Queensland Competition Authority

Final report

Rural irrigation price review 2020–24
Part B: Sunwater

January 2020

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EXECUTIVE SUMMARY

The Queensland Government (the Government) has directed the Queensland Competition Authority (QCA) to investigate the pricing practices for monopoly business activities of Sunwater and Seqwater, relating to the supply of water for irrigation services, in specified water supply schemes (WSSs) and distribution systems. The key objective of this review is to recommend prices to be charged by Sunwater and Seqwater to irrigation customers in the specified WSSs and distribution systems for the period 1 July 2020 to 30 June 2024.

This part of the report (Part B) assesses the costs and prices associated with irrigation schemes operated by Sunwater. Our overall approach to this review is outlined in Part A of the report.

In this report, we have recommended prices that increase gradually until they reach a cost-reflective level, where they recover the irrigation share of the scheme's operating, maintenance and capital renewal costs but do not recover a return on, or of, the scheme's initial asset base (as at 1 July 2000). This report refers to this level of cost recovery as 'the lower bound cost target'.

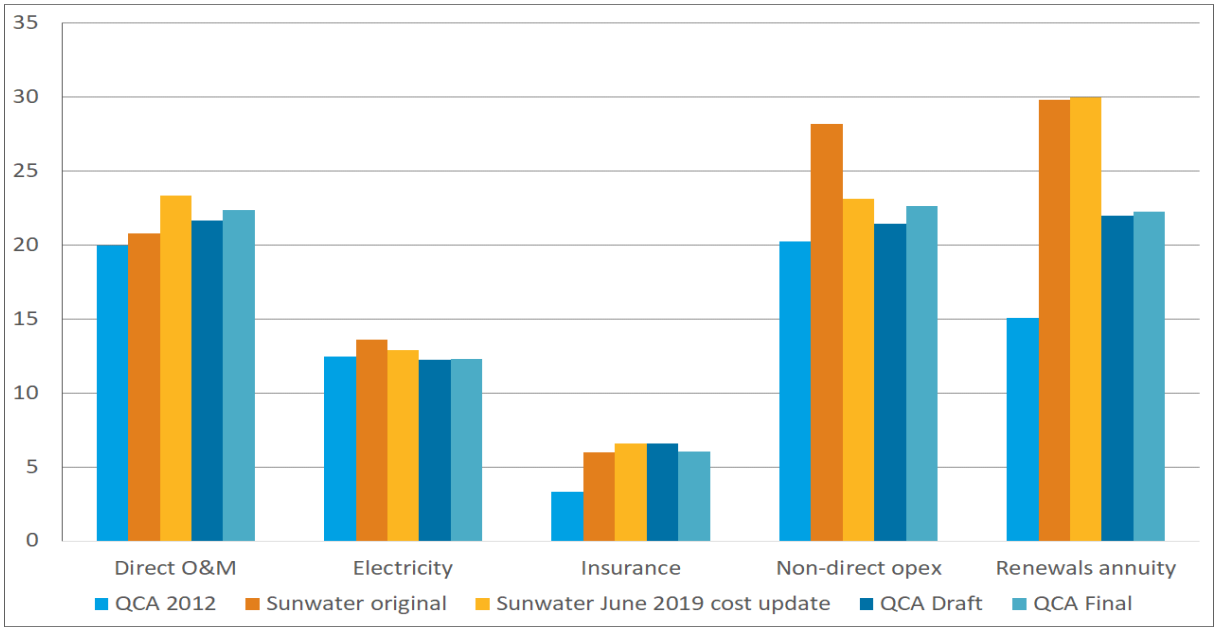
Costs

Our recommended prices seek to recover certain prudent and efficient costs. We have assessed the operating expenditure (opex), renewals expenditure and dam safety upgrade capital expenditure (capex) proposed by Sunwater for prudency and efficiency. Our recommended costs are in Chapters 2 and 3.

Our estimated total costs for Sunwater over 2020–24 of $367.6 million is $49.6 million (11.9 per cent) lower than Sunwater's proposed (November 2018) revenue requirement of $417.2 million. The main sources of this difference are our reductions to Sunwater's opex ($14.2 million) and renewals expenditure (which reduces the renewals annuity allowance by $35.6 million).

Our estimated base year opex is 7.6 per cent lower than what Sunwater proposed in its November 2018 submission, and 3.9 per cent lower than Sunwater's June 2019 resubmitted costs.

Figure 1 Base year cost breakdown ($2018–19, million)



Notes: QCA 2012 reflects our recommended 2016–17 opex. Direct O&M is direct operations and maintenance costs.

Source: Sunwater, sub. 45, November 2018; Sunwater, sub. 153, June 2019; QCA analysis.

We consider Sunwater's historical direct operations and maintenance expenditure to be generally prudent and efficient. However, Sunwater's proposed (budgeted) costs at the scheme-level vary significantly from average historical costs in some schemes. We have generally adopted average historical costs at the scheme level to even out year-on-year variability arising from changing operating and maintenance requirements. However, where there is a clear driver underlying a proposed change in cost, we have adjusted average historical costs to account for this.

Sunwater's proposed non-direct opex has changed significantly between its November 2018 submission and its June 2019 resubmission, both at the aggregate level and at the individual cost category level. We have considered the cost drivers behind Sunwater's proposed increase in the corporate cost base and generally accepted Sunwater's proposed additions to our draft report non-direct opex.

For Sunwater's renewals expenditure, we have:

- reduced historical renewals (inclusive of non-routine operations and corrective maintenance) from $173.4 million to $170.2 million (down 1.8 per cent), relative to the November 2018 submission
- reduced forecast renewals expenditure over the price path period and extended planning period from $1,751.9 million to $1,135.4 million (down 35.2 per cent), relative to the November 2018 submission.

Our recommended renewals annuity allowance over the price path period is 26.7 per cent lower than Sunwater's proposed annual allowance.

We have recommended that Sunwater work with its customers and with the Government to develop a proposal on transitioning to a RAB-based approach for consideration by us prior to 30 June 2021. We consider that moving away from an annuity approach for funding asset renewals in favour of a RAB-based approach would reduce the reliance on long-term renewals forecasts, improve transparency by allowing customers to see the pricing impacts of near-term renewals expenditure, and incentivise Sunwater to achieve efficiencies including the flexibility to reprioritise its expenditure to pursue least cost opportunities.

Prices

Our recommended prices and other charges, for the period 2020–24, are detailed in Chapters 7 and 8 of this report. These prices are also outlined in scheme-specific information sheets. Our recommended termination fees, and water harvesting, drainage and drainage diversion prices are detailed in Chapter 8 of both Part B and Part C.

We have derived our inflation forecast for calculating price increases using Reserve Bank of Australia (RBA) forecasts where available and the midpoint of the RBA target band in later years. This method derives an inflation forecast that averages 2.24 per cent over the price path period.

Pricing issues that we have assessed as part of our investigation include:

- treatment of distribution losses (section 6.2)— we have estimated the costs associated with historical excess distribution loss WAEs, and allocated the bulk holding (fixed) costs of these to Sunwater on the basis that distribution system customers should not pay for distribution loss WAEs in excess of what is required to meet actual loss releases
- access charges (section 6.3)—given the importance of the access charge and its impact on affordability, we have recommended not to approve the introduction of an access charge until further consultation is undertaken with Sunwater's customers, particularly with small water users
- scheme-specific pricing issues (section 6.4)—we have considered scheme-specific pricing issues including the Giru Benefited Groundwater Area tariff group, for which we have recommended prices that transition to a lower bound cost target that is the same as for Burdekin Channel tariff group

customers, as we do not consider that the costs of supply differ materially between these two tariff groups

- alternative tariff groups (section 6.5)—we have provided alternative tariff groups for Dawson Valley WSS, St George WSS and Three Moon Creek WSS, as required under the terms of the referral.

We have reassessed the allocation of bulk WSS costs to customer priority groups, particularly in respect of Inspector-General for Emergency Management (IGEM) review costs, dam safety upgrade capex and insurance costs. We consider that each of these costs are asset-related rather than service-related, and as such, we have allocated these costs using the headworks utilisation factor.

Transition to lower bound prices

We have sought to recommend prices that transition gradually to lower bound costs, as this will give users time to adjust. We have assessed appropriate transition paths for two key categories of tariff groups:

- above lower bound costs—those tariff groups with existing prices that are already more than sufficient to recover the lower bound cost target
- below lower bound costs—those tariff groups with existing prices that are not yet sufficient to recover the lower bound cost target.

