bond yield, apply 'a consideration' to ensure consistency with financial conditions that prevail at that time. In addition, QER considered that any figure nominated by GAWB associated with debt raising costs should be based on historic precedent.

CPM's expectation is that the debt margin be based on data at the time of the relevant price determination and that the Authority consider the 'appropriateness of any market data given recent volatility in financial markets'. CPM proposes no change to debt raising costs of 12.5 bp.

RTA submitted that Bloomberg, which quotes actual traded prices and is widely used by the market, is a more reliable source than CBA Spectrum.

The Authority's Analysis

The extent of illiquidity in global financial markets is reflected in increased debt margins compared to previous years. Standard practice has been to estimate the debt margin by referencing the Bloomberg and CBA Spectrum estimates which tended to track each other reasonably closely. In March 2008, they started to diverge widely, but in recent months have again provided relatively convergent estimates.

The Authority's recommendation of a five-year Commonwealth bond rate is also relevant for the bond rates used for estimating the debt margin. In this instance, the Authority recommends setting the debt margin with reference to the 20-day average of five-year bond yield data rather than 10-year yield data previously used.

The Authority engaged PwC to undertake analysis of GAWB's debt margin and debt issuing costs using five-year yield data.

PwC reviewed the effects of recent financial conditions and concurred with GAWB that the established benchmarks of Bloomberg and CBA Spectrum have tended to provide volatile and inconsistent estimates. However, PwC found that the wide divergence in Bloomberg and CBA-Spectrum estimated fair value curves (in recent months) has narrowed considerably.

PwC's position is that exclusive reference to Bloomberg data is favoured on the basis that it is based on more appropriate methodology and comprehensive information, and adjusts for outlier observations. Estimates of the Bloomberg fair value curve at a term of five years with reference to the 20 trading days up to 23 February 2010 imply a debt margin of 347 bp for BBB rated debt.

PwC advised that the change from the 10-year yields to five-year yields (consistent with the regulatory period) should be accompanied with an increase in debt issuing costs, given that most of these costs are incurred upfront and hence translate into a higher annualised fee when recovered over a shorter period. Accordingly, PwC recommended an allowance of 20 bp which is the value that would provide a similar present value of fee allowances over the five (as opposed to ten-) year period. At the same time, PwC noted the original 12.5 bp margin was conservative when compared to evidence of a range between eight to 10 bp at that time.

The Authority accepted PwC's advice in regard to using Bloomberg data for the five-year debt margin. However, the Authority considered that a margin of 12.5 bp for transactions costs was

reasonable. The result is a total debt margin of 360 basis points and a cost of debt of 8.79% (at an indicative date of 23 February 2010).

Recommendation 37:

The Authority recommends that the cost of debt be based on the BBB margin above the risk free rate for five-year corporate bonds. As at 23 February 2010, this translates into a cost of debt of 8.79% based on a debt margin of 347 basis points plus a margin for transactions costs of 12.5 basis points.

Gamma

Gamma is a measure of the effective value of dividend imputation franking credits, taken as the product of the value placed by investors on the tax credit (which depends on the investor's marginal tax rate) and the proportion distributed.

In the 2005 review, the Authority adopted a value of gamma of 0.5.

GAWB's Submission

GAWB submitted that, although regulators are now consistently adopting a value (for gamma) of 0.5, there is strong evidence that the value of gamma has fallen significantly, and zero is now the best estimate.

GAWB's reasoning was based on the fact that non-resident shareholders are unable to derive benefit from franking credits since the introduction of the 45-day rule. According to GAWB, as a consequence of this, the return to a foreign investor merely comprises dividends and capital gain, with the return to domestic investors being dividends, capital gain *and* franking credits.

GAWB submitted that, even if the majority of shareholders are domestic but there is some presence of foreign investors, then economic theory (i.e. Officer's theory on dividend imputation which describes the marginal shareholder as the price-setting investor) dictates that the marginal investor will be foreign because this investor will set the market-clearing price that determines the cost of capital. GAWB therefore submitted that, in Australia, as the price-setting investor is likely to be foreign, franking credits will not be accorded a value in the pricing of shares.

In addition, GAWB's consultant Synergies undertook statistical analysis to conclude that the market, on average, responds equally to fully franked and unfranked dividends, again suggesting that the market places no value on franking credits.

Based on Synergies' advice, GAWB's conclusion was that the value of gamma should be set at zero.

Other Jurisdictions

IPART (2009) has applied a range of 0.5 to 0.3 for gamma in its water pricing review of the major urban water businesses. ICRC (2008) in its investigation of WACC parameters for ACTEW, nominated a value of 0.5 for gamma. ESC (2009) also applied a gamma of 0.5 for its WACC calculation for Melbourne Water.

ERA recommended a value of 0.65 based on 'recent studies of the utilisation of imputation credits in Australia (ERA 2009)'.

AER (2009), in its recent review of WACC parameters for electricity transmission and distribution businesses, estimated a gamma of 0.65, as the mid-point value between two empirical studies.

Stakeholder Comment

QER submitted that a zero value for gamma is appropriate.

RTA does not support the proposal that the marginal investor is the international investor. RTA submitted that potential purchasers of an interest in infrastructure assets will, in most cases, be able to utilise the benefit of imputation credits. RTA noted the numerous precedents for recognition of imputation credits in regulatory determinations of WACC across Australia, including IPART, ESC and ERA.

CPM does not support the adoption of a value for gamma of zero as this is inconsistent with the Authority's recent consideration of QR's proposed reference tariffs where a value of 0.50 was recommended.

The Authority's Analysis

The Authority does not accept Synergies' arguments in regard to the use of zero for the utilisation rate of franking credits.

The Authority does not consider it inappropriate to use the value assigned to imputation credits by foreign investors within a domestic CAPM model. The Authority considers that consistency requires that all parameters are estimated within the context of either a domestic CAPM or an international CAPM.

In addition, the Authority is of the view that, within the version of the CAPM applied in Australia, gamma is defined as the weighted average of the utilisation rates of all investors and that the equilibrium price of equities is determined, inter alia, by the aggregate demand for (and supply of) equities and not simply by the marginal investor.

The Authority recommends that gamma be set at 0.5 as previously used in the 2005 investigation remains.

Recommendation 38:

The Authority recommends a gamma 0.5 for GAWB.

Expected Inflation

In applying a nominal post-tax approach, the Authority requires a projection for inflation over the regulatory period.

The Authority's 2005 investigation recommended that inflation be estimated using the difference between the nominal bond rate and capital indexed bonds over the same period using the Fisher equation. The resulting estimate was 2.69%.

GAWB's Submission

GAWB submitted that the Authority's preferred approach is biased. This bias is based on the Government's decision in 2003 to cease the issuing of indexed bonds and the increased demand for these assets.

GAWB considered that the ACCC and AER approach, which is to produce a long-term forward-looking estimate based on the Reserve Bank of Australia's (RBA) forecasts for the next two years followed by the mid-point of the target range after that.

GAWB estimated an inflation rate of 2.43% using forecasts contained in the RBA's August 2009 *Statement of Monetary Policy*.

Other Jurisdictions

As part of its inquiry into tariffs for water service provision, ERA considered that the contracting of supply in capital indexed bonds has caused an 'upward bias in real yield' resulting in the application of the Fisher equation being at risk of producing a 'downward biased result' (ERA 2009).

Accordingly, ERA base inflation estimates on the geometric mean of 10 years expected inflation for the period June 2010 to 2019, using the RBA's inflation forecasts for the first two years and the mid-point of the RBA's target inflation range for the remaining eight years (2009).

IPART considers that using differences between nominal and real Commonwealth bond rates to estimate expected inflation is problematic due to the resulting bias associated with indexed bonds caused by the Commonwealth having indicated they will not be issued beyond the 2020 maturity series.

Accordingly, IPART intends now to base inflation estimates with reference to swap data provided by Bloomberg. Specifically, inflation indexed swaps are derivatives used to offset inflation risk providing an indication of market expectations of inflation (IPART 2009).

Stakeholder Comment

No stakeholder comments were received regarding methodologies for estimating expected inflation.

The Authority's Analysis

The Authority accepts that its previously adopted method of using the difference between the nominal bond rate and capital indexed bonds is no longer appropriate. GAWB's proposed approach is essentially reflective of the mid-point of the RBA's target range for inflation.

The Authority notes that, as the inflation rate is applied in rolling forward the value of assets at the conclusion of each year of the regulatory period, and as this is done using actual CPI, its estimation is needed only for the purpose of providing indicative pricing. GAWB's prices are reset each year based on observed CPI outcomes.

For the purpose of estimating prices in the Draft Report, the Authority has estimated inflation based on the midpoint of the Reserve Bank of Australia's inflation target range. Currently the mid-point is 2.5%.

Recommendation 39:

For the purpose of the Draft Report inflation has been estimated at 2.5%.

7.4 Conclusion on WACC

GAWB's Submission

Using the parameters it proposed, GAWB's estimate of WACC was 10.05% using a risk-free rate of 5.61%.

The Authority's Analysis

Each of the parameter inputs into WACC has been discussed in previous sections. On the basis of its recommendations in these sections, the Authority's estimate of WACC is 8.93% based on a risk-free rate of 5.19%. Table 7.1 summarises GAWB's proposed values along with the Authority's recommendations on the cost of capital for GAWB.

Table 7.1: GAWB Cost of Capital Parameter Values

<i>Parameter</i>	<i>Authority's Estimate, 2005 Pricing Investigation</i>	<i>GAWB Value</i>	<i>Authority's Draft Estimate</i>
Risk-free rate	5.45%	5.61%	5.19%
Market risk premium	6.0%	6.5%	6.0%
Capital structure (% debt)	50%	50%	50%
Debt beta	0.11	0	0.11
Asset beta	0.40	0.40	0.40
Equity beta	0.65	0.68	0.65
Gamma	0.5	0	0.5
Cost of Equity	9.33%	10.03%	9.07%
Debt margin (including transactions costs)	1.32	4.34	3.60
Cost of Debt	6.77%	10.07%	8.79%
Officer WACC3	8.05%	10.05%	8.93%

The Authority notes that the main driver for the increased WACC compared to 2005 is the increased debt margin as a result of the tightening of the credit markets following the global financial crisis.

The Authority's estimated WACC is lower than GAWB's due to a lower observed risk-free rate, an MRP of 6% and a lower estimated debt margin.

The Authority proposes to reset the WACC prior to the Final Report, so that the above estimates should be considered to be indicative only.

