Queensland Competition Authority

Draft Report

Gladstone Area Water Board Price Monitoring 2015-2020

February 2015

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SUBMISSIONS

Closing date for submissions: 27 March 2015

Public involvement is an important element of the decision-making processes of the Queensland Competition Authority (QCA). Therefore submissions are invited from interested parties concerning its assessment of Gladstone Area Water Board. The QCA will take account of all submissions received.

Submissions, comments or inquiries regarding this paper should be directed to:

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EXECUTIVE SUMMARY

Introduction

The Queensland Competition Authority (QCA) was directed by the Treasurer and Minister for Trade (Treasurer) to monitor the proposed prices of the Gladstone Area Water Board (GAWB). GAWB is a government-owned monopoly business which sells water to industry and to local government, for residential supply. GAWB supplies its customers from Awoonga Dam on the Boyne River.

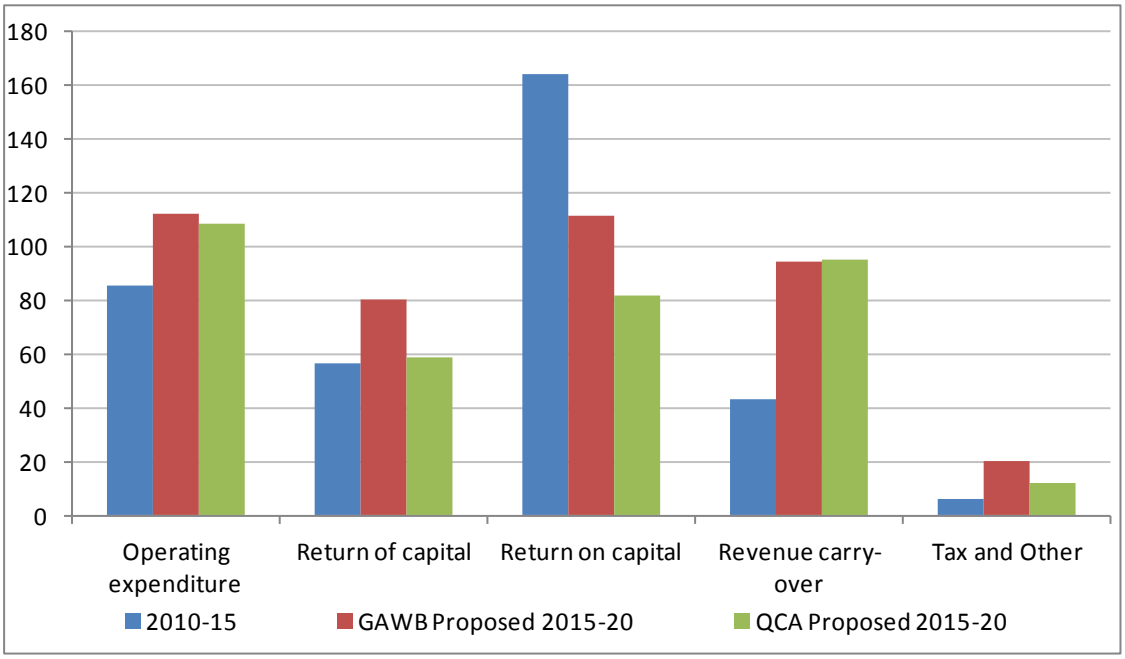
We have reviewed GAWB's pricing practices three times since 2000. The Treasurer directed us to perform a price monitoring investigation by focusing on material cost items.

Since the 2010 review, GAWB built the Curtis Island Pipeline (CIP) to provide water to liquefied natural gas (LNG) proponents on Curtis Island. We agree with GAWB that these costs are confidential. Curtis Island costs and prices are outlined in Chapter 10, which is confidential, but will be made available to GAWB and the LNG proponents. Accordingly, the analysis of costs and prices exclude the CIP—this allows better comparability with previous costs.

Cost Drivers

Our estimated total real revenue requirement for 2015–20 is 0.2% higher than 2010–15, and 15% lower than what GAWB proposed.

Figure 1 Revenue requirement breakdown ($ million)



Source: GAWB (2014a), QCA calculations

Operating expenditure (opex)

GAWB submitted an opex for 2010–15 of 22% above what we recommended in 2010. Staff numbers have increased from 55 to 87 full-time equivalents. We found most of this increase to be justified, as:

- staffing the Gladstone water treatment plant 24 hours, seven days a week (not 16 hours, five days a week) remained necessary for plant reliability and the limitations of remote access of controls

- maintenance has been in-sourced, resulting in cost increases. This leads to better asset management strategies which are expected to lower reactive maintenance costs beyond 2020.

Electricity costs increased more rapidly than we forecast in 2010. GAWB is spending 18% more on electricity. We expect that this rate of increase will substantially moderate over 2015–20.

We have reduced GAWB's proposed opex by 3.0% due to a marginal reduction to staff numbers and lower electricity escalation.

Capital expenditure

In 2010, GAWB proposed $86.5 million of capex for 2010–15 and we recommended $53.0 million. GAWB actually spent $67.4 million. We reviewed two past projects worth $13.4 million and found both to be prudent and efficient. We allowed $67.4 million into the Regulated Asset Base (RAB).

In 2010, we excluded $14 million from the RAB for preparatory works associated with GAWB's contingent supply strategy (CSS) that were undertaken in 2008–10. We concluded that GAWB should have deferred further drought mitigation works once the dam levels rose past a critically low level. GAWB sought to include this expenditure, capitalised to a value of $22 million, in the RAB on 1 July 2015. However, we found no basis to reverse our previous decision and have continued to exclude the expenditure until the asset is commissioned. For 2015-20 capex, we included $83.1 million of GAWB's proposed $97.2 million.

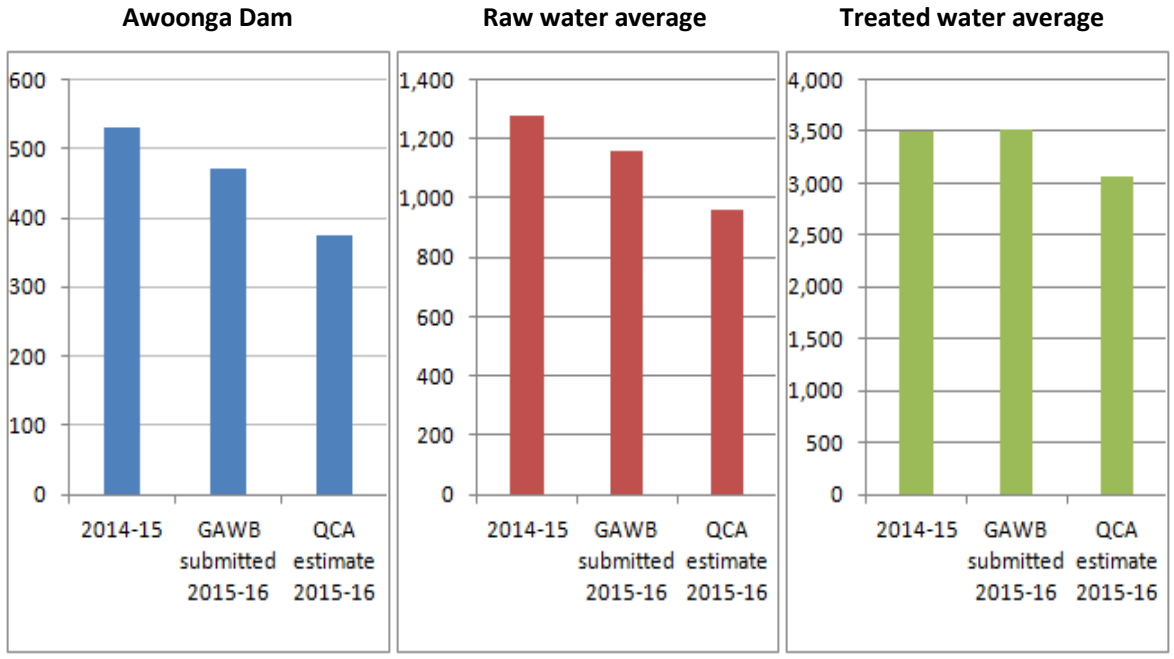
Rate of return

GAWB earns a return on its investments which includes its debt servicing costs. In 2010, we approved a weighted average cost of capital (WACC) of 9.35% which reflected prevailing market conditions. GAWB submitted a WACC of 6.85%. We calculated a benchmark WACC of 5.78%. Our estimate is lower due mainly to a decrease in the risk-free rate since GAWB made their submission.

Prices

Our estimated indicative price for all price zones will decrease in 2015–16 compared with both 2014–15 prices and GAWB's submitted prices.

Figure 2 Revenue requirement breakdown ($/ML)



Source: QCA (2010), GAWB (2014a), QCA calculations

Draft findings

Table 1 Summary of QCA key draft findings

Topic	*Section*	*Draft findings*
Sampled opex	2.5	We sampled opex in two out of four operating functions. In these functions, we found that $2.3 million (3.0%) of GAWB's proposed expenditure for 2015-20 of $75.34 million not to be efficient.
Total opex	2.7	We found $2.3 million (1.9%) of GAWB's submitted total opex for 2015-20 of $117.8 million not to be efficient.
Past capex	3.6	GAWB's submitted capex for 2010–15 of $67.4 million was prudent and efficient.
Proposed capex	3.6	$83.1 million of GAWB's proposed 2015-20 capex of $97.2 million was assessed as prudent and efficient.
Opening RAB	4.4	We continue to find that $22.3 million of preparatory works for the CSS that were excluded in the previous review, should be excluded.
Rate of return	5.8	We developed a benchmark WACC of 5.78%, compared with GAWB's submitted 6.85% and the rate approved for 2010–15 of 9.35%.
Form of regulation	6.1	A revenue cap with 10% deadbands.
Form of regulation – transition of delivery charges	6.2	A revenue cap with 5% deadbands.
Planning period	6.3	Total costs should be recovered over 20 years.
Regulatory period	6.3	The regulatory period is five years.
Contracted annual demand forecast	7.2	Contracted use will increase to full utilisation of Awoonga Dam (78,000 ML per annum) in 2035.
Contracted Maximum Daily Quantity (MDQ) forecast	7.4	MDQs will be introduced for this regulatory period.
Storage charges	8.3	A two-part tariff will be retained.
Fixed delivery charge	8.4	Fixed delivery charges will recover fixed costs from each customer depending on the size of their MDQ.
Variable delivery charge	8.5	Variable charges will recover the variable costs per ML of metered use.
Transition to MDQ	8.8	There will be mechanisms to smooth the impact of transitioning to MDQs in the 2015–20 regulatory period. They are measures to: (1) ensure that the total bill does not increase by more than 50% by 2020 compared with the previous charging regime (2) enable customers to respecify their MDQ without penalty (3) waive over-run charges during 2015–20 (4) apply a revenue cap to ensure that GAWB's revenue does not increase as a result of MDQ.
Total revenue requirement	9.2	We found GAWB's total revenue requirement for 2015-20 to be $355.6 million which is 14.8% lower than the $417.5 million proposed by GAWB.
Indicative prices	9.5	Our 2015–16 indicative prices are lower than those initially proposed by GAWB by between 9.7% and 21.5%.

THE ROLE OF THE QCA – TASK, TIMING AND CONTACTS

The Queensland Competition Authority (QCA) is an independent statutory authority to promote competition as the basis for enhancing efficiency and growth in the Queensland economy.

The QCA's primary role is to ensure that monopoly businesses operating in Queensland, particularly in the provision of key infrastructure, do not abuse their market power through unfair pricing or restrictive access arrangements.

In 2012, that role was expanded to allow the QCA to be directed to investigate, and report on, any matter relating to competition, industry, productivity or best practice regulation; and review and report on existing legislation.

Task

The QCA has conducted three pricing principles reviews of the Gladstone Area Water Board (GAWB) covering the pricing periods from July 2000 to June 2015.

On 25 February 2014, the QCA received a Ministerial Referral to conduct a price monitoring investigation into GAWB's planned changes in water prices. The purpose of the review is to provide oversight of GAWB's prices to ensure that GAWB does not misuse its monopoly power.

Key dates

Ministerial Direction	25 February 2014
GAWB submissions received	30 September 2014
Draft report	28 February 2015
Submissions due on draft report	27 March 2015
Final report	31 May 2015

Contacts and registration of interest

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1 INTRODUCTION

1.1 Ministerial Referral

The Queensland Competition Authority (QCA) has been directed by the Treasurer and Minister for Trade (the Treasurer) to conduct a price monitoring investigation of the Gladstone Area Water Board (GAWB) for the period from 1 July 2015 to 30 June 2020. The Referral forms **Appendix A**.

In accordance with the Referral and the *Queensland Competition Authority Act 1997* (Qld) (QCA Act), the QCA has considered:

- GAWB's prices having regard to GAWB's pricing model and demand forecasts
- the forecast revenue based on the total prudent and efficient costs
- GAWB's weighted average cost of capital (WACC) against the benchmark WACC
- the regulated asset base (RAB) and the revenue carryover
- the prudency and efficiency of GAWB's proposed capital expenditure (capex) and operating expenditure (opex) which has a material impact on prices
- the submissions and views of all parties, and published all submissions and reports on its website.

The QCA invites comments on this draft report with submissions due by 27 March 2015. A final report is due to the Treasurer by 31 May 2015.

1.2 Previous investigations

In September 2000, GAWB's bulk water storage, delivery and treatment services were declared to be government monopoly business activities. We have reviewed GAWB's pricing practices three times since 2000. For this review, we have been directed to undertake a price monitoring investigation.

Since the last review, GAWB has completed a Strategic Water Plan (SWP), which sets outs its strategies to address the interrelated issues of demand, security, reliability and prices.

1.3 Gladstone Area Water Board

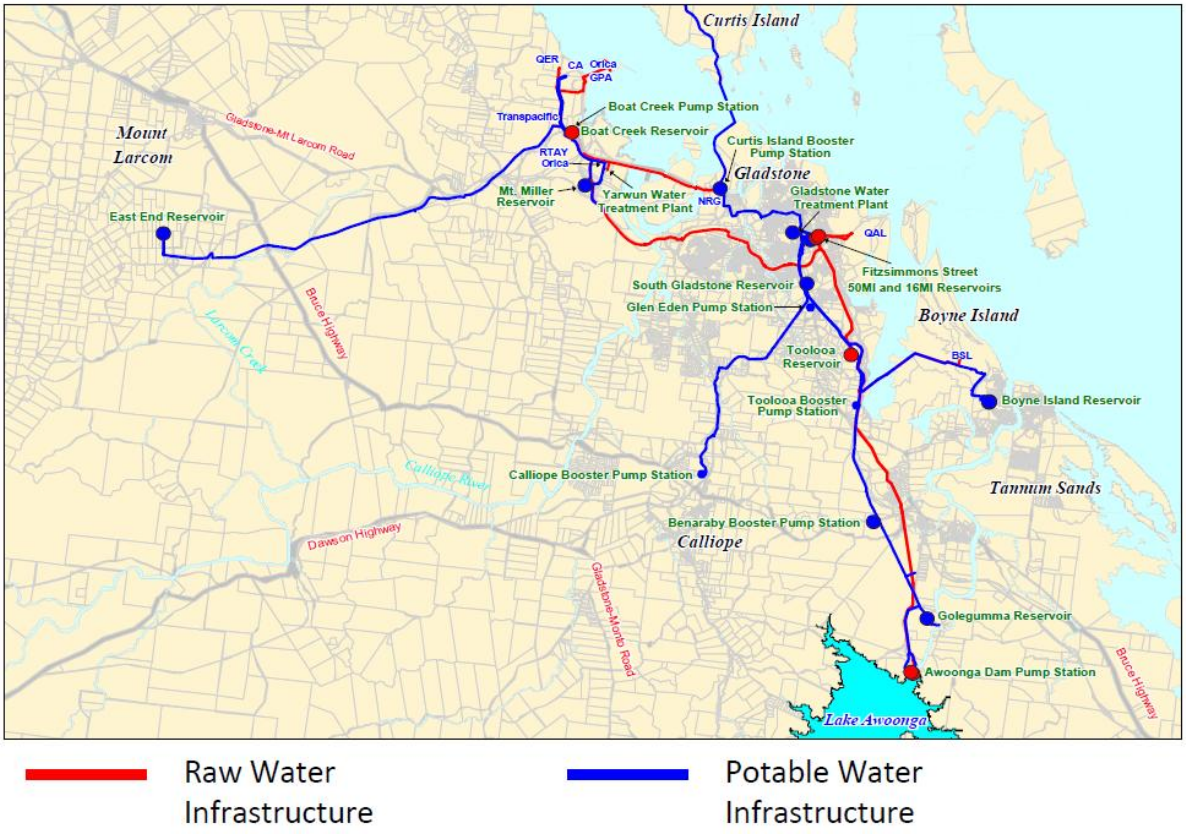
Established in 1973, GAWB is a commercialised statutory authority, owned by the State Government. GAWB owns and operates Awoonga Dam on the Boyne River together with a network of pipelines, pump stations, reservoirs and treatment plants. It provides treated and raw water to industrial customers, power stations and the Gladstone Regional Council (GRC).

1.3.1 Key infrastructure

GAWB has a single water source—Awoonga Dam—which is the fourth largest dam in Queensland with a total storage capacity of 777,000 megalitres (ML). The maximum allowable annual extraction by GAWB is 78,000 ML per annum (ML/a). The dam was at 100% of capacity in February 2015.[1]

[1] http://www.gawb.qld.gov.au/dam-levels

Figure 3 GAWB's infrastructure



Source: GAWB (2013).

GAWB supplies untreated water from Awoonga Dam, and potable water. Raw water accounts for approximately 76% of all water supplied by GAWB. The majority of the potable water supplied by GAWB is delivered to GRC.

GAWB operates two interconnected delivery pipeline networks.

Table 2 GAWB's delivery network

	Length total (metres)	*Length above ground (metres)*	*Length below ground (metres)*	*Average age (years)*
Treated water	98,944	2,000	96,944	38
Raw water	95,348	27,262	68,086	24

Source: GAWB (2013)

GAWB also owns and operates:

- untreated water pumping stations at Awoonga Dam and Boat Creek and treated water pumping stations at Benaraby, Calliope, Glen Eden and Boat Creek
- untreated water reservoirs at Boat Creek, Gladstone (Fitzsimmons Street) and Toolooa and treated water reservoirs at Boyne Island, East End, Golegumma and South Gladstone
- water treatment plants at Gladstone and Yarwun
- the Lake Awoonga Recreation Area adjacent to Awoonga Dam
- a fish hatchery in Gladstone.

1.3.2 Customers

GAWB's major raw water customers are CS Energy, Callide Power Management (CPM), Cement Australia, Rio Tinto Alcan (RTA) and Queensland Alumina Limited (QAL). Meeting these customers' demand accounts for approximately 70% of GAWB's total supply. Other industrial customers include Gladstone Power Station (indirectly via the GRC), Boyne Smelters, Orica, and the Gladstone Ports Corporation (GPC).

In 2013, GAWB completed the Curtis Island Pipeline (CIP) project that saw the three Curtis Island LNG proponents become GAWB customers.

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

1.4 Note to readers

Readers should be aware that:

- all tables and figures are presented in nominal dollar terms, except where explicitly labelled otherwise
- some tables may not sum exactly due to rounding
- in response to an application from GAWB, we consider that costs for the CIP are confidential. The CIP costs and prices are outlined in Chapter 10, which is confidential, but will be made available to GAWB and the LNG proponents. Accordingly, the analysis of costs and prices exclude the CIP—this allows better comparability with previous costs and prices.

2 OPERATING EXPENDITURE

2.1 Introduction

When considering opex to be included in the forecast revenue, the QCA may investigate the expenditure in any function where GAWB's forecast expenditure in that function exceeds the level allowed in the QCA's 2010 pricing practices investigation by an amount that would give rise to a material increase in price.[2]

2.2 Opex 2010–15

2.2.1 Previous investigation

In 2010, we recommended $77.68 million of opex for 2010–15—$7.51 million (9%) lower than GAWB proposed. Subsequently, we increased our regulatory fee which we allowed GAWB to recover through prices. Total recommended (adjusted) opex was $79.23 million.

