

Gladstone Area Water Board

Strategic Water Plan 2013

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Glossary

| Abbreviation | Meaning |
|-----------------------------|---|
| ADPS | Awoonga Dam Pump Station |
| ADWG | Australian Drinking Water Guidelines |
| AHD | Australian Height Datum – the national standard level datum |
| AMTD | The adopted middle thread distance – the distance in km along the middle of a stream from its mouth or junction with the main river |
| ANZECC | Australian & New Zealand Environment & Conservation Council |
| ARR | Aggregate Revenue Requirement |
| Boyne ROP | Boyne River Basin ROP 2006 |
| Boyne WRP | Water Resource (Boyne River Basin) Plan 2000 |
| BSC | Banana Shire Council |
| CHMP | Cultural Heritage Management Plan |
| Commercial Framework | The commercial framework within which GAWB operates and as described in 5.4.1 |
| CPM | Callide Power Management |
| CQRWSS | Central Queensland Regional Water Supply Strategy |
| CSE | CS Energy |
| CSS | Contingent Supply Strategy |
| Dead Storage | The lowest level from which water may be drawn from a storage by its fixed pumps |
| DERM | Department of Environment & Resource Management |
| Desal | Desalination |
| DMP | Drought Management Plan |
| DORC | Depreciated Optimised Replacement Cost |
| DSITIA | Department of Science Information Technology Innovation and Arts |
| DWQMP | Drinking Water Quality Management Plan |
| ECI | Early Contractor Involvement |
| EIS | Environmental Impact Statement |
| Fitzroy ROP | Fitzroy Basin ROP 2011 |
| GAWB | Gladstone Area Water Board |
| GFP | Gladstone-Fitzroy Pipeline |
| GL | Gigalitre (1,000,000,000 litres/ 1,000,000 cubic metres) |
| GLpa | Gigalitres per annum |
| GRC | Gladstone Regional Council |
| ha | Hectares |
| HNFY | Historic No Failure Yield |
| IFR | Instantaneous flow rate |
| IQQM | Integrated Quantity and Quality Model |
| km | Kilometre/s |
| L/s | Litres per second |



| Abbreviation | Meaning |
|-----------------------------|--|
| LFRIP | Lower Fitzroy River Infrastructure Project |
| LGA | Local Government Area |
| LNG | Liquefied Natural Gas |
| LRMC | Long Run Marginal Cost |
| m | metres |
| MDQ | Maximum Daily Quantity |
| ML | Megalitre (1,000,000 litres/ 1,000 cubic metres) |
| MLpa | Megalitres per annum |
| NPV | Net Present Value |
| NTU | Nephelometric Turbidity Units |
| Pricing Principles | GAWB's Pricing Principles as set out in Appendix 4 |
| PV | Present Value |
| QAL | Queensland Alumina Limited |
| QCA | Queensland Competition Authority |
| RAB | Regulated Asset Base |
| Rookwood Weir | Rookwood1 or Rookwood2 |
| Rookwood1 | Rookwood weir stage 1 – a new weir constructed to FSL 45.5m AHD at Rookwood Crossing 54km southwest of Rockhampton |
| Rookwood2 | Rookwood weir stage 2 – the addition of 3.5m high flap gates to Rookwood1 to achieve FSL 49.0m AHD |
| ROP | A Resource Operations Plan made under a WRP |
| RRC | Rockhampton Regional Council |
| SAMP | Strategic Asset Management Plan |
| SDA | State Development Area |
| Strategic Water Plan | GAWB's 2013 Strategic Water Plan |
| WRP | A Water Resource Plan made under the <i>Water Act 2000</i> |
| WSA | GAWB's standard Water Supply Agreement |
| WSAA | Water Services Association of Australia |
| WSSRA | Water Supply (Safety & Reliability) Act 2008 (Qld) |
| WTP | Water Treatment Plant |



1 EXECUTIVE SUMMARY

As GAWB pursues its vision of being an excellent water business it continually looks at how it can better align the water service that it provides with the current and future needs of customers. GAWB's philosophy places emphasis upon thoughtful use of a scarce resource and operating as a water service provider that provides customers with the services that best meet their evolving needs rather than as just an asset operator.

