Gladstone to Fitzroy Pipeline QCA Investigation

Part (C) Submission to QCA

Gladstone Area Water Board

May 2009

Summary

GAWB currently operates a bulk water supply business with a single water source. GAWB's current pricing practices were designed with a single source in mind. This submission sets outs GAWB's proposed changes to pricing practices necessary to set prices in a multiple source system.

A summary of GAWB's proposed changes to pricing practices have been included at Section 11 for the Authority's approval, rejection, or alteration.

Necessity to Change Pricing Practices

The current delivery system pricing is based on pricing zones. A customer's price is the sum of all upstream zones.

Following commissioning of the Gladstone to Fitzroy Pipeline (or any alternative second source), many customers will be able to be supplied from either source. That is, the "sum of upstream zones" will be dependent on the network operating conditions at any point in time. Therefore a modified delivery pricing arrangement is required.

Pricing Approach for Multiple Source System

When a second source is connected to the trunk raw water delivery network, there is no change to the flows in raw water spurs or the potable water delivery network. For this reason GAWB proposes that pricing of raw water spurs and the potable water delivery network remains unchanged. That is, GAWB proposes that the current zonal pricing practice is retained.

Consistent with economic efficiency and a principle that all customers should pay the same price for the same service, GAWB proposes that all customers pay the same water reservation and storage price, irrespective of the source from which their supply is normally physically derived.

Other than a small amount of pipeline assigned to delivery system to achieve desired delivery price outcomes, GAWB proposes that the connection between the new source and existing delivery system is considered to be a source asset and its economic cost is recovered through the water reservation and storage price.

Three options for pricing the trunk raw water delivery network are discussed:

- postage stamped – as source asset;
- postage stamped – as delivery system asset; and
- zonal pricing based on normal flow.

In network businesses, "postage stamped" pricing means that prices are not related to location. Most electricity, gas and water distribution networks (especially for mass market customers) set prices on a postage stamp basis. Most electricity, gas and some water transmission networks set prices on a location-specific basis.

GAWB proposes to retain the practice of zonal pricing with prices based on normal flows. Where location-specific pricing is relatively inexpensive to calculate (few off-takes, stable network configuration, etc), it is usually considered by regulators to have both efficiency and equity benefits over a geographically averaged approach.

However, compared to the other arrangements, modelling of zonal prices is more complex (especially when flow characteristics change over the pricing horizon) and prices are more difficult to explain to customers.

GAWB also proposes that, after the specific location of demands at the time of augmentation trigger is known (so customer price impacts can be properly assessed), a single pricing zone for the trunk raw water delivery network should be considered in preference to zonal pricing if:

- there is a reasonable amount of spare capacity throughout the trunk raw water delivery network or if the marginal cost of capacity is similar throughout the trunk raw water delivery network; and
- average price changes can be equitably managed (through a revenue neutral transition or similar arrangement).

Postage stamp pricing of the sources and trunk raw water delivery network as a single source zone would result in inefficient and inequitable outcomes and is not supported by GAWB.

Operating Rules

Once a second source is commissioned, GAWB will require rules for operating the multiple source system.

Irrespective of the particular form of the operating rules eventually developed, there will be the perception that GAWB has an incentive to over-use cheaper sources to maximise profit unless this incentive is corrected by some other regulatory mechanism. If acted upon, such an incentive could potentially put supply reliability at risk.

GAWB wishes to avoid any appearance of a conflict between GAWB's financial incentives and optimal outcomes for customers. Therefore, GAWB proposes that, following commissioning of a second source, the regulatory framework should include an unders-and-overs account for source-related variable expenses.

Under the proposed mechanism, at the beginning of a regulatory control period, the regulator would assess a marginal cost of supply from each source. GAWB's target revenue and prices would be set on the basis of a forecast of use of each source. When actual use of each source differed from the forecast due to the application of the operating rules, the associated cost (or cost saving) would be added to (or subtracted from) the unders-and-overs account. The balance of the unders-and-overs account would be rolled forward using an interest rate equal to the regulated rate of return on assets and adjusted against target revenue at the next price reset.

Price Transition

Despite adopting a multiple source pricing arrangement that provides the least variation from current prices, connection of a second source may yield significant price movements for some customers. GAWB proposes that the impact of significant price movements be mitigated for customers using a price transition arrangement.

Whilst we acknowledge that the specific details of a price transition arrangement will need to be determined at the time price outcomes for every customer are known, GAWB proposes the following principles apply to transition arrangements:

- price transition be implemented in such a way as to be revenue-neutral for GAWB (that is, preserve the present value of expected revenue over the 20 year planning horizon);
- where possible, transition arrangements should occur within a single 5-year regulatory control period; and
- that transition arrangements consider the financial and cash flow impact on GAWB and, in particular, GAWB's ability to (achieve and) maintain financial ratios consistent with a BBB+ credit rating.

Contents

1 Introduction

GAWB currently operates a bulk water supply business with a single water source. GAWB's current pricing practices were designed with a single source in mind. This submission sets outs GAWB's proposed changes to pricing practices necessary to set prices in a multiple source system.

1.1 Background

On 23 February 2007 the Premier and the Treasurer referred GAWB to the QCA for investigation of revisions that GAWB proposes to make to its existing pricing practices as a result of its intention to undertake preparatory expenditure for the Gladstone to Fitzroy Pipeline as a part of its contingent supply strategy.

The referral notice for the investigation divides the investigation into three parts:

(a) GAWB's recovery of proposed preparatory expenditure from customers, including the prudence of GAWB's contingent source strategy and selection of a supply from the Fitzroy River as the appropriate contingent source;

(b) GAWB's proposed criteria for triggering construction of the appropriate augmentation in the event of drought or unexpected additional demand; and

(c) GAWB's proposed changes to pricing practices related to declared activities required to enable GAWB to recover its efficient costs of the system as appropriately augmented.

This submission relates to Part (c) of the referral notice.

1.2 Necessity to Change Pricing Practices

GAWB's current pricing is based on specific infrastructure, grouped into zones. This pricing structure was recommended by the QCA in two previous reviews. [1]

Figure 1 shows the pricing cascade for the first year of the current price control period (2005/06 to 2009/10). This is a simplified representation of GAWB's network, with assets optimised out of the regulated asset base removed. Water sources are shown in yellow, raw water delivery system zones in green and potable water delivery system zones in blue.

1 For example, see QCA Final Report 2005, p53, "The Authority recommends that prices be differentiated for all customers according to their utilisation of specific components of GAWB's infrastructure network." Similarly see QCA Final Report 2002, p33, "The use of price differentials is particularly suited to GAWB as its water supply system has a number of clearly defined components and involves specific infrastructure to supply customers in defined geographic areas… [The Authority recommends] that a differentiated cost structure be adopted with prices based upon users' share of common infrastructure together with costs related to any infrastructure specific to their own requirements."

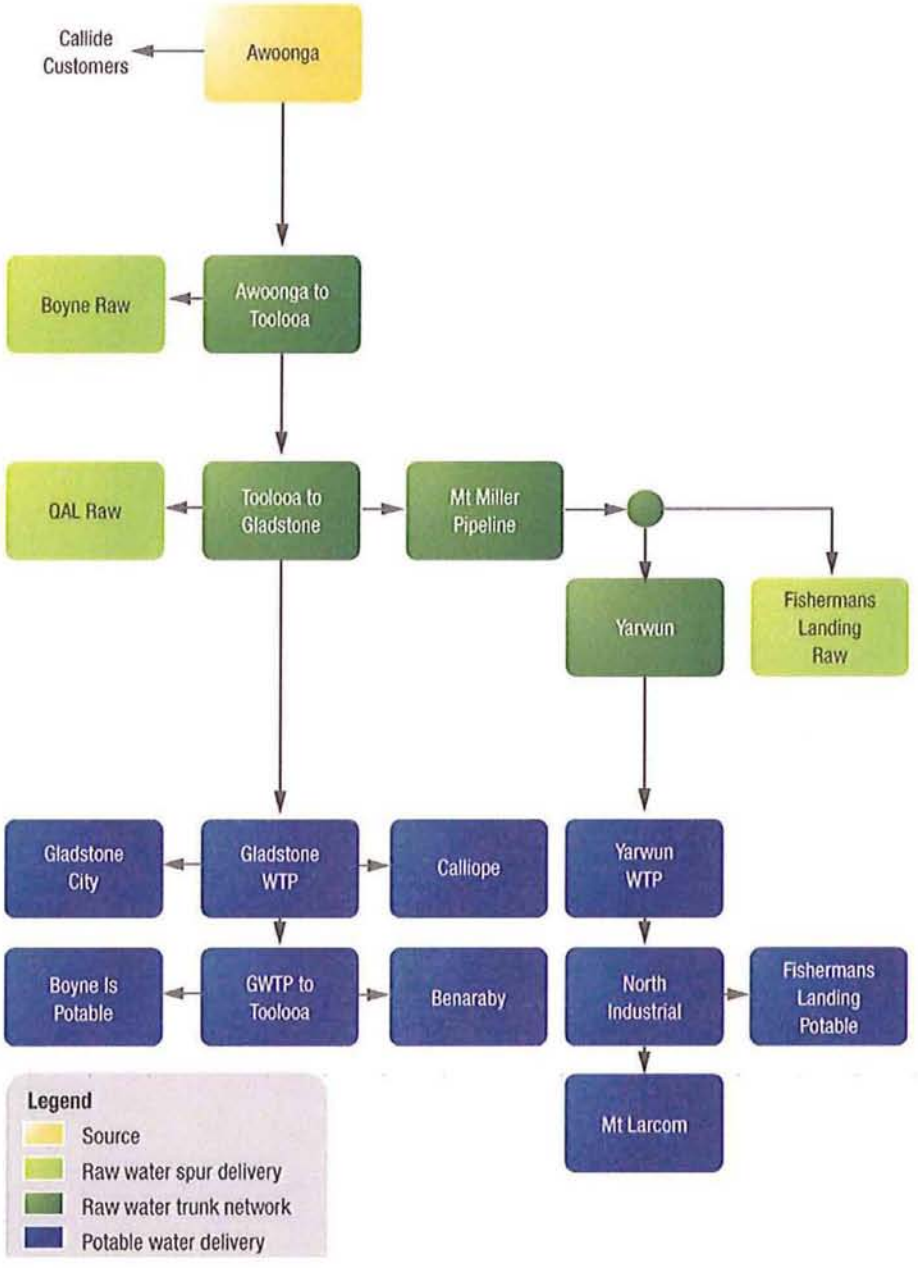

Figure 1 - Current Pricing Cascade

Under the current delivery system pricing a customer's price is the sum of all upstream zones.

Because there is only one source and there is limited paralleling or redundancy in the delivery system, water can be regarded as taking a single route through the delivery system. Figure 2 shows the water flow assumption for a hypothetical customer taking supply in the Fishermans Landing zone. This customer would pay a water reservation and storage price based on the costs of the 'Awoonga' zone and a delivery price based on the costs of the 'Awoonga to Toolooa', 'Toolooa to Gladstone', 'Mt Miller Pipeline' and 'Fishermans Landing' zones.

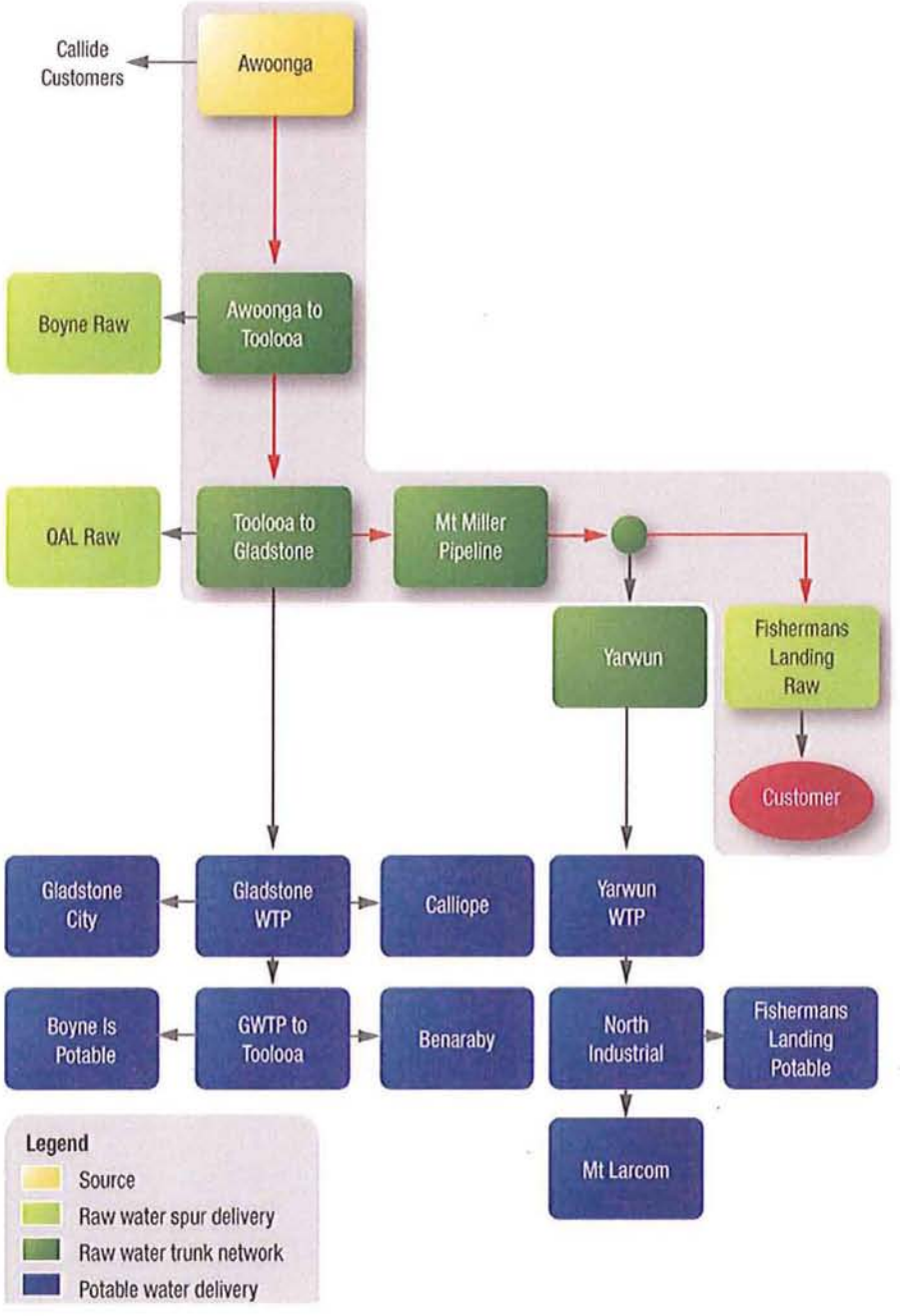

Figure 2 - Current Pricing – Fishermans Landing Customer

Following commissioning of a second source, many customers will be able to be supplied from either source. That is, water can take multiple routes through the delivery system; the 'sum of upstream zones' will be dependent on the operating rules and operational decisions at any point in time.