8. OPERATING COSTS

8.1 Background

GAWB's operating costs include operations, maintenance, electricity, chemicals, staffing costs, insurance, rates, self-insurance and corporate overhead costs.

8.2 Cost Allocation

In the 2005 price investigation, with the assistance of SMEC, the Authority identified efficient operating costs for each zone of GAWB's raw and treated water supply systems, with those costs being:

- (a) system direct costs – those costs specifically attributable to system zones, which include operations, maintenance, electricity and chemicals costs;
- (b) system overhead costs, or indirect costs – which are attributable to raw water or treated water services, but not to a specific zone. SMEC considered that the amount of system overhead costs allocated to an individual zone would vary in proportion to its operations and maintenance costs incurred on a year-by-year basis; and
- (c) general administration costs – costs which could not be attributed to a particular service or zone.

The Authority accepted SMEC's proposal that general administration costs be allocated to customer service functions and demand based functions. SMEC's analysis of GAWB's general ledger accounts indicated that 10% of general administration costs were attributed to customer service functions (including billing, customer contract administration, queries and customer pricing matters) which should be evenly distributed between GAWB's customers. For demand based functions which make up the remaining 90%, SMEC concluded that the relative management effort between the three major segments should be allocated in accordance with the following weightings:

- (a) 0.5 for supplies from Awoonga Dam;
- (b) 1.0 for raw water delivery; and
- (c) 2.0 for treated water production and delivery.

GAWB's Submission

GAWB submitted that, where possible, it sought to capture actual and forecast operating costs by specific pricing zones. This approach was designed to ensure water prices are cost reflective.

For allocative purposes, GAWB segmented its business into four broad categories:

- (a) source assets – Awoonga Dam and contingent supply strategy preparatory works;
- (b) raw delivery network – comprising all raw delivery pricing zones;
- (c) water treatment plants – both the Gladstone and Yarwun water treatment plants; and
- (d) potable delivery network – comprising all treated delivery pricing zones.

Within these broad groups, referred to by GAWB as 'segments', GAWB identified separate pricing zones.

GAWB also submitted that the costs for supporting these segments be treated as support service costs and represent those costs that cannot be directly assigned to any of the segments listed above.

Further, GAWB submitted that:

- (a) if costs are directly related to one pricing zone, the cost should be solely assigned to that pricing zone;
- (b) if costs are related directly to a group of pricing zones, the cost should be assigned to those groups based on a relevant expenditure driver, such as asset value;
- (c) if costs are related to a segment (e.g. raw delivery network), costs should be assigned to zones based on demand in each pricing zone in the raw delivery network; and
- (d) where costs are related to more than one segment, costs should be assigned between segments using a relevant driver, and allocated to pricing zones on the basis of demand.

GAWB also proposed that support service costs be allocated directly to customers using the methodology recommended by the Authority in the 2005 price review.

Stakeholder Submissions

Both RTA and QAL submitted that GAWB should provide a detailed breakdown of the cost allocation methodology between service areas to confirm that the growth of operational staff costs required for water treatment activities are correctly allocated to treated water customers.

The Authority's Analysis

The Authority engaged Davwil to review GAWB's methodology for allocating general administrative costs to water products and customers.

Davwil noted the Authority had previously stated that further activity analysis was required to be undertaken by GAWB to identify the key activity drivers and, thus, adequately justify the basis used to allocate overhead expenses. Davwil noted that GAWB had not done so. Davwil also identified that GAWB does not keep staff time sheets but rather allocates staff time based on a Manager's assessment of activities. As a result, there is no record of actual staff times against specific customer related activities. Davwil was therefore unable to determine whether the current basis for allocating overheads remains valid and appropriate to apply to customers for the next pricing period.

Further, Davwil noted that a key issue with the current allocation relates to the impact on small usage customers where the 10% overhead allocation is a significant proportion of the small usage customer's bill. In discussions, GAWB indicated that it was aware of the effect of the cost allocation methodology on small customers, and proposed to maintain the allocation at current levels, with GAWB absorbing a loss of revenue. In effect, GAWB proposed to maintain current charges for smaller customers related to the 10% overhead allocation, thus under-recovering by the difference between the previous charge and that which would have applied.

Davwil also noted that, as GAWB improves its billing system and the new control system's remote meter reading becomes effectively utilised, costs that currently relate to each customer should diminish, through improved efficiencies.

Overall, Davwil was of the view that the level of specific overhead activities associated with customers was likely to be significantly less, on average, than the current 10% allowance. As a

result, Davwil concluded that the current 90-10 split should be replaced by overhead costs being allocated solely on the basis of relative administrative effort required to provide storage, raw water and treated water services. Effectively, Davwil recommended that overhead costs should be assigned to customers on the basis of their share of demand in the zone.

Davwil also recommended that GAWB undertake an activity based analysis of its overhead costs and develop an overhead allocation approach based upon key drivers in consultation with its customers, as recommended by the Authority in 2005.

The Authority accepts Davwil's conclusion that the 90%-10% allocation is no longer appropriate and that overhead costs should be allocated on the basis of relative administrative effort required to provide storage, raw water and treated water services. The Authority also agrees that GAWB should undertake an activity based analysis of overhead cost and develop an approach based on key drivers, in consultation with its customers.

Recommendation 40:

The Authority recommends that:

- (a) GAWB's general administrative costs be allocated to customers on the basis of the relative administrative effort required to provide storage, raw water and treated water services; and**
 - (b) GAWB undertake an activity based analysis of overhead costs and develop an approach based on key drivers, in consultation with its customers.**
-

8.3 Escalation of Operating Costs

In the 2005 investigation, the Authority used forecast CPI to escalate operating costs over the ensuing regulatory period.

GAWB's Submission

GAWB's escalation factors for operating costs over the 2010-15 period were determined as follows:

- (a) employment costs – increasing by 5% per year, incorporating a market movement of 4% a year and a performance related movement of 1% per year;
- (b) insurance – increasing by 5% a year for 3 years than increasing at CPI thereafter;
- (c) professional services – increasing by 4.63% per year, based on the 3-year average (2007-09) of the property and business services wage price index;
- (d) electricity – increasing at 8% per year;
- (e) chemicals – increasing at 4.84% per year, based on the 3-year average (2007-09) of the articles produced by manufacturing industries – chemicals index;
- (f) construction – increasing at 6.3% per year based on the 3-year average (2007-09) of the Queensland general construction index;
- (g) council costs – increasing at 5.3% per year reflecting the February 2009 Local Government Association's Council cost index; and

- (h) other costs – increasing at 2.43%, based on Synergies’ CPI forecast.

For the 2015-2030 regulatory period, GAWB projected operating costs increase by CPI from the 2014-2015 year onwards.

Other Jurisdictions

In reviewing Melbourne metropolitan water prices, the ESC (2009) applied CPI for operating inputs such as electricity and chemicals, but allowed a 1.5% real increase in labour costs over the regulatory period.

The ICRC (2008) adopted a more conservative wages growth forecast of 4.7% nominal per year compared to ACTEW’s proposed 5.45%. The ICRC noted that ACTEW’s wages rates were already higher than industry-related market rates, and sourced its preferred forecast from BIS Shrapnel.

Stakeholder Submissions

GRC was concerned that the proposed increases in operating costs were substantially above CPI.

CPM was also concerned about GAWB’s escalation methodology of selecting 2007-09 indicators and carrying this forward into the next five-year period. CPM notes that the 2007-08 period incorporates the end of the resources boom in Queensland and the economy has subsequently moved downwards in 2009.

RTA and QAL submitted that the Authority should seek independent advice regarding the appropriateness of applying a 5% escalation factor for employment costs.

The Authority’s Analysis

The Authority notes that GAWB’s approach for escalating future operating expenditure relies on forecasts for specific indexes, which either use prior 3-year averages or an alternative estimate. In most cases, the Authority has accepted GAWB’s proposed indexation measure. However, the Authority considers that a three-year historical average will not provide a reliable indication of cost escalation over the regulatory period, as market conditions may now be markedly different from those in that period.

Therefore, for those items (operations, maintenance and chemicals), the Authority considers that more attention needs to be given to a more appropriate forward looking approach. In the interim, the Authority has adopted CPI as the index.

At the same time, the Authority accepts GAWB’s proposal to escalate all operating cost items by CPI from 2015 to 2030.

Recommendation 41:

The Authority recommends that:

- (a) GAWB review the basis for escalating the costs of operations, maintenance and chemicals costs over the 2010-2015 regulatory period, with CPI being used until a more appropriate escalation basis is determined; and**
 - (b) Operating costs be escalated using CPI during the period 2015-2030.**
-

8.4 Efficient Operating Costs

Efficient costs should reflect the costs that would normally be expected to occur in a competitive environment. That is, there is a need to reflect the impact of changes in technology, developments in economies of scale and productivity improvements in response to increased competition and inflation.

In the 2005 price investigation, the Authority recommended that independently assessed efficient operating costs be incorporated in the cash flows for pricing purposes.

As part of the 2005 investigation, the Authority engaged SMEC to undertake a benchmarking study and an activity based analysis of GAWB's operating costs, assessing activity, system and overhead costs against such parameters as asset condition, maintenance regimes, levels of service, and effectiveness of operational control of variable costs such as electricity and chemicals.

SMEC concluded that GAWB's efficient operating costs totalled \$8.183 million in 2005-06 increasing to \$9.086 million by 2009-10.

GAWB's Submission

GAWB submitted that operating costs have steadily increased over the current regulatory period, increasing from around \$8 million in 2005-06 to more than \$16 million in 2009-10 (refer to Table 8.1).

Table 8.1: GAWB's Actual Operating Costs 2005-10 (\$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10
Operations	901	977	1,128	1,794	1,660
Maintenance	1,021	999	1,339	1,292	3,220
Electricity	890	946	919	1,002	1,141
Chemicals	299	358	337	651	811
Other	1,498	1,585	2,298	3,598	3,404
Staffing	2,645	3,002	3,554	4,201	5,496
Insurance	577	618	555	549	629
Rates	187	165	211	306	319
TOTAL	8,018	8,650	10,342	13,393	16,680

Note: the above figures have been rounded.

GAWB identified the major causes of this increase as being:

- (a) improved knowledge of the condition of GAWB's assets with the identification of several significant and urgent maintenance projects;
- (b) the need to employ additional staff to properly discharge GAWB's duties in relation to safety, environmental and water quality obligations, strategic planning activities and management of the capital works program. GAWB also submitted that there were legacy issues associated with inadequate resourcing in earlier years, and that water treatment activities previously outsourced to the Councils (now GRC) have now been transferred to GAWB; and
- (c) general increases in electricity, chemical, rates and insurance costs.