Understanding that water circumstances, needs, opportunities and technologies change, this Strategic Water Plan outlines GAWB's methodology that can be dynamically adopted and formed into specific actions that are most appropriate for the changing future circumstances.

This Strategic Water Plan looks at how GAWB can best meet the needs of current and future customers and specifically addresses the important inter-related water service issues of demand, security, reliability and price. This Strategic Water Plan articulates GAWB's approach to meeting these challenges into the future through:

- Utilisation of contemporary practice to understand the security characteristics of its water supply (both current and future water sources) and the capability that GAWB has developed to mitigate the inherent risks associated with a single water source;
- Its infrastructure planning and development approach to ameliorate the water delivery risks inherent within its water supply system;
- Improvements to pricing methodology to ensure alignment with "user pays" principles; and
- Its future water supply planning to meet demand that incorporates assessments of water source augmentation options and associated price impacts.

In so doing, GAWB builds upon the framework established by past reviews to facilitate an informed allocation of risks and an equitable distribution of costs with customers.

This ongoing alignment between the needs of its customers and the water service that it provides represents GAWB's overarching strategic objective to optimise the value it provides to all customers (present and future) and thereby the Gladstone region.



1.1 Overview

The Gladstone region is an internationally significant industrial and export hub that makes a substantial contribution to the Queensland and Australian economies. The water service that Gladstone Area Water Board (GAWB) provides to this region is an essential component to its ongoing economic and social prosperity.

GAWB's customer base is unique. Industrial and power generation demand represents approximately 80% of the total water supplied. GAWB recognises that any interruption to supply has the potential to disrupt the operation of these customers' multi-billion dollar facilities, which will result in the loss of substantial revenue to them. Whilst security of supply to such commercially sophisticated customers is critical, value for money is equally important. GAWB seeks to facilitate the appropriate balance between these competing objectives through the medium of its contractual and commercial frameworks. It is through these frameworks that GAWB aims to deliver the optimal allocation of risk and cost for the services it provides to its customers.

Approximately 20% of the total water supplied by GAWB is supplied to Gladstone Regional Council (GRC) as potable water. GRC then on-sells this potable water to residential and small business users. GAWB recognises its important responsibility of ensuring high quality drinking water as well as being reliable and reasonably priced. For Gladstone to prosper as a centre of industry and commerce, GAWB embraces its role of providing residents with a trusted and valued bulk water service.

1.2 Strategic Water Planning Background

GAWB's last strategic water plan was prepared in 2004. At that time, fresh from experiencing the effects of extended years of low inflows, the main focus of the plan was to identify the next water source for the region. That strategic water plan had two primary purposes:

1. To identify the region's future water needs, preferred broad strategic options for GAWB to meet those needs, and the actions required to further develop, explore and secure those options; and
2. To provide sufficient background information and articulation of options to form the basis for further informed discussion and negotiation among all major stakeholders to select and implement the preferred options.

The strategic water plan identified the Gladstone-Fitzroy Pipeline (GFP) as the preferred water source augmentation option and proposed that GAWB continue to assess the various options over time recognising that needs, circumstances and technologies can and will change. The strategic water plan concluded that GAWB adopt an approach within a robust framework that provides flexibility to adapt to changes in future circumstances.



1.3 2004 Strategic Water Plan Actions

The 2004 strategic water plan contained a list of actions that it recommended be undertaken. These recommended actions together with commentary on status to completion are contained in Appendix 1.

1.4 Events since last Strategic Water Plan

In the period since publication of the 2004 strategic water plan, GAWB has experienced its driest consecutive 3-year period as well as its wettest consecutive 3-year period. Awoonga Dam (GAWB's water source on the Boyne River) reached full supply level of the 40m AHD dam for the first time in December 2010.