Table 3 2010–15 approved opex by cost category ($m)

Category	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*Total*
Operations	1.41	1.22	1.07	1.06	1.09	**5.86**
Maintenance	2.45	2.11	1.86	2.43	2.33	**11.18**
Electricity	1.29	1.35	1.48	1.62	1.77	**7.50**
Chemicals	0.85	0.89	0.93	0.97	1.01	**4.64**
Other	2.04	2.00	1.98	2.29	2.46	**10.77**
QCA regulatory fee	0.38	0.40	0.43	0.45	0.48	**2.14**
Staffing	5.88	6.03	6.22	6.53	6.85	**31.51**
Insurance	0.70	0.73	0.77	0.79	0.81	**3.79**
Rates	0.34	0.35	0.37	0.39	0.41	**1.87**
Total – QCA approved (adjusted)	**15.32**	**15.09**	**15.10**	**16.52**	**17.21**	**79.23**
Total – GAWB proposed (2010)	**16.16**	**16.47**	**16.37**	**17.70**	**18.50**	**85.19**

Source: QCA (2010), GAWB (2014a)

2.2.2 Transition from cost to function-based reporting

Approved opex

Since the QCA's 2010 pricing practices investigation, GAWB has transitioned from a cost category to a function-based reporting method for opex. GAWB submitted that the function-based reporting approach is consistent with contemporary accounting practice and provided greater transparency and understanding of the costs necessary to perform its functions.

As the Referral requires comparability with past opex, GAWB engaged PricewaterhouseCoopers (PwC) to quality assure the translation of past QCA approved and GAWB actual opex into the

[2] Minister's Referral, cl 2(g).

new functional definitions. PwC (2014) concluded that to the extent that it was 'able to validate the calculations against source documentation, the translation rules applied to 2010 QCA price review forecast and subsequent yearly cost baselines, appear[ed] to have been accurately and consistently applied in accordance with the proposed functional allocation methodology'.

CPM (2014) requested that the QCA review this change in methodology and the GAWB-commissioned benchmarking review to determine whether the opex contained in the GAWB submission meets the prudent and efficient regulatory tests.

Jacobs (2015) found that GAWB's new cost allocation method is robust and the costs can be reconciled and compared with costs incurred in previous years. Based on Jacobs' advice, we accept GAWB's translation of approved opex for 2010–15.

Actual opex

GAWB stated that the quantum of opex approved by the QCA in 2010 was insufficient to ensure that all regulatory, customer and asset obligations were met, to the standards reasonably required of a bulk water supplier. Although it did not recover the additional opex from customers, GAWB contended the additional opex ensured services were not negatively affected.

GAWB also stated that it undertook a number of projects in the 2010–15 period to 'recruit' efficiency savings, including in-sourcing of easement maintenance which provided opportunities for asset condition assessments to be done concurrently with easement maintenance activities.

GAWB further submitted that its operations expenditure increased steadily in 2010–15 due to:

- operating the Gladstone water treatment plant (WTP) 24 hours a day, seven days a week rather than 16 hours a day, five days a week as expected by GAWB when (in April 2009) it assessed delivery methods for in-sourced operations and maintenance[3]
- considerable increases in electricity costs
- development and implementation of GAWB's Drinking Water Quality Management Plan (DWQMP)[4] which increased water quality monitoring and reporting activities
- further development of GAWB's asset management system (refer to capex chapter for details) and the need to ensure supply reliability.

[3] GAWB supporting information (2014).
[4] DWQMPs are a requirement of the Water Supply (Safety and Reliability) Act 2008 (Qld).

Table 4 2010–15 overspend by function

Function	*Total - QCA approved ($m)*	*Total - GAWB actual ($m)*	*Overspend ($m)*	*Overspend (%)*
Operations	25.80	31.06	**5.26**	**20.4**
Asset life cycle management (ALCM)	28.48	39.04	**10.56**	**37.1**
Strategy and asset creation	16.31	17.53	**1.22**	**7.5**
Corporate services	8.64	8.92	**0.27**	**3.2**
Total	**79.23**	**96.55**	**17.32**	**21.9**

Source: QCA (2010), GAWB (2014a)

Overspends in operations and ALCM were significantly higher than in strategy and asset creation and corporate services.

RTA (2014) expressed concern that the significant reduction in GAWB's WACC from 9.35% to 6.85% (refer to Chapter 5—Rate of return for details) had been substantially offset by significant opex inflation, resulting in a 'modest' real reduction in prices. CPM (2014) stated that, based on a comparison of the QCA's forecast and GAWB's actual costs incurred, opex increases in the order of 20–30% would have been factored into water charges had this 'actual cost' approach been accepted at the last QCA review.

We agree that material increases in GAWB's opex have largely offset the reduced WACC. We have reviewed a sample of operations and ALCM opex to test the prudency and efficiency of GAWB's opex (details below).

2.3 GAWB's proposed opex

The table below shows GAWB's opex for the base year (2014–15) and forecast opex for 2015–20.

Table 5 Base year and 2015–20 forecast opex by function ($m)

Function	*Base year (2014-15)*	*2015-16*	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total (2015-20)*
Operations	6.84	7.28	7.50	7.94	8.23	8.57	**39.52**
ALCM	8.57	9.07	9.24	9.95	9.86	10.57	**48.69**
Strategy and asset creation	3.66	3.51	3.57	3.69	4.13	4.76	**19.66**
Corporate services	1.83	1.85	1.92	1.96	2.04	2.11	**9.89**
Total – GAWB forecast	**20.90**	**21.70**	**22.23**	**23.54**	**24.27**	**26.01**	**117.75**

Source: GAWB (2014a; 2014b).

GAWB's forecast was developed by applying escalation rates to base year (2014–15) opex. GAWB applied forward-looking rates where they were available. Historical averages were applied in instances where they provide a better indicator of cost movements (compared to CPI) and forward-looking escalators were not available. GAWB submitted that this approach was consistent with the QCA's (2010) decision that historical averages did not provide a reliable indication of cost escalation for operations, maintenance and chemicals costs. In 2010, we allowed above-CPI escalation of staffing costs, insurance, professional engineering services, electricity and council rates.

GAWB submitted that its forecasts for the operations and ALCM functions are materially higher than the level allowed by the QCA in 2010. GAWB has also identified operational efficiencies from 2017–18 (details below).

CSE (2014) and CPM (2014) identified that GAWB had moved from the QCA's approved benchmark efficient cost model to a (higher) actual costs incurred model in forecasting opex. CPM submitted that some of the cost escalation rates proposed by GAWB appeared to depart from the QCA's methodology or otherwise appeared high.

CSE added that there appeared to be no significant change in GAWB's operating regime or consideration of cost impacts given recent macroeconomic changes, including the regional slowdown following the gas investment boom. CSE requested that the QCA consider reviewing the methodology utilised by GAWB in determining the opex cost structure to ensure the proposed expenditure is both prudent and efficient.

We accept that GAWB's forecast for 2015–20 opex is based on a higher level of 2014–15 opex than approved by the QCA in 2010. As per the Referral, we reviewed for prudency and efficiency a sample of opex items where cost increases materially affected prices (detailed below).

We also reviewed GAWB's proposed escalation rates.

2.4 Prudency and efficiency review

We sampled the major cost categories in the two material functions. Our sample covered 64% of total opex for 2015–20.

Table 6 Sampled 2014–15 forecast operations and ALCM opex by cost category and total operations and ALCM opex by cost category 2015–20 ($m)

Cost category	*2014-15 (base year)*		*Total for 2015-20*	
	Operations	*ALCM*	*Operations*	*ALCM*
Staffing	2.86	3.77	15.86	21.22
Maintenance	-	2.17	-	12.63
Insurance	-	0.74	-	4.26
Motor vehicles	-	0.75	-	4.03
Electricity	1.99	-	12.99	-
Chemicals	0.81	-	4.35	-
Total sampled categories	**5.66**	**7.43**	**33.20**	**42.14**
Un-sampled categories	1.18	1.14	6.32	6.55
Total opex	**6.84**	**8.57**	**39.52**	**48.69**

Source: GAWB (2014a)

We engaged Jacobs (2015) to review the prudency and efficiency of sampled forecast opex for the 2015–20 period.

2.4.1 Staffing (Operations)

Background

Between 2010–11 and 2014–15, GAWB increased its full-time equivalents (FTEs) – across all functions – from 55.35 (based on the 2010 QCA approved budget) to 86.5. GAWB expressed the view that this level of staffing is now sufficient and it will not further increase staffing levels over the 2015 to 2020 regulatory period.

Operations FTEs increased from 16 in 2010–11 to 23.5 in 2014–15—an increase of 7.5 FTEs. Over this period, GAWB spent over $3 million more on staffing (operations) costs than we recommended in 2010.

GAWB forecast staffing (operations) opex of $15.86 million for 2015–20.

Prudency

Jacobs considered employment of competent staff to operate its infrastructure to be a core function for GAWB, to ensure that GAWB is able to supply the proper quality and quantity of water required by customers and in accordance with licence conditions. Jacobs therefore found this opex to be prudent.

Efficiency

Jacobs found that an increase in FTEs since 2010 was justified based on the additional responsibilities and obligations of the organisation. This is due to:

- the need to staff the water treatment plants 24/7 as outlined above. This resulted in recruitment of a further 4.4 FTEs
- the implementation of the DWQMP, which required an additional 1.5 FTEs for:
  - an environmental scientist
  - a technical officer
- an administrator for procurement and contract support
- an additional fish hatchery technician engaged to ensure the required seven days a week operation, including regular feeding and grading of the fish to minimise loss of fish stock
- additional operations and maintenance management and support.

Jacobs found that it was appropriate that GAWB in-source all key operational activities and only utilise contract labour during times of peak activity, such as flood events.

Escalation

GAWB escalated staffing costs based on advice from a remuneration specialist, Mercer Consulting Pty Ltd (Mercer).

Jacobs recommended staffing opex be escalated by Queensland State Budget forecast increase for three years (the extent of available data) and by the 10-year average Queensland WPI of 3.8% for the remaining two years. Jacobs acknowledged the uncertainty in this estimation and considered that their approach better addresses the uncertainty.

We accept that escalation by either approach is reasonable for GAWB and that the difference is immaterial. We have used Jacobs' recommendation in our modelling.

Table 7 Staffing escalation rates (%)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*
GAWB submitted	3.3	3.1	3.4	3.6	4.0
Jacobs recommended	3.3	3.5	3.5	3.8	3.8
QCA proposed	**3.3**	**3.5**	**3.5**	**3.8**	**3.8**

Source: GAWB (2014a), Jacobs (2015)

Policies and procedures

Jacobs found that GAWB implemented appropriate recruitment and remuneration processes.

Conclusion

On the basis of Jacobs' advice, we accept that the opex is prudent and efficient.

Table 8 Staffing (operations) ($m)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
GAWB submitted	2.97	3.06	3.16	3.27	3.40	**15.86**
Jacobs recommended	2.96	3.06	3.15	3.28	3.40	**15.83**
QCA proposed	**2.96**	**3.06**	**3.15**	**3.28**	**3.40**	**15.83**

Source: Jacobs (2015)

2.4.2 Staffing (ALCM)

Background

Prior to 2010, GAWB outsourced the majority of maintenance functions to external contractors and had limited asset condition information on its operational assets. GAWB has progressively assumed full maintenance responsibilities for its assets during the past four years.

ALCM staffing numbers increased from 19.1 FTEs in 2010–11 to 35.5 in 2014–15. Over the period, GAWB spent over $5.3 million more than that recommended by the QCA in 2010.

GAWB forecast staffing (ALCM) opex of $21.22 million for 2015–20.

Prudency

Jacobs considered employment of competent staff to operate its infrastructure to be a core function to ensure that GAWB is able to properly maintain its infrastructure and supply the proper quality and quantity of water required by its customers and in accordance with its licence conditions. Jacobs therefore found staffing opex for ALCM to be prudent.

Efficiency

In 2010, GAWB decided to change its maintenance arrangements from one where most of the work was contracted to external parties to one where GAWB would internalise most maintenance activities. As a result GAWB has better knowledge of its assets through implementing improved asset management practices.

A major benefit of the in-sourcing of maintenance is greater asset information capture and assessment. This information has allowed GAWB to develop budgets and its capital renewal program more effectively. GAWB expects that the increase in preventive maintenance and better knowledge of its system will reduce reactive maintenance costs and defer refurbishment/replacement expenditure.

Jacobs accepted the additional expenditure to be prudent, but found that one of the additional 16.4 FTEs was considered not efficient and one mechanical fitter was misclassified as an ALCM staff member when the position should be a WTP operator. Jacobs found the opex to be partially efficient on this basis.

Staffing (ALCM) costs are escalated in the same way as staffing (operations) costs, discussed above.

Policies and procedures

Jacobs found that GAWB implemented appropriate recruitment and remuneration processes.

Conclusion

On the basis of Jacobs' advice, we accept that the opex is prudent and partially efficient.

Table 9 Staffing (ALCM) ($m)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
GAWB submitted	3.97	4.09	4.23	4.38	4.55	**21.22**
Jacobs recommended	3.79	3.92	4.06	4.22	4.38	**20.37**
QCA proposed	**3.79**	**3.92**	**4.06**	**4.22**	**4.38**	**20.37**

Source: Jacobs (2015).

2.4.3 Maintenance

Background

As indicated above, GAWB has in-sourced maintenance functions since 2010.

GAWB's historical and proposed maintenance opex exhibits a cyclical pattern, driven mainly by the timing of major overhauls of pumps and motors, the replacement of consumables such as batteries and timing of inspections.

With respect to preventive maintenance activities, GAWB has undertaken the preparation of Life Cycle Maintenance Plans (LCMPs). An LCMP summarises asset details, current and future levels of service, utilisation, condition, major overhaul or repair events and key asset risks. Life cycle strategies include acquisition, operation, maintenance and disposal. Ten-year opex (and capex) estimates are developed with opex costs based on average historic costs or estimates for breakdown maintenance.

GAWB's LCMPs generally forecast the preventive component of maintenance expenditure to be about 70% of forecast maintenance expenditure. The 30% remainder includes estimates of breakdown, pipeline repairs and corrective maintenance.

Overall, Jacobs considered the preparation of LCMPs to be in accordance with good asset management practices.

GAWB forecast maintenance opex of $12.63 million for 2015–20.

Prudency

Jacobs considered the proper maintenance of assets to be a core function for GAWB. Jacobs reviewed nine LCMPs and found this expenditure to be prudent.

Efficiency

Jacobs noted that GAWB has not achieved a full understanding of the condition of its assets but that its maintenance capabilities are improving. Jacobs also commented that efficiencies should be realised when asset condition and maintenance requirements are fully known.

Consistent with our 2010 decision, GAWB escalated maintenance costs by 2.5% for the 2015–20 period, being the mid-point of the RBA's inflation target band (2–3%).

Jacobs considered a 2.6% escalation factor – based on the 10-year average of the ABS Producer Price Index (PPI) for Output of the Construction Industries (Non-Residential Construction, Queensland) – to be more appropriate than GAWB's 2.5%. We accept that a 10-year historical average of the PPI provides a reasonable indicator of cost movements (compared to CPI) for this category.

Initial submissions and QCA response

RTA was concerned that increased opex from in-sourcing maintenance activities had not been offset by a reduction in out-sourced contractor costs. GAWB (2014a) submitted that in-sourcing had a 'related impact' of [increasing] motor vehicle leasing, labour and information technology costs, ancillary tools and equipment and engagement of professional consultants. GAWB considered it has better knowledge of the condition of its assets and is responding to maintenance requirements in an efficient and prudent way.

We agree GAWB has significantly increased its in-house maintenance opex without demonstrating any reduction in out-sourced costs. However, we accept Jacobs' finding that GAWB has proceeded to improve its asset condition knowledge in an efficient way and that GAWB's maintenance opex is prudent and efficient. We expect GAWB's opex to stabilise over the coming regulatory period and for efficiencies to be realised and passed on to customers (refer below for details on further efficiency).

Conclusion

On the basis of Jacobs' advice, we accept that the opex is prudent and efficient. We recommend slightly higher expenditure due to the application of a higher escalation rate.

Table 10 Maintenance ($m)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
GAWB submitted	2.31	2.26	2.79	2.46	2.81	**12.63**
Jacobs recommended	2.31	2.26	2.80	2.47	2.82	**12.65**
QCA proposed	**2.31**	**2.26**	**2.80**	**2.47**	**2.82**	**12.65**

Source: Jacobs (2015)

2.4.4 Insurance

Background

GAWB obtains insurance coverage for: group personal accident; multi-risk insurance; motor vehicles; industrial special risks (specific to each asset or site and to activities at these sites); combined liability; and marine hull.

GAWB forecast insurance opex of $4.26 million for 2015–20.

Prudency

Jacobs considered that, given the conditions in which GAWB operates with assets located across an area of approximately 800 km^2, the expenditure was prudent.

Efficiency

Jacobs considered the expenditure to be efficient on the grounds that it was market tested and subject to competitive quotation process (summarised in policies and procedures below).

GAWB proposed escalation of 5% per annum. Jacobs accepted this as a price ceiling and recommended escalation rates of 2.5% in 2015–16, followed by 5% per annum from 2016–17.

Table 11 Insurance escalation rates (%)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*
GAWB submitted	5.0	5.0	5.0	5.0	5.0
Jacobs recommended	2.5	5.0	5.0	5.0	5.0
QCA proposed	**2.5**	**5.0**	**5.0**	**5.0**	**5.0**

Source: GAWB (2014a), Jacobs (2015)

Policies and procedures

GAWB's insurance broker is Marsh Pty Ltd (Marsh). In its presentation (March 2014) to GAWB, Marsh summarised GAWB's insurance needs, provided a strategy to define GAWB's risk profile and obtained quotations from suitable insurance providers. Jacobs found the policy and procedure to be in keeping with good practice.

Conclusion

On the basis of Jacobs' advice, we accept that the opex is prudent and efficient. Our proposed expenditure is slightly lower than GAWB submitted due to a lower escalation rate.

Table 12 Insurance ($m)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
GAWB submitted	0.77	0.81	0.85	0.89	0.94	**4.26**
Jacobs recommended	0.75	0.79	0.83	0.87	0.92	**4.17**
QCA proposed	**0.75**	**0.79**	**0.83**	**0.87**	**0.92**	**4.17**

Source: Jacobs (2015)

2.4.5 Motor vehicles

Background

GAWB leases 39 motor vehicles. GAWB's motor vehicle opex for 2010–15 was above the QCA's (2010) forecast due to increased costs associated with in-sourcing maintenance activities (refer to Section 2.4.3 for further detail).

GAWB forecast motor vehicles opex of $4.03 million for 2015–20.

Prudency

GAWB operates with assets located across an area of approximately 800 km^2. Access to many sites (especially dams and reservoirs) across this area is often by steep and unsealed tracks that require four-wheel drive vehicles. Given these conditions, Jacobs considered GAWB's expenditure on motor vehicles to be prudent.

Efficiency

GAWB previously engaged QFleet to lease vehicles, however the cost of doing so was higher than through commercial leasing companies. GAWB subsequently applied a competitive procurement approach and now leases vehicles through three companies. GAWB also benefits from fleet discounts available to Queensland Government entities through these companies.

Jacobs found that fuel costs were not consistent with prevailing market conditions. As such, Jacobs found the opex to be not fully efficient and recommended a modest reduction.

GAWB escalated maintenance costs by 2.5% for the 2015–20 period, being the mid-point of the RBA's inflation target band (2–3%). Jacobs considered this to be reasonable.

Policies and procedures

Jacobs concluded the approach followed by GAWB in determining the requirement for motor vehicles and allocation to staff to be robust and in keeping with good practice.

Conclusion

We accept Jacobs' recommended cost and note that the change in fuel costs were largely due to a general decrease in fuel prices since GAWB provided its submission in September 2014.

Table 13 Motor vehicles ($m)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
GAWB submitted	0.77	0.79	0.81	0.83	0.85	**4.03**
Jacobs recommended	0.74	0.76	0.78	0.80	0.82	**3.90**
QCA proposed	**0.74**	**0.76**	**0.78**	**0.80**	**0.82**	**3.90**

Source: Jacobs (2015).

2.4.6 Electricity

Background

Electricity is a key component of GAWB's operations cost. Approximately 95% of GAWB's electricity use is attributed to four contestable sites – Awoonga Dam Pump Station (ADPS), Gladstone WTP, Yarwun WTP and the administration centre in Goondoon Street, Gladstone.

GAWB forecast electricity opex of $12.99 million for 2015–20.

Prudency

Jacobs considered that the use of electricity was critical to ensuring water supply security and water treatment and therefore found expenditure to be prudent.

Efficiency

GAWB purchases electricity at the four contestable sites. At non-contestable sites, Ergon Energy supplies electricity to the various GAWB facilities.

GAWB is a price-taker in relation to electricity — it does not have the scale to effectively negotiate prices. However, GAWB's pumping regime, particularly at the ADPS, significantly affects electricity opex through the balance of peak and off-peak pumping.

In the 2010–15 period, peak demand at the ADPS and WTPs increased materially when GAWB recognised that low reservoir levels at the end of each day meant limited risk storage existed.[5] This led GAWB to increase peak demand pumping to ensure reservoirs were constantly filled so that, should pumps fail overnight, the following day's supply could be assured.