Figure 3 below shows an example of possible future delivery system cascade based on possible interconnection arrangements for the Gladstone to Fitzroy pipeline. This future cascade includes the Hansen Rd pipeline (optimised out of the 2005/06 regulated asset base) and a new Aldoga zone to supply the Gladstone State Development Area (GSDA) around Aldoga. The boundaries between the Yarwun, Mt Miller pipeline and Fishermans Landing zones have also been slightly modified to reflect expected changes to the infrastructure to allow interconnection of the Gladstone to Fitzroy pipeline.

Note that the flow direction in many zones is now dependent on operational decisions (indicated as bidirectional arrows). Fitzroy water will potentially be able to reach the Boyne Raw zone and Awoonga water will be able to supply the GSDA around Aldoga.

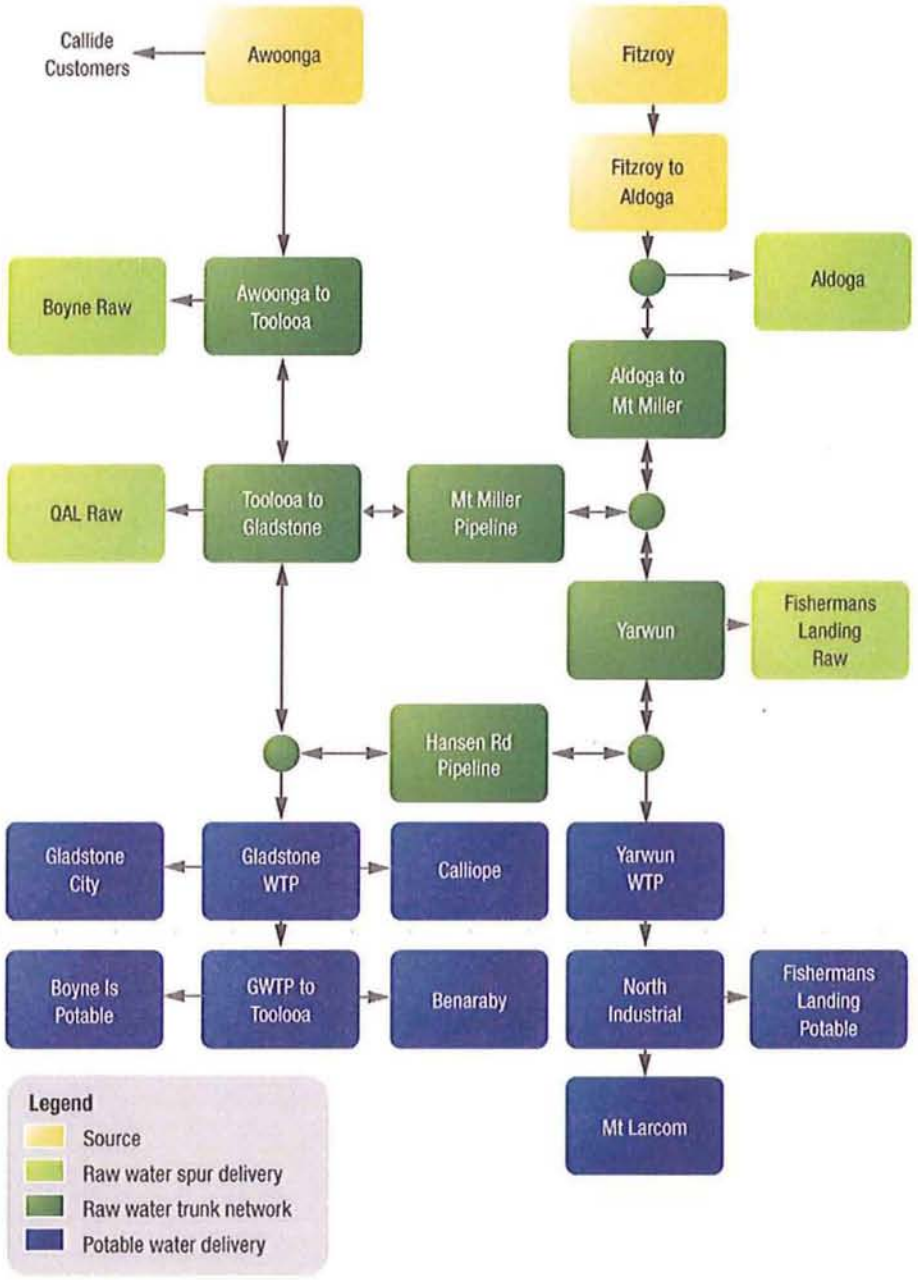

Figure 3 - Possible Future Pricing Cascade

Figure 4 below expands on the previous example and shows two different water flow routes to the hypothetical Fishermans Landing customer. The customer can either be supplied from Awoonga via the Mt Miller pipeline or from Fitzroy via the Gladstone to Fitzroy pipeline. Indeed, a third route is also possible - the customer could be supplied from Awoonga via the Hansen Rd Pipeline.

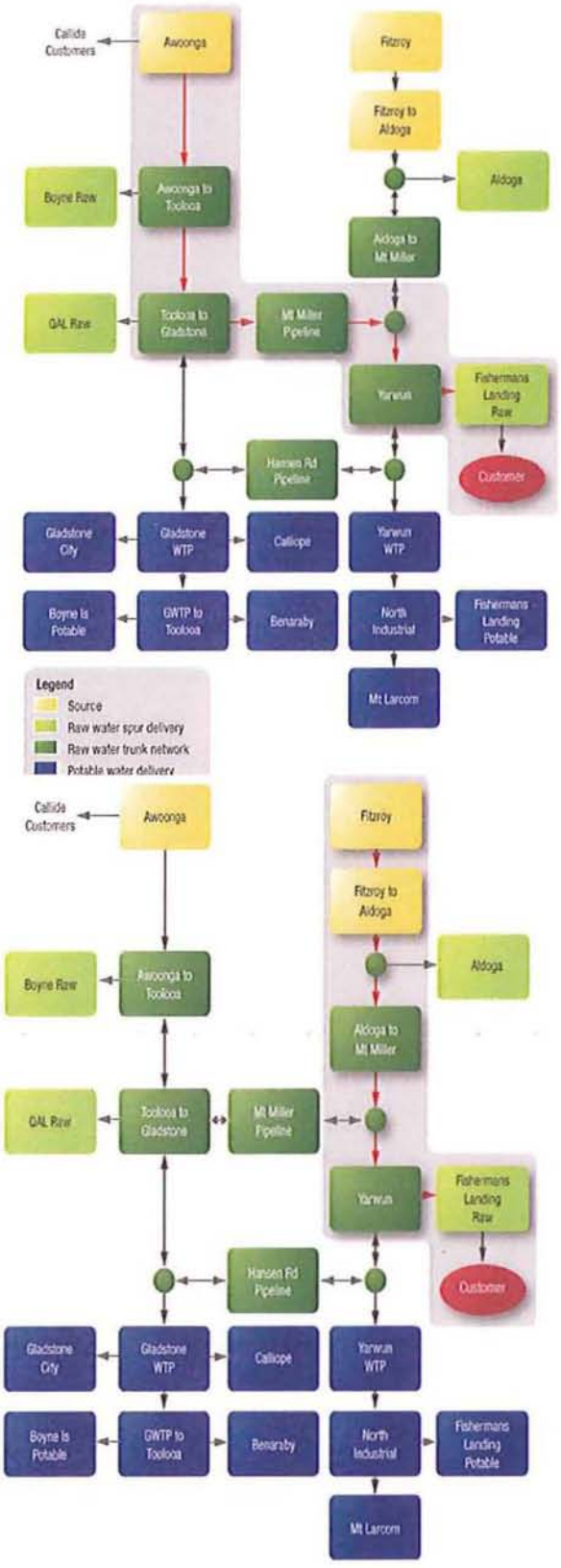

Figure 4 - *Possible Future Pricing – Fishermans Landing Customer*

Because it is not possible to define a single water flow route from which to calculate prices, a modified delivery pricing arrangement is required.

1.3 Preferred Contingent Source

Examples and illustrations in this submission generally relate to GAWB's currently preferred contingent source, the Gladstone to Fitzroy pipeline. However, unless otherwise stated, the arguments and conclusions can be generalised to any additional source connected to GAWB's system.

For example, Figure 5 shows a possible future network including a sea water desalination plant connected to the existing system in the Yarwun area. Notwithstanding that a different future pricing cascade would be required (the network supplying Aldoga from the Mt Miller pipeline is a spur in this example), the same conclusion would be drawn: Because it is not possible to define a single water flow route from which to calculate prices, a modified delivery system pricing arrangement is required.

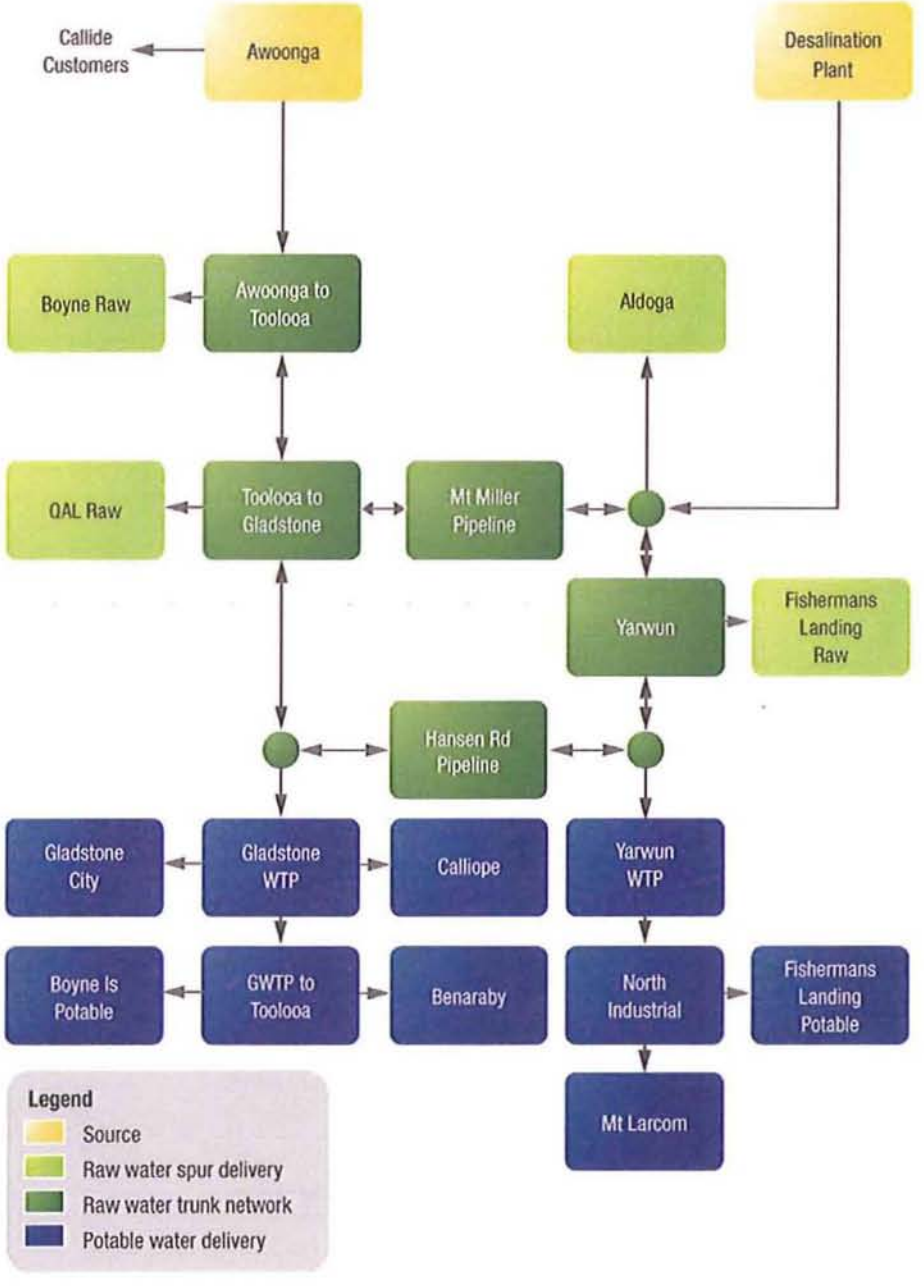

Figure 5 - Possible Future System with a Sea Water Desalination Plant

1.4 Scope of this Submission

This submission deals only with changes to pricing practices necessary to allow GAWB to set prices in a multiple source system.

Other changes to GAWB's pricing practices will be presented during a future investigation into pricing practices for the next regulatory control period (2010/11 to 2014/15).

1.5 Summary of GAWB Proposals

A summary of GAWB proposed changes to pricing practices is included in Section 11.

2 Definitions

2.1 Source Zones

Throughout the document (as shown in Figure 6 below):

- source zones are illustrated in yellow; and
- delivery system zones are illustrated in dark green (for trunk raw water delivery network zones), light green (for raw water spur zones) and dark blue (for potable water delivery zones).