Above lower bound prices

For those tariff groups with existing prices above the lower bound cost target, we have sought to transition to prices that reflect the lower bound cost target by maintaining fixed prices in nominal terms until this cost target is reached.

Where existing volumetric prices are above the volumetric component of the lower bound cost target (cost-reflective volumetric prices), we have reduced the existing volumetric price to the cost-reflective volumetric price immediately. Where existing volumetric prices are less than or equal to cost-reflective volumetric prices, we have increased the existing volumetric price each year by our estimate of inflation until overall prices reach the lower bound cost target.

Below lower bound prices

For those tariff groups with existing prices below the lower bound cost target, we have sought to transition fixed prices to the fixed component of the lower bound cost target by annual increases of inflation plus an additional component of $2.38 per megalitre of WAE (from 2020–21, increasing by inflation), consistent with the pricing principles in the referral.

Where existing volumetric prices are above the volumetric component of the lower bound cost target (cost-reflective volumetric prices), we have reduced the existing volumetric price to the cost-reflective volumetric price immediately.

Where existing volumetric prices are less than or equal to cost-reflective volumetric prices, we have recommended that the total volumetric price increases by inflation (unless a lower than inflation increase reaches the cost-reflective volumetric price in the first year) until the fixed price reaches the fixed component of the lower bound cost target. The volumetric price then increases each year by inflation plus $2.38 per megalitre (from 2020–21, increasing by inflation) until the lower bound cost target is reached.

This approach ensures a maximum annual real increase of $2.38 per megalitre of WAE ($2020–21).

Alternative pricing options

As required in the referral, we have recommended two pricing options for those schemes with dam safety upgrade projects that are expected to be commissioned in the price path period. One set of prices that excludes all dam safety upgrade capital expenditure (capex) and another that includes an appropriate

allowance for dam safety upgrade capex forecast to be incurred from 1 July 2020 onwards. We note that the impact on prices of including an appropriate dam safety upgrade capex allowance is limited in this price path period, so we have provided indicative longer-term pricing impacts for all dam safety upgrade projects commencing in this price path period (Part A, Chapter 4).

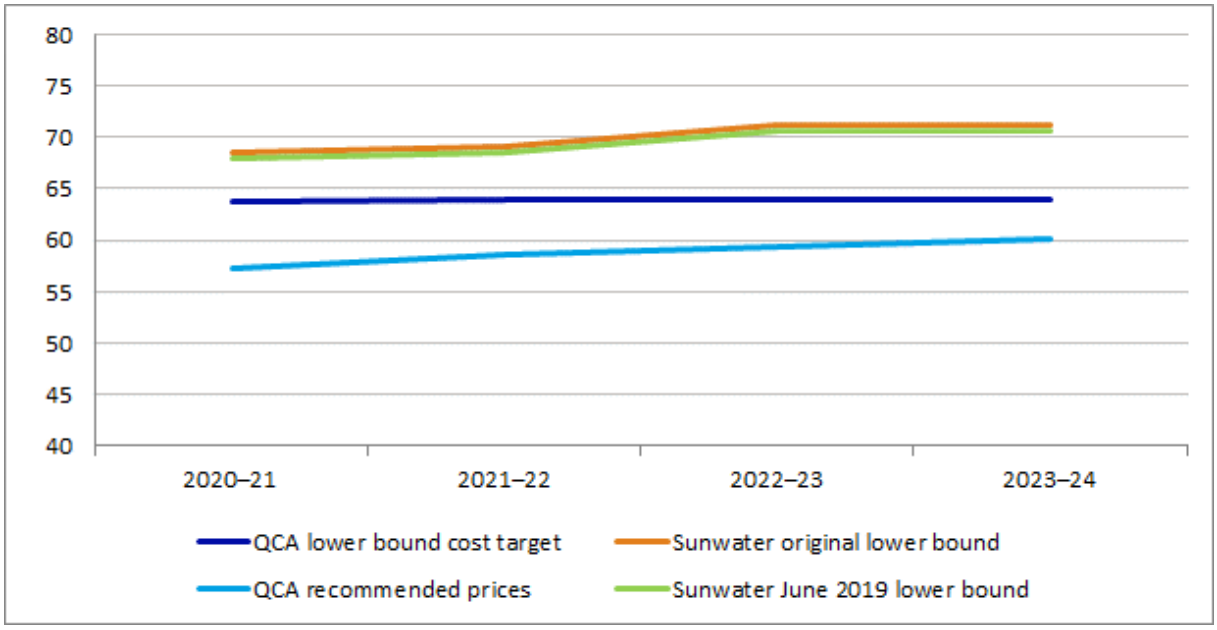
We have also reviewed the tariff groups in certain specified WSSs (Dawson Valley WSS, Three Moon Creek WSS and St George WSS) and developed alternative tariff groups as a second pricing option.

Implications

For each tariff group, the impact on water bills will vary depending on an irrigator's water use profile. We have presented indicative customer bill impacts and estimated customer bills in Chapter 9.

Figure 2 compares revenue implied by Sunwater's submitted irrigation prices, our lower bound cost target and our recommended prices.

Figure 2 Comparison of irrigation revenues (2020–24) ($2018–19, million)



Note: These revenues reflect the irrigation share of total costs. Source: Sunwater, sub. 48; Sunwater, sub. 153; QCA analysis.

Recommendations

Our report was provided to the Government on 31 January 2020. The Government will consider our recommendations when it sets prices for irrigation customers in the relevant WSSs and distribution systems. A summary of our recommendations from this Part B report are shown in Table 1.

Table 1 Summary of recommendations (Part B report)

Number	*Recommendation*	*Chapter*
8	We recommend that Sunwater should work with its customers and with the Government to develop a proposal on transitioning to a RAB-based approach for consideration by the QCA prior to 30 June 2021.	4
9	We recommend that: • prudent and efficient bulk costs associated with necessary distribution loss WAEs should be recovered from distribution system customers • the bulk holding (fixed) costs of distribution loss WAEs not required to service distribution system customers should be borne by Sunwater • Sunwater should review its distribution loss WAEs and develop a strategy for their future treatment before the next price review.	6

Number	*Recommendation*	*Chapter*
10	We recommend that prices for irrigation customers for each water supply scheme and distribution system should be set according to the prices set out in Appendix A. This includes pricing options for certain tariff groups.	7
11	We recommend that: • termination fees should be calculated as up to 11 times (including GST) the relevant cost-reflective fixed price • Sunwater should have the discretion to apply a lower multiple to the relevant cost-reflective fixed tariff or waive the termination fee • Sunwater should never recover any revenue shortfall from remaining customers upon exit of the scheme by another customer.	8
12	We recommend that: • current drainage charges for the Burdekin-Haughton distribution scheme should be increased each year by our measure of inflation • drainage costs associated with the Mareeba-Dimbulah distribution system should continue to be recovered from the fixed (Part C) price.	8
13	We recommend that current drainage diversion charges shoud be increased each year by our measure of inflation.	8
14	We recommend that distribution system water harvesting charges should comprise any applicable DNRME water harvesting charges, our recommended volumetric (Part D) price, and a Sunwater lease fee if relevant.	8
15	We recommend that Sunwater improve its engagement with customers by: • engaging with them on an ongoing basis, to keep a strong focus on what is important to customers over the course of the price path period and to provide a better understanding of customer requirements prior to the next price review • drawing a clearer link for customers between proposed expenditure and both prices and service level outcomes for customers • engaging with its customers prior to the next price review to develop a pricing proposal that incorporates its proposed prices for all of its tariff groups with irrigation customers.	10

1 BUSINESS OVERVIEW

The Queensland Government (the Government) has asked us to investigate the pricing practices for monopoly business activities of Sunwater and Seqwater relating to the supply of water for irrigation services, in specified water supply schemes (WSSs) and distribution systems.

The key objective of this review is to recommend prices to be charged by Sunwater and Seqwater to irrigation customers in the specified WSSs and distribution systems for the period 1 July 2020 to 30 June 2024.

This part of the report (Part B) assesses the costs and prices associated with irrigation schemes operated by Sunwater.

1.1 Background

We completed our first review of Sunwater's irrigation prices in 2012 and recommended prices for the period 1 July 2012 to 30 June 2017 (the 2012 review).[1] The Government set prices for the five-year period that were consistent with our recommendations.

From 2017–18 to 2019–20, the Government extended the price paths by applying an increase of 2.5 per cent each year to all tariff groups. In addition to this increase, tariff groups below the lower bound cost target incurred increases of $2 per megalitre (in $2012–13 real terms) until revenues consistent with the lower bound cost target were reached.