Jacobs indicated that, should the offstream storage and repump station project (refer to Chapter 3—Capex) go ahead, this would allow for more off-peak pumping from the ADPS. Jacobs recommended including this efficiency ($42,000 in 2017–18, increasing to $44,000 in 2019–20) in GAWB's cost projection. However, given we did not find the offline storage and repump station to be the best option, we have not included this efficiency saving in the electricity opex.

Jacobs also identified that the operation of variable speed drives (VSDs) at the Gladstone WTP will reduce electricity consumption and the peak load from 2016–17 (refer to review of the Low Lift & High Lift Pump Station Switchboard & VSDs project in Chapter 3—Capex). Jacobs estimate that this could result in electricity savings of 20% per annum. Based on the net cost of electricity at the Gladstone WTP (refer Jacobs (2015)) we consider a reasonable estimate of annual electricity savings to be $52,000 in 2016–17, increasing to $59,000 in 2019–20.

Jacobs considered electricity costs for the 2014–15 base year had retreated from high levels of 2013–14. GAWB proposed escalation of between 9.60% and 9.83% per annum from 2015–18, falling to 6.25% per annum from 2018–20. In light of Ergon's (2014) regulatory submission to the Australian Energy Regulator (AER) that distribution use of system revenue will decrease in 2015–20, Jacobs concluded that lower escalation rates should be applied.

Table 14 Electricity escalation rates (%)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*
GAWB submitted	9.8	9.8	9.6	6.3	6.3
Jacobs recommended	3.5	6.1	4.2	4.2	4.2
QCA proposed	**3.5**	**6.1**	**4.2**	**4.2**	**4.2**

Source: GAWB (2014a), Jacobs (2015)

Initial submissions and QCA response

CPM referred to the QCA's 2013–15 monitoring of SEQ retail water prices where the QCA proposed electricity prices be escalated in the first year by applying the most recent retail electricity determination for small sites, and escalation rates included in contracts for large sites. For subsequent years, CPM stated, the QCA adopted a less uniform approach and a range of methodologies and benchmarks were accepted. CPM noted that Wedgewood White Limited's (WWL) advice to GAWB was not based on one of the data sets adopted by the other water utilities and approved by the QCA.

For the 2013–14 SEQ retail water review, we used our electricity determination for small sites and contract rates for large contestable sites.[6] For 2014–15, we accepted forecast escalation rates proposed by the retailers, notwithstanding that the sources of these forecasts tended to differ between retailers. Our rationale for this approach was that, so long as the forecast was based on robust analysis, it was appropriate to accept it even if the source of the analysis varied between the retailers. CPM is correct that none of the SEQ retailers relied on analysis by WWL.

[5] GAWB's approach to maintaining risk storage in its supply network is discussed further in the capex chapter.
[6] See our final report at http://www.qca.org.au/Water/Urban-retail-water/SEQwater-price-monitoring.

However, this does not of itself disqualify WWL from providing forecasts which the QCA may consider to be robust.

CPM also stated its expectation that GAWB's proposed escalation factor would exclude the carbon pricing scheme as this had recently been removed from the cost base. Consistent with our 2010 decision on pass-through of carbon costs, we agree GAWB should pass on any reduction in carbon costs associated with the abolition of the carbon pricing scheme. GAWB's estimates exclude the carbon tax.

Policies and procedures

GAWB uses a broker to purchase electricity for its contestable sites. The broker obtains multiple proposals from vendors and presents at least two options for GAWB to consider. Jacobs concluded this process was appropriate and should enable GAWB to procure electricity at prevailing market rates.

Conclusion

On the basis of Jacobs' advice, we accept that the opex is prudent and efficient under existing operating constraints. We have applied Jacobs' savings in regard to the escalation rate. The net effect of our adjustments reflecting the offline storage and low lift & high lift pump station is a $94,000 difference between our electricity cost and Jacobs' recommendation.

Table 15 Electricity ($m)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
GAWB submitted	2.19	2.40	2.63	2.80	2.97	**12.99**
Jacobs recommended	2.20	2.26	2.38	2.46	2.55	**11.85**
QCA proposed	**2.20**	**2.21**	**2.37**	**2.45**	**2.53**	**11.76**

Source: Jacobs (2015)

2.4.7 Chemicals

Background

GAWB uses a range of chemicals for the storage, delivery, treatment of water and in its fish hatchery activities. Consumption of chemicals is largely a function of water demand. GAWB did however incur significantly higher chemicals costs in 2012–13 following ex-tropical cyclone Oswald causing heavy rain and flooding in January 2013.

GAWB forecast chemicals opex of $4.35 million for 2015–20.

Prudency

Given the criticality of chemicals to GAWB's water treatment process, Jacobs found the expenditure to be prudent.

Efficiency

GAWB has limited control over chemicals expenditure as costs are largely a function of global demand. The cost of sodium hypochlorite has also increased as the LNG projects in Gladstone have necessitated GAWB seeking supply from New South Wales rather than within Gladstone.

GAWB escalated chemicals costs by 2.5% for the 2015–20 period, this being the mid-point of the RBA's inflation target band (2–3%).

Jacobs considered a 2.7% escalation factor—based on the 10-year average of the PPI for Output of the Manufacturing Industries (Basic Chemicals)—to be more appropriate than GAWB's 2.5%.

We accept that a 10-year historical average of the PPI provides a reasonable indicator of cost movements (compared to CPI) for this category.

Policies and procedures

GAWB stated that chemicals are purchased in accordance with its procurement thresholds under supply agreements or contractor arrangements.

Jacobs found that GAWB's procurement process:

- provided guidance on expenditure thresholds and the number of quotes needed for certain thresholds
- did not stipulate who had authority to determine the preferred bidder and the basis of the decision
- for the $250,000 to $500,000 threshold, did not specify how many invitations for tender are to be issued
- for contracts above $500,000, did not state how the public tender process was to be undertaken.

Jacobs recommended GAWB review its procurement policy and opex governance processes to make them more robust and in keeping with good industry practice.

Conclusion

On the basis of Jacobs' advice, we accept the opex to be prudent and efficient. We have forecast slightly higher costs due to a higher escalation rate.

Table 16 Chemicals ($m)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
GAWB submitted	0.83	0.85	0.87	0.89	0.91	**4.35**
Jacobs recommended	0.83	0.85	0.87	0.90	0.92	**4.36**
QCA proposed	**0.83**	**0.85**	**0.87**	**0.90**	**0.92**	**4.36**

Source: Jacobs (2015)

2.5 Summary of sampled opex

Below is a summary of our findings on the prudency and efficiency of sampled opex.

Table 17 2015-20 approved opex by cost category ($m)

Category	*GAWB submitted*	*QCA proposed*	*Difference ($m)*	*Difference (%)*
Staffing (operations)	15.86	15.8**3**	**-0.03**	**-0.2%**
Staffing (ALCM)	21.22	20.37	**-0.85**	**-4.0%**
Maintenance	12.63	12.65	**+0.03**	**0.2%**
Insurance	4.26	4.17	**-0.09**	**-2.2%**
Motor vehicles	4.03	3.90	**-0.13**	**-3.2%**
Electricity	12.99	11.76	**-1.23**	**-9.4%**
Chemicals	4.35	4.36	**+0.01**	**0.3%**
Total	**75.34**	**73.05**	**-2.29**	**-3.0%**

Source: GAWB (2014a)

2.6 Additional operating efficiencies

GAWB submitted that it had captured operational efficiencies of in-sourcing various activities (some of which are referred to above) and recruited the QCA's (2010) efficiency targets into prices for the strategy and asset creation and corporate services functions. Further to these efficiencies, GAWB identified the potential for ALCM costs to be reduced in the 2015–20 period as GAWB better understands the condition of its assets and deploys further automation and technology solutions. GAWB also noted that 'business improvement projects' which will occur early in the 2015–20 period will provide a credible basis for provision of an efficiency dividend (between 2 and 3%) from 2017–18. GAWB submitted that these efficiencies were not factored into its opex forecasts but were taken into account in price setting. We identified that these were not applied to prices in GAWB's initial pricing model. GAWB addressed this in a re-submitted version.

GAWB also indicated it expects to achieve efficiencies through implementation of a comprehensive asset management system, including certification under ISO 55001:2014 Asset Management - Management Systems - Requirements, that will enable it to better manage asset processes by combining financial and operational data. Savings of $330,000 by 2019–20 are expected.

We welcome GAWB's identification of these efficiencies, particularly in light of the significant increase in opex since 2010.

In addition to GAWB's identified savings, Jacobs identified that the installation of VSDs at the Gladstone WTP will reduce electricity consumption and the peak load from 2016–17. Jacobs estimated that this could result in savings of 20% (see Chapter 3—Capex). Based on the net cost of electricity at the Gladstone WTP (Jacobs 2015) we consider a reasonable estimate of annual electricity savings to be $52,000 in 2016–17, increasing to $59,000 in 2019–20.

We have also reduced GAWB's efficiency saving to account for the ADPS pumping efficiency not being realised on account of the offstream storage and repump station project not being found efficient (see Section 2.4.6 above and Chapter 3—Capex).

Table 18 2015–20 operating efficiencies ($'000)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
GAWB submitted	0	0	515	582	651	**1,748**
QCA adjustment (ADPS)	0	0	-42	-43	-44	**-129**
QCA adjustment (VSDs)	0	52	55	57	59	**223**
QCA proposed	**0**	**52**	**528**	**596**	**666**	**1,842**

Source: GAWB supporting information (2014), QCA

2.7 Summary of findings

The table below summarises prudent and efficient opex by function.

Savings apply in the operations and ALCM functions from which sampled costs were reviewed.

Table 19 2015–20 prudent and efficient opex by function ($m)

Function	*2015-16*	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
Operations	7.27	7.30	7.67	7.89	8.14	**38.27**
Asset life cycle management	8.84	9.03	9.74	9.66	10.37	**47.64**
Strategy and asset creation	3.51	3.57	3.69	4.13	4.76	**19.66**
Corporate services	1.85	1.92	1.96	2.04	2.11	**9.89**
Total – QCA proposed	**21.48**	**21.83**	**23.06**	**23.73**	**25.37**	**115.46**
Total – GAWB proposed	**21.70**	**22.23**	**23.54**	**24.27**	**26.01**	**117.75**

Source: QCA calculations, GAWB (2014b).

Our proposed total opex is 1.9% lower over the five–year period than GAWB submitted.

2.8 Opex 2020–35

GAWB has a 20-year planning period. GAWB submitted that, consistent with the 2010–15 regulatory period, opex forecasts for 2020–35 assume a CPI increase over the 2020 forecast opex set at 2.5% per annum. Forecast opex for 2020–35 totals $478 million across the four functions (excluding the CIP).

Jacobs recommended that opex be escalated at 2.5% for 2020–35.

We accept GAWB's approach to opex escalation for 2020–35.

3 CAPITAL EXPENDITURE

3.1 Introduction

Prudent and efficient capex should be added to the RAB and recovered through prices. The QCA is to form a view on prudency and efficiency, with a focus on cost areas which are material to price changes rather than matters which are likely to have a minor and inconsequential impact.[7]

This chapter reviews the prudency and efficiency of a sample of GAWB's actual 2010–15 capex and proposed capex for 2015–20.

For this review, capex is:

- prudent, if it
  - is required as a result of a legal obligation (compliance), new growth, replacement or renewal of existing infrastructure, or
  - achieves an increase in the reliability or the quality of supply that is explicitly endorsed or desired by customers or external agencies (improvement), and
- efficient, if the
  - scope of the works is the best means of achieving the desired outcomes after having regard to the options available
  - standard of the works conforms to technical, design and construction requirements in legislation, industry and other standards, codes and manuals
  - cost of the defined scope and standard of works is consistent with conditions prevailing in the markets for engineering, equipment supply and construction.

3.2 Capex 2010–15

In 2010, we approved $53.0 million of capex for 2010–15 — $33.6 million (39%) lower than GAWB proposed. GAWB actually spent $67.38 million from 2010–15 (GAWB 2014a).

CSE (2014) expressed concern at GAWB's proposal to roll-in an additional $8 million of 2010–15 capex above what the QCA recommended in 2010, given the majority of expenditure was not on projects determined by the QCA to be efficient.[8] CPM (2014) similarly stated its expectation that the QCA determine whether each of the past capex projects were delivered prudently and efficiently.

We were required to focus on only those capex items which have a material impact on prices. Accordingly, we reviewed the prudency and efficiency of three projects completed in 2010–15 (19.9% of the 2010–15 capex).

[7] Minister's Referral, cl 2(f).
[8] CPM's reference to an $8 million over-spend is drawn from GAWB (2014a), Table 23.

3.3 Capex 2015–20

3.3.1 Background

Network design standard

Prior to this review, GAWB (2013) undertook an analysis of its water delivery network, including an assessment of the network failure risks that had the potential to lead to a customer supply interruption. Subsequently, GAWB introduced a network design standard for its delivery network infrastructure. The standard represents a planning approach to construction of the necessary delivery network infrastructure, and stipulates that a minimum level of 24 hours of 'risk storage' be maintained in the delivery network (GAWB 2014a). The target represents the period of time in which GAWB generally can repair all network failures (other than failures that occur in certain locations with access limitations). GAWB also noted that a certain level of latent risk can never be removed but that the higher standard will reduce the likelihood of a supply interruption occurring.

GAWB submitted that the following projects, scheduled for the 2015–20 period, are necessary to meet the design standard in their respective price zones:

- Boat Creek expansion stage 1 (Mt Miller Pipeline zone)
- Low lift and high lift pump station switchboard and VSDs (Gladstone WTP zone)
- Offline storage and repump station (Awoonga to Toolooa zone).

CPM submitted that security and reliability of supply should be appropriately balanced with the level of capex and also the customer's ability and desire to separately manage these risks.

Accordingly, the projects that reduce risks were included in our sample (below) of capex projects for detailed prudency and efficiency review.

End-of-life replacement

GAWB identified the following asset replacement projects for completion in 2015–20 as having a material impact on customer prices:

- Yarwun WTP switchboards/motor control centre (Yarwun WTP zone)
- East End Reservoir—various works (Boat Creek to East End zone)
- South Trees Pipe Bridge— structural refurbishments (Boyne Raw zone).

The reservoir and pipe bridge projects were included in the sample (below) of capex projects for detailed prudency and efficiency review.

3.3.2 New and replacement capex

GAWB (2014b) submitted (new and replacement) capex of $97.18 million for 2015–20 (excluding the CIP).

We mapped GAWB's capex drivers to our drivers stated in the above definition of prudency.

Table 20 GAWB's 2015–20 capex by driver ($m)

Driver (GAWB)	*Driver (QCA)*	*2015-16*	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
Risk	Improvement	4.66	26.02	0.00	0.10	2.19	**32.97**
Replacement	Renewal	18.96	10.15	4.19	11.12	13.37	**57.80**
Regulatory	Compliance	2.29	0.18	0.00	0.91	1.14	**4.52**
Business Process Improvement	Improvement	0.09	0.00	0.00	0.00	0.00	**0.09**
Contingent Supply Strategy	Growth	0.77	0.12	0.67	0.24	0.00	**1.80**
Total		**26.77**	**36.48**	**4.86**	**12.37**	**16.72**	**97.18**

Source: GAWB (2014b), QCA.

3.3.3 Initial submissions and QCA response

GAWB engaged Cardno (2014) to review its capex forecasts, prior to submitting them to us. CSE submitted that Cardno's review of GAWB's 2015–20 capex found only 43% was efficient. We note Cardno reviewed 43% of GAWB's total program of $77 million (new capex only) and found all reviewed projects to be efficient.

CSE and CPM requested that the QCA review GAWB's capex to ensure it prudently and efficiently meets demand and/or service requirements for each of the zones.

3.4 Materiality and sampling

The Referral required that prudency and efficiency assessments focus on capex costs that are material to prices. We have therefore selected eight projects from a cross-section of the major asset classes (storage and delivery and treatment) and cost drivers that were material in terms of the potential price impact on a price zone.

The sample accounted for 28% of GAWB's capex for the 2010–20 period.

Table 21 2010–20 Capex sample

	Project	*Driver*	*Price zone*	*Year of commissioning*	*Expenditure $m*
1	Awoonga Dam - spillway capacity upgrade (implementation)	Compliance	Awoonga	2014-15	8.99
2	Dam safety compliance works	Compliance	Awoonga	2014-15	4.44
3	South Trees Pipe Bridge structural refurbishment	Renewal	Boyne Raw	2015-16	1.69
4	Offline storage & repump station	Improvement	Awoonga to Toolooa	2016-17	21.95
5	Boat Creek expansion	Compliance / Improvement	Mt Miller Pipeline	2016-17	3.99
6	Low lift & high lift pump station switchboard & VSDs	Renewal	Gladstone WTP	2016-17	3.79
7	East End Reservoir - various works	Renewal	Boat Creek to East End	2016-17	1.18
Total sample					**46.02**
Total capex (2010-20)					**164.56**

Note: Expenditure values exclude return on investment.

Source: GAWB (2014a, 2014b).

3.5 Prudency and efficiency review

We engaged Jacobs as consultants to undertake detailed engineering analysis of the prudency and efficiency of the sampled capex.

3.5.1 Awoonga Dam—spillway capacity upgrade

Background

The project involved raising Saddle Dam 3, the raising of the Awoonga Dam left abutment and the construction of an auxiliary spillway channel below Saddle Dam 6. These works were required to meet acceptable flood capacity (AFC) requirements as issued by the Department of Energy and Water Supply (DEWS).

This project was reviewed by the QCA in the 2010 review. That review concluded that significant expenditure would be required within the 2010–15 regulatory period to meet dam safety standards. An indicative cost estimate of $22.1 million ($26 million adjusted for escalation) was accepted for 2010–15 (QCA 2010).

Subsequent investigations by GAWB to confirm the scope of works, and changes to dam safety regulatory obligations in 2010 and 2013, have resulted in a $13 million reduction of projected capex to less than $9 million.

The project is underway with completion anticipated in October 2015.[9]

[9] GAWB's (2014b) pricing model states commissioning will be in the 2014-15 financial year.

Prudency

Jacobs assessed the project as prudent as the compliance driver was demonstrated through the requirement to meet AFC guidelines (DEWS 2013).

Efficiency

Jacobs assessed the project as efficient, as:

- the scope was appropriate and the standard of works consistent with industry practice
- the costs related to the principal contract were consistent with prevailing market conditions.

Policies and procedures

Jacobs found GAWB's policies and procedures had been mostly complied with in respect to project implementation and the tendering of the construction works. Jacobs considered GAWB's procurement policy was not followed regarding the sole supplier invitations for contract management, engineering and construction quality assurance services. Jacobs was not able to conclude that savings would have been realised through competitive tendering of these services; hence the efficiency finding was retained.

Conclusion

On the basis of Jacobs' advice, we accept that the project is prudent and efficient.

Table 22 Awoonga Dam spillway capacity upgrade ($m)

	2014-15
GAWB proposed	8.99
Jacobs adjustment	0.00
QCA proposed	**8.99**

Source: Jacobs (2015).

3.5.2 Dam safety compliance works

Background

This past project involved undertaking various works on the Awoonga Dam primarily associated with safety of the dam wall and spillway structure to ensure compliance with dam safety requirements. The project was not reviewed by the QCA in the 2010 review. However, Jacobs noted that the costs presented for review of the project ($4.44 million) are higher than forecast in GAWB's 2010 review submission ($0.53 million), primarily due to an expansion to scope.

The scope of works in 2010 included the upgrade of the Awoonga Dam intake crane. The additional scope items included:

- purchase of a replacement DN1400 butterfly valve as it was damaged beyond repair
- construction and demolition of coffer dam to allow the river discharge pit valve removal and refurbishment program to be maintained while the dam was still spilling.

Prudency

Jacobs concluded the additional scope incorporated into the program of works was acceptable considering that more information became available to GAWB regarding scope requirements as the project progressed. Jacobs assessed the project as prudent as the primary driver of compliance has been demonstrated through the requirement to meet AFC guidelines (DEWS 2013).

Efficiency

Jacobs assessed the project as efficient as the scope was appropriate and the standards of works consistent with industry practice. Also, the majority of costs associated with the principal contract were consistent with prevailing market conditions and variations were well documented and approved following appropriate processes.

Policies and procedures

Jacobs found GAWB's policies and procedures had been mostly complied with regarding the appointment of the main contractor. Jacobs considered GAWB's procurement policy was not followed with respect to the sole-supplier invitation for provision of project management services by GHD Pty Ltd, and inspection, cleaning and painting services by Aestec Pty Ltd. Jacobs was not able to conclude that a level of savings would have been realised through competitive tendering of these services; hence the efficiency finding was retained.