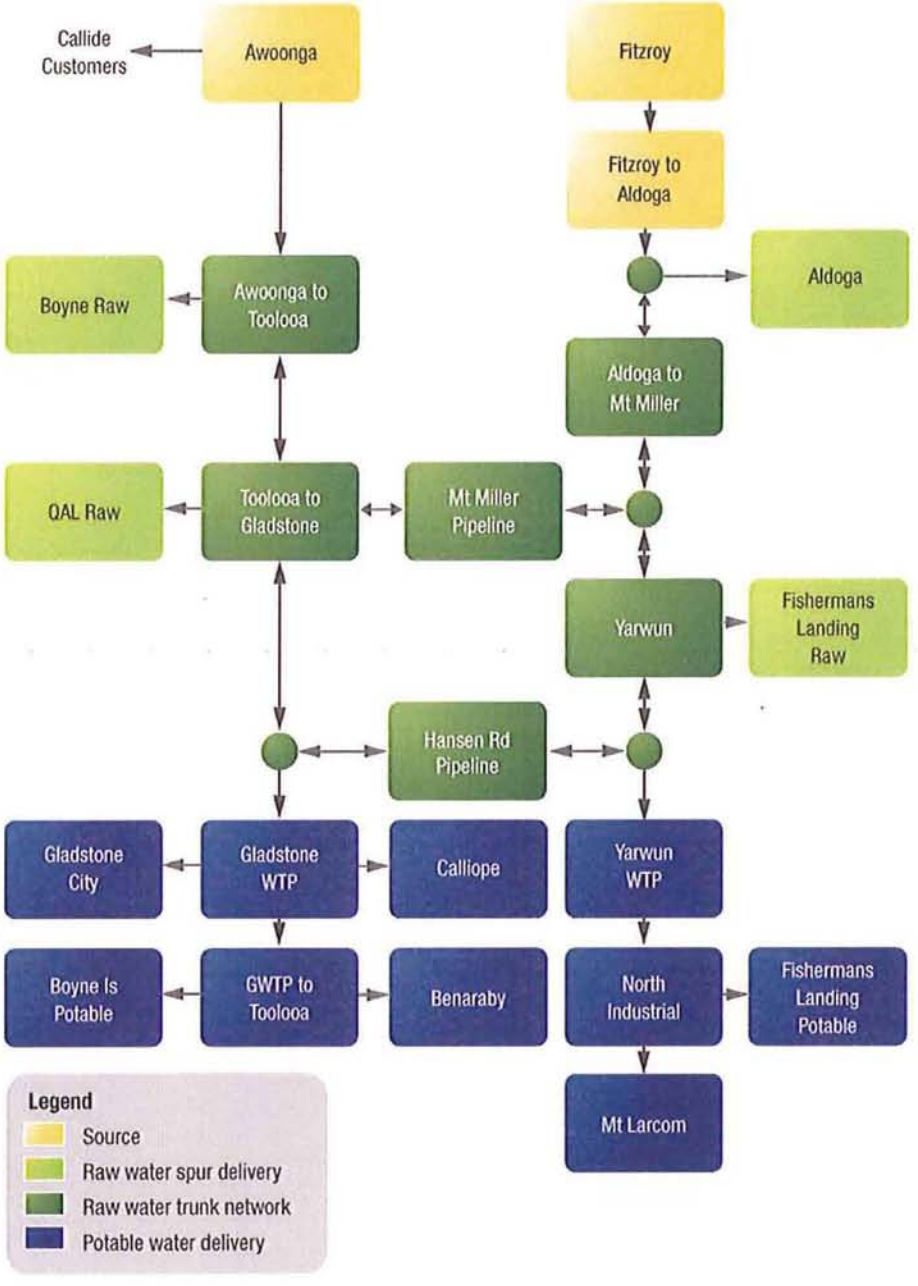

Figure 6 – Colours used to Illustrate Zone Types

2.2 Source and the Water Reservation and Storage Price

GAWB's separately prices for a water reservation and storage service and a delivery service.

Source assets are those assets used to provide the water reservation and storage service. Currently the only source is Awoonga Dam. In future source assets may include the Gladstone to Fitzroy Pipeline, desalination plants, other water sources and/or contracts requiring customers to reduce demand under certain circumstances.

All customers pay the same water reservation and storage price for the water reservation and storage service. The product of a customer's water reservation and storage price and billable volume over a period is the water reservation and storage charge.

2.3 Delivery System and Delivery Price

The delivery system consists of those assets (pipes, reservoirs, pumps, valves, etc.) used to provide the delivery service.

Customers currently pay a zone-specific delivery price for the delivery service. The product of a customer's delivery price and billable volume over a period is the delivery charge.

2.4 Trunk Raw Water Delivery Network

The trunk raw water delivery network is the raw water network other than spurs. Alternatively, trunk raw water delivery network assets (pipes, reservoirs, pumps, valves, etc.) can be thought of as that part of the delivery system where flow direction may change from time to time. The trunk raw water delivery network assets are shown in dark green n Figure 6 above and throughout the remainder of this document. The diagram includes the Aldoga to Mt Miller zone as a trunk raw water delivery network asset but part of this asset may be priced as a source asset until a delivery network in the Aldoga precinct is established (see discussion at Section 5.1.3 and Section 8.1).

2.5 Operating Rules

Operating rules are a set of rules that govern water flows in the delivery system. The operating rules will state how much water should be used from each source under various circumstances.

Operating rules are further discussed in Section 8.2.

2.6 Normal Flow

Normal flow is the modelled flow of water in a pricing zone in a particular year applying the operating rules, forecast demand and expected (average) hydrological conditions.

2.7 Security and Reliability

GAWB generally uses "security" and "reliability" to refer to different aspects of service. Security refers to redundancy in the system or the system's ability to cope with failure of components. A reservoir supplied by two

pumps will have greater security than a reservoir dependent on one pump. Security is related to assets and their configuration.

Reliability is a measure of customer outcomes, that is, actual system performance. Reliability is dependent on the level of security built into the system, but also other factors including maintenance policies, leak management, operating rules and hydrology.

To improve readability, in this document we use the single term reliability to include both the security and reliability concepts.

3 Unchanged Aspects of Pricing

3.1 Potable Water Supply

Potable water delivery zones are shown in dark blue in Figure 7 below.

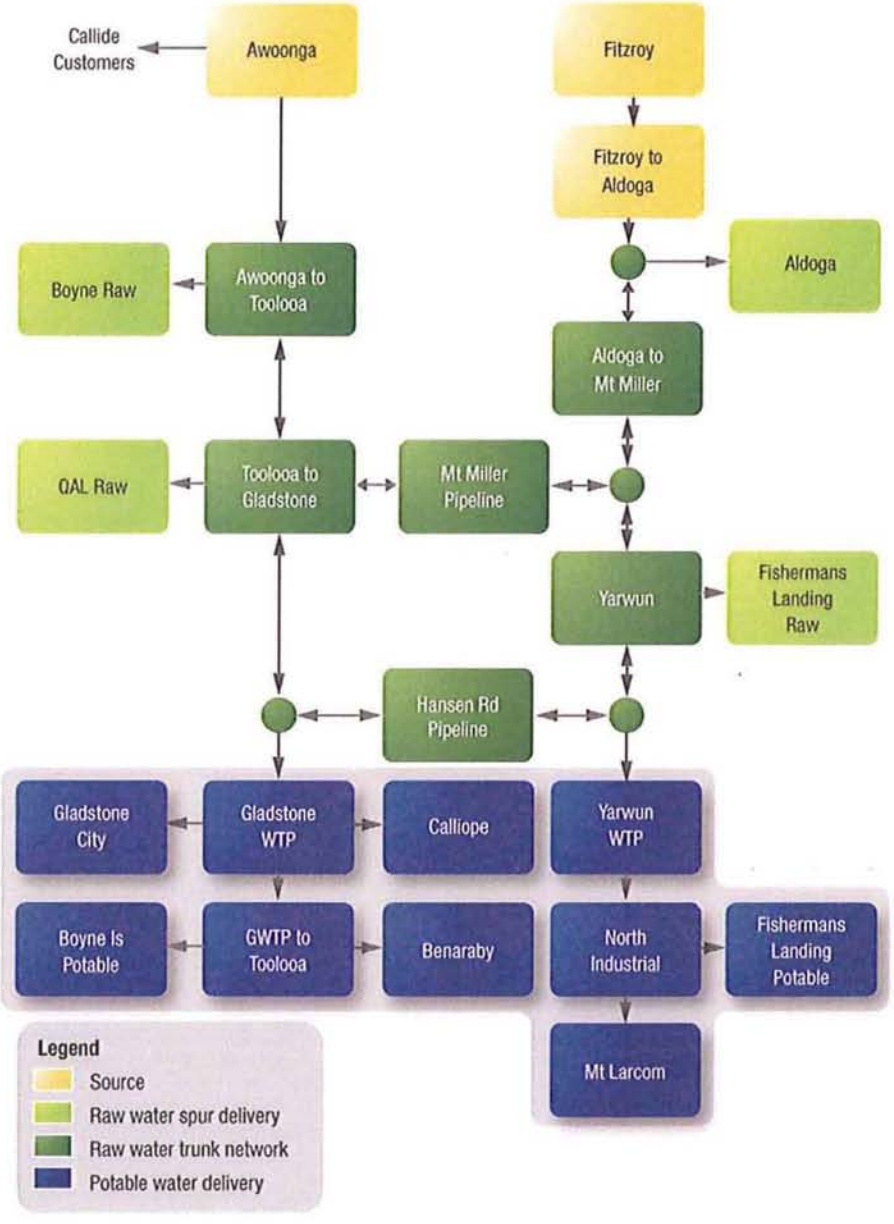

Figure 7 – Potable Water Delivery Zones

Whilst the interconnection of a new water source complicates the cascade somewhat, a comparison of Figure 1 and Figure 3 shows that there is no change to the cascade structure downstream of the Yarwun Water Treatment Plant (WTP) and Gladstone WTP. That is, notwithstanding that pricing the raw water input into the WTPs will be more complex, the cascade below the WTPs is unchanged and therefore pricing should remain unchanged.

Zonal pricing for potable water (appropriately capped at the efficient bypass cost of serving each community) is equitable, efficient, and has been previously endorsed by the QCA.

GAWB proposes that the current practice is retained.

3.2 Raw Water Spur Lines

Raw water spur lines are illustrated in light green in Figure 8 below.

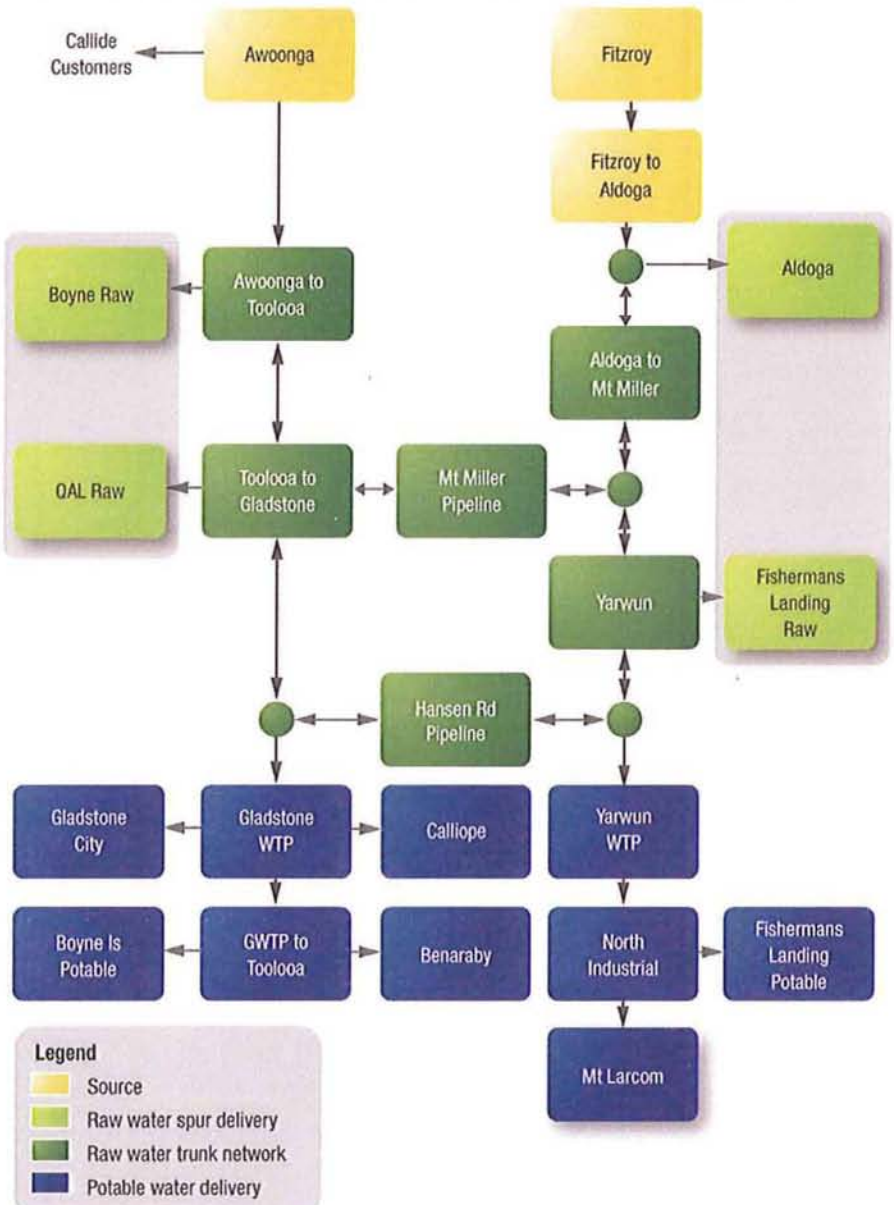

Figure 8 – Raw Water Spur Zones

The costs associated with raw water spur lines are currently recovered only from customers using those spur lines. This approach is equitable, efficient, and has been previously endorsed by the QCA.

GAWB proposes that the current practice is retained.

4 Source Pricing

Source zones are illustrated in yellow in Figure 9 below.