During 2004-2007, the Gladstone region experienced its driest consecutive 3-year period on record. Average annual inflows during this period were 29,942MLpa, which represented the lowest consecutive 3-year inflows and were 43% lower than the driest 3-year period previously recorded. Before the drought broke in February 2008 the level of Awoonga Dam was at 32.6% of total capacity.

The last 3 years have been the wettest on record for the Gladstone region. In December 2010 the 40m Awoonga Dam spilled for the first time. This led to GAWB's annual allocation from Awoonga Dam being formalised at 78,000MLpa in accordance with the Water Resource (Boyne River Basin) Plan 2000. Awoonga Dam has spilled on six subsequent occasions - the most recently in March 2013. On 27 January 2013 Awoonga Dam reached its highest historical level of 48.3m (or 192.9% of capacity). As at 16 September 2013, the total water storage of Awoonga Dam was at 96.7% of capacity.

Since the 2004 strategic water plan GAWB has developed its Contingent Supply Strategy (CSS). The CSS is GAWB's strategic approach to planning and implementation of source augmentation to address water source security issues. The CSS represents a prudent approach to source augmentation infrastructure planning and implementation that delivers efficient outcomes for customers. This approach involves attaining and maintaining a state of preparedness (or capability) to enable augmentation decisions to be made "as late as is safe" utilising the best available data whilst not compromising the requisite certainty associated with the implementation of such infrastructure by nominated milestones.

GAWB's currently preferred source augmentation option for both drought and demand triggered augmentation scenarios is the GFP. GAWB has attained and maintained a state of preparedness in relation to its planning for the GFP such that when needed it has the capability to implement a GFP augmentation solution within 3 years of being triggered (2 year construction schedule with approximately 1 year of early works covering workforce mobilisation, confirmation of all construction-related regulatory and other approvals and finalisation of commercial arrangements with customers).

The security and reliability of water supply and the accompanying price remain important issues to GAWB and its customers. With ever-increasing demand for water



in the Gladstone region, it is prudent for GAWB to readdress these issues as it develops its strategy to meet the future water needs of the region. It must also be recognised that any strategy requires ongoing review and refinement at appropriate intervals.

1.5 Optimal Risk Allocation

As discussed earlier, GAWB supplies bulk raw and potable water to major industrial customers and bulk potable water to GRC. GAWB's customer base is unique due to its concentration of a relatively small number of large commercial customers and GRC.

GAWB continually aims to ensure that the service it provides is aligned with the needs of its customers. The alignment of GAWB's water service to the needs of its customers requires an informed allocation of the risks inherent in water supply and an equitable distribution of the costs related to the provision of GAWB's water service to customers.

Ensuring an informed allocation of risks requires GAWB to:

- identify the inherent risks of supply interruption that exist within its supply system (which incorporates both water source and water delivery assets) and the potential consequences of such a supply interruption; and
- develop risk mitigation proposals to address the impact of one (or more) of the inherent risks materialising.

Communication of these assessments and GAWB's proposals in response (in relation to its water source and/or delivery systems) including details of expected costs and the potential impact on future prices ensures customers have an informed understanding of the water supply risks and actions being undertaken by GAWB.

GAWB will continue to engage with customers on an ongoing basis in relation to important water supply issues. The five-yearly Queensland Competition Authority (QCA) price review process provides a defined and formal mechanism through which GAWB will propose future capital expenditure on its water supply system infrastructure and customers will have the opportunity to provide detailed submissions in response. As a specialist water service provider, in framing its capital expenditure proposals, GAWB will articulate its assessment of the level of investment required to meet the proposed targeted level of risk in the supply of water to customers.

In composing their submissions, customers can individually make choices on the preferred risk/cost balance for their respective businesses. To the extent that a customer has a different view to GAWB on the appropriate level of risk and/or related costs/price impact then they will be encouraged to articulate their preference in their submissions to the QCA.



The ability for customers to use this framework to tailor the risk allocation they strike with GAWB is especially relevant in relation to GAWB's network prices, which are developed utilising a linear nodal methodology that differentiates charges based upon a customer's use of GAWB's network infrastructure. Accordingly, there is more scope within the different pricing nodes (or zones) to influence investments within that zone, than for example costs associated with Awoonga Dam (GAWB's sole water source) that are apportioned across all customers.

