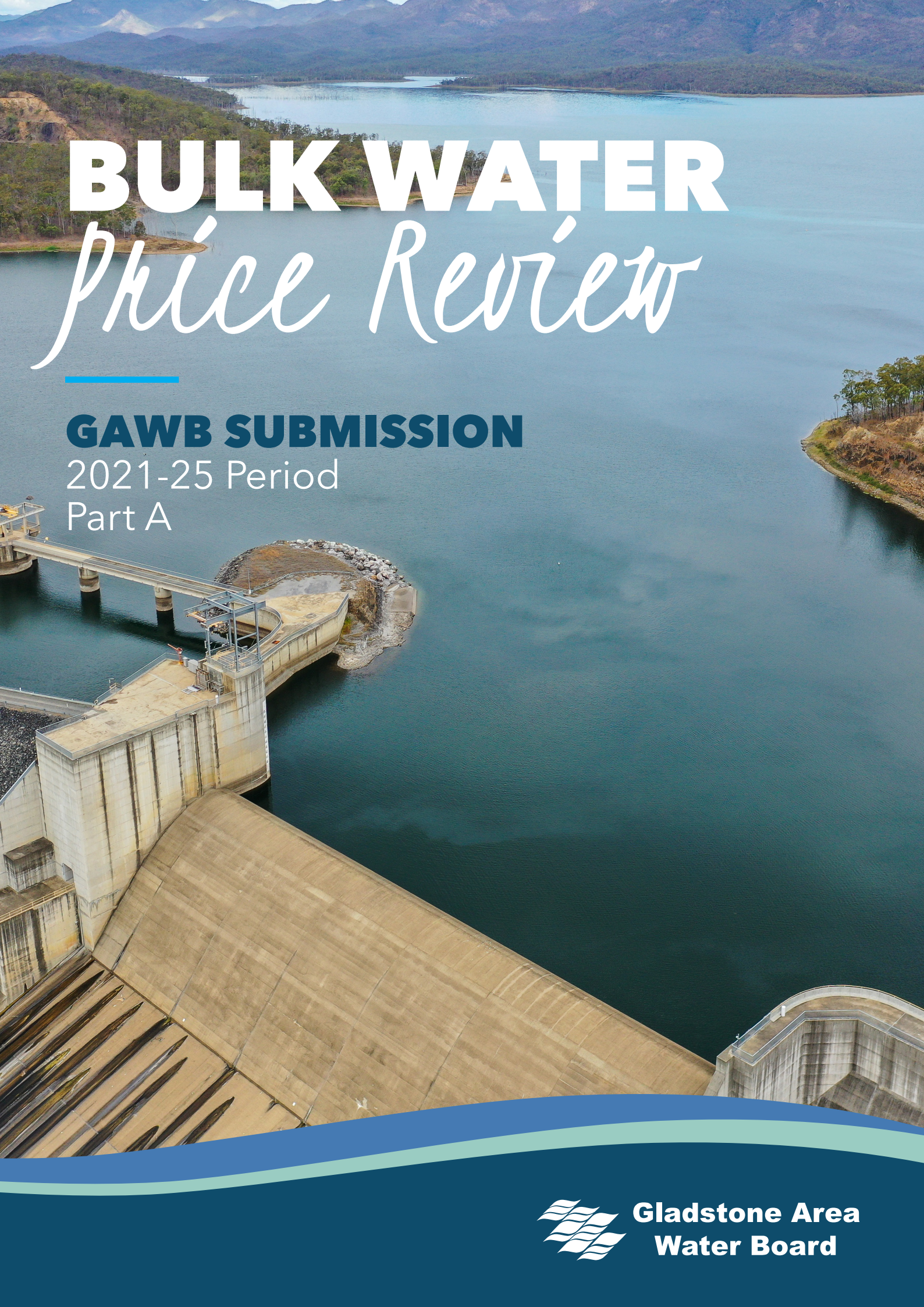

BULK WATER *Price Review*

GAWB SUBMISSION

2021-25 Period

Part A

Gladstone Area Water Board

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Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ADA	Aquaculture Development Areas
AER	Australian Energy Regulator
AFC	Acceptable Flood Capacity
AIC	Average Incremental Cost
ANCOLD	Australian National Committee on Large Dams
ARR	Annual Revenue Requirement
ASX	Australian Stock Exchange
CAPM	Capital Asset Pricing Model
CCF	Community Consultative Forum
CPI	Consumer Price Index
CRP	Customer Representative Panel
CSS	Contingent Supply Strategy
DAE	Deloitte Access Economics
DAEM	Deloitte Access Economics Macroeconomic Model
DGMs	Dividend Growth Models
DNRME	Department of Natural Resources Mines and Energy
DWQMP	Drinking Water Quality Management Plan
EAP	Emergency Action Plan
EIS	Environmental Impact Statement
ERA	Economic Regulation Authority Western Australia
ERP	Enterprise Resource Planning
ESC	Essential Services Commission
ESCOSA	Essential Services Commission of South Australia
FTE	Full Time Equivalent
GAWB	Gladstone Area Water Board
GFC	Global Financial Crisis
GFP	Gladstone to Fitzroy Pipeline
GPCL	Gladstone Ports Corporation Limited
GRC	Gladstone Regional Council
GWTP	Gladstone Water Treatment Plant
HNFY	Historical No Failure Annual Yield

ICRC	Independent Competition and Regulatory Commission
ICT	Information and Communication Technologies
IDC	Interest During Construction
IPART	Independent Pricing and Regulatory Tribunal
ISO	International Organisation for Standardisation
LCMP	Life Cycle Management Plans
LNG	Liquified Natural Gas
LRMC	Long Run Marginal Cost
M	Million
MDQ	Maximum Daily Quantity
ML	Megalitre
MRP	Market Risk Premium
NWI	National Water Initiative
OTTER	The Office of the Tasmanian Economic Regulator
p.a.	Per Annum
PMF	Probable Maximum Flood
PMBOK	Project Management Body of Knowledge
PMS	Project Management System
PoE	Probability of Exceedance
PREMO	Performance, Risk, Engagement, Management and Outcomes
QCA	Queensland Competition Authority
RAB	Regulated Asset Base
RAS	Recirculating Aquaculture System
RBA	Reserve Bank of Australia
ROL	Resource Operations Licence
ROP	Resource Operating Plan
SDP	Sydney Desalination Plant
SEQ	South East Queensland
SRMC	Short Run Marginal Cost
USD	United States Dollar
UT5	2017 Access Undertaking
Utilities Commission	Northern Territory Utilities Commission
WACC	Weighted Average Cost of Capital
WPI	Wage Price Index

Overview

This document presents the Gladstone Area Water Board's (GAWB) regulatory submission for the 2021-25 pricing period, commencing 1 July 2020.

Gladstone plays a significant role in the economic sustainability of the Queensland economy due to the diverse, export-oriented industries located in the region. Water is an essential input to the production processes of these industries. It is our customer's need for continuous (i.e. 24/7, high-reliability) access to water, that drives the way GAWB operates the water delivery network, ensuring a continuous supply under either a drought or growth scenario.

Current performance

Over the current pricing period (1 July 2015 to 30 June 2020), GAWB has completed capital projects that ensure continued delivery of the highly reliable 24/7 continuous flow service demanded by our customers. Overall, a total of $122.48 million is forecast to be spent on capital investment during the current pricing period, including an additional $20.95 million when compared to forecast. As a result, both operational and compliance risks have reduced which is vital to support the sustainability of Gladstone's export-oriented industry. It also supports GAWB's ability to undertake complex, time critical inspections of essential infrastructure. Investments have also been made to improve our internal processes, for example the management of our asset base (e.g. Life Cycle Management Plans (LCMPs)) and improvements to our Information and Communications Technology (ICT) systems.

In most cases these operational improvements have been funded by GAWB, as the associated long-term benefits were not evident at the time of the last regulatory submission. Based on the activities undertaken and insights gathered over the current period, we are confident forecast future investments, as proposed in this submission, are appropriate and will deliver further operational and financial benefits for our customers.

Customer and community engagement

The infrastructure we own and operate indirectly benefits the Gladstone community, by positively contributing to liveability in the region. In recognition of this, GAWB adopted a strategic engagement process to improve communication with stakeholders and develop inputs for this regulatory submission.

A key outcome of our community engagement activities is the development of the Lake Awoonga Recreational Strategy. Over $7.2 million ($2019) will be invested this pricing period to improve recreational facilities and related services. These investments will positively contribute to the economic prosperity of the Gladstone community and adjoining regions.

Demand

Customer demand is affected by the international prices of core commodities such as coal, bauxite, alumina, caustic soda and prevailing/anticipated Australian Dollar to United States dollar exchange rates (as a majority of our customers are export-oriented and typically trade in international core commodity markets).

Our customers are becoming increasingly aware of the economic and environmental impact of their consumption behaviour. In this context, the introduction of Maximum Daily Quantity (MDQ) pricing for delivery services in 2015-16 supported an increased level of awareness.

Overall, MDQ consumption is forecast to be lower than levels observed this pricing period, while overall water demand is forecast to remain at current levels.

Forecast expenditure

Compared to 2016-20 forecast levels, expenditure on professional services, staffing costs, and ICT are forecast to be materially higher. This cost base is necessary to meet GAWB's changing environment and will benefit customers in the longer term. This increase is expected to continue into the next pricing period. Where feasible, GAWB has included expected savings into the proposed allowance for the 2021-25 period. That said, an additional efficiency target of 1% on controllable operating expenditure has also been proposed.

An increase in maintenance costs is also forecast for this pricing period. This is largely due to the timing of long term major asset condition assessments which fall due this regulatory period, combined with the ageing profile of the delivery network. Maintenance expenditure has also increased due to the commissioning of the Offline Water Storage Facility. The Offline Water Storage Facility has significantly reduced supply risk to customers and will allow a range of Dam Safety inspections, as required by the Dam Safety Regulator, to be undertaken. Previously GAWB did not have the ability to shut down the main Dam for these inspections and temporary exemptions had been provided awaiting completion of the Offline Water Storage Facility.

Our forecast capital expenditure for the 2021-25 pricing period is approximately $179 million. This is higher than the capital forecast for the current period and is attributable to the need to replace ageing assets and address regulatory or compliance obligations. Over the 2021-25 pricing period approximately $60.7 million will be spent on dam safety upgrades. These investment activities are necessary to achieve compliance under the ANCOLD guidelines and ensure GAWB can continue to provide the secure and reliable services expected by our customers, now and into the future.

Pricing impacts

Prices for the 2021-25 pricing period have been calculated based on a 5 year planning and price smoothing period. This approach is different to the one used to develop prices for the current pricing period (i.e. 2016-20). This change is required to meet the requirements of Part B, clause 1.3 (a) of the Referral Notice issued by the Queensland Treasurer on 28 June 2019.

The net result of all forecast activities is a 9% increase in real prices on an average network wide $/ML basis.

The average price change set out above is exclusive of the accumulated revenue under-recovery. Part B of the Regulatory Submission sets out GAWB's proposed approach to meet the requirements of Part B, clause 1.3 (b) and (c) of the Referral and Direction Notice (Referral Notice) (i.e. to reduce the accumulated revenue under-recovery).

1. Introduction

The Treasurer has directed the Queensland Competition Authority (QCA) to undertake a price monitoring investigation (under s23A of the Queensland Competition Authority 1997 Act (Qld) (QCA Act)) and to report on its findings in considering the Gladstone Area Water Board's (GAWB) proposal for water prices commencing 1 July 2020. The terms of the current price monitoring investigation are set out in the Referral and Direction Notice (Referral Notice) dated 28 June 2019 (see Attachment 1).

GAWB's regulatory submission to the QCA consists of two parts. Part A sets out:

- *the pricing framework for the current pricing period (2016-20)*
- *past performance*
- *forecast operating and capital expenditure*
- *the proposed revenue requirement*
- *proposals for the regulatory framework into the future.*

Part B sets out GAWB's response to the requirement to reduce the existing balance of accumulated revenue under-recoveries (Part B, clause 1.3 (b) of the Referral Notice).

1.1 About GAWB

GAWB was established in 1973 as a Project Board under the *State and Regional Planning and Development, Public Works Organisation and Environmental Control Act 1971–74*. On 1 October 2000, GAWB commenced operations as a Category 1 Water Authority under the Water Act 2000 (Qld) (Water Act) and on 1 July 2008, GAWB became a registered service provider under the *Water Supply (Safety and Reliability) Act 2008* (Qld).

GAWB owns and operates Awoonga Dam on the Boyne River, along with a network of delivery pipelines, water treatment plants and other bulk water distribution infrastructure required to service our customer base. GAWB has a water allocation of 78,000 mega litres per annum (ML p.a.) from Awoonga Dam, granted under the Water Act. The Fitzroy Resource Operating Plan (ROP) contains a process to grant GAWB up to 30,000 megalitres (ML) of water per annum (p.a.) of the 'strategic infrastructure reserve' (out of a total capacity of 76,000 ML) from the Fitzroy River.

In addition to supply and transportation of bulk water, GAWB provides important services to the community, including catchment management and recreational facilities. GAWB's land holdings total approximately 23,850 hectares, consisting predominantly of inundated and rural land. GAWB's recreational areas are visited by most residents on a regular basis. With recent studies indicating that 79% of residents visit the recreational areas at least once a year and 21% visit monthly or more often. This highlights the extent to which our recreational areas are valued by the communities located around Lake Awoonga and/or work in Gladstone and its surrounds.

Our core responsibilities are:

- **supply bulk water services**: to provide both raw (high reliability 24/7 continuous flow) and potable water to industries located in Gladstone and surrounding communities.

- **water treatment**: to collect, treat and distribute drinking water in accordance with the Australian Drinking Water Guidelines set by the National Health and Medical Research Council.
- **catchment management**: to manage the impact of land and public use activities around the lake as they have the potential to impact water. Without effective measures in place these activities may adversely impact public health and the environment. It may also impact water quality, necessitating higher levels of treatment.
- **fish stocking and monitoring**: to breed and release barramundi, mangrove jack and sea mullet fingerlings in Lake Awoonga each year. This is an environmental obligation associated with the construction of the dam wall.

Figure 1.1 illustrates GAWB's area of operations and key assets.

1.2 Our customers

Our customer base is unique when compared to other urban and/or bulk water service providers.

We supply potable water to the Gladstone Regional Council (GRC) and 33 domestic connections located around Lake Awoonga. This represents approximately 20% of annual water supplied. The remaining 80% of water volume supplies industrial customers (predominately export-oriented). This customer profile creates more volume risk for GAWB, compared many bulk water service providers. It also places a high level of obligation on GAWB to take proactive steps in seeking to ensure future security of supply.

GAWB currently supplies bulk water services – raw and potable - to businesses operating in or supporting the following key industries:

- thermal electricity generation
- liquified natural gas (LNG) production
- alumina / aluminium production
- chemical production
- coal (export).

Figure 1.1: GAWB's major assets

1.3 Key regulatory obligations

In order to provide our services, we need to comply with a wide range of legislative and regulatory requirements. These include:

- **Dam Safety**: we need to make sure the Awoonga Dam does not pose unacceptable risks to downstream communities. This involves following safety processes, understanding flood capacity, preparing for and following the Emergency Action Plan.[1]
- **Notifications:** there are a number of residential properties situated in close proximity to the dam. GAWB provides residents, that may be potentially affected by floodwaters, with regular updates on dam levels, hourly inflows and evacuation routes.
- **Noxious weeds and pests**: as a significant landholder in the region, GAWB must meet its obligations for controlling noxious weeds and pests on this land and undertake general catchment management activities.
- **Environmental obligations**: we have extensive obligations that relate to ensuring our daily operations and investment activities do not harm the environment and actively support upstream freshwater ecosystem viability.
- **Water quality**: GAWB monitors water quality for various purposes, including environmentally relevant activities, the Awoonga Water Supply Scheme Resource Operations Licence (Awoonga ROL) and to maintain compliance with GAWB's Drinking Water Quality Management Plan (DWQMP).

1.4 Long term planning

Planning for long term water security and performance for the region is also a key function for GAWB as this supports the significant multi-billion dollar long term capital investments of our export-oriented customer base. Given the substantial royalty and other taxation income generated for government and significant levels of regional employment, it is vital that long term planning ensures a lack of water supply does not occur. As such an outcome would inhibit economic growth and prosperity for the State.

To ensure long term high reliability water is provided to industry, GAWB actively plans for the region's potential water needs and future water supply options. Fluctuations in weather conditions and water demand also guide the design, operation and maintenance of our assets.

1.4.1 Planning for future water needs

As the owner/operator of Lake Awoonga, which is the region's sole major water supply, GAWB plays a key role in providing water security. To do this, we must actively plan by considering the region's potential water needs, future water supply options and demand side alternatives. GAWB must also consider the impact weather conditions will potentially have on current and future water supply options.

[1] Water Supply (Safety and Reliability) Act 2008 (Queensland).

In recognition of the economic importance of the region to Queensland, together with our customers' expectation of continuous supply (irrespective of external factors such as drought), GAWB adopted the Contingent Supply Strategy (CSS). The CSS establishes a set of guiding principles and a roadmap for addressing water security across periods of both/either increased demand or drought.

As noted by the QCA in 2002[2], dam and network-oriented capital augmentations are typically 'lumpy and indivisible', as such increments may result in a significant level of excess capacity albeit representing the most efficient means of servicing expected future demand. Therefore, if current capacity is inadequate, based on customer expectations of levels of service or anticipated increases in demand, this is not a problem that can be easily, quickly or cheaply rectified.

In recognition of the long lead times associated with addressing shortages in supply, through increased demand and/or drought, GAWB has committed to provide a second water source within the following timeframes, dependent on the investment trigger:

- for drought – construction to be completed with 2-years of water supply remaining in Awoonga Dam;
- for incremental demand – by the date that the additional demand is required.

Due to the dynamic nature of capacity under drought conditions, preparatory works must be undertaken to support the above timeframes being achievable. That is, the timing, severity and duration of a drought is highly uncertain and cannot be predicted by GAWB or its customers. Therefore, it is prudent and efficient for preparatory works to be undertaken in advance. Whilst the Drought Management Plan can assist with managing the short term socioeconomic impacts of drought, this is only an interim/temporary measure.

For more than a decade GAWB has investigated the viability of alternative supply side options with a view to determining the most prudent and efficient option(s) to pursue. For example, the supply side options considered include further augmentation of Awoonga Dam, desalination and a new supply source on the lower Fitzroy River. Consideration has also been given to the transportation of this new bulk supply source. In the context of a new supply from the lower Fitzroy River, a 115 kilometre pipeline would be constructed to enable the transfer of 30,000 ML of water per annum – the Gladstone to Fitzroy pipeline (GFP). The GFP would run within the Stanwell-Gladstone Infrastructure Corridor for most of its length before connecting with existing water infrastructure in the Gladstone State Development Area.

In August 2007, the GFP was declared a significant project under the *State Development and Public Works Organisation Act 1971 (Qld)* and was the subject of an Environmental Impact Study (EIS). The Office of the Coordinator-General evaluated the environmental impacts of the GFP and released the EIS on 2 February 2010. The report recommended the GFP proceed subject to conditions and implementation of the proponents' commitments in the EIS.[3] For example, construction of the GFP will only commence once all approvals have been obtained and pre-defined triggers are met. The Commonwealth Government granted

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[2] Queensland Competition Authority. 2002. *Gladstone Area Water Board: Investigation of Pricing Practices - Final Report*. September. p 2.

[3] Building Queensland. 2017. *Detailed Business Case: Lower Fitzroy River Infrastructure Project*. October. p 28.

conditional project approval under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* on 4 November 2011.

Since 2011, GAWB has continued to hold the necessary approvals and acquire the land necessary to ensure it is able to meet the triggers and timeframes for investment set out above. These holding costs are included in the Regulated Asset Base (RAB), consistent with prior QCA recommendations.[4]

As set out in the Strategic Water Plan 2013[5], GAWB's preferred option for source augmentation is additional supply from the lower Fitzroy River. This is based on financial and risk-based assessments (i.e. the rainfall forecast for the lower Fitzroy River is not correlated with the Boyne River). This new supply source would be connected to GAWB's existing network via the GFP. During the current pricing period this option was agreed to as the preferred second water source for Gladstone as evidenced by the Queensland and Australian Government's support for the development of Rookwood Weir.[6]

GAWB is continuing to work with SunWater on this new supply source and to ensure the allocation available and timeframes in which it could be developed support the triggers and timeframes for investment set out in the CSS.

At various points over the last decade GAWB has also sought customer input on potential demand side solutions. For example, GAWB has consulted with customers on whether there is scope to increase the use of onsite supplies or to invest in new technological processes, which would deliver operational efficiencies through reduced water consumption. Customer input has also been sought to update our assumptions on customer operational processes and ensure water requirements are correct. This was most recently conducted in mid-2019.

1.4.2 Asset plans

GAWB's asset management framework received International Organisation for Standardisation (ISO) certification in 2016 (ISO 555001:2014), making it the first water service provider in Australia to gain this certification. ISO 55001 is an international standard for managing physical assets and promotes an integrated approach to asset management. The approach focuses on integrating core business functions to optimise performance and minimise the cost of ownership throughout the life cycle of an asset. Thereby supporting GAWB's focus on prudency and efficiency.

The asset management certification covers:

- GAWB's supply of treated and untreated water in the Gladstone region;
- Awoonga Dam and associated infrastructure such as reservoirs, pumping stations, pipework, water treatment plants and wastewater treatment plants; and

[4] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20 – Final Report*. May. p. 47.
[5] Gladstone Area Water Board. 2013. *Strategic Water Plan*. November. p 51.
[6] Department of Natural Resources, Mines and Energy. 2018. *Queensland Bulk Water Opportunities Statement: December 2018 Update.* December. p 10.

- land surrounding Awoonga Dam, recreational facilities, the fish hatchery and workshops.

GAWB's asset management framework has recently been externally audited, resulting in its recertification in early 2019.

A major component of GAWB's asset management framework and the requirements of ISO 55001, is the development and maintenance of asset management plans. In GAWB, these are referred to as Life Cycle Management Plans (LCMPs). GAWB has LCMPs for all asset classes. Each LCMP contains:

- asset class details (e.g. business objective, description, role and estimated lives)
- major events relating to the assets within the LCMP
- levels of service – current and future
- health, safety and environmental factors
- life-limiting factors/current condition
- key asset risks
- improvement actions
- life cycle strategies
- funding.

Through the development and maintenance of the LCMPs, GAWB can ensure maintenance and repair activities, as well as replacement strategies, maximise the value and operational performance of the existing asset base. It also enables GAWB to be proactive, rather than addressing network performance issues via reactive maintenance.

It has taken several years to establish the first generation of LCMPs. These were based on historical records and input from key stakeholders (i.e. operations, maintenance and engineering). In some cases, the level of detail available at the time was incomplete or dated due to the asset previously being owned or operated by a third party and that insufficient records were provided at the time the asset was transferred to GAWB. To address this gap in information and to embed a process of continuous review, an annual review of all LCMPs is conducted.

A key purpose of the annual review process is to engage with internal key stakeholders through structured discussions on the actual condition of the asset, operational performance and potential costs for replacement. Once the review has been completed, the updated information is uploaded into the asset management module of GAWB's Enterprise Resource Planning (ERP) system. The current generation of LCMPs reflect the outcomes of the last two rounds of annual reviews (i.e. 2017 and 2018). The next annual review will be conducted in late 2019.

The asset management module provides long term forecasts on asset replacements, both in terms of timing and cost. This information is used to inform the development of GAWB's short and long-term capital works program (5 to 20 year asset investment plans for all assets) and strategic long-term planning activities.

GAWB submits that the QCA should take significant comfort as to the prudency and efficiency of GAWB's capital investments and operation and maintenance costs given the rigour in decision making which is derived from the certified asset management framework and the individual LCMPs developed within it.

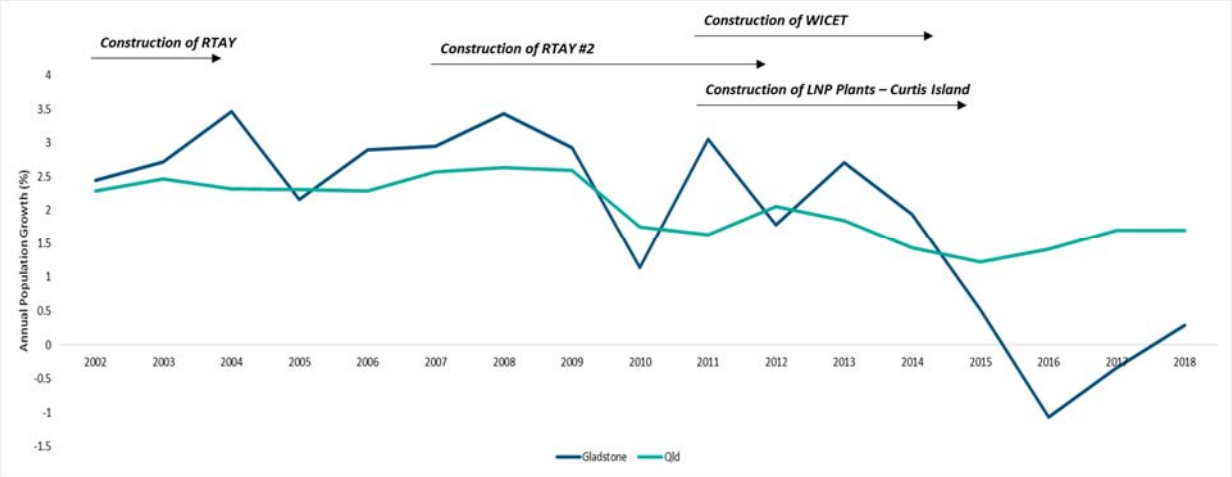
2. GAWB's Operating Context

Gladstone, unlike many of Australia's industrial cities, is home to a diverse set of industries which service both domestic and international markets. The economic contribution of the region to the Queensland economy has grown significantly over the last 70 years, through the diversification of key industries operating in the area. This change has involved moving beyond primary industry activities (i.e. handling cattle and other livestock) to becoming a multimillion tonne export centre. As a result of this diversification the Port of Gladstone has become the largest port in Queensland.[7] *Gladstone is a major export-industry hub.*

2.1 Key industries

Over the last 20 years the breadth of commodities produced and/or exported from Gladstone has grown. Diversification has come about through discrete periods of significant investment. As shown in Figure 2.1, there have been 4 major waves of investment over approximately the last 15 years.

Figure 2.1: Population growth (Gladstone vs Queensland)



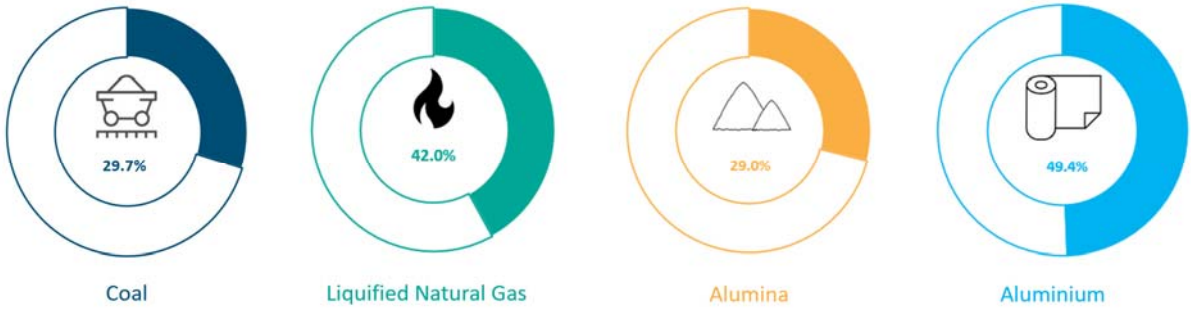
The cyclical impact of this investment is shown through the annual variability in Gladstone's resident population. This variability is reflective of the direct and indirect services required to support the construction of new industrial infrastructure and that a downward adjustment in the total number of jobs/residents occurs once production commences. This is most clearly shown in the years following the commencement of production by the three liquefied natural gas (LNG) proponents (e.g. from 2015).

The major commodities exported from Gladstone are coal, LNG, alumina and aluminium. Bauxite ore is a key input to the aluminium production process, as the ore is chemically processed to produce alumina (aluminium oxide). Alumina is then smelted using an electrolysis process to produce pure aluminium metal.

Figure 2.2 shows Gladstone's exports, for each of these commodities, as a percentage of total Australian exports for 2016-17.

[7] Gladstone Ports Corporation. Brochure About the Gladstone Port 2017. Accessed August 2019. http://gpcl.com.au/SiteAssets/Publications/GPC_BROCHURE_About_Gladstone_Port_Port_of_Gladstone_2017.pdf.

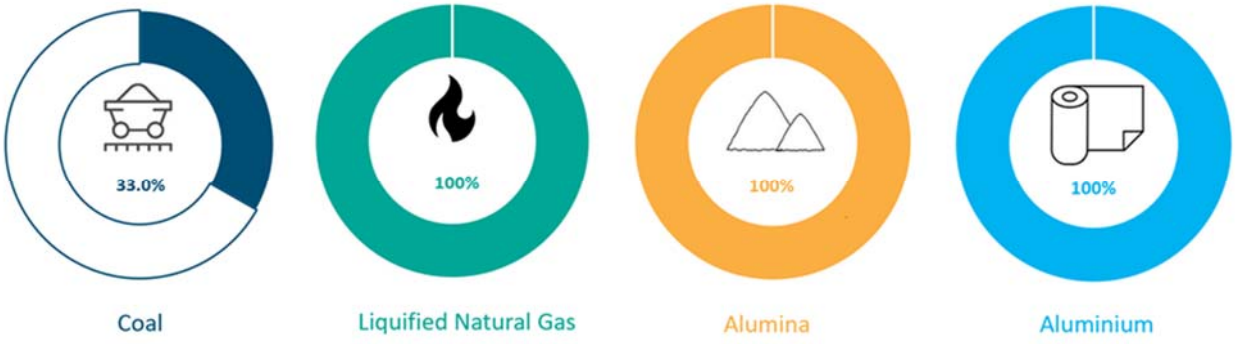
Figure 2.2: Gladstone's exports as a percentage of total Australian exports (2016-17)



Source: Ports Australia (https://www.portsaustralia.com.au/resources/trade-statistics)

The Gladstone region makes a significant contribution to the performance of the Queensland Economy. According to Queensland Treasury, mining activity made up to 11.8% ($38.8 billion) of the Queensland economy in 2017-18. [8] Exports from coal, LNG and minerals alone accounted for around 60% of Queensland's international goods and services exports in 2017-18.[9] Exports from Gladstone, as a percentage of Queensland's total exports for coal, LNG, alumina and aluminium are shown in Figure 2.3.

Figure 2.3: Gladstone's exports as a percentage of total Queensland exports (2016-17)



Source: Ports Australia (https://www.portsaustralia.com.au/resources/trade-statistics)

The composition of Gladstone's workforce is reflective of the industries operating in the region and supporting services. In 2016, the manufacturing (13.6%) and construction (11%) industries were the top two industries for employing persons aged 15 years and over who work. This is significantly different to the top two industries for the State, these being health care and social assistance (13.0%) and the retail trade industry (9.9%).[10]

[8] Queensland Treasury. https://www.treasury.qld.gov.au/queenslands-economy/about-the-queensland-economy/ (Accessed August 2019.)

[9] Queensland Treasury. https://www.treasury.qld.gov.au/queenslands-economy/about-the-queensland-economy/ (Accessed August 2019.)

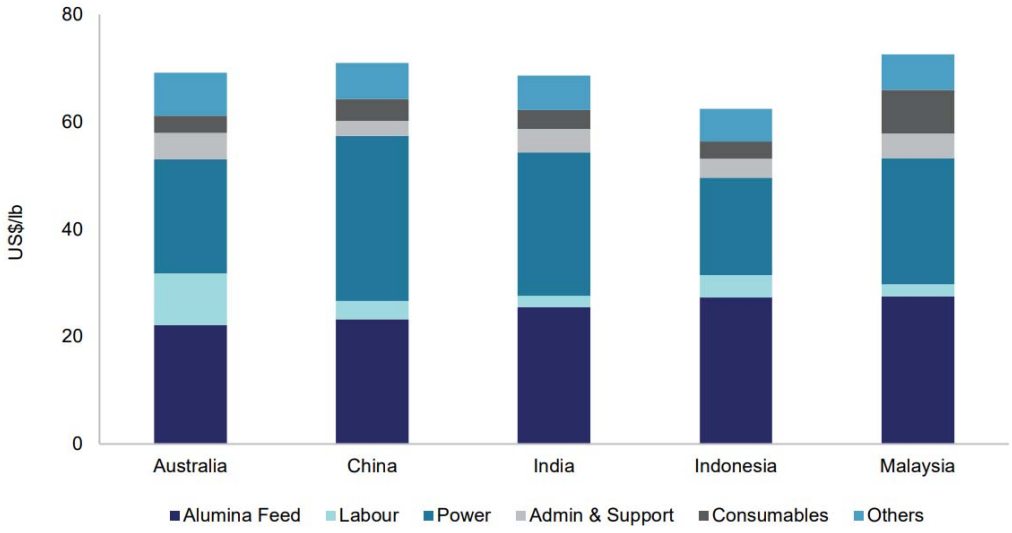
[10] Queensland Government Statistician's Office. 2019. *Queensland Regional Profiles: Gladstone (R) Local Government Area (LGA)*. Report generated August 2019.

2.2 Factors driving economic productivity

2.2.1 Electricity

Energy is a key cost component, particularly in the production of both alumina and aluminium, due to the energy intensive nature of their production processes (see Figure 2.4).