Further, GAWB submitted that the allowance for operating expenditure at the last price review was not sufficient to allow it to meet all the regulatory, customer and asset obligations consistent with that of a reasonable bulk water provider. As a result, GAWB undertook all necessary work to ensure these obligations were met and customers were provided with safe and secure water supply. GAWB submitted that this has come at a significant financial cost.

To demonstrate the prudence and efficiency of current operating costs, GAWB commissioned a benchmarking review of total operating costs by Marchmont Hill Consulting (MHC). MHC advised that GAWB's operating cost, staffing efficiency and productivity were generally better than the peer group, which included Melbourne Water, Aqwest Water, Sydney Catchment Authority, Hobart Water, Busselton Water, Rous Water and New Zealand's WaterCare Services. However, this benchmarking review was based on 2007-08 data, prior to very significant increases in operating costs and staffing levels (refer Table 8.1).

For the 2010-15 regulatory period, GAWB estimated operating costs on the basis of an analysis of contracts for supply of services, known future regulatory and planning obligations and specific cost escalation factors. Taken together, GAWB's forecast was for an annual average increase in total operating costs of 2.7% over the five year regulatory price period using 2009/10 expenditure of \$16,679,675 as the 'base year'. Forecast costs are summarised in Table 8.2 below.

Table 8.2: GAWB's Forecast Operating Costs 2010-15 (\$'000)

	2010-11	2011-12	2012-13	2013-14	2014-15
Operations	1,450	1,301	1,169	1,201	1,235
Maintenance	2,993	3,074	2,577	2,798	2,795
Electricity	1,286	1,350	1,464	1,587	1,721
Chemicals	866	926	990	1,059	1,132
Other	2,347	2,321	2,302	2,822	3,005
Staffing	6,183	6,415	6,725	7,051	7,393
Insurance	696	731	767	786	805
Rates	336	354	373	392	413
Self-insurance	590	590	590	590	590
TOTAL	16,747	17,062	16,956	18,287	19,090

Note: the above figures have been rounded.

In relation to specific cost items for the 2010-2015 regulatory period, GAWB submitted that:

- (a) operations costs include updating the Strategic Water Plan in 2010/11. However, compared to the previous actual two years, operations costs will decline as a result of internalising activities currently contracted out;
- (b) maintenance costs including:
 - (i) preventative maintenance activities. GAWB submitted that the preventative maintenance schedule will reduce the risk of unexpected breakdowns and supply failure, and provide GAWB with a better understanding of the condition of its assets. Preventative maintenance costs comprise \$1.03 million of total proposed maintenance costs in 2010/11, rising to \$1.24 million by 2014/15;

- (ii) a number of specific maintenance projects. Major items are repairs to the Boyne South Trees Bridge for raw and treated water pipelines (\$1.1 million over two years), and repairs to the lining of Mt Miller pipeline (\$1.16 million);
- (c) electricity costs mainly relate to pumping in the delivery network, and are projected to average 8.6% increase per year, comprising an annual increase in charges of 8% and a minor increase in the amount of pumping required;
- (d) chemical costs are mainly incurred in water treatment and are projected to rise 6.9% per year, comprising a 4.84% increase in chemical costs and an increase in the volume of potable water delivered;
- (e) other operating expenses are forecast to fall in the first three years of the next regulatory period as a result of lower corporate costs. However, higher expenses are expected to be incurred in the last two years of the period relating to the forecast costs associated with preparing for the 2015 price review;
- (f) staffing costs are expected to increase by 6.1% per year, comprising a 5% annual increase in costs and an increase in the number of staff by three FTEs;
- (g) insurance costs are increasing to reflect an increase in public liability coverage to a level consistent with other service providers; and
- (h) rates are expected to increase by 5.3% per year.

GAWB also proposed to incorporate a self-insurance premium. This issue is reviewed separately below.

For the 2015-2030 regulatory period, GAWB's forecasts incorporated: costs for each regulatory price review; 5-yearly strategic water planning processes; costs to review GAWB's resource operations plan (ROP) in 2020 and 2030; and a large maintenance expenditure for spillway relief hole clearing of Awoonga Dam in 2030.

Further details relating to GAWB's proposals for the individual cost items are provided in the Authority's analysis below.

Stakeholder Submissions

GRC submitted that it was not in a position to provide an informed comment due to the lack of detail provided in GAWB's proposals. Further, GRC stated that any increase in expenditure should reflect an efficient and effective organisation.

CPM submitted that the benchmarking and accompanying analysis of GAWB's proposed operating expenditure is questionable and does not provide a meaningful basis on which to assess GAWB's productivity and efficiency.

Further, CPM notes that: GAWB's operating expenditure has more than doubled in the previous four years; GAWB's maintenance costs have more than tripled over the same period; and entirely new categories (such as self insurance) have been added with no apparent benefit to customers in terms of enhanced levels of service or reduced risk.

CPM is also concerned about GAWB's organisational structure proposed to execute services in the next regulatory period.

CS Energy submitted that it should only bear the operating costs that specifically relate to the cost of operating Awoonga Dam to store the raw water taken by CS Energy.

Both QAL and RTA submitted that:

- (a) GAWB's proposed staffing cost allocation appears high in proportion to the operational budget;
- (b) a high proportion of the additional Operational Business Unit FTEs are required to address issues in relation to the treatment of water and that GAWB has not demonstrated how this increase adds value to raw water users; and
- (c) the Authority seek independent advice regarding comparison of operating expenditure as a proportion of the RAB and the impact of projected staffing costs on benchmark performance.

Further, QAL noted that operating costs had increased significantly on an aggregate level over the 2005-10 pricing period and that this trend of expected to continue for the next regulatory period. QAL submitted that expenditure in 2009/10 exceeded forecast expenditure by 85%. QAL requested that GAWB detail the value added by this proposed expenditure increase.

NRG submitted that it does not support costs associated with the Employment Office being treated separately to staffing costs as it creates the opportunity for the inefficient use of labour.

The Authority's Analysis

The Authority's analysis focuses on:

- (a) assessing whether the increase in operating costs over the 2005-10 period is appropriate and justified; and
- (b) reviewing forward estimates of the operating cost categories.

The Authority engaged Davwil to assist with the analysis. In addition, the Authority proposes to undertake further benchmarking of GAWB's operating costs prior to making a final recommendation on them.

Operations Expenditure

In the 2005 price investigation, the Authority forecast that GAWB's operational costs would remain relatively stable, and effectively decrease from \$1,141,791 in 2005/06 to \$1,140,967 in 2009/10. However, GAWB submitted that its actual operational expenditure increased from \$900,746 in 2005/06 to \$1,794,140 in 2008/09, with a budget expenditure of \$1,659,910 in 2009/10.

The breakdown of GAWB's actual and forecast operational expenditure compared to the Authority's forecast of GAWB's operational costs in 2005 are outlined in Table 8.3.

Table 8.3: GAWB's Actual and Forecast Operational Expenditure 2005-15 (\$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
ROP Monitoring	73	49	112	130	192	164	168	172	176	180
Blue Green Algae Monitoring	4	-	8	73	33	34	35	35	36	37
Water Quality Testing	89	92	94	86	106	109	111	114	116	119
Additional Testing	25	14	14	36	63	65	66	68	69	71
Stream Gauging	-	26	-	38	30	31	31	32	33	34
Safety & Surveillance	3	34	69	221	62	64	65	67	68	70
Contractor Plant Operations	481	546	590	904	606	-	-	-	-	-
Vegetation Rehabilitation	53	67	61	50	46	47	48	50	51	52
Hatchery Operations	53	30	49	40	59	60	61	63	64	66
Vehicles	91	76	79	216	266	236	241	247	253	259
Engineering Services	-	-	-	-	-	209	164	172	180	188
Strategic Water Plan	-	-	-	-	-	250	164	-	-	-
Other	29	43	52	0	197	181	147	149	155	159
TOTAL	901	977	1,128	1,794	1,660	1,450	1,301	1,169	1,201	1,235
QCA – 2005 Investigation	1,142	1,034	1,078	1,111	1,141					

Note: the above figures have been rounded.

Davwil noted that the primary drivers for the increase in GAWB's actual operational expenditure from 2005/06 to 2009/10 related to increased costs associated with: regulatory dam and OH&S safety; increased water quality and environmental regulatory costs; and the transfer of operating activities from the Gladstone Regional Council, particularly regarding work related to water treatment plants, pump stations and general system operations.

In response to the significant increase in GAWB's operational expenditure since 2005/06, the Authority has undertaken a further review of the operations expenditure with a view to detailing the reasons behind the cost increases incurred over the period 2005-10. The Authority found that:

- (a) while ROP monitoring is regular mandated testing, costs have increased since 2007 due to trigger release monitoring of the aquatic habitat and fish monitoring required when the dam exceeds 30 metres. GAWB's 2010/11 forecast is based on the 2010 budget allocation of \$0.16 million (\$0.192 million less \$0.032 million for geomorphic process survey). However, average annual expenditure over the past three years is \$0.127 million. The Authority expects the dam to exceed the 30 metre level well beyond the five-year regulatory period and that costs will be significantly higher than 2005-2007;

- (b) costs associated with blue green algae monitoring include routine monitoring and additional investigations when blooms occur. GAWB's 2010/11 forecast is based on the 2010 budget allocation of \$0.033 million. However, average annual expenditure over the past five years is \$0.022 million;
- (c) water quality testing costs have increased by \$0.02 million from 2009 to 2010 due to the installation of a water profile calibrator at the dam in 2009;
- (d) additional testing relates to specific event monitoring, identified through routine testing or in response to regulatory compliance requests. GAWB's 2010/11 forecast is based on the 2010 budget allocation of \$0.063 million; and
- (e) stream gauging costs have been inconsistently recorded in the past and that costs of \$0.03 million pa reflect new contractual arrangements with DERM.

In relation to other cost adjustments, the transfer of the Gladstone Water Treatment Plant operations from the GRC to GAWB resulted in the removal of the plant operations contractor costs item. This is partly replaced from 2010-11 by professional engineering services transferred from 'other expenditure' cost category.