After considering the collective submissions made by customers through the formal five-yearly price review process, the QCA will assess GAWB's capital expenditure proposals. Through this process customers can have confidence that GAWB will not "gold plate" the services it provides by inefficient investment.

The QCA's analysis is generally guided by its assessment of economic efficiency. It is usually sufficient to consider all customers (both current and future) together, irrespective of where they are located on the network. However, GAWB expects that the assessment of capital investments to mitigate network risks (for example around the sizing and operation of reservoirs) will place substantial reliance upon the submissions of customers within each zone. The value that customers place on network security may (or may not) be uniform across all nodes of the network.

GAWB's belief is that its role is to ensure customers are provided with sufficient data so that they are able to make informed decisions on risk allocation and make the elections that they are best placed to make (to the extent that is possible in a system that leverages the value of common use infrastructure). As an example, customers in one zone may form the view that their own capital investment to increase water storage on their premises is preferable to a GAWB proposed investment in a reservoir to mitigate network risk or alternatively they may form the view that no investment is required at all as the assessed risk is acceptable to them - thereby facilitating the informed and transparent acceptance of risk and price by them.

1.5.1 Water Source

1.5.1.1 Awoonga Dam

GAWB continues to build on its understanding of the capability of its sole water source, Awoonga Dam, to meet the needs of customers.

Capability of a water source to meet total customer demand and customer service level expectations is influenced by the characteristics of the water source and in particular its storage capacity, hydrology, operating procedures and annual yield.

Awoonga Dam is the fourth largest dam in Queensland with a total storage capacity of 776,854ML. The maximum allowable yield that GAWB is currently authorised to extract is 78,000MLpa.



The existing allowable annual yield from Awoonga Dam is determined according to the 100% Historic No Failure Yield (HNFY). The HNFY is derived by utilising the rainfall and inflow records kept for the last (approximately) 120 years.

By using this data (and taking into account the current storage capacity of the dam) analysis shows that 78,000ML of water could have been extracted from Awoonga every year without fail. This means that every year for the last 120 years, 78,000ML of water could be consumed and the Awoonga Dam water storage would not have failed. Setting the maximum allowable annual yield of Awoonga Dam at 100% HNFY (78,000ML) is a highly conservative approach that underpins the security of Awoonga Dam as a water source. Relative to the allocations from other water storages across Queensland, at an annual yield of up to 78,000ML Awoonga Dam can be regarded as a secure water source.

Whilst 120 years is a significant period of time, what has happened in the past is not necessarily an indicator of the future. It is possible that there could be better and/or worse future hydrological outcomes than those experienced during the last 120 years. One way of looking at possible future hydrological outcomes is to undertake a stochastic analysis of the catchment's historical data. By utilising the existing historical data but employing stochastic modelling techniques, a more expansive assessment of the security characteristics of a water source can be undertaken.

In line with contemporary water service practice, GAWB has supplemented its knowledge of Awoonga Dam's security as a water source by undertaking a performance assessment of Awoonga Dam utilising stochastic modelling methods. This analysis has demonstrated that over a simulation of 10,000 years and at an annual demand of 78,000ML, Awoonga Dam had a failure frequency of 0.36% (or once in every 278 years). Conversely, Awoonga Dam was shown to deliver 78,000MLpa without failure in 99.64% of the 10,000 simulated years.

At demand levels up to GAWB's allowable annual yield of 78,000ML Awoonga Dam has strong water security characteristics. At current demand levels (where demand is lower than 78,000MLpa), customers receive the benefit of an additional security buffer.

1.5.1.2 Second Water Source

Whilst Awoonga Dam can be regarded as a secure water source at demand levels of up to 78,000MLpa, it remains GAWB's sole water source. Any water supply system that relies upon a single water source has, compared to other water supply systems that have multiple integrated sources, a higher inherent risk as it has a single point of failure. Ideally a water supply system will consist of multiple water sources with different yet complementary hydrological characteristics. For example, different water sources may not be subject to drought (and therefore low inflows) at the same time.