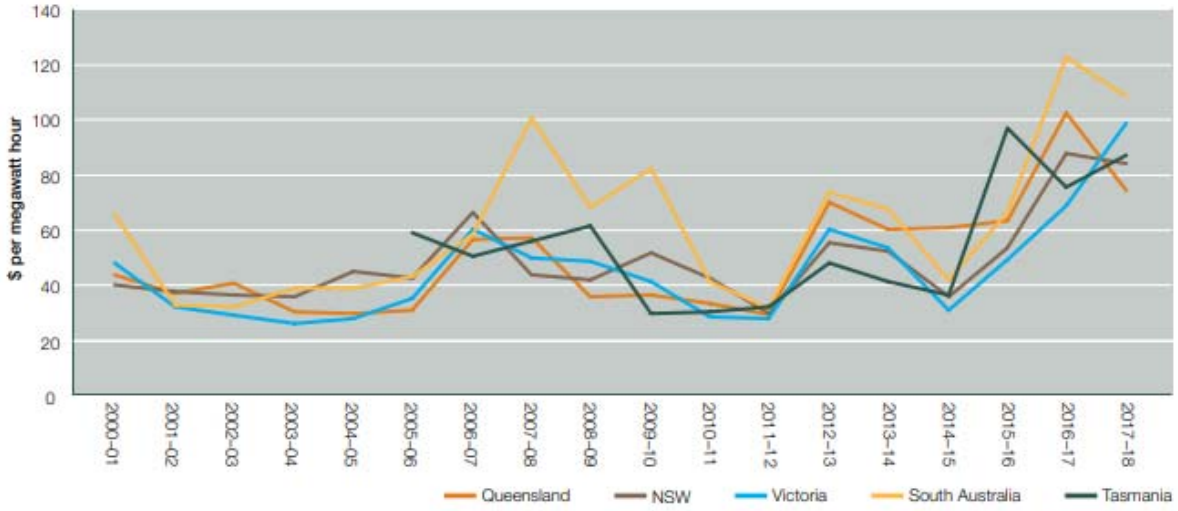
Figure 2.4: Cost components for aluminium production, 2015



Source: Australian Government. 2016. *Analysis of Steel and Aluminium Markets: Report to the Commissioner of* the Anti-Dumping Commission. April. p 26.

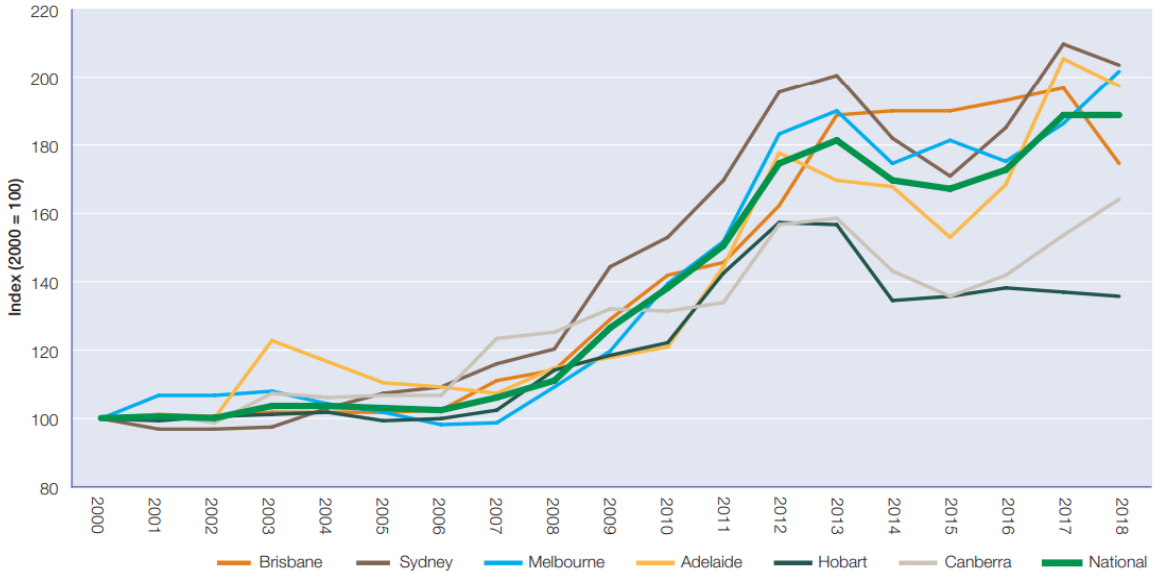
Whether the cost of electricity is considered in terms of wholesale electricity prices (Figure 2.5) or retail electricity prices (Figure 2.6), electricity prices in Australia have gone from a source of competitive advantage to adversely impacting business productivity.

Figure 2.5: Wholesale electricity prices



Source: Australian Energy Regulator. 2018. *State of the Energy Market 2018*. December. p. 16.

Figure 2.6: Electricity retail price index (inflation adjusted)



Source: Australian Energy Regulator. 2018. *State of the Energy Market 2018*. December. p. 44.

2.2.2 International commodity prices

Coking coal

The Australian Government's 2019-20 Budget has assumed the coking coal spot price will decline over the next year to reach US$150 per tonne by the end of the March quarter 2020.[11]

[11] Queensland Treasury. 2019. *Budget Strategy and Outlook 2019-20.* June. p 87.

Aluminium

After a steady increase in the lead-up to the Global Financial Crisis (GFC), primary aluminium prices were in general decline since 2006 (except for a short recovery in 2010 and 2011 in the wake of the GFC). [12] Prices have recovered from the lows seen at the end of 2015 ($1,532.00 $USD/tonne), with a tonne of aluminium at the end of June 2019 priced at $1,800 $USD/tonne.[13] This is a lower price than in 2000.[14]

2.3 A changing operating environment

Over the last decade there has been increased debate on the impact of mining on the environment (where these operations occur) and climate change (especially for coal). As a result of this dialogue and the ratification of international agreements (e.g. Paris Agreement) there is now an increased level of community awareness around the environmental impact of coal mining, large emitters and associated industry activities.

Through an increased focus on climate change and associated government policies, there has also been a change in the production mix for electricity generation. The age mix of current electricity generators is also a key driver for change. This is due to the ageing generation plants becoming 'increasingly unprofitable due to rising maintenance costs, coal supply issues and market penetration by other plant technologies'.[15]

Renewable technologies such as solar are being embraced in Gladstone and surrounding regions. Gladstone has also been identified as a focus point for hydrogen development in Queensland with the release of the Queensland Government's Queensland Hydrogen Industry Strategy.[16] Gladstone is seen an ideal location for this emerging industry due to the breadth of existing industries, gas infrastructure, access to a deep-water export port and skilled local workers.[17]

2.4 Customer expectations for GAWB

Whilst water is not a major cost component for most of GAWB's industrial customers, it is an essential input for production. It is the criticality of continuous high reliability access to water that drives the way in which GAWB operates the water delivery network and seeks to ensure there is continuous supply, under either a drought or growth scenario. In other words, security of supply is a priority for customers, and they are supportive of GAWB taking actions to prevent or mitigate potential adverse impacts on their operations or investments that would result from interruptions of supply.

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[12] Australian Government. 2016. *Analysis of Steel and Aluminium Markets: Report to the Commissioner of the Anti-Dumping Commission*. April. p 29.
[13] https://markets.businessinsider.com/commodities/historical-prices/aluminum-price/usd (Accessed August 2019.)
[14] Australian Government. 2016. *Analysis of Steel and Aluminium Markets: Report to the Commissioner* of the Anti-Dumping Commission. April. p 29.
[15] Australian Energy Regulator. 2018. *State of the Energy Market 2018*. December. p 15.
[16] Queensland Government. 2019. *Queensland Hydrogen Industry Strategy 2019-2024*. May.
[17] Queensland Government. 2019. *Queensland Hydrogen Industry Strategy 2019-2024*. May. p 5.

Network performance

Most of our industrial customers run 7 days per week, 24-hour continuous operations. This places increased pressure on our maintenance and investment programs, as works need to fit in with the operational needs of our customers.

Our network planning and operational performance risk frameworks also place an increased weighting on the need to have a low number of interruptions. This is due to the economic consequences of supply interruptions to our customers. This task is made more challenging as a result of the environmental conditions e.g. various sections of the network are located over water or in corrosive soils, and the likelihood of tropical cyclones.

Certainty of supply

Water restrictions, be that temporary or of a more sustained nature, have differing economic impacts across our customers. This is indicative of the marginal value of water, which varies considerably depending on the type of use. For example, internal research shows the economic costs imposed by progressively higher restrictions are non-linear. That is, for example a 25% restriction would cause an impact many times greater than the impact of a 10% restriction.

Due to the economic importance of the Gladstone region to the Queensland economy, plant design and/or the associated commercial arrangements, small albeit temporary reductions in water can have a significant impact. This may be due to the need to scale back production when water supply is limited. The consequence of such actions can have significant flow-on employment and economic impacts.

The economic and employment impacts of larger or more sustained water restrictions would be significantly greater than temporary water restrictions. As it may result in the closure of one or more key industries.

3. Price Adjustments During 2015-20

The last pricing investigation conducted by the QCA was carried out under section 23A of the QCA Act (a 'price monitoring investigation'), rather than section 23 ('an investigation of pricing practices'). One of the substantive differences between the two forms of investigation is that GAWB may depart from one or more of the QCA's reported findings if such actions are justified.

3.1 2015 price monitoring investigation (2016-20)

The Referral Notice issued by the Queensland Treasurer for the 2015 price review, required the QCA to monitor GAWB's forecast costs and prices (i.e. to conduct a section 23A price monitoring investigation).

The QCA Act provides a range of regulatory approaches which can be applied to regulate infrastructure services.

Price monitoring investigations are intended to represent a 'lighter-handed' oversight based regulatory framework, at the opposite end of the range of regulatory responses to the direct price regulation that is applied under several access undertakings.

As the explanatory notes to the *Queensland Competition Authority Amendment Bill 2008* (Qld) (which first introduced the price monitoring regime to the QCA Act) explained:[18]

> Price monitoring will provide a light-handed transparent regulatory regime for monopoly business activities that provides maximum flexibility for a monopoly business to operate in the market with minimal interference from the regulator.

GAWB considers the fact that successive State Treasurers, for two consecutive periods, have continued to believe price monitoring investigations are the appropriate regulatory response is recognition that it does not have any incentive to exercise market power. Also, there is no evidence of it having done so, based on any previous QCA investigation.

Consequently, the purpose of price monitoring is to create transparency for our customers and key stakeholders and assist GAWB in setting appropriate prices. The information published by the regulated business and/or the QCA, as part of the price monitoring investigative process, will inform the Government and GAWB's customers on whether there has been any misuse of market power. If the information provided indicates further investigation is required, then the Queensland Government can ask the QCA to undertake a more 'intrusive' investigation.

This style of approach also applies to the 2021-25 price review.

In conducting the price monitoring investigation, the QCA is also required to follow the Ministerial directions provided under section 24 of the QCA Act. In that regard, particularly important features of the 2021-25 Referral from GAWB's perspective include that:

- a 'lighter-handed' regulatory approach is to apply, via a section 23A review;

[18] Queensland Competition Authority Amendment Bill 2008 (Qld), Explanatory Notes, p 3.

- it is specifically acknowledged that GAWB's prices should provide sufficient revenue to recover the prudent and efficient costs of catchment management and recreation facilities (as part of GAWB's bulk water supply services);
- in relation to forming a view on prudency and efficiency of capital and operating expenditure, the QCA is to:
  - use an appropriate sample size; and
  - focus on areas which would give rise to material price changes (rather than matters which are likely to have minor or inconsequential impacts);
- the QCA is to provide advice on measures to prevent further accumulation of under-recovered revenue and reduce the existing balance of accumulated revenue under-recoveries (while managing the impact on customers of proposed measures to address that);
- GAWB is to provide an interim report (i.e. in 2023) on its performance during the regulatory period; and
- GAWB will be given an opportunity to justify differences in the customer prices and indicative pricing set out in the QCA's final report.

In conducting the price monitoring investigation, the QCA is also required to have regard to the matters set out in section 26 of the QCA Act. Importantly, those factors extend beyond factors purely relating to efficiency and appropriateness of pricing to include broader public interest issues, such as economic and regional development issues.

3.2 The QCA's final report

In addition to a less intrusive style of price review, the QCA is not required to make recommendations on the determination of the regulated business's prices. Rather it is to report on the findings of its investigation.

As a result, the regulated business is not required to adopt the QCA's findings. This was acknowledged by the QCA at the time of the 2015 price monitoring review:[19]

> [A]ctual prices charged by GAWB during 2016-20 are not subject to regulatory oversight by the QCA and our findings do not constrain GAWB's ability to set its own prices.

The QCA's final report included estimated indicative prices, based on its estimates of required revenue and the application of the pricing framework, but noted:[20]

> 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 report, will have on prices.

[19] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20: Final Report*. May. pp 78-79.
[20] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20: Final Report*. May. p 76.

Actual prices for individual customers are set by GAWB subject to contractual arrangements.

Table 3.1: QCA indicative prices - $(2015-16) per ML

Pricing Zone	Reservation & storage		Delivery		Admin	QCA total indicative price
	Contract Volume	Metered Volume	Contract Volume	Metered Volume		
Awoonga	324	16	0	0	27	367
Awoonga to Toolooa	324	16	179	30	81	629
Toolooa to Fitzsimmons	324	16	224	30	81	675
Boyne Raw	324	16	483	30	81	934
Mt Miller Pipeline	324	16	320	30	81	771
Fitzsimmons to Gladstone	324	16	236	30	81	686
QAL	324	16	289	30	81	740
Fishermans Landing Raw	324	16	750	35	81	1,206
Gladstone WTP	324	16	641	106	188	1,276
Gladstone City	324	16	748	106	188	1,383
Gladstone WTP to South Gladstone	324	16	770	106	188	1,404
Calliope	324	16	1,171	127	188	1,826
South Gladstone to Toolooa	324	16	973	109	188	1,611
Boyne Potable	324	16	1,255	109	188	1,893
Benaraby	324	16	1,938	138	188	2,604
Yarwun WTP	324	16	1,180	154	188	1,863
North Industrial Potable	324	16	1,520	154	188	2,203
Fishermans Landing Potable	324	16	5,132	154	188	5,815
Boat Creek to East End	324	16	6,636	261	188	7,426

Source: Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20: Final Report*. May .p77.

3.3 Departures from QCA final report in 2016-2020 pricing

3.3.1 Expenditure forecasts and adjusting for errors

As noted in the QCA's final report for the 2015 price monitoring investigation GAWB advised that it would have due regard to the QCA's indicative prices when setting actual customer prices.[21]

Consistent with that prior feedback, GAWB adopted the QCA's findings except in the following areas, on the basis these limited departures were justified and reasonable:

- assumed electricity efficiencies of 1% for the Gladstone Water Treatment Plant (GWTP), compared to the QCA's approach of 15%. This adjustment was made based on an actual/business efficiency analysis undertaken and therefore preferred over a theoretical estimate;
- adopted a higher escalation rate for electricity costs, as the QCA's estimates were based on the Australian Energy Regulator's (AER) draft rather than final report;
- included the Offline Water Storage Facility project in the capital forecast for the 2016-20 period, rather than the QCA's preferred approach (i.e. pontoon pump station). This adjustment was made based on three independent expert consultant reports recommending GAWB adopt the former and not the QCA's preferred approach;
- included additional staffing costs for water treatment services (1 FTE) that were misclassified in the original operating expenditure forecasts;
- adopted lower escalation rates for maintenance and chemical costs;
- adopted higher escalation rates for staffing costs, insurance and motor vehicles; and
- applied the actual Consumer Price Index (CPI) for March 2015.

The above departures, including some minor corrections to the modelling of targeted efficiencies, were communicated to all customers in July 2015 – consistent with the intent of the price monitoring regulatory framework of providing transparency to GAWB's customers.

3.3.2 Weighted Average Cost of Capital

The QCA final report included a benchmark weighted average cost of capital (WACC) of 5.41%, based on a 20 day averaging period ending 13 April 2015.

Prior to finalising prices for the start of the regulatory period (i.e. 1 July 2015) the WACC was updated to reflect actual market conditions.

[21] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20: Final Report*. May. p 76.

An increased WACC value of 5.77% was adopted based on a revised 20-day average of the risk-free rate ending on 30 June 2015.[22] A revised debt risk premium of 2.48% was determined, to align with the averaging period.

GAWB notes these are effectively timing issues, in seeking to determine an estimate for the appropriate rate of return, rather than substantive differences with the methodology utilised by the QCA to estimate the WACC and building block-based pricing. The overall impact of these changes, holding all other WACC parameters consistent with the QCA's final report, was an increase in the WACC from 5.41% to 5.77%.

3.3.3 Demand

Following the release of the QCA's final report, GAWB continued to hold conversations with customers to finalise their demand forecasts. Based on these discussions, the demand forecast was adjusted to reflect actual reservations for the 2016-20 period.

3.4 2016 prices (1 July 2015 – 30 June 2020)

Based on the above adjustments, the following prices applied from 1 July 2015 (see Table 3.2).

These prices remain constant in real terms for the length of the pricing period.

[22] A risk-free rate of 2.33%, compared to the 1.92% used in the Final Report was applied, based on analysis conducted by Queensland Treasury Corporation.

Table 3.2: Indicative prices - $(2015-16) per ML

Pricing Zone	Reservation & storage		Delivery		Admin
	Storage access ($ per reserved ML)	Storage volumetric ($ per metered ML)	Delivery access ($ per reserved ML)	Delivery volumetric ($ per metered ML)	($ per reserved ML)
Awoonga	339.45	22.52	-	-	27.94
Awoonga to Toolooa	339.45	22.52	203.01	34.11	83.82
Toolooa to Fitzsimmons	339.45	22.52	252.78	34.26	83.82
Boyne Raw	339.45	22.52	697.70	34.11	83.82
Mt Miller Pipeline	339.45	22.52	361.93	34.75	83.82
Fitzsimmons to Gladstone	339.45	22.52	264.79	34.26	83.82
QAL	339.45	22.52	320.40	34.33	83.82
Fishermans Landing Raw	339.45	22.52	812.48	40.19	83.82
Gladstone WTP	339.45	22.52	707.43	127.95	195.58
Gladstone City	339.45	22.52	822.14	127.95	195.58
Gladstone WTP to South Gladstone	339.45	22.52	848.70	128.03	195.58
Calliope	339.45	22.52	1,295.18	151.70	195.58
South Gladstone to Toolooa	339.45	22.52	1,064.05	130.97	195.58
Boyne Potable	339.45	22.52	1,356.71	131.45	195.58
Benaraby	339.45	22.52	2,177.09	165.82	195.58
Yarwun WTP	339.45	22.52	1,307.28	185.75	195.58
North Industrial Potable	339.45	22.52	1,688.62	185.75	195.58
Fishermans Landing Potable	339.45	22.52	6,996.77	185.75	195.58
Boat Creek to East End	339.45	22.52	7,227.96	306.79	195.58

(1) For comparative purposes the indicative prices for delivery services are presented on a $/ML basis. However, delivery access charges are levied $/reserved MDQ basis.

3.5 Annual indexation of prices

In its 2015 final decision[23], the QCA recommended that prices be indexed annually by CPI, measured on the Brisbane All Groups classification. GAWB's 2015 proposal included this approach for price adjustments during the 2016-20 pricing period.

Annual CPI values used in the indexation of prices are set out in the table below. These CPI values were used to annually adjust prices across the 2016-20 pricing period.

Table 3.3: Annual CPI – Brisbane all groups

	2015-16	2016-17	2017-18	2018-19
CPI	1.69%	1.84%	1.72%	1.51%

[23] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20: Final Report*. May. p.78.

4. Engagement

GAWB operates Awoonga Dam on the Boyne River and invests in and maintains the critical infrastructure necessary to satisfy customer's short- and long-term water needs. The infrastructure we own and operate also indirectly benefits the Gladstone community by positively contributing to liveability. In recognition of the impact GAWB's operations can have on customers and the community, we have adopted a strategic engagement process to improve communication with stakeholders and develop inputs for this price review.

4.1 Engagement program

GAWB recognises that its success as a business is contingent on its ability to understand the concerns, priorities and preferences of its customers. This information will be used to inform future investment and expenditure plans. Understanding the broader community that we serve, through the supply of bulk water, is also essential. In recognition of this, GAWB has progressively introduced the following strategic engagement program to make engagement central to the way we do business.

As a regional bulk water supplier, with a predominantly industrial customer base, the model for engagement is different, to what is typically adopted by other urban water service providers. Our approach needed to (i.e. the 'engagement objectives'):

- **Commence GAWB's journey towards a 'customer centric culture'**

  GAWB's interface with customers, beyond operational and commercial matters, had been reactive. Internal capacity needed to be developed to improve the customer experience and to establish frameworks within GAWB to support ongoing engagement.

- **Acknowledge the non-homogenous nature of GAWB's customer base**

  Unlike other urban water service providers GAWB has a small and significantly more industrial customer base. Furthermore, our customers are export-oriented and exposed to international commodity markets. Almost all of our customers are established and substantially sized businesses (relative to GAWB) and have the capacity to effectively contribute to, and change if they so desire, the policy and pricing environment applicable to GAWB's operations. They also operate across a range of domestic and/or international markets as inputs to production processes.

- **Encourage collaboration on ways to enhance public value**

  GAWB's assets and its services can make a positive contribution to liveability in the region. Through effective community engagement, future investment and operational decisions can be structured to make a positive contribution to the region.

- **Demonstrate a commitment to honest and transparent engagement**

  Information needs to be delivered in such a way that our customers and the community are effectively engaged. Our customers and the community need to know how they can affect the aspects of water delivery important to them and how they can be involved in demand side options. Particularly in the context of the 2021-25 price review and beyond. Communications also need to be clear and honest, so that they understand what is or is not under consideration.

- **Reflect industry best practice**

  Regulatory frameworks and corporate norms increasingly reflect more extensive customer engagement and the use of customer insights to guide the delivery of services, so that they are more efficient, effective and supportive of customer needs.

GAWB has adopted a three-phase approach to progressively deliver against the above engagement objectives – Figure 4.1. Learnings, from each phase, have been used to reframe the engagement process and inform the implementation of future phases and initiatives.

Figure 4.1: Engagement objectives – a three phased approach

4.1.1 Build a community presence

Historically, GAWB has had a limited brand presence within the local community. This was the result of organic growth within the organisation and visual branding activities occurring on an ad-hoc basis.

In early 2016, a Community Awareness and Perceptions Survey was conducted to gain insights into the community's understanding of GAWB's operations. Results of that survey demonstrated a lack of general awareness about GAWB's operations and ownership. As an essential service provider, this result highlighted the need to reframe our relationship with stakeholders. In particular, GAWB needed to be viewed as a credible authority, so that when it came to deliver critical information on matters such as water quality or emergency situations, the community and customers responded accordingly. [24]

Various initiatives have been identified and implemented over recent years to build a strong brand presence and improve public awareness of GAWB's operations and responsibilities. These activities include providing educational opportunities to the public (e.g. participation at local events) and schools (e.g. Water Week), as well as increasing general public awareness of GAWB's operations via a proactive media presence. To facilitate the delivery of these

[24] GAWB's Emergency Action Plan (EAP) provides that during an emergency event, at specified times, notifications are given to Pikes Crossing residents updating them on potential threats to person and property. When Awoonga Dam levels reach certain levels, a notification is given recommending Pikes Crossing residents evacuate their properties to higher ground at a specified location.

initiatives, GAWB created a new full-time communication/community engagement position in 2016.

In 2019, the Community Awareness and Perceptions Survey was conducted again to gauge the success of these initiatives and to inform future engagement activities. The survey found GAWB's initiatives had been successful. The survey found there had been a significant improvement in resident awareness and knowledge of GAWB, with 81% of residents indicating they knew something about GAWB, compared to 65% of residents in 2016. There was also an improvement in perceptions of GAWB's community involvement, with 61% of residents acknowledging that GAWB contributed more to the region than solely the provision of bulk water, up from the 2016 level of 46%.

4.1.2 Collaboration on investment and planning activities

In 2017 GAWB established several engagement activities, under the banner of Deliberative Customer Engagement, to inform the 2021-25 price review. These activities sought to build trust and support for the delivery of projects and initiatives that provide mutual benefit for GAWB, our customers and the community. To ensure this commitment was achieved in the context of the 2021-25 price review, GAWB sought stakeholder input early in our planning and decision-making processes. Through the following engagement activities, stakeholders were provided the opportunity to provide feedback and/or to co-design initiatives.

Community Consultative Forum

The Community Consultative Forum (CCF) provides a medium for the views and ideas of the wider Gladstone community, on ways to increase liveability in the region and opportunities to enhance public value, to be captured. The CCF comprises a diverse cross-section of community groups and peak organisations that directly serve the Gladstone community.

During 2017 and 2018, the CCF met on several occasions to discuss ways GAWB could improve the socioeconomic and/or environmental outcomes for the region. The broader Gladstone community was also invited to take part in these discussions, through a social media campaign. These engagement activities culminated in the development of the **Lake Awoonga Recreational Strategy** – see Figure 11.4.

The CCF meets periodically to discuss contemporary issues and to provide feedback on investment and communication initiatives.

Customer Representative Panel

To build our understanding of what our customers want, GAWB established the Customer Representative Panel (CRP). The role of the CRP is to provide feedback on regulatory and pricing matters relevant to the 2021-25 price review. It also assists GAWB in considering the views and ideas generated by the CCF.

The CRP consists of representatives from a cross section of GAWB's customer base, with the following customer groups being represented:

- electricity generation
- large industrial water users
- small industrial water users

- LNG process operators
- local government.

Since late 2017, the CRP has met periodically to discuss a broad range of issues such as GAWB's regulatory framework, the Lake Awoonga Recreational Strategy, future investment plans and potential pricing impacts.

Additional engagement activities

As this was the first time GAWB had applied a collaborative approach to engagement, we reviewed the effectiveness of the above engagement activities in mid-2018. This review considered feedback from participants, external advisors and customers. As a result, several additional engagement initiatives were introduced.

Dedicated Relationship Manager

To ensure consistency in messaging and a demonstrated commitment to ongoing engagement, a Dedicated Relationship Manager has been assigned to our key customer segments – Industrial & Gladstone Regional Council and Direct Domestic Connections. Relationship Managers have a good understanding of GAWB's commercial and operating requirements. This ensures customer enquiries are directed to subject matter experts within the business. Furthermore, by having a centralised process for customer queries, it also facilitates timely and consistent responses where appropriate.

Information forums

To increase customer awareness of the regulatory framework applicable to GAWB, forums have been held with our key customer segments. Information forums have also been held on our customers' understanding of their water security position, to provide guidance on their future water needs and the commercial impact of water restrictions. The information forums also covered drought management activities and potential demand and supply side solutions that could be used at times of drought or to address increased demand.

One-on-one customer meetings

To facilitate GAWB's transition towards a more customer centric business, one-on-one meetings have been held with our industrial customers and GRC. The purpose of these meetings is to:

- develop our understanding of their operations
- ensure the information we hold is accurate, useful and relevant to our operations
- facilitate open dialogue on operational priorities and long-term objectives
- discuss issues of concern
- discuss issues specific to the customer rather than the industry more broadly.

4.1.3 Customer centric culture

Moving forward, GAWB recognises that total customer water consumption and consumption patterns over time, do not change immediately. This is due to the design of our customers' long-life industrial processes and habitual usage patterns. Therefore, the relatively infrequent decisions GAWB makes when replacing large infrastructure (i.e. reservoirs, pumping stations)

can have a material impact on prices and service quality in the longer-term. This complexity is why customer engagement is so important. It is simply not sustainable for GAWB to assume it fully understands the priorities and needs of our industrial customers and GRC.

Dialogue is central to developing a genuine focus on customers. This ensures the water services we provide deliver value to current and future customers. Through the initial phases of the Engagement Objectives (Figure 4.1) GAWB has started to embed this approach and culture. These measures are also reflected in GAWB's refreshed Mission, Vision and Values.

Th next phase in our journey towards a customer focused business will build on the lessons learnt through the 2021-25 price review engagement activities and the following key priorities.

Figure 4.2: Transitioning to a customer centric culture – key priorities

4.2 Initiatives that reflect community priorities

In 2018 the Gladstone Community was invited to make submissions on ways GAWB could enhance liveability in the Gladstone region through the operation of its assets or future investments. A wide range of ideas were generated by the community and CCF, with most ideas relating to additional facilities at Lake Awoonga, education and environmental sustainability.

Recreational facilities at Lake Awoonga

GAWB currently provides or facilitates a range of recreational areas and facilities, both water and land based, at Lake Awoonga. These facilities generally relate to family recreation, recreational fishing, self-drive and caravan-based tourism, regional water sports and ecotourism. There are two main recreational areas currently available:

- Lake Awoonga Recreational Area - on the eastern side of the lake, comprising picnic areas, two lookouts, hardened and natural shorelines enabling water access, boat ramp, caravan park, shelters, barbeques, play facilities and public toilets.
- Boynedale Bush Camp - on the western side of the lake, comprising a more natural setting for camping, swimming, water sports and paddling.

Through engagement with the Gladstone Community several initiatives were identified to maintain/upgrade existing facilities, provide new recreational areas and opportunities and to promote the use of these facilities through partnerships and commercial opportunities. An overview of the initiatives identified is discussed in chapter 11.3.

These initiatives were presented to both the CCF and CRP in late 2018. At both forums, participants were provided the opportunity to discuss each initiative, anticipated pricing impacts and the potential benefits for the Gladstone community. These initiatives were also presented to customers in mid-2019. Overall the community and customers are supportive of these initiatives.

Education & environmental sustainability

Since 2015 an increased level of attention has been given to the provision of educational opportunities to the public. This has taken the form of running school-based activities for National Water Week, producing educational materials and playing an active role in local events such as Ecofest. These initiatives have had a positive impact on community perceptions and the community sees an ongoing and increased role for GAWB into the future.

The community also sees a role for GAWB in partnering with local high schools and universities to develop educational programs in the areas of aquaculture and environmental sustainability. Through GAWB's technical knowledge and detailed understanding of operating a continuously successful fish hatchery, the community believes it can make a positive contribution to the Queensland aquaculture industry. These measures would also indirectly support the Queensland Government's policy initiatives aimed at expanding aquaculture in Gladstone and surrounding areas.[25]

Through the design of the new hatchery GAWB has taken steps to address community expectations and make a positive contribution to the local economy by providing spaces for collaboration with local educational providers (e.g. laboratories). For example, the new hatchery includes spaces for tertiary students to conduct research and its design also allows for local aquaculture and marine science high school students to observe the breeding process.

4.3 How customers influenced this price review

Our engagement process has enabled customers to directly influence the development of our regulatory submission.

Customers have told us they do not support the use of pricing mechanisms that automatically increase their reservation, based on a once off occurrence. The current pricing framework includes this type of mechanism, it is an element of the transitional provisions introduced to support the transition to Maximum Daily Quantity (MDQ) pricing for delivery services. This

[25] Aquaculture Development Areas (ADAs) - https://www.business.qld.gov.au/industries/farms-fishing-forestry/fisheries/aquaculture/site-selection-production/development-areas/investment. (Accessed September 2019.)

matter and the way that GAWB proposes to address customer feedback is discussed in chapter 14.2.

Water security is a central element to our customers ongoing viability. Customers are supportive of GAWB's initiatives to take a proactive/forward looking approach to planning for drought management events and/or to address future water demands.

5. Demand Forecast

For the 2021-25 pricing period, GAWB has developed a demand forecast. This forecast has been used to determine prices as set out in chapter14. Consistent with chapter 7, a demand forecast for 5 years has been identified, rather than for a 20 year planning period.

5.1 Water demand

Actual annual volumes have been slightly higher than the levels expected in 2015. This is attributable to variability in operational requirements.

Actual annual MDQs have been lower than levels expected in 2015. Whilst some level of variability was anticipated to occur in the initial years of the transitional period (i.e. 2016-20), customer responsiveness to the pricing signals associated with the introduction of MDQ has resulted in lower than anticipated MDQ levels. In response to these pricing signals (e.g. the 'ratcheting mechanism'), customers have introduced permanent water efficiency measures, as well as operational processes and procedures to ensure 'over-runs' occur on an infrequent basis.

5.2 Forecasting methodology

In 2010 the QCA recommended that demand forecasts should reflect existing contracted volumes, anticipated contracted volumes and a component to reflect expected long term growth (i.e. to address the outer years of the 20 year planning period).[26]

GAWB agreed with this approach in 2015 and applied the methodology to develop the demand forecasts for the 2016–2020 period. However, an alternative approach was used to set forecast demand for the longer term (i.e. the 2021-2035 period).

For this price review, the demand forecast is based on a probabilistic approach (i.e. Probability of Exceedance (PoE)). The demand forecast is based on the information provided by customers and commercial arrangements. The information provided by customers has been adopted as the median of the demand probability distribution. The forecast also takes into account any connection enquiries, from potential customers, that would require a water supply within the next 5 years.

Consistent with chapter 7.2, a demand forecast for 5 years has been identified, rather than for a 20 year planning period. The 5 year demand forecast (i.e. for the 2021–25 regulatory period), has been developed in accordance with shorter term elements of GAWB's forecasting methodology.

GAWB will continue to meet with each of its customers over the coming months to discuss their future demand requirements, having regard to their contractual commitments and operational plans. An updated demand forecast will be submitted in response to the QCA's draft decision.

[26] Queensland Competition Authority. 2010. *Gladstone Area Water Board: Investigation of Pricing Principles – Final* Report. June. p 72.

5.3 Demand forecast

The demand forecasts, used to set prices for this pricing period, are set out below.