GAWB submitted that its operational costs would decrease from its budget expenditure of \$1,659,910 in 2009/10 to \$1,449,831 in 2010/11. Davwil noted that this saving relates to a reduction in system operations associated with moving from contracted out operations to in-house operations; savings associated with GAWB's new control system; and savings associated with rationalising water quality, environmental monitoring and testing including moving to more in house testing. Davwil also noted that, during the period, GAWB has forecast increases in engineering services associated with: asset management investigations, consultancy assistance regarding the five yearly regulatory Strategic Water Plan; and inflation.

Further, GAWB submitted that its operational expenditure would decrease from \$1,449,831 in 2010/11 to \$1,235,005 in 2014/15. Davwil noted that the reduction in operational costs during this period related to savings from: the completion of the disinfection study in 2011; the completion of the Strategic Water Plan in 2012; and, a reduction in engineering advice in 2011/12.

Davwil noted that overall water quality and environmental management had significantly risen in cost. An estimated 80% of the water quality testing is for drinking water or sludge disposal for treatment plants. The balance relates to general regulatory environmental testing. Davwil also noted that a key factor for the increase is the additional investigative, risk management and reporting required with the new Drinking Water Guidelines 2008 and the increase in environmental activities associated with land management and environmental assessment for projects (excluding CSS). However, Davwil noted that significant environmental and water quality management increases in expenditure over recent years is common across the water industry as drinking water and environmental regulatory guidelines and requirements have strengthened.

Davwil undertook a review of potential operations improvements that could be achieved over the 2010-15 regulatory period.

As a result, Davwil recommended that GAWB could achieve an overall 10% potential cost reduction from 2010/11. This would be achieved by savings of 5% in water quality testing, ROP monitoring, dam safety and hatchery operations, 5-10% savings in motor vehicles, reductions of 25% in non-regulatory driven engineering services and 10% in general operations including the WTP. Overall, Davwil identified savings of around \$0.12 million per year over

the five-year period. However, Davwil proposed that these reductions be achieved over 4 years, with 2.5% in 2010-11, 5% in 2011-12, 7.5% in 2012-13 and 10% in 2013-14 and onwards.

On the basis of Davwil's assessment, estimated efficient operations costs are as summarised in Table 8.4 for the next regulatory period of 2010-15.

Table 8.4: GAWB's Operations Costs 2010-15 (\$'000)

	2010-11	2011-12	2012-13	2013-14	2014-15
GAWB's Proposed Operating Costs	1,450	1,301	1,169	1,201	1,235
Davwil's Proposal	1,414	1,236	1,081	1,081	1,112

Note: the above figures have been rounded.

The Authority also notes that GAWB could achieve savings in regard to the Strategic Water Plan and demand management activities given that these should now be a lower priority following recent inflows. However, for the purposes of price modelling for the Draft Report, the Authority accepts Davwil's assessment and recommendations regarding GAWB's operational expenditure for 2010-15. However, as indicated earlier, the Authority proposes to apply CPI as the escalation factor until a more appropriate escalator is determined.

Maintenance Expenditure

In the 2005 price investigation, the Authority forecast that GAWB's maintenance costs would remain relatively stable and effectively decrease from \$990,940 in 2005/06 to \$979,329 in 2009/10. However, GAWB submitted that its actual maintenance costs increased from \$1,021,175 in 2005/06 to \$1,292,456 in 2008/09, with a budget expenditure of \$3,220,287 proposed for 2009/10.

Table 8.5: GAWB's Actual and Forecast Maintenance Expenditure 2005-15 (\$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Preventative maintenance	n/a	n/a	n/a	n/a	n/a	1,031	1,124	1,147	1,238	1,238
Specific Items	n/a	n/a	n/a	n/a	n/a	1,962	1,950	1,430	1,560	1,557
Total Maintenance	1,021	999	1,339	1,292	3,220	2,993	3,074	2,577	2,798	2,795
Backlog totals			139	110	1,979	908	569	312	824	783
QCA – 2005 Investigation	991	876	919	941	979					

Note: these figures have been rounded.

Davwil indicated that maintenance activities comprise special projects, general maintenance and new routine maintenance largely in response to regulatory and OH&S requirements. General maintenance has kept pace with inflation from 2005, while the additional maintenance is due to new routine maintenance such as vegetation clearing for access, fire protection and good practice preventative maintenance including dam safety as proposed by GHD and reviewed by Hunter Water Australia.

Davwil advised that the increase in maintenance from 2005 to 2010 related to a backlog and increased ongoing asset management (the backlog component, as estimated by Davwil is shown in Table 8.5). Davwil noted that GAWB's maintenance had previously been undertaken by the

GRC. However, since amalgamation GRC has sought to end the contractual arrangement. Consequently, GAWB is progressively resuming full maintenance responsibilities and has embarked on improving their knowledge of their assets.

Further, Davwil indicated that the backlog resulted from substantial condition assessments undertaken in 2008 and 2009 on a number of key infrastructure assets and because monitoring revealed a problem. As a result, the increase in maintenance did not really occur until 2009/10 when the knowledge gained from the 2008 and 2009 assessments showed a need for increased maintenance.

A significant backlog maintenance amount of \$1.98 million was identified for 2009-10, most of which was for specific items, including cleaning drainage holes in the Awoonga dam spillway (\$0.4 million) required every 20 years and cleaning Fitzsimmons St 50ML reservoir (\$0.25 million). However, backlogs were also identified in routine maintenance, particularly in mechanical and electrical areas such as pumping stations.

Davwil identified other major backlog maintenance items which were considered to be required on the basis of documentation provided by GAWB. These were prioritised and spread over the 5 year regulatory period. These included Awoonga Dam valve repairs, Mt Miller pipeline lining repairs, YWTP and GWTP Clearwater storage concrete repairs and Mt Miller concrete reservoir repairs.

Davwil identified other specific projects (not backlog) in 2009/10 including periodic inspections and maintenance of pumping stations, reservoirs and pipelines (\$1.05 million), and new routine maintenance associated with grass and vegetation clearing for fire and access (\$0.25 million). The remaining \$1.27 million related to routine maintenance. Davwil noted that these large maintenance items were needed to attain the useful asset lives rather than extend them, and therefore were appropriately treated as operating costs rather than capital.

Davwil recommended that GAWB implement an asset and maintenance management system, as measured by the WSAA process benchmarking system, and including updated condition assessments, as soon as practical. When such systems are operating efficiently, GAWB should realise significant savings in preventative maintenance and routine maintenance.

On the basis that these efficiency improvements are implemented, Davwil recommended that general maintenance (excluding specific periodic maintenance) be reduced by 2.5% in 2011/12, 5% in 2012/13, 7.5% in 2013/14 and 10% in 2014/15 and onwards (\$0.28 million reduction).

In regard to specific maintenance projects, Davwil recommended that, in the period 2010/11 to 2014/15, two projects that are currently not yet well understood and may not be required should not be included. These are:

- (a) repairs to Boyne Trees Bridge which takes raw and treated water to Boyne Island (reduction of \$1.1 million). Davwil advised that the extent of any problem with the bridge piles is not known as an inspection is yet to occur. However, Davwil proposed an allowance of \$0.24 million to cover inspections and relatively minor repairs. Davwil noted that, if a greater level of repairs are required, it is likely to be a capital issue as the service life of the asset will be extended; and
- (b) Mt Miller Pipeline repairs associated with fixing the lining inside the steel reducers to each side of the concrete pits. Davwil noted that, with Boat Reservoir back on line, the Mt Miller Pipeline can be shut down for a period of time. An allowance of \$0.2 million has been provided for an efficient repair process to be undertaken progressively over a few years saving \$0.95 million.

The following table outlines Davwil's proposed maintenance reduction program resulting from the above assessment.

Table 8.6: Davwil's Proposed Maintenance Costs 2011-2015

	2010-11	2011-12	2012-13	2013-14	2014-15
General Routine	1,319	1,335	1,369	1,440	1,433
New Routine	540	509	482	558	472
Special Projects	643	351	127	638	679
TOTAL	2,501	2,196	1,979	2,636	2,583
GAWB Total	2,993	3,074	2,577	2,798	2,795
% Reduction	-16.4%	-28.6%	-23.2%	-5.8%	-7.6%

Note: these figures have been rounded.

The Authority accepts that backlog maintenance items should be incorporated in operating costs as these reflect the costs that would be incurred for effectively managing the storage and delivery systems.

The Authority accepts Davwil's recommendation regarding GAWB's maintenance expenditure and has adopted these estimates for indicative pricing purposes. However, as indicated earlier, the Authority proposes to apply CPI as the escalation factor until a more appropriate escalator is determined.

Electricity Expenditure

In the 2005 price investigation, the Authority forecast that GAWB's electricity costs would remain relatively stable and increase from \$1,002,326 in 2005/06 to \$1,327,569 in 2009/10. GAWB submitted that its actual electricity costs increased from \$890,103 in 2005/06 to \$1,001,631 in 2008/09 with a budget expenditure of \$1,140,887 in 2009/10.

Table 8.7: GAWB's Actual and Forecast Electricity Expenditure 2005-15 (\$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Electricity	890	946	919	1,002	1,141	1,286	1,350	1,464	1,587	1,721
QCA – 2005 Investigation	1,002	1,026	1,065	1,179	1,328					

Note: these figures have been rounded.

The Authority notes that GAWB's actual electricity expenditure has been lower than forecast in the 2005 investigation. Davwil advised that the increased electricity costs in 2010 compared to those incurred in 2009 relate to day time pumping at Awoonga Dam Pumping Station, which was required due to the rehabilitation of the Fitzsimmons Street 50ML reservoir. The Authority accepts GAWB's actual electricity costs incurred between 2005 and 2010.

GAWB submitted that its total electricity costs will increase according to its current electricity contract until it expires in 2012. GAWB anticipates that electricity not covered by contract will increase by 8%, which GAWB proposes is in line with expected network price increases.

Davwil adjusted GAWB's electricity expenditure to reflect the Authority's demand projections. The changes mostly affect the Awoonga Dam Pumping Station costs with a small decrease in the short term, an increase in the mid term and a decrease in the later term of the 20-year period.

The Authority accepts GAWB's forecast electricity expenditure for 2010-11 as well as the 8% annual increase from 2012 proposed by GAWB.

Chemical Expenditure

In the 2005 price investigation, the Authority forecast that GAWB's chemical costs would remain relatively stable and increase from \$464,050 in 2005/06 to \$542,766 in 2009/10. However, GAWB submitted that its actual chemical costs increased from \$298,853 in 2005/06 to \$651,144 in 2008/09, with a budget expenditure of \$810,880 in 2009/10.