GAWB will augment its existing water supply by the construction of a second water source when, in consideration of the circumstances that exist at the time, it is



appropriate to do so. Such a source augmentation will most likely be driven by the need to respond to drought or when water demand is projected to exceed GAWB's allowable yield from Awoonga Dam. Construction of a second water source with different yet complementary hydrological characteristics will provide greater water security for GAWB's customers.

GAWB's preferred second water source is the GFP. The GFP involves the construction of a pipeline from the lower Fitzroy River together with associated infrastructure and has the capability to provide an additional 30,000MLpa (and possibly more if required). GAWB currently holds a reservation for 30,000MLpa ("the Gladstone reserve") under the Fitzroy Basin Resource Operations Plan 2011 (Fitzroy ROP) that is capable of conversion to a water allocation at the time that GAWB formally agrees to construct the water storage infrastructure on the lower Fitzroy River.

Since 2004 GAWB has undertaken extensive work in evaluating options to augment its water supply. In 2004 following a multi-criteria analysis, the GFP was chosen as GAWB's preferred augmentation option. In 2012, source augmentation options were again assessed (including the GFP, desalination (large and small) and increasing the storage capacity at Awoonga Dam - all with updated expenditure forecasts procured from specialist consultants). Following this assessment the GFP remains GAWB's preferred second water source option.

1.5.1.3 Contingent Supply Strategy

As mentioned above, in the period since 2004 GAWB has developed its CSS. The CSS represents GAWB's strategic approach to efficiently respond to either emerging demand or supply shortages caused by drought. The CSS provides GAWB with this capability through investigating alternative supply options and undertaking only that work that is necessary to reach and maintain the desired state of preparedness for water source augmentation. Attaining and then maintaining a state of preparedness significantly reduces the lead-time to implementation of the relevant source augmentation. CSS preparatory works undertaken since 2004 have reduced the implementation timeframe for the non-LFRIP (Lower Fitzroy River Infrastructure Project) components of GAWB's preferred water source augmentation solution from a period of between 6 to 8 years down to a period of 3 years from the augmentation trigger event.¹

With any degree of certainty, It is impossible to predict the commencement of a drought that will imperil Gladstone's water storage (Awoonga Dam). Consecutive years of poor inflow can be replenished within a week, as occurred in 2003 with the

¹ GAWB has undertaken preparatory work to attain and maintain a state of preparedness to enable construction and implementation of the non-water storage components of the GFP (including pipeline, water treatment plant, pump stations and reservoirs) within 3 years from augmentation trigger event. Significant progress towards attaining a comparable state of preparedness in relation to the lower Fitzroy River water storage infrastructure (LFRIP) has been made. These preparatory works to provide capability to construct and implement the LFRIP within a 3-year period (from augmentation trigger) are currently being progressed and will be staged to balance costs incurred with attaining and maintaining the required state of preparedness.



rainfall that resulted from ex-Tropical Cyclone Beni. The impossibility stems from the inability to predict when these “replenishing events” will intervene to restore the storage.

An augmentation solution that would take 6-8 years to be implemented would not be ready in time to respond to the risks posed by an extreme drought. The methodology that GAWB has developed provides a clear roadmap to a final investment decision for an augmentation to be made “as late as is safe” without compromising its ability to be implemented (in time) with certainty. Given the broad scientific consensus as to the likelihood of greater climatic extremes, such capability is considered an essential weapon to combat such risks.

This capability also provides GAWB with clear parameters upon which it is able to provide commitments to supply water from Awoonga Dam beyond the maximum annual allowable yield of 78,000ML. Customers require this level of certainty considering the level of their investment commitment. Customers making billion dollar investments require certainty around GAWB’s ability to deliver upon its commitments, not qualified expressions of goodwill.

The CSS approach is covered in more detail in Section 3.3.