Figure 5.1: Annual volume forecast for pricing purposes

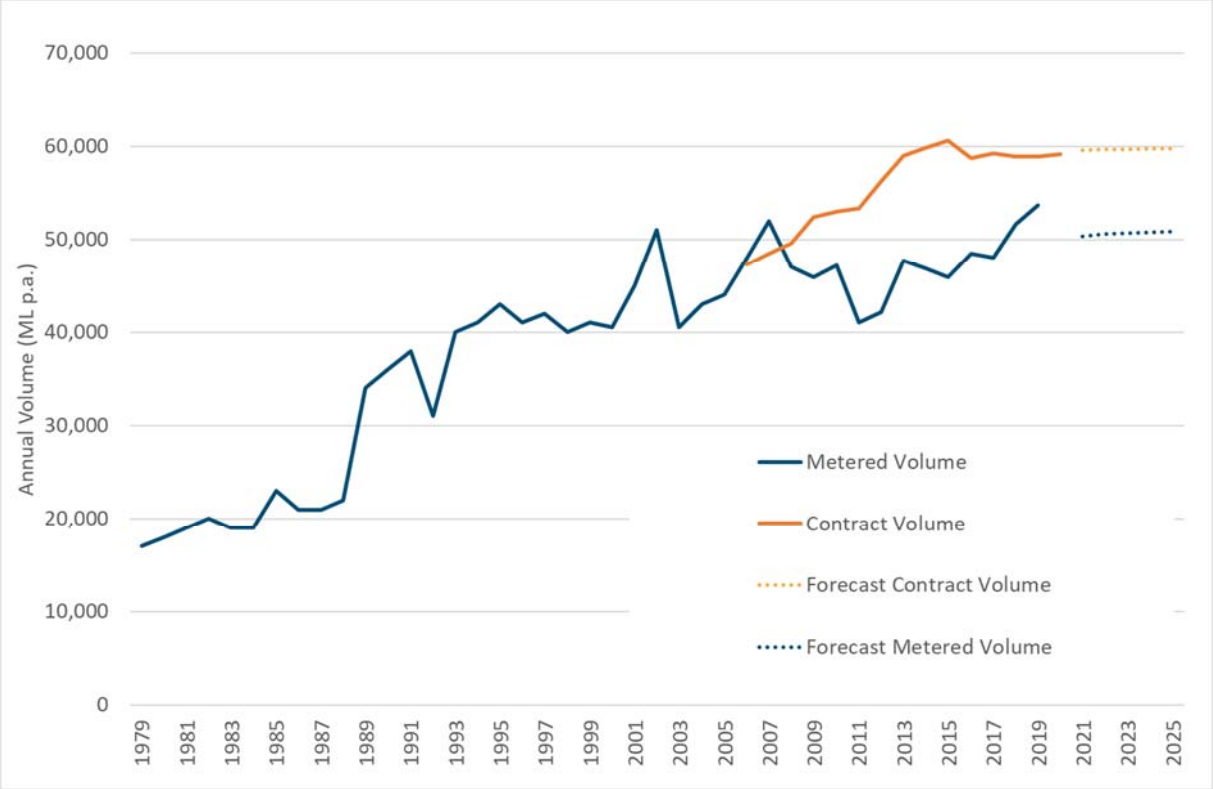
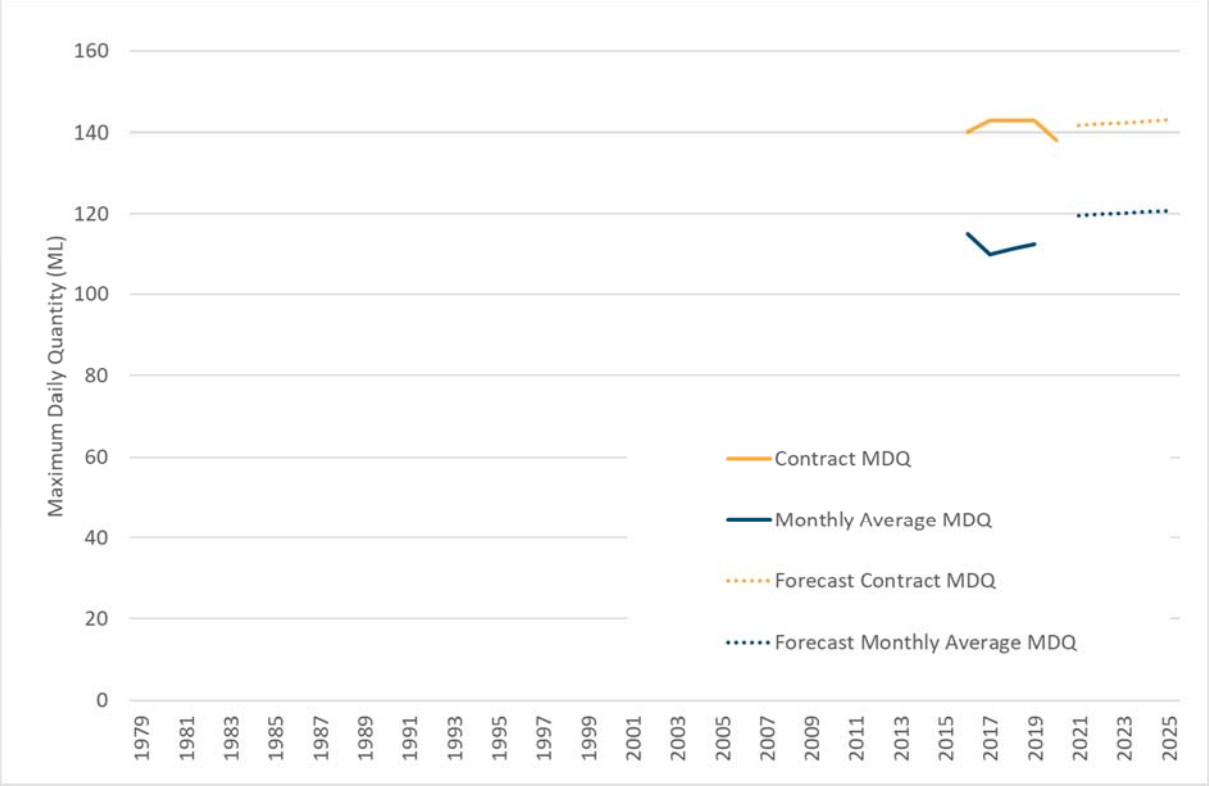


Figure 5.2: MDQ forecast for pricing purposes



6. Form of Regulation

The form of regulation governs GAWB's exposure to variations in demand compared to forecast. Currently GAWB is subject to a 'hybrid' revenue cap. Under this approach variations in demand, and the resulting revenue risk for GAWB is managed via a hybrid revenue cap framework.

6.1 Overview

The form of regulation essentially governs the level of demand risk borne by GAWB. That is, the level of risk it is exposed to when actual consumption varies from the demand forecast. It is possible to vary the form of regulation to provide for a different sharing of risk in relation to such demand volatility.

Alternative forms of regulation

The form of regulation can take many forms, the main approaches are set out below. Variations to these two 'purist' approaches can be applied, as in the case of GAWB's existing hybrid arrangements.

Price cap

A price cap form of regulation is where the regulator sets a cap on the price that can be charged for a service or group of services. The price cap reflects an assumed volume forecast and the regulated business bears the risk that actual volumes differ from that forecast. The revenue that the business is 'permitted' to earn will be a function of the price cap and actual volumes, that is:

- if actual volumes exceed forecast, resulting in increased revenue, the business is able to retain that revenue; or
- if actual volumes are below forecast, resulting in reduced revenue, the business is not able to recover the revenue shortfall.

Revenue cap

Under a revenue cap form of regulation, the regulated business can set prices to ensure it recovers the Annual Revenue Requirement (ARR). In practice, the resulting prices are typically set at the start of the relevant regulatory period and then adjusted to ensure that it recovers its full ARR. This typically occurs by either:

- an annual review of prices, where prices are reviewed prior to the start of each year and any previous over-or under-recovery of revenue is immediately reflected in a future price adjustment; or
- an end of period adjustment based on an annual carryover mechanism, where annual over-and under-recoveries accumulate over the course of the regulatory period and a single adjustment to tariffs is made at the commencement of the next regulatory period based on the net over-or under recovery.

6.2 Current approach

GAWB proposed a revenue cap with a 5% dead-band for storage, reservation and administration charges and a pure revenue cap for demand charges. To maintain price certainty for customers, prices would be limited to CPI increases during the period with a true-up at the end of that period.

The QCA identified an alternative approach to the one proposed by GAWB, that being a hybrid revenue cap. Under this arrangement GAWB bears the revenue risk within a ± 10% dead-band on all regulated activities except water delivery (i.e. network) services. Whilst for water delivery services, a ± 5% dead-band would apply.

In support of this approach the QCA noted that "GAWB should be exposed to strong commercial incentives to increase profitability", with the QCA considering that a 10% dead-band was appropriate given:[27]

- GAWB's existing contractual agreements with its customers provide it with a substantial level of revenue protection, implying low downside risk;
- the impact of the entry or exit of a major customer is outside GAWB's control;
- it would provide GAWB with a greater incentive to increase the take-up of excess capacity; and
- it more closely aligns with the dead-band ranges applied by other jurisdictions, most notably the Independent Pricing and Regulatory Tribunal (IPART).

The QCA also referred to the existence of excess capacity at Awoonga Dam (i.e. that the volumes currently reserved by customers are less than GAWB's annual water allocation) in support of its position:[28]

> Under the price cap that has previously applied, GAWB has sold more water by taking on additional Curtis Island customers. This required GAWB to undertake extensive expansion of the scheme. However, the resulting increased utilisation of Awoonga Dam and parts of the existing delivery network is to the benefit of all customers as fixed costs are allocated to a larger customer base. Such incentives should be retained to further encourage this behaviour.

6.3 Reasonableness of current approach

Incentives to increase volumes

In prior pricing decisions the QCA has acknowledged that GAWB is unable to control the entry or exit of a major customer.[29] GAWB does not believe there have been any changes, be that in market factors or commercial arrangements, to warrant a change in this view.

Despite this position, the QCA has recommended a form of regulation designed to incentivise GAWB to increase volume.

This approach is counter-intuitive when considered in the context of the following:

- There is no indication that GAWB has not sought to increase volumes. GAWB does not have a legal obligation to connect customers. Notwithstanding this, GAWB has

[27] Queensland Competition Authority. 2015. *Gladstone Area Water Board: Price Monitoring 2015-20 – Final Report.* May. p. 57.
[28] Queensland Competition Authority. 2015. *Gladstone Area Water Board: Price Monitoring 2015-20 – Final Report.* May. p. 59.
[29] Queensland Competition Authority. 2015. *Gladstone Area Water Board: Price Monitoring 2015-20 – Final Report.* May. p. 57.

demonstrated an ongoing willingness to actively contribute to the economic prosperity of the region. This was most recently acknowledged by the QCA in 2015 in terms of taking on additional Curtis Island customers.

  - In the context of this regulatory submission, as set out in chapter 7 (revenue under recovery) and chapter 15 (new connections), GAWB is taking measures to ensure the prices customers pay for water services are reflective of the cost incurred to provide those services and to make connecting to the network more seamless. These measures seek to positively contribute to the attractiveness of the Gladstone region.

- The requirement to sell more water does not acknowledge the potential adverse impact increased consumption may have on the frequency of drought restrictions being applied. This is discussed in detail in chapter 7.
- As noted in chapter 2 the economic environment in which GAWB operates and the factors that drive demand are not comparable to other urban water providers. For example:
  - approximately 80% of GAWB's water is reserved by industrial customers;
  - investment in the region is driven by international and domestic market factors (i.e. demand and volume growth is driven by factors well outside GAWB's control); and
  - population growth alone, does not have a material impact on demand.
- GAWB is not funded to 'market' the benefits of investing in the Gladstone region or to 'actively support' the connection of new customers.

Irrespective of the form of regulation applied over a 5 year pricing period (and the associated incentives), GAWB remains strongly incentivised to secure additional volumes as it remains fully exposed to volume risk in the longer term and ultimately the risk of asset stranding for its long life infrastructure. This risk is not reduced by the form of regulation or compensated by the WACC (noting the low asset beta the QCA applies in its WACC estimate). GAWB is strongly incentivised to deliver the services expected by current and future customers, these being a highly reliable supply of water and a reliable delivery network. Delivery of these services is also essential to the economic prosperity of the State. The concentrated nature of our customer base and the significant impact the loss of a major customer would have on water prices also acts as a significant incentive.

Accordingly, GAWB is constrained in its ability to deliver increased water sales. Therefore, we believe the imposition of such an incentive is flawed from a regulatory perspective. However, from a market readiness perspective GAWB has historically demonstrated and continues to, as seen through this submission, encourage investment in Gladstone through measures such as the CSS.

Regulatory practice

In the 2015 decision, the QCA noted that a hybrid revenue cap closely aligned with the dead-band ranges applied by other jurisdictions, most notably IPART. As shown in Table 6.1 this is still the case.

Table 6.1: Current approaches by Australian regulators

Determination	Regulator	Form of regulation	Comments
Gosford City Council and Wyong Shire Council [a]	IPART	Hybrid revenue cap	Implemented via demand volatility adjustment. A material variation is plus or minus 10%.
Essential Energy [b]	IPART	Hybrid revenue cap	Implemented via demand volatility adjustment – the same as the one applied to Gosford City Council and Wyong Shire Council. Dead-bands are not defined.
Hunter Water Corporation[c]	IPART	Hybrid revenue cap	Demand volatility adjustment with a 5% dead-band.
Sydney Water Corporation[d]	IPART	Hybrid revenue cap	Demand volatility adjustment with a 5% dead-band.
WaterNSW[e]	IPART	Price cap	No demand volatility adjustment is applied.
Melbourne Water[f]	ESC	Price cap	-
GWMWater[g]	ESC	Price cap	-
SA Water[h]	ESCOSA	Hybrid revenue cap	Annual revenue caps are applied to drinking water and sewerage services, with a demand variation adjustment mechanism. ESCOSA accepted SA Water's proposal of a 50:50 sharing of the revenue impacts of any material variations in demand from forecast. The minimum threshold for any adjustment is 1% of revenue.
Icon Water[i]	ICRC	Hybrid price and revenue cap	Individual price caps apply to water and sewerage services. A demand volatility adjustment mechanism applies. This is assessed at the end of the regulatory period, with a 6% dead-band applied based on allowed revenue.

Source: a Independent Pricing and Regulatory Tribunal. 2013. *Gosford City Council and Wyong Shire Council: Prices for Water, Sewerage and Stormwater Drainage Services from 1 July 2013 to 30 June 2017, Final Report.*

b Independent Pricing and Regulatory Tribunal. 2014. *Essential Energy's Water and Sewerage Services in Broken Hill: Review of Prices from 1 July 2014 to 30 June 2018, Final Report*.

c Independent Pricing and Regulatory Tribunal. 2016. *Review of Prices for Hunter Water Corporation: From 1 July 2016 to 30 June 2020, Final Report*.

d Independent Pricing and Regulatory Tribunal.2016. *Review of Prices for Sydney Water Corporation: From 1 July 2016 to 30 June 2020, Final Report*.

e Independent Pricing and Regulatory Tribunal. 2016. *Review of prices for WaterNSW: From 1 July 2016 to 30 June 2020, Final Report*.

f Essential Services Commission. 2016. *Melbourne Water Price Review 2016, Final Decision*.

g Essential Services Commission. 2018. *GWMWater Determination: 1 July 2018 – 20 June 2023*.

h Essential Services Commission of South Australia. 2016. *SA Water Regulatory Determination 2016, Final Determination.*

i Independent Competition and Regulatory Commission. 2018. *Final Report: Regulated Water and Sewerage Services Prices 2018-2023*.

6.4 Form of regulation

GAWB has applied a ± 10% dead-band based on all regulated activities. A consistent approach to all services (i.e. storage, delivery) is being applied as the transitional measures introduced in 2015, to support the introduction of MDQ prices, are to expire at the end of the current regulatory period.

7. Revenue Under-Recovery

Part B, clause 1.3 of the Referral Notice, requires the QCA to provide advice on measures that prevent the further accumulation of under-recovered revenue and to reduce the existing balance of accumulated revenue under-recoveries. In recognition of this obligation, GAWB has identified a set of measures that it believes best prevents the further accumulation of under-recovered revenue. In developing the preferred measures, GAWB has sought to balance the pricing impact on customers and the requirement that the regulatory framework aligns with regulatory policies and principles, and best practice.

The repayment of the accumulated revenue under-recovery is a matter relevant to existing customers. Any measures introduced to address the requirements of clauses 1.3(b) and (c) will be in addition to, and entirely separate from, prices for the 2021-25 pricing period. For this reason, GAWB has set out its proposed repayment mechanism in Part B of the Regulatory Submission.

7.1 Current regulatory approach

A key theme of GAWB's first price review was the regulatory treatment and funding of major efficient capacity augmentations (i.e. the raising of the Awoonga Dam wall), which was underway at the time. Due to the nature of the asset, capacity augmentations of this nature tend to be lumpy and indivisible, i.e. the least-cost efficient outcome can see material step changes, rather than incremental changes. This was the case with the 2002 augmentation which increased the dam's safe yield by almost 80% (at the time). Whilst this was a significant increase in capacity, it was viewed by the QCA as an efficient investment because it "represent[ed] the long run least cost supply". [30] This view was reiterated in 2015, with the QCA noting it had "previously found that efficient excess capacity that was generated through the expansion of capacity at Awoonga Dam should be recovered across current and future users".[31]

Major water users expressed strong views at the time on how the costs of significant capacity augmentation should be assigned, arguing that augmentation costs should be borne by incoming customers given they created the need for the augmentation. Meanwhile incoming users argued the opposite case – namely that all users impose capacity demands and should share jointly in the efficient costs of providing adequate capacity. The latter view was endorsed by the QCA in its final report, recommending "the costs of common infrastructure be allocated to all users provided they represent the least cost option to meet envisaged demand".[32]

At this same time, a price smoothing approach of 20 years was implemented via the regulatory framework. Compared to standard regulatory practice, where price smoothing approaches align with the regulatory period (which in GAWB's case, is currently 5 years), this approach was unique. The 2002 final report did not explicitly set out how the adoption of a 20 year price smoothing period served the interest of water users (existing or future) or achieved policy

[30] Queensland Competition Authority. 2002. *Investigation of Pricing Practices of Gladstone Area Water Board: Final Report*. September. p 39.
[31] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20: Final Report*. May. p 5.
[32] Queensland Competition Authority. 2002. *Investigation of Pricing Practices of Gladstone Area Water Board: Final Report*. September. p 39.

objectives. However, justification of this approach has been provided over time through subsequent regulatory reviews.

In 2005, the 20 year price smoothing approach for the calculation of prices was justified by the QCA on the basis of:[33]

- **Inter-generational equity considerations**: the need to avoid a situation in which current customers are forced to pay for capacity required to meet the needs of future customers.
- **Price efficiency grounds**: the need to provide appropriate signals for long term planning by customers.
- **Fairness grounds**: the need to avoid significant price shocks.

In its 2010 final report it was further justified on the basis that:[34]

> As a general principle, a planning period broadly in line with the expected time required for spare capacity to be utilised remains most appropriate for water businesses like GAWB. A longer planning period is also consistent with project evaluation conventions for water infrastructure projects.

The additional clarification provided on the 20 year price smoothing period raises two important points. Firstly, the goal of apportioning costs of efficient long-term infrastructure investments between current and future customers appears to have been confused at times with the goal of protecting customers from inefficient over-investment. The latter issue, which clearly has a place in economic regulation, is not appropriate in relation to the Awoonga Dam investment based on the QCA's 2002 finding that it was an efficient investment.

Secondly, the way in which the 20 year price smoothing mechanism has been applied does not separate the costs of the Awoonga Dam augmentation investment from all other costs and allowances (via the building block approach). This undermines any argument that the price smoothing mechanism is necessary to defer the recovery of costs until spare capacity is utilised, which rests on the assumption that the main beneficiaries are expected to be future users who therefore should bear the associated costs. In any case, as noted above, the QCA has previously made it clear these costs should be recovered across current and future users.[35]

7.1.1 Methodology for calculating water prices

Under the current regulatory framework, GAWB's bulk water prices are reviewed by the QCA periodically, typically every 5 years. This process is conducted in accordance with the Referral Notice (issued by the Queensland Government) and the principles of economic regulation. That is, the QCA has regard to four building blocks when calculating GAWB's yearly ARR (the 'building block' approach). These building blocks - operating expenditure, return on capital,

[33] Queensland Competition Authority. 2005. *GAWB: Investigation of Pricing Practices, Final Decision*. March. p 33.
[34] Queensland Competition Authority. 2010. *Investigation of Pricing Practices of Gladstone Area Water Board: Final Report.* June. p 19.
[35] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20: Final Report*. May. p 5.

return of capital and tax - are estimates of the efficient costs GAWB needs to incur in providing the regulated services to customers over the regulatory period.

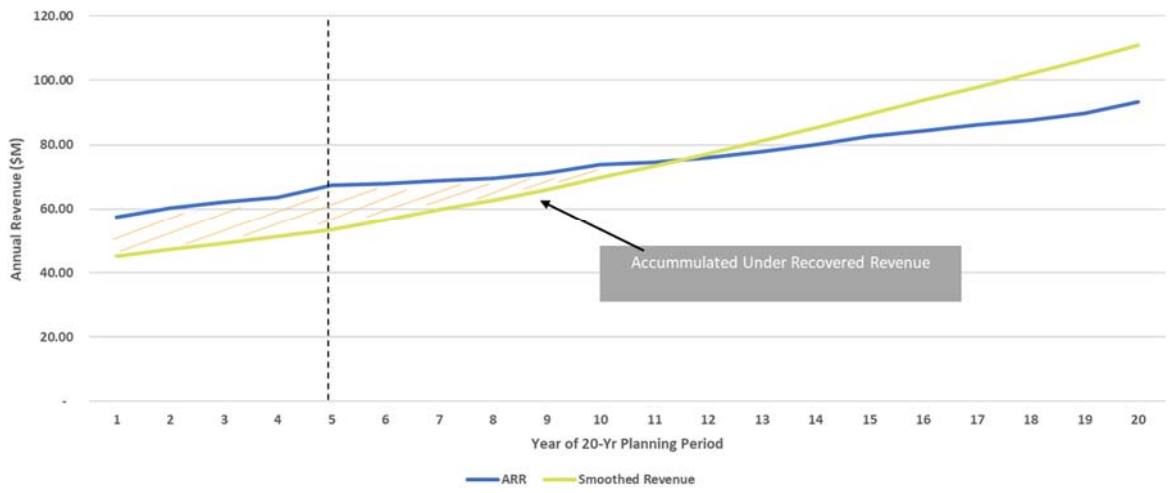
Under the QCA's price smoothing approach, prices are then calculated to recover GAWB's efficient costs over the 20 year planning period with prices to remain constant (i.e. in real terms) over the period. Figure 7.1 illustrates this approach based on a set of hypothetical inputs.

As shown in Figure 7.1, the annual ARR (as determined through the building block approach) and smoothed revenue allowance (based on the determined price and forecast demand) are typically not the same. This 'difference' can be negative (i.e. the regulated business is under-recovering revenue compared to the ARR) or positive (i.e. the regulated business is over-recovering revenue compared to the ARR). The potential for this was noted in the 2005 final report[36]:

> … by setting prices smoothed over a planning period in excess of a regulatory period, prices in the current regulatory period may generate revenues higher or lower than that required to achieve a (sic) the rate of return to maintain investment within the regulatory period.

In the case of Figure 7.1, this means that under this scenario GAWB is not recovering sufficient revenue from existing users to fully recover the costs of servicing those users over the 5 year regulatory period.

Figure 7.1: ARR vs Smoothed Revenue (based on hypothetical inputs)



In order to maintain investment incentives, the QCA stated that in future regulatory periods the smoothed prices "should incorporate an adjustment to reflect the effects of past price smoothing". [37] This would take the form of a carryover adjustment for any past revenue over or under-recoveries. The annual differences – the difference between the smoothed revenue and the ARR that results from the application of the building block approach – would then be

[36] Queensland Competition Authority. 2005. *GAWB: Investigation of Pricing Practices, Final Decision*. March. p 156.
[37] Queensland Competition Authority. 2005. *GAWB: Investigation of Pricing Practices, Final Decision*. March. p 156.

carried over to the commencement of the next pricing period based on the Weighted Average Cost of Capital (WACC) applied in the previous price review. The sum of these differences is then included in the ARR of the first year of the next regulatory period and re-smoothed over the next forward looking 20 year planning period.

Whilst the framework seeks to maintain investment incentives, the continual resmoothing of the accumulated under-recovery every 5 years effectively results in a perpetual deferral of allowable revenue.

GAWB's commercial arrangements recognise this element of the regulatory framework and refer to it as the 'price smoothing carryover'.

Since the framework was implemented[38], GAWB has under-recovered its revenue in most years. The accumulated under-recovery has grown exponentially in recent regulatory periods, reaching $124.7 million as at 1 July 2020 – see Figure 7.2. This amount will be excluded from the building block approach for the calculation of prices for the 2021-25 pricing period. The composition of the accumulated under-recovery is explored below.

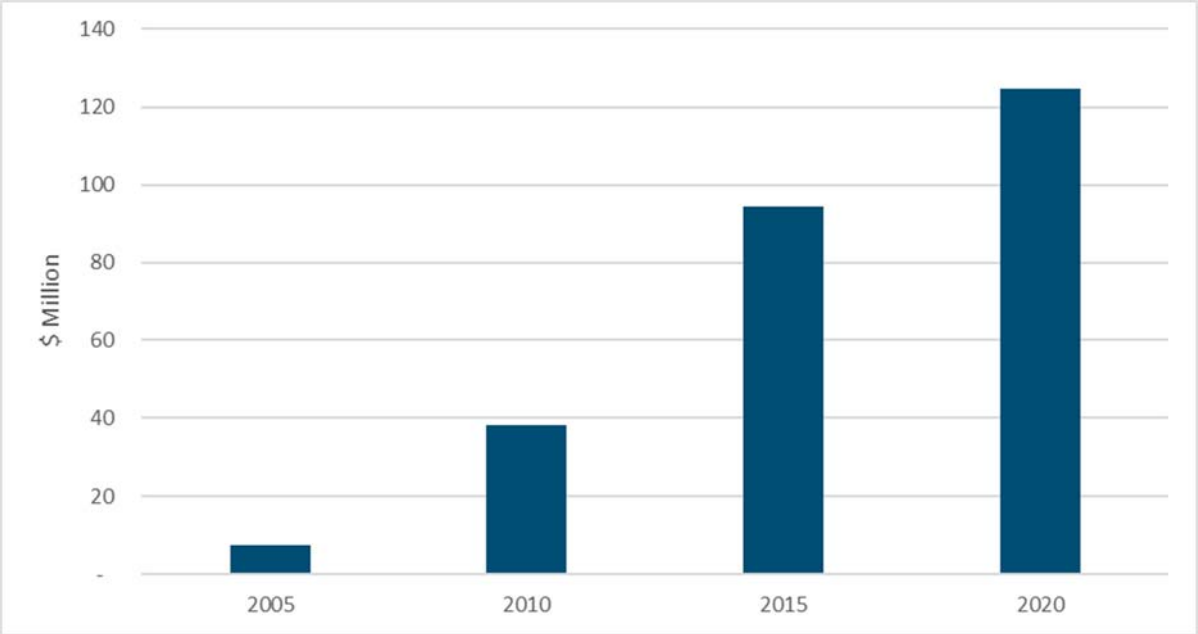
The proposed approach to recover the accumulated revenue under-recovery is set out in Part B of the Regulatory Submission.

As shown in the discussion above, the accumulated under-recovery is completely different to a revenue under- or over-recovery that may eventuate as a result of the application of a revenue cap or equivalent variant (i.e. the form of regulation).[39] Chapters 6 and 8 set out the proposed form of regulation to apply for the 2021-25 regulatory period and whether a revenue under- or over- recovery has occurred over the current regulatory period under the current hybrid revenue cap.

[38] Queensland Competition Authority. 2002. *Gladstone Area Water Board: Investigation of Pricing Practices* – Final Report. September.

[39] The form of regulation relates to adjusting for differences between forecast and actual demand over the regulatory period and the resultant revenue impact.

Figure 7.2: Accumulated under-recovery (up to 2020)



7.1.2 Under-recovery in practice

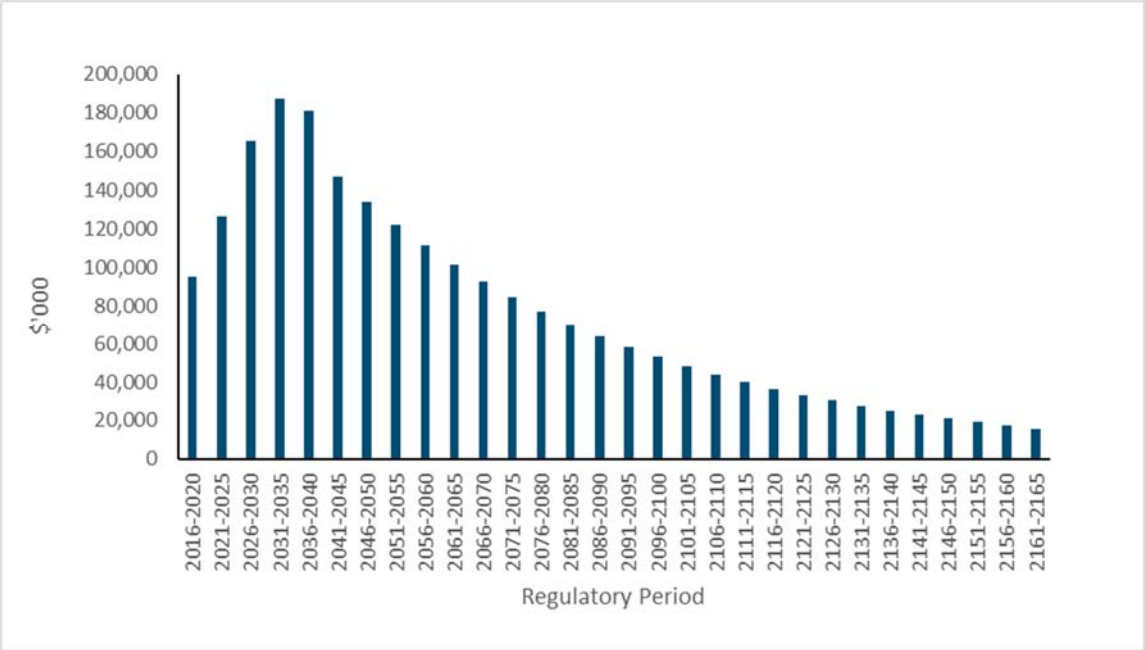
Due to the perpetual rolling forward of the accumulated under-recovery, there is significant uncertainty as to if and when repayment of the accumulated under-recovered revenue will occur. This risk is exacerbated by GAWB's concentrated customer base and the potential risk of the loss of a major customer. It also ignores the large trade exposed nature of the customer base and the additional incremental credit risk this places on GAWB.

Nevertheless, under the current framework the eventual recovery of the revenue under-recovery is illusory, even if customer reservations (i.e. demand) reach full capacity at some point during the 20 year planning period (i.e. 78,000 ML p.a. which is the permitted annual yield for Awoonga Dam). The profile of the smoothed ARR, and the resultant under- or over-recovery, is also impacted by the demand profile for the planning period.

If demand increases over time, the annual under-recovery of revenue will continue, and the accumulated carryover amount will continue to increase. Once full utilisation is reached (where reservations equal the permitted annual yield for Awoonga Dam) or demand is forecast to decrease, the under-recovery will decrease in the initial years. Over-recoveries will start occurring in later years, which will reduce the carryover amount. However, this situation also assumes the QCA will permit GAWB to over-recover revenue in those years.

To illustrate this point GAWB has undertaken modelling that assumes that full capacity utilisation is reached by 2035. Beyond this point, demand is assumed to remain stable and no further supply augmentations occur. Assets and operational costs are held static over the 150-year analysis period (2015-2165), which is the assumed end of life of GAWB's most recent capital expenditure augmentation. This analysis shows that while the accumulated balance of under-recovered revenue gradually declines over that period, it is not fully repaid.

Figure 7.3: Projected accumulated under-recovered revenue over a 150 period

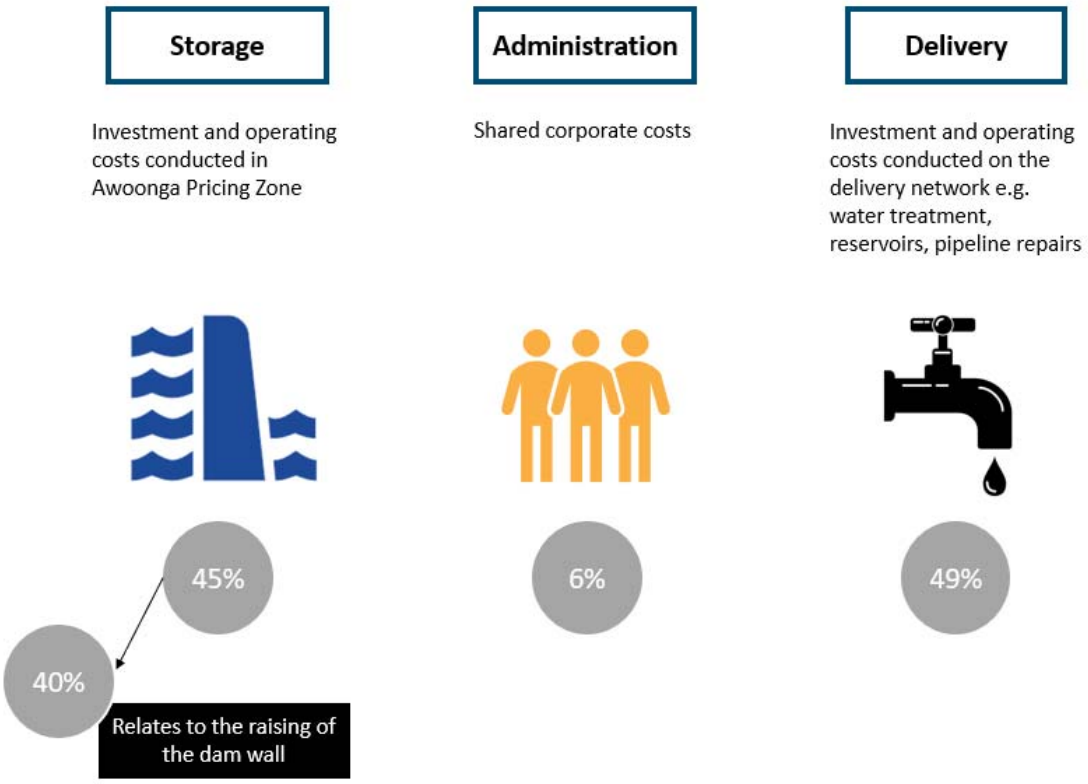


It is also important to note that this analysis assumes GAWB is permitted to over-recover revenue in the later years. If this is not permitted, the under-recovery will never be paid down.

7.1.3 Composition of the accumulated revenue under-recovery

The impact of setting prices based on smoothed revenue over a 20 year planning period, that is reset every 5 years, is that GAWB does not recover its ARR (unsmoothed) over the regulatory period. Existing customers are not paying a price that reflects the full cost of supplying the regulated service. Effectively customers are benefiting from GAWB not receiving revenue that is reflective of the prudent and efficient services that are being provided. Figure 7.4 provides a break-down of the current level of accumulated under-recovered revenues.

Figure 7.4: Composition of the accumulated under-recovered revenue



Over the last three regulatory periods, the long term demand forecast has assumed demand for bulk water services would continue to grow, eventually resulting in the accumulated revenue under-recovery being paid down. However, with the perpetual resetting of the 20 year price path every 5 years, which includes the rolling in of the accumulated under-recovery, the recovery of the full costs associated with servicing the demand of existing (and past) users is deferred. This outcome increases the burden on future users and reduces the desirability of the Gladstone region as a location for future investment.

Noting that concerns have previously been expressed that existing users are subsidising future users; the opposite is what has actually occurred due to the approach adopted. Further, this eventually requires an over-recovery of revenue from these future users if the balance is to be repaid, which may not be permitted by the QCA.

GAWB notes that the QCA's stated intention of the pricing adjustments to manage the effects of price smoothing was to "ensure appropriate investment incentives are in place"[40]. It is assumed that this was referring to GAWB's investment incentives as the QCA acknowledged that it should be "able to achieve a commercial return on its assets over the life of its assets".[41] The current framework has clearly had the opposite effect – if GAWB is unable to fully recover

[40] Queensland Competition Authority (2005). *GAWB: Investigation of Pricing Practices, Final Decision*. March. p.156.
[41] Queensland Competition Authority (2005). *GAWB: Investigation of Pricing Practices, Final Decision*. March. p.156.

its past investments and current costs of servicing existing users it can have no confidence that the costs of any future investments will be able to be recovered.