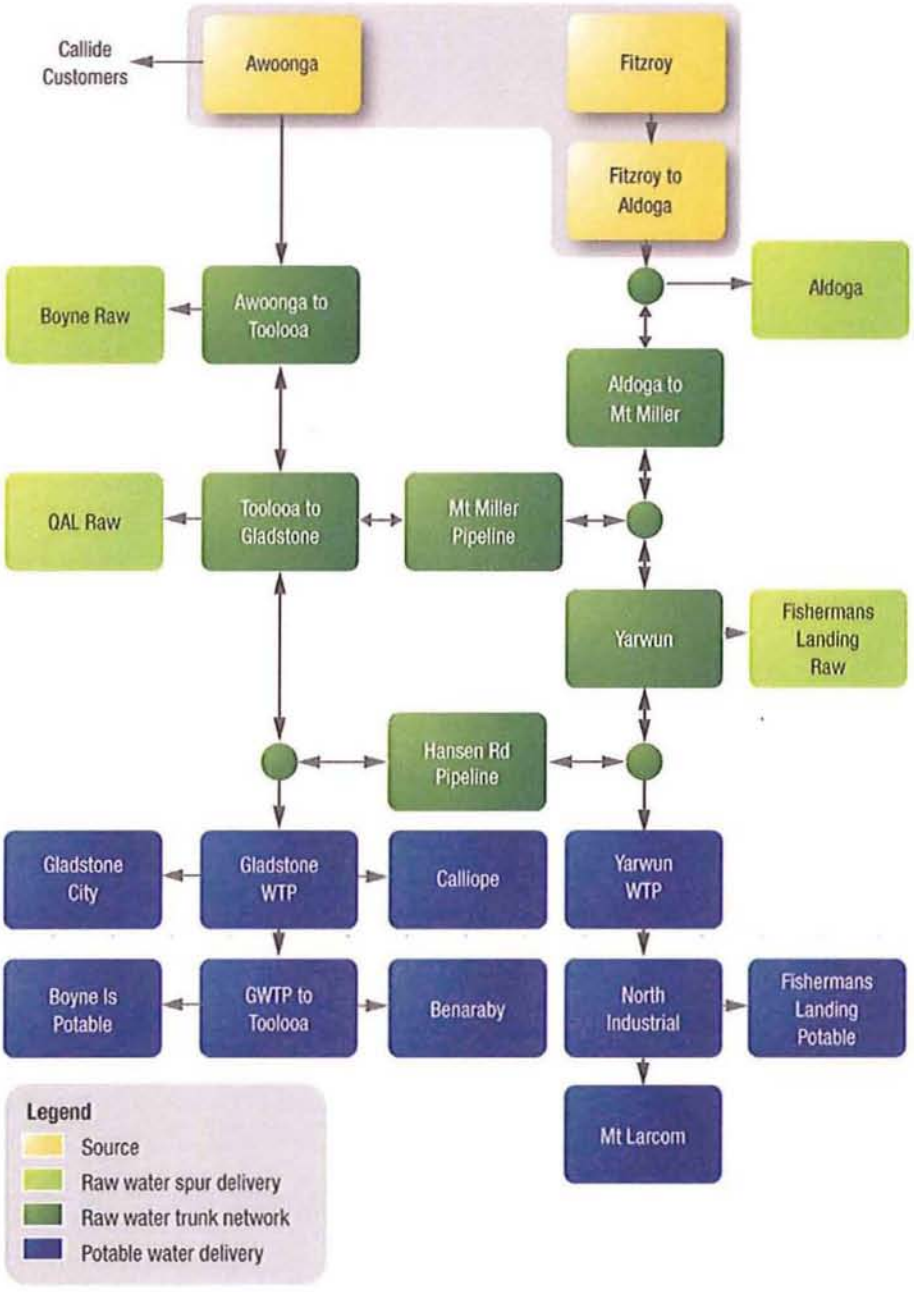

Figure 9 – Source Zones

4.1 Single Source Price

Economic efficiency requires that all customers pay the same (marginal cost related) variable component of water reservation and storage price. Equity requires that all customers pay the same total water reservation and storage price.

4.1.1 Equity Considerations

The QCA has previously recommended that new and existing users should pay the same price for the same service. At p62 of QCA Final Report 2005, the QCA stated:

> *The Authority has previously recommended that new and existing users pay the same price for the common infrastructure costs of providing water. The rationale was that it would be inequitable to charge a different price for the same service, and further that regional development would be promoted by such an arrangement…*
>
> *To further expand on its previously stated position, the Authority considers that, where a facility requires expansion because of the demand of new users, both the existing and new user are in a position to adjust their demand to minimise the extent of augmentation required. Thus, to the extent that they utilise common infrastructure, both should receive the same price signal to review their requirements. Under the current contractual proposals, a reduction in demand by an existing user in response to prospectively increased costs should result in a reduction in their access charge, as GAWB would be able to on-sell the associated surplus capacity to those users whose demand could otherwise create the need for the additional capacity. In this way, regional development is promoted because costs are kept at a minimum.*

At p64 of QCA Final Report 2005, the QCA stated:

> *The Authority considers that, as a general principle, the cost of common infrastructure should be allocated to all existing and expected new customers, provided the costs represent the least cost option to meet projected demand.*

The two (or more) sources are common infrastructure because they will be managed on a combined, portfolio basis to achieve the desired level of system-wide supply reliability.

In almost all situations, all customers (irrespective of the source that normally supplies their water) will experience system-wide, rather than source-specific, reliability. According to the QCA's 2005 rationale, which is supported by GAWB, equity requires that all customers pay the same water reservation and storage price for this common reliability product.

4.1.2 Efficiency Considerations

Long Run Marginal Cost of Source Capacity

Economic efficiency requires that all customers should see the marginal capacity cost in their water reservation and storage price.

All customers' consumption decisions contribute to the aggregate demand used in the calculation of the system-wide LRMC of source capacity. Incremental consumption anywhere in the system brings forward the next source augmentation.

Once the second source is commissioned, the long-run marginal cost (LRMC) of source capacity will be determined by:

- the marginal operating costs of current sources; and
- the capital cost of the next (third) source and the timing of the next augmentation.

Analogous to the second source augmentation trigger discussed in Section 8 of GAWB's original Part (b) submission (December 07) and Section 3 of the QCA's Part (b) Final Report (December 08), the third source augmentation demand trigger will occur when contracted demand exceeds a trigger threshold. This trigger threshold will be a function of aggregate supply capacity less a margin for system losses and, potentially, other contingencies.

Because the trigger is related to whether aggregate demand exceeds the threshold, a single LRMC of source capacity is appropriate throughout the entire system.

Operating Costs

Excluding all sunk asset costs, the marginal cost of supply (variable operating costs) of the Gladstone to Fitzroy pipeline will be around $260/ML. The variable operating costs of sea-water desalination would be even greater. The variable operating cost of the most expensive source will become the system marginal cost. Any marginal change in any customer's demand will result in GAWB either saving or spending $260/ML. [2]

Efficiency pricing requires that all customers should see the marginal operating cost in their water reservation and storage price.

GAWB's proposed regulatory treatment of source operating costs is discussed in more detail in Section 8.2 below.

4.1.3 Proposed Pricing Practice

GAWB proposes that all customers pay the same water reservation and storage price, irrespective of the source from which their supply is normally physically derived.

4.2 Connection to Existing Network is a Source Asset

As part of the Strategic Water Plan process, GAWB examined many options for supplying the Gladstone region's future water needs. Options were evaluated based on the incremental cost of water at Gladstone rather than at the particular source.

If the connection between the new source and existing delivery system was not considered part of the source then those customers taking water supply but not delivery (e.g. Callide customers) would not see the true marginal cost of consumption and the cost of increased system-wide supply reliability.

As discussed in Section 4.1.2 above, the marginal cost of supply (variable operating costs) of the Gladstone to Fitzroy pipeline will be around $260/ML. Any marginal change in any customer's demand will result in GAWB either

[2] Indicative prices discussed in this paragraph are based on GAWB's January 2008 price impacts analysis. An updated analysis is currently underway and will be available in August 2009.

saving or spending $260/ML. All customers, including those not using the existing delivery system, should see the marginal cost of the Gladstone to Fitzroy Pipeline in their Water Reservation and Storage Price.

Other than a small amount of pipeline assigned to the delivery system to achieve desired delivery price outcomes, GAWB proposes that the connection between the new source and existing delivery system is considered to be a source asset and its economic cost is recovered through the water reservation and storage price.

Setting the source/delivery system boundary is further discussed in Section 8.1.

5 Options for Pricing the Trunk Raw Water Delivery Network

Section 3 above sets out GAWB's proposed approach for pricing in those delivery system assets where water flow direction is known. There remains the question of how to price delivery in the trunk raw water delivery network. The flow of water in the trunk raw water delivery network would be controlled by GAWB applying the operating rules (see section 8.2).

The trunk raw water delivery network is illustrated dark green in Figure 10 below.

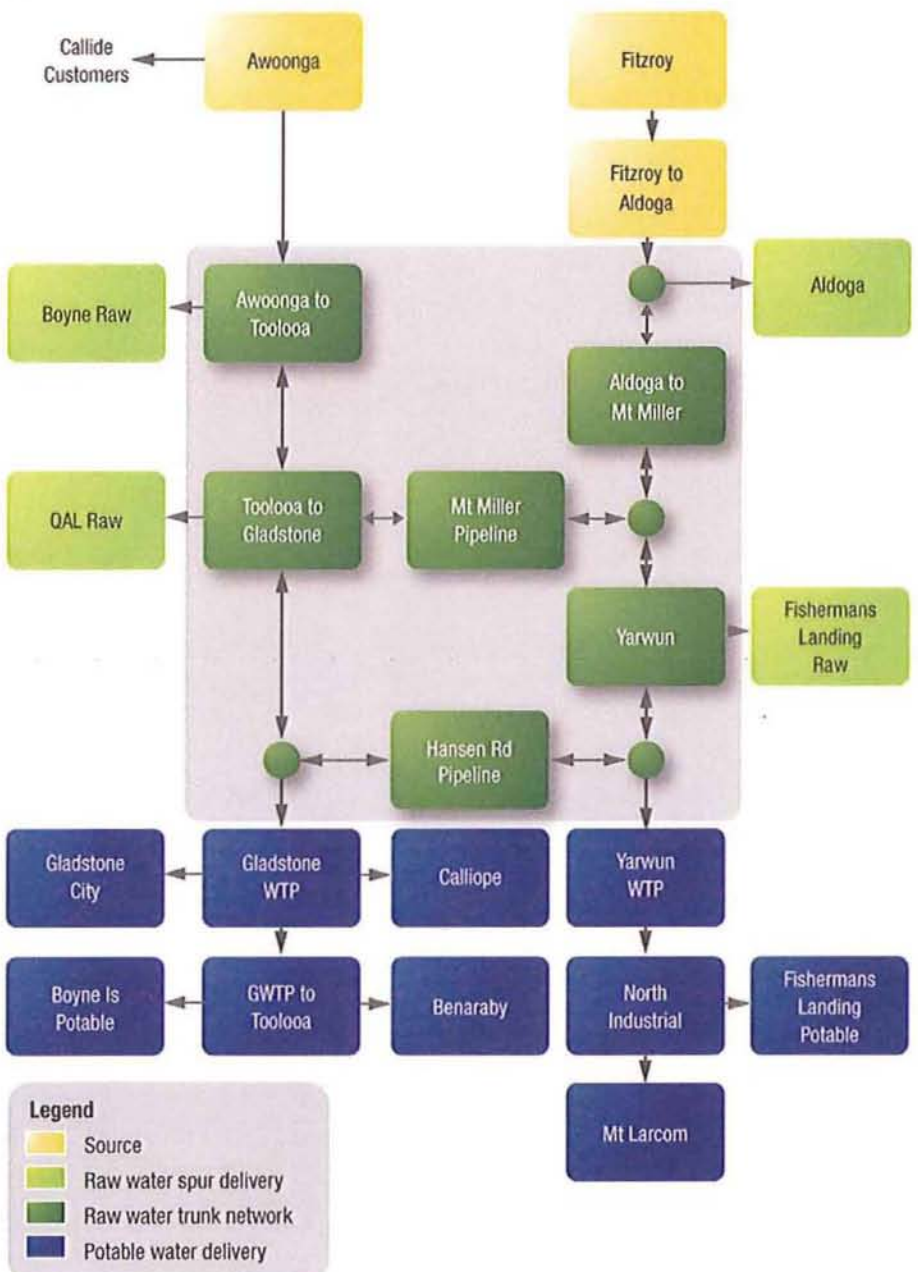

Figure 10 – Trunk Raw Water Delivery Network Zones

The flow of water to a particular customer through the trunk raw water delivery network may be from either Awoonga or a second source at any point in time.

GAWB has identified three options for pricing the trunk raw water delivery network:

- postage stamped – as source asset;
- postage stamped – as delivery system asset; and
- zonal pricing based on normal flow.

In network businesses "postage stamped" pricing means that prices are not related to location. Most electricity, gas and water distribution networks (especially for mass market customers) set prices using a postage stamp approach. Most electricity and gas transmission businesses (more analogous to GAWB's bulk supply role) set prices on a location-specific (non postage stamp) basis.

5.1.1 Postage Stamped as Source Assets

Figure 11 shows the pricing arrangement if trunk raw water delivery network assets were treated as part of a combined source. The box shows the boundary of the proposed postage stamping.