Conclusion

On the basis of Jacobs' advice, we accept that the project is prudent and efficient.

Table 23 Dam safety compliance works ($m)

	2014-15
GAWB proposed	4.44
Jacobs adjustment	0.00
QCA proposed	**4.44**

Source: Jacobs (2015).

3.5.3 South Trees Pipe Bridge structural refurbishment

Background

The South Trees Pipe Bridge was built around 1985 to carry two pipelines—one for treated water and the other raw water—to Boyne Island across the South Trees arm of the Boyne River.

A condition assessment of the bridge was undertaken in 2013. The assessment found that the bridge was corroding and the failure risk was high. The condition of the bridge walkway impacts on GAWB's ability to access the pipelines for inspection and maintenance. In the long term, deterioration of the pipe bridge would also risk the water supply to GRC and QAL.

The project involves repairing the bridge structure, including reinstatement of protective coatings to pipelines, concrete rehabilitation (bridge structure, pile caps and columns), and protective works to marine support structure (pile wraps and cathodic protection to steel reinforcement).

The project is due for completion in 2015–16 at a cost of $1.69 million.

Prudency

The primary driver identified by GAWB for this project was risk, which Jacobs considered best mapped to the QCA regulatory driver of replacement (renewal).

Jacobs concluded the project met the QCA's definition of prudency as it is required to renew existing infrastructure which is in use and useful (that is, required to deliver a regulated service).

Efficiency

Jacobs assessed the project as efficient as the scope and standards of works were appropriate and the costs were consistent with market conditions.

Policies and procedures

Jacobs sighted a project justification form and a budget estimate has been developed for this project. This was in keeping with the level of documentation that Jacobs would expect to be available at this stage of the project. Jacobs indicated it would anticipate that as the project progresses additional documentation—including project plan, business case, contract documents and reports, and a project closure report—will be developed.

Conclusion

On the basis of Jacobs' advice, we accept that the project is prudent and efficient.

Table 24 South Trees Pipe Bridge structural refurbishment ($m)

	2015-16
GAWB proposed	1.69
Jacobs adjustment	0.00
QCA proposed	**1.69**

Source: Jacobs (2015).

3.5.4 Offline storage and repump station

Background

This project involves constructing a 1,200 ML offline storage and repump station at Toolooa, between Awoonga Dam and Toolooa Reservoir. The project was identified through a risk assessment in relation to the reliance of GAWB's delivery network on the daily operation of the ADPS.

In its submission to the 2010 review, GAWB proposed to spend $22 million on the offline storage and repump station project in the 2010–15 period.[10] We found that GAWB had not provided a convincing case for this project and included $2 million of expenditure in the 2010–15 period for investigations on the range of options to improve system storage capability. GAWB spent $0.62 million of this recommended amount.

For this review, GAWB submitted to construct the offline storage and re-pump station in the 2015–16 and 2016–17 financial years for a total cost, including expenditure already incurred, of $21.95 million.

Prudency

Jacobs assessed the project as prudent as it will facilitate GAWB undertaking condition assessment and maintenance on critical Awoonga Dam assets and this links to the 'good practice' clause in customer contracts.

Initial submission

GRC (2014) submitted that it agreed in principle with this project. However, the council identified the following issues with GAWB's submission:

[10] Refer to 'system storage project' sub-sections of QCA (2010), section 6.5.

- The likelihood of an outage at the ADPS is not clear and alternatives should be investigated with respect to redundancy of pumps at Awoonga Dam. Further, it appeared the justification for the timing of these works had been tied to the five-year maintenance period of the pumps rather than obsolescence of the redundant pipeline.
- Residents should not fund a project that will only be utilised infrequently.
- Council systems provide up to a four-day storage capacity to meet demand. Therefore the project will provide the council with an additional level of service in the event of a failure that would take the system offline for a period of between 4 and 14 days. Council requested that pricing strategies be reviewed if this project is required for other customers and that, if it proceeds, residents only pay a share of costs in excess of 4 days storage.

We consider that most of the council's issues are for GAWB to address. However, in terms of the argument that Gladstone residents should not fund a project that will only be used infrequently, the 'beneficiary pays' principle is also relevant in determining who should pay for a particular service (QCA 2014a). That is, if Gladstone residents receive a benefit from the project, it may be reasonable for them to pay for that benefit.

Efficiency

Jacobs concluded that an efficient cost for this expenditure should be based on the pontoon pump station option ($11.37 million) which will allow for assessment and maintenance of critical assets. The pontoon option was first identified as the best option in an analysis conducted in 2010. The pontoon was considered to be a simpler and lower-cost solution to the offline storage but would not afford the same high level of risk mitigation as the offline storage and repump station.

Jacobs therefore assessed the project as partially efficient.

Policies and procedures

GAWB provided a significant number of documents to Jacobs in support of this project. However, in terms of documentation required under GAWB's standard procedures only a project plan for the feasibility study and planning documents and reports were sighted. GAWB advised Jacobs that the offline storage and repump station was 'not a project' [yet] and, as such, other supporting documents such a business case have not yet been developed for the project. Jacobs considered that, given that detailed design was being completed at the time of its review, documentation such as the business case should already have been developed.

Conclusion

On the basis of Jacobs' advice, we accept that the project is prudent and is partially efficient.

We have included previous years' expenditure of $0.62 million in the RAB for consistency with our 2010 recommendation.

Table 25 Offline storage and repump station ($m)

	Previous years	*2015-16*	*2016-17*	*Total*
GAWB proposed	0.62	0.22	21.11	**21.95**
Jacobs adjustment	0	-0.22	-9.74	**-9.96**
QCA proposed	**0.62**	**0.00**	**11.37**	**11.99**

Source: Jacobs (2015).

3.5.5 Boat Creek Expansion—including refurbishing assets and securing land

Background

The project involves increasing the available storage capacity at Boat Creek from 29 ML to 38.5 ML. The project is proposed to be undertaken in two stages:

- Stage 1 involves increasing capacity by creating a new reservoir immediately to the north of the existing reservoir and emptying and cleaning out of material from the existing Boat Creek Reservoir.
- Stage 2 involves the expansion of the existing reservoir to the south.

This review only covered the cleaning of the reservoir and the stage 1 expansion.

The project is due for completion in 2016–17 at a cost of $3.99 million.

Prudency

The primary driver identified by GAWB for this project is risk of supply failure and hence the regulatory requirement of meeting contracted customer supply standards.

Jacobs found the project to be prudent on the basis that it supports achievement of GAWB's network design standard (discussed above). Jacobs considered the project to be necessary to GAWB meeting its network design standard as the provision of 24 hours storage capacity is reasonable for a surface reservoir supplying a local water distribution system.

Efficiency

Jacobs found the methodology used for the selection of the preferred option was not robust and were unable to conclude that the preferred scope of work and its selection was appropriate or the most efficient method of implementation of the project. Further, as the costs were understood by Jacobs to be based on a storage size larger than that required, Jacobs considered the costs included in the budget to be excessive and hence not efficient. Jacobs' recommended costs allowed for new storage of 10 ML to maintain a minimum of 24 hours supply in all parts of the delivery network. The cost of Jacobs' recommended option was $2.90 million.

Jacobs found the project to be partially efficient.

Policies and procedures

Due to the early stage of the project only a budget estimate and a project justification form were provided in support of the project which is in keeping with the level of documentation that Jacobs would expect to be available at this stage of the project. Jacobs anticipated that as the project progresses additional documentation—including project plan, business case, contract documents and reports, and a project closure report—will be developed.

Conclusion

On the basis of Jacobs' advice, we accept that the project is prudent and partially efficient.

Table 26 Boat Creek expansion including refurbishing assets and securing land ($m)

	2016-17
GAWB proposed	3.99
Jacobs adjustment	-1.09
QCA proposed	**2.90**

Source: Jacobs (2015).

3.5.6 Low lift and high lift pump station switchboard & VSDs

Background

There are two pump stations at the Gladstone WTP which deliver water to the GAWB potable network and GRC's reticulation systems. The pumps are referred to as the 'high lift' (installed circa 1992) and 'low lift' (installed circa 1972) pump stations. The switchboards and pump motor controls are ageing and there are issues with peak power demand exceeding the nominal rating of the power supply transformers (as experienced in late 2013).

The exact scope of works for the project is yet to be finalised. The scope recommended by Welcon Technologies Pty Ltd (consultant to GAWB) formed the basis of GAWB's pricing model which included capex of $3.79 million.

In January 2015, GAWB provided two revised scopes to Jacobs, the first of which contained a budgeted cost of $5.09 million.

Prudency

Jacobs found the project was prudent as the primary driver of pump redundancy was demonstrated through improved power supply distribution facilities.

Initial submissions and QCA response

GRC (2014) did not question the need for the project, but noted that references to 'peak power demand as experienced in late 2013' suggested the project should be attributed to Curtis Island customers and not the region's residents. The QCA understood from GAWB that the project coincided with the delivery of the CIP but was not driven by the CIP.

Efficiency

Jacobs considered the project to be efficient as the scope is appropriate to meet demand growth.

However, Jacobs noted that a revised cost estimate is required from GAWB for the second change in scope. Pending the completion of this cost estimate by GAWB, we propose to include the $3.79 million included in GAWB's pricing model.

Policies and procedures

Jacobs considered that GAWB had followed its policies and procedures for the implementation of this project.

Conclusion

On the basis of Jacobs' advice, we accept that the project is prudent and efficient.

Table 27 Low Lift and High Lift Pump Station Switchboard & VSDs ($m)

	2015-16
GAWB proposed	3.79
Jacobs adjustment	0.00
QCA proposed	**3.79**

Source: Jacobs (2015).

3.5.7 East End Reservoir—various works

Background

The project involves various works at the East End Reservoir to rectify condition issues. Based on a condition assessment of the reservoir, the scope includes external strengthening, external concrete rectification, and roof repairs and replacement.

The QCA (2005) optimised the East End Reservoir, reducing its size from 5 ML to 2.25 ML. In October 2014, GAWB advised Jacobs that refurbishment of the reservoir was cheaper than replacement.

The project is due for completion in 2016–17 at a cost of $1.18 million.

Prudency

Jacobs found the project was prudent as the primary driver of renewal was demonstrated through evidence of the deterioration of the existing infrastructure.

Efficiency

Jacobs assessed the project as efficient as the scope was appropriate and standards of works were anticipated to be consistent with industry practice. The independent cost estimate developed for the works was considered appropriate for the current phase of the project.

Policies and procedures

Due to the early stage of the project only a budget estimate was provided in support of the project which is in keeping with the level of documentation that Jacobs would expect to be available at this stage of the project. Jacobs anticipated that as the project progresses additional documentation—including project plan, business case, contract documents and reports, and a project closure report—will be developed.

Jacobs was unable to conclude that GAWB's purchasing policy was followed with respect to the sole-supplier invitation for the provision of reservoirs condition/risk assessment services by Vinsi Partners. However, the value of these contracts was unknown to Jacobs and as such the methodology adopted may have been appropriate.

Conclusion

On the basis of Jacobs' advice, we accept that the project is prudent and efficient.

Table 28 East End Reservoir— various works ($m)

	2016-17
GAWB proposed	1.18
Jacobs adjustment	0.00
QCA proposed	**1.18**

Source: Jacobs (2015).

3.6 Summary of capital expenditure adjustments

We propose a $11.66 million reduction to the seven sampled projects. We accepted total capex for 2010–15 of $67.38 million. Capex for 2015-20 was reduced from $97.18 million to $83.15 million (including a $2.36 million reduction in return on investment associated with the project reductions).

Table 29 Sampled capex adjustments

	Project	*Jacobs assessment*		*Expenditure $m*		
		Prudent	*Efficient*	*GAWB*	*Adjustment*	*Total*
1	Awoonga Dam - spillway capacity upgrade (implementation)	Yes	Yes	8.99	0.00	8.99
2	Dam safety compliance works	Yes	Yes	4.44	0.00	4.44
3	South Trees Pipe Bridge structural refurbishment	Yes	Yes	1.69	0.00	1.69
4	Offline storage & repump station	Yes	Partially	21.95	-10.58	11.37
5	Boat Creek expansion - including refurbishing assets and securing land	Yes	Partially	3.99	-1.09	2.90
6	Low lift & high lift pump station switchboard & VSDs	Yes	Yes	3.79	0.00	3.79
7	East End Reservoir - various works	Yes	Yes	1.18	0.00	1.18
Total				**46.02**	**-11.66**	**34.35**

Note: offline storage and repump station total excludes pre-2015 capex.

Source: Jacobs (2015).

3.7 Overall findings

Jacobs identified areas for possible improvement to GAWB's procedures for identifying, selecting and implementing projects.

3.7.1 Risk mitigation

Jacobs reviewed two projects—offline storage and repump station and Boat Creek Reservoir—where GAWB proposed to increase reliability by increasing storage capacity within its network.

For the offline storage project, the sizing of the storage has been designed to mitigate low risk events. Jacobs did not see any evidence of GAWB discussing customer-driven options to reduce costs. However, Jacobs recognised that water is critical for many of GAWB's industrial customers and that a lack of water, even for short times, may have significant economic consequences. In addition, Jacobs noted that the demands of GAWB's customers can be varying, unlike typical residential demands, as water is required to meet industrial process needs. As such, this reasonably influenced GAWB's approach to risk mitigation in Jacobs' view.

The QCA's definition of prudency includes projects that achieve an increase in the reliability or the quality of supply that is explicitly endorsed or desired by customers or external agencies. Jacobs understood that GAWB was testing its customers' willingness to pay for proposed projects through its 2015 price monitoring submission. In addition, Jacobs indicated that projects do not become 'official' until endorsed by its customers.

While Jacobs agree there are efficiencies using the submission for dual purposes—to inform both the regulator and customers—there may be difficulties due to the timing of GAWB's submission. For example, the offline storage and Boat Creek projects progressed to detailed design before prudency was established or appropriate documentation developed (e.g. business cases). Jacobs considered that this creates potential for rework to be undertaken.

3.7.2 Sole sourcing

Jacobs found some evidence of sole sourcing. In many cases there was a documented reason for this decision (for example, perceived unique skill sets, relationship, prior experience). In addition, Jacobs noted the context in which some of these decisions were made; that is, a lack of skills/resources in Gladstone due to competing demands from industry. However, by not undertaking market testing, it was difficult for GAWB to demonstrate that the costs achieved through these contracts were efficient. We note Jacobs' observations on this issue and expect that GAWB will undertake capex in accordance with its own policies and procedures.

3.8 Final capital expenditure rolled into RAB

We will include $83.15 million of capex into the RAB over the 2015–20 period.

3.9 Capex 2020—35

GAWB has a 20-year planning period. GAWB forecasts capex beyond the 2015–20 period solely for the purpose of setting the price path for 2015–20. A total of $121 million capex is forecast for the 2020–35 period (GAWB 2014b).

We did not review any projects beyond 2020 in detail and did not adjust GAWB's proposed forecasts for this period, as forecast 2020–35 capex:

- has a smaller impact on prices compared with capex over 2015–20
- will not be included in the RAB until commissioned and can be reviewed in the next regulatory review
- includes only end-of-life replacement of assets constructed by 2020 (and therefore assumes like-for-like replacement of assets).

This approach is consistent with previous regulatory reviews.

4 REGULATED ASSET BASE

4.1 Introduction

The QCA is required to roll forward GAWB's RAB for the 2015–20 review in accordance with the QCA's previously recommended methodology.[11]

4.2 Previous methodology

Consistent with previous GAWB investigations, the method to roll forward the RAB incorporates:

- the opening value at the commencement of the regulatory period
- the addition of efficient capex incurred
- indexation for inflation in asset values
- the removal of redundant assets and assets sold (disposals)
- depreciation using estimated asset lives.

4.3 Opening asset base

GAWB rolled forward the QCA approved 1 July 2010 RAB of $419.60 million in accordance with our recommended methodology. GAWB submitted its forecast RAB at 30 June 2015 would be $504.72 million.

Table 30 RAB roll-forward ($m)

	Value
Opening RAB 1 July 2010 (QCA (2010))	**419.60**
Difference between actual and forecast inflation	2.29
Other adjustments (inc. capitalisation timing)	-10.88
Opening RAB 1 July 2010 (GAWB)	**411.01**
Capex 2010-15	67.38
Inflation	54.95
Capitalised value of Contingent Supply Strategy	22.31
Disposals	-2.90
Depreciation	-48.03
Forecast RAB 30 June 2015	**504.72**

Source: GAWB (2014a).

The capitalisation timing adjustment relates primarily to asset expenditure where the capitalisation timing was later than originally included in the QCA's 2010 RAB forecast; that is, commissioning was forecast for 2009–10, but occurred in 2010–11.

[11] Minister's Referral, cl 2(d).

4.3.1 QCA position

We accept GAWB's adjusted RAB as at 1 July 2010.

4.3.2 GAWB's submission

Using the required method, GAWB submitted its RAB would increase to $584.83 million at 30 June 2020.

Table 31 RAB 2015–20 ($m)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*
Opening RAB	504.72	528.88	562.40	563.86	572.31
Disposals	-0.18	-0.14	-0.24	-0.42	0.00
New capex	25.98	34.34	3.49	8.48	8.68
Replacement capex	0.78	2.14	1.38	3.88	8.03
Inflation	12.61	13.22	14.05	14.09	14.31
Depreciation	-15.05	-16.03	-17.22	-17.59	-18.49
Closing RAB	**528.88**	**562.40**	**563.86**	**572.31**	**584.83**

Source: GAWB (2014b).

4.4 Contingent supply strategy

GAWB's submitted RAB for 1 July 2015 includes $22.31 million for preparatory works on its CSS. We concluded in the 2010 review that the expenditure on these works should not be included in the RAB until the asset is commissioned. The asset has not been commissioned, but GAWB argued that the 2010 decision was incorrect and have presented new analysis to support its argument.

4.4.1 Background

Drought 1996–2003

Following the 1996–2003 drought, GAWB developed a SWP in consultation with customers. The plan outlined GAWB's CSS, with the preferred augmentation option being the Gladstone Fitzroy Pipeline (GFP) pipeline between the Lower Fitzroy River and the proposed Aldoga Reservoir. Water was to be sourced from raising the Eden Bann Weir and/or a new weir at Rookwood Crossing on the Fitzroy River (GAWB 2007).

Previous QCA reviews

The QCA undertook reviews of (a) GAWB's proposed recovery of preparatory expenditure for the GFP (QCA 2007), and (b) proposed criteria for triggering implementation of the CSS in the event of drought or unexpected increases in demand (QCA 2008). A review of (c) changes to GAWB's pricing practices once the augmentation was completed was not completed by the QCA as major rainfall event in February 2008 resulted in GAWB deferring its proposed CSS.

Preparatory works (2007)

The preparatory works undertaken by GAWB included project management, approvals, consultation and communication, engineering and investigations and land acquisition (QCA 2007). In our report mentioned in (a) above, we considered preparatory expenditure:

- to be appropriate if there was a high probability of project commencement in the next few years
- should be subject to an ex-post review before being considered for incorporation in the asset base.

Trigger Point (2008)

The QCA (2008) considered as appropriate GAWB's:

- drought trigger — to enable the appropriate augmentation to commence operations in sufficient time to avoid emergency restrictions and defer supply failure for a target period (2 years), after allowing for inflows, losses, current and contracted demand, and other forecasts as set out in GAWB's Drought Management Plan (DMP)
- unexpected additional demand trigger — to commence construction of the appropriate augmentation when GAWB has entered into contracts with customers that exceed the capacity of its water sources, after allowing for distribution losses and contingency.

Pricing practices investigation (2010)

The QCA (2010) pricing practices investigation recommended that $14.27 million of CSS expenditure for preparatory works incurred after April 2008 not be included in the RAB until the GFP is commissioned. GAWB should have ceased its expenditure when dam levels rose and it was clear that the CSS was not required for several years, at least.

Strategic Water Plan (2013)

In its 2013 SWP, GAWB stated that:

- its DMP required a second water source to be implemented and supplying water whilst Awoonga Dam still had two years supply remaining. Therefore:
  - under a drought-triggered augmentation, activity would need to commence when the dam had eight years of supply remaining
  - under a demand-triggered augmentation, activity would need to commence when the dam had six years of supply remaining.
- completing the CSS preparatory works has reduced the augmentation implementation timeframe from six years to three years. That is, without the preparatory works it would take at least six years to implement a GFP or desalination augmentation whereas, owing to the preparedness attained and maintained, the implementation timeframe for the GFP solution has been reduced to three years.
- to determine the appropriateness of the preparatory expenditure, it compared two strategies:
  - retaining CSS preparatory works – where drought-triggered second source work (early works and construction) commences when storage falls to five years from failure
  - abandoning CSS works – where drought-triggered second source work must commence whenever storage falls to eight years from failure.
- using stochastic simulation of inflows to Awoonga Dam, GAWB's costs 'with CSS' (i.e. incurring monthly holding costs) were compared with GAWB's costs 'without CSS' (i.e. higher monthly cost preparatory works commencing whenever the dam level drops below eight

years from failure). The value of the CSS was calculated as the present value of the differences between the 'with' and 'without' CSS costs.