The objectives of the review are set out in the referral notice (the referral).[2] The key objective of the review is to recommend prices to be charged by the water businesses to irrigation customers in the specified WSSs and distribution systems for the period 1 July 2020 to 30 June 2024. The Government will consider our recommendations when it sets those prices.

The referral states that we are not required to recommend prices for distribution systems that transfer to local management arrangements (LMA) before we release our draft report. Consequently, we have not recommended prices for the St George, Theodore and Emerald distribution systems.[3]

1.2 Overview of Sunwater's services

Sunwater is a government-owned corporation that owns and manages a regional network of bulk water supply infrastructure throughout Queensland that supports irrigated agriculture, mining, power generation, other industrial activities and local government.

Sunwater's water storage and distribution infrastructure includes 19 major dams, 64 weirs and barrages, 79 pumping stations, and more than 2500 kilometres of pipelines and water channels.

[1] QCA, *SunWater Irrigation Price Review: 2012–17*, final report, May 2012.
[2] See Appendix A of Part A for a copy of the referral.
[3] We note that customer support was provided for the transition of the Eton distribution system to local management arrangements in early December 2019. Subject to the completion of the transfer process, the Eton distribution system will transfer from Sunwater to the irrigator owned company Eton Irrigation Scheme Pty Ltd (Eton Irrigation) from 31 March 2020. However, consistent with the referral, we have recommended prices for Eton distribution system in this report.

Sunwater's core service is to store and release water to satisfy customer demand, subject to customers' rights to take water (water access entitlements). Sunwater provides this service in accordance with the Water Act 2000, associated water plans and resource operations licences.

1.2.1 Services provided

Sunwater's operations comprise 56 service contract areas. A service contract area represents a group of assets that generate cash inflows largely independent of cash flows from other groups of assets. For example, a bulk water service contract may include a dam, associated weirs, water accounting services, and a range of operational and maintenance services.

Irrigators account for the vast majority of Sunwater's customers (92 per cent in 2018–19). However, they account for a minority of Sunwater's total revenue (23 per cent in 2018–19).

Irrigation service contracts

Our investigation relates to the 27 service contracts containing irrigation customers (the irrigation service contracts)—22 bulk WSSs and 5 distribution systems.

Bulk WSSs

Sunwater's bulk WSSs provide bulk water services that involve storing for, and delivering raw water to, customers in accordance with customers' water access entitlements (WAEs).

Sunwater can only supply water to a customer with a WAE. Announced allocations specify the portion of a customer's WAE available for use (by priority group). They are updated throughout the water year (generally after rainfall events).

Distribution systems

Eight of Sunwater's bulk schemes have links to distribution systems.[4] Distribution systems generally consist of pumps, open channels and/or pipes designed to deliver water to customers not located on a river. All distribution system customers must also hold bulk WAEs.

Other services

In addition to bulk water and distribution services, Sunwater provides the following services:

- drainage services—in the Burdekin-Haughton and Mareeba-Dimbulah distribution systems, Sunwater provides drainage services to remove excess or run-off water from customers' properties and dispose of it via a system of drains that Sunwater maintains
- drainage diversion services—in the Burdekin-Haughton distribution system, Sunwater allows customers to extract water from the drainage network
- water harvesting—in the Burdekin-Haughton distribution system, customers also hold water harvesting WAEs. Water harvesting WAEs are derived from natural (high) river flows and not as a result of storage infrastructure assets.

Other service contracts

Sunwater owns and operates two WSSs that do not contain irrigation customers:

- the Awoonga Callide WSS, which supplies water to the Callide Power Station
- the Julius Dam WSS, which supplies the city of Mount Isa and various mines.

[4] As noted in section 1.1, we have not been directed to recommend prices for the St George, Theodore and Emerald distribution systems as these have transferred to local management arrangements.

Sunwater also operates pipelines and various offtakes that are not within the scope of the review.

In addition, Sunwater provides the following non-regulated services:

- asset developments—Sunwater investigates and develops new assets, particularly for water supply to the mining and industrial sectors
- external contracts—Sunwater provides services to the National Capital Authority for the operation of Scrivener Dam in Canberra and to the Dumaresq-Barwon Borders Rivers Commission
- consulting—Sunwater provides engineering and related consulting services to other parties
- hydro-electricity—Sunwater owns and operates hydroelectric generators at Tinaroo Falls Dam and Paradise Dam
- water trading—Sunwater trades its portfolio of WAE.

1.2.2 Service delivery framework

Sunwater owns and maintains the service infrastructure and provides a contracted service to its customers according to their WAEs. Customers are responsible for managing their own demand and bear the risk of water not being available under their WAE. DNRME determines the target reliability of a WAE.

Supply contracts

Sunwater enters into a supply contract with its customer. Supply contracts can take the form of a standard supply contract, or a negotiated contract. Most irrigation customers are subject to deemed (or unsigned) standard contracts pursuant to the Water Act 2000.

The standard contract requires Sunwater to release or divert water from Sunwater's works in accordance with a customer's WAE. The standard contracts can be varied by Sunwater in agreement with customers. If Sunwater proposes changes to the standard contract that are not agreed to by customers, Sunwater can terminate the contract.

Sunwater undertook consultation on the standard supply contracts during 2001 and 2002.

Service standards

Sunwater must identify appropriate service standards including customer service and performance indicators. The current service standards were established in consultation with customer representatives in 2001.

These standards are set out in each scheme's Water Supply Arrangements and Service Targets (also referred to as 'Sunwater Rules') in standard contracts and describe the process for ordering water and delivery times, circumstances that require suspension or restriction of supply, and the duration and frequency of shutdowns.

They can be periodically reviewed in response to requests by customer representatives or at Sunwater's own initiative. Sunwater's proposed costs for 2020–24 are based on the existing service standards continuing throughout the price path period.

Subsidiaries

Sunwater owns three subsidiary companies (not subject to this review):

- Burnett Water Pty Ltd — owns and operates Paradise Dam and Kirar Weir in the Burnett River catchment near Bundaberg.

- North West Queensland Water Pipeline Pty Ltd—owns pipelines that supply water from Julius Dam to rural, urban and industrial customers.
- Eungella Water Pipeline Pty Ltd—owns pipelines that supply water from Eungella Dam to mining customers.

1.3 Sunwater's legislative and regulatory obligations

Sunwater must comply with a range of obligations when providing water services, as set out in a number of legislative and regulatory instruments. See Part A (Appendix E) for more information.

1.4 Approach to reviewing Sunwater's irrigation prices

Figure 3 outlines the steps involved in calculating prices.

Figure 3 The QCA's approach to the review of Sunwater's irrigation prices

	Step	Description	Relevant Section
1	Establish total costs at the scheme/system level	Assess cost components, such as the appropriate allowance for renewals expenditure, to establish total costs for each scheme/system.	Part B Chapters 2–4
2	Establish the forecast volume of water entitlements and usage	Determine volume of entitlements and usage for each tariff group to use as a basis for revenue allocation and calculating prices.	Part B Chapter 5
3	Determine the structure of cost-reflective fixed and volumetric prices	Determine the allocation of revenue between fixed and volumetric prices across all tariff groups in the specified schemes/systems.	Part B Chapter 6-7
4	Calculate recommend fixed and volumetric prices	Derive fixed prices consistent with the pricing principles in the referral. Consider less than cost-reflective volumetric prices to moderate bill impacts.	Part B Chapter 7
5	Calculate miscellaneous charges	Derive drainage charges, drain diversion charges, termination fees and water harvesting charges for relevant schemes/systems.	Part B Chapter 8
6	Undertake customer bill analysis	Evaluate the impact of our pricing recommendations on irrigation customers.	Part B Chapter 9

2 OPERATING EXPENDITURE

In this chapter, we assess the prudency and efficiency of operating expenditure (opex) for the 27 irrigation service contracts relevant to this investigation of Sunwater. This includes all opex for these service contracts, including costs allocated to irrigation and non-irrigation customers. We have excluded all opex associated with the three distribution systems that transitioned to local management arrangements prior to our draft report.[5]

We recommend prudent and efficient opex of $276.6 million over the price path period, a reduction of 4.9 per cent, compared to Sunwater's originally proposed opex of $290.8 million. Our recommended opex reflects various adjustments to Sunwater's proposed opex including adopting a historical base year rather than higher budgeted costs and updating cost escalators.