7.1.4 Outcomes are incompatible with efficient pricing principles

The carrying forward of the accumulated under-recovery of allowable revenue and application of a 20 year price smoothing period is in conflict with both the QCA's Pricing Principles and the National Water Initiative Pricing Principles (NWI Pricing Principles).

The QCA's water pricing principles

In 2000 the QCA published the *Statement of Water Pricing Principles* (QCA Pricing Principles)[42]. According to the QCA Pricing Principles, to achieve the objectives of monopoly price regulation, including promoting economic efficiency, prices should:[43]

- be cost reflective - that is, reflect the costs of providing the service and, usually where the demand for water exceeds its supply, potentially incorporate a value for the resource;
- be forward looking - in that they represent the least cost which would now be incurred in providing the requisite level of service over the relevant period;
- ensure revenue adequacy - the revenue needs of the business must be addressed where possible;
- promote sustainable investment - where the services are to be maintained into the future, the investor must be given the opportunity to enjoy an appropriate return on investment;
- ensure regulatory efficiency - the pricing method which minimises regulatory intrusion and compliance costs relevant to a particular circumstance should be adopted; and
- take into account matters relevant to the public interest. Many such matters are identified in the *Queensland Competition Authority Act 1997* (the QCA Act).

The QCA Pricing Principles were most recently reviewed as part of the QCA's review of the long-term regulatory framework to apply to the retail water sector in South East Queensland.[44] The QCA reiterated its prior position that economic efficiency (allocative, productive and dynamic efficiency) is most likely to be achieved where prices are cost reflective and forward-looking.

Further clarification was provided on the matters that were considered relevant in assessing the public interest, having regard to the requirements of the QCA Act. It was noted that what is considered equitable may be interpreted differently by different stakeholders, with relevant issues including managing price shocks, the effects of pricing policies on vulnerable groups and the implications of subsidies and cross-subsidies.

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[42] Queensland Competition Authority (2000). *Statement of Water Pricing Principles*. December.
[43] Queensland Competition Authority (2000). *Statement of Water Pricing Principles*. December. p.3.
[44] Queensland Competition Authority (2014). *Final Report, SEQ Retail Water Long-term Regulatory Framework – Pricing Principles – Part C*.

The updated QCA Pricing Principles also commented that prices that satisfy the efficiency objective are more likely to be seen as 'fair'. It noted that:

- the user or impactor pays principle of cost recovery "is consistent with the proposition that it is fair for a user of a service, or an individual that causes costs to be incurred (the impactor), to pay for the relevant costs"[45]; and
- the beneficiary pays principle may also be relevant when determining who should pay for a service.

Importantly, the QCA concluded that unless it is otherwise directed by Government, its primary objective is economic efficiency:[46]

> This reflects the interpretation that economic efficiency represents the overall public interest under the assumption that social concerns are being addressed by other government policies and activities.

GAWB supports this conclusion. It also supports the view that to the extent that prices are cost reflective and forward-looking, this should assist in achieving economic efficiency.

A further relevant consideration is the extent to which water prices contain appropriate signals to guide efficient consumption decisions. For example, by providing information about the costs of increased demand. This is reflected in GAWB's QCA approved pricing framework, which is a two-part tariff with the volumetric component set with regard to Long Run Marginal Cost (LRMC). However, due to the application of a 20 year price smoothing period, any pricing signals are distorted.

As noted above, even if prices are set to be cost reflective and forward-looking, the subsequent adjustments that are made to carry forward the accumulated revenue under-recovery and re-smooth over a new 20 year price smoothing period means full cost recovery is not being achieved. This outcome compromises economic efficiency. It also fails to achieve revenue adequacy and will serve to undermine GAWB's investment incentives. As will be outlined below, it will also drive inequities between existing and future users.

National Water Initiatives

The NWI Pricing Principles have been developed since GAWB's regulatory framework was originally put in place by the QCA. These principles were developed jointly between the Commonwealth and State and Territory Governments and reflect an expectation that all jurisdictions will transition to full cost recovery. While some regions are still in transition, the intent is that this transition is finite, not perpetual.

The commitments in the Intergovernmental Agreement to the National Water Initiatives (NWI) were based on the following objectives, which applies to the pricing of all water services:[47]

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[45] Queensland Competition Authority (2014). *Final Report, SEQ Retail Water Long-term Regulatory Framework – Pricing Principles – Part C.* p.4.

[46] Queensland Competition Authority (2014). *Final Report, SEQ Retail Water Long-term Regulatory Framework – Pricing Principles – Part C*. p.4.

[47] Intergovernmental Agreement on a National Water Initiative, Between the Commonwealth of Australia and the Governments of New South Wales, Victoria, Queensland, South Australia, the Australian Capital Territory and the Norther Territory, para.64.

1. promote economically efficient and sustainable use of: (a) water resources, (b) water infrastructure assets, (c) government resources devoted to the management of water;

2. ensure sufficient revenue streams to allow efficient delivery of the required services;

3. facilitate the efficient functioning of water markets, including inter-jurisdictional water markets, and in both rural and urban settings;

4. give effect to the principles of user-pays and achieve pricing transparency in respect of water storage and delivery in irrigation systems and cost recovery for water planning and management;

5. avoid perverse or unintended pricing outcomes; and

6. provide appropriate mechanisms for the release of unallocated water.

Four of the six objectives are compromised under the 20 year price smoothing arrangement, as summarised in Table 7.1.

The NWI Pricing Principles were endorsed in 2010 and were intended to guide consistent implementation of the pricing commitments made under the NWI. Principle 1 for the setting of urban water tariffs is cost recovery[48]:

> Water businesses should be moving to recover efficient costs consistent with the National Water Initiative (NWI) definition of the upper revenue bound: 'to avoid monopoly rents, a water business should not recover more than the operational, maintenance and administrative costs, externalities, taxes or tax equivalent regimes, provision for the cost of asset consumption and cost of capital, the latter being calculated using a Weighted Average Cost of Capital (WACC)'.

Having regard to the objectives, the intent of the NWI in relation to pricing is not simply upper bound pricing, the intent was full cost recovery. If businesses are not achieving full cost recovery, the above pricing principle is not being met.

In its 2018 review of the national water reforms, the Productivity Commission recommended the establishment of a common set of principles to guide the economic regulation of urban water utilities in Australia. The Productivity Commission also recommended that prices should reflect the full efficient cost of service provision.[49] The Commonwealth Government recently provided its in-principle support for this, noting that implementation is a matter for State and Territory Governments.[50]

[48] Natural Resource Management Ministerial Council (NRMMC) 2010. *National Water Initiative Pricing Principles*. p 10.
[49] Productivity Commission (2018). *National Water Reform, Report no. 87*, Canberra.
[50] http://www.agriculture.gov.au/about/reporting/obligations/government-responses/response-national-water-reform#recommendation-64 {Accessed 24 May 2019}

Table 7.1: Evaluation of GAWB's 20 year price smoothing against NWI objectives

NWI Objective	Implications of current arrangements
(i) promote economically efficient and sustainable use of water resources, water infrastructure assets and government resources devoted to the management of water	The current arrangements are not economically efficient because revenue recovered from existing users is not sufficient to recover the full costs of servicing them. Smoothing prices over a 20 year period also dilutes any price signals that allow users to make informed consumption decisions.
(ii) ensure sufficient revenue streams to allow efficient delivery of the required services	GAWB is not earning sufficient revenue to cover its current costs – this has occurred in every year since the framework has been implemented. As shown above, the assumption that the accumulated under-recoveries will eventually be recouped is illusory.
(iv) give effect to the principle of user-pays and achieve pricing transparency in respect of water storage and delivery in irrigation systems and cost recovery for water planning and management	Existing users are not paying the full costs of service. Under the current arrangements these under-recoveries will be borne by future users, in addition to having to bear their own costs.
(v) avoid perverse or unintended pricing outcomes.	The pricing adjustments made by the QCA at each five-yearly reset were intended to preserve GAWB's investment incentives. Instead, what has emerged is a situation of the 'perpetual roll-forward' of revenue under-recoveries. That is, the recovery of the full costs associated with servicing the demand of existing (and past) users continues to be deferred, increasing the burden on future users.

It is noted these policy developments have occurred after GAWB's price smoothing framework was implemented. However, they are largely consistent with the QCA's Pricing Principles, including the commitment to the full recovery of efficient costs.

7.1.5 Outcomes do not reflect the original objectives

As noted above, the QCA's rationale for GAWB's price-smoothing framework has been based on a specific set of objectives, which is at least partially rationalised based on GAWB's specific circumstances. These objectives are reviewed below.

Intergenerational equity

GAWB continues to support an appropriate allocation of common (capacity) costs between new and existing users. It also considers that it is appropriate for existing users to bear some responsibility for the costs associated with the excess capacity because they have been deriving a benefit from this (see chapter 7.1.6).

However, the current approach is producing significant inequities. Apart from future users bearing a disproportionate share of the costs of the most recent augmentation, more importantly, these future users will also end up bearing some of the costs of servicing existing users that are not being recovered as a consequence of price smoothing. While it may be reasonable to conclude that augmentation costs warrant a re-allocation between current and

future customers on grounds of intergenerational equity, there is no such argument for re-allocating non-augmentation costs.

It is also now not clear what 'future' generation of users are being targeted. As shown in Figure 7.3, the under-recovery will not be fully repaid within the useful life of the most recent supply source augmentation (i.e. by 2165), irrespective of the level of demand assumed.

It is recognised that in practice, it is extremely difficult to reliably determine an equitable distribution of costs (e.g. the repayment of assets in the RAB and operating expenditure) between 'current' and 'future' users. However, the longer the recovery of a present cost is deferred, the stronger the argument becomes that the deferral is unreasonably favouring current generations over future ones. This could also be under-valuing (or ignoring) benefits that these current generations are deriving from an asset.

Efficiency

The QCA has referred to this approach as providing 'consistent and stable' price signals for lumpy investments. While it is not clear as to whether the QCA is referring to Short Run Marginal Costs (SRMC) or LRMC, the intent of a two-part tariff with a volumetric component based on LRMC is meant to provide a signal to users as to the costs of augmentations triggered by increased demand. If no further capacity is required, LRMC will equal SRMC. SRMC can also signal costs in times of scarcity (where SRMC may exceed LRMC), such as during a drought.

In recognising that "new projects do not solely assume responsibility for the funding of augmentations", the QCA has also recognised the role of water prices in clearly signalling the future costs associated with the use of these resources.[51] The importance of clear signalling is to "assist existing and future industry to take these into account and ensure that the most appropriate water use technologies are put in place".[52] Instead of 'consistent and stable' price signals for new capacity, the focus therefore needs to be on ensuring that users see a clearer and more realistic price signal on the costs of increased demand.

The use of LRMC is common in the water sector. Those costs can vary depending on where the business is in its investment cycle. GAWB also notes that the horizon over which LRMC is set can be quite long, but this is not linked to a long-dated price smoothing or 'planning' period' – see Table 7.2.

[51] A 'new project' refers to a new customer's connection.

[52] Queensland Competition Authority. 2002. *Gladstone Area Water Board: Investigation of Pricing Practices - Final Report.* p.116.

Table 7.2: LRMC horizons

Regulator	Water Business	Period	Regulatory Period	Long-dated planning period?
IPART	*General Methodology*	Between 20 - 50 years *Depending on the planned capacity related augmentations*	N/A	N/A
IPART	Sydney Water	40 years	4 years	No
ESCOSA	SA Water	35 years	4 years	No
QCA	GAWB	20 years	5 years	Yes

Source: Independent Pricing and Regulatory Tribunal. 2016. *Final Report, Review of Prices for Sydney Water Corporation – From 1 July 2016 to 30 June 2020. Attachment 3.*

To the extent that the intention is to provide a price signal, smoothing prices over a 20 year period will only serve to dilute or distort those signals. Further, nearly all regulated infrastructure is subject to lumpy investment.

GAWB is not aware of any other cases in Australia where a regulator has adopted a price smoothing period in excess of the regulatory period to account for this lumpy investment profile. It is acknowledged this may be considered in setting the depreciation method. However straight-line depreciation remains the most common approach applied by economic regulators.

Fairness

The 20 year smoothing period seeks to avoid significant price shocks. GAWB recognises the need to manage material step-changes in prices, even if those prices are economically efficient. It is understood that economic regulators need to strike a careful balance between economic efficiency and the public interest, although as noted above, recognising the inherent tensions that can arise between these objectives the QCA has previously stated that its priority should be efficiency.

Avoiding price shocks should not be to the point where prices are not enabling the service provider to generate sufficient revenue to recover its efficient costs. Other economic regulators similarly face this dilemma, which at least in the water sector, may see prices smoothed over the regulatory period but not over a longer period. This also reflects the key issue in managing price shocks is providing users with sufficient time to adjust to price changes.

As noted previously, what is considered fair or equitable may mean different things for different users or stakeholders. However, a situation where future users are being relied upon to fully recover the costs of servicing current users clearly contravenes any concept of fairness. Indeed, it could lead to the situation where prices are so high that this will discourage future investment in the Gladstone region (i.e. new demand). The importance of economic development is acknowledged in section 26(1)(m) of the QCA Act, where the QCA is required to consider, in conducting a price investigation, economic and regional development issues, including employment and investment growth.

Expected demand growth

Initially, a 20 year period was seen as consistent with the expected time horizon for the take-up of the full capacity of the Awoonga Dam. This has since become meaningless because rather than being based on a target date, this 20 year period is rolled forward at each price review. In addition, the demand requirements of customers are evolving and change over time.

GAWB's demand outlook is more uncertain than other urban water service providers, as industrial customers represent approximately 80% of water consumption. This risk is further exacerbated by the demand risks arising from GAWB's comparatively concentrated customer base. GAWB is highly reliant on a small number of large customers such as alumina and aluminium producers, energy generators and chemical producers. These customers are exposed to various commercial pressures and risks such as global commodity prices and domestic market and policy factors. The risk that GAWB could lose a significant existing customer cannot be ruled out. This would make the burden of collecting the unrecovered revenue from remaining water users more onerous.

It is not appropriate that GAWB should continue to bear the demand risks associated with the under-recovered revenue on the presumption that it is necessary to incentivise it to take-up new demand (on top of its exposure to demand risk via its hybrid revenue cap). GAWB is naturally incentivised to take advantage of all feasible demand options regardless of the mechanisms in the regulatory framework. As it has previously submitted, much of this future demand relies on economic factors and conditions in domestic and global markets, over which GAWB has no control.

Project planning

The QCA has argued that 20 years is consistent with project evaluation conventions for water infrastructure. GAWB agrees that long planning horizons are a feature of water infrastructure as well as other infrastructure subject to economic regulation, including electricity, rail and port assets. In some instances, the planning horizon may actually be longer than 20 years. GAWB highlights that it – along with its customers – currently plan, and will continue to plan, over a long-term horizon.

However, this planning horizon should be completely independent of the period over which prices are assessed and smoothed. GAWB does not believe long-term planning horizons provide any justification for price smoothing. This has not resulted in the application of long price smoothing periods (or a period in excess of the regulatory period) in any other jurisdiction in Australia. What is of more importance is providing users with sufficient time to adjust their consumption behaviours to price changes.

7.1.6 The excess capacity fallacy

In 2000, the Awoonga Dam had a storage capacity of 283,000 ML. At that time, the dam's assessed historical no failure annual yield (HNFY or safe yield) was 49,400ML. Over 2000-02, the Awoonga Dam wall was raised by ten metres. The augmentation increased storage capacity from 283,000ML to almost 777,000ML with a corresponding increase in the then assessed HNFY from 49,400ML to 87,900ML.

Has the augmentation of capacity at the dam remained efficient?

There are two key considerations underpinning this matter – demand and supply risk.

Demand Risk

GAWB's original investment decision was based on demand projections that were considered reasonable at the time, based on all available information. This issue has also been revisited at various times since this investment was approved by the QCA in 2002. For example, in the context of the 2010 final report it was concluded that:[53]

> While demand from Awoonga Dam has been lower than anticipated when the dam was raised in 2000-02, the demand projections were reasonably held at the time. *Indeed, demand has in a number of years exceeded the supply that would have been available had the dam not been augmented* [emphasis added]**.** Furthermore, technical advice was that the augmentation was the least cost option available in the anticipated demand scenario.

While most urban bulk water providers service a mix of residential, commercial and industrial customers, future demand growth is more likely to be heavily influenced by factors such as population growth. In GAWB's case, with a comparatively high proportion of its demand (currently around 80%) accounted for by industrial users, demand forecasts are much more uncertain and are sensitive to domestic and global economic conditions. This is particularly the case for potential new sources of demand.

While GAWB does not have detailed insights into the investment decision-making processes of these companies, it is expected that the key factors underpinning these decisions will vary, as will the triggers for commitments to new developments. GAWB is clearly incentivised to facilitate the connection of additional demand from new or existing customers as it increases its ability to recover its efficient costs and, in the long run, reduces the risk of asset stranding. GAWB also recognises the important role that it plays in enabling future economic development for the benefit of the region. This has also been previously recognised by stakeholders, including the QCA,[54] and is also one of the matters the QCA must have regard to in investigating prices under the QCA Act.

GAWB also reiterates that in considering the issue of excess capacity the focus should not solely be on whether this capacity will be absorbed by new demand. Appropriate regard also needs to be given to the benefits that existing users may derive from the current level of installed capacity, which provides security of supply, including during periods of drought. This is considered further below.

Supply risk

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

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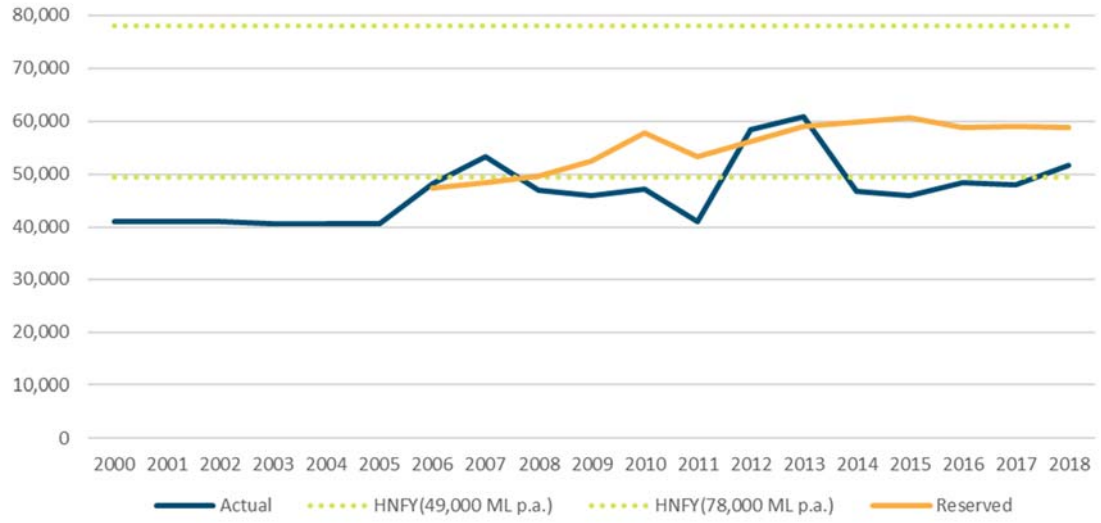
[53] Queensland Competition Authority. 2010. *Investigation of Pricing Practices of Gladstone Area Water Board: Final Report.* June. p.75.

[54] For example, refer to Queensland Competition Authority.2002. *Gladstone Area Water Board: Investigation of Pricing Practices - Final Report.* p.116.

The most recent supply augmentation resulted in a significant step change in capacity of approximately 35 to 40% in the initial years.[55] Whist this was a significant increase and has subsequently been referred to as 'excess capacity', it represented the most efficient investment option at the time. This increase in capacity has been required to meet existing and new customers water needs – see Figure 7.5.

Figure 7.5: Historic water consumption (actual and reservation)



Whilst an augmentation can deliver an increase in capacity, this level is not fixed over time.

The HNFY of Awoonga Dam is based on a computer simulation using historic monthly rainfall and estimated monthly flows in the Boyne River since 1890. The estimated HNFY is the volume of water available annually from the Dam with 100% monthly reliability over this historical period. Following the severe drought in 2002-03, the yield of Awoonga Dam was revised downward in the Resources Operations Plan (ROP) by 11.3%, to 78,000 ML.

A review of the Boyne River Basin was recently conducted by Department of Natural Resources Mines and Energy (DNRME) to determine any variations in the climatic conditions, compared with the period used for hydrological modelling for the plan (1890-2011) and the impacts of potential climate change based on climate projections to 2030.[56] In terms of climatic conditions, over the analysis period, it was noted the median rainfall expects lower rainfalls, as compared to the historical rainfall. Changes in rainfall patterns (including intensity) can affect the volume of water that can be captured by the dam and groundwater recharge.[57]

Due to the methodology used to determine allocations (i.e. based on a historical analysis of rain flows) and consideration for climatic changes, adjustments to the HNFY and GAWB's allocation are most likely to be downwards over time. Climate change significantly increases

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55 Queensland Competition Authority. 2005. *GAWB: Investigation of Pricing Practices, Final Decision*. March. p.39.
56 Department of Natural Resources, Mines and Energy. 2019. *Minister's Performance Assessment Report: Water Plan (Boyne River Basin) 2013*. May.
57 Department of Natural Resources, Mines and Energy. 2019. *Minister's Performance Assessment Report: Water Plan (Boyne River Basin) 2013*. May. p 10.

the likelihood of HNFY downward adjustments and potential future need for supply augmentation or other demand management strategies.

Capacity is also dynamic in that GAWB's ability to meet customer and community consumptive requirements is potentially impacted by drought. The timing, severity and duration of a drought remains highly uncertain and cannot be predicted by GAWB or its customers.[58]

GAWB seeks to manage the social economic impact of drought through the use of its Drought Management Plan. [59] The Drought Management Plan comprises the following key stages:

- Low supply alert – in the event the GAWB modelling indicates a 60-month time frame from failure (i.e. the period that Forecast Demand can be maintained until Dead Storage is reached) customers are:
  - notified of potential augmentation alternatives;
  - invited to submit proposals to reduce demand;
  - required to confirm (or adjust) water reservations within 30 days;
- Supply restrictions - in the event the GAWB modelling indicates a 60 month time frame from failure customers are advised restrictions will be imposed at a 10% reduction on customer water reservations;
- Emergency restrictions - in the event the GAWB modelling indicates a 6 or less month time frame from failure customers are advised the following restrictions will be imposed:
  - the supply of water to all non-local authorities will cease;
  - the supply of water to local authorities will be set at 50% of their water reservation.

Reliance on a single source of supply also presents risks, which is the focus of GAWB's CSS and is discussed in more detail in chapter 1.

An insurance policy

Traditionally, excess capacity can be viewed as inefficient as assets are not being used to maximise productivity. Furthermore, customers are paying for this capacity without any demonstrable economic or standard of service benefit. This approach does not necessarily hold for bulk water service providers.

The annual yield from Awoonga Dam is 78,000 ML p.a.. With no inflows, current consumption levels, evaporation, and releases for environmental flows, it takes approximately 3.5 years before a Low Supply Alert is issued in accordance with the Drought Management Plan. Increased levels of consumption reduce the period of time between a spill event (i.e. the dam is full) and enactment of the Drought Management Plan. As a result, the latent capacity provides a positive benefit to current users. That is, it prolongs the period between a spill event and the need to apply the Drought Management Plan. Effectively 'excess capacity' is an

[58] Queensland Competition Authority. 2005. *GAWB: Investigation of Pricing Practices, Final Decision*. March. p.20.
[59] Gladstone Area Water Board. 2015. *Drought Management Plan*. November.

insurance policy for current users and therefore the recovery of the costs of this capacity via water prices can be seen as an insurance premium. The value of this arrangement is dynamic i.e. it is directly related to consumption levels at any point in time.

Customers value secure supply

GAWB's customers value security of supply. For industrial customers, the availability of water is a key input into production processes and can therefore affect the volume and continuity of their output.

In the 2010-15 pricing investigation, the QCA's consultant, Marsden Jacob Associates, found that "customers universally require high reliability supplies" and that there was "no interest" in multiple products reflecting different levels of service.[60] This suggested that the scope for service quality differentiation was low.

GAWB still acknowledges that customers may have different preferences in relation to reliability and it is also possible that an individual customer's preference will change through time. However, while there may be ways of managing this, overall dam capacity cannot be that dynamic. As was recognised when the Awoonga Dam augmentation was approved in 2002, dam capacity will be augmented in 'lumpy' increments having regard to the least cost means of servicing expected future demand.

The capacity required to satisfy the preferences of existing customers in relation to reliability could be different today to what it was when the investment decision was first made, or what it might be in the future (even if demand itself did not change). Putting aside the capacity that might be required to service potential new sources of demand, sufficient installed capacity needs to be available to deliver a level of service required by existing customers, as well as potentially respond to changes in customer preferences. If the security of supply delivered by current capacity is inadequate, this is not a problem that can be quickly rectified.

Compensation for mitigating the impact of drought.

It is appropriate for GAWB to be compensated for the efficient costs of Awoonga Dam's drought mitigation service. This approach has been applied elsewhere, including where more discrete (and potentially more expensive) capacity sources need to be invoked during a drought, such as desalination.

For example, the costs of the Sydney Desalination Plant (SDP) are passed through to Sydney Water (who then passes these costs on to its customers). Sydney Water pays all of SDP's fixed costs in shutdown (or operation) mode. It also pays the operating costs if the plant is invoked to provide services, which now must be separately identified on customer bills.[61]

GAWB is currently able to set prices to reflect the costs of the drought mitigation service provided by the Awoonga Dam, although these costs are not being fully recovered from existing users due to prices being based on revenue allowances that are smoothed over a 20

[60] Queensland Competition Authority.2010. *Investigation of Pricing Practices of Gladstone Area Water Board: Final Report.* June. p.47.

[61] Independent Pricing and Regulatory Tribunal.2016. *Review of Prices for Sydney Water Corporation: From 1 July 2016 to 30 June 2020, Final Report*.

year period. GAWB's entitlement to compensation for these costs is also consistent with the QCA's previous position that:[62]

> In general, the Authority considers that drought risk is best managed by GAWB. GAWB is best placed to manage aggregate consumption to prolong supply and to determine the viability of alternative supplementary options or investments in more efficient water use practices. GAWB is therefore entitled to pass on the cost of managing this risk to customers.

The key beneficiaries of this drought mitigation service are existing users. If demand increased to the extent that the dam's full capacity was contracted, this would accelerate the need for investment in alternative water sources, including supplies that provided a drought mitigation service.

It is therefore appropriate that existing users make an appropriate contribution towards the costs of providing this service under the 'beneficiary pays' principle, which has underpinned cost allocation approaches in pricing water services. 'Beneficiary pays' is another way of expressing cost causation, where the beneficiary has 'caused' the costs.

In conclusion, historical assessments of the efficiency of GAWB's excess capacity as well as the allocation of costs between future and existing users has tended to focus on new demand. However, it is also important to have regard to the benefits that existing users are deriving from the augmentation of the Awoonga Dam in terms of supply security and drought mitigation.

This in turn continues to support the case for recovering a share of those costs from existing users, including the portion of the accumulated under-recovery that is attributable to that capacity.

7.1.7 Conclusions and implications

As shown above, there are three key assumptions underpinning the current framework that have not held in practice, nor will they hold in the future. These are that:

1. **the balance of GAWB's under-recovery will eventually be repaid**: As shown above, assuming that the QCA permits GAWB to over-recover revenue in the event that demand reached full capacity or started to decline, it will still be unable to recover the accumulated losses within the life of the most recent augmentation;

2. **the under-recovery is due to the existence of excess capacity following the augmentation of the Awoonga Dam**: This is not the case. Instead, a significant portion of the accumulated balance is due to the under-recovery of the costs of delivering current period and past period operational services (not just capital recovery) to existing users;

3. **a 20 year planning horizon preserves intergenerational equity**: On the contrary, future users will not only end up bearing a disproportionate share of the costs of the

[62] Queensland Competition Authority. 2005. *GAWB: Investigation of Pricing Practices, Final Decision*. March. p.73.

most recent augmentation, they will end up bearing the costs of providing services to existing (and past) users.

GAWB accepts that the current situation is an unintended consequence that was not foreseen when the framework was originally implemented. In particular, that insufficient revenue would be collected from existing users to cover the costs of servicing them, which could result in a disproportionate burden on future users. It was also implemented prior to the commitment made by Australian Governments to the NWI pricing principles.

GAWB's proposal in response to Part B, section 1.3 of the Referral Notice is provided below.

7.2 Preventing the further accumulation of under-recovered revenue

Part B, Section 1.3(a) of the Referral Notice requires the determination of measures to prevent the further accumulation of under-recovered revenue. The key factor contributing to the growth of the under-recovery – be that positive or negative – is the misalignment between the regulatory period and the price smoothing period.

In considering this requirement, the recovery of the current level of accumulated under-recovered revenues has been excluded from the building block calculation of the ARR for this 2021-25 regulatory period and is met via a separate mechanism – as discussed in Part B of the Regulatory Submission.

7.2.1 Alignment of the price smoothing period with the regulatory period

The only way to prevent further accumulation of under-recovered revenue and hence meet the requirements of Part B, Section 1.3(a) of the Referral Notice is for GAWB to be allowed to fully recover its approved ARR for each year of the regulatory period. Instead of prices being smoothed over a 20 year period, the price smoothing period should be aligned with the length of the regulatory period (currently five years). This means that an adjustment at the start of each regulatory period, for the effects of price smoothing, would no longer be required.

GAWB does not believe this proposal should be controversial, as it is seeking to apply the same treatment that applies to other regulated water businesses in Australia, and to GAWB's knowledge, all regulated businesses in other jurisdictions. Key examples from the water sector are provided below.

Regulatory precedent also shows that price paths have been used as transitional mechanisms only. Whilst price paths are a legitimate mechanism to mitigate pricing impacts, they must be transitional in nature, not perpetual due to the potential for inefficiencies and diluted or mis-aligned pricing signals.

Table 7.3: Other regulatory approaches

Business	Regulator	Is there a longer price path or planning period than the regulatory period?
Aqwest Water, Busselton Water, Water Corporation (Bulk Water, Distribution and Retail)	ERA	No. Subject to an efficiency review by the Economic Regulation Authority based on a forecast horizon of five years.
Goulburn-Murray Water (Bulk Water, Distribution and Retail), Melbourne Water (Bulk Water)	ESC	No. Prices are set to fully recover efficient costs over a four-year regulatory period. There is no proposal to change this under the new Water Pricing Framework and Approach - Performance, Risk, Engagement, Management and Outcomes (PREMO).
Hunter Water (Distribution and Retail), Sydney Water (Distribution and Retail), WaterNSW (Bulk Water)	IPART	No. Prices are set to fully recover efficient costs over a four-year regulatory period.
Icon Water (Bulk Water, Distribution and Retail)	ICRC	No. Prices are set to fully recover efficient costs over a five-year regulatory period.
Power and Water Corporation (Bulk Water, Distribution and Retail)	Utilities Commission	Subject to an annual Pricing Order determined by the Regulatory Minister.
SA Water (Bulk Water, Distribution and Retail)	ESCOSA	No. Prices are set to fully recover efficient costs over a four-year regulatory period.
TasWater (Bulk Water, Distribution and Retail)	OTTER	No. Some customers are still transitioning to the target tariffs, which must be completed by 2020 (this is in the current regulatory period). TasWater is responsible for setting prices to manage the transition. There is no longer a term price path in place. The regulatory period is three years.

Source: Economic Regulation Authority. 2017. *The Efficient Costs and Tariffs of the Water Corporation, Aqwest and Busselton Water*. Final Report. November; Essential Services Commission. 2016. *Goulburn-Murray Water Price Review 2016, Final Decision*. June; Essential Services Commission. 2016. *Melbourne Water Price Review 2016, Final Decision*. June; Essential Services Commission. 2016. *2018 Water Price Review, Guidance Paper*. November; Independent Pricing and Regulatory Tribunal. 2016. *Review of Prices for Sydney Water Corporation, From 1 July 2016 to 30 June 2020, Water- Final Report*. June; Independent Pricing and Regulatory Tribunal. 2016. *Review of Prices for Hunter Water Corporation, From 1 July 2016 to 30 June 2020, Water- Final Report*. June; Independent Competition and Regulatory Commission. 2018. *Final Report, Regulated Water and Sewerage Services Prices 2018-23*. May; Essential Services Commission of South Australia. 2016. *SA Water Regulatory Determination 2016, Final Determination*. June; Office of the Tasmanian Economic Regulator. 2018. *2018 Water and Sewerage Price Determination Investigation Final Report*. May.

There is precedent for the application of transitional price paths in Queensland, with each of the following having a finite end date:

- Seqwater[63]: In 2008 a transitional 20 year bulk water price path was established to recover the costs of investments made in response to the Millennium Drought (referred to as the 'Price Path Debt'). An end date of the 2027-28 financial year has been explicitly specified for the repayment of the debt. This date is not adjusted at each regulatory review.
- South East Queensland (SEQ) Distributor-retailers[64]: In reviewing the long-term regulatory framework to apply to the SEQ water retailers, the QCA noted that under its price monitoring approach for the 2013-15 period most of the retailers were under-recovering relative to their efficient costs. This was partly due to legacy pricing principles. The QCA concluded that it was appropriate to address these under and over recoveries via a smoothing to minimise the impact on price, with under-recoveries recovered on an NPV neutral basis for a period of up to 10 years. If full recovery has not occurred at the end of this period, the retailer would be required to apply to the QCA to allow the outstanding amount to be carried forward to later years. It is not evident from the report that there was any intention to continue to apply this price path.

The specification of a finite, not perpetual date for repayment is also necessary to satisfy the QCA Pricing Principles and NWI Pricing Principles for Urban Water.

This is consistent with efficient pricing principles

Allowing GAWB to fully recover its efficient costs maintains consistency with the NWI Pricing Principles as well as the QCA's water pricing principles. It also addresses one of the key inequities that arises under the current framework, which is that future users will be required to contribute towards the costs already incurred in servicing existing users.

Under the current arrangements if these under-recoveries were allowed to continue to accumulate the prices faced by future users could be so high that it could impact their investment decisions and deter entry. This is also contrary to GAWB's role in facilitating regional economic development, which is one of the relevant matters the QCA considers under the QCA Act.