- under almost all simulations in the 'with CSS' case, GAWB spends $3.4 million NPV over 20 years on holding costs. Holding costs are only avoided if construction of the drought response infrastructure is triggered. GAWB's loss is stopped at $3.4 million; in the 'without CSS' case GAWB may spend as much as $40 million in repeatedly starting the drought response works only to stop when the Awoonga storage level recovers.

4.4.2 GAWB's submission

GAWB has not recovered a return on investment for the $14.27 million expenditure incurred after April 2008 (GAWB 2014a). Contrary to our 2010 recommendation, GAWB submitted its intention to roll $22.31 million of preparatory works expenditure into the RAB at 1 July 2015. This amount is the $14.27 million of expenditure plus capitalisation at WACC (9.35%).

GAWB (2014a) concluded that maintaining the CSS was the lowest cost option in 90% of (inflow) cases and that the expected value of retaining the CSS — considering only the drought trigger benefits — was approximately $30 million. GAWB also identified that the CSS is extremely valuable in times of multiple short-duration droughts as frequent triggering and abandonment of early works would occur in the absence of the CSS.

4.4.3 Initial submissions

CSE (2014), CPM (2014), RTA (2014) and GRC (2014) argued that expenditure associated with the CSS after April 2008 should continue to be excluded from the RAB. The specific arguments made in support of this position are summarised below, with our responses.

Table 32 Initial submissions and QCA response

Issue	*Response*
Demand trigger GRC submitted that residential customers have proven to be receptive to water conservation measures and offer the most flexibility in times where demand management measures are required. Accordingly, GRC contended that the need for investment in any augmentation of a supplementary water source is not a function of council and its residents' demand. CPM and CSE commented there was no indication of future demand growth and demand for the 5-year period is expected to be well within the sustainable dam yield.	We acknowledge these points on demand and note GAWB did not identify demand during the 2015-20 period as a factor supporting its decision to roll-in the previous expenditure.
Roll-forward of excluded expenditure CSE (2014) submitted that inflation of the expenditure by the WACC from $14 million to $22 million effectively back dates the asset into the RAB from the period that it was rejected which is not consistent with capex recognition.	The purpose of GAWB's submission was to demonstrate the disallowed expenditure it incurred after April 2008 was prudent. If the QCA were to accept GAWB's submission, it would be appropriate for it to be at present value (i.e. $22.3 million).
Drought trigger CSE noted GAWB's submission did not identify alternatives available to mitigate water consumption or manage water supply in a drought, other than the CSS project. CPM stated the QCA needed to validate the 6-year lead time nominated by GAWB, and the DMP	Alternative strategies to manage water demand and supply in a drought are addressed by GAWB in its DMP and SWP. The 6-year lead time is a reasonable indication of the lead time for GAWB to construct a supply augmentation. The QCA (2002) indicated that optimisation of GAWB's asset base should adopt a

Issue	*Response*
requirement that supply of water from the second water source be available 2 years prior to it actually being required	'just-in-time' approach to augmentation, allowing for lead times of 6-8 years for storage augmentation. When reviewing GAWB's preparatory costs for the GFP, Cardno (2007) identified a 5-year timeframe for a 'normal' approach to delivering infrastructure just-in-time. GAWB (2005) cited a 6-year lead time for a major augmentation in its response to the QCA's draft report of the 2005 pricing practices investigation. In terms of the DMP requirement, although these plans are no longer regulated by DEWS, we consider a responsible bulk water service provider should maintain a plan to manage drought. The QCA (2008) also accepted the 2-year availability based on GAWB's assumptions regarding deferral of dam failure at the time.
CSS solution CPM commented the CSS preparatory works relate to a particular augmentation project [the GFP] and that, depending on the characteristics of any future required drought response, the GFP may or may not be optimal. In this case, expenditure already incurred with respect to the CSS project would prove to be of no real value to customers. CPM continues to hold a view that an 'opt in' arrangement is the most appropriate solution for supply reliability works.	We note that GAWB's submission details its investment in identifying augmentation options other than the GFP. We have previously addressed CPM's preference for an 'opt in' arrangement; see QCA 2008. In that report, we suggested GAWB could consider different contractual service standards for different customers, or that trading between customers could provide a commercial framework for customers to opt in or out of the CSS.
Price increases CSE submitted that the capex is significant and if the project does eventuate it will result in significant cost increases for all users.	We accept that construction of the GFP would lead to a material increase in prices for customers. Available information from the 2007 CSS review indicated that prices would need to increase by at least $310/ML (QCA 2007).

4.4.4 QCA position

We accept that GAWB's CSS model is intended to demonstrate the overall value of the 'with CSS' strategy compared to the 'without CSS' strategy, as opposed to specifically demonstrating the prudency of the previously excluded preparatory works expenditure.[12] However, we do not accept GAWB's proposal that continuing with the preparatory works was the least cost solution as GAWB's stochastic simulation for the 'with CSS' case does not include a return on or of the initial approved $14.37 million spent on the preparatory works. GAWB's analysis effectively compares maintaining a state of preparedness (assuming the preparatory works were already undertaken) against letting the preparatory works lapse. Adding the $14.37 million to the 'with CSS' costs means the holding costs strategy is more costly than the 'without CSS' strategy.

The model also assumes that the full value of the CSS is immediately lost if construction is triggered and then inflows cause construction to be abandoned.[13] While we accept that the CSS needs to reach hold points to retain value, we are not convinced that the assumption that all value is lost if construction is triggered and then abandoned is valid.

[12] GAWB supporting information (2014).
[13] Refer to Harrington (2009) for background on this issue.

The analysis GAWB presented does not show that completing the preparatory works was prudent, after it became clear that the project would not be needed for many years. On this basis we do not consider it appropriate to roll-in the $22.31 million at this stage. If, at a future time the CSS is implemented and an asset commissioned, the prudent and efficient value of the contingent supply may be added to the RAB. This is consistent with our decision on preparatory works in 2007.

GAWB has not included the construction costs of the CSS in its 20-year capex forecasts. However, we note initial submissions on the issues, and should storage levels fall, we expect that GAWB will continue to work with its customers to determine the best solution.

GAWB has not provided sufficient justification for us to reverse our previous decisions. Accordingly, we have not included previously excluded capex prior to 2010 in the RAB.

4.5 2010–15 CSS expenditure

In 2010, we allowed $1.332 million for 2010-15 to maintain a minimum level of preparedness.

GAWB actually spent $5.60 million on the CSS in the 2010–15 regulatory period, comprising:

- $3.40 million on preparatory works to obtain access to water from the Fitzroy River
- $1.96 million obtaining easements for the GFP
- $0.24 million improving cost estimates for desalination supply and Awoonga Dam raising options (out of $0.4 million allowed in 2010).

We requested further detail from GAWB on the nature of these expenditures. Based on this advice, we considered that expenditure of $2.20 million on easements for the GFP and on reviewing desalination and dam raising options was consistent with the QCA's 2010 recommendations.

We did not include the expenditure on the Lower Fitzroy project as these costs were to develop the project, not maintain it. This expenditure was inconsistent with our 2010 recommendations and the prudent and efficient expenditure can be included in the RAB when the asset is commissioned.

4.5.1 QCA position

We have included $2.20 million of the $5.60 million on the basis of our 2010 recommendation.

4.6 2015–20 CSS expenditure

Finally, GAWB forecast average expenditure on holding costs of $0.36 million per annum from 2015–20. The costs are for further investigation of the desalination option, the GFP and LFRIP. Consistent with our earlier decisions, we accept in principle that expenditure on holding costs is justified and have included these costs in the RAB.

4.7 QCA RAB

We have adjusted GAWB's RAB to reflect the exclusion of CSS capex incurred after April 2008 (except for $2.20 million between 2010–15) and capex found not to be fully prudent and/or efficient.

Table 33 QCA estimated RAB 2015–20 ($m)

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*
Opening RAB	478.39	506.57	532.83	538.05	550.00
Disposals	-0.18	-0.14	-0.24	-0.42	0.00
New capex	26.50	23.39	3.49	8.60	9.41
Replacement capex	0.78	2.14	1.38	3.30	4.16
Inflation	11.96	12.66	13.31	13.44	13.75
Depreciation	-10.89	-11.79	-12.72	-12.98	-13.75
Closing RAB	**506.57**	**532.83**	**538.05**	**550.00**	**563.57**

Source: QCA calculations

The table below shows the difference between the GAWB–submitted and QCA–calculated RABs.

Table 34 RAB 2015–20 ($m)

	GAWB	*QCA*	*Difference*
30 June 2015 RAB	**504.72**	**478.39**	**-26.33**
2015-20 Disposals	-0.97	-0.97	**0.00**
2015-20 Capex	97.18	83.15	**-14.03**
2015-20 Inflation	68.28	65.12	**-3.16**
2015-20 Depreciation	-84.37	-62.12	**22.25**
30 June 2020 RAB	**584.83**	**563.57**	**-21.26**

Source: QCA calculations.

The QCA's reduced opening RAB was mainly due to the exclusion of the CSS.

The significant difference in the depreciation amounts is largely due to our removal of the CSS from the asset base. The CSS has a relatively short asset life and most of the ($22.31 million) value was forecast by GAWB to depreciate in the 2015–20 period.

5 RATE OF RETURN

5.1 Introduction

The price monitoring framework allows GAWB to set its WACC, and therefore the QCA does not propose to prescribe the WACC. However, the Referral requires the QCA to consider the WACC applied by GAWB against the benchmark WACC. To do this, we have established a benchmark WACC for GAWB for the 2015–20 price monitoring period.

5.2 Background

QCA cost of capital methodology review[14]

As an organisation, we are reviewing our cost of capital methodology. For the cost of equity, the changes to date are that:

- the market risk premium (MRP) has been increased from 6% to 6.5% per annum
- Gamma, the product of the utilisation rate and distribution rate of dividend imputation credits, has been decreased from 0.5 to 0.47.

In its submission, GAWB (2014a) adopted these revised parameters. Accordingly, we have not further reviewed them here.

In reviewing our approach to the cost of debt for future regulatory reviews, we made a final decision in August 2014 to use an econometric methodology for estimating the benchmark cost of debt. At the same time, we also released a draft decision on the theoretical framework for setting the benchmark cost of debt; specifically that it should be based on an 'on-the-day', rather than a 'trailing average', approach. However, our position on the latter has not yet been finalised (discussed further below).

As a result, we have retained the 'on-the-day' framework to setting the cost of debt for GAWB and applied the econometric estimation method to obtain the relevant estimate. We will make any relevant adjustments for the final report, should the final decision on the cost of debt framework result in a change.

Form of the discount rate

For the 2010–15 investigation, we applied the nominal post-tax, 'vanilla' WACC (Officer WACC3). We propose, and GAWB has submitted, that the Officer WACC3 definition of the rate of return (Officer 1994) continue to be applied.

The focus of the ensuing analysis is on the WACC parameters where GAWB has taken a contrary view to our WACC methodology, or where GAWB-specific parameters are to be assessed.

5.3 Risk-free rate

The risk-free rate is the rate of return required by investors for holding an asset with zero default risk. The risk-free rate is a component of both the cost of equity and the cost of debt.

[14] A comprehensive analysis of cost of capital review issues and associated material can be found in the 'Research' section of the QCA website (http://www.qca.org.au/Other-Sectors/Research).

Our WACC methodology estimates the risk-free rate using a 20-business-day average of the (interpolated) nominal yields on Commonwealth Government bonds, whose terms most closely align with the term of the regulatory period (i.e. 'term-matching').

GAWB applied a 20-day averaging period, with an indicative end date of 31 July 2014. However, GAWB departed from term-matching and submitted an indicative risk-free rate of 3.53% per annum based on the yield of a Commonwealth Government bond with a term to maturity of 10 years rather than five.

We maintain that, for the reasons discussed in the QCA's final decision on the market parameters (QCA 2014b), the term of the proxy bond should align with the length of the regulatory period.

We estimate a risk-free rate of 2.36% per annum based on a five-year rate over the 20 days ending 12 January 2015. This estimate will be updated for the final report.

5.4 Capital structure and credit rating

Capital structure and credit rating are two related inputs in the assessment of the WACC.

Capital structure refers to the relative market-value proportions of debt and equity that together finance the regulated entity's assets. The regulated entity's proportion of debt in the total market value of its assets (equity + debt) is termed its 'gearing' or 'leverage'. The benchmark credit rating is based on the benchmark capital structure. Firms that face less risk in their operating environment are generally able to sustain higher levels of leverage for a given credit rating, all else equal.

The QCA's previous estimates of the appropriate benchmarks for these inputs were 50% debt and a BBB credit rating.

GAWB submitted no change to its capital structure or credit rating. As we consider GAWB's financial circumstances have not materially changed since the last review, we propose to retain the benchmark capital structure (50% debt/50% equity) and credit rating (BBB) from 1 July 2015 to 30 June 2020.

5.5 Debt beta

The debt beta reflects the non-diversifiable, or systematic, risk of a firm's debt. It is used in the de-levering/re-levering process to convert equity betas to asset betas (and vice versa). For the 2010 pricing investigation, we applied an estimate for the debt beta of 0.11.

GAWB submitted a debt beta of 0.11 for setting its indicative WACC. We have also continued to apply a debt beta of 0.11 in calculating the equity beta for GAWB.

5.6 Asset and equity betas

The asset beta (or unlevered beta) of an entity is a relative measure of the inherent 'business', or systematic, risk of investing in the entity compared to the risk of investing in the market as a whole, assuming the business is 100% equity-financed. The equity beta (or levered beta) reflects not only the entity's inherent business risk but also the financial risk borne by equity holders from the use of debt to partially fund the business.

For regulatory purposes, the equity beta is a direct input into the allowed WACC, where the underlying, benchmark asset beta has been re-levered at the benchmark leverage of the regulated firm. However, as asset betas cannot be observed directly, they need to be estimated

using market data of the returns to shareholders of listed firms and the returns on a proxy for the market portfolio, such as a stock market index. However, when market returns are unavailable—such as for Australian water utilities—a sample of equity betas of comparable entities is used to obtain a benchmark estimate. The asset beta is then derived from these equity beta estimates using an appropriate de-levering formula.

In the 2010 review, the QCA recommended an asset beta of 0.4, which using the Conine levering formula, corresponds to an equity beta of 0.65. GAWB submitted the same asset beta of 0.40. However, due to the slightly lower gamma of 0.47, GAWB proposed a slightly lower equity beta of 0.64 (based on leverage of 50%, a debt beta of 0.11 and a statutory corporate tax rate of 30%).

Based on our own analysis, as well as on advice from Incenta (2015), we accept GAWB's proposed asset and equity betas.

5.7 Cost of debt

Theoretically, the discount rate for valuing debt (the cost of debt) in the Capital Asset Pricing Model (CAPM) is the return expected by the providers of debt capital to reward them for bearing the systematic risk of investing in the entity. This rate, however, will under compensate the firm as it does not include compensation for the inferior liquidity of corporate bonds relative to government bonds, for example. Further, it is also not directly observable.

Therefore, it is common regulatory practice in Australia to estimate the cost of debt using the promised yield on it. The regulatory approach references benchmark debt with a credit rating consistent with the benchmark credit rating of the regulated entity. The credit (or corporate) spread (promised yield minus risk-free rate) is used to estimate the debt risk premium (DRP).

As discussed, the QCA applies the 'on-the-day', rather than a trailing average, approach in setting the regulatory cost of debt. This approach involves taking an average of the cost of debt over the 20-day period immediately preceding the start of the regulatory cycle.

GAWB submission

GAWB preferred a 10-year trailing average cost of debt approach, rather than the prevailing 'on-the-day' approach, on the grounds that the trailing average approach would:

- allow GAWB to refinance 10% of its debt requirements each year rather than trying to refinance its entire debt portfolio over a few weeks at every price review
- reduce price volatility for customers because the cost of debt can change significantly from one five-yearly price review to the next under the 'on-the-day' approach.

QCA analysis

As discussed above, we have not yet made a final decision on our preferred cost of debt framework. For the purpose of this draft report, we have therefore applied the 'on-the-day' approach, which is consistent with our draft position on this matter and used econometric techniques to obtain the estimate.

For this investigation, the QCA commissioned Incenta to provide updated estimates for the risk-free rate, the DRP, and the interest rate swap allowance.

For the purpose of setting the draft benchmark WACC, the annual benchmark cost of debt is 5.02% comprising a five-year risk-free rate of 2.36%, a 10-year debt risk premium of 2.42%, an interest-rate swap allowance of 0.13%, and an allowance for debt-raising costs of 0.108%.

The first three of these estimates will be updated for the purpose of establishing a benchmark WACC in the final report. The debt-raising cost allowance of 0.108% was established by the QCA in its final decision on a cost of debt estimation methodology (QCA 2014c). GAWB is not bound to use our benchmark WACC.

5.8 Conclusion on benchmark WACC

For the purpose of monitoring GAWB's prices for the 2015–20 period, we estimated a draft benchmark WACC of 5.78% per annum for the indicative 20-day period, ending 12 January 2015, comprising the parameter estimates listed below.

The primary reason our WACC is lower than GAWB's proposed WACC is that the risk-free rates are measured at different points in time. Specifically, if GAWB's 10-year risk-free rate is updated to 12 January 2015, then that rate would be 2.85%, or 68 basis points lower than the 10-year rate of 3.53% as at 31 July 2014. Updating this estimate would reduce GAWB's proposed WACC of 6.85% to 6.17%.

In addition, applying the QCA's preferred five-year term for the risk-free rate (rather than a 10-year term) would reduce the risk-free rate further, from 2.85% to 2.36% (i.e. by 49 basis points). This change would reduce GAWB's WACC from 6.17% to 5.68%. We note that our estimates of the DRP and associated transaction costs are slightly higher than GAWB's estimates, by 21 basis points. Updating GAWB's cost of debt to reflect this higher estimate results in a WACC of 5.78%.[15]

Table 35 GAWB cost of capital parameter estimates

Parameter	*WACC adopted by GAWB for the 2010-15 pricing practices investigation*	*GAWB initial submission*	*QCA draft position*
Data date where applicable	30 June 2010	31 July 2014	12 January 2015
Risk-free rate (% p.a.)	5.04[a]	3.53[b]	2.36[a]
Market Risk Premium (% p.a.)	6	6.5	6.5
Capital structure (% debt)	50	50	50
Debt beta	0.11	0.11	0.11
Asset beta	0.40	0.40	0.40
Statutory corporate tax rate (%)	30	30	30
Gamma	0.5	0.47	0.47
Equity beta	0.65	0.64	0.64
Cost of equity (% p.a.)	**8.92**	**7.72**	**6.54**
Debt risk premium (% p.a.)	3.64	2.34	2.42
Interest-rate and credit default swap allowances (% p.a.)[c]	0.98	n/a	0.13

[15] The QCA's debt premium, inclusive of transaction costs, is 21 basis points or 0.21% higher. Adopting our estimate increases the WACC by [0.50 x 0.21% = 0.105%], which would increase the WACC from 5.68% to 5.78% (rounded).

Parameter	*WACC adopted by GAWB for the 2010-15 pricing practices investigation*	*GAWB initial submission*	*QCA draft position*
Debt-raising allowance (% p.a.)	0.125	0.108	0.108
Cost of debt (% p.a.)	**9.78**	**5.98**	**5.02**
Officer WACC3 (% p.a.)	**9.35**	**6.85**	**5.78**

(a) Five-year term to maturity.

(b) 10-year term to maturity.

(c) The debt risk premiums provided in all cases are based on a 10-year term of debt. However, at the time of the 2010-15 decision, the 10-year premium was characterised as a five-year debt risk premium plus a proxy allowance for the transaction costs of credit default swaps, which were not available. Therefore, the majority of the 0.98% swap cost allowance is actually the term premium between 10-year and 5-year debt (with the residual being the transaction cost allowance for interest rate swap costs).

6 REGULATORY FRAMEWORK

As practised in Australia, incentive regulation is a tool designed to complement building blocks regulation by providing firms with incentives to become more efficient. Incentive regulation is usually implemented with a price cap, revenue 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.

6.1 Form of regulation

Previous investigations

GAWB submitted in 2005 and 2010 that a revenue cap is more appropriate than a price cap. GAWB contended that it could not mitigate the risk of future demand not materialising and therefore it was a risk it should not bear.