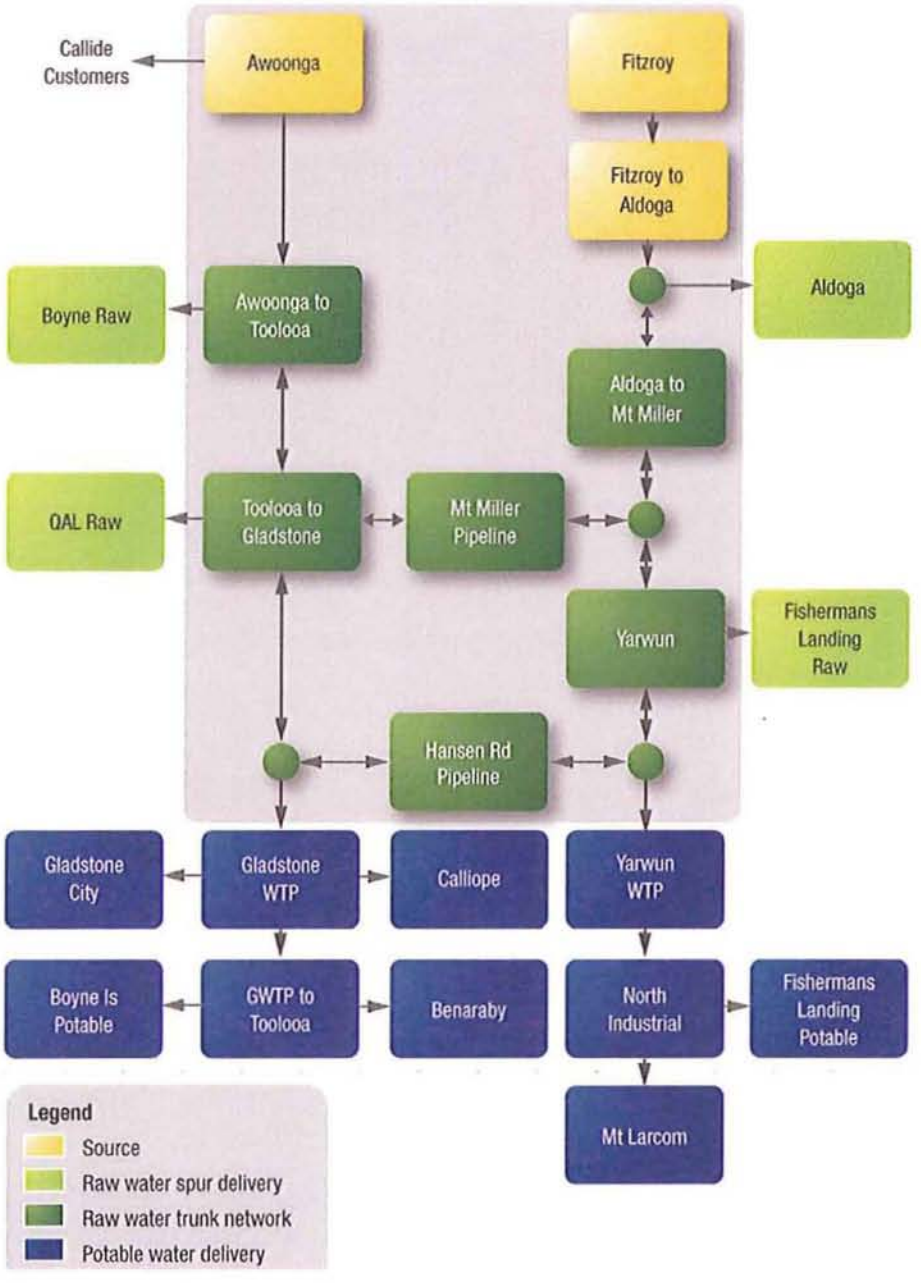

Figure 11 – Trunk Raw Water Delivery Network as Source Asset

Under the postage stamped source arrangement, customers would pay a volumetric price for raw water delivered anywhere in the trunk raw water delivery network. Customers connected to a raw water spur line would pay the combined source/trunk raw water delivery network price plus a delivery price that recovered the cost of the spur assets. Similarly, customers connected to the potable water network would pay the combined source/trunk raw water delivery network price plus a delivery price that recovered the cost of the treatment and potable water delivery assets.

5.1.2 Postage Stamped Delivery Assets

Figure 12 below shows the pricing arrangement if the trunk raw water delivery network assets were treated as postage stamped delivery assets. Note that there are now two boxes: In the first box Awoonga, the Fitzroy weir and delivery to Aldoga are averaged as a single source price (see

Section 4). In the second box the zones of the trunk raw water delivery network assets are averaged to a postage-stamped Delivery Price.

The practical differences between this pricing configuration and that shown in Figure 11 are:

- the Callide customers are not charged for use of the trunk raw water delivery network; and
- the trunk raw water delivery network could be charged on an instantaneous flow rate (rather than annual volume) basis.

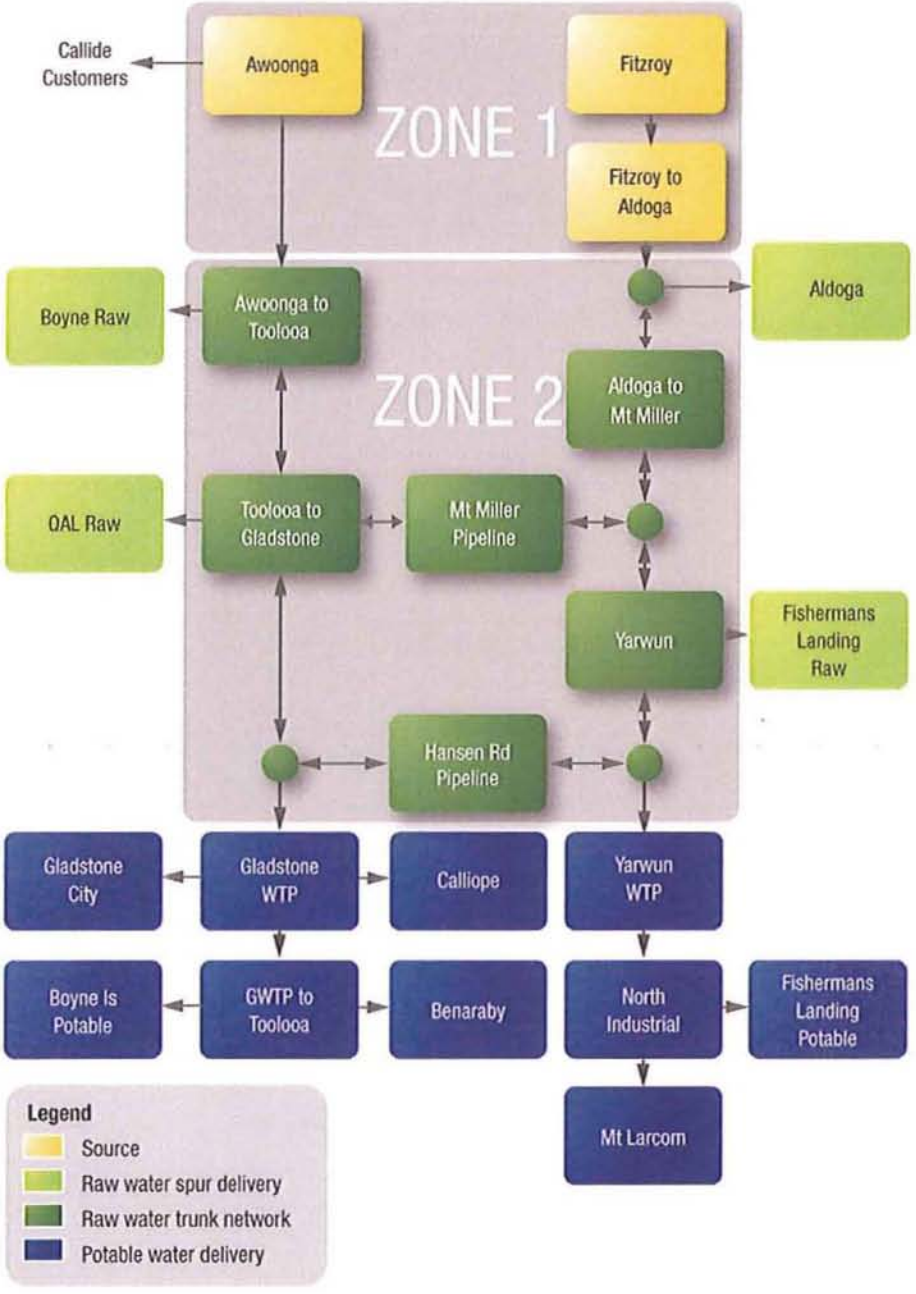

Figure 12 – Trunk Raw Water Delivery Network as Postage Stamped Delivery Asset

5.1.3 Zonal Pricing of Delivery Assets

Figure 13 and Figure 14 show the pricing arrangement if zonal pricing were retained using normal flows to generate price paths.

Figure 13 illustrates the expected normal flow at the beginning of the planning horizon, assuming the Gladstone to Fitzroy Pipeline was triggered by additional demand in the Fishermans Landing zone.

Note that both the weir on the Fitzroy River and the entire Gladstone to Fitzroy pipeline are initially treated as source assets. Development of the GSDA around Aldoga may result in either a raw water spur from the Aldoga reservoir or individual customer connections in the Aldoga to Mt Miller zone. If this occurred, the Aldoga to Mt Miller zone would be treated as a trunk raw water delivery network zone rather than a source zone.

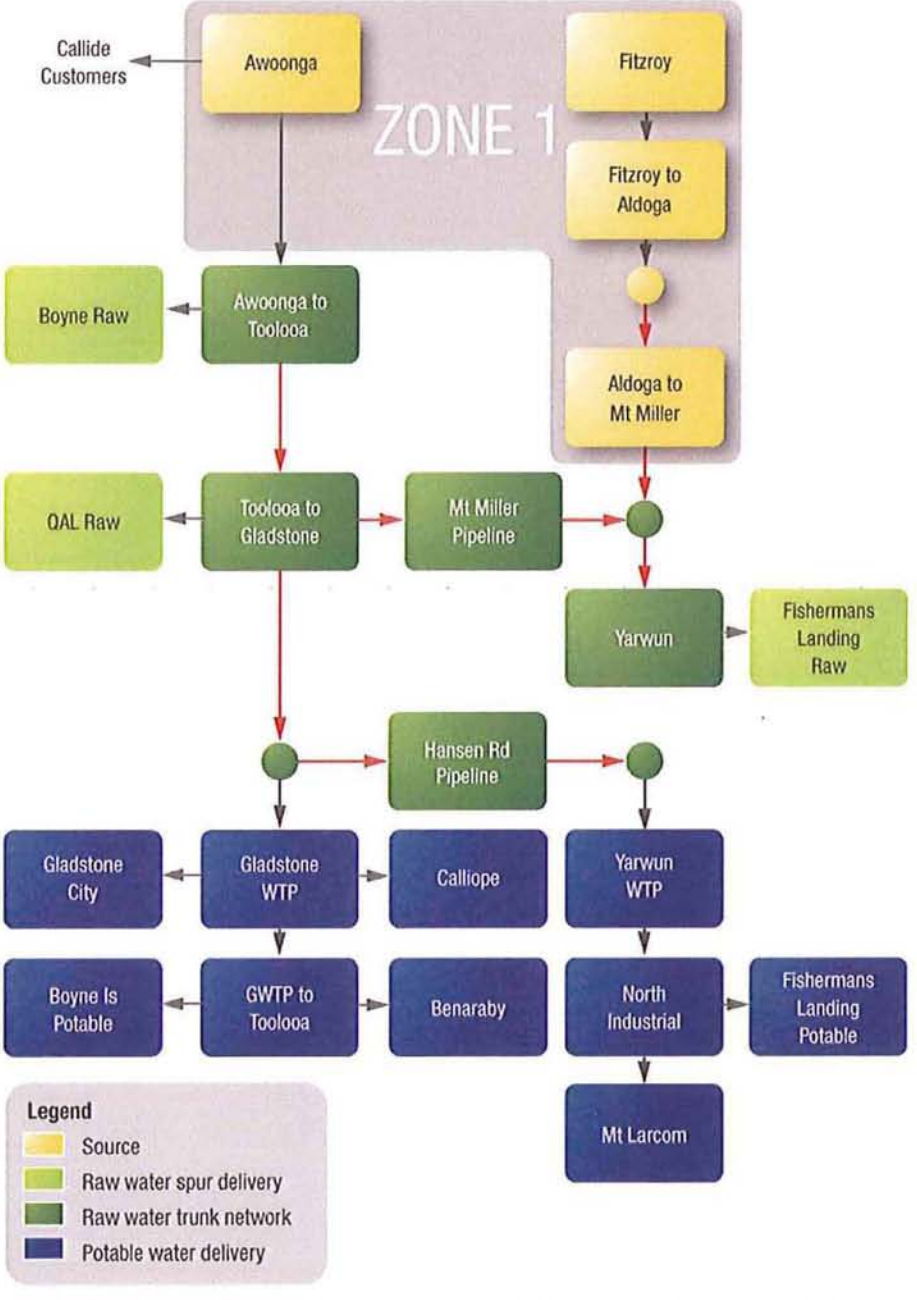

Figure 13 – Trunk Raw Water Delivery Network Price Based on Normal Flow (2010/11 Flow)

Figure 14 illustrates the expected normal flow at the end of the planning horizon, with the Aldoga to Mt Miller zone treated as a delivery system zone rather than a source zone.

Under the configuration shown in Figure 14 the Aldoga delivery price would be very low (being supplied directly from the source). This would conflict with both equity and efficiency. In practice, GAWB would set the source/delivery system boundary to make the Aldoga delivery price the same whether nominally supplied from the Awoonga or Fitzroy source (see Section 8.1 for more detail).

If pricing implications are material, the normal flow can be combined with unusual flow conditions to generate prices. For example the zone price might be the combination of 95% normal flows and 5% "high storage" flows (when use of a second source might be significantly reduced), with weightings selected to correspond with the probability of occurrence of each flow condition.

In other network applications, pricing for backup is also sometimes added as a security "uplift" on the normal flow prices (particularly where some assets are used predominantly for security and not used in normal circumstances). However, GAWB proposes that most of the costs of the Gladstone to Fitzroy pipeline are included in the water reservation and storage price and that storage variable costs are subject to an unders-and-overs account mechanism (see Section 8.2) so no additional uplift is necessary.