The QCA's requirement that GAWB continues to bear demand risk has been clearly based on the assumption that demand should continue to grow, as this spreads the recovery of common costs over a larger base, which should eventually lead to lower prices. There are two main issues with such an assumption. The first is the risk that the level of demand growth assumed by the QCA does not occur. The second is that as shown previously, even if this growth does occur, it would be a long time before lower prices would be seen given the time that it would take to recoup the accumulated under-recovery (i.e. a period that extends beyond the assumed asset life of the most recent augmentation). Limiting GAWB's price smoothing to the length of the regulatory period will have no impact on longer term planning horizons and

[63] Queensland Competition Authority. 2018. *Seqwater Bulk Water Price Review 2018-21: Final Report*. March.
[64] Queensland Competition Authority. 2014. *SEQ Retail Water Long-Term Regulatory Framework – Annual Performance Monitoring, Part B*.

indeed will reduce the extent to which price signals are distorted by the current smoothing of prices over 20 years.

Timing

The transition to an aligned regulatory and price smoothing period should be immediate, i.e. it applies to the calculation of prices that will apply from 1 July 2020. Any delay in this transition will result in the potential for the under-recovery to continue to grow until there is alignment between the regulatory and price smoothing period. Such an outcome is not consistent with Part B, Section 1.3(a) of the Referral Notice. Furthermore, it prolongs the period of time until GAWB's pricing practices are consistent with the QCA's Pricing Principles and NWI Pricing Principles.

GAWB's circumstances do not warrant a different approach

In its 2010 final report the QCA has previously acknowledged that other regulators do not necessarily adopt planning periods that exceed the length of the regulatory period but maintained that it remained appropriate for GAWB because of its "circumstances of lumpy demand growth and significant surplus capacity".[65] However, as has been highlighted in this submission, this incorrectly assumes that the under-recovery is largely attributable to 'excess capacity'. This is not the case. Most of the accumulated balance is due to the under-recovery of the costs of delivering services to existing users. This has arisen as an unintended consequence of the adjustments for price smoothing.

Much has been made about GAWB's 'unique' situation, in particular, the existence of excess capacity. However, the same pricing principles that apply to all other regulated water businesses should still apply to GAWB. In particular, this does not warrant an approach that does not enable GAWB to recover its efficient costs.

In any case, the requirements of the Referral Notice are to prevent any further accumulation of under-recovered revenue. This cannot be achieved if the QCA continues to smooth prices over a period that is longer than GAWB's regulatory period.

7.2.2 Conclusion

To address the requirement of Part B, Section 1.3(a) of the Referral Notice and prevent further accumulation of revenue under-recoveries, GAWB submits the following changes will need to be made to its regulatory framework from 1 July 2020:

- The concept of a 'planning' framework is no longer relevant. Prices are set with the objective of fully recovering GAWB's efficient costs, as recommended by the QCA, over the term of the regulatory period.
- Prices will be smoothed over the 5 year regulatory period but not beyond this.

[65] Queensland Competition Authority. 2010.. *Investigation of Pricing Practices of Gladstone Area Water Board: Final Report.* June p.19.

8. Prior Period Adjustments

At each price reset, adjustments must be made to take account of differences between forecasts used to set revenues for the current regulatory period and actual performance.

8.1 Introduction

At each price reset, adjustments must be made for:

- the accumulation of under-recovered revenue that occurs as a consequence of the misalignment between the regulatory period (5 years) and the price smoothing approach of 20 years (i.e. the price smoothing period). As set out in chapter 7; this amount will not be included in the prior period adjustments. This will be recovered via a separate mechanism (refer to Part B of GAWB's Regulatory Submission).
- additional revenue as a result of the levying of over-run charges;
- additional revenue received via the levying of short-term contract length premiums;
- revenue cap adjustments; and
- accelerated depreciation associated with asset disposals.

In accordance with the Referral Notice, GAWB has sought to apply the revenue carryover calculation in accordance with the QCA's previously recommended methodology, as explained below.

All of the above adjustment areas, excluding accumulated under-recovery revenues, are reliant on actual data. At the time of drafting, GAWB is able to confirm the adjustments required for the first four years of the current regulatory period (i.e. based on actuals for the 2014-15 to 2018-19 period). For the remaining period (i.e. 2019-20), forecasts will be applied. Adjustments will be made to the values summarised in Table 8.1 once actuals become available. These adjustments will be contained in GAWB's response to the QCA draft decision.

To minimise the need for further true ups as forecasts are replaced by actuals, GAWB proposes to update its proposed prices for the 2021-25 regulatory period based on actuals as at the end of May 2020. This will result in the roll-forward, for the 2025-30 regulatory period, being based on actuals for most of the period, except the month of June 2020. This approach provides better certainty for GAWB and its customers as variability in future revenue is minimised.

Table 8.1: Prior period adjustments ($M)

Adjustment Areas	$M
Over-run charges	0
Short-term contract length premiums	(37,993)
Revenue cap adjustments	0
Asset disposals and accelerated depreciation	336,455
	298,462

8.1.1 Over-run charges

Following the QCA's 2005 investigation of pricing practices, the Minister accepted GAWB's proposal that over-run charges may be applied to customers where actual demand exceeds the contracted/reserved volume.[66] The over-run charges are applicable to all components of GAWB's water tariffs – storage, delivery and administration.

The objective of these charges is to increase customer accountability for demand and to incentivise more accurate estimation of consumption (which is important given the 'lumpy' nature of capital investments required if estimated consumption exceeds existing capacity). The QCA also noted GAWB could recover and retain any additional costs associated with the delivery of this additional consumption.

Given this charge is a disincentive or surcharge, rather than a cost-reflective charge, it may result in GAWB recovering revenue in excess of the efficient costs associated with providing the additional water. The materiality of these additional costs to serve the additional demand are dependent on the size, location and persistence of the additional demand.

Consistent with the QCA's approach, any additional revenue received from the levying of over-run charges over a regulatory period will be returned to customers, net of any (efficient) increase in costs that are caused by the additional demand.[67] This additional revenue should also be excluded from the revenue cap adjustment (see 1.5).

For the 2015-16 to 2019-20 period, no over-run charges for storage and administration services were levied. As part of the transitional arrangements for the introduction of MDQ based delivery charges, delivery over-run charges were waived for the current regulatory period.

There is no amount, relevant to the over-run charges anticipated for the 2016-20 period, to offset against the ARR for the 2021-25 period.

8.1.2 Short- term contract length premiums

Prices are currently differentiated on the basis of contract length, to the extent there are differences in identifiable risks and costs. In the QCA's 2010 investigation of pricing practices, the QCA accepted that while it has no role in approving contract terms and conditions, it acknowledged short term contracts were riskier than long term contracts. In recognition of these risks, the following premiums were introduced[68]:

- 25% for contracts of 2 years or less
- 20% for contracts of 2 to 5 years
- 10% for contracts of 5 to 10 years

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[66] Queensland Competition Authority. 2010. *Gladstone Area Water Board: Investigation of Pricing Practices - Final Report*. June. p.33.

[67] Queensland Competition Authority. 2015. *Gladstone Area Water Board: Price Monitoring 2015-20 – Draft Report*. February. p.33.

[68] Queensland Competition Authority. 2010. *Gladstone Area Water Board: Investigation of Pricing Practices - Final Report.* June.p.53.

- 5% for contracts of 10 to 15 years
- 3% for contracts of 15 to 20 years.

Further clarification has been sought on the treatment of this additional revenue, including whether the sum of the short-duration surcharges should be included as an input to the building block approach for the next regulatory period. In 2015, the QCA advised that:[69]

> Revenue from surcharges (net of GAWB's costs) should be refunded to customers in the next regulatory period. Refunded surcharges should be offset against the administration charge.

It also determined the additional revenue from surcharges "should be used to offset charges for contracts of 20 years or more".[70]

This position, where additional revenues from surcharges are returned to customers, is inconsistent with the initial premise that short term contracts are riskier than long term contracts. As a result, this risk effectively remains uncompensated. GAWB has accepted this approach in the past and proposes to continue to apply this for the 2021-25 regulatory period, pending QCA commentary to the contrary. However, GAWB does not believe this is the best approach.

This mechanism operates independent of adjustments associated with the form of regulation (i.e. hybrid revenue cap). As noted above, the premiums are deducted from the administration component of the initial ARR in the relevant pricing zone[71] for the start of the next regulatory period. Consistent with the treatment of over-run charges, GAWB considers that revenue from contract length premiums should also be excluded from the revenue cap (refer to 8.1.1).

For the 2015-16 to 2019-20 years, it is anticipated that GAWB has/will recover revenue of $37,928 in the form of contract premium charges. GAWB confirms this amount:

- has been excluded from the revenue cap adjustment for this period; and
- will be rolled forward at WACC, net of any additional tax payable expense associated with the revenue. The rolled forward value is offset against the administration component of GAWB's ARR for the 2021-25 period.

8.1.3 Revenue cap adjustments

For the 2016-20 regulatory period, the QCA determined the most appropriate form of regulation for GAWB was a hybrid revenue cap. Under this arrangement, GAWB bears the revenue risk within a ± 10% dead-band on all regulated activities except water delivery (i.e. network) services.

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69 Queensland Competition Authority. 2015. *Gladstone Area Water Board: Price Monitoring 2015-20 – Final Report.* May. p.71.

70 Queensland Competition Authority. 2015. *Gladstone Area Water Board: Price Monitoring 2015-20 – Final Report.* May. p.70.

71 This is the Corporate Pricing Zone as this is the relevant zone for the calculation of the Administration Charge.

Due to the introduction of MDQ based delivery pricing, the QCA recognised an alternative transitional arrangement should apply to revenue from water delivery services. A ± 5% dead-band was also introduced for these services.

In determining the revenue cap, the QCA determined it:[72]

- covers all revenue including storage, administration, delivery, over–run charges and contract length premium revenue; and
- fixes prices in real terms (i.e. except for CPI increases) for the length of the regulatory period.

The treatment of over–run charges and the contract length premium is discussed in detail below.

Revenue from over–run charges

In the context of the revenue cap adjustment, the QCA noted in relation to over-run charges:[73]

> … these should also be included as a deduction in the inter–period carry forward—except where the customer over–run has caused a material increase in GAWB's costs. In this case, the revenue cap may be increased by the additional cost.

GAWB has therefore assumed the QCA's previous reference to the inclusion of over-run charges in the revenue cap is only to the extent that the over-run has resulted in an increase in costs. Otherwise, over-run charges should be excluded from the revenue cap as this revenue has already been returned to customers. In effect, this means that any revenue received from these charges is excluded from the revenue cap adjustment at the end of the period.

In its response to the QCA's 2015 draft report, GAWB noted the revenue cap adjustments are only triggered when the ± 10/5% dead-band is exceeded. However, regardless of whether or not this occurs, it must return any revenue from over-run charges collected net of any additional costs. The QCA did not comment on this in the final report.

For clarity, GAWB considers that in order for this mechanism to work correctly:

- any amounts received from over-run charges should be excluded from the revenue cap calculations, unless the additional volumes have led to a material increase in GAWB's costs. In this case, GAWB can apply to the QCA to have its ARR for the purpose of the revenue cap assessment increased by the amount of those additional costs. The associated over-run charge amounts received by GAWB, to cover these additional costs, will be included in the revenue cap assessment; and
- GAWB must refund the full amount of any revenue received from customers from over-run charges, net of the amount of any additional costs (as outlined in 8.1.1).

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[72] Queensland Competition Authority. 2015. *Gladstone Area Water Board: Price Monitoring 2015-20 – Final Report.* May. p.60.

[73] Queensland Competition Authority. 2015. *Gladstone Area Water Board: Price Monitoring 2015-20 – Final Report.* May. p.62.

This should be a separate adjustment to the revenue cap mechanism, as a revenue cap adjustment is only made where the ± 10/5% dead-band is exceeded.

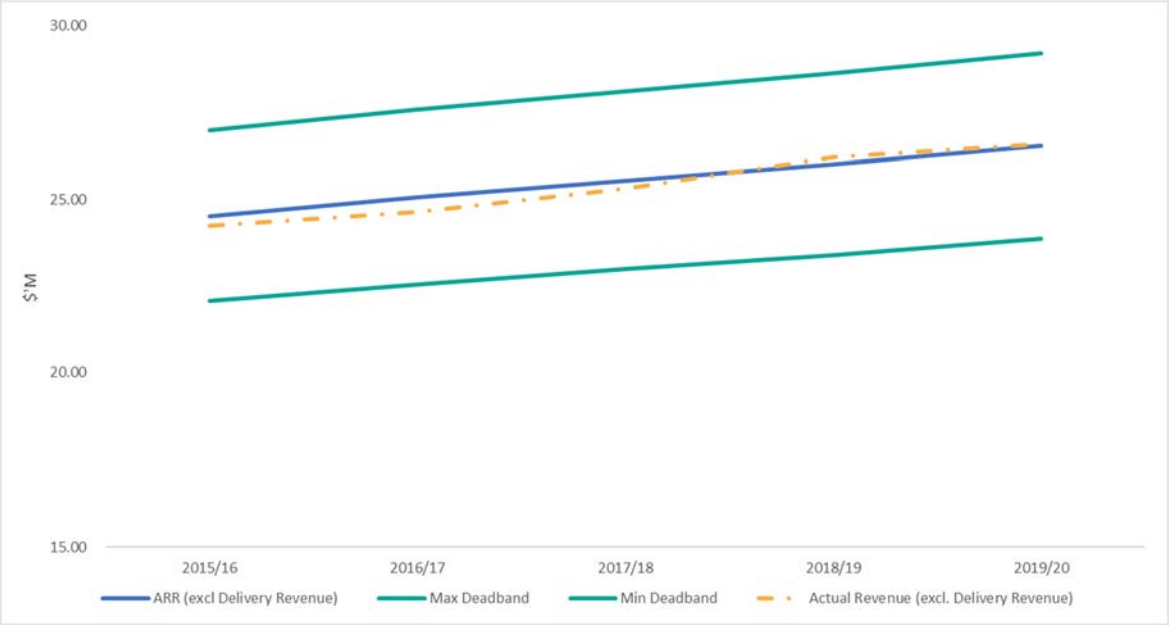
GAWB also notes that as cited above, the QCA has previously referred to allowing GAWB to increase the revenue cap when additional costs are incurred. However, it was also suggested this would occur when such increases are "material", but the threshold for materiality was not defined. GAWB therefore submits that this should be consistent with the treatment of other cost increases that are beyond GAWB's control and treated simply as a cost pass-through event (see chapter 16).

GAWB has calculated the revenue cap adjustment exclusive of revenue from over-run charges and contract length premiums.

All charges excluding delivery charges

For the 2015-16 to 2019-20 years, GAWB had an under-recovery of revenue in the first three years of the regulatory period and is expected to have an over-recovery of revenue in the final two years (based on forecasts). However, the amount of that recovery has remained within 10% of the ARR for each year. GAWB does not expect there to be an under or over-recovery of revenue in 2019-20 that would place it outside the 10% dead-bands. Although this will be confirmed when final prices are set prior to the start of the 2020-21 year.

Table 8.2: Dead-band analysis 2015-16 to 2019-20 – all other charges

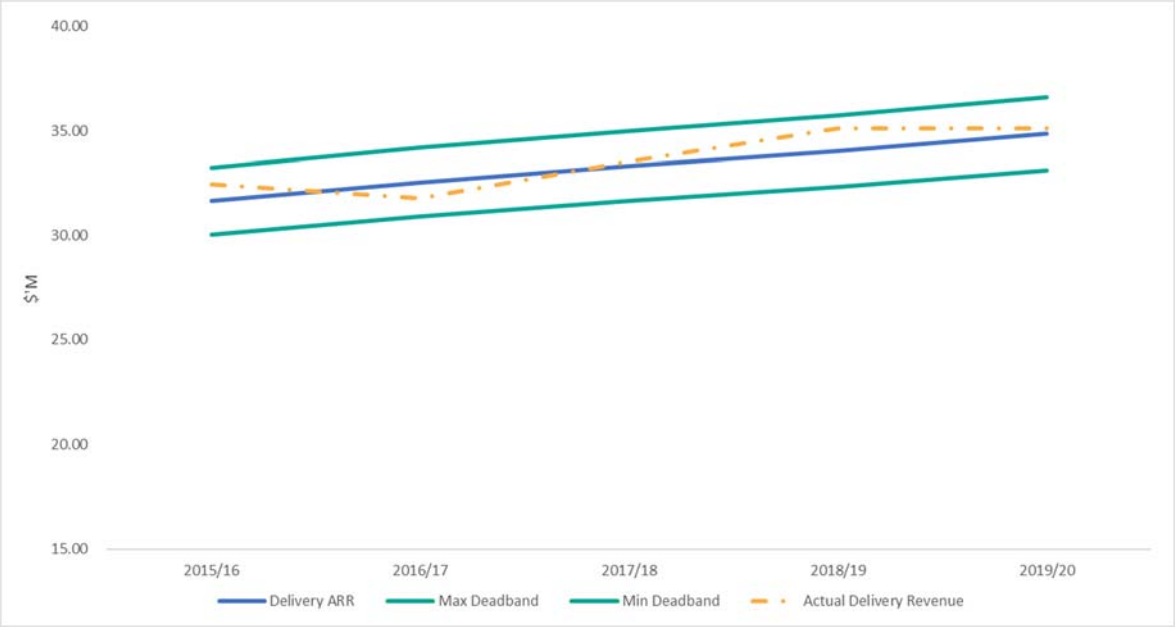


Delivery charges

As noted above, revenue from delivery charges has been subject to a transitional 5% dead-band for the 2016-20 period and therefore needs to be considered separately for the revenue cap adjustment.

For the 2015-16 to 2019-20 years, GAWB is expected to have an over-recovery of revenue from delivery charges in each year except for 2016-17. However, the amount of that recovery has remained within 5% of the ARR for each year. GAWB does not expect there to be an under-or over-recovery of revenue in 2019-20 that would place it outside the 5% dead-bands. Although this will be confirmed when final prices are set prior to the start of the 2020-21 year.

Table 8.3: Dead-band analysis 2015-16 to 2019-20 – delivery charges



As noted in chapter 6, GAWB is proposing to apply a 10 per cent dead-band on the ARR for each year of the regulatory period for the 2020-21 to 2024-25 regulatory period. As a result, there will be no differentiation between delivery and all other charges within the revenue cap for the next regulatory period.

8.1.4 Asset disposals and accelerated depreciation

The QCA has recognised that:[74]

> [a] key issue in applying brownfields optimisation is that, over time, assets that, even if initially prudent and optimal, may become redundant or sub-optimal due to changes in technology, demand expectations or other circumstances. The Authority's general approach is not to optimise these investments without some form of compensation to the service provider unless the regulator had previously been misled in some way, if there are actual bypass options or other issues in relation to customers' capacity to pay, or there is a need for other reasons to promote outcomes in downstream or upstream markets that are consistent with those of properly functioning competitive markets.

GAWB identifies assets that are no longer required for the provision of its services. These assets are subject to early disposal and removed from the RAB.

As GAWB may not have recovered its full return (on and of capital) for these assets, in accordance with the above principles, the QCA has historically permitted the application of accelerated depreciation. This is to ensure GAWB is fully compensated for those costs. It has therefore previously accepted the inclusion of the revenue from accelerated depreciation in

[74] Queensland Competition Authority. 2005. *Gladstone Area Water Board: Investigation of Pricing Practices – Final Report*. March. p.95.

the carryover amount.[75] This value is net of any proceeds GAWB may have received from the sale of those assets.

GAWB considers it important that these adjustments are clear and transparent.

For the 2015-16 to 2018-19 years, $2,385,224[76] in assets have been subject to early disposal. Net of any sale proceeds, the application of accelerated depreciation to those assets would result in additional revenue totalling $336,455. While GAWB is forecasting zero disposals for the 2019-20 year, a final assessment will be made when prices are set just prior to the commencement of the 2020-21 year.

An adjustment for the difference between the actual and forecast value of accelerated depreciation in the last year of the prior regulatory period (2014-15), also needs to be made as disposals for 2014-15 were based on a forecast at the time of finalising prices for 2015-16. A true up has been included in the carryover amount for the purpose of setting the ARR from 1 July 2020. This amount has been included along with the above values (i.e. for the 2015-16 to 2019-20 period).

[75] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20 – Final Report*. May p.62.
[76] This is the amount of asset disposals that are recognised in the roll forward of the RAB.

9. Regulatory Asset Base

The regulatory asset base (RAB) comprises our infrastructure including the dam, water treatment plants, pipelines, other infrastructure, and non-infrastructure items such as vehicles. At the commencement of the new regulatory pricing period (2021-25) the RAB is rolled-forward to take account of the return of capital, inflation, stranded or redundant assets and new assets, established during the 2016-20 pricing period. This section sets out GAWB's treatment of the roll-forward of the RAB.

9.1 Introduction

The QCA's previously recommended methodology involves the:[77]

- roll-forward of the opening value of the RAB as at 1 July 2015 using the actual Brisbane All Groups CPI;
- RAB assets to be depreciated on a straight-line basis using the remaining lives determined in the prior regulatory period;
- removal of redundant assets and assets sold during the regulatory period; and
- addition of efficient capital expenditure and assets purchased or constructed during the regulatory period.

Consistent with the Referral Notice, GAWB proposes to establish the opening RAB for the 2021-25 regulatory period in accordance with the QCA's established methodology. The roll-forward does not include previously excluded CSS expenditure.

The opening RAB as at 1 July 2020 is $647.5M. This value includes a forecast of capitalisation that is likely to occur between 1 July 2019 and 30 June 2020. GAWB proposes to update the RAB for the actual expenditure, disposals and indexation incurred through the course of this price review period, prior to 1 July 2020.

Projects are rolled into the RAB as they are capitalised. GAWB is entitled to a return on investment on the funds employed in constructing a project.[78] GAWB conservatively calculates interest during construction (IDC) only for projects with costs of more than $1 million. IDC has been calculated assuming uniform monthly expenditure over the duration of the project. This approach reflects the methodology applied in prior regulatory periods and accepted by the QCA. [79]

The capitalised expenditure over the 2016-20 period is above the forecast included in bulk water prices for the period – see chapter 9 for detailed discussion. Most of this additional expenditure was incurred during the construction of the Offline Water Storage Facility. The Offline Water Storage Facility is critical back-up storage to cover a period of the Awoonga Dam being offline (of up to approximately two weeks). Given much of the mechanical equipment at the Awoonga Dam is over 25 years old and may require longer offline periods for inspection and maintenance in the future, the Offline Water Storage Facility is integral to

[77] Queensland Competition Authority. 2010. *Gladstone Area Water Board: Investigation of Pricing Practices – Final Report*. June. pp 75-94.
[78] Queensland Competition Authority. 2005. *Gladstone Area Water Board: Investigation of Pricing Practices - Final Report*, March. p 97.
[79] Queensland Competition Authority. 2005. *Gladstone Area Water Board: Investigation of Pricing Practices - Final Report*, March. p 97.

GAWB being able to maintain its assets in accordance with its compliance obligations and to provide the level of certainty of supply expected by our customers during the inspection and maintenance activities. Developing this level of contingency is considered highly prudent given the consequences for GAWB's customers of an outage of water supply and, as noted in the media release announcing the project:[80]

> enhances the security of water supply to the Gladstone Region reinforcing its appeal as a location of major industry development.

In recognition of the QCA's prior positions on the inclusion of preparatory works for the CSS in the RAB, GAWB has not included the $35 million associated with these activities (i.e. previously excluded capital expenditure plus capitalisation at WACC). However, GAWB is still of the view the CSS is a prudent response to ensuring water security.

GAWB has adjusted the indexation of the RAB to reflect actual inflation over the period, which has been below the forecast. Consistent with the QCA methodology, GAWB has applied the Brisbane All Groups CPI. A forecast of 2.0% has been used for the 2019-20 year, based on the Reserve Bank of Australia's (RBA) current forecasts.[81]

Table 9.1 outlines the RAB roll-forward for the 1 July 2014 to 30 June 2020 period.

Table 9.1: RAB roll-forward to 1 July 2020 ($M)

	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Opening RAB at previous review	451.97	470.61	477.26	494.61	518.16	553.15
Actual/forecast capitalised expenditure	23.34	10.34	20.64	29.00	40.29	17.29
Disposals	(0.58)	(0.31)	(0.33)	(1.67)	(0.08)	0
Asset indexation	6.58	8.02	8.94	8.61	7.90	11.23
Depreciation	(10.70)	(11.41)	(11.89)	(12.39)	(13.13)	(14.62)
Closing Balance	470.61	477.26	494.61	518.16	553.15	567.05

[80] Media Release, Member for Gladstone, *$29 million upgrade brings water security and jobs to Gladstone.* 21 December 2016

[81] Reserve Bank of Australia. 2019. *Statement on Monetary Policy: May 2019*. May. p 71. The RBA has forecast CPI inflation of 2% in each of the December 2019 and June 2020 half-years.

10. Operating Expenditure

Part B, clause 1.1(f) of the Referral Notice requires that in assessing GAWB's operating expenditure, the QCA is to form a view on prudency and efficiency in any function by using an appropriate sample size and focussing on areas which would give rise to material price changes rather than matters which are likely to have a minor or inconsequential impact. GAWB's proposed operating expenditure reflects the level and scope of activities required to deliver bulk water services to its customers at the standard and reliability of service they require.

10.1 Overview

As a regional bulk water supplier, serving predominantly industrial customers, our cost base differs from urban water service providers. Our customers expect a highly reliable service due to the nature of their operations. The environment in which our infrastructure is located is challenging due to the proximity to saltwater, prevalence of acid sulphate soils and the potential for cyclones and tropical depressions.

As a regional business, the recruitment and retention of certain skills is challenging particularly in technical and specialised disciplines. These factors have a material impact on the operational and maintenance costs incurred by GAWB, such that care needs to be taken in attempts to analyse efficiency by reference to benchmarking against businesses that do not face this combination of circumstances and factors.

As outlined in chapter 3, the prices for 2016-20 included several differences, when compared to the QCA's final report. These changes were necessary to reduce GAWB's operating risks, meet compliance obligations and to more closely align with the costs likely to be incurred.

Consistent with a s23A price review and clause 1.1(f) of the Referral Notice, the information provided below focusses on areas that give rise to material price changes.

To support transparency and consistency in the regulatory framework, GAWB has applied a materiality threshold consistent with what was used for the 2015 price review. That is, a change in a cost category that would give rise to a 1% annual increase in the ARR. For the purposes of the 2021-25 price review *a material cost* is one where there is a sustained annual increase of approximately $700,000 or more over the pricing period, compared to the 2018-19 based year.

GAWB's operating forecasts, for the 2016-20 period, were categorised into the following four areas:

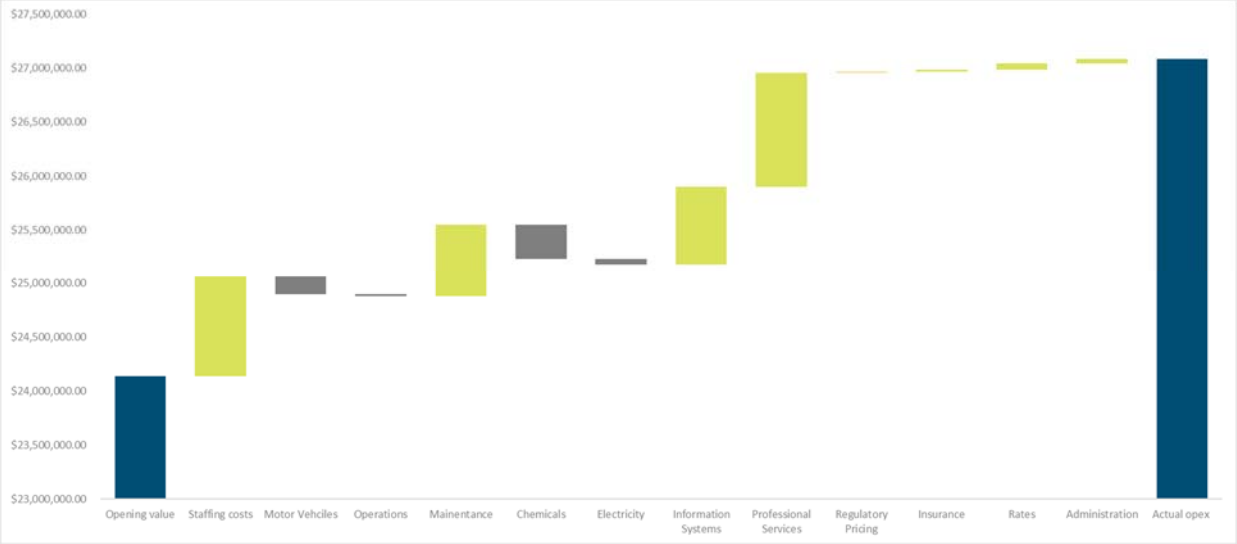
- strategy and asset creation
- asset life cycle management
- operations
- corporate services.

To aid transparency, GAWB has categorised the operating expenditure forecast for the 2021-25 period in conventional expenditure categories (e.g. maintenance, electricity, staffing etc). As GAWB is proposing to set prices to fully recover its efficient costs over the 2021-25 period, it has forecast operating expenditure for these years only.

10.2 Expenditure 2016-20

Compared to the forecast levels of operating expenditure assumed for pricing purposes, GAWB's cost base has increased over the current pricing period. The areas where a material increase has occurred is in the areas of information systems (e.g. IT), professional services, and staffing costs, as shown in Figure 10.1.

Figure 10.1: Operating expenditure: variance to forecast (2018-19)



At the time of finalising prices for the 2016-20 period, GAWB was in the preliminary stages of mapping out its long-term outlook for information systems. That is, how it would implement the Queensland Government's new computing policy framework and what enabling infrastructure it would need to allow GAWB to adopt new technologies (e.g. automation). GAWB was also in the early stages of implementing a new ERP system. While GAWB could have sought to include some of these costs in the operating expenditure forecast, it chose not to do so due to the levels of uncertainty present at the time, particularly regarding timeframes and ultimate costs.

GAWB identified several opportunities for efficiencies to be made, based on the business improvement projects identified for implementation in the early years of the 2016-20 pricing period. These efficiencies were taken into account when setting prices for the pricing period, with efficiencies to be captured from 2017-18. The identified business improvement projects have been implemented, but the anticipated efficiencies are yet to be realised, i.e. to the levels assumed in prices. This is due to a number of factors, most of which were unanticipated at the time of finalising the operating expenditure forecast.

The areas where a material increase has occurred are discussed in more detail below.

Professional services

As a regional business, serving a concentrated yet sophisticated industrial customer base, the demands on internal resources can vary significantly. It is therefore not efficient for GAWB to retain permanent internal capability to meet peak demands in many of these areas. Further, with the head office based in Gladstone, GAWB finds it difficult to attract and retain some of

the specialist skills that are required. GAWB is not the only regional employer to find this, with a report by The Regional Australia Institute observing:[82]

> Evidence from regions shows that it can be hard to fill available jobs due to perceptions of poor infrastructure, services and amenity – so action on improving the stock and capability of these key assets is in fact vital to regions being able to attract and retain the people they need to grow.

Also, as an industry, the impact of an ageing workforce and changing workplace (i.e. adoption of new technologies) means that traditional approaches such as outsourcing or organised training will not address all of these challenges.

GAWB therefore needs to maintain an appropriate balance between its internal resource base and the use of professional services. Apart from being at times necessary, it is often more efficient to use external resources to either provide specialist capability that GAWB does not have and/or supplement its own internal resources to address peaks in the work program. The demand for these resources, as well as the likely cost, can be difficult for GAWB to plan for with any certainty, particularly over a 5 year period.

There have been a number of areas where the need for external resources were either not anticipated, or were unable to be estimated with any certainly, by GAWB at the time of the last price review. The key areas include:

- following the last price review, steps were taken to address concerns raised by the QCA's consultant around GAWB's procurement practices and the project management framework. During this pricing period, external assistance has been sought to review GAWB's processes against applicable industry and government policy/guidelines to ensure GAWB's approach is compliant and/or reflects best practice.
- in response to recent high-profile reviews into corporate governance practices, GAWB has started to review its governance practices to ensure the quality and quantity of information collated and reported supports the maintenance of strong governance processes and cultures across the organisation.
- over the last decade there has been an increased level of emphasis placed on safe environmental practices and sustainable operations. A broader range of obligations now need to be considered when undertaking a project or maintaining an asset. There are also increased reporting obligations. To ensure GAWB's operational practices align with these new or expanded obligations, external support has been sought. GAWB has also reviewed its environmental policies and catchment management practices to ensure they align with current obligations and best practice.
- in 2014 the Queensland Government issued the Queensland Government Cloud Computing Strategy, which states the preferred option for all future digital and ICT investments is to use a cloud-based solution. As this represented a significant change to GAWB's current practices, external assistance was sought, and enhanced

[82] Houghton, K. 2019. *The Future of Regional Jobs, The Regional Australia Institute*. Canberra. April. p.1.

governance frameworks were introduced to oversee the development and implementation of this transition.

GAWB considers each of those areas to be prudent as explained further below.

Information systems

In response to the Independent Commission of Audit's recommendations, the Queensland Government accepted the following recommendations and developed the *Queensland Government Cloud Computing Strategy*:[83]

- that government adopt an ICT-as-a-service strategy and source ICT services, especially commoditised services, from private providers in a contestable market where this is feasible and represents value for money.
- government utilise as appropriate cloud-based computing and other emerging technologies as enablers to complement its ICT-as-a-service strategy.

As a statutory authority, GAWB is required to align with this strategy, therefore future ICT related activities need to take account of the requirement to:

- take a 'cloud-first' approach, to the sourcing of ICT-as-a-service and to procure cloud-based ICT services as the default option for their future ICT requirements, unless a sound business case exists for a contrary solution; and
- analyse its application portfolio and develop roadmaps for the adoption of ICT-as-a-service, including cloud computing.

GAWB's new ICT Strategic Plan 2019-24, is consistent with these recommendations. The ICT Strategic Plan maps out GAWB's transition to an ICT-as-a-service strategy, including the movement to a cloud-based environment. To develop the ICT Strategic Plan a detailed review and implementation process has been adopted. As a result, GAWB has incurred costs materially above forecast levels, including the necessary hardware upgrades.

As noted above, at the time of the last price review, GAWB was not at a stage where the scope and timing of work required to develop a ICT Strategic Plan could have been predicted with any certainty and it has therefore absorbed these costs in the current pricing period.

However, the ICT Strategic Plan now provides a clear and focused direction for GAWB and underpins the development of its information systems expenditure forecast for the 2021-25 period, which is explained further below.