We considered that the revenue cap proposed by GAWB at the time was inappropriate as it would pass on to existing customers the risk that the forecast take-up of spare capacity does not eventuate.

We recommended a price cap with appropriate mechanisms such as customer contracts, pricing structures and review triggers to manage GAWB's exposure to downside revenue risk.

GAWB submission

GAWB stated that while it benefited from the adoption of the price cap form of regulation in the 2010-15 period as actual demand has been higher than forecast, it remained of the view that a pure price cap is not an appropriate form of regulation for GAWB.

GAWB submitted that since the 2010 review, there has been a shift away from the application of pure price cap regulation for both water businesses and other regulated entities, including:

- IPART's (2012) adoption of a hybrid price/revenue cap for Sydney Water Corporation (Sydney Water)
- ESC (2013) allowing metropolitan water businesses the choice of a price or revenue cap
- ESCOSA's (2013) adoption of a hybrid average revenue/revenue cap for SA Water
- AER's (2012, 2013) application of a revenue cap for transmission businesses and a mix of price/revenue caps for distribution businesses
- ICRC's 2008 adoption of a hybrid price/revenue cap for ACT Energy and Water Corporation.

In addition, GAWB noted that in the 2010 report the QCA stated that it would work with GAWB to develop a mutually acceptable form of regulation where:

- GAWB is incentivised to facilitate connections of new customers
- GAWB can limit downside revenue exposure if forecast demand does not materialise
- customers retain five-year price certainty.

GAWB submitted that a hybrid price/revenue cap form of regulation would meet these requirements and that a move away from a pure price cap form of regulation now has significant regulatory precedent in not only the water industry but also regulated utilities in general.

GAWB proposed a hybrid price/revenue cap similar to that approved by ICRC in 2008 and IPART in 2012. GAWB proposed to:

- maintain prices unchanged within the period except for annual CPI adjustments
- implement a price cap for storage, reservation and administration charges with a symmetrical 5% deadband (threshold for triggering a revenue cap)
- a revenue cap for delivery charges with no deadband
- roll forward differences between actual and forecast revenue in excess of the 5% threshold to the beginning of the next regulatory period.

The 5% threshold is intended to apply to total tariff revenue (storage, delivery and administration cost recovery after price rebates). GAWB proposed that the threshold be applied on an annual basis.

Under the proposed approach:

- GAWB retains revenue from additional demand up to 5% over that forecast — meeting the QCA's requirement for an incentive to facilitate retention of demand and connection of additional demand
- customers bear the risk of demand outcomes being more than 5% below that forecast — meeting GAWB's requirement to effectively cap the downside exposure to demand risk
- prices are stable within the regulatory period.

Initial submissions and QCA response

CPM (2014) was concerned that the existing framework already provides significant volume-risk protection for GAWB in that:

- GAWB has adjusted its demand forecast, extending further the period over which demand will reach system capacity — the effect of this is that GAWB is accruing a significant 'revenue shortfall' amount, which feasibly could be recovered from existing users, if future demand forecasts are not realised.
- sitting behind the regulatory framework, there are agreements that have been struck on commercial terms at a particular point in time. The commercial agreements provide a great deal of revenue certainty for GAWB through a variety of charging mechanisms. This includes fixed charge components of two-part tariffs, penalty charges where customers understate proposed usage, and take-or-pay provisions.

CPM noted that these provisions provide GAWB with a significant level of revenue protection, beyond that implied by a conventional price-cap framework. The introduction of a revenue cap to protect GAWB further will effectively mean that customers will pay regardless of demand.

CPM and CSE (2014) submitted that they would not support the proposed framework without due consideration given to its impact on the existing risk allocations as formalised in GAWB's contractual arrangements with its customers, suggesting that the changes to GAWB's risk profile be recognised by a lower rate of return (as indicated by the WACC).

Key issues

As detailed above, the hybrid price/revenue cap proposed by GAWB is comprised of a price cap with a deadband covering the storage and reservation charges and administration charges, with a revenue cap in place for delivery charges.

We assessed GAWB's proposed hybrid price/revenue cap against the 2010–15 price cap form of regulation below.

Table 36 QCA assessment of regulatory framework options

Criterion	***Price cap (2010-15 approach)***	***Hybrid price/revenue cap with deadbands (GAWB approach)***
Allocation of demand risk	Demand forecast is a critical factor. GAWB has incentive to understate demand to maximise price. GAWB bears risk of forecast demand not eventuating and receives 100% of benefit from additional demand.	Customers bear the cost if demand drops below the deadband. GAWB only benefits from additional demand within the deadband. Less incentive for GAWB to understate demand.
Allocation of supply risks	Price caps encourage demand management by customers.	A revenue cap encourages demand management by GAWB, limited to the end of the deadband.
Pricing certainty to customers	Prices stable over the regulatory period.	Prices stable over the regulatory period.
Regulatory consistency	Consistent with past approach and a number of regimes around Australia.	Significant change from previous approach but is consistent with recent regulatory practice in other jurisdictions.
Transparency and administrative complexity	Simple and low-cost administration. Customers familiar with the process.	Simple and low cost administration. Minimal change from existing processes.
Effectiveness of monopoly prices oversight	Limited scope for monopoly pricing behaviour.	Potential for monopoly pricing up to the deadbands if demand exceeds the forecast. However, at the next price reset, the increase in demand will reduce prices all other things being equal.
Revenue adequacy	Risk of insufficient revenue if demand is less than forecast	Risk of insufficient revenue limited to shortfall of storage and administration components within deadband
Incentives	Maximum incentive to sell additional water.	Incentive to sell additional water up to the deadband.

The application of a +/-5% deadband provides the incentive for GAWB to increase the take-up of spare capacity. The proposed deadband is however narrow compared to those imposed by other regulators. For example, IPART (2012, 2013a, 2013b) applied a 10% deadband for Sydney Water, Hunter Water Corporation and Gosford and Wyong councils.

The nature of GAWB's customer base and the absence of incremental demand (excluding that driven by population growth which comprises less than 20% of total demand (GAWB 2014a)) is such that the loss or gain of a single major customer would have a significant impact on GAWB's revenues and potential financial viability were a price cap in place.

The pure price cap approach therefore requires a cap for each individual customer's price at each offtake.

A revenue cap with a deadband:

- aligns with the QCA's intention for its oversight of GAWB to be less intrusive
- recognises the commercial nature of GAWB's dealing with its customers
- is simple to implement and communicate to customers
- retains the incentive for GAWB to increase the take-up of spare capacity.

The application of revenue cap with a deadband addresses the QCA's previous concerns with the application of a pure revenue cap and/or hybrid price/revenue cap identified in the 2010 review because:

- the use of a deadband removes much of the risk to customers as GAWB bears all risk within the deadband
- the application of the deadband creates incentives for GAWB to increase take-up of excess capacity within the deadband
- GAWB bears planning risk for augmentations driven by uncontracted demand within the deadband
- the carryover of the revenue variances in excess of the deadband to the commencement of the next regulatory period ensures price stability over the regulatory period
- the revenue at risk is limited as the bulk of revenue is generated by fixed charges.

We support CPM's view that the regulatory framework should recognise the significant level of revenue protection provided to GAWB by previously negotiated commercial agreements.

In recognition of this, we recommend a 10% deadband rather than the 5% proposed by GAWB as:

- GAWB's existing contractual agreements with its customers provide it with a substantial level of revenue protection, implying low downside risk.
- this recognises the impact of the entry or exit of a major customer is outside GAWB control.
- this will provide GAWB with a greater incentive to increase the take-up of excess capacity.
- this more closely aligns with the deadband ranges applied by other jurisdictions, most notably IPART.

QCA position

We find that the most appropriate form of regulation for GAWB is a revenue cap which:

- covers all revenue including storage, administration, delivery, over-run charges and contract length premium revenue
- fixes prices (with the exception of CPI increases) for the length of the regulatory period
- carries forward annual revenue variances in excess of 10% of the total revenue to the next regulatory period (indexed at WACC) in conjunction with the existing carryover mechanism.

6.2 Transition mechanism for delivery charges

GAWB has proposed a change to the pricing for the delivery system whereby prices would be based on a customer's MDQ. GAWB's proposed MDQ-based pricing regime is discussed in detail below.

GAWB considered that there is significant uncertainty regarding the revenue that would be recovered via MDQ-based delivery charges. The uncertainty arises from the fact that:

- some customers may modify their operations to be significantly less 'peaky' (decreasing their contracted MDQ)
- some customers may find their MDQ requirements are greater than has been observed over the past two years and increase their contracted MDQ.

GAWB estimated that half of its customers would face higher bills under the MDQ approach at the commencement of the period, falling to 30% of customers by the end of the period. GAWB submitted that there is uncertainty over the rate and extent to which affected customers would respond to the incentives around the introduction of MDQ-based prices.

GAWB proposed that, to minimise windfall gains or losses arising from the introduction of MDQ-based prices, the revenue cap for delivery services would not be subject to a deadband for existing customers for the 2015–20 regulatory period only. That is, for this transition period, the full value of the under/over recovery of delivery revenue would be rolled forward at WACC to the next regulatory period. No changes would be made to the prices within the period, other than CPI indexing.

GAWB suggested that the proposed revenue cap mirrors the effect of the long-term volume contract quantities and does not affect GAWB's incentive to connect new customers.

GAWB reiterated that the transitional revenue cap would cease at the end of the 2015–20 period and that all revenues are proposed to be regulated under the hybrid price/revenue cap from 2020.

We recognise that the introduction of MDQ-based pricing imposes a unique set of risks for GAWB. However, GAWB's proposed revenue cap without deadbands for delivery prices removes all revenue risks (upside and downside) associated with the introduction of MDQ-based pricing. GAWB should have an incentive to manage its downside risk and it is not appropriate for this entire risk to be transferred to customers.

A pure revenue cap does not provide GAWB with an incentive to negotiate higher MDQs and to find new customers. However, we acknowledge that GAWB's proposed pure revenue cap is a transition to allow for the introduction of MDQs, which we consider will create more efficient price signals. To allow for this transition, we recommend that downside risk be reduced through a 5% deadband to apply to delivery charges during the transition period (compared to 10% deadband on remaining revenue).

QCA position

A revenue cap should apply to delivery revenues with a 5% deadband as this represents an appropriate allocation of risk between GAWB and its customers and provides GAWB with an incentive to increase demand.

6.3 Planning and regulatory period

The Referral requires us to review GAWB's proposed prices for the five years to 30 June 2020.

In the 2005 and 2010 reviews, we recommended that prices be calculated to recover costs over a 20-year planning period. A timeframe of this length dealt with any efficient excess capacity and provided consistent and stable pricing signals given the lumpiness of water infrastructure investments.

In line with previous QCA recommendations GAWB has adopted a 20-year planning period and a five-year regulatory period. This means that prices over 2015–20 will not recover the full costs, as a portion of the excess capacity is not being recovered through 2015–20 prices but will be recovered from future users, as take-up of the storage capacity increases. Consistent with past practice, this under-recovery will be calculated and recovered through future prices.

QCA position

We find a 20-year planning period and five-year regulatory period to be appropriate for GAWB.

6.3.1 Revenue carryover

In 2010, we recommended 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. Under this approach the initial revenues from smoothed prices are lower than costs as a result of the deferred recovery of the cost associated with excess storage capacity. This under-recovery will be recovered from future customers as the excess capacity is taken up.

This is the difference between the forecast smoothed price revenue and the forecast annual revenue that would result from the use of the building block approach. Annual differences were capitalised to the commencement of the next pricing period using the WACC applicable for the previous review. The sum of the capitalised amounts carried forward was subject to price smoothing on a forward-looking basis, in a similar manner to the other elements of the revenue requirement.

Importantly, the carryover does not reflect changes in revenue resulting from a difference between actual and expected revenues. Rather, the adjustment reflects the difference between building blocks and smoothed revenues, given the same set of assumptions.

As required by the Referral, GAWB submitted a $94.3 million revenue carry-over that is consistent with the approach we recommended in 2010. This is below the value we estimated in 2010 mainly due to GAWB estimating its WACC at the commencement of the pricing period, whereas we estimated our WACC several months prior. GAWB made a minor correction to its model which resulted in a revenue-carryover of $95.01 million. We accept this value as it is consistent with our recommended approach.

In addition to the revenue carryover amount, GAWB has carried over the revenues from short-duration contract surcharges and accelerated depreciation. We support the carryover of short-duration contract surcharges. GAWB's inclusion of accelerated depreciation in the carryover is consistent with the QCA's 2005 finds with respect to the brownfields optimisation.

In addition to short-duration contract surcharges GAWB may also receive revenue from over-run charges. We find that these should also be included as a deduction in the inter-period carry forward - except where the customer over-run has caused a material increases in GAWB's costs. In this case, the revenue cap may be increased by the additional cost.

GAWB did not receive any revenue from over-run charges in the 2010–15 regulatory period.

QCA position

We accept GAWB's position noting that GAWB's inclusion of accelerated depreciation in the carryover is consistent with the QCA's 2005 findings with respect to the brownfields optimisation.

7 DEMAND FORECASTS

Since 1979 the volume of water sold by GAWB has increased from 16,500 ML per annum (ML/a) to over 53,000 ML/a. Over this period, the annual yield of Awoonga Dam was increased from 70,000 ML to 78,000 ML.

7.1 Previous reviews

In 2002 we concluded that demand would not exceed Awoonga Dam's then yield of 87,900 ML/a until beyond 2020–21. In the 2005 review, after Awoonga Dam's yield was reduced to 78,000 ML/a, we concluded that capacity would not be taken up until beyond 2024–25. In 2010, full uptake was forecast for 2029–30.

In past investigations, while GAWB's demand forecasts have not been met, we considered that demand risk was best managed by customers who best know and can manage their requirements. Under the price cap approach that has prevailed since 2002, when demand is lower than forecast, GAWB recovers less revenue.

In 2010, we recommended that demand forecasts should reflect existing contracted volumes, anticipated contracted volumes and a component to reflect expected long-term growth.

The Referral requires us to have regard to GAWB's demand forecasts. GAWB's proposed prices are levied by either:

- annual contracted volume
- contracted MDQ
- metered use.

7.2 Annual contracted volume

GAWB submitted demand forecasts that reflect customers' contracted or committed volumes and statements of anticipated actual volumes, consistent with the QCA's 2010 recommendation.

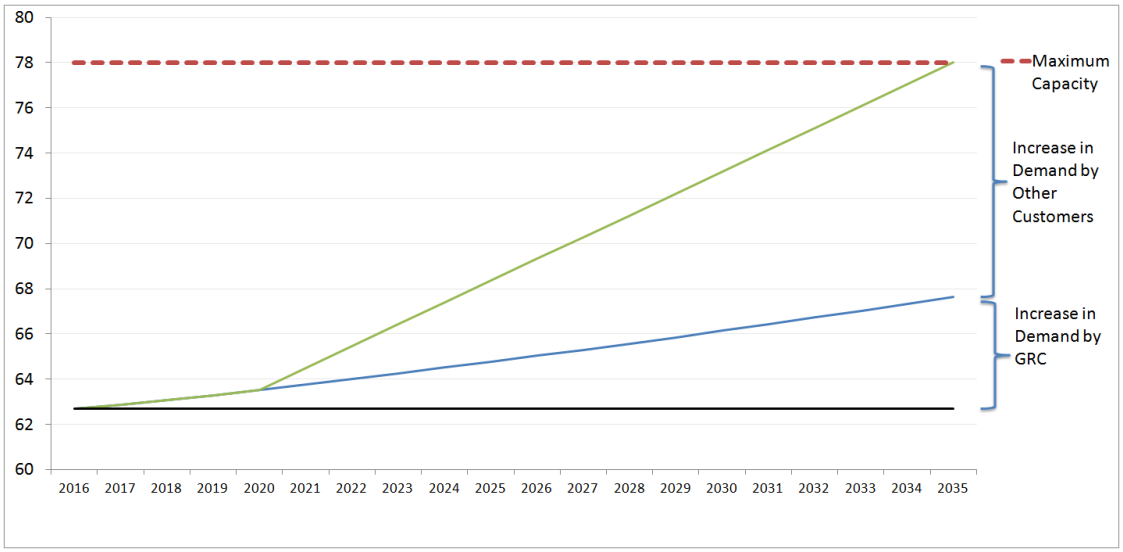
GAWB discussed future demand with each of its major customers. For 2015–20 GAWB considers that:

- new industrial customers have significant lead-times. GAWB has no enquiries from potential customers that would require a water supply within five years.
- The only existing customer forecasting any demand growth over the 2015–20 period is GRC. GRC's growth forecasts are included in GAWB's demand forecast.

Beyond 2020, GAWB forecast full utilisation of its water allocation from Awoonga Dam at the end of the planning period—in 2035. GAWB considered that this approach:

- recognises that the primary purpose of the 20-year planning period is to share the cost of spare capacity between current and future users
- is consistent with the QCA's objectives when establishing the 20-year planning period
- is consistent with GAWB's water supply agreements and the CSS (because augmentations are not 'priced in' based on speculative forecasts).

Figure 4 GAWB's Forecast Contracted Volume ('000 ML)



CPM (2014) submitted that GAWB's forecast suggests a further delay in demand reaching the full capacity of Awoonga Dam. CPM noted that when the Awoonga Dam Raising Project was proposed, the additional capacity was then forecast to be utilised by 2009. Existing customers are carrying the cost of this additional spare capacity for more than 20 years longer than was originally anticipated.

CPM requested that QCA critically review GAWB's reduced demand forecast and verify the adjusted demand. CPM also requested that the QCA determine the extent to which water prices are higher than they otherwise would have been, had the 2010 demand forecast been retained.

We have previously found that that efficient excess capacity that was generated through the expansion of capacity at Awoonga Dam should be recovered across current and future users. This is done through using a 20-year planning approach that defers some of the costs beyond the five-year regulatory period. We acknowledge that past forecasts have not been accurate and, consistent with previous reviews, we consider that customers should bear demand risk.

We discussed likely future demand with each of GAWB's major customers and no party expressed a prospect of materially higher demand in the next five years. In the case of GRC, we accept that it will experience modest demand growth. On this basis, we accept GAWB's forecast.

We furthermore accept GAWB's submission that demand will increase smoothly to reach full utilisation of Awoonga Dam by 2035. This forecast will be re-assessed in the next price investigation.

QCA position

We accept GAWB's demand forecast as it is based on the best available information and no customer has submitted that it intends to increase its demand over 2015–20.

7.3 Metered use

The majority of customers ordinarily use their full contracted volume, but GAWB forecast that some customers will use less than their full contracted volume.

We examined past usage trends and confirm that some customers do not use their full contracted volume.

QCA position

We accept these forecasts as they are based on historical averages.

7.4 Contracted MDQ

GAWB is proposing to recover fixed delivery costs through the new MDQ mechanism.

Existing customers have MDQs specified in their contracts. However, GAWB recognised that contracted MDQs have not been used for billing and therefore may have been specified inaccurately. On one hand there was no penalty for specifying a high MDQ, so some customers may have specified the contract MDQ higher than actually required to ensure that GAWB is required to provide a high flow rate. On the other hand, some customers may have not fully considered the issue (because it did not drive commercial outcomes with GAWB) and under-specified MDQ. For these reasons GAWB will initially forecast MDQs based on historic metered quantities rather than contracted quantities.

For MDQ forecasts:

- GAWB used the metered MDQ from the past two years as the base reservation
- where existing customers are forecasting to increase their annual volume reservation over time, GAWB has increased the MDQ in the same ratio as the annual volume increase (i.e. a forecast 2% per annum increase in contracted annual volume reservation would result in a 2% per annum increase in forecast contracted MDQ).

QCA position

We accept the introduction of MDQ and GAWB's MDQ demand forecast as they reflect recent usage patterns.

8 PRICING PRACTICES

Historically, GAWB's price structure comprised three distinct prices—storage and reservation, delivery and administration. We have previously reviewed these prices to ensure they reflect efficient outcomes, provide GAWB with the revenues necessary to promote sustainable investment and take account of public interest matters.

This chapter outlines the pricing structures for the 2015–20 regulatory period. Specifically, we investigate GAWB's proposal to change the mechanism to recover fixed delivery costs.

8.1 Zonal pricing

Previous investigations

In the 2010 review, we recommended that the GAWB's prices be differentiated for all customers according to their use of specific components of GAWB's infrastructure network. This is achieved by zonal pricing. GAWB adopted the QCA's recommended pricing zones for the 2010–15 regulatory period.