1.5.1.4 Conjunctive Use

When built, the GFP will extract water from the lower Fitzroy River. The Fitzroy River catchment is Australia’s largest eastern-flowing river catchment, is located approximately 110km to the north of the Boyne River catchment and has different yet complementary hydrological characteristics. The GFP provides improved water security to customers through conjunctive use of the two separate water sources. These two water sources are designed to be operated as an integrated system.

Another benefit of operating the GAWB water supply system on an integrated basis with multiple water sources relates to delivery risk diversification. Through the operation of Awoonga Dam and the GFP (or an alternative second source option) together as a complementary system, the inherent risk of a supply interruption resulting from a failure in the water delivery network is reduced. The utilisation of multiple water sources connected to the water delivery network in different locations can reduce the potential for a failure of a single upstream delivery asset in one part of the network leading to a supply interruption for customers.

1.5.2 Water Delivery

An assessment of GAWB’s water delivery network has been undertaken to assess credible risks of supply interruption. Due to the potentially significant financial consequences for customers resulting from a supply interruption, GAWB believes it is imperative that customers understand the inherent risks that exist in the water delivery network that could lead to a supply interruption.

This assessment determined consequences of various network failure scenarios and identified GAWB’s proposed risk mitigation actions.



The assessment of credible risks of an asset failure in its water delivery network from Awoonga Dam to the Awoonga Dam Pump Station (ADPS) that may lead to a supply interruption to customers will (again) form the basis of GAWB's submissions to the QCA for investment in an in-system water storage of (approximately) 14 days storage capacity.

In accordance with the 2010 decision of the QCA Ministers, GAWB has identified its preferred site for this storage and will be able to supply detailed expenditure forecasts for it. GAWB believes this storage is warranted to mitigate the risks that it has identified in light of the magnitude of the consequences that would result if supply was interrupted for a period of 14 days.

Ultimately, whether or not GAWB proceeds with this investment is a matter that will be resolved during the 2015 price reset investigation and is expected to be largely informed by the input of all customers. GAWB's role will be to explain the risk and provide its recommended approach as a water service specialist, but as customers will ultimately pay for such investments, their assessment of its value should be critical to the process.

GAWB has also undertaken an assessment of its water delivery network (downstream of the ADPS) to assess credible risks of supply interruption. This assessment determined consequences of various failure scenarios and identified GAWB's proposed risk mitigation actions.

The location of a failure in the delivery network has a major bearing on the consequences of that failure and whether or not it will lead to a supply interruption. GAWB proposes a target of 24 hours be set as the period of time within which it will repair all network failures, other than failures located in the limited number of areas with access limitations.

In conjunction with GAWB maintaining a minimum of 24 hours risk storage throughout the network, certain other actions (such as increased assessment and maintenance) are appropriate to reduce network failure risks.

The delivery network design standard incorporating the proposed risk mitigation actions that is being proposed by GAWB will form part of its capital expenditure submissions to the QCA for the 2015 price review.

Customers will have the opportunity to provide formal input in relation to the appropriate balance of risk and price that takes into account their specific needs and individual preferences. Customers will therefore be able to make submissions on risk mitigation actions proposed by GAWB and articulate their preferred outcome for balancing supply risks and price.

As distinct to the investment in the upstream water storage, investments in downstream risk mitigation proposals are expected to allow a more differentiated



response from customers as a consequence of GAWB's linear nodal pricing for its network. For example, customers in one pricing zone may support GAWB's standard of 24 hour risk storage, while customers with different characteristics in another pricing zone may not, reflecting their individual circumstances. Should such differences emerge, they would be welcomed by GAWB as demonstration of the alignment that it is seeking with customers around the allocation of risk and price through the price review process.

1.5.2.1 Water Delivery Pricing

An amendment to GAWB's water delivery pricing methodology is proposed. The primary objective of changing the delivery tariff from annual volume to a flow basis is to be more cost reflective, improve equity and efficiency in water charges and the use of water delivery infrastructure. The proposal is to change the delivery tariff so that customers are charged on the basis of maximum daily quantity used rather than annual volume to more accurately reflect use of delivery infrastructure and its cost drivers.