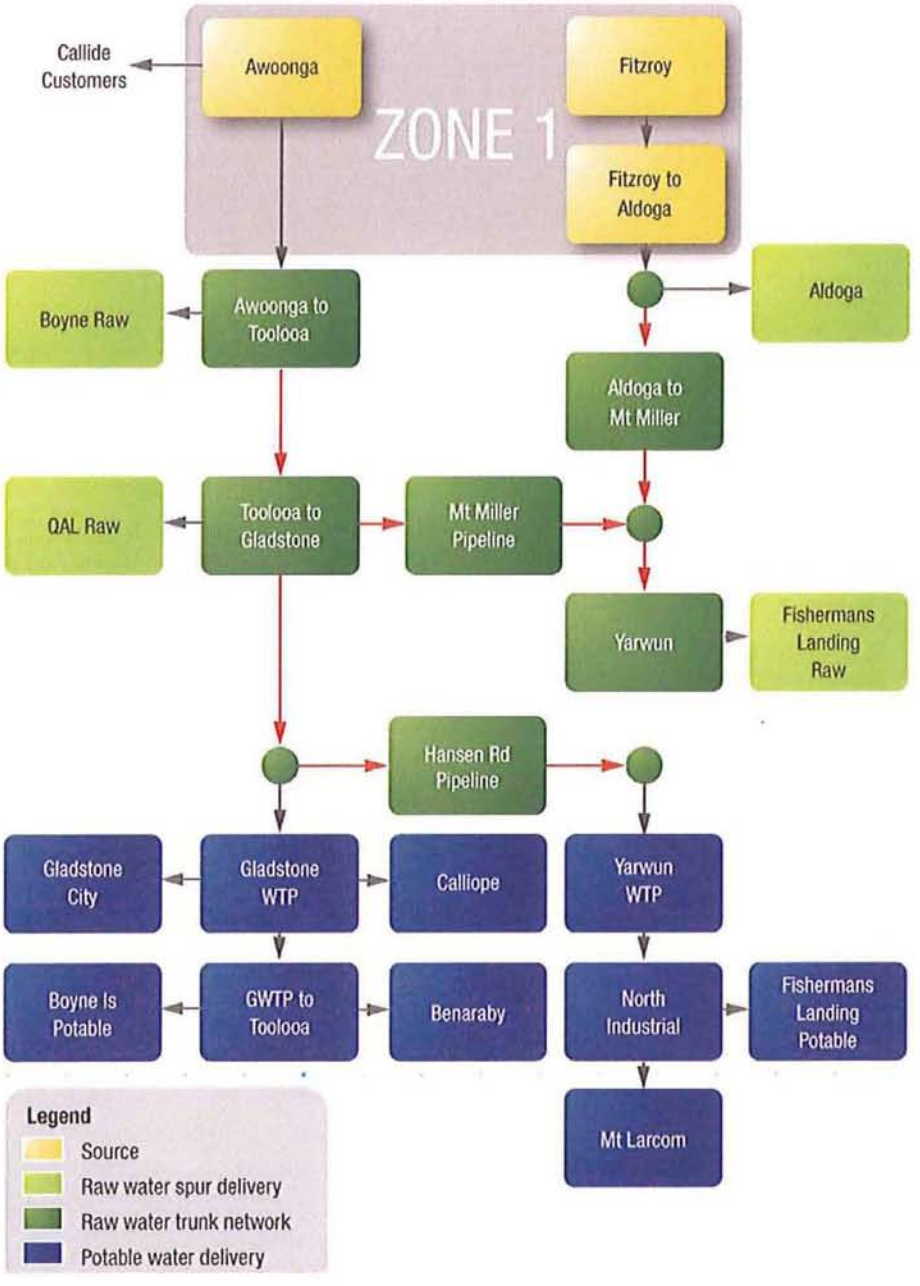

Figure 14 – Trunk Raw Water Delivery Network Price Based on Normal Flow (2029/30 Flow)

6 Criteria for Selecting Preferred Option

GAWB has used the following criteria to analyse trunk raw water delivery network pricing options:

- economic efficiency;
- equity; and
- consistency with other bulk water providers and analogous network businesses.

The first two criteria are almost universally applied to regulated pricing practices in Australia. The QCA referred to both efficiency and equity as guiding objectives in the last pricing review.

At p36 of QCA Final Report 2005, the QCA stated:

> To be consistent with the regulatory objectives, prices should reflect efficient outcomes, provide GAWB with revenues necessary to promote sustainable investment and take account of the public interest (QCA Act 1997, Section 26).

At p164 of QCA Final Report 2005, the QCA stated:

> The Authority also recommends... [a particular pricing practice]... to provide greater transparency, equity and efficiency in pricing arrangements.

Whilst any pricing practices adopted by GAWB must be right for the specific circumstances of Gladstone region, GAWB submits that consistency with other bulk water providers and regulated businesses in general is useful. Consistency is useful because it reinforces pricing signals, improves customer awareness and lowers the education burden placed on GAWB. The most important businesses to achieve pricing consistency with are therefore ones that share the same customers and media space. For this reason GAWB proposes evaluation criteria related to consistency with similar regulated network businesses including the South East Queensland water reforms.

6.1 Economic Efficiency

In this context, economic efficiency requires two conditions to be met:

- prices should reflect marginal costs; and
- prices should prevent uneconomic bypass.

If the marginal cost of delivery is significantly different in different parts of the network (constraint costs and pumping), economic efficiency requires that these differences be signalled to customers.

Similarly, if an average delivery price was charged at all customers, those customers "close" to the source could bypass the GAWB delivery system. Not only would such a bypass inhibit GAWB's ability to recover its regulatory permitted revenue, it would almost certainly be economically inefficient. That is, all customers' prices would rise if the bypass were to go ahead. In this situation it is in all customers' interest for customers closer to sources (i.e. with lower average cost of supply) to be charged a lower-than-average price. Whether prices need be location specific for all customers or specific

adjustments to the average price can be made for potential bypass customers is a question of administrative simplicity.

6.2 Equity

Equity is a difficult consideration to include in tariff design because equity is inevitably subjective. One person might consider it equitable that customers paid for the share of the network they use. Another customer might consider it equitable that all customers pay the same amount for water.

However, it would generally not be considered "fair" that a customer next to the dam should pay an averaged delivery price. Equity requires that this customer pays a lower delivery price than a remote customer. However, such a concept breaks down when there is a highly interconnected network. In this case it may be difficult to determine exactly which customers are "close" to a source because the delivery paths may change over time.

A key aspect of equity is that prices should be predictable over time. Customers make investment decisions (including location decisions) based on expectations of future prices. It is inequitable (and potentially inefficient) if customers prices are arbitrarily changed in a manner that is inconsistent with previously espoused pricing policies.

6.3 Consistency with other Bulk Water Providers and Analogous Network Businesses

Postage stamp pricing is often used where the network has any of the following features:

- many injection and/or off-take points (individual prices for several hundred thousand connections is prohibitively expensive);
- is highly interconnected/meshed;
- is frequently reconfigured (in response to changing supply/demand characteristics); or
- cost of supply is poorly correlated with location.

These network characteristics make calculation of a supply "path" at best complicated (value of a location-specific price exceeds cost of calculating the price) and, at worst, meaningless.

In electricity distribution and non-contestable retailing, postage stamp pricing is often mandated by governments. However, large customers at distribution level (of the order of 2MVA and larger) are often charged on the basis of the so-called "cost reflective network pricing" or CRNP methodology. This methodology essentially charges the customer based on usual network configuration plus any specific back-up assets used.

Most electricity, gas and water transmission businesses use location-specific pricing. Where location-specific pricing is relatively inexpensive to calculate (few off-takes, stable network configuration, etc), it is usually considered by regulators to have both efficiency and equity benefits over a geographically averaged approach. Some transmission networks are priced on the basis of a proportion of CRNP and postage stamping remaining target revenue.

The QCA has already observed[3] that location-specific pricing is common in other regulated network industries, including:

- electricity transmission;
- gas transmission; and
- telecommunications.

Moreover the QCA listed[4] several water utilities that use location-specific pricing:

- Hunter Water;
- Goulbourn Murray Water;
- Coliban Water; and
- Harvey Irrigation.

To this list GAWB adds the Victorian bulk water provider, Melbourne Water.

In general, a "consistency with other bulk water providers and analogous network businesses" criterion would support the normal flow pricing option.

However, the pricing arrangements for bulk water in SEQ result in a single bulk water price throughout the SEQ water grid by 2017/18. This pricing arrangement is most similar to the postage stamped models discussed above.

[3] *QCA Final Report 2005*, p51

[4] Ibid.

7 Discussion of Each Pricing Option

This section discusses each option for pricing use of the trunk raw water delivery network discussed in Section 5 in terms of the criteria set out in Section 6.

7.1 Postage Stamped as a Source Asset

As discussed in Section 5.1.1, under the postage stamped source arrangement, customers would pay a volumetric price for raw water delivered anywhere in the trunk raw water delivery network.

GAWB plans to introduce instantaneous flow rate pricing for delivery assets at the price re-set that follows the 2010 reset (expected to be 2015). Because storage is priced using annual volume reservations, rather than instantaneous flow rate, including the trunk raw water delivery network in the source definition will not provide any signals related to constraint of the trunk raw water delivery network. This is both inefficient and conflicts with GAWB's rationale for proposing adoption of instantaneous flow rate pricing for the delivery system.

Moreover, GAWB submits that this pricing option would rank poorly for equity of Callide customers. Obtaining a supply from the Fitzroy River benefits the power stations (because it reduces the probability of failure of the Awoonga supply) and therefore should contribute to the costs of the second source including the cost of the new network required to deliver that water to Gladstone (as discussed in Section 4.1). However, the Callide customers do not use, and get no direct[5] benefit from, the existing delivery system.

Under this option the Callide customers would pay a postage stamped price that includes recovery of the costs of the trunk raw water delivery network. This is inequitable because:

- those customers get no direct benefit from the network;
- the practice would result in significant price increases; and
- such a practice would conflict with GAWB's previously espoused pricing policies.

GAWB therefore does not propose to implement this pricing option.

7.2 Postage Stamped as a Delivery Asset

The practical differences between this pricing configuration and that discussed above are:

- the Callide customers are not charged for use of the trunk raw water delivery network; and
- the trunk raw water delivery network could be charged on an instantaneous flow rate (rather than annual volume) basis.

[5] Of course, the Callide power stations get an indirect benefit from the trunk raw water delivery network. It is because water from a second source is likely to be deliverable to most other customers using the trunk raw water delivery network that security of supply from the Awoonga Dam can be improved.

These differences make this option favoured (in equity, efficiency and consistency with past GAWB statements) over the postage stamped source option.

However similar to the postage stamped source arrangement (see section 7.1), a significant weakness of this option is that the large postage stamped zone is that the zone price cannot signal the cost of capacity in different parts of the zone. Whether this is important will depend on:

- differences in the level of spare capacity throughout the zone; and
- differences in the cost of augmenting supply in different parts of the zone.

A second weakness is that such an arrangement would change the distribution of costs recovered from customers. Customers close to the Awoonga source would see a relatively higher delivery price (indicatively, around $60/ML higher), customers closer to the current network extremities (GSDA, Fishermans Landing) would see a relatively lower delivery price (indicatively, around $40/ML lower). In the context of an indicative total delivered raw water price of around $800/ML to $950/ML (2010/11 dollars) this redistribution of costs is not negligible.[6]

Finally, a large postage stamped zone can give rise to inefficient bypass opportunities. A customer very close to Awoonga Dam might prefer an inefficient dedicated connection to the source (or the pipeline supplying the Callide customers) to paying the average price of the entire trunk raw water delivery network. Whilst a theoretical problem with any postage stamped pricing methodology, the small number inefficient bypass opportunities could be mitigated by prudent discounting of the zone price.

On the other hand, a single trunk raw water delivery network zone is simple and easily understood by customers. Moreover, the pricing arrangements would require minimal (probably nil) subsequent modifications when additional sources are connected to the network.

GAWB concludes that this pricing arrangement should be considered if:

- there is a reasonable amount of spare capacity throughout the trunk raw water delivery network or if the marginal cost of capacity is similar throughout the trunk raw water delivery network; and
- the price implications of cost redistributions can be equitably managed (through a revenue neutral transition or similar arrangement).

Whether the above criteria are met cannot be known until the reason for triggering the second source (drought or demand) is known and, if demand triggered, the precise location and network augmentation implications of the new customers is known.

7.3 Normal Flow Zonal

The normal flow zonal model promotes economic efficiency by allowing marginal cost of delivery to be signalled in smaller zones.

[6] Indicative prices discussed in this paragraph are based on GAWB's January 2008 price impacts analysis. An updated analysis is currently underway and will be available in August 2009.

It scores well in terms of equity by minimising the differences between current and expected future prices. That is, it provides for the most similar cost recovery distribution to the current pricing arrangement. All other methodologies examined create 'winners' and 'losers' on change from the current zonal approach.

Finally, zonal pricing is consistent with other transmission networks.

However, compared to the other arrangements, price modelling is more complex and prices are more difficult to explain to customers. In particular, two aspects of this methodology are more complex than postage stamped approaches:

- changes in the boundary of source and delivery system assets are likely to be necessary to preserve efficiency and equity of the arrangement as the delivery system expands in the GSDA; and
- because zonal flow directions are likely to change over the planning horizon, it may not be possible to set a 20-year price in each zone and sum these prices to find a customer price – a more complex calculation will be necessary.

7.4 Proposed Approach

Notwithstanding the additional complexity involved, GAWB proposes to adopt zonal pricing based on normal flow model. The postage stamped as a delivery asset model will only be considered in preference to the normal flow zonal model if:

- there is a reasonable amount of spare capacity throughout the trunk raw water delivery network or if the marginal cost of capacity is similar throughout the trunk raw water delivery network; and
- the price implications of cost redistributions can be equitably managed (through a revenue neutral transition or similar arrangement).

8 Other Issues

8.1 Setting the Source/Delivery System Boundary

Prices used in this section are for illustrative purposes only. They are not intended to represent actual price outcomes under any particular supply and demand scenario. Prices are included to illustrate concepts: they should not be relied upon for any other purpose.

We illustrate issues associated with setting the source/delivery system boundary using the example of the Gladstone to Fitzroy pipeline interconnection. Identical issues would arise from connection of a sea-water desalination plant.

GAWB proposes to retain the zonal pricing methodology in large part to minimise the "winners and losers" from the connection of new sources. To achieve this outcome GAWB proposes to set the source/delivery system boundary to achieve the same delivery price at the interconnection point as is currently charged, irrespective of the flow direction.

Of course other considerations may be involved in setting the source/delivery system boundary. For example, the Aldoga precinct of the GSDA is likely to eventually be a delivery system zone. It may be sensible to include the Aldoga to Mt Miller Pipeline zone as a delivery system asset from construction. However, whether this achieves the goal of retaining the existing distribution of delivery charges will depend on the forecast demand at the time of the augmentation.

It is possible to argue that assigning some of the new infrastructure to delivery system assets effectively provides a cross-subsidy[7] to those customers that do not use the delivery network (the Callide customers) but benefit from a second source.