2.1 Overview

2.1.1 Sunwater's submission

In its November 2018 submission, Sunwater proposed opex of $290.8 million over the price path period. These opex forecasts were based on 2018–19 budgeted costs (see Table 2).

Table 2 Sunwater's proposed opex for irrigation service contracts ($ million, nominal)

Cost category	*Price path period*				
	2020–21	*2021–22*	*2022–23*	*2023–24*	*Total*
Direct operations and maintenance	21.2	21.7	22.3	22.8	**88.0**
Electricity	14.3	14.8	16.1	16.0	**61.3**
Insurance	6.2	6.4	6.5	6.7	**25.9**
Total direct	**41.7**	**42.9**	**44.9**	**45.5**	**175.2**
Indirect	7.7	7.9	8.0	8.3	**31.8**
Local area support	13.6	14.0	14.3	14.7	**56.6**
Corporate support	6.5	6.7	6.9	7.1	**27.2**
Total non-directs	**27.8**	**28.5**	**29.3**	**30.0**	**115.6**
Total opex	**69.6**	**71.5**	**74.2**	**75.5**	**290.8**

Note: Totals may not add due to rounding. Source: Sunwater, sub. 11 and sub. 45.

Sunwater's actual direct[6] opex over the previous price path period (from 2012–13 to 2016–17) was $182.6 million, $23.0 million higher than our allowed opex over this period of $159.6 million. Sunwater identified electricity costs ($5.7 million higher than forecast) and insurance costs ($15.2 million higher than forecast) as the primary reason for exceeding our opex allowances.

Sunwater's actual non-direct[7] opex over the previous price path period was $89.0 million, $11.3 million lower than our forecast opex over this period of $100.2 million in the 2012 review. This was primarily as a result of lower than forecast indirect costs over the entire price path period.

[5] Emerald, St George and Theodore distribution systems.
[6] Direct opex refers to opex that can be directly attributed to an asset or service contract.
[7] Non-direct opex refers to opex that supports local or business-wide operations but that cannot be directly attributed to activities in a given service contract.

In June 2019, Sunwater provided us with updated costs forecasts (including opex) based on 2019–20 budgeted costs that, while comparable in aggregate to those provided in November 2018, were significantly different for the direct and non-direct costs categories (see Table 3).[8]

Table 3 Sunwater's proposed opex for irrigation service contracts over the price path period ($ million, nominal)

Cost category	*Original submission*	*June 2019 cost update*	*Difference*
Direct operations and maintenance	88.0	98.4	10.4
Electricity	61.3	62.6	1.3
Insurance	25.9	28.5	2.6
Total direct	**175.2**	**189.5**	**14.3**
Indirect	31.8	35.3	3.5
Local area support	56.6	26.6	(30.0)
Corporate support	27.2	35.5	8.3
Total non-directs	**115.6**	**97.4**	**(18.2)**
Total opex	**290.8**	**286.9**	**(3.8)**

Note: Totals may not add due to rounding. Source: Sunwater, sub. 45 and sub. 153.

While Sunwater's June 2019 resubmission addressed a number of issues identified by us, Sunwater and other stakeholders—in particular, issues with Sunwater's proposed base year non-direct costs in its November 2018 submission—it also resulted in material increases in Sunwater's direct operations and maintenance expenditure.

In response to our draft report, Sunwater submitted that we use its actual costs for 2018–19 as the basis for forecasting its opex. However, Sunwater did not provide updated cost forecasts.

2.1.2 Key issues for consideration

We have considered all aspects of Sunwater's proposal in assessing the prudent and efficient level of Sunwater's opex. Issues that attracted comment from stakeholders or we have identified for further consideration include:

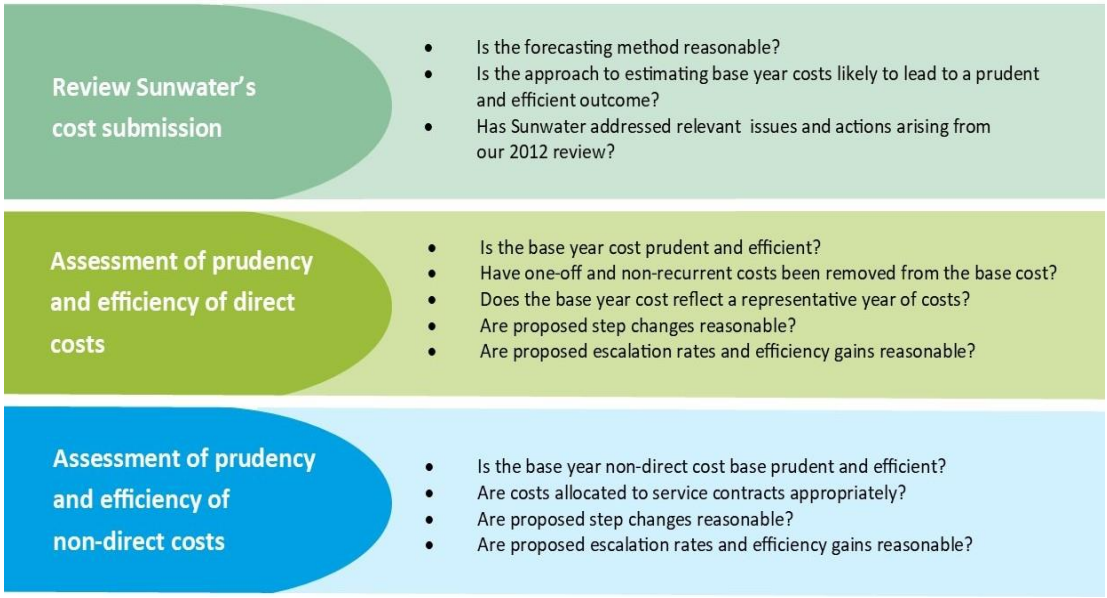
- the extent to which Sunwater's proposed costs have been developed in a way that addresses the issues and actions arising from our 2012 review
- the prudency and efficiency of Sunwater's proposed base year operating costs for 2018–19
- the appropriate methodology for allocating non-direct costs to service contracts[9]
- the escalation factors to be applied to costs for the purpose of forecasting operating costs.

2.2 Our assessment approach

Our approach has involved reviewing Sunwater's proposed direct and non-direct operating costs, considering forecasting methods, base year efficiency, cost allocation, step changes, rates of escalation and proposed efficiency gains (Figure 4). Where appropriate, we have developed alternative estimates of reasonable operating costs, based on the findings of our investigation.

[8] Sunwater, sub. 153.
[9] Sunwater has 27 irrigation service contract areas out of 56 service contracts across its entire business.

Figure 4 The QCA's assessment approach for opex



We engaged AECOM to assist us in this assessment. AECOM's review was informed by extensive information requests issued to Sunwater, as well as in-person interviews with key Sunwater staff. We have had regard to AECOM's analysis and recommendations in developing prudent and efficient opex estimates. In some cases, we have formed views that differ to those expressed by AECOM, or have adopted a different approach.

We have sought to promote a regulatory process that is effective and efficient. Where relevant we have leveraged off the findings from our 2012 review that developed efficient cost benchmarks and provided specific recommendations that sought to improve Sunwater's cost forecasting approach and its capture of labour cost information.

2.3 Forecast methodology

We have reviewed Sunwater's submission to determine whether aspects of its operating policies and procedures, such as the approach to forecasting opex, and the information on which forecasts are based, are robust and likely to lead to prudent and efficient outcomes.

2.3.1 Sunwater's submission

Sunwater said it used a base-step-trend approach to forecast its opex over the price path period.

In its November 2018 submission, Sunwater said it developed its base year costs from 2018–19 budgeted costs, as both 2016–17 and 2017–18 were abnormal years, involving some restructuring costs.[10] Sunwater's June 2019 update used 2019–20 budgeted costs, de-escalated to be presented in terms of a 2018–19 base year.

In its November 2019 response to our draft report, Sunwater said it accepted the arguments in our draft report for rejecting a base year that used 2018–19 budgeted costs rather than actual financial results.[11] Sunwater instead proposed using 2018–19 actual costs for its base year costs.

[10] Sunwater, sub. 11, p. 34.
[11] Sunwater, sub. 229, p. 5.