Table 8.8: GAWB's Actual and Forecast Chemicals Expenditure 2005-15 (\$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Chemicals	299	358	337	651	811	866	926	990	1,059	1,132
QCA – 2005 Investigation	464	441	459	496	543					

Note: these figures have been rounded.

In a further submission to the Authority, GAWB submitted that the increase in chemical costs between 2005 and 2010 was attributed to:

- changing the type of soda ash used at the Gladstone WTP. The previous type was sourced from China but it had low take up rates and caused operational issues, such as mechanical breakdowns. (The Authority notes that, compared to 2005, the cost of soda ash used at the GWTP almost doubled by 2010);
- the introduction of sodium fluorosilicate to both the Gladstone WTP and the Yarwun WTP in 2009/10;
- the introduction of sodium hypochlorite to the Toolooa Chlorinator where chlorine cylinders were previously used but were replaced due to safety issues; and
- the introduction of sodium hypochlorite to the East End Reservoir where chemicals had not been used at the site in 2005.

The Authority accepts GAWB's above explanation regarding the increase in its chemical costs between 2005 and 2010.

GAWB forecasts that its total chemical costs will increase by 6.9% over the next regulatory period. This is based on a 4.84% per annum increase in the cost of chemicals, using the 2007-2009 three year average chemicals index, and a small increase in the quantity of potable water delivered.

Davwil advised that their projections for chemical use based on the Authority's treated water demands were effectively the same as GAWB's estimated chemical costs, as GAWB's demand projections for treated water were similar to the Authority's. Davwil therefore proposed no change to GAWB's chemical cost forecast.

The Authority accepts Davwil's analysis of GAWB's future chemical expenditure. However, the Authority proposes to escalate costs by CPI until the appropriate escalator for 2010-15 is established.

Other Expenditure

Other expenditure includes various corporate and office costs, rent, accommodation and travel, board meeting costs, software, specialist support and regulatory costs.

In the 2005 price investigation, the Authority forecast that GAWB's other (corporate and office) costs would remain relatively stable and only increase from \$1,565,499 in 2005/06 to \$1,738,173 in 2009/10. GAWB submitted that its actual costs increased from \$1,497,761 in 2005/06 to \$3,598,031 in 2008/09, with a budget expenditure of \$3,403,573 in 2009/10.

Table 8.9: GAWB's Actual and Forecast Other Expenditure 2005-15 (\$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Telephone	52	57	56	87	84	86	88	90	92	95
Rent	-	-	-	52	91	93	96	98	100	103
Minor Asset Purchases	-	26	270	160	178	198	187	191	196	200
Accommodation & Travel	108	59	72	139	188	193	198	202	207	212
Internal & External Audit	65	121	186	294	232	237	243	249	255	261
Regulatory Pricing	124	133	186	436	340	205	210	215	688	705
Survey Expenditure	13	6	59	60	24	25	25	26	26	27
Board Meeting Fees	88	92	93	89	111	116	120	125	130	136
Specialist Advice	709	594	784	949	839	471	483	430	440	451
Engineering Advice	-	190	226	952	600	-	-	-	-	-
Asset Valuations	-	-	-	3	50	5	5	5	6	113
Software Support	81	65	76	86	120	123	126	129	132	136
Specialist IT Support	76	23	48	10	171	210	147	138	135	144
Other	182	218	243	282	375	384	393	403	413	423
TOTAL	1,498	1,585	2,298	3,598	3,404	2,347	2,321	2,301	2,822	3,005
QCA – 2005 Investigation	1,565	1,605	1,648	1,693	1,738					

Note: these figures have been rounded.

Following additional discussions with GAWB, the Authority notes that:

- (a) the increase in telephone costs from 2008-09 is due to additional mobile phone costs for new staff and the ability to access emails on smart phones;
- (b) rent relates to the Brisbane office. GAWB stated the maintenance of an office in Brisbane was necessary because of the frequency of its dealings with government, regulators, specialist consultants and customers and to accommodate a small number of specialist staff whom it has difficulty basing in Gladstone;
- (c) minor asset purchases relates to those assets valued at less than \$5,000. GAWB stated that these assets generally have a fairly short useful life and, therefore, have a regular turnover. In 2006 and 2007, these assets were being capitalised. However, a change in accounting policy in 2007 meant that these assets would be expensed going forward.

GAWB also stated that their YTD 31.12.09 minor and pooled asset spend was \$0.114 million with a full year forecast of \$0.186 million. The 2010 spend is in line with actual for 2009 and reasonable for forecasts going forward and includes an additional \$0.016 million in 2011 for upgrade of ranger vehicle CB's;

- (d) accommodation and travel relate to internal GAWB staff only. GAWB stated that, with a number of its Board members, the CEO and certain other staff located in Brisbane, travel costs are incurred as GAWB and other meetings still take place in Gladstone. In addition, GAWB stated that Gladstone based staff need to travel to Brisbane for several purposes, including training;
- (e) the increase in GAWB's internal and external audit costs relate to the internal audit that commenced in 2007 and is now conducted on a regular basis, as part of GAWB's new governance policy. Further, external audits are conducted annually by the Queensland Audit Office;
- (f) regulatory pricing incorporates the annual regulation fee GAWB pays the Authority. The increase in expenditure relates to regular regulatory pricing advice. GAWB has also forecast that, in year 4 and 5, costs will increase significantly in preparation for the 5-yearly price review;
- (g) survey expenditure relates to survey costs not associated with land acquisitions or sales. GAWB stated that surveys are undertaken in regards to inundation areas, easements, pipeline locations, pipeline alignment etc;
- (h) the Board meeting fees have increased in response to an increased number of meetings;
- (i) specialist advice from 2006 to 2010 relates to legal advice sourced in regards to a number of significant matters. GAWB forecast that legal costs will be lower in 2013-2015, acknowledging the reduction in contracts and procurement advice;
- (j) engineering advice previously related to a number of feasibility and design studies. GAWB stated that this expense item now forms part of GAWB's operational expenditure;
- (k) GAWB intends to roll forward its asset base in 2010 and perform a full asset revaluation in 2015. GAWB also indicated it may move to a rolling revaluation after 2015;
- (l) the significant increase in GAWB's software support costs in 2010 relate to the Navision upgrade (GAWB's accounting system) and Edocs (GAWB's document management system);
- (m) GAWB indicated that the relatively recent increase in its specialist IT support costs reflect GAWB now having a dedicated IT manager and compensation for its legacy of underspending with regards to IT; and
- (n) GAWB's other costs primarily relate to cleaning, internet/video conferencing, printing, sponsorships and donations, stationery, and subscriptions and publications.

Davwil recommended an overall \$380,000 or 12.5% saving could be achieved by 2014/15, by reducing regulatory pricing costs by 20%, reducing specific advice (legal, accounting, tax etc) by 20%, reducing other costs by 15%, reducing board meeting fees by 10%, reducing accommodation and travel by 10%, reducing minor asset purchases by 10% and reducing both internal/external audits and telephone expenses by 5%. Davwil concluded that the 12.5% cost reduction could be applied from 2010/11, rather than using a staged approach.

Davwil accepted GAWB's proposals in regard to rent, survey expenditure, engineering advice, software support and specialist IT support.

The Authority notes that, while it is for GAWB's management to determine its expenditure levels and priorities, there is the potential to reduce costs without impacting on GAWB's efficiency. This includes: the Brisbane office – while this may have been necessary when the CSS project was in full swing, it appears optional now; other costs – which have more than doubled; and regulatory pricing costs which are predicted in 2013-14 and 2014-15 to be substantially higher than incurred on this review despite the substantial increase in operations and expenditure, which should improve the quality of information available, and the increase in staff generally, which should enable more work to be done in-house.

Taking all of the above to account, the Authority considers that other costs of \$2 million per annum is reasonable with an additional \$250,000 per annum in 2013-14 and 2014-15 for additional costs associated with the next review.

Staffing Costs

Staffing costs were not listed as a separate line item in the 2005 price investigation. GAWB submitted that staffing costs increased from \$2,644,862 in 2005/06 to \$4,201,141 in 2008/09, with a budget expenditure of \$5,496,198 in 2009/10.

GHD, in a review for GAWB, considered that GAWB's increased staffing levels have predominately been driven by GAWB's desire to be better informed about its operations, to reduce risk associated with supply failure, to replace legacy ICT systems and to continue to meet all regulatory and compliance obligations, and the transfer of operational services historically delivered by the GRC into GAWB operations.

GAWB submitted that staff numbers had increased by 23.9 net FTEs (full time equivalents) since 2005/06. While advice from GHD indicated that a further 7.5 FTEs were required by 2014-15, GAWB proposed an increase of 3.5 FTEs by 2014/15 to improve asset management planning and to provide information technology support.

Table 8.10: GAWB's Actual and Forecast Staffing Expenditure 2005-15 (\$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Staff numbers (FTEs)	33.8	36.8	40.5	45.9	55.9	n/a	n/a	n/a	n/a	59.4
Staffing costs	2,645	3,002	3,554	4,201	5,496	6,183	6,415	6,725	7,051	7,393

Notes: Staff numbers of 55.9 FTEs as at February 2010. Staff numbers proposed to increase by 3.5FTEs by 2014-15. Dollar values have been rounded.

Based on advice from Davwil and further discussions with GAWB, the Authority found that the increase in staffing costs is related to a number of issues. These include:

- (a) increased dam safety and increased OH&S requirements. A safety/compliance supervisor was appointed in 2007/08;
- (b) increased ongoing asset management. A mechanical/electrical supervisor was appointed in 2007/08 and an electrical engineer in 2009/10;
- (c) increased water quality and environmental regulatory requirements. Two water scientists were appointed, in 2007/08 and 2009/10;

- (d) increase in land and catchment management requirements;
- (e) increased emphasis on legal and risk management. A corporate counsel was appointed in 2006/07;
- (f) development of significant capital projects and major replacements (excluding the CSS), with all staff charged to opex instead of being apportioned to capex;
- (g) the transfer of operating staff from the Gladstone Regional Council. Five staff were transferred in 2009/10;
- (h) an increase in commercial/financial activities principally associated with accounting standards changes, the CSS requiring additional work and GAWB management and Board reporting;
- (i) corporate system improvement, such as IT. An IT system administrator was appointed in 2005/06;
- (j) pricing regulation and internal/external audit. A pricing officer was appointed in 2005/06; and
- (k) corporate strategy and support functions.