However, if the second source was triggered for drought, then there would be no normal flow from the second source, so the entire new asset could be assigned source asset.

If the new source was being triggered by significant new demand in the Aldoga precinct of the GSDA then it seems reasonable that these customers should pay a delivery price at least similar to that paid in the Boat Creek / Fisherman's Landing Area. Because some asset would be assigned to the delivery system, all existing customers benefit in the form of a slightly reduced water reservation and storage price. The alternative is that the new customers pay a nil delivery price and all customers share the entire cost of the pipeline project through their common water reservation and storage price.

Figure 15 below shows the simplified delivery price for the current network configuration. Figure 16 shows that if only the Aldoga to Mt Miller Pipeline zone is considered to be delivery system asset then a new customer taking supply in Aldoga and normally supplied (normal flow is indicated by red arrows) from the Fitzroy source would pay a zero delivery price.

[7] We use the word 'cross-subsidy' in a colloquial sense. All customers price will be greater than the marginal cost of supply so there can be no cross-subsidy in the formal economic sense.

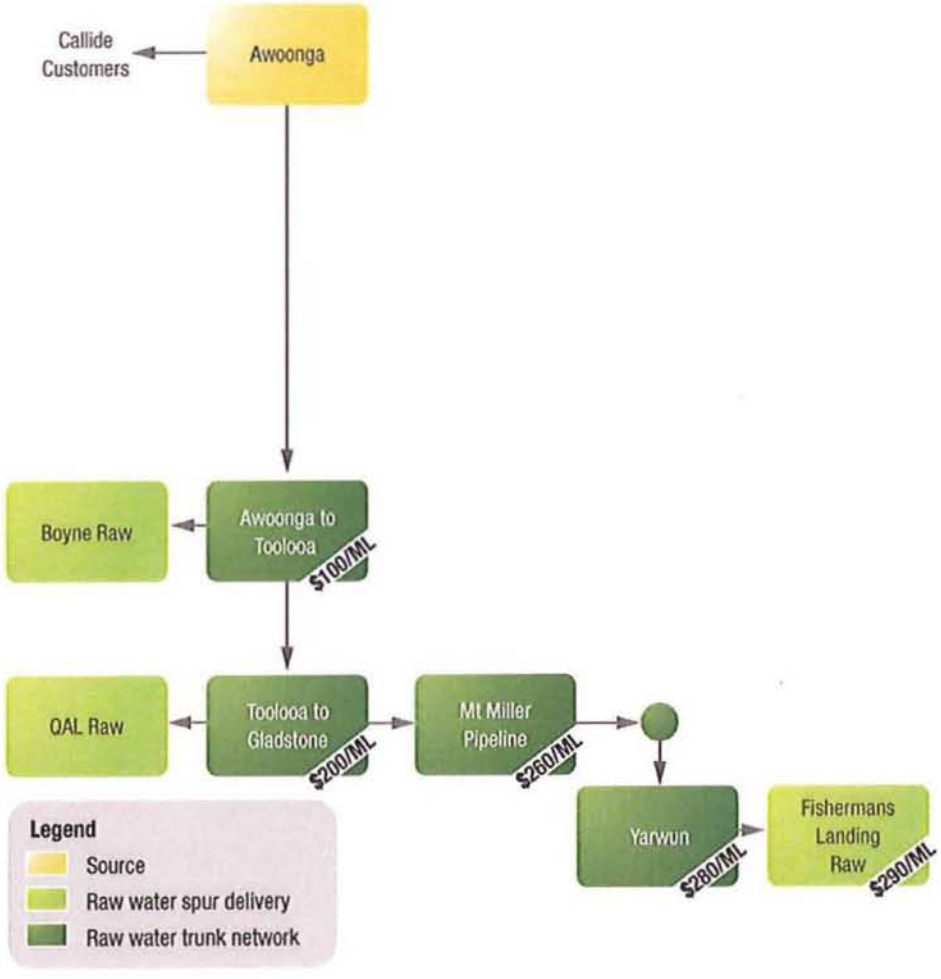

Figure 15 – Current Indicative Delivery Price

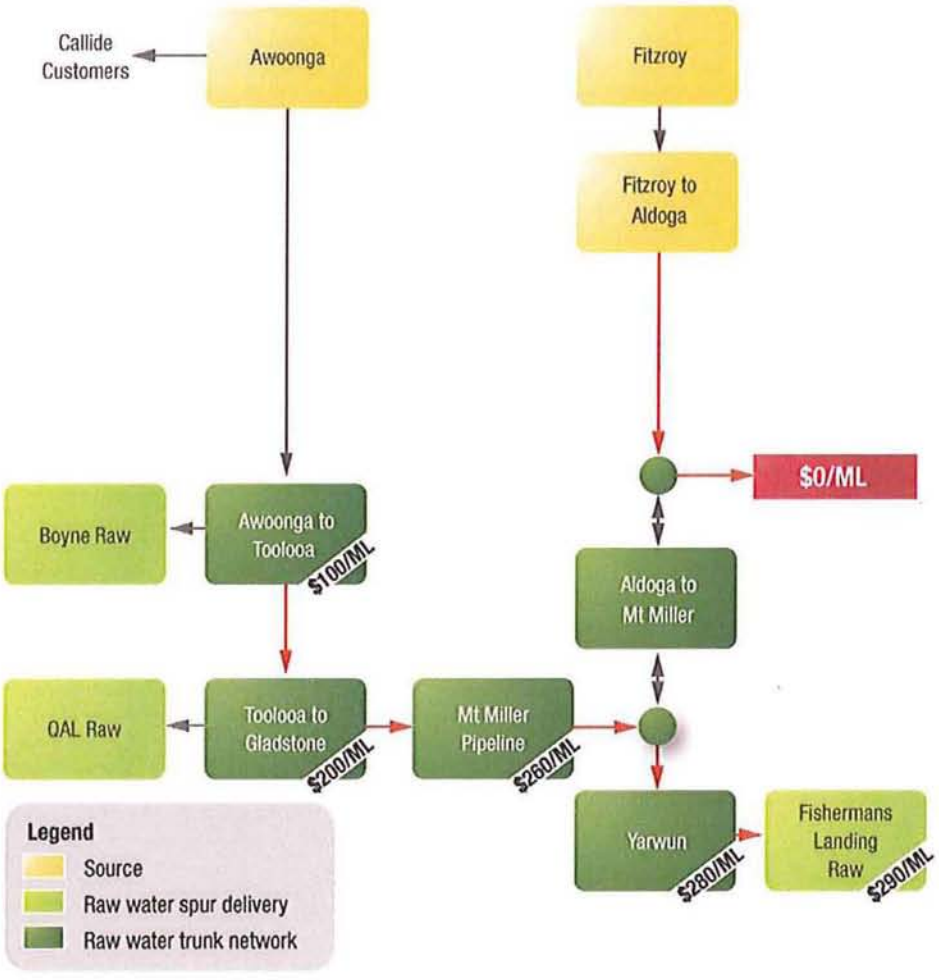

Figure 16 – Indicative Delivery Price with Boundary at Aldoga

By assigning part of the Fitzroy to Aldoga zone to delivery asset, we can avoid the zero delivery price. In our hypothetical example, there is no flow in the Aldoga to Mt Miller Pipeline zone. In this case, we could set the source/delivery system boundary so that the delivery price at either end of this zone is the same (see Figure 17). In this case our hypothetical Aldoga customer would pay a $260/ML delivery price.

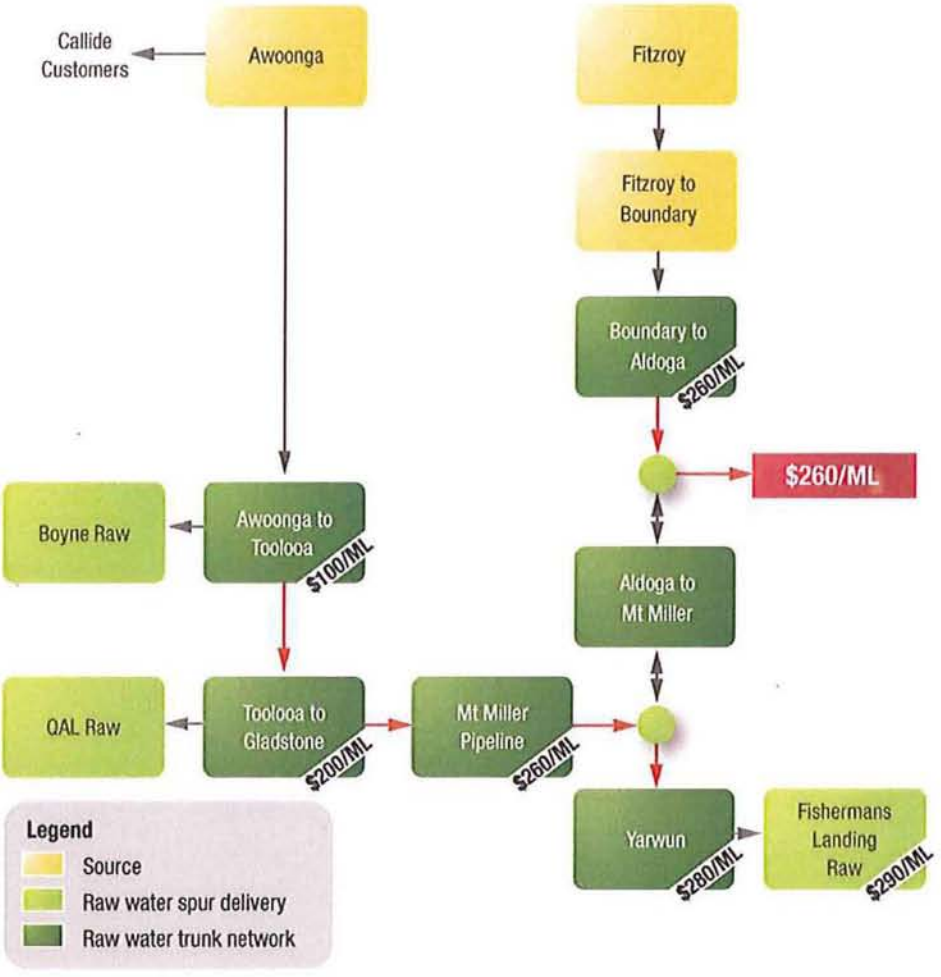

Figure 17 – Indicative Delivery Price with Boundary set to give the same Delivery Price at both ends of the Aldoga to Mt Miller Pipeline zone.

Figure 18 shows a source/delivery system set where the normal flow from the Fitzroy source passes through the Aldoga to Mt Miller Pipeline zone and enters the current delivery system. In this situation, the source/delivery system boundary is set so that the price at the interconnection point is the same (in this case $260/ML) whether the path considered is upstream to Awoonga Dam or the Fitzroy source. In this case:

- our hypothetical Aldoga customer would pay a $200/ML delivery price; and
- Delivery prices for customers on the existing network would remain unchanged.

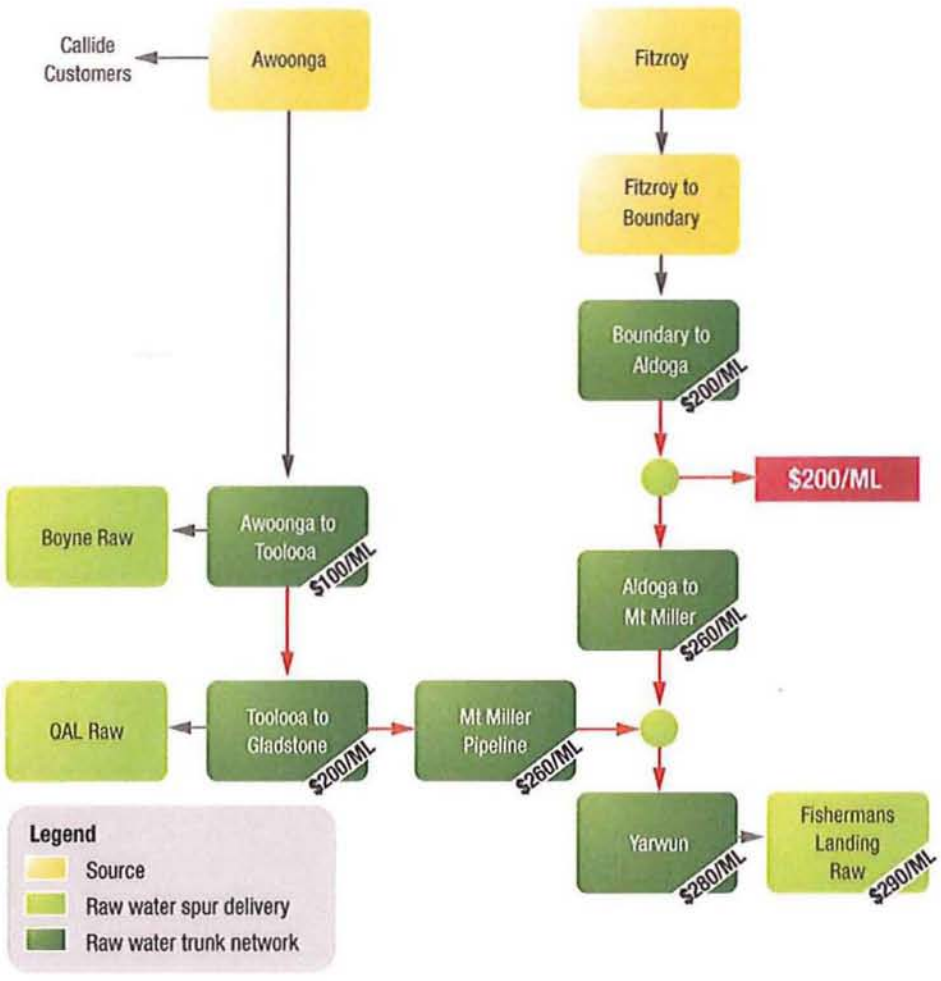

Figure 18 – Indicative Delivery Price with Boundary set to retain current Delivery Price at the Interconnection Point.

Details of the appropriate boundary between source/delivery system assets can only be determined when both the type of trigger and forecast demand distribution at the time of augmentation are known.