Sunwater said that 2018–19 actuals reflected the most current operational and business requirements, input markets and regulatory obligations.[12]

Sunwater considered that our use of different methodologies to separately assess direct costs and non-direct costs had resulted in an outcome that did not accurately reflect future efficient opex.[13]

In the event that we decided to retain our draft report approach, Sunwater proposed adjustments to reflect areas where it said that the base year calculated in our draft report was not reflective of its current or future costs.[14]

2.3.2 Other stakeholders' submissions

Several stakeholders noted that Sunwater's forecast opex was based on budgeted base year costs and requested that we investigate this forecasting approach.[15] The Burdekin River Irrigators Association (BRIA) noted the 2018–19 base year costs do not contain actuals and appear 'to be totally divorced from previous years of actuals, which were broadly in-line with our cost allowances in the previous review'.[16]

2.3.3 QCA assessment

The base-step-trend approach to forecasting operating costs involves determining a reasonable base year level of costs, applying escalations, incorporating material step changes in efficient costs, and recognising expected productivity improvements.

The starting point for this approach is to select base year costs that represent a reasonable estimate of future efficient operating costs. The base year costs would generally be derived from the business's actual historical costs, an approved regulatory allowance or another cost benchmark. However, Sunwater's November 2018 submission and June 2019 cost update took different approaches by proposing to use budgeted costs as base year costs.

In our draft report, we considered that adoption of a base year based on budget forecasts would make it difficult to validate the basis of underlying assumptions and any adjustments made to historical source data. We therefore used Sunwater's historical costs as the starting point to assess the efficient level of base year expenditure. We maintain this position.

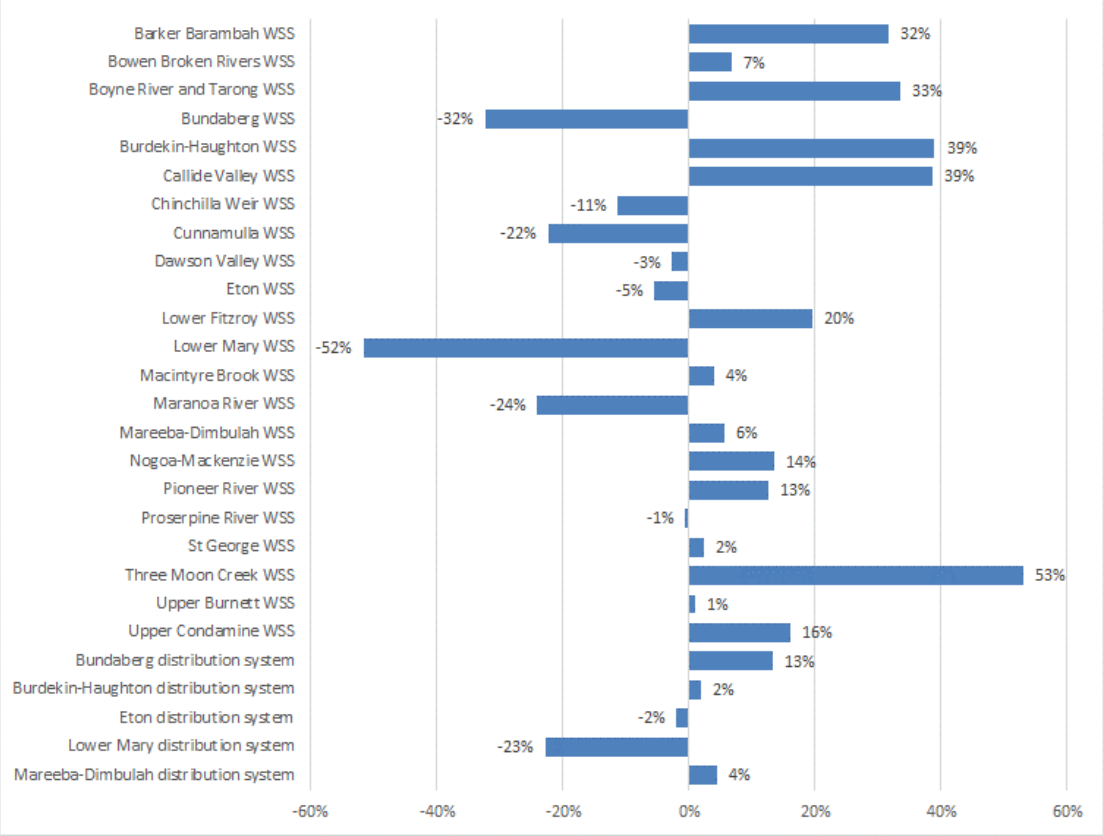
However, we do not consider it appropriate to use actual costs for 2018–19 as the basis for determining base year costs in this instance. A comprehensive assessment of actual costs for 2018–19 as a possible base year would require a full review of all costs (including cost allocations). We do not consider this to be efficient given that our consultant, AECOM, has reviewed previous historical years and Sunwater has not made a strong case to suggest that 2018–19 reflects a more appropriate base year.

For direct operating and maintenance costs, there is significant year-on-year variability at the scheme level (see section 2.4.3), as demonstrated by Figure 5, which shows the scheme-level percentage changes from Sunwater's proposed 2018–19 base year (budgeted) costs in its November 2018 submission to its 2018–19 actual costs in its November 2019 submission. For this

[12] Sunwater, sub. 229, p. 31.
[13] Sunwater, sub. 229, p. 33.
[14] Sunwater, sub. 229, p. 24.
[15] QFF, sub. 132, p. 5; KDWUA, sub. 112, p. 8; CHRC, sub. 101, p. 2.
[16] BRIA, sub. 85, p. 26.

reason, we consider there is a strong case to average historical costs at the scheme level to establish an efficient level of expenditure.

Figure 5 Percentage difference in scheme-level direct operations and maintenance expenditure, 2018–19 actual costs compared to 2018–19 budgeted costs



Source: Sunwater, sub. 153 and sub. 229; QCA analysis.

For non-direct costs, we note that most of Sunwater's proposed adjustments relate to budgeted increases to corporate support costs that Sunwater said need to be applied to either the base year costs in our draft report (adjusted 2017–18 actual costs) or Sunwater's proposed 2018–19 actual costs.[17] Our assessment in the draft report was that Sunwater's 2017–18 actual costs (with adjustments) were the best estimate of efficient costs. As with direct opex, we consider it would not be efficient to undertake a detailed independent review of 2018–19 actual costs, given we have already undertaken a detailed review of 2017–18 actual costs.

As explained in section 2.8.3, non-direct costs do not vary significantly year-on-year, so we have instead derived base year costs using 2017–18 actuals with appropriate adjustments.

2.4 Base year direct operations and maintenance expenditure

2.4.1 Sunwater's submission

Sunwater said that it had concerns with our approach to establishing an efficient base year for direct operations and maintenance expenditure. In particular, Sunwater said that:

[17] We note that $3.4 million of Sunwater's proposed total adjustments of $4.1 million (excluding rental cost adjustments) relate to budgeted increases in corporate support costs beyond 2018–19. The remaining $0.7 million relates to increases in corporate support costs from 2018–19 onwards.

- it is inappropriate to separately assess opex at a scheme and aggregate level due to the level of activity and resource cross-over between service contracts
- there is limited variability, over time, in its underlying costs, with changes in direct operating and maintenance expenditure driven primarily by input costs, operational needs, and regulatory or compliance requirements
- we did not account for the increase in opex that might be expected from our proposed reduction in renewals expenditure.[18]

Sunwater considered that 2018–19 actual opex represented a more appropriate basis for setting future direct operations and maintenance expenditure than budgeted costs or a six-year historical average.

Table 4 Sunwater's proposed 2018–19 direct operations and maintenance base year opex for irrigation service contracts ($2018–19, million)

Cost category	*Original submission*	*June 2019 cost update*	*November 2019 submission*
Direct operations and maintenance	20.8	23.4	22.2

Note: Over this investigation, Sunwater separately proposed base year opex using 2018–19 budgeted opex (original submission), 2019–20 budgeted opex (June 2019 cost update) and 2018–19 actuals (November 2019).

Sunwater said that were we to retain our draft report approach, we should consider its proposed adjustments of $2.1 million to our proposed base year to account for increases in costs between the historical average and present.[19]

2.4.2 Other stakeholders' submissions

No stakeholders provided submissions on direct operations and maintenance expenditure.

2.4.3 QCA assessment

We have assessed Sunwater's submission to determine the prudency and efficiency of the proposed base year direct operations and maintenance expenditure by:

- examining historical direct operations and maintenance expenditure at the aggregate level, comparing it with our recommended expenditure from the 2012 review and assessing the drivers behind any increases in costs
- examining Sunwater's maintenance regimes, work scheduling, and delivery to determine the efficiency with which Sunwater undertakes operations and maintenance activity
- assessing Sunwater's proposed base year costs at the scheme level with alternative estimates based on Sunwater's historical costs
- assessing Sunwater's proposed base year cost adjustments in response to our draft report.