Davwil noted that the GHD report stated that GAWB staff levels have increased to a critical mass. As a result, Davwil concluded that GAWB's staffing levels have reached a point where it can handle its critical operational needs within risk parameters, efficiently manage and process core business functions, and maintain appropriate knowledge and skills in house, whilst outsourcing some functions to cover peak workloads or skills that cannot be efficiently provided within the business.

Davwil recommended that a restructure of its organisation would enable GAWB to achieve cost savings. This could be achieved through a review of business priorities, position description adjustments, multi-skilling where appropriate, streamlining processes and judicious outsourcing. In particular, Davwil stated that there is scope to:

- (a) reallocate approximately 2.2 FTEs to capital projects; and
- (b) achieve a reduction of 8.35 FTEs (which includes the discontinuation of 2 FTEs allocated to the CSS) by 2014.

This equates to a 19% reduction of staff assigned to Opex. In regard to GAWB's proposed increase of 3.5 FTEs between 2010 and 2015, Davwil considered that 1.5 FTEs were required to improve asset management planning and for further development of IT systems.

Davwil's recommendations result in staff numbers for operating purposes being set at 45.4 FTEs, increasing by 1.5 FTEs to 2014/15.

The Authority notes that staff numbers of 45-47 FTEs is still significantly higher than the 32 FTEs in place at June 2005. However, the increase can largely be explained by:

- (a) five staff transferred from GRC to operate the WTPs;
- (b) an additional three staff that engaged in water quality and environmental management roles as regulatory requirements have increased;
- (c) an additional three staff in asset management roles; and

(d) additional staff for mechanical/electrical engineering, IT and regulatory pricing roles.

The Authority notes that the Employing Office is not included in the staffing costs, but is to be treated as a cost pass-through (see Chapter 9).

On the basis of the analysis above, the Authority accepts Davwil's recommendations regarding GAWB's forecast staffing requirements. With respect to escalation, the Authority accepts GAWB's proposed 5% annual escalation.

Insurance Costs

Insurance was not listed as a separate line item in the 2005 price investigation. GAWB submitted that its actual insurance costs decreased from \$576,983 in 2005/06 to \$548,683 in 2008/09, with a budget expenditure of \$628,777 in 2009/10.

Table 8.11: GAWB's Actual and Forecast Insurance Expenditure 2005-15 (\$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Insurance	577	618	555	549	629	696	731	767	786	805

Note: these figures have been rounded.

The Authority accepts GAWB's actual insurance expenditure for 2005 to 2010.

GAWB forecasts that, based on advice from consultants, its insurance costs will increase by 5% for the first three years and then increase by CPI thereafter. GAWB also noted that additional premiums were incurred in 2010 to increase GAWB's public liability insurances coverage to a level consistent with other water service providers.

Davwil proposed no change to GAWB's forecast insurance expenditure.

The Authority proposes to accept GAWB's estimates.

Rates Expenditure

Rates were not listed as a separate line item in the 2005 price investigation. GAWB submitted that its expenditure regarding rates increased from \$187,459 in 2005/06 to \$305,968 in 2008/09, with a budget expenditure of \$319,163 in 2009/10.

Table 8.12: GAWB's Actual and Forecast Rates Expenditure 2005-15 (\$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Rates	187	165	211	306	319	336	354	373	392	413

Note: these figures have been rounded.

GAWB forecasts that its rates expenditure will increase by 5.3% as per the February 2009 Local Government Association's Council cost index.

Davwil proposed no change to GAWB's forecast rates expenditure.

The Authority accepts GAWB's estimates as rates increases across Queensland have generally exceeded inflation.

Summary

The Authority recommends a total operating expenditure of \$14,835 million in 2010/11, increasing to \$15.533 million in 2014/15, as outlined in Table 8.13 below.

GAWB's estimates reflect the escalation factors proposed by GAWB while the Authority has applied CPI in some instances until an appropriate index for 2010-15 is established.

Table 8.13: Operating Expenditure: Summary of GAWB's proposals and Authority's conclusions

	2010-11	2011-12	2012-13	2013-14	2014-15
Operations					
GAWB	1,450	1,301	1,169	1,201	1,235
Authority	1,384	1,186	1,016	996	1,003
Maintenance					
GAWB	2,993	3,074	2,577	2,798	2,795
Authority	2,450	2,107	1,860	2,428	2,331
Electricity					
GAWB	1,286	1,350	1,464	1,587	1,721
Authority	1,202	1,232	1,303	1,418	1,543
Chemicals					
GAWB	866	926	990	1,059	1,132
Authority	847	885	925	967	1,011
Other					
GAWB	2,347	2,321	2,302	2,822	3,005
Authority	2,000	2,000	2,000	2,250	2,250
Staffing					
GAWB	6,183	6,415	6,725	7,051	7,393
Authority	5,920	5,782	5,707	5,881	6,177
Insurance					
GAWB	696	731	767	786	805
Authority	696	731	767	786	805
Rates					
GAWB	336	354	373	392	413
Authority	336	354	373	392	413
TOTAL – GAWB	16,157	16,471	16,365	17,697	18,499
TOTAL - AUTHORITY	14,835	14,278	13,951	15,118	15,533

Note: these figures may not add due to rounding.

In addition to reviewing individual cost items, Daywil reviewed the Marchmont Hill Consulting (MHC) benchmarking study commissioned by GAWB to assess GAWB's overall efficiency against the identified comparators including Melbourne Water, Aqwest Water, Sydney Catchment Authority, Hobart Water, Busselton Water, Rous Water and New Zealand's WaterCare Services.

Davwil noted that on a measure of operating costs as a ratio of water sales, GAWB was more efficient than the weighted average of the peer group in 2007-08. However, by 2009-10, GAWB had become less efficient than the peer group weighted average. While forward looking information on the comparators is not available, if GAWB is able to achieve the efficiencies identified by Davwil by 2013-14, its performance may revert back to being competitive with its comparators.

Davwil also noted that, compared to the comparators, GAWB has a low number of customers, a high volume delivered per customer and a relatively low length of pipework. On this basis, GAWB should have greater opportunities to achieve operational efficiencies than high level benchmarking would indicate. At the same time, Davwil cautioned that, because of differences between the comparators, the benchmarking review should be treated with some caution.

The time available did not allow the Authority to benchmark GAWB's current and proposed cost levels against relevant comparators. Therefore, the Authority proposes to undertake a benchmarking exercise prior to the Final Report to provide a more up-to-date analysis and potentially a more informed basis for identifying efficient operating costs.

Recommendation 42:

The Authority recommends that efficient operational expenditure as identified in Table 8.13 be included for indicative pricing purposes.

8.5 Self-Insurance

All firms are subject to risk. Risk can be classified as either systematic (common to all firms) or non-systematic (specific to a particular firm). Systematic risk is accounted for in the rate of return GAWB receives via its WACC while non-systematic is outside of this.

Non-systematic risks are either symmetric (downside events are compensated by upside events) or asymmetric (net impact of specific events is either positive or negative in nature). Regulated entities are compensated for asymmetric risks through:

- (a) including a cost pass-through mechanism for defined non-systematic risks; or
- (b) self-insuring against the risk (a notional insurance premium being included as an operating expenditure); or
- (c) securing a commercial insurance policy against these risks, the cost being included as an operating expenditure with the costs of deductibles being included:
 - (i) in the operating expenditure; or
 - (ii) as a cost pass-through; or
 - (iii) as a self-insurance premium; or
- (d) any combination of these approaches.

Specifically, self insurance constitutes risk-bearing through the retention of implicit self-insurance premiums by the regulated entity in an internal fund and may be an option where insurance is unavailable or otherwise uneconomic.

GAWB's Submission

GAWB submitted that, in general business risks are mitigated by: capital or operational expenditure; purchasing insurance; or regulatory mechanisms such as cost pass-through or price review triggers. However, in the event that it is not possible or economically efficient to entirely mitigate a risk through the application of one of the above mechanisms, GAWB bears the residual risk.

Further, GAWB stated that self insurance costs are essentially an 'insurance premium' for that residual risk borne by GAWB.

GAWB engaged SAHA International (SAHA) to undertake an assessment of GAWB's proposed self-insured risks.

The methodology adopted by SAHA involved:

- (a) estimating the annual probability of a particular event occurring; and
- (b) estimating the financial consequences associated with that event occurring.

Based on the analysis conducted by SAHA, GAWB submitted that the Authority should approve \$590,200 per annum in each year of the next regulatory control period for specific risks borne by GAWB. If a self-insured risk event occurs during the next regulatory period, GAWB will not be entitled to pass-through these costs. These risks, and the individual self-insurance premiums to cover them, are summarised in Table 8.14.

Table 8.14: GAWB's Self-Insurance Proposal

<i>Risk Event</i>	<i>Description</i>	<i>Proposed Annual Self-Insurance Premium</i>
Financial	Fraud and theft, insurer default, counterparty credit and counterparty credit.	\$16,400
Environmental	Extreme weather, earthquake and environmental procedures not accounted for in nominated CAPEX and OPEX.	\$259,000
Asset Related	Failure of assets.	\$188,000
Operational	Public liability claims up to deductible limit, human resource risk, etc.	\$126,800
TOTAL		\$590,200

SAHA also identified risk events faced by GAWB that were better dealt with as a cost pass-through event rather than inclusion in the allowance for self insurance. These were costs associated with major earthquakes, bomb threats and asbestos related liabilities.

Other Jurisdictions

Both the ACCC and the AER maintain frameworks for the purpose of assessing self-insurance proposals. Although it is generally recognised that self-insurance is a legitimate cost of conducting business, it is acknowledged that self-insurance is a complex expenditure to quantify and requires specific administrative arrangements to be put in place before allowances are recognised.

Further, the ACCC (2002) requires external verification regarding the calculation of risks and corresponding insurance premiums, evidence of a board resolution to self-insure and details relating to the categories of risk the company have resolved to self-insure.

AER (2009) assesses self-insurance proposals against opex and capex objectives and requires Distribution Network Service Providers (DNSP) to provide:

- (a) details of all amounts, values and other inputs used to calculate proposed self-insurance costs;
- (b) an explanation of the calculation of these amounts, values and inputs;
- (c) a Board resolution to self-insure;
- (d) confirmation that the regulated entity is in a position to undertake credible self-insurance;
- (e) details of the specific risks that the regulated entity has resolved to self-insure; and
- (f) a report from an appropriately qualified actuary verifying the calculation of risks and corresponding insurance premiums.