8.2 Operating Rules

Once a second source is commissioned, GAWB will require rules for operating the multiple source system.

For either the Gladstone to Fitzroy Pipeline or a desalination plant, the marginal operating cost would be much higher than supply from Awoonga Dam.

However, maximum security of supply would be achieved by minimising use of Awoonga Dam and maximising use of the second source.

Once the conditions for triggering the second source are known, it will be possible to determine the range of reliabilities possible from the multiple source system and the cost implications of adopting a particular reliability target. At that time GAWB, in consultation with customers, will determine a target level of service and develop operating rules.

In its simplest form, the operating rules might be of the form:

- when Awoonga Dam storage is below N GL, use the second source to the maximum extent possible; and
- when Awoonga Dam storage is above N GL, use Awoonga Dam to the maximum extent possible.

The value of N will be a function of:

- the contracted demand at the time (the lower the level of contracted demand, the lower value of N for some given level of reliability); and
- the targeted system reliability (the greater reliability required, the higher the value of N).

The value of N will be set in a revised Drought Management Plan based on the targeted system reliability and then-applicable demand and storage inflow assumptions.[8]

Unless corrected by some other regulatory mechanism, under either a regulated revenue cap or price cap and irrespective of the particular form of the operating rules eventually developed, there will be the perception that GAWB has an incentive to over-use cheaper sources to maximise profit. If acted upon, such an incentive could potentially put supply reliability at risk.

GAWB wishes to avoid any appearance of a conflict between GAWB's financial incentives and optimal outcomes for customers. Therefore, GAWB proposes that, following commissioning of a second source, the regulatory framework should include an unders-and-overs account for source-related variable expenses.

Under the proposed mechanism, at the beginning of a regulatory control period, the regulator would assess a marginal cost of supply from each source. GAWB's target revenue and prices would be set on the basis of a forecast of use of each source. When actual use of each source differed from the forecast, the associated cost (or cost saving) would be added to (or subtracted from) the unders-and-overs account. The balance of the unders-and-overs account would be rolled forward using an interest rate equal to the regulated rate of return on assets. At the beginning of the next regulatory control period, the unders-and-overs account balance would be added to the initial year target revenue calculation (in the same way that the at revenue smoothing carry-over amount is added to the target revenue calculation).

Unders-and-overs accounts are a standard regulatory mechanism used in electricity and gas regulation throughout Australia (and indeed other countries) to ensure that the regulated service provider is indifferent to some element of cost or customer behaviour.

In this case, the purpose of the mechanism is to ensure that GAWB is indifferent to which source is used to supply water. GAWB would still have an incentive to minimise costs (for example the input cost of electricity) because the unders-and-overs account transactions are based on an ex ante benchmark of costs rather than actual costs.

[8] That is, if the Gladstone to Fitzroy pipeline was the second source, N would be directly related to some specific "months to failure" measure assuming particular Awoonga Dam inflows and Fitzroy River flows.

8.3 Including Demand Management Costs in Prices

As discussed in Section 4 of the QCA's Part (b) Final Report, the process for triggering construction of a second source includes allowing customers to propose demand management responses.

GAWB proposes that, if demand management is undertaken to either defer or replace an augmentation, then efficient costs of demand management are recovered from customers as if they were augmentation costs.

Where an augmentation is deferred by one or more customers reducing their demand, efficient demand management costs include both the direct costs (if any) of paying the customer(s) to reduce demand and foregone revenue from reduced reservation and storage charges and delivery charges.

Like the other costs, the cost to GAWB of foregone delivery charges will be recovered as if it were a source asset, through the reservation and storage price.

8.4 Recovery of Preparatory Costs when Commissioning is not anticipated within the Planning Horizon

In its Part (a) Final Report, the QCA stated that efficient preparatory costs would be included in prices from the next regulatory reset (that is from 1 July 2010). For example, at p59 the QCA stated:

> *GAWB appears to be concerned that preparatory expenditure will not be included in pricing decisions prior to works being commissioned. However, this is not the case.*
>
> *Under the Authority's general approach to regulatory pricing, anticipated capital expenditure is included in the pricing model regardless of whether or not the assets to which the expenditure relates are commissioned during the regulatory period. Accordingly, efficient preparatory costs should (and would) be taken into account when determining prices at the next regulatory reset. In other words, prices determined at the next regulatory reset will include a return on capital in respect of efficient preparatory expenditure.*

The mechanism for recovery of preparatory costs for capital expenditure anticipated in the 20 year planning horizon is clear. If it is anticipated that the asset will be commissioned within the 20 year planning horizon, then the associated capital expenditure (including efficient preparatory costs) is included in the RAB from the anticipated commissioning date. This generates return on investment and depreciation building block components, which form part of GAWB's target revenue and are recovered in prices. Because efficient preparatory costs are capitalised using the appropriate WACC rate, the QCA-proposed mechanism has the same net present value as if a return of investment on the efficient preparatory costs were recovered from the beginning of the regulatory period.

The mechanism for recovery of preparatory costs when the associated physical infrastructure is not anticipated to be commissioned within the 20 year planning horizon is not clear. GAWB proposes that in the case that the associated physical infrastructure is not anticipated to be commissioned within the 20 year planning horizon, efficient preparatory costs be included in

the RAB and priced and depreciated over the economic life of the preparatory works.

8.5 Scope of Price Reviews Triggered by Augmentation

In the Part (b) Final Report, the QCA considered that trigger of a construction of second source was likely to also trigger a price review. At p5 the QCA stated:

> *In the 2005 investigation, the Authority recommended that a price review should be triggered if there was, or was expected to be, a sustained variation of 15% or more in GAWB's* ***aggregate revenue*** *(QCA, 2005:151). A sustained variation was considered to be a permanent change which has occurred, or was expected to occur with a high degree of certainty, such as significant demand changes (QCA, 2005:155). The Authority's recommendation was subsequently accepted by the Ministers.*
>
> *GAWB's proposed contingent supply strategy, including the proposed criteria and process, provides guidance, in the form of generic criteria, to guide decisions relating to when new augmentation can be reasonably expected to be required for previously unplanned events such as droughts or additional demand. While it is possible that the finally preferred option may not increase GAWB's* ***aggregate revenue requirement*** *by more than 15% and therefore may not trigger a review of prices, an augmentation such as the Fitzroy Pipeline would. The Authority would need to be directed by the Ministers to commence such a review, most likely in response to a request by GAWB.*
>
> *[Emphasis added]*

GAWB notes the QCA's interpretation of its 2005 recommendation related to "aggregate revenue" to include "aggregate revenue requirement" (i.e. aggregate economic costs). GAWB supports this interpretation.

If a second source is triggered early in a regulatory period, GAWB will request that QCA Ministers refer GAWB to QCA for a price review.

GAWB proposes that the scope of the QCA price review is limited to consider the price impact of new assets (i.e. the second source and/or demand management alternative). The effect of this incremental approach to the review would be that:

- new assets are priced using a rate of return (WACC) based on the then-current financial parameters; and
- pre-existing assets are priced using a rate of return set to the previous price review WACC rate.

The reason for proposing an incremental approach (and therefore a different rate of return for new assets for the initial period) is that GAWB will have secured debt for the existing asset base at appropriate rates at the time of the previous price reset.

Both pre-existing and new assets would be priced at the then-current financial parameters from the beginning of the following regulatory period (when GAWB will have the opportunity to secure new debt priced consistently with the regulatory financial parameters).

Whilst the details of any referral by the QCA Ministers will be a matter for the QCA Ministers depending on the circumstances applying at the time of an augmentation trigger, GAWB requests that the QCA make a recommendation to the effect that an incremental approach to a price review is appropriate in principle.

9 Price Impacts Analysis

In January 2008, GAWB released "Pricing Implications of a Second Water Source" to customers and the QCA. This analysis assumed the normal flow delivery pricing approach proposed by GAWB.

This document set out estimates of the price impact of four augmentation options:

- 30 GL p.a. Gladstone to Fitzroy pipeline;
- 30 GL p.a. sea water desalination plant;
- 15 GL p.a. Gladstone to Fitzroy pipeline; and
- 15 GL p.a. sea water desalination plant.

Whilst the 2007/08 costs are now somewhat out of date, the analysis showed that when a demand triggered second source was required, the expected 2010/11 price for a multiple source system was:

- 50% to 100% higher than the current price (depending on the demand and supply scenario considered) for raw water at the Awoonga Dam;
- 15% to 30% higher than the current price (depending on the demand and supply scenario considered) for raw water delivered to the GSDA or for potable water at the Gladstone Water Treatment Plant.

The analysis also showed that notwithstanding the modelled price increases, the expected 2010/11 price was at the low end of water supply costs in Australia.

Customers requiring further copies of this report should contact:

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07 4976 3050

GAWB is currently updating that analysis based on:

- updated Gladstone to Fitzroy pipeline cost and lower Fitzroy River storage costs;
- improved sea-water desalination cost estimates;
- revised trigger scenarios (revised information regarding emergent demand and earliest possible drought triggers based on current storage levels);
- revised infrastructure response scenarios (including staged construction of the Gladstone to Fitzroy pipeline or desalination facilities);
- revised input cost assessments (e.g. electricity costs); and
- updated financial parameters.

GAWB expects to provide a copy of the updated price implications report to QCA and customers later in 2009.

10 Price Transition Arrangements

As discussed in Section 7.3 above, one reason for retaining the normal flow zonal pricing approach is that it scores well in terms of equity by minimising the differences between current and expected future prices. That is, it provides for the most similar cost recovery distribution to the current pricing arrangement.

Essentially, the effect of retaining the normal flow zonal pricing approach is that all customers' price is increased by the same amount in $/ML terms. Of course a uniform $/ML price increase gives a different percentage price increase to every customer. For example, 2010/11 prices under the 'base demand – Awoonga late fill' scenario are about $250/ML to $300/ML higher than the current price everywhere in GAWB's network. This corresponds to a 30% increase in price for potable water at the GWTP but almost a doubling of the price for raw water at Awoonga dam.[9]

Moreover, factors unrelated to investment in a second water source will also affect both the level and geographical distribution of costs. For example new demand in the GDSA may change absolute level and geographical allocation of costs (e.g. by improving the utilisation and therefore lowering the cost per ML of the Mt Miller pipeline).

Therefore, despite adopting a multiple source pricing arrangement that provides the least variation from current prices, connection of a second source may yield significant price movements for some customers. GAWB proposes that the impact of significant price movements be mitigated for customers using a price transition arrangement.

In its 2005 pricing practices investigation, the QCA recommended that prices be transitioned over three years, with a minimum price increase of 10%. This arrangement was appropriate for the scale of price changes required in 2005.

GAWB supports a similar approach for price transition post connection of a second source. Whilst we acknowledge that the specific details of a price transition arrangement will need to be determined at the time price outcomes for every customer are known, GAWB proposes the following principles apply to transition arrangements:

- price transition be implemented in such a way as to be revenue-neutral for GAWB (that is, preserve the present value of expected revenue over the 20 year planning horizon);
- where possible, transition arrangements should occur within a single 5-year regulatory control period; [10]and
- that transition arrangements consider the financial and cash flow impact on GAWB and, in particular, GAWB's ability to (achieve and) maintain financial ratios consistent with a BBB+ credit rating.

[9] Indicative prices discussed in this paragraph are based on GAWB's January 2008 price impacts analysis. An updated analysis is currently underway and will be available in August 2009.

[10] However, if a longer transition is necessary, a mechanism (similar to the 2005 mechanism to allow revenue carryover between regulatory periods) should be used ensure that transition is NPV neutral for GAWB.

11 Summary of Proposals

GAWB requests that the QCA make recommendations regarding each of the following proposed pricing practices as to whether they approve, reject or alter the proposals put forward by GAWB:

1. GAWB proposes to retain the current practice of zonal pricing for potable water.
2. GAWB proposes to retain the current practice of zonal pricing for raw water spurs.
3. GAWB proposes that all customers pay the same water reservation and storage price, irrespective of the source from which their supply is normally physically derived.
4. Other than a small amount of pipeline assigned to delivery system to achieve desired delivery price outcomes, GAWB proposes that the connection between the new source and existing delivery system is considered to be a source asset and its economic cost is recovered through the Water Reservation and Storage Price.
5. GAWB proposes that, following commissioning of a second source, zonal pricing for the trunk raw water delivery network should be retained, with prices based on normal flows. GAWB also proposes that, after the specific location of demands at the time of augmentation trigger is known (so customer price impacts can be properly assessed), a single pricing zone for the trunk raw water delivery network should be considered in preference to zonal pricing if:
    - there is a reasonable amount of spare capacity throughout the trunk raw water delivery network or if the marginal cost of capacity is similar throughout the trunk raw water delivery network; and
    - average price changes can be equitably managed (through a revenue neutral transition or similar arrangement).
6. GAWB proposes that, following commissioning of a second source, the regulatory framework should include an unders-and-overs account for source-related variable operating and maintenance expenses.
7. GAWB proposes that, if demand management is undertaken to either defer augmentation or in place of augmentation, then efficient costs of demand management are recovered from customers as if they were augmentation costs.
8. GAWB proposes that in the case that the physical infrastructure associated with preparatory expenditure is not anticipated to be commissioned within the 20 year planning horizon, efficient preparatory costs be included in the RAB and priced and depreciated over the economic life of the preparatory works.
9. GAWB proposes that any price review triggered by construction of a second source and/or demand management alternative is limited to consider the price impact of new assets (i.e. the second source and/or demand management alternative). The effect of this incremental approach to the review would be that:

- new assets are priced using a rate of return (WACC) based on the then-current financial parameters; and
- pre-existing assets are priced using a rate of return set to the previous price review WACC rate.

10. GAWB proposes that significant price movements arising from connection of a second source be mitigated for customers using a price transition arrangement.

11. GAWB proposes the following principles apply to transition arrangements:
    - price transition be implemented in such a way as to be revenue-neutral for GAWB (that is, preserve the present value of expected revenue over the 20 year planning horizon);
    - where possible, transition arrangements should occur within a single 5-year regulatory control period; and
    - that transition arrangements consider the financial and cash flow impact on GAWB and, in particular, GAWB's ability to (achieve and) maintain financial ratios consistent with a BBB+ credit rating.