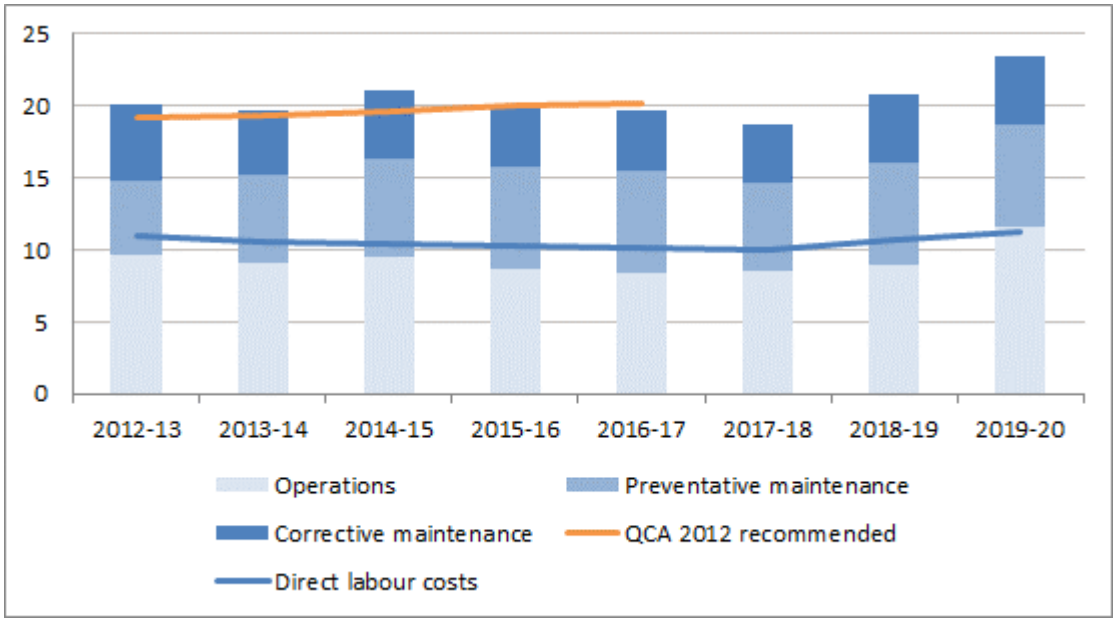
We do not agree with Sunwater's view that it is inappropriate to separately assess opex at a scheme and aggregate level due to the level of activity and resource cross-over between service contracts. We consider that the significant year-on-year variability at the scheme level for direct operating and maintenance costs warrants a further investigation into scheme level costs, particularly given that we are required to recommend irrigation prices at the scheme level.

[18] Sunwater, sub. 229, pp. 33–35.
[19] Sunwater, sub. 229, pp. 35–36.

Prudency and efficiency of historical direct operations and maintenance expenditure

Figure 6 compares Sunwater's historical direct operations and maintenance expenditure with our recommended expenditure from the 2012 review.

Figure 6 Sunwater's direct operations and maintenance expenditure for irrigation service contracts ($2018–19, million)



Notes: The 2017–18 figure reflects Sunwater's actual costs rather than the 'normalised' costs provided in Sunwater's submission. The 2018–19 figure is the budgeted base year provided by Sunwater in its November 2018 submission. The 2019–20 figure is the budgeted base year provided by Sunwater in its June 2019 cost update.

Source: Sunwater, sub. 45 and sub. 153; QCA analysis.

Expenditure over the period 2012–13 to 2017–18 was fairly consistent with our 2012 review recommendation. However, Sunwater said that there was an under-representation of time-sheet reporting for direct cost activities in the latter years, particularly over 2015–16 to 2017–18.[20]

While there was an increase of $4.8 million from 2017–18 actuals to Sunwater's June 2019 resubmitted base year forecast for 2019–20, AECOM could only partially explain this difference, noting the following transfers from local area support costs:

- direct charging of fleet costs to service contracts from 2019–20 ($1.8 million)
- correction for undercharging of labour directly to irrigation service contracts ($0.6 million).

AECOM also reviewed Sunwater's:

- staffing arrangements and found these to be reasonable noting that total full-time equivalent (FTE) staff fell in 2014–15 as a result of corporate restructuring and has generally been sustained with further reductions budgeted over the price path period; wage growth has also been restrained with the average cost of staff increasing by 1 per cent in 2017–18 after a reduction of 6.5 per cent in 2016–17
- staff utilisation levels in regional operations offices (i.e. hours booked on work activities relative to the total time available) and noted that this had averaged 88 per cent in 2018–19, up from an average of 83 per cent over 2016–17 and 2017–18; AECOM considered the level

[20] Sunwater response to AECOM RFI A43, A44 and QCA RFI 28.

of utilisation over the year to March 2019 to be an appropriate level, stating that a target of 90 per cent would be comparable to best practice

- maintenance regime and work scheduling and delivery to determine the prudency and efficiency of operations and maintenance activity and considered it to be efficient noting that Sunwater uses calendar based routine maintenance to minimise travel and coordinates work between regional offices when necessary.[21]

As historical costs have been generally consistent with the allowance from our 2012 review and based on AECOM's assessment of staffing levels and work scheduling, we consider Sunwater's historical direct operations and maintenance expenditure to be generally prudent and efficient.

Base direct operations and maintenance expenditure at the scheme level

AECOM compared historical expenditure at the scheme level with our recommended expenditure from the 2012 review and noted there had been variability in historical expenditure at the scheme level typically driven by factors including:

- damage due to extreme weather events leading to a temporary increase in maintenance costs until the relevant assets have been refurbished
- maintenance requirements that may vary depending on water usage
- changes in asset condition that may prompt increased/decreased maintenance activity
- weed control activities in affected schemes varying with water flows and weather conditions.[22]

Noting that annual workloads vary for the above reasons, AECOM advised that it would be appropriate to average costs between 2012–13 and 2017–18 in establishing an efficient base year of costs, in order to even out year-on-year variability.[23] Over time the annual costs will, on average, be similar to this typical year. The significant differences between the budgeted and actual costs for 2018–19 reinforces the view that any particular year is unlikely to be a representative year.

We consider that AECOM's proposed base year estimates cover a sufficiently large historical data set to capture the expected variability in operations over the long-term. As a result, we generally accept that these do not require adjustment to bring them back to average expectations. However, we consider that adjustments should be made where there are clear justifications for changes—for example, adjustments to take into account changes in operations, new technology, one-off abnormal costs or clearly demonstrated efficiency gains. We have also considered whether there have been step changes in cost drivers—for example, rising preventative maintenance costs for distribution schemes as a result of increased weed growth in channels.

We considered a number of adjustments to the historical average in developing a reasonable base year level of costs. These are assessed as:

- global adjustments (applicable at a business-wide level)
- scheme-specific adjustments.

[21] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, pp. 40–42.
[22] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020, p. 53.
[23] AECOM escalated Sunwater's historical costs to 2018–19 dollars by applying actual escalation rates derived using the same component cost escalators as used in deriving forecast costs.

These include Sunwater's proposed adjustments in its response to our draft report.

Where a proposed adjustment would be expected to be addressed by the long-term averaging approach (e.g. cost changes related to operational variability), we have not accepted the adjustment. Where the averaging approach does not adequately address a proposed adjustment, we have assessed the cost against the following criteria:

- prudency—the proposed inclusion should be justified by reference to an identified need or cost driver (for instance, the expenditure is required to deliver agreed service levels, is required to meet new legal or regulatory obligations, or there is a reasonable expectation of future benefits)
- efficiency—the expenditure must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Global adjustments

In our draft report, we made the following global adjustments to the six-year historical averages:

- adjustments to account for direct labour undercharging in 2016–17 and 2017–18—AECOM advised that it would be reasonable to assume staff utilisation of 88 per cent compared to the average utilisation rate of 83 per cent reported for these years
- adjustments for fleet costs, which Sunwater will charge directly to service contracts from 2019–20, rather than allocating to local overheads—AECOM adjusted for the difference between 2017–18 actual costs and 2019–20 forecast costs.