Another contributing factor to the unexpected increase in GAWB's information systems expenditure during this period was the implementation of GAWB's new ERP. Upon migrating to the new system in 2016, it became evident that further changes were required to leverage additional value from the new system. This included the purchase of additional modules, for example, an enterprise asset management module to support GAWB's strategic asset management capability and ISO-accredited asset management approach (discussed below).

[83] Department of Science, Information Technology and Innovation (2014). *Queensland Government Cloud Computing Strategy*, p.iv.

As noted above this has resulted in a delay in the recovery of the anticipated efficiencies associated with this business process improvement investment.

Staffing costs

GAWB needs to maintain adequate internal resourcing having regard to its size, scope and complexity of operations and the challenges of attracting and retaining staff in a regional location. As discussed previously, this is complemented / supplemented by external resources where necessary.

GAWB's staff numbers have increased over the 2016-20 period. This has largely been in response to the embedding of the LCMPs and the increased complexity of the capital program, which includes the costs associated with the planning, management and delivery of projects, as well as governance practices. GAWB considers these increased staffing costs are prudent given the contribution they make to ensuring prudency and efficiency of material capital, operating and maintenance decisions.

As noted in chapter 4, to build a strong brand presence and to improve public awareness a communications position was created. GAWB has also developed improved succession planning in key areas of technical specialisation, which is an important risk mitigation strategy in maintaining and ensuring continuity in its service delivery capability. Given the challenges in terms of hiring and retention that GAWB faces as a regional employer, GAWB considers these increased staffing levels are clearly prudent.

10.3 GAWB's proposed operating expenditure

10.3.1 Overview

Consistent with the requirements of the Referral Notice under GAWB's price monitoring framework, the focus of this submission is on those aspects of GAWB's operating expenditure forecast that propose increases that will have a more material impact on prices in real terms. GAWB's proposed escalation factors are addressed separately below.

Forecast expenditure for professional services, staffing costs and information systems over the 2021-25 period, when compared to 2016-20 forecast levels, represent a material increase. These increases are merely an extension of those observed during the current pricing period.

Over the 2021-25 review period, maintenance costs will increase materially, compared to current forecast levels. This increase is attributable to the timing of long-term major condition assessments and the age profile of the delivery network.

This cost base is necessary, in order to respond to GAWB's changing environment (e.g. increased use of technology, compliance and reporting obligations) and can be expected to deliver benefits to its customers in the longer term.

In that regard, GAWB notes that prudency and efficiency require a 'total cost' approach, such that there is a strong case for the increased investment now to produce future benefits.

Each of the cost categories in which material changes are anticipated, are discussed in detail below.

10.3.2 Professional services

As noted above, it is not necessarily efficient for GAWB to retain permanent internal capability in highly technical or specialist areas. GAWB therefore maintains an appropriate balance between its internal resource base and the use of professional services. The use of professional services is largely impacted by contemporary issues or contemporary changes in legislation and policy. It is therefore difficult to plan for, with any certainty particularly over a 5 year period, the actual skills required, scope of the engagement and/or the timing of the engagements.

GAWB's utilisation of professional services materially increased during the pricing period, compared to forecast levels. This step change in costs is expected to be maintained in the early part of the 2021-25 pricing period, and then is expected to decline.

Whilst variability still exists, there is an increased level of predictability underlining the 2021-25 forecast. This is due to the improvements made to corporate governance and environmental processes over recent years.

The key areas in which these services are required are:

- corporate governance
- ICT
- catchment management
- regulatory strategy (noting that the first mid-period review of GAWB's pricing practices will be conducted during the 2021-25 pricing period).

GAWB's professional services budget for the 2021-2025 period is shown below.

Table 10.1: Forecast professional services ($'M 2019)

	2018-19 (Base Year)	2020-21	2021-22	2022-23	2023-24	2024-25
Professional Services	2.07	3.86	2.38	2.20	2.13	2.17

10.3.3 Staffing costs

Staffing costs include wages, superannuation obligations, other support and on-costs and training.

As noted above, staffing numbers increased over the 2016-20 period in response to the embedding of the LCMP process and the increased size of the capital program. The delay in the recovery of efficiencies associated with the identified business process improvement investments also contributed to the increase in staffing costs. This increase represents a material change compared to forecasts for the 2016-20 pricing period.

Staffing costs are forecast to remain constant in real terms, compared to 2018-19 levels, over the 2021-25 pricing period.

Table 10.2: Forecast staffing costs ($'M 2019)

	2018-19 (Base Year)	2020-21	2021-22	2022-23	2023-24	2024-25
Staffing costs	12.34	12.30	12.29	12.35	12.27	12.37

10.3.4 Information systems

GAWB's recently approved ICT Strategic Plan 2019-24, sets the direction for GAWB's transformation to an ICT-as-a-service environment. Some of this transformation, including the migration to cloud-based services, commenced during the current regulatory period.

As a commercialised statutory authority, the ICT Strategic Plan 2019-24 aligns with Queensland Government requirements. The move to a managed services model recognises that the approach of perpetual software licences is not only obsolete, but it is also no longer available as enterprise software. Apart from being compliant with Queensland Government Policy, it also responds to some of the key business challenges that GAWB faces, including increasing business demands on ICT, the recruitment and retention of skilled staff, automation, network connectivity limitations due to remote locations and technological change. As with most businesses, GAWB also needs to ensure adequate protection against cyber security risks, which is particularly important given the essential nature of the service it provides.

The ICT Strategic Plan 2019-24 identifies both recurrent and non-recurrent expenditure associated with the key initiatives that will be undertaken over the next regulatory period. GAWB's projected ICT budget for the 2021-25 period is shown below.

In the medium to long term, the investments made over the 2016-20 pricing period and beyond will deliver benefits to GAWB's customers. This will be in the form of efficiencies as well as increased transparency and operational flexibility for customers (for example, for customers seeking data on real-time data flows).

The ICT Strategic Plan 2019-24 is expected to reduce GAWB's risk profile and improve the resilience of the business and the water supply network. Some of the initiatives will translate into direct cost savings in the medium to long term, such as the use of automation strategies. For example, through automation of the operation of water treatment plants and increased use of smart meters and sensors throughout the network to provide real time analytics.

It is likely to take some time to fully implement these strategies. Furthermore, GAWB is not expecting to achieve any material cost savings/efficiencies in the current regulatory period in response to these investments. However, GAWB has proposed an efficiency target for the current period – see chapter 10.5.

Table 10.3: Forecast ICT ($'M 2019)

	2018-19 (Base Year)	2020-21	2021-22	2022-23	2023-24	2024-25
ICT	1.29	3.14	2.67	2.74	2.84	2.70

10.3.5 Maintenance

In its submission for the 2016-20 pricing period, GAWB flagged an increase in expenditure associated with the introduction and embedding of LCMPs into operational planning and investment processes. The LCMP framework has evolved significantly since 2013 and is now an integral part of GAWB's journey to better understand its assets and respond to, and plan for, maintenance requirements. At the time of that submission, the LCMPs were still at an early stage of development. Since GAWB attained ISO accreditation, this framework has resulted in improved levels of discipline and rigour around maintenance activities and investment decisions. They have also removed some of the discretion in decision-making.

The LCMP annual review process, which is conducted with internal key stakeholders, identifies the actual condition of the asset under review, operational performance and potential costs of replacement values. Through this process and future annual reviews, GAWB will have much better information on the age and condition of its assets, some of which had been inherited from Gladstone City Council. At the time these assets were transferred to GAWB, limited information was provided on the condition of the assets. By extension, it also had limited understanding of the ongoing maintenance and capital requirements of the asset base.

Whilst it was anticipated at the time of the prior review to result in reduced costs, it has now been identified that additional expenditure (capital and operating) is needed based on a much more advanced data set. This data set continues to be updated as part of the annual review process.

The size of GAWB's RAB has also materially increased over this period. Since the commencement of the current regulatory period, GAWB's RAB has increased from $470.61M to $567.05M, or by approximately 20%. Given the size of the asset base it must now maintain, appropriate maintenance expenditure can also be naturally expected to increase.

During this pricing period, a number of long-term condition assessments/inspections need to be conducted. The number and cost of these inspections is material. As shown in the figures below, whilst these types of assessments/inspections occur periodically, a disproportionate number of significant assessments/inspections occur during this pricing period.

Figure 10.2: Number of inspections based on required frequency (longitudinal analysis)

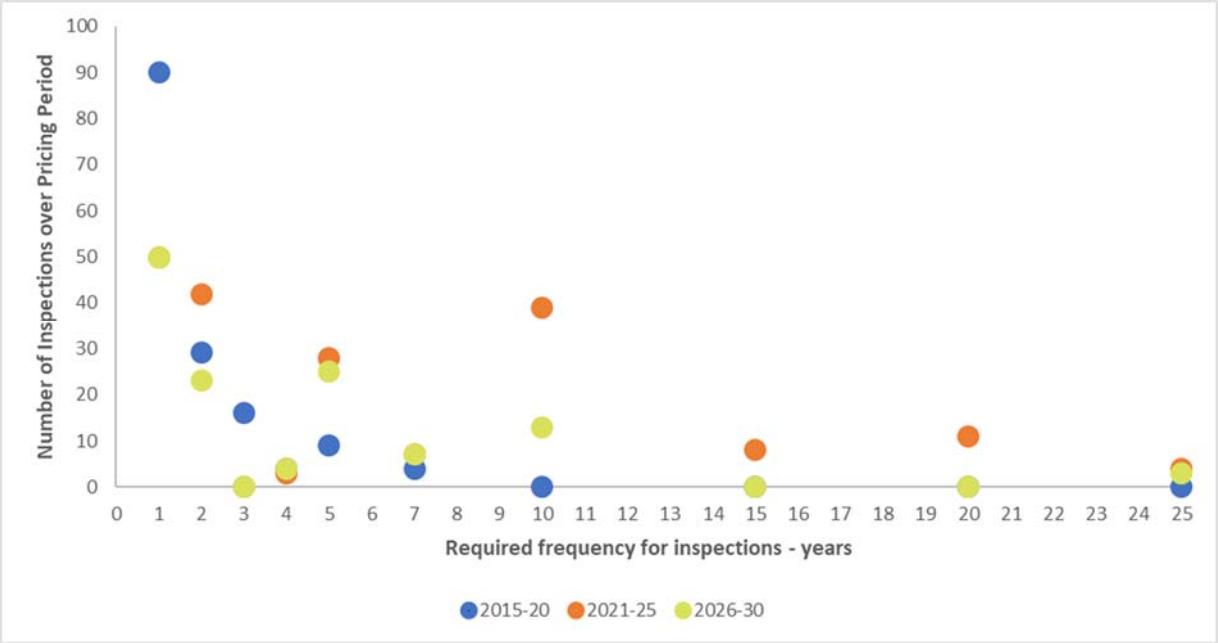
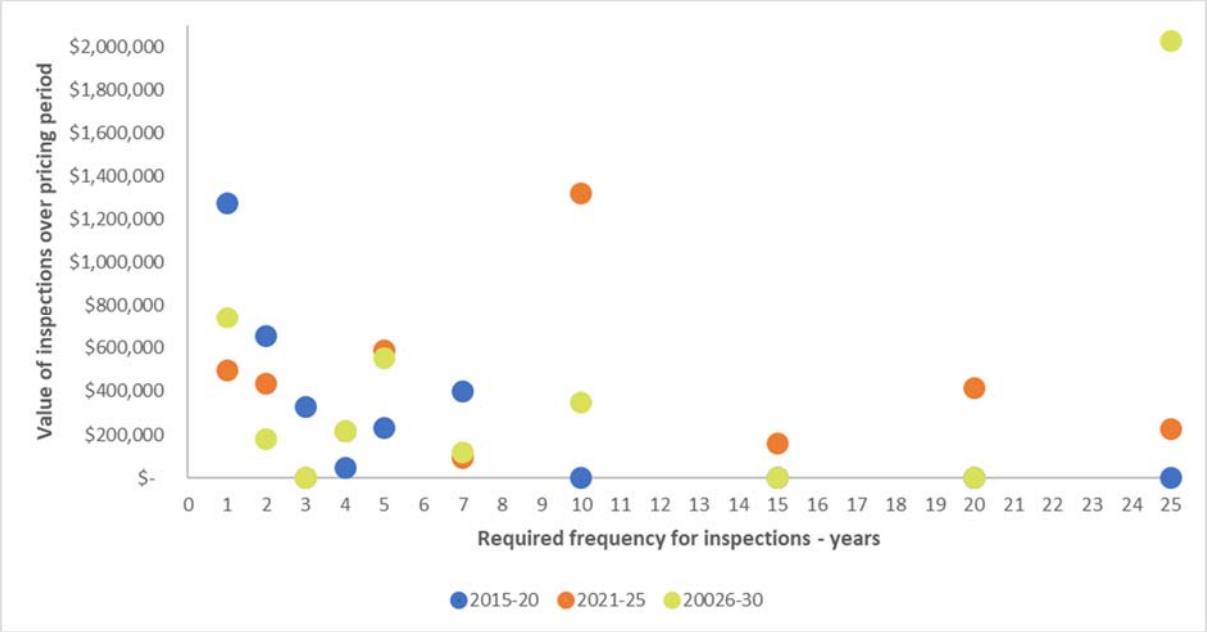


Figure 10.3: Value of inspections based on required frequency (longitudinal analysis)



GAWB's projected maintenance budget for the 2021-2025 period is shown below.

Table 10.4: Forecast maintenance costs ($2019)

	2018-19 (Base Year)	2020-21	2021-22	2022-23	2023-24	2024-25
Maintenance Costs	3.18	3.78	3.95	3.37	3.63	3.47

10.4 Escalation factors

GAWB engaged Deloitte Access Economics (DAE) to forecast its cost escalation factors for the 2021-25 period and its report is presented in Attachment 2. This includes forecasts for the CPI and Wage Price Index (WPI) for Queensland, which draws on DAE's Macroeconomic model of the Australian economy (the DAEM). The DAEM is widely utilised as a forecasting tool for a range of businesses and industries.

A high-level summary of the basis for the forecast, for each key cost category, is provided below.

Table 10.5: Basis for GAWB's proposed nominal cost escalation factors

Cost category	Methodology
CPI	DAEM
Employee costs	QLD WPI + premium
Contract labour costs	QLD WPI
Contractors (service delivery)	QLD WPI
Electricity	Component forecast (CPI-based)
Chemicals	DAEM crude oil price (lagged)
Other materials and services	75% QLD WPI, 25% CPI
Professional services (engineering)	QLD WPI
Capex	70% QLD WPI, 30% Brisbane CPI
Rates (Gladstone Regional Council)	Component forecast
Insurance	Brisbane CPI + observed historical premium

Points to note regarding the above are as follows:

- DAE has added an additional premium to the QLD WPI for GAWB's employee costs. This reflects GAWB's recent experience and the premium it has to pay to attract and retain specialist skills. By the end of the next regulatory period it is predicting that growth in GAWB's employee costs and QLD WPI growth will converge.
- Electricity prices have increased significantly in recent years in Queensland and Australia and have borne little relationship with overall CPI growth. Forecasting electricity prices therefore remains challenging as they are influenced heavily by government policy along with market forces. For the purpose of its forecast DAE has broken retail electricity costs down into the following components: wholesale, distribution, transmission, retail, green schemes and metering.
- DAE has found that the Producer Price Index for basic chemicals and chemicals products has been positively correlated with movements in crude oil prices (with crude oil prices leading by one year). As it produces a crude oil forecast it has used this to drive the proposed cost escalation factors for chemicals, lagged by one year.
- The proposed split between WPI and CPI in setting the cost escalation factors for other materials and services reflects the split between labour and materials costs in

undertaking GAWB's maintenance activities. The proposed split for capital expenditure is based on the Australian Bureau of Statistics (ABS) labour and capital income shares for the construction industry.

- The proposed cost escalation factor for rates is based on the four key cost components based on GRC's 2017-18 Annual Report. These are: materials and services, employee costs, depreciation and amortisation and finance.
- The proposed cost escalation factor for insurance reflects an expectation that future insurance premium increases will continue to exceed CPI growth, including due to climate-related risks. The existence of such a premium is consistent with historical experience.

Based on DAE's analysis the following escalation factors have been used to develop the operating and capital forecasts for the 2021-25 pricing period.

Table 10.6: Proposed nominal cost escalation factors

Cost category	Compound Annual Growth Rates (2020-21 to 2024-25)
CPI	2.30%
Employee costs	3.22%
Contract labour costs	3.04%
Contractors (service delivery)	3.04%
Electricity	2.06%
Chemicals	3.03%
Other materials and services	2.85%
Professional services (engineering)	3.04%
Capex	2.82%
Rates (Gladstone Regional Council)	2.82%
Insurance	5.70%

10.5 Efficiency target

As explained previously, GAWB has undertaken several business transformation activities during the 2016-20 period. These were in response to GAWB's changing environment and to manage risk and compliance obligations. This has resulted in an increase in operating expenditure. While these activities are continuing into the next period, where feasible, GAWB has built any expected savings into its proposed allowance for the 2021-25 period. For example, while GAWB's maintenance expenditure has increased as a result of the following, maintenance expenditure is forecast to reduce in the later years of the 2021-25 period:

- a significantly larger RAB;
- a better understanding of asset condition (particularly for the assets inherited from local government); and
- the commissioning of the Offline Water Storage Facility.

GAWB can only influence efficiency savings for controllable operating expenditure. This accounts for approximately 76% of GAWB's total expenditure. In its report to the QCA as part of its review of Seqwater's proposed operating expenditure for the 2018-21 regulatory period, KPMG noted that regulators have tended to apply efficiency targets of between 1% and 2% per annum on controllable operating expenditure.[84] It recommended a target of 1% per annum for Seqwater, as it considered that Seqwater's proposed target of 0.2% per annum of controllable operating expenditure was too low. However, the QCA adopted a "conservative" approach and accepted Seqwater's proposed target, noting that it was a cumulative target.[85] The QCA also noted the inherent difficulties in directly comparing different efficiency targets.

GAWB is proposing a static target of 1% per annum of its controllable operating expenditure for the 2021-25 period. This is higher than Seqwater's cumulative target, which only reaches 1% after five years. The proposed target is also within the range of targets applied to controllable operating expenditure by other Australian regulators, as reference by KPMG.

[84] KPMG. 2017. *Seqwater Expenditure Review: Prudency and Efficiency Assessment, Report for the Queensland Competition Authority*.

[85] Queensland Competition Authority (2018). Final Report, Seqwater Bulk Water Price Review 2018-21, p.30.

11. Capital Expenditure

Part B, clause 1.1(e) of the Referral Notice requires that in assessing GAWB's capital expenditure, the QCA is to form a view on prudency and efficiency using an appropriate sample size and to focus on areas which would give risk to material price changes rather than matters which are likely to have a minor or inconsequential impact.

11.1 Overview

The prices for 2016-20 included several differences, when compared to the QCA's final report. As noted in chapter 3, adjustments were made to the operating expenditure forecast to meet compliance obligations and to more closely align with the costs likely to be incurred. The capital forecast was also adjusted to include GAWB's preferred technical solution for an offline storage and repump station (i.e. the Offline Water Storage Facility). This change was made to ensure the solution adopted aligned with dam safety obligations.[86]

Consistent with a s23A price review and clause 1.1(e) of the Referral Notice, the information provided below focuses on areas that give rise to material price changes, not minor or inconsequential impacts.

To support transparency and consistency in the regulatory framework, GAWB has applied a materiality threshold consistent with what was used for the 2015 price review. That is, a material project has a proposed value of $1 million or more. GAWB's submission does not provide detailed information on each of these projects. Consistent with the previous review and the Referral Notice, only a sample of projects are to be considered.

11.1.1 Categorisation of expenditure

Consistent with GAWB's Project Management Framework, in order to demonstrate *prudency,* forecast capital expenditure must be justified under one or more of the following justification categories.

Risk

The project is required to address a credible risk in GAWB's current operating environment that would have a high or extreme consequence, as assessed in accordance with GAWB's *Risk Management Policy*. In other words, the existing residual risk rating will be lowered to an acceptable level by the completion of the project.

Replacement

The project is required to replace assets that are assessed as being at the end of their useful life or which are assessed as being non-maintainable (e.g. spare parts for servicing are difficult to obtain or prohibitively expensive).

Regulation

The project is undertaken to achieve compliance with a requirement of law or regulation, for example *Work Health and Safety Act 2011.* Alternatively, the project is being undertaken to align with a Government policy or guideline.

[86] This change was made based on three independent expert consultant reports (Entura, CDM Smith and GHD).

Capacity (including CSS capacity components)

The project is required to meet increased customer demand through the augmentation of:

- the delivery network; or
- sources of water supply.

Business Process Improvement & Investments requested by the Community or Customers

The project is justified by reference to the efficiencies that it will bring to GAWB's operations or an explicit request from the CCF or customers.

11.1.2 Project Management System

The delivery of GAWB's capital works program is governed by the Project Management System (PMS). In response to the matters raised by the QCA's consultant in 2015, GAWB reviewed its PMS to ensure it was in line with industry best practice. This review was conducted in 2016 and several areas were identified for improvement. An updated PMS, based on the Project Management Body of Knowledge (PMBOK) framework, was formally implemented in mid-2017.

Following the release of the updated PMS, the new framework was externally reviewed by KPMG to ensure it aligned with industry best practice. The review also considered whether the framework would support the delivery of timely signals/reporting on project performance and potential underspends/overspends. KPMG found the revised PMS to be well thought out and in line with the key principles of the PMBOK Guide. KPMG also noted that,[87]

> [w]ith a continued focus on portfolio, program and project management, combined with the changes that have been implemented, there should be sufficient early warning to GAWB and its Board, through appropriate monitoring and reporting, of potential underspends / overspends of the approved capital budget.

Prior to commencement, each project is reviewed to determine the associated risk/complexity of the project, considering risk factors and project size. The outcome of this assessment determines the delivery model for the project i.e. how the five stages of a project (concept, scoping, planning, implementation and close out) will be sequenced and the associated gates for approval.

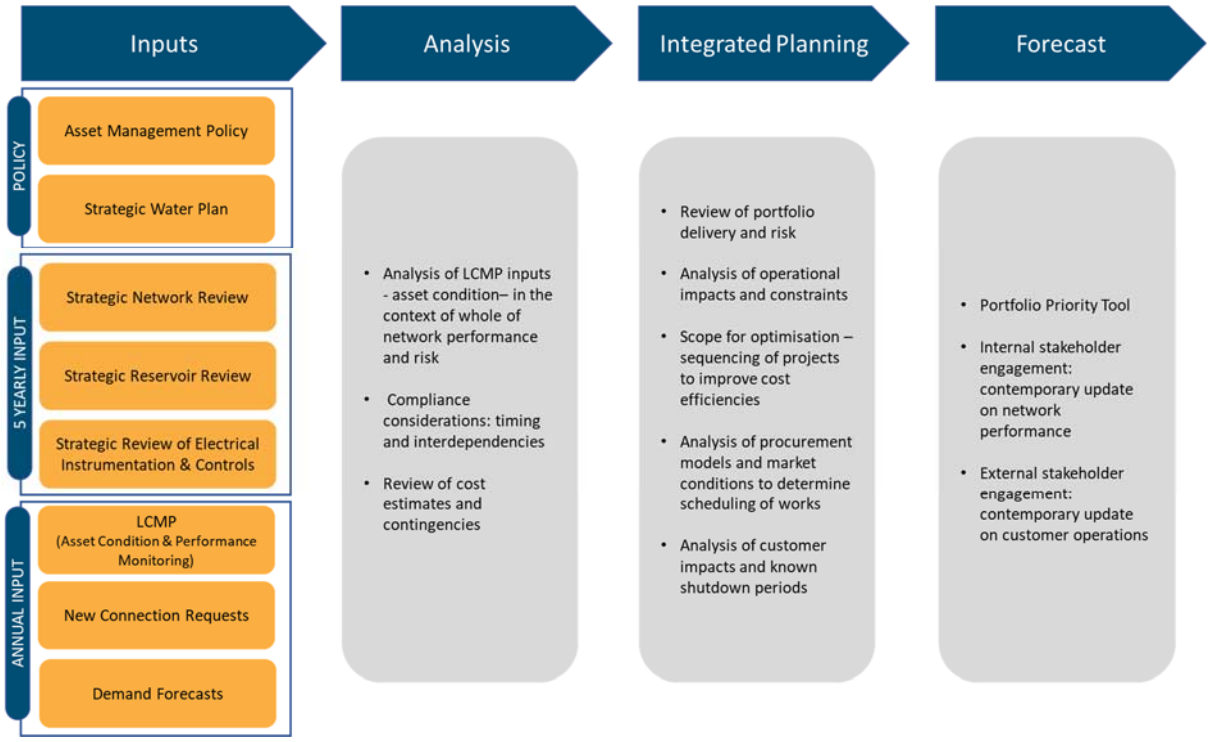
11.1.3 Development of the capital program

Over the last 12 months, GAWB has continued to review the appropriateness of the capital planning process. A key initiative has been the development of a revised capital forecasting framework that effectively utilises the information contained in the LCMPs. As this information is updated annually, to reflect the actual asset condition, it ensures the expenditure forecasts are appropriate.

[87] KPMG. 2017. *Internal Audit of Project Management Framework.* 9 May.p 10.

The 2021-25 capital program has been developed according to the process outlined in Figure 11.1.

Figure 11.1: Capital Planning Process



11.2 Capital expenditure 2016-20

GAWB expects to capitalise over $122 million of project costs for the 2016-20 pricing period. This value includes expenditure forecast to be capitalised during the 2019-20 period and IDC. Consistent with the methodology accepted by the QCA in 2015, IDC has been applied to projects with a value greater than one million dollars. As shown in Table 11.1, an additional $20.95 million is expected to be capitalised over this period, compared to forecast.

Table 11.1: Capitalised expenditure (including IDC) ($, million)

	2015-16	2016-17	2017-18	2018-19	2019-20	Total
Forecast expenditure	36.87	35.25	4.90	11.77	12.74	101.53
Actual expenditure[1]	14.01	20.85	29.00	40.31	18.31	122.48
Variance between forecast capital and capitalisation						**20.95**

(1) Including forecast capitalisation for the 2019-20 period.

Over the 2016-20 period, GAWB has delivered a capital program that includes several significant business process improvement and risk mitigation projects. An example is the construction of the Offline Water Storage Facility, which is an independent supply of water that provides between 10 and 14 days' supply (depending on customer consumption).

The Offline Water Storage Facility was viewed by the QCA in 2015 as prudent, as it would enable GAWB to undertake condition assessments and more complex maintenance (i.e. time

intensive activities) on critical assets at Awoonga Dam. This project also represented good practice as it reduces GAWB's overall risk profile through improved resiliency of the water delivery network.

Additional costs were incurred during construction of the facility. These additional costs related to access issues, such as the requirement to upgrade the Gladstone/Benaraby and Skyring Hill Road intersection and to relocate essential infrastructure services, that weren't evident at the initial planning stages of the project.

11.3 GAWB's proposed capital expenditure

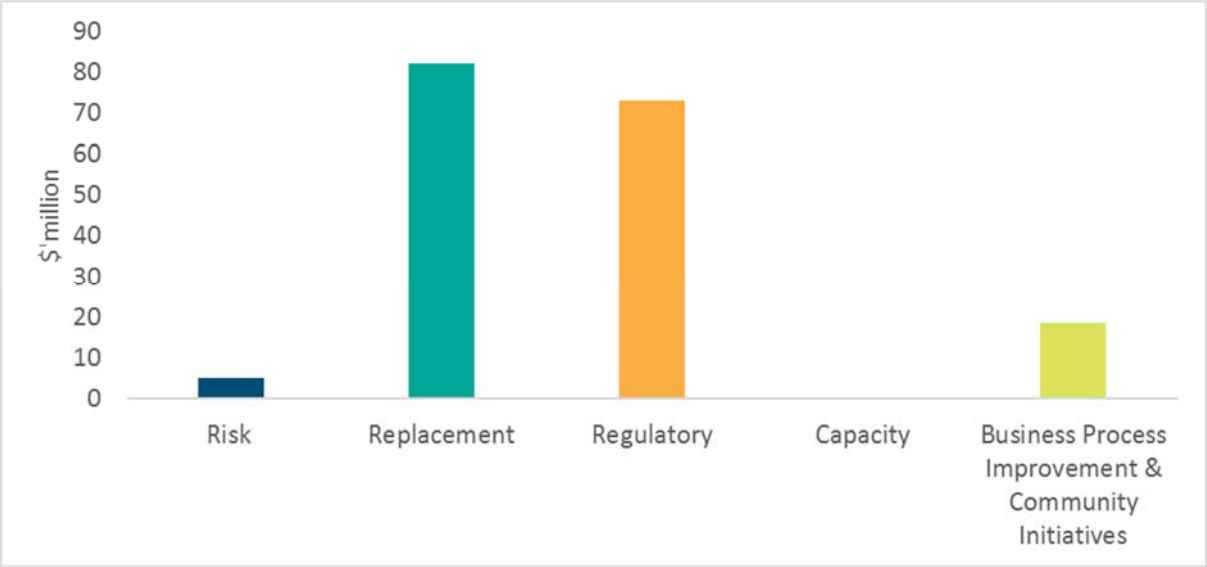
As noted in chapter 1.1 a number of improvements have been made to the governance and planning frameworks applicable to GAWB's capital planning and delivery processes. These changes have guided the development of the capital forecast.

A capital expenditure forecast of $178.75 million is proposed for the 2021-25 pricing period. Most of this expenditure will be to replace ageing assets and to address regulatory or compliance obligations (see Figure 11.2).

Table 11.2: Capital forecast (including IDC) ($, million)

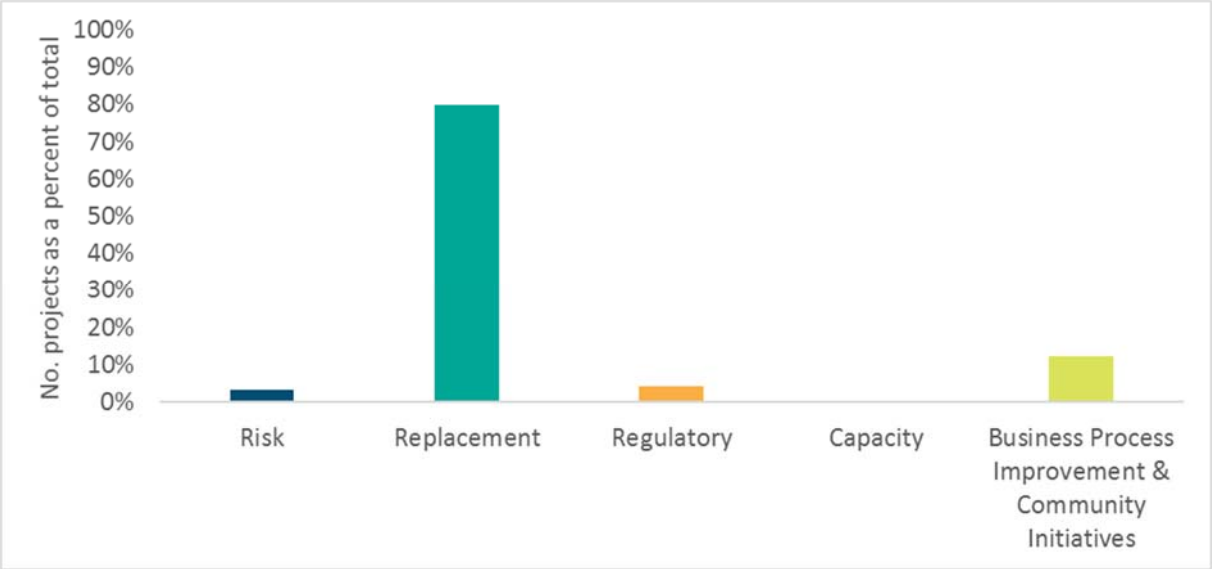
	2020-21	2021-22	2022-23	2023-24	2024-25	Total
Forecast expenditure	35.64	25.78	15.62	9.73	91.97	178.75

Figure 11.2: Forecast capital expenditure – 2021-25



As shown in Figure 11.3, in terms of project numbers, most investment activities will be in the area of asset replacement.

Figure 11.3: Forecast capital expenditure – 2021-25, number of projects



As GAWB is proposing to set prices to fully recover its efficient costs over the 2021-25 period, the capital expenditure forecast relates to these years only.

The capital expenditure program includes a number of significant projects which are discussed below.

Dam safety upgrades (Regulatory)

GAWB operates Awoonga Dam in accordance with the following Guidelines:

- ANCOLD Guidelines on Dam Safety Management (2003);
- ANCOLD Guidelines Design Criteria for Concrete Gravity Dams (2013);
- Water Supply and Reliability Act 2008 (Qld);
- Department of Energy and Water Supply (Qld), Guidelines for Acceptable Flood Capacity for Water Dams, July 2017.

These Guidelines relate to the ability of a water dam to be able to safely discharge an acceptable flood capacity and a minimum required acceptable flood capacity (AFC), that all proposed and existing referable dams in Queensland must be able to safely pass. Under the guidelines, the AFC for the dam is required to meet 65% of the Probable Maximum Flood (PMF) by 1 October 2025 and 100% of the PMF by 1 October 2035.

Computer modelling of the spillway structure was completed in 2015. This work recommended the spillway crest to be anchored for 100% of the PMF by 2035.

A further assessment of Awoonga Dam's AFC was conducted in 2016. This review considered the recent changes to the ANCOLD and to the Guidelines for Acceptable Flood Capacity for Water Dams. It also took into account the impact of Tropical Cyclone Oswald (January 2013) on the Dam. An assessment of the stability of the lower spillway slabs was completed in January 2018. This assessment identified that the lower spillway chute did not comply with the requirements for 65% of the PMF by 2025.

Based on the 2015, 2016 and 2018 assessments, the following works have been identified for completion during the next pricing period, in order to achieve ongoing compliance with the Guidelines:

- **Up Lift Lower Spillway:** anchorage capacity is currently inadequate for existing height and design flood. A thicker 0.6m reinforced concrete lining, anchored with 36mm Ø steel anchors at ±1m x 1m spacing for the lower half of the of the old spillway is to be installed. Required by 2025.
- **Cavitation and damage of lower spillway:** areas on the spillway apron below/ behind the spillway chute blocks have been damaged in recent large floods. This is attributable to cavitation. An aeration system will be installed to address this issue. Required by 2025.
- **Structural Instability of Gravity Concrete Spillway:** to install additional post tensioned anchors (14 x 22 x 15.2mm Ø) to improve stability. Required by 2035.

The works listed above are generally considered to be specialised. It is expected that cost efficiencies will be achieved by executing the above works concurrently.

Over the 2021-25 pricing period, $60.7 million will be spent on dam safety upgrades.