This tariff change will not lead to an increase in revenue for GAWB but will rather send a price signal to customers to encourage more efficient use of water delivery infrastructure.

1.5.3 Future Demand

GAWB undertakes forecasting of future demand scenarios to ensure that it has the capability to supply water to meet demand whenever and wherever it arises.

GAWB has assessed possible future demand over a 20-year planning period and through its infrastructure planning maintains the capability to respond in time to meet future demand scenarios within the Gladstone region.

GAWB's demand forecasting is ongoing. As part of the Strategic Water Plan, GAWB has considered its capability to address demand across the wider region. Through an active engagement process, GAWB will seek to understand future demand scenarios from (new and existing) customers and from beyond GAWB's existing network. GAWB's demand forecasting approach recognises the drivers of demand growth across the region and informs its planning to enable it to respond as required to meet higher contracted demand as it emerges.

An informed understanding of credible future demand scenarios positions GAWB to support optimal water planning outcomes for the region.

1.6 Supply Demand Balance

GAWB has assessed the capability of Awoonga Dam to supply the water demand of current and future customers. Both short and long-term assessments of the supply/demand balance have been conducted.

Figure 1 below illustrates a possible drawdown scenario for Awoonga Dam over the next 3 years. The scenario models forecast contracted demand and conservative

inflow assumptions in accordance with GAWB’s Drought Management Plan (DMP). This scenario shows that a low supply alert is not triggered in the three-year horizon.

Figure 2 below outlines GAWB’s demand profile for the 20-year period from 2013/14 to 2032/33. It illustrates 3 different demand forecasts undertaken by GAWB (covered in detail in Chapter 5 MEETING DEMAND) and when demand under those different forecasts is expected to exceed the capacity of Awoonga Dam. Base Case (contracted) demand is not forecast to exceed the annual yield of Awoonga Dam during the 20-year planning period.