Sunwater proposed an additional $0.9 million in global adjustments to the base year direct operations and maintenance expenditure, including amendments to our draft report adjustments for:

- normalisation of historical costs for labour utilisation
- estimation of fleet and travel and accommodation costs
- application of market based escalation rates to normalise historical costs for the purpose of averaging. [24]

In addition, Sunwater said that extending the timing of its renewals program (as we had recommended) was also likely to result in higher maintenance costs than we had allowed for.[25]

Normalising historical costs for labour utilisation

In response to our adjustments for labour utilisation, Sunwater submitted that:

- normalisation for labour utilisation should cover years earlier than 2016–17 and 2017–18
- the scope of the utilisation adjustment should not be limited to regional staff (noting that staff from other regions and Brisbane will also directly bill labour)
- its target utilisation rate of 90 per cent should be applied, instead of the 2018–19 actual utilisation rate.[26]

In response to Sunwater's concerns, AECOM considered that:

[24] Sunwater, sub. 229, p. 36.
[25] Sunwater, sub. 229, p. 32.
[26] Sunwater, sub. 229, pp. 35–37.

- it was appropriate to revise its utilisation adjustment to include 2015–16, noting that Sunwater reported that reduced direct charging was particularly notable from 2015–16 onwards
- the Brisbane based component of total labour is small in relation to total labour booked to the schemes (around 11 per cent). AECOM also noted that its adjusted approach resulted in a recommended base year very similar to Sunwater's adjusted average cost calculation
- over the 2012–13 to 2018–19 period, the 90 per cent utilisation rate was only achieved around 11 per cent of the time. Therefore AECOM considered the actual 2018–19 utilisation of 88 per cent to be a more representative utilisation figure.[27]

As AECOM's revised advice is based on the new information provided by Sunwater, we have adjusted labour utilisation resulting in an additional $0.3 million to base year costs.

Fleet and travel and accommodation costs

Sunwater said the six-year average approach in our draft report failed to consider the different historical treatment of fleet (in 2012–13 and 2013–14) and travel and accommodation costs (2012–13 to 2014–15). Sunwater proposed the use of a shorter-term average to remove these years.[28]

AECOM recommended adjusting base year costs to reflect the four-year average for fleet costs and the three-year average for travel and accommodation costs, as proposed by Sunwater.

We consider this to be a reasonable adjustment given the change in cost allocation approach over this period and have accepted AECOM's final adjustment of $2.3 million to base year costs.

Market based escalation rates

Sunwater considered that the escalation of historical costs using market-based escalation rates understated costs, in particular the escalation of labour costs. Sunwater said historical labour escalation should be based on previous Sunwater enterprise agreements (EAs), which included pay increases of 3 per cent per annum.[29]

AECOM noted that the EAs would include a provision for efficiency gains, which AECOM considered should offset the cost of Sunwater's EAs. AECOM did not consider it reasonable to allow for a higher escalation rate without providing for the offsetting efficiency gain.[30]

We consider it is appropriate to apply the wage price index for historical costs as it is an index that excludes productivity changes. For this reason, we have accepted AECOM's recommendation to reject the cost increase.

AECOM's recommendations on Sunwater's renewals program

AECOM considered that its recommended deferral of renewals would not impact on prudent and efficient maintenance costs within the price path period as:

- the deferral of renewals was more relevant in the long term (beyond the price path period)

[27] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020, pp. 98–99.
[28] Sunwater, sub. 229, pp. 117–19.
[29] Sunwater, sub. 229, pp. 115–17.
[30] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020, p. 46.

- renewals works which were scheduled to occur within the price path period were only deferred where the deferment was supported by projected asset condition (i.e. issues observed in the planning of renewals).[31]

We accept AECOM's recommendation as we are of the view that, for the reasons outlined above, the deferral would not impact on prudent and efficient maintenance costs.

Scheme-specific adjustments

We have made adjustments to Boyne River and Tarong WSS and Bundaberg distribution system, as historical costs in these schemes have been driven by factors that are not representative of normal operating conditions:

- For Boyne River and Tarong WSS, the long-term average was impacted by abnormal cost items from 2012–13 to 2014–15. Costs in 2012–13 were more than triple the six-year average due to legal costs related to progressing Sunwater's claim for flood damage to Boondooma Dam.[32] We removed flood-related legal costs over 2012–13 to 2014–15.
- For the Bundaberg distribution system, water usage was significantly higher than long-term averages over the past six years, with average usage over this six-year period around 30 per cent higher than our forecast usage for the upcoming price path period. This led to significantly higher costs due to increased surveillance and water management activities and additional Acrolein injections during the season to ensure the continued delivery of high volumes of water to customers.[33] We accepted Sunwater's revised June 2019 estimates as these were more consistent with recent historical expenditure.

In response to our draft report, Sunwater proposed $1.3 million in additional scheme-specific adjustments to our base year direct operations and maintenance expenditure in the event that we did not accept actual costs for 2018–19 as base year costs.

AECOM advised that most of Sunwater's proposed scheme-specific base year cost adjustments were examples of operational variability, and these adjustments were captured in its recommended base year (via the long-term averaging approach).[34] We consider that these adjustments would be covered by the averaging approach and have accepted AECOM's recommendation.

However, we have considered the following adjustments that would not already be captured by the long-term averaging approach.

Legal and administration (increased local authority rates) and Contractors (Callide Valley)

Sunwater proposed base year adjustments in the Burdekin-Haughton and Callide Valley WSSs to account for increased local authority rates,[35] and an adjustment to the Callide Valley WSS for roadworks and desilting on the Callide diversion channel. Sunwater said that these works have been added to Sunwater's routine work program and will be required again before 2023.[36]

AECOM considered these adjustments reflected prudent and efficient cost increases which would not be captured in the averaging approach, and recommended we accept these increases.

[31] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020, p. 21.
[32] Sunwater, 2013 *Annual Performance Report, Boyne Bulk*, October 2013.
[33] Sunwater, *2014 Annual Performance Report, Bundaberg distribution*, October 2014.
[34] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020, pp. 55–61; 79–82.
[35] Sunwater, sub. 229, pp. 124–25.
[36] Sunwater, sub. 229, p. 125.

We consider the inclusion of these costs to be prudent given that local authority rates are obligatory, and the roadworks and desilting activities represent a new activity and are reasonably required to maintain assets in a functional state and deliver services.

Direct weed control costs and Acrolein usage

Given above-inflation cost changes in Acrolein, AECOM recommended that we should adjust Sunwater's Acrolein costs by applying the current Acrolein price to the six-year average quantity of Acrolein used. This represents a $0.2 million increase to base year costs, and applies to the Bundaberg, Burdekin-Haughton and Eton distribution systems.[37]

As Acrolein cost increases have been above inflation, we accept AECOM's recommendation.

Base direct operations and maintenance expenditure summary

We consider Sunwater's historical direct operations and maintenance expenditure to be generally prudent and efficient and have generally adopted historical costs adjusted for average conditions. Where there is a clear driver underlying a proposed change in cost, we have further adjusted historical costs to account for this. Our estimates are materially different from Sunwater's in schemes where Sunwater's proposed costs vary significantly from historical costs with no clearly identified cost driver.

For bulk WSSs, our recommended base year direct operations and maintenance expenditure is 8.0 per cent lower than Sunwater's June 2019 cost update. In aggregate and at the scheme-level, we consider there is a material difference between our assessed costs and Sunwater's June 2019 update and have therefore used our assessed estimates (Table 5).

Table 5 The QCA's recommended base year direct operations and maintenance expenditure for bulk WSSs ($2018–19, '000)

WSS	*Sunwater*		*QCA recommended*			
	Original submission	*June 2019 update*	*Historical average*	*Adjustments*		*Total*
				Global	*Scheme*	
Barker Barambah	262	357	267	37	–	303
Bowen Broken Rivers	689	750	582	96	–	677
Boyne River and Tarong	194	248	255	30	(57)	228
Bundaberg	567	651	507	25	–	532
Burdekin-Haughton	1,103	1,156	1,057	57	83	1,197
Callide Valley	415	548	375	70	73	518
Chinchilla Weir	38	45	41	0	–	41
Cunnamulla	13	15	14	0	–	14
Dawson Valley	294	304	263	32	–	295
Eton	550	590	509	57	–	566
Lower Fitzroy	87	137	66	24	–	90
Lower Mary	105	116	46	1	–	47
Macintyre Brook	355	401	287	32	–	319
Maranoa River	15	15	10	0	–	10
Mareeba-Dimbulah	467	563	463	42	–	505
Nogoa-Mackenzie	902	948	847	66	–	913
Pioneer River	445	505	393	87	–	480

[37] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020, p. 101.