GAWB submission

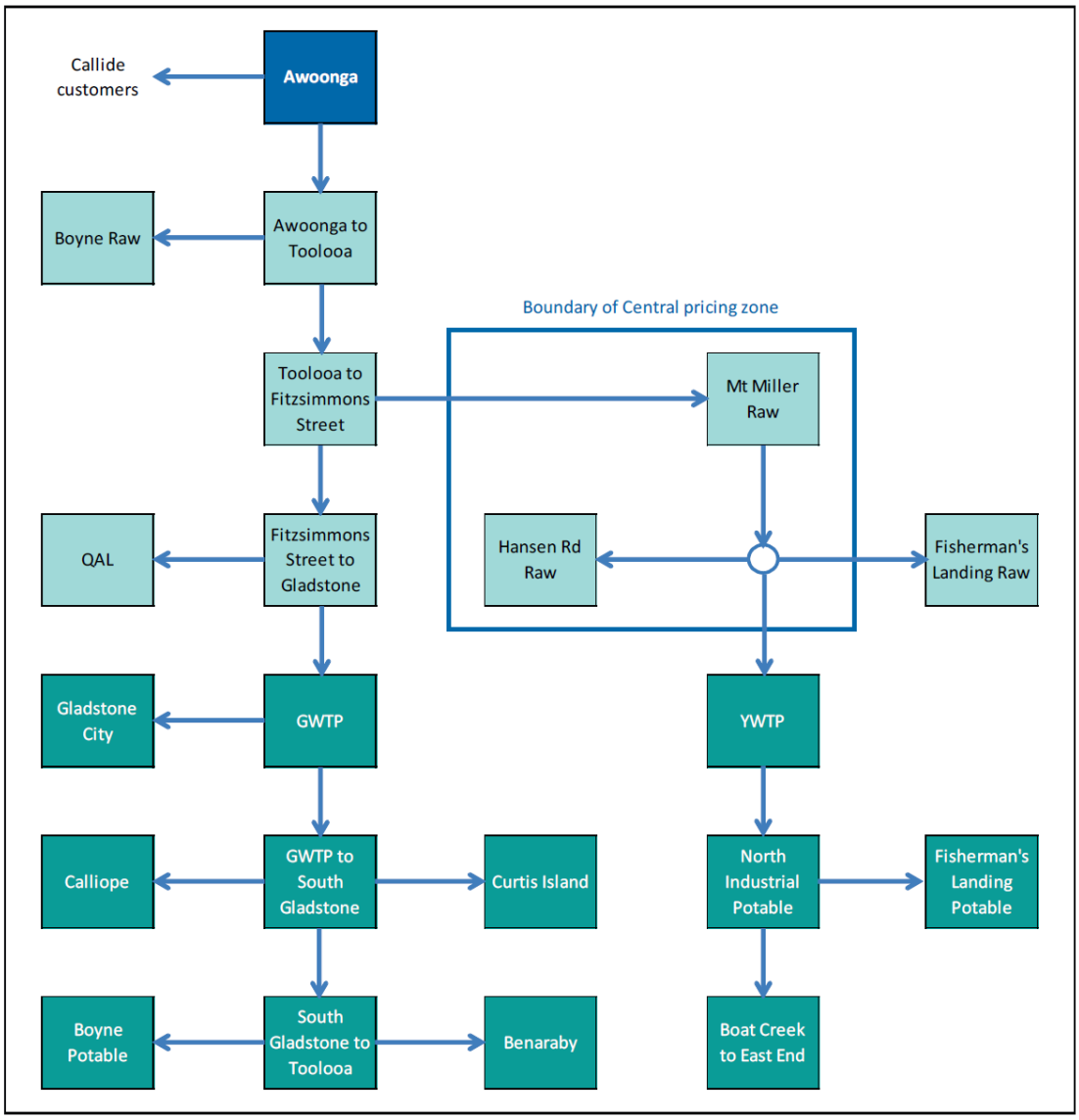
GAWB proposed three changes to the pricing zones adopted in the 2010 review:

(a) merging the Northern Industrial and Mt Miller Raw price zones noting that the zones were priced the same

(b) the creation of a new zone 'Curtis Island potable' to service Curtis Island customers

(c) using the Mt Miller Raw price zone for Hansen Road raw water customers to reflect the re-purposing of parts of the Hansen Road pipeline to service the Curtis Island potable zone.

Figure 5 GAWB's proposed pricing zones



Source: GAWB (2014a)

QCA position

We find that GAWB's revised pricing zones are appropriate as they reflect the operational and physical structure of GAWB's delivery network.

8.2 Long-run marginal cost and two-part tariffs

In the 2010 review, we recommended that:

- prices should reflect long-run marginal cost (LRMC)
- LRMC be estimated using the average incremental cost (AIC) method
- 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.

GAWB continues to adopt the AIC approach for the estimation of LRMC. We supported this method in the 2010 GAWB review, and we also recommended it as an option in our pricing principles for the SEQ retail water long-term regulatory framework (2014a).

QCA position

We continue to support pricing based on LRMC estimated using GAWB's suggested AIC approach as this approach is consistent with our water pricing principles and previous regulatory decisions.

8.3 Storage charges

In the 2010 review, we recommended:

- basing the storage volumetric charge on LRMC with volumes sourced from Awoonga Dam
- basing the storage access charge on contracted demand and recovering the residual amount through the volumetric charge.

GAWB proposed to maintain the structure of storage charges recommended by the QCA in the 2010 review for the 2015–20 regulatory period.

We consider that the use of annual volumes is an appropriate measure for the allocation of storage and reservation costs to customers as these costs are not related to the capacity of the delivery network but the storage capacity of the Awoonga dam.

GAWB proposed to include preparatory expenditure on its CSS in its capex forecast. Applying the AIC method, GAWB developed a volumetric storage charge of $33/ML of contracted volume.

QCA position

We accept in principle GAWB's proposed two-part tariff structure for storage charges as it is consistent with the previously approved approach and appropriately allocates costs.

8.4 Delivery access charge

GAWB's delivery access charges are based on annual contracted volumes. In its submission to the 2010 review GAWB stated that contracted annual volume is a poor proxy for a customer's use of delivery assets.

GAWB suggested that the amount of network capacity that must be set aside for a customer is dependent on peak usage rather than the customer's annual contracted volume. Network augmentation is triggered by additional peak demand requirements rather than additional annual contracted volume. GAWB therefore proposed in 2010 to investigate implementing instantaneous flow rate (IFR) based charging. We recommended in 2010 that GAWB conduct further analysis into the cost and benefits of IFR charging.

GAWB's investigations resulted in a move away from the IFR approach to maximum daily quantity (MDQ) charges as it considered MDQ to be the more important driver of network costs. Each customer is specified a MDQ which is the maximum amount they can take in any single day.

GAWB gave the example of an asset designed to supply two customers that both use their 1000 ML of annual contracted volume. Customer A operates 24 hours per day, seven days per week (except for a short annual maintenance shutdown). Customer B operates eight hours per day on 200 working days per annum. Both customers pay the same access charge.

Table 37 Flow based pricing example

	Annual Contracted Demand ML	*Maximum Daily Quantity ML*	*Maximum flow Rate L/s*
Customer A	1,000	3.0	35
Customer B	1,000	5.5	200

Source: GAWB (2014a)

Due to the nature of the delivery networks Customer B would require the reservation of almost twice the upstream network capacity as Customer A. The upstream network (pumps, pipelines and in-system storages) would need to be sized to satisfy Customer B's MDQ. Customer B would require the reservation of almost six times as much downstream network capacity as Customer A. This is because the downstream network (equipment downstream of the last network storage) would need to be sized to meet Customer B's maximum flow rate.

The costs identified by GAWB related to MDQ include:

- pipe capacity of the network upstream of the last reservoir
- pumping capacity on the network upstream of the last reservoir[16]
- reservoir capacity.

Another advantage put forward by GAWB for the proposed approach is that under MDQ-based pricing customers have an incentive to minimise their contracted MDQ and peak demand. Lower MDQs would defer capacity-based augmentation (and potentially some security-based augmentation).

GAWB considered that MDQ-related costs represent by far the largest proportion of network costs and has therefore proposed it as the core component of its delivery pricing regime.

CPM (2014) submitted that it has no concerns with MDQ-based pricing as long as the methodology applied to allocate costs between the reservation and storage service and the delivery network remains unchanged.

GRC (2014) submitted that while modelling provided to it by GAWB indicated that there is little impact on it, a move to MDQ-based pricing may not be appropriate from a residential perspective.

GRC submitted that the proposed methodology is contradictory to the DEWS (2014) guideline for sizing bulk assets. The DEWS guideline suggests that bulk water mains be sized for the 'Mean Day Maximum Month' (MDMM), which is the highest 30-day moving average daily water demand during a year. GRC concluded that the use of a MDMM peaking factor would be more in line with the guidelines that have been established for sizing bulk water assets.

We note that the DEWS guidelines are planning rather than pricing guidelines. Further, capacity required for any customer depends on their peak demand. Taking a 30-day average may not reflect the peak usage of a customer.

We examined if MDQ is a better measure of a customer's burden on the delivery network than annual contracted volumes.

[16] GAWB refers here to the capacity costs of pumping (pump and power supply size, etc.). The variable costs of pumping would be recovered through a volume charge under the IFR-or MDQ-based pricing.

We note that GAWB has consulted with its customers on implementation of MDQ-based pricing, including providing 'shadow' bills, and we support GAWB's proposal to continue to engage with customers.

GAWB's delivery system is not generally subject to capacity constraints. The complexity and cost of MDQ-based pricing may not be justified where there is no delivery capacity constraint. However, we consider that implementing a system in advance allows for customers to adjust to the new charging mechanism and make long-term decisions about their infrastructure. It is expected that the delivery system will become more constrained over time.

Queensland electricity distributors—Energex and Ergon—operate a distribution and transmission pricing framework similar to that proposed by GAWB for delivery services. Both businesses have a capacity charge that has similar characteristics to GAWB's MDQ.

Consistent with our 2010 conclusions, we find that the proposed delivery access charges regime based on contracted MDQ:

- is a cost reflective and more equitable means of allocating the fixed cost of the delivery network
- signals delivery capacity expansion costs to existing and future customers and may defer the need for future augmentation
- provides incentives for customers to actively reduce their impost on the delivery system
- is consistent with the pricing regimes of other regulated industries.

QCA position

We agree that MDQ is an appropriate means to recover fixed delivery costs.

8.5 Delivery volumetric charge

GAWB submitted that it sets the volumetric charge for delivery services to reflect the LRMC of consumption which is comprised of:

- variable operating cost
- the marginal cost of capacity.

Variable operating costs largely relate to the total volume of water supplied. Therefore, a volumetric charge based on metered water use is the most cost reflective recovery method.

QCA position

We agree that the volumetric charge should relate to variable costs and be charged per ML of metered use.

8.6 Over-run charges

Consistent with past QCA recommendations, GAWB levies over-run charges where customers exceed their contracted annual volume. These charges provide an incentive for customers to accurately specify their required capacity and allow for the recovery of costs associated with over-runs.

The move to MDQ-based delivery charges requires a change to over-run charges for delivery services. To assist with the transition to MDQ-based charging GAWB proposed to waive all delivery over-run charges for the 2015–20 regulatory period.

For the 2020–25 regulatory period GAWB proposed that an over-run charge of twelve times the monthly MDQ-based charge apply to any actual MDQ in excess of the contracted MDQ. Under the proposed approach the 10% over-run allowance would be removed.

We consider that the proposed over-run charge may not be reasonably reflective of the additional costs incurred by GAWB resulting from the over-run. The approach used by Ergon for the pricing of demand in excess of authorised demand is a more appropriate method for implementing over-run charges. Under the Ergon approach, if a customer exceeds its contracted peak demand in any one month, the actual peak demand is substituted for contracted peak demand in the calculation of the capacity charge for that month. This approach may better reflect the network costs incurred by the supplier.

QCA position

While we recognise that GAWB intends to waive all over-run charges for the 2015–20 period we will reassess GAWB's proposed over-run charges at the next review. At that point customers' responses to the introduction of MDQ-based charges will be known.

8.7 Administration charges

GAWB's costs that cannot be allocated to a particular pricing zone are allocated to a corporate overheads pricing zone in accordance with the previously adopted methodology. These costs are charged directly to customers on the basis of the relative administrative effort required to provide storage, raw water and treated water services.

GAWB allocated administration charges using the method established in the initial pricing principles investigation in 2002.

Table 38 GAWB proposed administration charges

Charge	*Effort/volume ratio*	*2015-16 Admin Charge $/ML*
Storage	1:1	30.5
Raw	3:1	91.4
Treated	7:1	213.3

Source: GAWB (2014a)

It is reasonable to recover corporate costs via an administration charge based on annual contracted volume as administration charges do not vary with metered water use or peak demand.

While, an activity analysis of general administration functions would be desirable to better identify the cost drivers, the cost of such an analysis is not justified given that total administration costs are less than 10% of total MAR and that any resulting change would not have a material impact on prices.

QCA position

We accept GAWB's proposed allocation of administrative costs.

8.8 Transition arrangements

GAWB proposed four mechanisms to smooth customers' transition to MDQ-based tariffs.

Grandfathered annual quantity tariffs

As the transition to MDQ-based charges may result in large bill changes for some customers, GAWB proposed to retain the annual quantity-based delivery charges for the next five years. In practice under this transition measure GAWB would charge customers the lesser of the MDQ-based delivery charge and the grandfathered annual volume-based delivery charge.

GAWB's proposed transitional charging arrangements are set out in the table below.

Table 39 Transitional grandfathered volume-based charges

Year	*Charge*
2016	Lesser of MDQ-based charge and 110% of the volume-based charge
2017	Lesser of MDQ-based charge and 120% of the volume-based charge
2018	Lesser of MDQ-based charge and 140% of the volume-based charge
2019	Lesser of MDQ-based charge and 160% of the volume-based charge
2020	Lesser of MDQ-based charge and 180% of the volume-based charge

Source: GAWB (2014a)

GAWB submitted that under these arrangements customers with low-cost demand profiles (no peaks) would immediately receive lower bills. Customers with high-cost demand profiles (peaky demand) would, in the absence of changes to their demand profiles, transition to higher bills over time.

The implementation of MDQ-based delivery charging is likely to have a larger impact on customers with low annual demand. We estimate that without transition arrangements customers with annual usage of less than 20 ML would face total bill increases of between 425% and 1126% in the first year. While this is large in percentage terms, the absolute change is small due to the small volume.

The application of the grandfathering regime proposed by GAWB would reduce the maximum increase in any customer's bill in the first year to 10%. By the end of the regulatory period the maximum bill increase would be as high as approximately 80%.

Given that bill increases of up to 80% may still result from GAWB's proposed grandfathered volume-based charges, we consider that the following transitional volume-based charges are more appropriate as they provide customers with an extended opportunity to implement infrastructure solutions to optimise their MDQ.

Table 40 QCA transitional grandfathered volume-based charges

Year	*Charge*
2016	Lesser of MDQ-based charge and 110% of the volume-based charge
2017	Lesser of MDQ-based charge and 120% of the volume-based charge
2018	Lesser of MDQ-based charge and 130% of the volume-based charge
2019	Lesser of MDQ-based charge and 140% of the volume-based charge
2020	Lesser of MDQ-based charge and 150% of the volume-based charge

Ability for customers to re-specify MDQs

The proposed MDQ-based pricing regime is largely reliant on contracted MDQ volumes. GAWB's commercial framework is based on long-term (20-year) contracts, under which customers have limited ability to change their contracted MDQ volumes over time. However, as MDQ-based pricing is new to customers, GAWB will allow customers to modify their contract MDQ during the 2015–20 regulatory period; specifically:

- if a customer over-specified its MDQ or makes operational changes to reduce its MDQ, the customer may reduce its contracted MDQ
- if a customer under-specified its MDQ it can increase its contracted MDQ and not face over-run charges.

We support GAWB's proposal to allow customers to re-specify their MDQ. The MDQ stipulated in existing contracts was not intended to be used for pricing purposes. The move to MDQ-based delivery charges places increased importance on the correct specification of MDQ by customers. The proposed arrangement allows customers to right-size their MDQ and thereby either release excess capacity or avoid over-run charges.

No overrun charges for five years

GAWB submitted that it will waive all delivery over-run charges during the 2015–20 regulatory period.

A revenue cap form of regulation

GAWB submitted that the proposed new pricing framework and transition arrangements pose a risk for the business. In the light of this risk GAWB proposed to apply a revenue cap for delivery access charges for existing customers. GAWB noted that a revenue cap on existing customers would not affect its incentive to connect new customers.

As previously noted, we accept that a revenue cap form of regulation should apply to all charges including delivery charges.

QCA position

We support GAWB's transitional measures. However, we consider that GAWB's transition approach may increase bills substantially and therefore have adopted a more measured transition approach, as per the above Table.

8.9 Price differentiation for contract length

In the 2010 review, we found that the risks associated with short-term contracts are greater than long-term contracts and that GAWB should encourage customers to sign long-term

contracts particularly where there is a surplus of supply. We therefore recommended that a premium of 25% be applied to contracts of two years or less, 20% for contracts of two to five years, 10% for contracts of five to 10 years, 5% for contracts of 10 to 15 years, and 3% for contracts of 15 to 20 years. Additional revenues from surcharges should be used to offset charges for contracts of 20 years or more.

GAWB applied the QCA's recommendation to each customer, noting that a more defined specific interpretation would see the principle applied to contracts for supply at a particular connection. That is, if a long-term customer requests a short-term connection at a new location, the price at that connection would include the short-term contract surcharge.

GAWB proposed that the sum of surcharge revenue be offset against the Awoonga zone building blocks in the calculation of prices for the next period. This approach would reduce the storage volumetric charge. GAWB estimated that the surcharge amount from the 2010–15 period to be returned to customers is in the order of $0.68 million.

GAWB requested that the QCA endorse two clarifications to the short-duration contract surcharge arrangements:

- that surcharges should apply on a per connections basis
- that the sum of short-duration surcharges from one regulatory period be included as a building block in the price calculation for the next period.

We consider that surcharges should be based on the total contract length rather than time-in-use for individual connections. The use of the total contract length to assess the applicability of surcharges provides customers a greater incentive to strike long-term contracts incorporating all of a customer's connections. This allows GAWB to more effectively manage its network and the take-up of spare capacity over the long term.

Revenue from surcharges is to be included in the revenue cap and offset against the administration charge.

QCA position

We consider that surcharges should be based on the total contract length, not time-in-use, for individual connections.

8.10 Other pricing issues

Small connections

GAWB proposed that where the cost of installing flow metering capacity outweighs the benefits to the system of recording flows, GAWB would estimate the MDQ for billing purposes based on actual consumption and typical demand profiles.

QCA position

We consider that all new connections must have flow metering capacity installed where cost effective. GAWB should develop and publish clear guidance on the thresholds for the installation of flow meters for existing customers.

Catch-up demand

Where a customer experiences an outage caused by GAWB network failure, GAWB proposed that they be permitted to refill their storage at a rate in excess of MDQ without penalty. GAWB

also noted that coordination between GAWB and the customer would be necessary in these instances.

QCA position

We agree with GAWB's proposed approach, as network operational risks are to GAWB's account.

Connections under GAWB control

In circumstances where GAWB controls the flow rates at a connection, GAWB proposed that the price at that connection be based on the maximum average three-day flows. GAWB noted that a three-day average was chosen to reflect the typical operating capacity of reservoirs.

Where GAWB, and not the customer, controls the flow rate at a connection, the QCA is of the opinion that the MDQ be based on the monthly average of the daily quantity delivered. This approach recognises that GAWB maintains control over flows to these customers and can therefore manage the burden placed on the delivery network by these connections.

QCA position

GAWB's approach to post-outage charging is appropriate.

Benaraby zone

GRC noted that it had been working with GAWB to alter supply in the Benaraby zone to reduce opex associated with booster pumps. The council sought clarification as to whether the associated reduction in opex had been factored into GAWB's 14% price increase in the zone. The QCA understands from GAWB that the price increase was substantially driven by capex and demand in the zone and that the increased pumping efficiency had a minimal impact on costs.

Subsequent to GAWB's submissions, the QCA and GAWB identified errors in GAWB's pricing model. These included double counting of assets scheduled for replacement. These errors had a material effect on some prices, including those in the Benaraby zone. Correcting these errors and applying our savings resulted in a 10.5% price decrease for the Benaraby zone.