In the 2009 QR Network Draft Access Undertaking, the Authority accepted QR Network's claimed \$0.92 million in self insurance costs in 2009/10 as being reasonable, on the basis that QR Network's claim had been based on an actuarial assessment. The Authority also accepted a pass-through for major events in excess of \$1 million. However, the Authority rejected QR Network's claims for administration costs as QR Network had yet to formally establish a self-insurance scheme.

Similar to the AER framework, the Authority requires:

- (a) the identification of the specific risks to be self-insured;
- (b) quantification of the expected incidence and costs of the risks by a method consistent with an actuarial assessment;
- (c) confirmation of a board resolution to self-insure;
- (d) explicit confirmation that the regulated entity will not recover costs covered by self-insurance through other regulatory cash-flows; and
- (e) evidence that the regulated entity has the financial capacity to assume the self-insured risks.

Stakeholder Submissions

GRC submitted that there did not appear to be any reduction in insurance expenses and questioned what GAWB's proposed self-insurance expenses are expected to achieve.

CPM noted that self-insurance constituted an entirely new cost category and that GAWB had not adequately outlined the benefit to customers in terms of enhanced levels of service or reduced risk.

The Authority's Analysis

The Authority engaged PricewaterhouseCoopers (PwC): to assess whether the specific risks proposed to be self-insured by GAWB were appropriate for self-insurance; to quantify the

expected incidence and costs associated with the relevant identified risks; and to review the premiums associated with legitimate self-insured risks.

PwC stated that a risk is considered to be insurable if it is financially measurable and random in nature. Further, an entity may self insure:

- (a) where the variability in the risks is low (i.e. high frequency, low average size);
- (b) where the price of insurance is too high and therefore the value of the risk transfer is not considered worth the cost. This may relate to the particular characteristics of the risk or the prevailing conditions of the insurance market;
- (c) where insurance is not available; or
- (d) by default, in that some risks believed to be covered by insurance are in fact not covered.

Following an assessment of each of the proposed claims for self insurance, PwC concluded that only 6% of GAWB's total claim would be considered suitable for self-insurance. Further, PwC concluded that 72% of GAWB's total claim is insurable but not suitable for self-insurance due to the low frequency, high cost nature of the risks. The remaining risks were considered not to be insurable. While PwC identified each of these risks, GAWB has requested that they not be explicitly identified in this report.

Based on PwC's assessment, revised self-insurance premiums are summarised in Table 8.15.

Table 8.15: Revised Self-Insurance Premiums

<i>Risk Event</i>	<i>GAWB's Proposed Annual Self-Insurance Premium</i>	<i>Revised Annual Self-Insurance Premium</i>
Financial	\$16,400	\$16,400
Environmental	\$259,000	\$0
Asset Related	\$188,000	\$0
Operational	\$126,800	\$19,000
TOTAL	\$590,200	\$35,400

PwC also indicated that, in the event that it is considered appropriate for GAWB to establish a formal self insurance fund, GAWB must:

- (a) ensure that the fund is separately identified with premiums credited to the fund each year and any losses paid from the fund;
- (b) ensure all claims against the self insurance fund are subject to appropriate scrutiny;
- (c) record all claims in an electronic claims data base to:
 - (i) support the management of the program;
 - (ii) provide sufficient details to enable the monitoring and review of the program; and
 - (iii) estimate and project future self insurance liabilities; and
- (d) integrate the management of the self insurance program with the insurance program.

Overall, PwC indicated that the creation of the fund should encourage greater discipline in the identification and management of losses. In addition, trends can be monitored and formal models established to estimate future costs.

However, the Authority considers a self insurance fund is an inefficient administrative approach to cover approximately \$35,000 per annum in insurance risks. The Authority therefore, recommends against including any self insurance premiums.

Recommendation 43:

The Authority considers that self insurance is not an appropriate mechanism for GAWB to mitigate the identified risks.

9. ONGOING REGULATORY PRICING ARRANGEMENTS AND PRICING IMPLICATIONS

9.1 Cost Pass-Through Arrangements

In the 2005 investigation, the Authority recommended that material exogenous changes in expected costs be passed through to customers, subject to approval by the Authority. Eligible costs include changes in taxation, changes in government charges such as resource management charges, changes in compliance requirements, changes in law and changes in government policy. A material change is considered to be one that affects the annual revenue requirement consistent with the approved pricing practices by more than 1%.

The Authority considered that changes in GAWB's water allocation or changes in estimated yield resulting from reviews of river hydrology or climate change which could bring forward storage augmentations would generally require a review of the pricing model and should not be considered to be simple cost pass-through events.

The Authority noted that approved pass through of costs is typically implemented in revised prices for the next financial year. In order to ensure a timely cost pass-through into revised prices, the Authority proposed that sufficient information for these events would be required by the Authority as soon as is reasonably possible after their occurrence.

The Ministers generally accepted the Authority's recommendations but determined that changes in taxation and changes in Government charges should be passed through to customers by GAWB (without requiring approval by the Authority and with no materiality constraints). The Ministers determined that other exogenous changes in expected costs may be passed through to customers provided they are material and subject to approval by the Authority.

GAWB's Submission

GAWB identified additional possible cost pass-through events that may impact on the next regulatory period.

These include:

- (a) the emissions trading scheme – the costs to which GAWB could be exposed are unquantifiable at this time. GAWB submitted that the additional costs should be subject to pass through irrespective of the materiality threshold;
- (b) self-insurance – GAWB submitted that some residual self-insurance risks should be handled through a cost pass-through mechanism rather than be incorporated in a self-insurance premium. These included asbestos-related risk and bomb threats; and
- (c) employing office – GAWB submitted that, in 2007, the Queensland Government passed the *Statutory Bodies Legislation Amendment Act 2007* which provided for the creation of the GAWB Employing Office as a statutory body. The new entity would employ staff and hire these staff to GAWB on a cost recovery basis. Additional expenditure will be incurred for the ongoing administration and audit requirements of the new entity. Due to uncertainties about timing, GAWB proposed not to include the additional costs in operating costs, but to use the cost pass-through mechanism if necessary in the next regulatory period.

Other Jurisdictions

ICRC (2008) allowed for cost pass-through arrangements in the regulatory framework for ACTEW. Pass-through events include changes in taxes and costs incurred to address water

shortage events. ICRC did not accept ACTEW's proposal for pass through of operating costs outside of a range of 10% from forecast and considered that acts of terrorism could be dealt with by the insurance market. The ICRC applied a materiality threshold of \$1 million per event per year.

Stakeholder Submissions

NRG submitted that it does not support costs associated with the Employment Office being treated separately to staffing costs. Planning and preparation of annual and five-yearly financial plans should be detailed and sufficiently understood to capture staffing requirements. NRG stated that deployment of the Employment Office creates the opportunity for the inefficient use of labour.

The Authority's Analysis

The issue of cost pass through is generally resolved by deciding:

- (a) whether the change in costs could have been anticipated and thus managed or avoided by the service provider, and
- (b) whether the impact of the change in costs on either the service provider or the customer is material.

The principle of cost pass through recognises that in a competitive market unforeseen additional cost imposts would apply to all service providers and would be immediately passed through to customers. However, cost pass-through arrangements increase regulatory costs and complexity and therefore a clear definition of relevant events and a materiality test are required as part of ongoing regulatory arrangements.

In the absence of any comment from GAWB or its customers, the Authority considers that there is no case for any change to the current arrangements as determined by the Ministers after the 2005 investigation.

That is, the additional costs arising from changes in government charges and changes in taxation would be passed through to customers. This would include additional costs arising from an emissions trading scheme or similar (collectively referred to as carbon costs). However, an issue that the Ministers did not address was how the impact of such changes would be quantified in prices. This is particularly important with carbon costs as they are likely to impact on the cost of servicing customers differentially given GAWB's distributed pricing model. For example, pumping costs are likely to be more significant for some customers than others. Therefore, while it is proposed that these costs be passed through directly to customers without regard to materiality, it is proposed that their translation into prices be subject to approval by the Authority.

Residual risks of a catastrophic nature (force majeure events) are not manageable by any party and are best accommodated under review trigger arrangements. The costs associated with residual risk events identified by GAWB that do not trigger a review should be subject to ex post regulatory review.

Other changes arising from regulatory compliance requirements, changes in law or pursuant to a law, or changes in government policy would be subject to a materiality test (1%) and approval by the Authority. This would include the costs of the employing office.

Recommendation 44:

The Authority recommends that changes in expected costs that are beyond GAWB's control be passed through to customers. Costs associated with changes in taxation and changes in government charges may be passed through as they are incurred and without reference to materiality, subject to the translation into prices of the increases being subject to approval by the Authority. Costs arising from changes in compliance requirements or changes in law should be passed through subject to materiality and approval by the Authority. A material change is considered to be one which affects the annual revenue requirement by more than 1%.

9.2 Review Triggers

Review triggers prompt an unscheduled or interim review. They are generally defined in terms of an impact on a provider's revenues or costs, arising from events that diverge significantly from initially forecast.

In the 2005 review, the Authority recommended that a review should be triggered if there is, or there is expected to be, a sustained variation of 15% or more in GAWB's aggregate revenue. A sustained variation is considered to be a permanent change which has occurred, or is expected to occur with a high degree of certainty. Such variations would include significant demand changes.

GAWB's Submission

GAWB proposed a revenue cap in conjunction with an unders and overs account to allow an annual adjustment of prices. Side constraints were proposed to limit annual price increases to CPI+5% in any one year, with excess amounts carried forward to the next annual adjustment.

Other Jurisdictions

In the review of Sydney Water's prices IPART (2008) considered the option of a consumption adjustment mechanism to address the risk of variations between forecast and actual consumption. However, IPART considered that the adjustment mechanism was not necessary because of an expected lower risk of water restrictions in the near future due to increased available supplies.

The ESC (2009) also proposed that, where actual demand varied from forecast demand, it may be subject to a price adjustment under an uncertain and unforeseen events mechanism. The ESC did not set any materiality thresholds for triggering this mechanism, but would apply it only to events that are outside the control of the water business. Price adjustments may be made during or at the end of the regulatory period.

The ICRC (2008) also applied an end-of-period deadband adjustment factor to provide compensation for ACTEW or customers if revenue is different from that forecast in its current decision. This mechanism applies if revenues are more than 3% different from the forecast across the first four years of the regulatory period. The ICRC considered that a wider deadband of 10% would mean an excessive level of risk being faced by ACTEW.