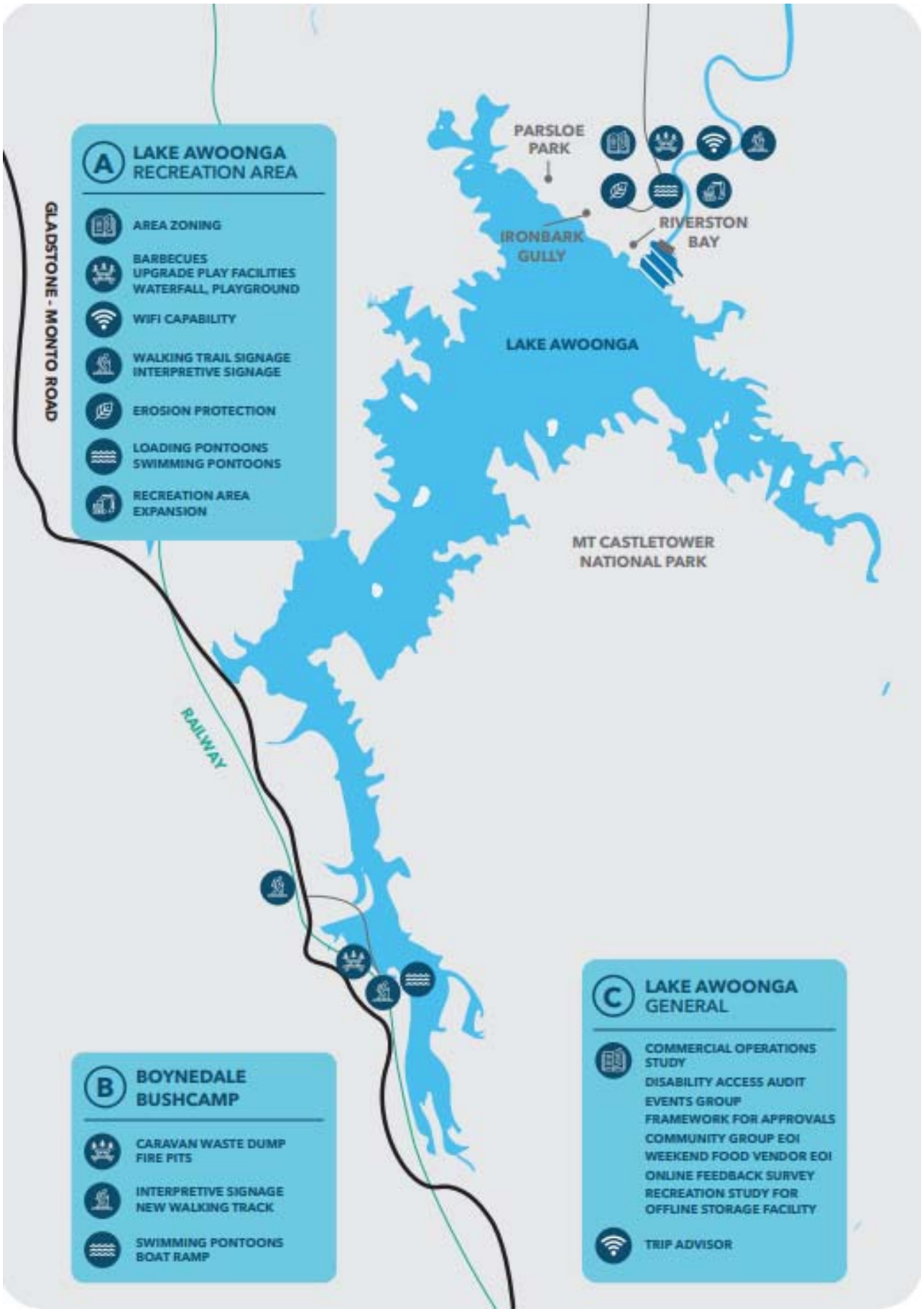
Recreation Strategy (Community)

As noted in chapter 4.2 in 2018 the Gladstone community was invited via various consultative activities to make submissions on ways GAWB could enhance liveability in the region. Several initiatives were identified through this process and collectively represent the Lake Awoonga Recreational Strategy. An overview of the initiatives identified is shown in Figure 11.4.

Over the 2021-25 pricing period, over $7.2 million[88] will be spent on activities set out in the Lake Awoonga Recreational Strategy (i.e. community focused activities).

[88] This is representative of the total expenditure forecast to be spent on this project.

Figure 11.4: Lake Awoonga Recreational Strategy



Hatchery (Regulatory)

GAWB operates a fish hatchery in response to EIS conditions aimed at mitigating the impact of the dam on migratory species of fish native to the Boyne River System.

GAWB's general fisheries permit allows the production and release of barramundi, mangrove jack and sea mullet among other species. These fish require saltwater to breed i.e. in the lower Boyne River. Re-stocking Awoonga Dam with these species assists with maintaining the ecology in Lake Awoonga.

Due to Gladstone Ports Corporation Limited (GPCL) East Shores development the hatchery needs to relocate to an alternative location. A new facility needs to be developed as most of the infrastructure used at the prior location was temporary in nature and improvements needed to be made to align with industry best practice, for example in the area of biosecurity.

The new hatchery will be constructed at Lake Awoonga, adjacent to GAWB's mechanical and electrical facility. The new hatchery will feature:

- an entirely new multi-species hatchery capable of breeding 1.5 million fish per year, consistent with GAWB's general fisheries permit.
- Recirculating Aquaculture System (RAS) improving production processes providing more efficient and modern technology and improved biosecurity controls. These features will enable year-round production cycles.
- research and training facilities for primary, secondary and tertiary students, including laboratory facilities.
- tourist and community education areas including an interpretative reception area, process viewing windows and live fish display.

This is an important investment not only to meet our EIS obligations, support aquaculture and environmental sustainability educational objectives, but it will allow GAWB to support the aquaculture industry in Gladstone and contribute to the local community and economy as part of the Queensland Government's Gladstone aquaculture development area.

Over the 2021-25 pricing period, $7.1 million will be spent on the relocation of the hatchery.

12. Weighted Average Cost of Capital

Section B, clause 1.1 (b) requires the QCA, in conducting its investigation, to provide an appropriate WACC. GAWB has proposed a WACC for the 2021-25 regulatory period that applies a reasonable commercial position, whilst having regard to the price impacts of the proposed WACC estimate.

12.1 Introduction

In establishing the proposed WACC for the 2021-25 period, GAWB has undertaken a detailed assessment of the key WACC inputs. GAWB's starting point was the methodology and assumptions previously applied by the QCA, updating for recent market data. Regard has also been given to recent relevant regulatory developments. The parameter estimates set out below are preliminary only and will be updated prior to the finalisation of prices for the 2021-25 period.

A detailed summary of GAWB's consultant's analysis (Synergies Economic Consulting), which supports this assessment, is provided in Attachment 3.

12.2 Capital structure

GAWB has conducted an updated review of the most appropriate benchmark gearing ratio. This assessment is based on domestic and international entities with comparable risks and having regard to relevant regulatory precedent.

The assessment of capital structure (or gearing) in the WACC calculation is based on the 'optimal' long-term benchmark capital structure given GAWB's risk profile and the industry in which it operates. A number of different factors can affect the capital structure adopted by firms within the same industry. Differences in the observed capital structures of firms operating in the same industry may be related to different financing strategies, investment needs, owner preferences and tax treatments.

The capital structure assumption is based on establishing what the maximum efficient long-term gearing level for the business might be. It is not based on the firm's actual gearing. This ensures the firm is not rewarded for maintaining an inefficient capital structure.

Based on comparable listed water utilities, gearing levels range from 14% to 71%. The average and median gearing ratio is 39%.[89]

Table 12.1shows that 60% is the most frequently applied gearing ratio in Australian regulatory decisions for water utilities. There are two exceptions to this:

- the QCA has previously adopted a gearing ratio of 50% for GAWB, in part due to the very concentrated nature of its customer base and associated demand and its dependence on a single catchment, which result in GAWB having an elevated risk profile relative to Seqwater;

[89] Synergies Economic Consulting. 2019. *Review of WACC for Gladstone Area Water Board*. September. p 10.

- the Economic Regulation Authority Western Australia (ERA) applied a gearing ratio of 55% in its inquiry into efficient costs and tariffs for the Water Corporation, Aqwest and Busselton Water in 2017, based on updated evidence from listed comparators.

Table 12.1: Recent Australian regulatory gearing decisions for water businesses

Water utility	Regulator	Year	Gearing ratio
Gladstone Area Water Board (GAWB)	QCA	2015	50%
Seqwater	QCA	2018	60%
Various NSW water utilities	IPART	2018	60%
TasWater	OTTER	2018	60%
Water Corporation, Aqwest & Busselton Water	ERA	2017	55%
Melbourne Water	ESC	2016	60%
Goulburn-Murray Water	ESC	2016	60%
SA Water	ESCOSA	2016	60%

Source: Synergies Economic Consulting database.

Based on the above evidence from comparable listed entities as well as regulatory precedent, GAWB considers that its current gearing assumption of 50% remains appropriate. This is the midpoint between the most frequently applied gearing level in regulatory decisions in the Australian water sector (60%) and the average and median of the listed comparator set (39%).

The fundamental risk characteristics of GAWB's business, and its concentrated industrial customer base, continue to support a capital structure below the level applied to other regulated water utilities in Australia. These other utilities have a greater mix of residential, commercial and industrial customers and (comparatively) steady demand growth. While not a factor underpinning the QCA's original recommendations to apply a 50% gearing level to GAWB, the historical under-recovery of revenue also means that it has a lower capacity to maintain and service debt, particularly compared to these other businesses.

12.3 Return on Equity

GAWB has calculated the return on equity using the Sharpe-Lintner Capital Asset Pricing Model (CAPM), consistent with the QCA's current practice. This requires estimates of the risk-free rate, market risk premium and beta.

12.3.1 Risk free rate

The risk-free rate is used in estimating the return on equity and debt. There are three main components to setting the value for this parameter:

- the proxy used
- the term to maturity
- the averaging period.

Proxy

The Commonwealth Government bond yield is most commonly used as a proxy for the risk-free rate in Australia, including by the QCA. GAWB considers the Commonwealth Government bond yield remains the best proxy for the risk-free rate in an Australian context. Government bond yields have declined significantly in recent months and are now at historical lows. This reflects a number of drivers, including the outlook for inflation (and hence the cash rate) as well as conditions in domestic and global economies and financial markets.

GAWB has adopted the Commonwealth Government bond yield as the proxy for the risk-free rate.

Figure 12.1: Trend in Commonwealth Government bond yields, 2013-present

Source: Reserve Bank of Australia.

Term to maturity

The QCA has historically applied a term to maturity that aligns with the term of the regulatory period (i.e. 5 years). This was the case for the 2015 price monitoring investigation.[90]

In making its most recent decision on the final WACC for Aurizon Network, one of the alternative approaches considered by the QCA was the use of a 10 year bond term for the risk-free rate.[91]

Most recently in the Queensland Rail draft decision,[92] the QCA flagged the potential for a change in its approach, seeing merit in considering a 10-year bond term for use in a bottom-up WACC assessment. This would bring the QCA into alignment with other Australian economic regulators, who predominantly use a 10 year risk-free rate in their assessments across a range of infrastructure sectors. The QCA considered that adopting this position would

[90] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20 – Final Report*. May. p 60.
[91] Queensland Competition Authority. 2018. *Aurizon Network's 2017 Draft Access Undertaking – Final Decision*. December.
[92] Queensland Competition Authority. 2019. *Queensland Rail's 2020 Draft Access Undertaking – Draft Decision*. April.

contribute towards a return on investment that is at least commensurate with the commercial and regulatory risks involved. It is noted that "other regulators had generally accepted the argument that the term of the bond should be a proxy for the life of the regulated asset."[93]

GAWB has previously submitted that a 10 year term should be applied in setting the risk-free rate as this is considered consistent with the horizon of investors in water network infrastructure and also reflects the approach adopted by other Australian regulators. It also notes that the QCA is considering this based on its statements in the Queensland Rail draft decision. GAWB has therefore estimated the risk-free rate based on a 10 year term to maturity.

Averaging period

Economic regulators typically apply a short averaging period to estimate the risk-free rate. This is to minimise the impact of irregular pricing abnormalities that may occur if the estimate is taken on a single day. In Australia, regulators typically employ averaging periods ranging from 10-40 trading days. The QCA has typically applied a 20 day averaging period.

In the Queensland Rail draft decision, the QCA expressed an openness to extending the length of the averaging period to 40 business days, instead of the currently adopted 20 business days.[94] The objective of this proposed change was to limit the extent to which market rates are influenced by short-term volatility.

The 40 day average will be higher than the 20 day average if the risk-free rate has been in decline over the relevant period. Conversely, if interest rates have been rising, then a 20 day average would produce a higher risk-free rate than a 40 day average. In the long run though, there is no evidence to suggest that a shorter or longer average is consistently higher or lower.

For the purpose of setting the preliminary WACC estimate, GAWB has applied a 20 day average. However, noting the QCA's comments in the Queensland Rail draft decision, GAWB will monitor this depending on market volatility, with a view to minimising the extent to which the estimate is influenced by temporary perturbations in the market.

Risk free rate estimate

GAWB has calculated the risk-free rate based on a 10 year term to maturity. As at the end of August 2019, the risk-free rate is 0.94%. This is a preliminary estimate only.

12.3.2 Market risk premium

The market risk premium (MRP) is the amount an investor expects to earn from a diversified portfolio of investments (reflecting the market as a whole) that is above the return earned on a risk-free investment. The key difficulty in estimating the MRP arises from it being an expectation and therefore not being directly observable. As with all the parameters in the CAPM, whilst the MRP is intended to be forward-looking, the difficulty with observing or inferring it from market data means that there is valuable information about its value in historical data.

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[93] Queensland Competition Authority. 2019. *Queensland Rail's 2020 Draft Access Undertaking – Draft Decision*. April.p.32.
[94] Queensland Competition Authority. 2019. *Queensland Rail's 2020 Draft Access Undertaking – Draft Decision*. April.

A range of methods have been developed to estimate the MRP, these fall into two broad approaches:

- historical – for example Ibbotson, Siegel and Wright
- forward looking – for example Dividend Growth Models (DGMs).

In GAWB's 2015 price monitoring investigation, the QCA recommended a MRP of 6.5% in conjunction with a risk-free rate that had a term to maturity equal to the length of the regulatory period.

In its draft decision for Aurizon Network's 2017 Access Undertaking, the QCA approved Aurizon Network's proposed MRP of 7%. The QCA stated that, in light of stakeholder submissions, it reviewed its position on the Wright approach and will now give "more regard to estimates from the Wright method."[95] In reaching this conclusion, the QCA noted that its analysis suggesting greater stability in the MRP than the return on equity over time was "not determinative, given the limitations identified."[96] The QCA maintained this approach for both the Seqwater Bulk Water Price Review 2018-21 in March 2018, and Aurizon Network's final decision in December 2018.

As noted above, in its draft decision for the 2020 Queensland Rail Draft Access Undertaking, the QCA applied a 10-year risk-free rate instead of a risk-free rate matching the regulatory period.[97] The QCA noted that the 7% MRP it applied to Aurizon Network was based on a 4 year risk-free rate. The equivalent MRP with a 10 year risk-free rate was 6.5 per cent. Synergies believes an MRP of 7.0% (or higher) is still appropriate even when using a 10 year risk free rate, especially given that the 10-year risk-free rate has fallen substantially in recent times. See Attachment 3 for a detailed examination of the MRP methodologies that comprise the QCA's MRP estimate.

Market risk premium estimate

GAWB has assumed a MRP of 7.0%. Synergies believes the application of the QCA's current range of approaches and weightings results in a conservative estimate of the MRP, especially given the:[98]

- decrease in the risk-free rate;
- relatively low weight assigned to the Wright MRP; and.
- the QCA's Cornell DGM estimate is well below DGM estimates generated by other Australian regulators.

In light of Synergies analysis, GAWB has assumed a MRP of 7.0%.

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95 Queensland Competition Authority. 2017. *Aurizon Network's 2017 Draft Access Undertaking – Draft Decision*. December.), p.493.
96 Queensland Competition Authority. 2017. *Aurizon Network's 2017 Draft Access Undertaking – Draft Decision*. December.), p.493
97 Queensland Competition Authority. 2019, *Queensland Rail's 2020 Draft Access Undertaking, Draft Decision*, April, p.32
98 Synergies Economic Consulting. 2019. *Review of WACC for Gladstone Area Water Board*. September. pp 3-4.

12.4 Beta

The equity beta measures the 'riskiness' of a firm's returns compared with that of the market. Specifically, the equity beta measures the standardised correlation between the returns on an individual risky asset or firm with that of the overall market.[99] Investors generally diversify away non-systematic risk (or business specific risk). Therefore, compensation is only required for bearing systematic risk. A business' sensitivity or exposure to systematic risk depends on its business activities and gearing.

There are three key sources of information that can inform the assessment of an entity's systematic risk, namely:

- benchmark results from comparable entities
- first principles analysis
- regulatory precedent.

In undertaking an empirical analysis of beta estimates, reference needs to be made to an appropriate set of listed comparators for whom equity betas can be estimated.

The QCA, following advice from its advisor, Incenta, applied an asset beta for GAWB of 0.40 in 2015. While this value had been applied in previous reviews, Incenta undertook an updated analysis of comparable companies.

More recently, in advising the QCA on the WACC to apply for Seqwater for its 2018-21 price review, Incenta determined an asset beta of 0.41 based on a virtually identical sample of comparator firms to the sample it previously used for GAWB.[100]

GAWB's systematic risk profile is quite different to that of Seqwater and most other regulated water utilities, who have a much higher proportion of residential customers. GAWB's high concentration of industrial customers results in a stronger correlation with economic conditions, particularly compared with a utility that has a higher exposure to residential demand (as residential demand is relatively insensitive to domestic economic activity). This justifies a higher beta for GAWB compared to Seqwater.

GAWB notes that in Incenta's previous review of GAWB's beta, it concluded that GAWB is likely to have a low asset beta as while it is dependent on commercial customers, it has long term contracts in place and these customers have provided "steady growth" to GAWB.[101] GAWB is concerned that these statements reflect a lack of understanding of its actual customer and contract profile (and the way in which those contracts and its customers operate) and as a consequence, materially overstates the degree of certainty GAWB has in relation to future volumes and revenues.

While GAWB has some certainty over volumes for the term of the regulatory period (including the application of a revenue cap with 10% dead-bands), GAWB has even less certainty as to

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[99] R. Brealey, S. Myers, G. Partington and D. Robinson. 2000. *Principles of corporate finance.* pp. 186–188.
[100] Incenta. 2017. *Estimating Seqwater's Firm-specific WACC Parameters for the 2018-21 Bulk Water Price Investigation,* November. Incenta did use a comparator set of toll roads to form an upper bound for Seqwater's asset beta (0.47).
[101] Incenta. 2015. *WACC Parameters for GAWB Price Monitoring Investigation 2015-20 – Final Report,* May.

volumes beyond this horizon. This includes the risk of the withdrawal or closure of a major customer, which can have a material impact given GAWB's concentrated customer base.

Synergies (Attachment 3) has conducted a detailed beta analysis, including a 'first principles' assessment of GAWB's risk profile along with a comparable companies analysis. This analysis supports an asset beta between 0.45 (based on a sample consisting only of water utilities) and 0.56 (including four relevant mining and industrial services companies that are seen as more representative of GAWB's underlying risk profile). As explained above, considering GAWB's industrial and resource exposure, GAWB's beta should be higher than that of a 'conventional' water utility such as Seqwater.

Beta estimate

GAWB has adopted an asset beta of 0.45. This is at the lower bound of Synergies' recommended range (comprising water utilities only) and is therefore considered conservative. This corresponds to an equity beta of 0.73 assuming the QCA's previous debt beta assumption of 0.12 and gearing of 50%. While this is an increase from the value applied in the 2015 price monitoring investigation (i.e. 0.40), it is clearly supported by the empirical evidence summarised above and detailed in the Synergies report. While GAWB has had regard to the price impact on customers (and hence has selected the estimate from the lower bound of the recommended range), it also needs to earn a return that is commensurate with its risk profile.

12.5 Return on debt

In calculating the return on debt, consideration is given to several underlying assumptions, these being:

- risk-free rate
- notional credit rating
- term to maturity
- debt management approach
- method and data source/s used to estimate the debt risk premium
- debt raising costs.

Each of these assumptions is examined below.

Risk free rate

GAWB has applied the same risk-free rate estimate for the return on equity and the return on debt, the preliminary estimate as at the end of August 2019 is 0.94%.

Notional credit rating assumption

The QCA has previously assumed a BBB benchmark credit rating for GAWB. This is a frequently applied benchmark for Australian water utilities. GAWB has applied this widely applied benchmark credit rating.

Term to maturity

Although the QCA has previously set the term of the risk-free rate equal to the length of the regulatory period, it has usually assumed a 10 year benchmark for the term of debt. In the final

decision for Aurizon Network's UT5 review, the QCA stated that a 10 year debt term "is consistent with Australian regulatory practice and recognises that utility businesses, in general, will issue debt for longer terms than the regulatory period to manage refinancing risk."[102]

Accordingly, and consistent with the term to maturity for the risk-free rate (as discussed above), a 10 year term to maturity for BBB bonds has been assumed. This is consistent with Australian regulatory practice and also tends to be the longest term for which indicative BBB bond yields are published by data providers such as Bloomberg and the RBA.

Debt management approach

Cost of debt methodologies applied by Australian economic regulators broadly fall under two categories: on-the-day or trailing average.

The on-the-day approach takes a short-term average of observed corporate bond yields prior to the commencement of the regulatory period. One drawback of this method is that it can be volatile due to short-term fluctuations in market conditions, which is exacerbated when the cost of debt is locked in for the full regulatory period. Further, for the business to replicate (or at least approximate) this estimate, it assumes the entire debt portfolio is refinanced over that short averaging period.

On the other hand, the trailing average approach places more weight on historical cost of debt estimates (typically up to 10 years). This methodology, which was first introduced in electricity network regulation, emanated from the recognition that, in practice, an efficient debt management strategy for a regulated utility with a significant ongoing funding requirement is to maintain a staggered debt maturity profile and progressively refinance debt over time.

The QCA has historically applied the on-the-day methodology in its determinations. However, more recently, the QCA has made a series of supportive comments about applying the trailing average methodology. In the UT5 final decision for Aurizon Network, while approving the on-the-day approach that Aurizon Network submitted, the QCA stated that:[103]

> The QCA is open to considering alternative regulatory benchmarking debt management approaches (for example a trailing average approach) in future assessments.

Subsequently, in the April 2019 draft decision for Queensland Rail's 2020 draft access undertaking, Queensland Rail also proposed to apply an on-the-day approach. However, the QCA stated that:[104]

> In considering Queensland Rail's proposal, the QCA is open to considering alternative regulatory debt management strategy benchmarks – should the regulated entity be able to sufficiently demonstrate why such an alternative benchmark strategy is appropriate, having regard to the criteria in s.138(2) of the QCA Act.

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[102] Queensland Competition Authority. 2018. *Aurizon Network's 2017 draft access undertaking – Appendices*. December, p.141.
[103] Queensland Competition Authority. 2018. *Aurizon Network's 2017 draft access undertaking, Decision*. December. p.77.
[104] Queensland Competition Authority. 2019. *Queensland Rail's 2020 draft access undertaking, Draft Decision*, April, p.36.

> We acknowledge that alternative approaches will yield different cost of debt estimates—for instance, we calculated that an estimate of the cost of debt under a trailing average debt management strategy is 6.38 per cent. However, differences in these estimates will be influenced by the extent to which historical cost of debt calculations are relied upon. The key factor is that the benchmark debt management strategy for setting the cost of debt is an appropriate approach for the regulated entity, having regard to the regulatory and commercial risks involved.

It is important to note that GAWB is subject to price monitoring and is therefore regulated differently from the aforementioned rail entities. The QCA acknowledged in the 2015 final decision that GAWB "has the flexibility ex ante to set its cost of debt in any manner it chooses, including using a trailing average approach."[105]

As noted in its 2015 regulatory submission, GAWB sees merit in a trailing average methodology. However, prior to deeming it appropriate for use, GAWB needs to consider how this debt management strategy relates to the prices it charges its customers.

In Australian regulatory practice, an on-the-day cost of debt estimate is maintained for an entire regulatory period. In effect, the approach is assuming that the entity reissues its debt in a single transaction, rather than progressively over time, so there is no theoretical requirement to update the WACC on an annual basis.[106] On the other hand, a trailing average cost of debt estimate is updated annually, because the methodology is emulating what is assumed to be the efficient benchmark financing strategy, which is to refinance a portion of its debt portfolio each year. This is now the practice of other economic regulators in Australia such as the AER, the ERA (for gas), the Essential Services Commission of South Australia (ESCOSA) (SA Water) and the Essential Services Commission (ESC) for Melbourne Water.[107] The Independent Pricing and Regulatory Tribunal (IPART) also applies a trailing average to estimate its long-term cost of debt, which is combined with a short-term trailing average.

Changes in the WACC from year to year flows through to the setting of prices. This presents a challenge to GAWB, as the current regulatory framework sets prices at the start of the 5 year regulatory period. Prices are increased annually by CPI. Essentially, prices cannot be adjusted during the regulatory period so the yearly changes in the WACC could potentially introduce an additional layer of uncertainty for customers as a 'true up' would need to occur at the start of each regulatory period.

In light of the potential customer impacts i.e. the potential for an additional 'true up' that would need to occur at the start of each regulatory period, GAWB will continue to use the on-the-day approach for the 2021-25 pricing period.

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[105] Queensland Competition Authority. 2015. *Gladstone Area Water Board: Price Monitoring Investigation 2015-20* - Final Report. May. p.52.

[106] The ERA updates its rail WACC estimates annually, even though it adopts an on-the-day approach for the entities that it regulates. However, the ERA also undertakes a comprehensive annual update of all market-influenced parameters (risk-free rate, MRP, return on debt).

[107] IPART indicated in its most recent WACC methodology review that it will decide on a case-by-case basis whether the annual changes in the cost of debt will flow through to prices in the subsequent year, or whether they will be cumulated and passed through via a true-up in the subsequent regulatory period.

Method used to estimate the debt risk premium

The QCA has historically used a portfolio econometric estimation methodology to estimate the return on debt. This involves data filtering in order to form an appropriate portfolio of bonds for the entity under assessment. In the final decision for Aurizon Network's UT5 review, the QCA had regard to an average of RBA and Bloomberg data as a cross-check against its 'bottom-up' WACC assessment.

Subsequently, the QCA used this approach in its draft decision for Queensland Rail. This was because the averaging period for the Queensland Rail 2020 draft amending undertaking had not been nominated for a date before the draft decision, which made it difficult for the QCA to "undertake adequate and timely consultation on the appropriate econometric approach to be adopted".[108]

In order to assess the impacts of utilising third party data sources, the QCA compared the outputs from RBA and Bloomberg data with its own econometric outputs from previous determinations that it has handed down since 2013. From this exercise, the QCA did not consider that differences between the approaches were biased in any particular direction. Moreover, the QCA acknowledged that the use of third-party estimates was "common across the Australian regulatory landscape".[109] The Australian Competition and Consumer Commission (ACCC), AER, ESC, ESCOSA and IPART all use either RBA and/or Bloomberg data.[110]

GAWB supports the use of independent third-party data sources that are reputable and robust for calculating the return on debt. GAWB believes that the RBA and Bloomberg data sources meet these criteria. In line with most Australian regulators, GAWB has used them to estimate the return on debt. Moreover, this approach is more readily replicable by stakeholders, which provides greater transparency, particularly when compared with the QCA's econometric approach.

Assumed debt raising costs

Consistent with the value most recently used by the QCA in Queensland Rail's 2019 draft decision, GAWB has included a debt raising cost allowance of 0.108% (or 10.8 basis points per annum).

With the term to maturity of the risk-free rate and the term of the benchmark debt assumed to be identical, an efficient debt management strategy does not need to factor in the requirement for interest rate swap contracts. This was the case under a 5 year term to maturity of the risk-free rate, where interest rate swap contracts were required to convert the risk-free rate element of the cost of debt from a 10 year term, to a term that matches the length of the regulatory period. No allowance for interest rate swap costs has therefore been included in GAWB's cost of debt estimate.

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[108] Queensland Competition Authority. 2019. *Queensland Rail's 2020 draft access undertaking - Draft Decision*, April, p.34.
[109] Queensland Competition Authority. 2019. *Queensland Rail's 2020 Draft Access Undertaking - Draft Decision*. April, p.35.
[110] In its 2018 Rate of Return Guideline review, the AER considered the merits of incorporating data from Thomson Reuters and S&P Global in its return on debt estimate. The AER opted to include Thomson Reuters data, but chose not to rely on data from S&P Global. Analysis by the AER suggests that the difference in estimated yields with and without the Thomson Reuters data is virtually indistinguishable.

Return on debt estimate

GAWB has calculated the return on debt using the on-the-day approach. This estimate has been calculated using an average of RBA and Bloomberg data, consistent with the approach the QCA applied in the 2019 draft decision for Queensland Rail.

The preliminary on-the-day cost of debt estimate is 3.10%, as at the end of August 2019. This comprises the preliminary estimates of a 0.94% risk-free rate, and debt raising costs ('debt issuing costs') of 0.108%.

Despite retaining the on-the-day approach for the 2021-25 period, GAWB may review the use of the trailing average approach under the price monitoring framework at some point in the future.

12.6 Gamma

Gamma (γ) is the value of imputation credits to investors in a business, where some part of corporate tax paid by this entity can be claimed as a tax credit against personal income tax. To the extent it can be accessed by investors, it forms part of the assumed equity return to investors.

Gamma is the product of two inputs which must be estimated:

- the proportion of tax paid that has been distributed to shareholders as franking credits (the distribution rate); and
- the value the marginal investor places on $1 of franking credits, referred to as the value of distributed franking credits (or theta).

Gamma must take a value between zero and one depending on the assumptions made for the distribution rate and theta.

The QCA has applied a distribution rate of 0.88 in its most recent decisions for Aurizon Network and Queensland Rail. This was based on the average distribution rate of the top 20 companies on the Australian Stock Exchange (ASX) by market capitalisation. Concerns have been raised with the QCA's methodology (see Attachment 3).

The QCA currently applies a theta of 0.55, which it states is based primarily on the equity ownership of Australian listed companies. Concerns have been raised regarding the integrity of the data underpinning the equity ownership approach. GAWB acknowledges that most estimation approaches are subject to some form of uncertainty in relation to data, but the risks of poor data are heightened if significant weight is placed on a single approach, to the exclusion of other theoretically and empirically sound approaches.

According to Synergies (Attachment 3), evidence suggests the QCA's current approach over-estimates both the distribution rate and theta. This is attributable to both conceptual and data-related shortcomings. The product of these parameters leads to a gamma assumption that overstates the value of imputation credits.

GAWB is not proposing to depart from QCA precedent at the current time. However, it will continue to monitor developments in the approaches to valuing imputation credits and re-evaluate its position at future reviews accordingly.

Gamma estimate

Despite concerns regarding the QCA's approach to estimating both the distribution rate and theta, GAWB is prepared to accept the QCA's current gamma methodology, as applied in the Aurizon Network final decision and Queensland Rail draft decision, for the 2021-25 price monitoring period.

This currently results in a gamma estimate of 0.484.

12.7 Preliminary WACC estimate

Based on the parameter assumptions above, GAWB's preliminary post-tax nominal vanilla WACC (WACC3) estimate is presented in Table 12.2. The preliminary WACC of 4.57% is considerably lower than the WACC used to set prices for the 2016-20 pricing period. This change largely reflects decreases in market parameters, particularly the significant reduction in the risk-free rate, which flows through to both the return on equity and debt.

GAWB's preliminary WACC estimate will be updated just prior to the calculation of prices for the 2021-25 regulatory period.

Table 12.2: Preliminary WACC estimates

Parameter	Initial Regulatory Submission
Risk-free rate	0.94%
EQUITY PARAMETERS	
Asset beta	0.45
Equity beta	0.73
Market risk premium	7.0%
Cost of equity	**6.04%**
DEBT PARAMETERS	
Debt risk premium (raw)	2.05%
Debt issuing costs	0.108%
Debt swap costs	n/a
Debt risk premium (total)	2.158%
Cost of debt	**3.10%**
Capital structure (% debt)	50%
Post-tax nominal vanilla WACC (WACC3)	**4.57%**
LEVERING / TAX PARAMETERS	
Debt / equity ratio	1.00
Debt beta	0.12
Statutory corporate tax rate	30%
Utilisation rate	0.55
Distribution rate	0.88
Gamma	0.484
Imputation-adjusted tax rate	15.48%

Source: Synergies analysis

13. Forecast Revenue

A building block approach has been used to calculate the total revenue requirement for the 2021-25 regulatory period. Consistent with chapter 7, the revenue allowance has been calculated for a 5 year rather than 20 year planning period.

13.1 Annual revenue requirement

Section B, clause 1.1 of the Referral Notice requires GAWB's water prices to provide sufficient revenue to recover the prudent and efficient costs associated with providing bulk water supply services, including catchment management and recreational facilities. The conventional regulatory method is to use a 'building blocks' approach to determine the ARR for each year of the regulatory period.

The key components of a 'building blocks' approach is a return on assets, depreciation, operating and maintenance costs, tax costs and other adjustments (e.g. over-run charges). In accordance with the QCA's previously recommended methodology, the building block calculation has also included, in the first year of the new regulatory pricing period, the carried forward value (at WACC) of the accumulated revenue under-recovery.

Consistent with Section B, clause 1.3 (a) of the Referral Notice and chapter 8 of this submission, GAWB is seeking to recover the carried forward value of the accumulated revenue under-recovery via a separate pricing structure (see Part B of the Regulatory Submission). The recovery of the accumulated revenue under-recovery is only applicable to current customers. As noted in chapter 7, by removing the accumulated revenue under-recovery from the building block calculation, it ensures customers pay for the assets and services they are provided during the regulatory period.

13.1.1 Total revenue requirement

Based on the values/forecasts set out in the prior chapters, GAWB has estimated ARR for each year of the 2021-25 regulatory period. The breakup of the ARR for each year of the 2021-25 regulatory period is given in the Table below and is consistent with the methodology set out in chapter 7. The values are exclusive of the accumulated revenue under-recovery amount.