9 REVENUE REQUIREMENTS AND INDICATIVE PRICES

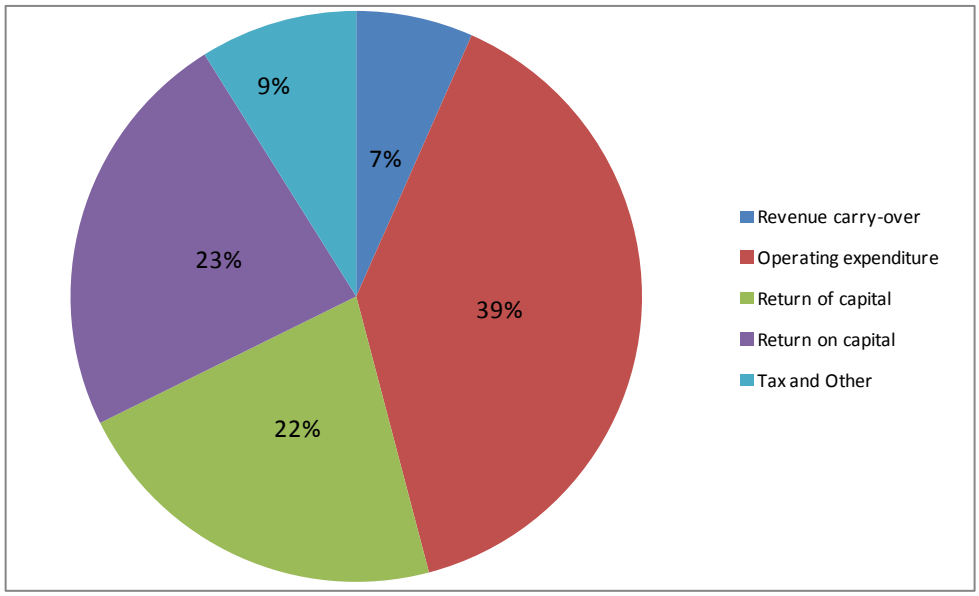
9.1 GAWB's total revenue requirement

A building block approach is used to calculate GAWB's total revenue requirement over the 20-year planning period. The revenue requirement includes:

- operating expenditure—this represents our estimate of GAWB's prudent and efficient operating, maintenance and corporate costs
- return of capital or regulatory depreciation—this allowance recognises that through the provision of services, capital infrastructure will degrade and GAWB needs to recoup its prudent and efficient capital cost over the useful life of the infrastructure
- return on capital—this is an allowance for a return on the prudent and efficient assets used for the provision of the regulated service. This represents the opportunity cost of the capital invested in GAWB by its owner (Queensland Government) and ensures that it can continue to make efficient investments.
- tax—this represents GAWB's tax equivalents expenses.
- revenue carryover, as required by the Referral—the under-recovery amount, or revenue carryover, resulting because past prices have not recovered all costs. It will be recovered from future customers as demand increases.
- other—various adjustments that include rebates, unregulated revenues and MDQ transition costs.

GAWB's prices are set at a level to allow it to recover costs over a 20-year planning period (2015–35). The figure below shows the QCA's estimate of each component of total costs over the planning period.

Figure 6 Components of GAWB's total revenue requirement 2015–35



Source: GAWB 2014b, QCA calculations

9.2 Revenue requirement

Based on our assessment of GAWB's submitted costs, over the 2015–20 regulatory period our estimate of GAWB's revenue requirement is $355.63 million. This is $61.83 million (14.8%) lower than that submitted by GAWB and $0.65 million (0.2%) higher than the previous period.

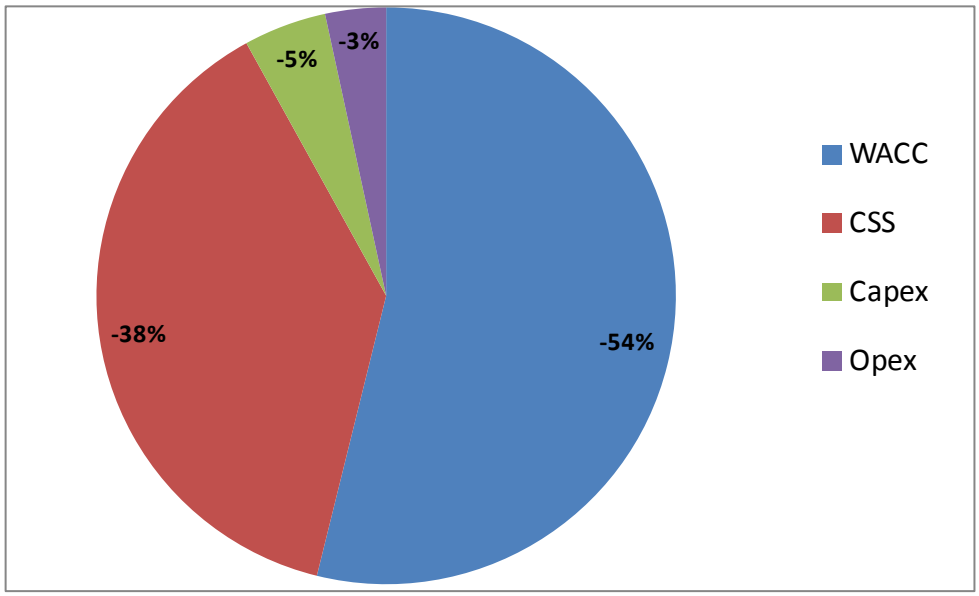
Table 41 GAWB's revenue requirement ($m real 2015)

	QCA 2010-15	*GAWB proposed 2015-20*	*QCA proposed 2015-20*	*% Difference between previous QCA and QCA proposed*	*% Difference between GAWB and QCA*
Operating expenditure	85.28	111.89	108.21	**26.9%**	**-3.3%**
Return of capital	56.15	80.16	59.00	**5.1%**	**-26.4%**
Return on capital	164.29	111.26	81.80	**-50.2%**	**-26.5%**
Tax	-3.73	15.17	7.34	**-296.8%**	**-51.6%**
Revenue carry-over	43.48	94.35	95.01	**118.5%**	**0.7%**
Other	9.50	4.64	4.28	**-55.0%**	**-7.8%**
Total revenue requirement	**354.98**	**417.47**	**355.63**	**0.2%**	**-14.8%**

Source: GAWB (2014b), QCA calculations

The components making up the difference between GAWB's and our estimates of GAWB's revenue requirement for 2015–20 are shown below. Over half of the difference is because our benchmark WACC is significantly lower than GAWB's submitted WACC.

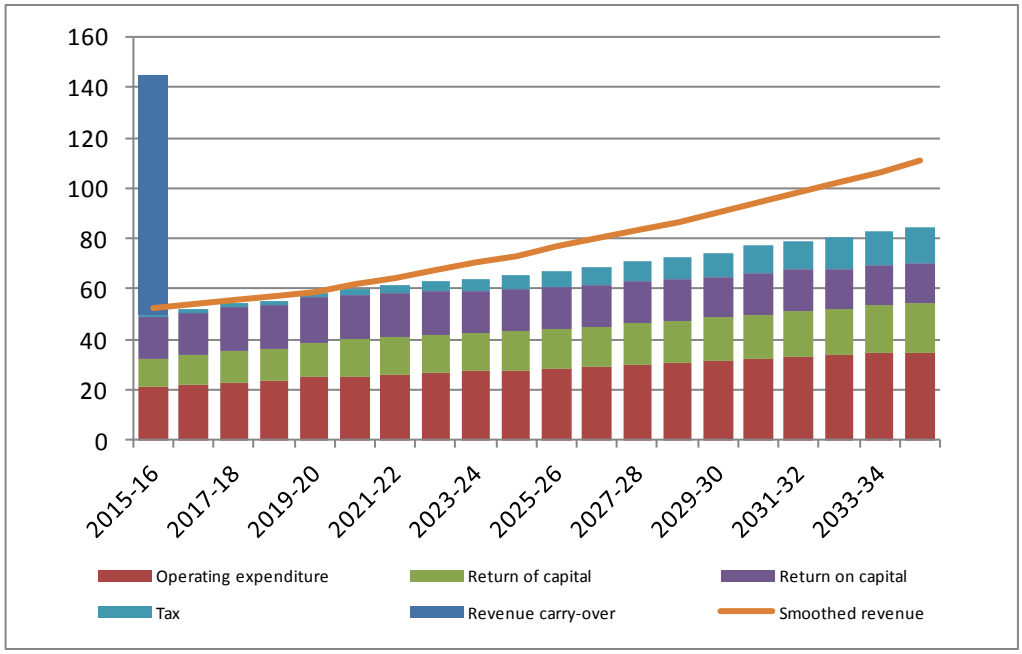
Figure 7 Components of cost reductions



9.3 QCA proposed annual revenue requirement and annual revenue

We calculated smooth revenues to recover the revenue requirement over 20 years. Over the 2015–20 period, annual revenues will not recover the annual revenue requirement (ARR), primarily due to the under-recovery in past years that is carried forward to 2015–16. The 20-year smoothing approach ensures that the past under-recovery will be recovered from customers over 20 years as demand increases.

Figure 8 QCA proposed ARR and annual revenue ($m)



Note: Excludes other

Source: QCA calculations

9.4 Revenue requirement by pricing zone

We have estimated individual ARRs for storage, administration changes and for each delivery pricing zone. The revenue carryover amount, to be apportioned over the 20-year planning period, is separately identified.

Table 42 QCA ARR by charge type and zone ($)

Charge / zone	*Revenue carryover*	*2015-16*	*2016-17*	*2017-18*	*2018-19*	*2019-20*
Storage and Reservation	46,193,892	20,310,746	20,404,103	20,991,818	21,660,484	22,741,745
Delivery						
Awoonga to Toolooa	21,522,129	8,091,335	8,715,505	9,207,097	9,243,509	9,915,068
Toolooa to Fitzsimmons	2,384,327	1,868,544	1,895,408	2,137,376	2,139,085	2,196,603
Boyne Raw	294,077	328,943	205,893	209,413	213,554	218,467
Mt Miller Pipeline	4,578,707	1,582,463	1,746,831	1,945,904	1,985,906	2,013,530
Fitzsimmons to Gladstone	102,672	269,720	279,179	283,574	298,919	309,154
QAL	535,548	499,598	491,594	547,591	573,177	597,699
Fishermans Landing Raw	291,049	159,585	161,149	163,598	166,557	168,552
Gladstone WTP	4,224,690	6,110,315	6,763,285	6,932,138	7,106,604	7,440,632
Gladstone City	204,659	180,105	184,519	194,329	200,682	205,854
Gladstone WTP to Sth Gladstone	1,440,557	1,600,381	1,647,232	1,691,079	1,550,901	1,652,401
Calliope	1,076,162	338,840	339,893	357,847	380,080	363,372
Sth Gladstone to Toolooa	847,134	470,001	475,574	499,450	547,973	540,318
Boyne Potable	943,319	663,635	507,053	543,258	584,070	616,669
Benaraby	308,958	448,048	506,815	547,114	528,072	551,748
Yarwun WTP	2,375,850	1,811,497	2,003,903	1,899,697	1,873,780	2,003,661
North Industrial Potable	1,348,426	325,899	329,285	330,872	339,044	342,509
Fishermans Landing Potable	21,304	59,432	60,653	61,147	62,410	63,718
Boat Creek to East End	757,949	630,304	591,487	666,210	647,980	691,600
Administration	5,553,877	5,332,408	5,583,040	5,647,321	6,161,942	6,403,018
Total Revenue Requirement excluding CIP	**95,005,285**	**58,586,695**	**60,444,394**	**62,488,037**	**63,964,899**	**66,810,989**

Source: QCA calculations

9.5 Indicative prices

In contrast to the three previous pricing practices investigations, this investigation is a price monitoring review.

Accordingly, we have estimated indicative prices based on our estimates of required revenue and the application of the pricing framework set out above.

We do not set or recommend prices charged by GAWB to its customers. The indicative prices are provided for information purposes only to assist GAWB's customers to understand the impact that our proposed changes to pricing inputs, as outlined in this draft report, will have on prices.

Actual prices for individual customers are set by GAWB subject to contractual arrangements. GAWB advise that it will set its final prices in late June 2015 and will have due regards to the contents of the QCA final report when setting those prices.

GRC is responsible for setting the water prices for ratepayers in the Gladstone region. The bulk water price paid by GRC is only one component of that price (other components include the cost of investing in, operating and maintaining council's own delivery infrastructure). GRC has a long-standing policy of setting a uniform water tariff, effectively averaging the geographically varying cost of bulk water from GAWB across all ratepayers. Therefore it is not possible to draw conclusions regarding changes to ratepayers' water bills from these indicative bulk water prices.

Table 43 QCA indicative prices ($2015)

Price zone	*Reservation & storage*		*Delivery*		*Admin charge*	
	Contract volume	*Metered volume*	*Contract MDQ*	*Metered MDQ*	*Metered volume*	*Contract volume*
	($/ML)	*($/ML)*	*($/ML MDQ)*	*($/ML MDQ)*	*($/ML)*	*($/ML)*
Awoonga	321	26	0	0	0	28
Awoonga to Toolooa	321	26	49,427	0	35	85
Toolooa to Fitzsimmons	321	26	62,060	0	35	85
Boyne Raw	321	26	99,051	0	35	85
Mt Miller Pipeline	321	26	89,470	0	36	85
Fitzsimmons to Gladstone	321	26	65,187	0	35	85
QAL	321	26	79,813	0	35	85
Fishermans Landing Raw	321	26	115,936	0	42	85
Gladstone WTP	321	26	177,169	0	122	199
Gladstone City	321	26	214,002	0	122	199
Gladstone WTP to Sth Gladstone	321	26	211,977	0	122	199
Calliope	321	26	340,609	0	145	199
Sth Gladstone to Toolooa	321	26	263,645	0	124	199
Boyne Potable	321	26	330,098	0	125	199
Benaraby	321	26	666,894	0	157	199
Yarwun WTP	321	26	287,061	0	212	199
North Industrial Potable	321	26	332,316	0	212	199
Fishermans Landing Potable	321	26	469,834	0	212	199
Boat Creek to East End	321	26	767,878	0	332	199

Source: QCA calculations

Our 2015–16 indicative prices are lower than those initially proposed by GAWB by between 9.7% and 21.5%. The 2015–16 indicative price for customers at Awoonga Dam will be 20.2% lower than proposed by GAWB and 29.4% lower than 2014–15 indicative prices.

Table 44 Summary of 2015–16 indicative price movements ($/ML)

Price zone	*2014-15 Total indicative price[a]*	*GAWB Total indicative price*	*QCA Total indicative price*	*% Change in indicative price from 2014-15*	*% Change in indicative price, QCA vs GAWB*
Awoonga	532	471	376	**-29.4%**	**-20.2%**
Awoonga to Toolooa	n/a	806	665	**n/a**	**-17.5%**
Toolooa to Fitzsimmons	n/a	863	716	**n/a**	**-17.1%**
Boyne Raw	1,152	1,187	992	**-13.9%**	**-16.4%**
Mt Miller Pipeline	1,026	1,000	831	**-19.0%**	**-16.9%**
Fitzsimmons to Gladstone	n/a	875	727	**n/a**	**-16.9%**
QAL	962	937	783	**-18.6%**	**-16.5%**
Fishermans Landing Raw	1,964	1,520	1,288	**-34.4%**	**-15.2%**
Gladstone WTP	n/a	1,544	1,348	**n/a**	**-12.7%**
Gladstone City	1,627	1,662	1,458	**-10.4%**	**-12.3%**
Gladstone WTP to Sth Gladstone	1,624	1,692	1,482	**-8.7%**	**-12.4%**
Calliope	2,380	2,195	1,925	**-19.1%**	**-12.3%**
Sth Gladstone to Toolooa	1,933	1,933	1,698	**-12.2%**	**-12.2%**
Boyne Potable	2,263	2,262	1,993	**-11.9%**	**-11.9%**
Benaraby	3,049	3,474	2,728	**-10.5%**	**-21.5%**
Yarwun WTP	n/a	2,517	2,230	**n/a**	**-11.4%**
North Industrial Potable	2,672	2,790	2,484	**-7.0%**	**-11.0%**
Fishermans Landing Potable	7,666	6,844	6,178	**-19.4%**	**-9.7%**
Boat Creek to East End	8,358	8,891	7,926	**-5.2%**	**-10.9%**

(a) 2014-15 price only available where a customer has an off-take in that zone

Note: Excludes capital contributions rebates and discounts associated transition to MDQ-based delivery charges.

9.6 Annual indexation of prices

In the 2010 review, we recommended that a CPI measure based on the Brisbane All Groups classification should be used for the purpose of annual price adjustments between price reviews.

We support the continued use of CPI for annual price adjustments for the 2015–20 regulatory period.

10 CURTIS ISLAND [CONFIDENTIAL]

In December 2014 we approved GAWB's claim that its submission on the CIP was confidential. Accordingly, this chapter has been provided on a confidential basis only to the Treasurer, GAWB and the LNG proponents.

APPENDIX A: MINISTER'S REFERRAL

REFERRAL

SECTIONS 23A
QUEENSLAND COMPETITION AUTHORITY ACT 1997

1) Referral

As the responsible Minister, pursuant to section 23A of the *Queensland Competition Authority Act 1997* (the QCA Act), I refer the Gladstone Area Water Board (GAWB) to the Queensland Competition Authority (the Authority) for a price monitoring investigation for the period from 1 July 2015 to 30 June 2020.

2) Conduct of the QCA pursuant to this referral

In referring this investigation, the Authority is to consider:

a) the planned change in prices of water having regard to, amongst other things:
   i. GAWB's pricing model; and
   ii. demand forecasts;

b) the forecast revenue based on the total prudent and efficient costs of carrying on the activity;

c) in respect of the return on capital consider the WACC applied by GAWB against the benchmark WACC;

d) the regulated asset base (RAB) roll-forward calculation (in accordance with the Authority's previously recommended methodology);

e) the revenue carryover calculation (in accordance with the Authority's previously recommended methodology);

f) for capital expenditure to be included in the forecast RAB, the Authority is to form a view on prudency and efficiency, with the focus on cost areas which are material to price changes rather than matters which are likely to have a minor and inconsequential impact; and

g) for operating expenditure to be included in the forecast revenue, the Authority may investigate the expenditure in any function where GAWB's forecast expenditure in that function exceeds the level allowed in the Authority's 2010 pricing practices investigation by an amount that would give rise to a material increase in price.

For the avoidance of doubt, the Authority may consider a matter not indicated in (a) to (g) if it is likely to have a material impact on the price to a customer.

3) Consultation

The Authority must undertake an open consultation process with all relevant parties and consider submissions within the timetable for the review and reports. Consistent with section 34 of the QCA Act, all reports and submissions must be published on the Authority's website.

4) Timing

GAWB is to provide a submission to the Authority in respect of its pricing practices by 30 September 2014.

The Authority must provide a Draft Report by 28 February 2015 and a Final Report by 31 May 2015.

TIM NICHOLLS
Treasurer and Minister for Trade
25 / 2 / 14

GLOSSARY

A	
ABS	Australian Bureau of Statistics
ADPS	Awoonga Dam Pump Station
AFC	Acceptable Flood Capacity
AIC	Average Incremental Cost
AER	Australian Energy Regulator
ALCM	Asset Life Cycle Management
ARR	Annual Revenue Requirement
C	
CAPM	Capital Asset Pricing Model
CIP	Curtis Island Pipeline
CPI	Consumer Price Index
CPM	Callide Power Management
CSE	CS Energy
CSS	Contingent Supply Strategy
D	
DEWS	Department of Energy and Water Supply
DMP	Drought Management Plan
DRP	Debt Risk Premium
DWQMP	Drinking Water Quality Management Plan
F	
FTEs	Full-time equivalents
G	
GAWB	Gladstone Area Water Board
GFP	Gladstone Fitzroy Pipeline
GRC	Gladstone Regional Council
GPC	Gladstone Ports Corporation
H	
HNFY	Historic No Failure Yield
I	
ICRC	Independent Competition and Regulatory Commission (ACT)
IFR	Instantaneous Flow Rate
IPART	Independent Pricing and Regulatory Tribunal (NSW)

L	
LCMP	Life Cycle Maintenance Plan
LRMC	Long Run Marginal Cost
LNG	Liquefied Natural Gas
M	
m	million
MDQ	Maximum Daily Quantity
ML	megalitres
MRP	Market Risk Premium
N	
NPV	Net Present Value
P	
PPI	Producer Price Index
Q	
QCA	Queensland Competition Authority
QCA Act	Queensland Competition Authority Act 1997 (Qld)
QAL	Queensland Alumina Limited
R	
RAB	Regulatory Asset Base
RBA	Reserve Bank of Australia
RTA	Rio Tinto Alcan
S	
SEQ	South east Queensland
SWP	Strategic Water Plan
V	
VSD	Variable Speed Drive
W	
WACC	Weighted Average Cost of Capital
Water Supply Act	Water Supply (Safety and Reliability) Act 2008 (Qld)
WPI	Wage Price Index
WTP	Water Treatment Plant
WWL	Wedgewood White Limited

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