The ICRC also applied a second adjustment mechanism to allow the resetting of prices in the fourth and fifth years of the regulatory period. Should water revenue be more than 7% different from that forecast over the first 2.5 years of the regulatory period, the ICRC will revisit the usage forecasts for the remaining two years of the regulatory period and adjust tariffs if necessary.

Stakeholder Submissions

No stakeholders commented specifically on the issue of review triggers or adjustments for demand variations.

The Authority's Analysis

In the interests of maintaining price certainty, minimising the costs associated with price reviews, and providing incentives for robust estimates of costs and demand, regulators generally limit within period reviews to those situations involving a significant change in anticipated revenues or costs.

The Authority's current 15% trigger is designed to cover major threats to GAWB's existence not a de-facto revenue cap arrangement which the arrangements in other States resemble.

It also needs to be considered in the context to GAWB's environment where there are a small number of customers who are generally signed up to long term contracts with two-part pricing arrangements. Currently, the fixed element (reservation volumes) of GAWB's charges is some 80% of the total charge leaving GAWB exposed to only variations in the remaining 20%. As a result, these arrangements should substantially protect GAWB from variations in demand from existing customers. Furthermore, as discussed earlier, the cost of spare capacity is to GAWB's account.

The Authority recommends that the 15% trigger remain unchanged.

Recommendation 45:

The Authority considers that a price review should be triggered if there is, or expected to be, a sustained variation in aggregate revenues of at least 15%.

9.3 Annual Indexation of Prices

Under the nominal cash flow approach adopted by the Authority, a forward-looking estimate of inflation is incorporated into the estimated prices to apply in each year of the regulatory period.

In the 2005 prices investigation, the Authority recommended that the Brisbane All Groups CPI be used for the purpose of annual price adjustments between price reviews. The CPI was considered to be readily available, timely and not subject to revision and is commonly used in commercial contracts for price escalation.

GAWB's Submission

GAWB proposed to continue to apply the Brisbane All Groups CPI to inflate prices through the regulatory period.

Other Jurisdictions

The ERA (WA) (2009) recommended that tariffs for the Water Corporation of WA be annually escalated using the Australia-wide eight-city average CPI. The reasons for choosing this index as against the Perth CPI was that the local index was impacted by housing price increases which were seen as unrelated to the cost-drivers affecting the water businesses. In addition, two-thirds of the utilities' costs relate to return on assets, which is influenced by the financial markets, and depreciation, which is affected by capex sourced more broadly than from the local market.

The Authority's Analysis

The Authority considers that the approach previously applied in 2005 remains appropriate. For the purposes of setting prices each year, GAWB should apply the Brisbane All Groups CPI to inflate prices.

Recommendation 46:

The Authority recommends that a CPI measure based on the Brisbane All Groups classification should be used for the purpose of annual price adjustments between price reviews.

9.4 Inter-Period Cash Flow Adjustments

In the 2005 review, the Authority recognised that, by setting prices smoothed over a planning period in excess of a regulatory period, prices in the current regulatory period may generate revenues higher or lower (more likely lower) than that required to achieve a the rate of return to maintain investment within the regulatory period.

To ensure that appropriate incentives to invest are in place, the Authority proposed that smoothed prices in future regulatory periods should incorporate an adjustment to reflect the effects of past price smoothing. This can be achieved, for example, by a carry-over adjustment for any past over or under provision of revenues.

The adjustment should be based on the difference between the smoothed price revenue and the annual revenue that would result from the use of the building block approach, with annual differences capitalised to the commencement of the next pricing period using the WACC applicable for the previous assessment. The sum of the capitalised amounts carried forward from the previous assessment should be subject to price smoothing on a forward looking basis, in a similar manner to the other elements of the revenue requirement.

The Authority noted that the approach needed to be distinguished from unders and overs accounts typically used under revenue caps. The proposed adjustment does not reflect changes in revenue resulting from a difference between actual and expected revenues. Rather, the proposed adjustment reflects the difference between building blocks and smoothed revenues, given the same set of assumptions.

GAWB's Submission

GAWB submitted that, in the eight years from 2002-03 to 2009-10, the prices recommended by the Authority have (by design) under-recovered the economic cost of supply in every year. All this planned under-recovery (some \$35 million) is being rolled forward, with interest, for future customers to bear.

From 2015, GAWB proposed that the prices be set for the five-year planning period, thus eliminating the need for between-period adjustments.

Stakeholder Submissions

Stakeholders did not comment on this issue.

The Authority's Analysis

As indicated earlier, the Authority considers that GAWB, not existing customers, should bear the cost of spare capacity.

In this regard, the Authority notes that its proposal to continue with the approach of a 20-year planning horizon for determining smoothed prices requires that between-period adjustments continue to be made.

The current GAWB review requires a between-period adjustment to be made to accommodate the difference between building blocks revenue and the smoothed revenue over the 2005-10 regulatory period. This value, capitalised at the WACC applied in 2005-10, is carried forward to be offset against future revenues.

It is noted that this adjustment does not include an amount of revenue foregone because actual demand was in fact lower than forecast demand.

GAWB did not provide details on the calculation of its estimate of \$35 million for the carryover adjustment in its submission.

The Authority estimated the adjustment to be a total of \$13.9 million and has incorporated this amount for price modelling purposes. Given the substantial difference in the estimates, the Authority proposes to discuss this matter further with GAWB prior to issuing its Final Report.

The adjustment of \$13.9 million does not include the \$5.3 million loss incurred by GAWB as a result of volume variations during the current regulatory period as the Authority considers it should be borne by GAWB and not customers. In this regard, to the extent the loss related to spare capacity, it is to GAWB's account. Furthermore, to the extent it relates to existing customers responding to the low supply alert, it was open to GAWB to have in place arrangements to compensate for this, as recommended previously by the Authority.

Recommendation 47:

The Authority recommends that, where prices are smoothed over a planning period longer than the regulatory period, prices in the next regulatory period incorporate an adjustment to account for the under-recovery. The Authority proposes to include an amount of \$13.9 million for price modelling purposes pending further discussion with GAWB.

9.5 Revenue and Pricing Implications*Aggregate Revenue Projections*

Table 9.1 provides a comparison of projected revenues under the Authority's proposals and GAWB's.

Table 9.1: Summary of Aggregate Revenue Projections (\$ million)

	2010-11	2011-12	2012-13	2013-14	2014-15	2019-20	2024-25	2029-30
Projected revenue - Authority's recommendations	\$38.1	\$40.6	\$43.1	\$45.8	\$48.6	\$68.4	\$82.3	\$103.8
Projected revenue - GAWB's proposals	\$61.5	\$63.5	\$65.6	\$67.7	\$69.9	\$92.4	\$126.1	\$153.5
Difference	-38.0%	-36.1%	-34.3%	-32.4%	-30.5%	-26.0%	-31.4%	-32.4%

The differences between the two revenue forecasts can be attributed to:

- (a) a lower return on capital due to a lower risk free rate and debt margin. The Authority proposes a WACC of 8.93% nominal post-tax compared with GAWB's proposed 10.05%;
- (b) lower capital expenditures over the planning period 2010-30 than proposed by GAWB
- (c) elimination of \$37.3 million in costs associated with the CSS. In this regard, actual expenditure to date of \$22.65 million has been capitalised while the balance relates to future proposed expenditure which has not been recommended;
- (d) lower operating costs allowed than proposed by GAWB; and
- (e) higher demand estimates than proposed by GAWB.

Notwithstanding this, the revenues in 2010-11 that would result from the Authority's recommendations are 21% higher than the revenues projected from the 2005 investigation (\$38.1 million compared to \$31.5 million).

Implications for Prices

On the basis of the available information, and GAWB's base demand forecast, the Authority estimates that average prices (weighted by demand in each segment) would increase by 43.4% if the Authority's proposals were adopted compared to an increase of 119% if GAWB's proposals were adopted.

9.6 Transitional Pricing

GAWB's Submission

GAWB submitted that any price transitioning must be based on the following principles:

- (a) it must be revenue-neutral for GAWB, that is, it must preserve the present value of expected revenue over the transitioning period;
- (b) it must occur within a single five-year regulatory control period; and
- (c) the price transitioning period for any customer cannot exceed the remaining term of their water supply contract with GAWB.

GAWB considered that transitioning periods greater than a single five-year regulatory period would result in administrative complexity as well as adding considerable pricing complexity at subsequent price reviews, particularly if further price transitioning is accepted as a result of that review.

Other Jurisdictions

The ESC (2009) stated that, in general, it would expect a proposed price path to:

- (a) provide the same revenue over the five year regulatory period in net present value terms;
- (b) have been set with regard to customer preferences; and
- (c) not result in a significant price shock in the first year of the subsequent regulatory period.

IPART (2009) decided to set final price levels so that the present value of SCA's target revenue equates with the present value of its notional revenue requirement over the determination period.

Stakeholder Submissions

CPM did not support GAWB's proposal to limit transitional arrangements to a single five-year regulatory period. CPM submitted that a price transition period consistent with the customer's current or remaining contract term should be adopted.

NRG requested that price increases not take place immediately and be phased in over five years commencing from the start of the next regulatory period on 1 July 2010.

QER supported GAWB's proposal of price transitional arrangements being NPV neutral.

The Authority's Analysis

The Authority notes that, while some customers may have the capacity to absorb significant price increases, particularly where water is only a small component of total production cost, such increases may be problematic for other customers, particularly residential customers. Business groups may also prefer a smoother price path to allow time to absorb the price increases and implement measures to reduce their water usage.

Price transitioning provides a mechanism through which price shocks to customers can be moderated.

The Authority agrees with GAWB's view that, if prices are to be transitioned, they should be transitioned within a regulatory review period. As the proposed prices reflect the efficient costs being incurred by GAWB, any delay in implementing the new prices in full is to GAWB's account unless there is an NPV neutral transitioning process. It is not always possible to achieve NPV neutrality in transitioning prices, particularly in the context of significant price increases, without prices in the final year being substantially in excess of their efficient level, requiring further transitioning (down) in the next regulatory period.

However, any price transitioning that is not NPV neutral will impact on GAWB's financial performance and possibly its financial viability. GAWB's financial performance in recent years has not been strong. However, the Authority has incomplete information relating to GAWB's contractual arrangements, financing arrangements and current financial position, and the financial implications of any transitioning of price increases. It is therefore proposed to liaise with GAWB (and other stakeholders) regarding the issue of transitioning before reaching a final position on this matter.

Recommendation 48:

The Authority recommends that further discussions be held with GAWB, and other stakeholders, regarding the issue of transitioning to the recommended pricing practices.

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