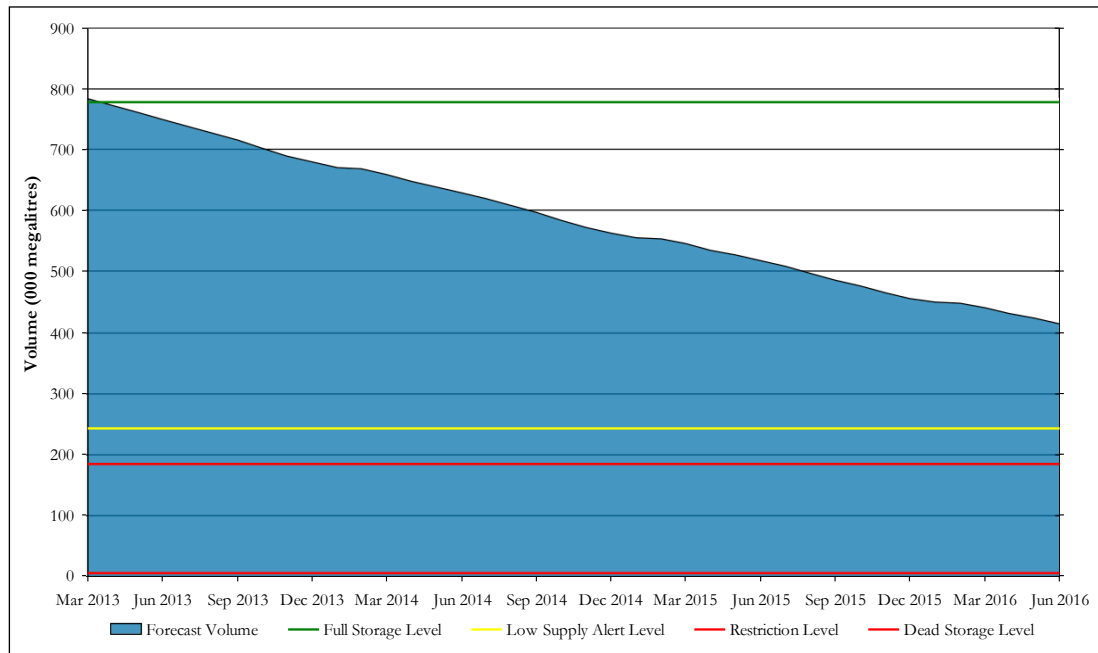


Figure 1: DMP Scenario Modelling

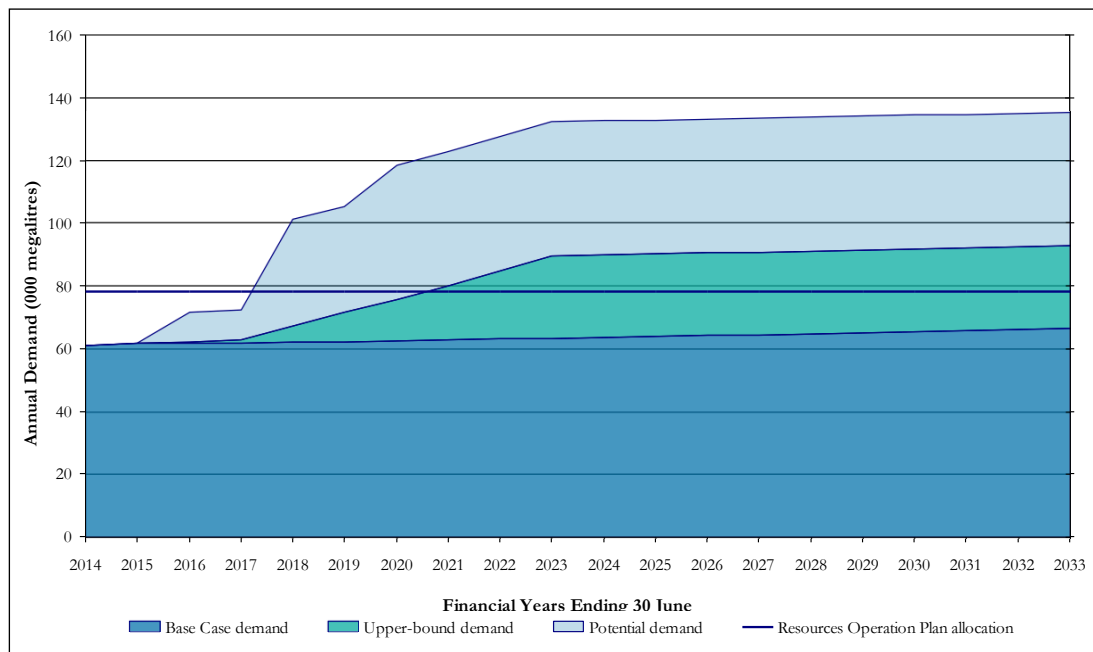


Figure 2: GAWB Demand Profile



1.7 Actions

As GAWB continues its pursuit of aligning the water service that it provides and the needs of customers, it will need to continue to revise its plans, processes and actions on an ongoing basis. Its approach will need to be flexible and recognise changes in circumstances, opportunities and technologies as they occur. Progress will be monitored by the Board and reported in GAWB's Corporate Plans and Performance Plans.

In particular, on an ongoing basis GAWB will need to:

- Review water source security in light of changes in current and future demand, hydrological data and other relevant factors;
- Ensure it retains capability and preparedness to augment its water source as needed to respond to drought and/or demand scenarios through:
 - Conducting capability assessments that recognise changes in GAWB's operating environment;
 - Regularly reviewing changes in technology (including emerging technology); and
 - Attaining and maintaining necessary regulatory approvals
- Review supply system reliability including assessment of risks in the delivery network that have the potential to lead to customer supply interruption;
- Engage with customers on GAWB's strategic water planning activities and GAWB's intention to use the SWP to provide context to and inform its submissions to the QCA price review process;
- Develop capital expenditure proposals relating to supply system assets (source and delivery) to be submitted to the QCA as part of the 5-yearly price review process (next review due in 2015);
- Assess credible future demand scenarios to ensure GAWB maintains capability to supply contracted demand whenever it materialises.