Figure 13.1: GAWB's ARR ($m) (nominal)

	2021	2022	2023	2024	2025
Operational Expenditure	34.26	33.19	33.00	35.38	37.41
Return on capital[1]	30.66	31.84	32.54	32.88	34.92
Return of capital[2]	5.13	5.62	5.50	5.86	6.05
Taxation [3]	1.44	1.71	1.88	1.72	1.42
Other[4]	(2.92)	(3.30)	(3.37)	(3.45)	(3.53)
Total	**68.57**	**69.06**	**69.55**	**72.39**	**76.27**

(1) Return on capital includes return on working capital
(2) Return of capital is net of inflation
(3) Tax is net of imputation credits
(4) Other includes income GAWB receives from services other than bulk water services, capital contribution rebates and prior period adjustment amounts.

14. Tariff Structures and Prices

GAWB's pricing structure comprises three distinct elements – storage, delivery and administration. Consistent with Part B clause 1.1 (a) of the Referral Notice, GAWB is permitted to apply prices that provide sufficient revenue to recover the prudent and efficient costs associated with providing bulk water supply services, including catchment management and recreational facilities. The prices set out below reflect the cumulative impact of GAWB's prior proposals on each of the building block elements.

The prices set out in this chapter are exclusive of the accumulated under-recovery of revenues.

14.1 Tariff structure

14.1.1 Zonal pricing

GAWB's prices are differentiated for all customers, based on the assets used to supply/deliver the reserved bulk water supply service/s. This is achieved through the application of zonal/nodal pricing. The pricing zones used for the 2015 price review will continue to apply for the 1 July 2020 to 30 June 2025 period (see Figure 14.1).

14.1.2 Tariff structure

GAWB's current tariff structure has three components:

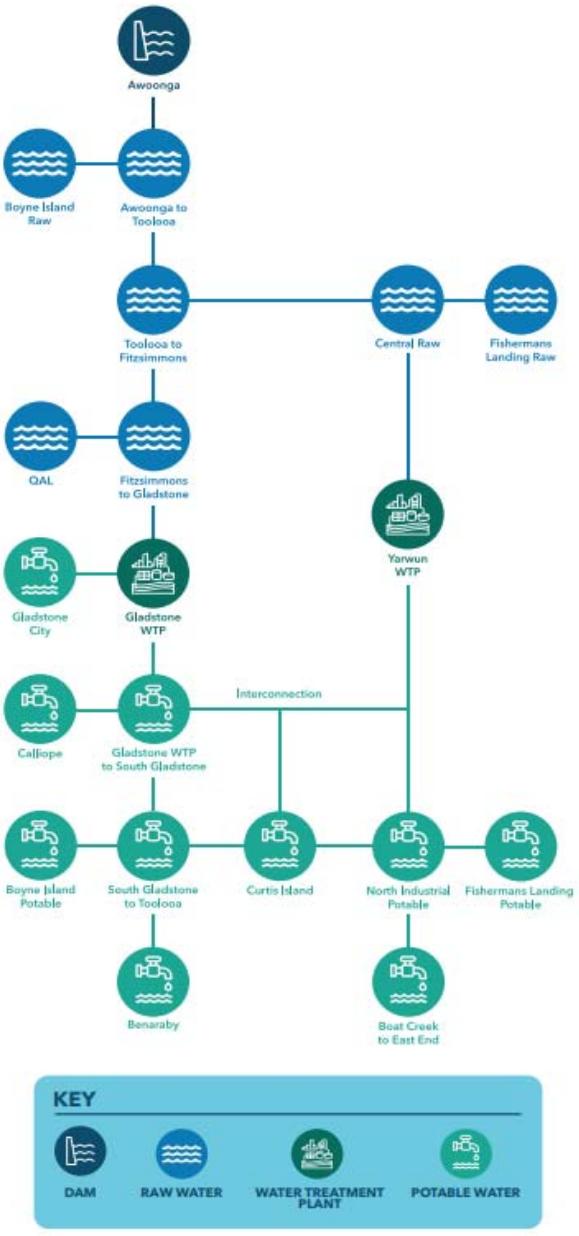
- storage charge: a two-part tariff structure, with:
  - the storage volumetric charge based on the LRMC[111] for volumes sourced at Awoonga Dam. This charge is based on forecast annual ML;
  - the storage access charge covers the remaining ARR associated with storage that is not recovered by the storage volumetric charge. This charge is based on reserved annual ML;
- delivery charge: a three-part tariff structure, with:
  - the delivery volumetric charge reflects the forecast volume-related operating costs. This charge is based on forecast annual ML;
  - the delivery metered MDQ volumetric charge is based on the LRMC of delivery capacity. This charge is based on forecast MDQ; and
  - the delivery access charge covers the remaining delivery network ARR that is not recovered via the volumetric delivery charges. This charge is based on reserved MDQ;
- administration charge: based on reserved ML and the QCA approved cost allocation methodology.[112]

[111] In 2010 the pricing methodology was adjusted to reflect the LRMC of service provision. GAWB estimates the LRMC using the average incremental cost (AIC) method.

[112] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20: Final Report*. May. 68.

The current pricing methodology is consistent with the QCA Pricing Principles[113] and previous regulatory decisions.[114] GAWB is not proposing to change the structure or method of calculating the above bulk water tariffs this regulatory period.

Figure 14.1: GAWB's pricing zones – 2021-25



(1) Mt Miller Pipeline and Hanson Road Pipeline pricing zones were combined in 2016-20 to provide an average zonal price. This approach has been continued in 2021-25 and presented as the Central Raw pricing zone.

[113] Queensland Competition Authority. 2000. *Statement of Regulatory Pricing Principles for the Water Sector.* December. p 67

[114] For example, Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20: Final Report*. May. pp 64-65.

14.1.3 Price differentiation for contract length

As noted in chapter 8.1.2, in recognition of the risks associated with short-term compared to longer-term contracts, a surcharge is applied to contracts with a term less than 20 years.

GAWB is not proposing to change the arrangement or premiums currently applied for this regulatory period.

14.2 Over-run charges

As noted in chapter 8.1.1, GAWB can apply over-run charges where a customer exceeds their reservation. The over-run charge serves two functions, that is to provide an incentive for customers to accurately specify their required capacity and to recover the incremental costs associated with an over-run.

The methodology for calculating over-run charges currently relates to the volume and administrative components of GAWB's pricing framework. The application of delivery over-run charges was waived for the 2016-20 regulatory period. The methodology for calculating storage and administration over-run charges are discussed below.

For industrial customers, a surcharge of:

- 25% will apply to the total charge for incremental volumes where actual consumption is between 110% and 125% of the reserved amount; and
- 50% will apply to the total charge for incremental volumes where actual consumption is higher than 125% of the reserved amount.

For GRC, unless otherwise negotiated with GAWB, a surcharge of 25% will apply to the total charge for incremental volumes where actual consumption is higher than 125% of the reserved amount.

14.2.1 MDQ-based delivery charges

The move to MDQ based delivery charges changed the way in which over-run charges could be applied to delivery network over-runs. These charges now need to be determined on a monthly basis and have regard to reserved MDQ rather than on annual reserved levels.

Whilst GAWB waived the application of delivery over-run charges for the 2015-16 to 2019-20 years ('the transitional period') as part of the transitional measures associated with the introduction of MDQ, an alternative over-run approach was set out in GAWB's initial 2015 regulatory submission. This approach was to apply from 1 July 2020 and consisted of:

- in months where the actual MDQ exceeds contracted MDQ, the customer would be required to pay an over-run charge based on the difference between the actual and reserved MDQ; and

- to retain a financial incentive for customers to reserve their expected annual MDQ, the over-run charge would be set at 12 times the monthly MDQ over-run charge.[115]

A key advantage of this approach was its comparatively simple structure to understand and administer. It also did not require an annual true-up process.

At the time of the final report, the QCA expressed concerns with this approach and queried whether it reasonably reflected the additional costs GAWB may incur as a consequence of the over-run.[116] The approach used by Ergon Energy, was noted as more appropriate as it may be a better reflection of the network costs incurred by the supplier.[117] Under this approach, if a customer exceeds their contracted peak demand in any one month, the actual peak demand is substituted for contracted peak demand in that month. The QCA noted it would reassess GAWB's proposed over-run charge at the next review.

14.2.2 New methodology for delivery over-run charges

Transitional period arrangements

During the transitional period, various measures were introduced to minimise the potential customer impacts associated with introducing MDQ based charges. The transitional measures included, for most customers, the waiver of delivery over-run changes for the term of the regulatory period, the ability to re-specify MDQs under limited circumstances and the automatic ratchetting up of MDQs based on actual usage.

Automatic ratchetting up of MDQ's

Consistent with GAWB's pricing framework, monthly water charges are based on a 'greater of' approach for access/capacity charges. That is, water charges for the period are based on the greater of the MDQ reservation or the actual MDQ recorded during the month.

In the event a customer exceeds their reserved MDQ in one month, the actual MDQ recorded during the month is used to calculate water charges for the month. The actual MDQ for that month is also substituted as the reserved MDQ for the remainder of the regulatory period (subject to the ability to increase or decrease reserved MDQ referred to below). As shown in Figure 14.2, if a customer exceeds the increased reserved MDQ in a subsequent month, the reserved MDQ is increased again to align with the actual MDQ recorded during the month. The 'automatic ratchetting up' mechanism was introduced to assist customers in identifying the maximum daily capacity they required and to recover the incremental costs associated with an over-run.

In response to the pricing signals provided via the 'automatic ratchetting up' mechanism, customers have implemented new operational processes or manual procedures to reduce their peak daily capacity requirements (including infrastructure to capture and store water

[115] Setting the over-run charge in this way is roughly equivalent to an annual charge (in the first month of the over-run), triggering a charge equal to what would have been paid if the customer had specified this higher MDQ in their contract. The more frequently the customer over-runs its contracted MDQ, the higher the effective annual charge.

[116] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20 – Final Report*. May. p 67-68.

[117] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20 – Final Report*. May. p 68.

onsite). Customers are able to apply to GAWB over the course of the transitional period to modify their reserved MDQ, without penalty, to:

- increase the reserved MDQ if they determine they require higher peak day flows (and GAWB determines there is sufficient capacity in its delivery system to accommodate the request); or
- decrease the reserved MDQ if they over-specified it or make changes to their consumption profile that result in lower peak day flows.

A customer's application is reviewed in terms of a longitudinal analysis of consumption (MDQ) and information provided by the customer on the changes it has made to its consumption profile (i.e. operational).

From 1 July 2020, these transitional period arrangements will cease and delivery MDQ charges will be based on a customer's reserved MDQ as at that date. This recognises the benefits customers have had over the 5 year transitional period to regulate their peak daily flow rates and 'right size' their reserved MDQ.

Customer feedback

Over the regulatory period, customers have raised concerns with the ratcheting up mechanism. Whilst it is considered appropriate to pay for actual consumption, the continual ratcheting up and resetting of the reserved MDQ is viewed as unfair. For example, this mechanism could result in increased water charges over time, as a result of what could have been a singular one-off incident.

Figure 14.2: Automatic ratchetting of MDQ's

Note: The values presented are for illustrative purposes only.

Review of methodology for over-run charges

In preparing for the 2021-25 price review, GAWB revisited the methodology it proposed to apply to delivery (MDQ) over-runs. This review had regard to the QCA's comments from the 2015 review, as summarised above.

A fundamental concern GAWB has with the QCA's earlier comments is that it implies the intent of over-run charges is to be reflective of the costs incurred as a result of the customer's additional (unreserved) demand. As discussed above, the main rationale for the introduction of over-run charges was to incentivise accurate reservations. This rationale has been previously accepted by the QCA[118].

The approach suggested by the QCA as more appropriate in 2015, where actual consumption is substituted for reserved MDQ when determining delivery charges, aligns with the current/transitional 'ratchetting up mechanism'. Under the suggested QCA mechanism, customers would pay for their actual utilisation of services only at that point in time (noting that within the regulatory period GAWB's prices cannot change to align with changes in demand). However, in GAWB's experience this does not incentivise accurate reservations. In the absence of a more appropriate pricing signal, GAWB's only fallback is its commercial arrangements. Under those arrangements, GAWB is only obliged to supply at the customer's reserved level and if the customer fails to regulate its consumption within the reserved level, GAWB could regulate supply to the customer and refuse to meet the customer's demand to the extent it is above those reserved levels.

Due to the nature of delivery services, GAWB believes over-run charges must be a financial disincentive that is sufficiently material to influence a customer's behaviour i.e. to encourage the customer to 'right size' their reservation. Recognition should also be given to the costs associated with consumption above reserved levels. These costs impact both GAWB and all other customers supplied at and downstream of that pricing zone.

It is important to note, additional revenue recovered from over-run charges (net of additional costs incurred, this includes any tax payable associated with the additional revenue) is rebated to customers. This methodology is consistent with the QCA's approach to short term contracts. As a result, there is no 'windfall gain' retained by GAWB. Instead, the additional revenue is rebated to all customers, rewarding those who sought to reserve accurately (see 8.1.1)).

Principles

GAWB submits the methodology for delivery over-run charges should reflect the following principles:

- Over-run charges should provide a sufficiently strong incentive to customers to reserve for demand that, to the best of their knowledge, reflects their most likely demand forecast over the relevant period.
- The methodology should be fair and equitable between customers and groups of customers.
- The methodology should:
  - allow GAWB to be able to recover the (efficient) additional costs it incurs in servicing demand in excess of reservation; and

[118] Queensland Competition Authority. 2015. *Gladstone Area Water Board Price Monitoring 2015-20 – Final Report*. May. p 67.

  - have sufficient flexibility to target particular constraints and/or augmentation requirements in specific parts of the network that could be triggered by increases in demand.

- The methodology should be transparent and easy to understand and administer.

To ensure there are no windfall gains, any additional revenue recovered by GAWB from over-run charges will continue to be rebated to customers, net of any additional costs incurred in servicing that additional demand.

14.2.3 Proposed methodology

Delivery over-run charges methodology

In identifying a preferred methodology, consideration was given to the way in which over-run events are identified, communicated and recovered from customers. Consideration was also given to the materiality of the signal provided (i.e. the size of the over-run charge and how this has been determined).

Having regard to the above principles, GAWB identified and evaluated various options. Some of the options considered included:

- no over-run charges;
- monthly over-run charges – customers incur an additional charge when actual consumption exceeds the reserved MDQ. This additional charge is calculated at the end of each month and included in the customer's monthly bill, if applicable;
- annual over-run charges - customers incur an additional charge when consumption exceeds the reserved MDQ, over the financial year. This additional charge is calculated at the end of the financial year and is included in the customer's bill for June, if applicable;
- over-run charge with a collar – a customer will only incur an over-run charge when actual consumption exceeds the reserved MDQ and the level of exceedance is greater than a pre-established threshold. This approach could be applied on a monthly or annual basis; and
- over-run charge with a collar plus excluded events – a customer will only incur an over-run charge when actual consumption exceeds the reserved MDQ and the level of exceedance is greater than a pre-established threshold. In calculating the level of exceedance, consideration will be given to the circumstances surrounding the event. This approach could be applied on a monthly or annual basis.

GAWB's proposed approach is to levy delivery over-run charges on a monthly basis, based on the highest exceedance above the reserved MDQ that occurs in a month. Monthly delivery charges will be levied as:

- Delivery Access Charges are levied each month based on the higher of reserved and actual MDQ;
- Delivery Metered MDQ Volumetric Charges are levied on actual MDQ; and
- Delivery Over-run Charges are levied monthly based on the MDQ exceedance, i.e. the amount by which actual MDQ exceeds the reserved MDQ in that month. This is

set at two times the difference between the total MDQ charges levied on actual and reserved MDQ. Where the 'total MDQ charge' comprises the Delivery Access Charge and Delivery Metered MDQ Volumetric Charge.

GAWB believes this approach best meets the principles specified above, that is, it:

- should provide a stronger incentive for customers to reserve accurately;
- results in no inequalities between different customers and groups of customers; and
- is transparent and easy to understand and administer.

Furthermore, the benefit of a monthly charge is that the customer sees the impact of their consumption decisions in a timely manner, compared to a charge applied on an annual basis.

As noted above, this approach will not result in GAWB making any windfall gains, because any additional revenue GAWB recovers from delivery over-run charges will continue to be rebated to customers in the subsequent regulatory period. This value is net of any additional costs incurred in servicing the additional demand (i.e. allowing GAWB to recover its efficient costs).

To be clear, this revised methodology applies to delivery over-run charges only. It does not apply to storage and administration over-run charges. These over-run charges will continue to be applied based on the methodology previously approved by the QCA.

Over the 2019-20 year, GAWB will monitor actual versus reserved demand for the year and discuss potential options with customers whose actual demand is consistently above their reserved MDQ. These options may include regulating consumption by the installation of flow-limiters.

GAWB will continue to maintain its commercial arrangements, such that GAWB could intervene to regulate supply to a customer and refuse to meet a customer's demand to the extent it is above its reserved level, particularly, for persistent exceedances. These measures are essential given the impact a customer's consumption decisions can have on other customers and the network more broadly if consumption is unconstrained.

14.3 Indicative prices

Table 14.1 provides estimated indicative prices based on the pricing framework. These prices are provided for information purposes only, that is, to assist customers to understand the impact of the various policy inputs and forecast values outlined in this regulatory submission.

In recognition of actual prices being subject to each customer's commercial arrangements, GAWB has and will continue to provide supplementary information and/or meet with each customer to discuss the potential pricing impact/s.

The prices set out in Table 14.1 will be annually adjusted by CPI, across the 2021-25 pricing period.

Table 14.1: Indicative prices – ($2021)

Pricing Zone	Reservation & storage		Delivery		Admin	Indicative average price
	Storage access ($ per reserved ML)	Storage volumetric ($ per metered ML)	Delivery access ($ per reserved MDQ)	Delivery volumetric ($ per metered ML)	($ per reserved ML)	($ per Reserved ML)
Awoonga	363.65	2.19	-	-	32.40	397.91
Awoonga to Toolooa	363.65	2.19	6,269.19	45.61	97.20	774.91
Toolooa to Fitzsimmons	363.65	2.19	7,943.86	45.61	97.20	847.10
Boyne Raw	363.65	2.19	10,697.76	45.61	97.20	1,008.77
Central Raw	363.65	2.19	9,782.49	45.61	97.20	929.57
Fitzsimmons to Gladstone	363.65	2.19	8,476.98	45.61	97.20	869.48
QAL	363.65	2.19	10,210.19	45.61	97.20	949.28
Fishermans Landing Raw	363.65	2.19	13,810.26	46.42	97.20	1,384.85
Gladstone WTP	363.65	2.19	24,857.59	144.16	226.81	1,713.57
Gladstone City	363.65	2.19	28,135.90	144.16	226.81	1,846.97
Gladstone WTP to South Gladstone	363.65	2.19	29,616.20	144.22	226.81	1,896.91
Calliope	363.65	2.19	43,341.73	164.79	226.81	2,477.38
South Gladstone to Toolooa	363.65	2.19	38,417.08	147.84	226.81	2,269.98
Boyne Potable	363.65	2.19	46,204.86	148.23	226.81	2,599.99
Benaraby	363.65	2.19	70,416.13	179.84	226.81	3,597.11
Yarwun WTP	363.65	2.19	34,162.99	158.81	226.81	2,716.05
North Industrial Potable	363.65	2.19	40,557.24	154.00	226.81	3,318.84
Fishermans Landing Potable	363.65	2.19	59,027.74	154.00	226.81	6,194.25
Boat Creek to East End	363.65	2.19	85,203.82	403.34	226.81	10,323.50

(1) Prices are exclusive of the prices applicable to the Curtis Island Pricing Zone.
(2) These prices are indicative of the price a customer will pay for water taken off in the relevant pricing zone.
(3) Delivery access charges are shown as monthly amounts ($/MDQ). The annual $/MDQ price is 12 times this monthly amount.

The price movement between the current indicative average price per reserved ML for each pricing zone and the proposed indicative average price to apply from 1 July 2020 are shown in Table 14.2. It should be noted the prices for the 2021-25 pricing period are based on a 5 year planning period and the accumulated revenue under recoveries have been excluded (i.e. it has not been included in the building block calculation).

Table 14.2: Summary of indicative average price movements ($/Reserved ML)

Pricing Zone	Current Average Price ($2021)	Indicative Average Price ($2021)	% Change
Awoonga	423.42	397.91	(6)%
Awoonga to Toolooa	741.94	774.91	4%
Toolooa to Fitzsimmons	796.38	847.10	6%
Boyne Raw	1,281.52	1,008.77	(21)%
Mt Miller Pipeline/Central Raw	915.94	929.57	1%
Fitzsimmons to Gladstone	809.48	869.48	7%
QAL	870.22	949.28	9%
Fishermans Landing Raw	1,413.31	1,384.85	(2)%
Gladstone WTP	1,516.28	1,713.57	13%
Gladstone City	1,641.39	1,846.97	13%
Gladstone WTP to South Gladstone	1,670.45	1,896.91	14%
Calliope	2,183.26	2,477.38	13%
South Gladstone to Toolooa	1,908.55	2,269.98	19%
Boyne Potable	2,228.29	2,599.99	17%
Benaraby	3,160.60	3,597.11	14%
Yarwun WTP	2,233.68	2,716.05	22%
North Industrial Potable	2,649.61	3,318.84	25%
Fishermans Landing Potable	8,439.43	6,194.25	(27)%
Boat Creek to East End	8,823.62	10,323.50	17%

Note: The current prices given above are the average prices that are currently applied escalated to 2021 dollar terms using actual CPI (2016 – 2019) and forecast CPI of 2% for the 2020 financial year.
Mt Miller Pipeline pricing zone has been renamed to Central Raw for the 2020 review.

15. New Connections

Whilst this is a price monitoring investigation, GAWB sees the framework for new connections as a key instrument to encourage and support future investment in the region. Changes to our current framework are being made to align with the standard processes and procedures applied by other essential infrastructure service providers. These amendments are being set out in our submission to provide an increased level of transparency, which is consistent with our commitment to become more customer centric.

15.1 Introduction

GAWB has a comparatively unique customer base, that is a highly concentrated customer base comprising a small number of large industrial customers and GRC. As a result, it can be exposed to significant asset stranding risk when undertaking network investments to accommodate new demand from a (new or existing) customer.

One way that this risk can be mitigated is via a capital contribution from the customer. In its 2010 final report, the QCA approved GAWB's Capital Contributions Policy (the policy). [119] The policy contains principles for the treatment of past and new capital contributions, including where an asset/s that was previously subject to a capital contribution is subsequently used by another customer. Under this policy, a contributed network asset must be identified as one of the following: a dedicated connection, extension or shared network asset.

GAWB considers that its current policy satisfactorily addresses the situation where it may seek a capital contribution to fund an investment required to meet customer demand (including where this asset is subsequently utilised by another customer). However, this also presumes that GAWB owns the relevant assets. GAWB does not consider this an appropriate default position, as these types of investments present a different risk profile compared to those used by more than one customer.

GAWB can also incur significant costs when it investigates an investment to accommodate demand from a new or existing customer. In some instances, it may be unable to recover those costs if the investment does not proceed. As these costs are incurred prior to any investment commitments being made, the issue exists regardless of whether the investment is subject to a capital contribution or not.

GAWB remains highly committed to investigating and developing new sources of demand, as this is not only in its commercial interests, but it can result in lower prices for existing customers. It also supports economic growth and development in the region. However, the framework for new connections needs to appropriately balance this against mitigating GAWB's risk and maintaining financial sustainability.

As outlined below, GAWB intends to amend the treatment of future dedicated customer connections and the funding of costs incurred in investigating investments required to accommodate new demand.

[119] Queensland Competition Authority. 2010. *Gladstone Area Water Board: Investigation of Pricing Practices – Final Report*. June.

15.2 Dedicated customer connections

15.2.1 Overview

A dedicated customer connection is defined under GAWB's policy to mean:

> An asset that is installed for the sole use of the connecting customer and is expected to remain for the sole use of that customer at all times over the life of the asset.

This typically involves the construction of a pipeline (and other associated assets) to connect the customer to GAWB's shared network (or an extension asset). It does not include common or shared network infrastructure.

The QCA has previously stated that:[120]

> Spur line infrastructure costs are directly attributed to individual customers and are excluded from the regulatory asset base in determining other customer prices in that segment.

This means the costs of these investments are appropriately met by these customers. This includes design, construction and commissioning costs, along with ongoing operating and maintenance costs.

Historically, GAWB has tended to retain ownership of dedicated connection assets. This can result in GAWB bearing significant asset stranding risk unless it is subject to a capital contribution. However, it still also retains the risks of ownership and the associated management and administration costs.

From 1 July 2020, GAWB is proposing these costs be met by the relevant customer; unless otherwise required by and/or agreed with GAWB. It is also proposed the customer own these assets. This is for new developments occurring from this date only. The treatment of existing assets will not change. This is the same approach that GAWB understands has been generally adopted by Aurizon Network in respect of mine specific rail spurs and balloon loops.

As this change does not alter the pricing treatment of new investments and remains consistent with the:

- accepted principles that apply to capital contributions; and
- the commercial framework that GAWB proposes to apply in negotiating the funding, construction, connection and operation of dedicated customer connections;

it is not considered to be within the scope of this price monitoring investigation.

The key issue is ensuring that any amendments (which are likely to be minor) remain consistent with GAWB's approved policy. As this is a price monitoring investigation, GAWB sees the framework and details of GAWB's proposed commercial framework for the development of dedicated customer connections to be outside the scope of the pricing review.

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[120] Queensland Competition Authority. 2005. *Gladstone Area Water Board: Investigation of Pricing Practices - Final Report*. March. p.68.

However, GAWB is presenting the details of the proposed changes in this submission in the interests of full disclosure and transparency for all stakeholders.

15.2.2 Regulatory precedent

GAWB's policy, which has been approved by the QCA, is generally consistent with the treatment applied by other Australian regulators. That is, it provides the regulated business with a mechanism to mitigate its asset stranding risk on new investments while ensuring that a user that has funded (or contributed) these assets receives a benefit proportionate to that contribution. It also seeks to prevent the 'double charging' of the capital costs associated with an investment.

It appears to be generally accepted practice that dedicated customer connections are excluded from the RAB for pricing purposes. However, at least in the regulated water sector in Australia, arrangements in relation to the funding and ownership of dedicated customer connections are not addressed in any detail. To the extent that these assets are not included in the RAB, this is likely to be considered a commercial matter between the regulated business and its customer. This is also likely to reflect the fact that in Australia, most water utilities are subject to some form of price regulation or prices oversight, rather than access regulation. [121]

In the case of industries that are subject to third party access regulation, such as below-rail networks, the funding and ownership of dedicated customer connections tends to be a commercial matter. For example, in the case of the rail network services provided by Aurizon Network that are regulated under Part 5 of the QCA Act, customer-specific branch lines (also referred to as 'mine infrastructure') can be owned by network users (or third parties) or Aurizon Network, noting that in the case of the former, an agreement may still be entered into with Aurizon Network to fund and construct those assets on behalf of the user.[122]

This can also be the case where connection infrastructure is more technically complex, such as electricity. For example, under Energex's Large Customer Connection Manual, the customer has the option of owning its connection assets (being assets beyond the 'network coupling point' that connects them to the shared network) or 'gifting' them to Energex (noting that any such gifted assets may also be used to supply other customers).[123] Responsibility for ongoing operation and maintenance then rests with the owner of the connection assets.

15.2.3 GAWB's proposal

Ownership and funding

GAWB considers that customers should be responsible for the development and funding of dedicated connection assets that are necessary to connect them to GAWB's network. This responsibility should extend to the ongoing risks and benefits of ownership, including operating and maintenance costs.

[121] Although this is the case in South Australia, for example.
[122] http://www.qca.org.au/Rail/Aurizon/Intro-to-Aurizon/2017-Access-Undertaking-(UT5)
[123] Energex. Large Customer Connection Manual, p.9. https://swp.energex.com.au/upload/technical_documents/20170428_084144_7891504.pdf {Accessed 24 July 2019}

From 1 July 2020, it is proposed that, unless otherwise determined by and/or agreed with GAWB, all dedicated connection assets that relate to an individual customer's connection to GAWB's water delivery network should be funded and owned by that customer downstream of the point of connection to the shared network (or to an extension asset). There may be exceptions to this, for example, where:

- the nature and/or location of the asset means that it is more likely that it could be used by other customers to access GAWB's network in the future. This includes 'strategic' infrastructure that GAWB considers could enable future growth and economic development in the region;
- the cost of the infrastructure is very small;
- the connection enables the delivery of water to GRC (as this presents a different risk profile to GAWB's industrial customer base).

This will be determined at GAWB's commercial discretion and in discussions with the relevant customer.

As stated above, GAWB is not proposing to change the arrangements in place for existing customers. This will only apply to new connection inquiries or investments from 1 July 2020.

GAWB's policy has been updated to reflect the above proposes changes – see Attachment 4.

16. Review Triggers

Water prices can be adjusted during the regulatory period to take account of unforeseen changes or material variations in revenue resulting from changes in demand. These provisions are periodically reviewed by GAWB to ensure they remain appropriate given GAWB's operating environment.

16.1 Current framework

GAWB's regulatory framework provides for review triggers, that is a mechanism to recover costs that are uncertain and not provided for in capital or operating expenditure forecasts. Review triggers also represent a predetermined position on the most appropriate allocation of risk between customers and GAWB. If an eligible review event occurs, then the costs can be recovered through a mid-period adjustment, proceeded by an assessment by the QCA.

The initial price review established that a review may be triggered if: [124]

> demand changes have a significant impact on aggregate revenue or, more specifically, if revenues vary by more than fifteen per cent. These variations may be driven, for example, by revisions to the historic no failure yield of Awoonga Dam, which impact on the capital costs and the timing of the next augmentation.

Variations are measured in terms of a movement from the initial forecast and that the change has a high degree of certainty.[125]

16.2 Adequacy of current review triggers

16.2.1 Potential events

To review the reasonableness of the current framework, consideration has been given to the allocation of risk between our customers and GAWB. In doing so, consideration has been given to:

- who is more appropriately placed to mitigate the risk;
- the degree to which there is an efficient trade-off between GAWB mitigating the risk using commercial and/or insurance instruments or customers bearing the risk;
- the extent to which these 'events' are unexpected and outside GAWB's control; and
- what extent should GAWB be required or incentivised to protect its equipment.

Considering the above assessment, drought response measures and force majeure have been identified for potential inclusion. Both of these issues have been previously acknowledged by the QCA as potential triggers for a review, but neither have been formally identified a trigger.

The appropriateness of these events as review triggers is considered below, in light of the above considerations.

[124] QCA. 2002. *Gladstone Area Water Board: Investigation of Pricing Practices – Final Report*. September. P 118.
[125] QCA. 2005. *Gladstone Area Water Board: Investigation of Pricing Practices – Final Report.* March. p 154.

Drought Response

Drought response measures include the potential for a reduced level of revenue due to the imposition of the Drought Management Plan and increased costs for catchment management and water treatment. GAWB's Drought Management Plan sets out the triggers and actions that will be taken in response to a sustained period/s of low or nil inflows. The cost of implementing drought response measures can be significant.

Drought conditions also bring about an adjusted cost profile. For example, as dam levels decline an increased amount of the riparian zone is exposed. As a result, the breadth of catchment management activities such as weed and pest management to be conducted, increases. An increased level of attention is also placed on fire prevention activities. It is prudent that we undertake these additional activities and incur the additional costs as there is a direct relationship between effective catchment management and water quality (e.g. turbidity). That is, poor water quality results in operational impacts for GAWB (through the potential for increased chemical costs) and our raw water customers.

These costs are uncertain due to the unpredictable nature of droughts. GAWB currently, as part of its regulatory and compliance obligations, undertakes a wide range of catchment management activities. These activities represent a prudent and efficient response to GAWB's operational requirements and the known risks. Due to the unpredictable nature of droughts, and to ensure the costs of these activities are only recovered from customers when applicable, it is appropriate that the actual cost, when incurred, is recovered from customers.

Force Majeure

Force majeure events may include:

- flood, earthquake, cyclone, tornado, storm, lightning or other damage caused by the elements;
- a failure of electricity supply to the Dam or water delivery system;
- fire, including a fire that may require an increase in the quantity or flow rate of water to be supplied by GAWB to any other customer of GAWB; or
- insurrection, riot, war, revolution, acts of terrorism and civil commotion.

These costs are uncertain due to their unpredictable nature. Due to the unpredictable nature of the above events, and to ensure the costs of these activities are only recovered from customers when applicable, it is appropriate that the actual cost, when incurred, is recovered from customers.

16.2.2 Regulatory precedent

Several regulatory frameworks have identified force majeure and drought response measures as review triggers – as shown Table 16.1.

Table 16.1: Current approaches by Australian regulators

Determination	Regulator	Review Triggers		Materiality Threshold (costs to be greater than)
		Force Majeure (incl terrorism, emergency event)	Drought Response (including natural disaster)	
Icon Water	ICRC	✓	✓	$12 Million[1]
Seqwater	QCA	✓	✓	Not specified
Aurizon Network	QCA	✓[2]		$1 Million
QR	QCA	✓		2.5 % of foregone revenue

Source: Independent Competition and Regulatory Commission. 2018. *Regulated Water and Sewerage Services Prices – Final Report 2018-23,* Report 1 of 2018. May. p 22; Queensland Competition Authority. 2018. *Seqwater Bulk Water Price Review 2018-21 – Final Report*. March. p 81. Aurizon Network 2017 *Access Undertaking (UT5).* Part 12. July. p 272; Queensland Rail *Access Undertaking No. 1*. October. p 81.

Notes: 1. This value is indexed for inflation each regulatory period, so for the current period the value is $13.9 million. 2. A force majeure event can include events such as a flood.

16.2.3 Materiality

Currently the materiality threshold for a review trigger is a variation in revenues by more than 15%. Based on the smoothed ARR for the 2021-25 pricing period, this represents approximately $10 million.

Compared to the values shown in Table 16.1, this is a very high materiality threshold.

As noted in chapter 6, GAWB has proposed to retain a hybrid revenue cap with a ± 10% dead-band (based on all regulated activities). To maintain a consistent level of risk sharing between GAWB and our customers, a reduction in the materiality threshold to 10% is proposed. Based on the smoothed ARR for the 2021-25 pricing period, this would represent a materiality threshold of $6 million. Compared to the values shown in Table 16.1, the adjusted materiality threshold still represents one of the highest thresholds.

16.3 GAWB's proposal

GAWB proposes to expand the list of eligible review events to include:

- adjustments to demand
- drought response measures
- force majeure.

If one of the above events occurs and the costs incurred exceed the materiality threshold, they may be recovered through a mid-period adjustment. GAWB will act reasonably in determining the related costs and resultant prices. The method of calculation will be submitted to the QCA for review at the following pricing investigation.

From 1 July 2020, the materiality threshold for a review trigger will be reduced to a 10% variation in aggregate revenue.