WSS	Sunwater		QCA recommended			
	Original submission	June 2019 update	Historical average	Adjustments		Total
				Global	Scheme	
Proserpine River	406	497	444	51	–	494
St George	361	389	357	47	–	404
Three Moon Creek	156	197	163	20	–	182
Upper Burnett	379	441	324	41	–	366
Upper Condamine	424	489	377	57	–	434
Total	**8,225**	**9,362**	**7,644**	**874**	**99**	**8,617**

Note: Totals may not add due to rounding. Source: AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020; QCA analysis.

Our assessed total expenditure for distribution systems is 1.7 per cent lower than Sunwater's June 2019 cost update (Table 6). At the scheme level the differences range from 1.8 per cent higher (Burdekin-Haughton distribution system) to 13.4 per cent lower (Eton distribution system). Given that our prices are derived at the scheme (and sub-scheme) level, we have used our assessed estimates.

Table 6 The QCA's recommended base year direct operations and maintenance expenditure for distribution systems ($2018–19, '000)

Distribution system	Sunwater		QCA recommended			
	Original submission	June 2019 update	Historical average	Adjustments		Total
				Global	Scheme	
Bundaberg	2,652	3,001	2,888	519	(397)	3,010
Burdekin-Haughton	6,062	6,391	5,918	485	102	6,505
Eton	1,373	1,597	1,149	208	25	1,382
Lower Mary	343	363	310	26	–	337
Mareeba-Dimbulah	2,148	2,649	2,041	488	–	2,529
Total	**12,578**	**14,001**	**12,307**	**1,726**	**(269)**	**13,763**

Note: Totals may not add due to rounding. Source: AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020; QCA analysis.

2.5 Base year electricity costs

2.5.1 Sunwater's submission

Sunwater submitted that managing electricity costs had been a key challenge in the previous price path. Sunwater said that it had devoted resources to optimising tariff selection each year to help minimise the impact of electricity retail tariff increases, noting that these had been higher than those we forecast in the 2012 review.[38]

In its November 2018 submission, Sunwater said its proposed electricity costs were variable costs and it proposed to recover them from volumetric prices.[39] In its June 2019 cost update, it amended this approach to assign all electricity costs in the Eton bulk WSS to fixed costs, with electricity costs for all remaining bulk WSSs and distribution systems allocated to variable costs.

[38] Sunwater, sub. 11, p. 18.
[39] Sunwater, sub. 49, p. 16.

In its response to our draft report, Sunwater noted that if we accepted its proposal to use 2018–19 actual costs as a base year, then the electricity cost allowance for bulk WSSs would decline by $0.2 million.[40]

For distribution systems, Sunwater noted that we used a higher five-year average water usage to calculate low variable costs per megalitre, and then calculated the total variable electricity costs from a lower 20-year average water usage. Sunwater stated that given the correlation between water usage and electricity costs, it is not appropriate to use two different time-series of water usage data in the estimation of electricity costs.[41]

Sunwater considered that a better approach would be to use 20 years of electricity data. However, given the lack of available electricity data for this length of time, Sunwater proposed that we adopt the lowest of:

- Sunwater's actual 2018–19 electricity costs
- Sunwater's June 2019 forecast costs
- our unadjusted calculated five-year historical average.[42]

2.5.2 Other stakeholders' submissions

Stakeholders were generally concerned about Sunwater's energy procurement and efficiency practices and how it derived its base year electricity costs.

Some stakeholders said that Sunwater should review its tariffs more frequently than annually with relevant Irrigator Advisory Committees (IACs), to take advantage of mid-year tariff reforms.[43]

Stakeholders also raised concerns with Sunwater's energy usage practices, in particular, stakeholders said:

- Sunwater should be encouraged to implement more efficient usage strategies and should provide more detailed information on potential proposals to manage electricity, including implementing off-grid options[44]
- Sunwater should be using smart meters for improved measurement and optimal timing of energy use[45]
- benchmarking electricity costs against other schemes or businesses, and presenting this information to customers, would also provide guidance on future investment decisions.[46]

Bundaberg Regional Irrigators Group (BRIG) requested that we investigate how Sunwater had derived its base year electricity costs. In particular, BRIG were concerned that:

- the increase in base year electricity costs from 2016–17 to the 2018–19 base year was higher than the increase in regulated retail electricity prices over that period[47]

[40] Sunwater, sub. 229, p. 39.
[41] Sunwater, sub. 229, p. 39.
[42] Sunwater, sub. 229, p. 42.
[43] BRIG, sub. 54, p. 9; CHCGIA, sub. 99, p. 4; Nogoa Mackenzie IAC, sub. 127, p. 2.
[44] BRIA, sub. 85, p. 42; BRIG, sub. 54, p. 9; Fairbairn Irrigation Network, sub. 104, p. 6; MDIAC, sub. 203, p. 1.
[45] Central Downs Irrigators, sub. 186, p. 3; MDIAC, sub. 203, pp. 1–2; WBBROC, sub. 149, p. 9.
[46] Bundaberg Regional Council, sub. 87, p. 3.
[47] BRIG, sub. 54, p. 9.

- estimated costs per megalitre should reflect an average mix of scheme usage, rather than a mix that results in higher or lower than average electricity costs per megalitre.[48]

In response to our draft report, Mareeba-Dimbulah Irrigation Area Council (MDIAC) considered there was too much averaging and estimating in determining the fixed and variable costs.[49]

Some stakeholders questioned whether the tariffs being used by Sunwater were the most efficient, and considered we should recommend an electricity efficiency target that reflected potential efficiency gains associated with technologies and practices.[50]

QFF said that a better methodology, such as that applied in the electricity cost pass-through mechanism it is working through with Sunwater, would lead to greater transparency if irrigators can understand the true fixed cost of electricity in distribution systems.[51]

2.5.3 QCA assessment

We have assessed the prudency and efficiency of Sunwater's base year electricity costs by reference to:

- the appropriateness of Sunwater's energy procurement program
- the appropriateness of energy efficiency measures
- cost drivers underpinning base year electricity costs.

Energy procurement program

Sunwater follows a formal procurement process as per the Queensland Procurement Policy for the supply of electricity under a market contract arrangement. Since 2012, Sunwater has engaged external market consultants to undertake annual tariff reviews with energy retailers and recommend the optimal regulated tariff or market contract arrangements.

In recent years, Ergon Energy Retail has analysed some larger sites on transitional tariffs to provide regulated retail tariff options for Sunwater to consider beyond 2020 when a suite of transitional and obsolete tariffs are scheduled to be phased out.[52]

Sunwater's June 2019 update to electricity costs included a revised estimate for electricity costs for the Burdekin-Haughton distribution system as it has moved from a regulated tariff to a market contract. This has resulted in a 14 per cent decrease in 2018–19 base year electricity costs for this distribution system from $6.6 million to $5.7 million.

AECOM concluded that Sunwater's procurement process for electricity was efficient, as it enabled Sunwater to maintain competitive retail tariffs.[53] We accept AECOM's findings, which are supported by the material decrease in electricity costs for the Burdekin-Haughton distribution system that Sunwater has achieved.

[48] BRIG, sub. 54, p. 10.
[49] MDIAC, sub. 203, pp. 1–2
[50] Canegrowers, sub. 179, p. 12; Lower Mary Customer Advisory Board, sub. 202, p. 2.
[51] QFF, sub. 223, p. 5.
[52] Phasing-out of transitional and obsolete tariffs has been postponed to 30 June 2021.
[53] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019; p. 62.

Energy efficiency

AECOM agreed with the energy efficiency strategies identified in Sunwater's Energy Strategy, which included prioritising the installation of smart metering and/or energy monitoring systems.[54]

However, AECOM noted that Sunwater had not incorporated potential cost reductions, achieved through energy efficiency savings, into forecast electricity prices, on the basis that:

- potential efficiency savings had not yet been quantified
- some of the efficiency measures require capital expenditure which are not yet included in capital expenditure forecasts
- the targets are intended for internal continuous improvement purposes.

AECOM noted the apparent lack of suitable interval data for several large and small sites, stating that smart metering and associated monitoring platforms are currently available and in use amongst Australian water utilities.

AECOM recommended that Sunwater increase the implementation of smart metering across the remainder of its sites. Access to detailed energy interval data is necessary for accurate measurement and efficient optimisation of operations, as well as efficient integration of renewable and other behind-the-meter power generation.[55]

We encourage Sunwater to consider investing in smart metering where the benefits from such investment are likely to outweigh the costs.

Pumping efficiency

AECOM investigated Sunwater's operational pumping efficiency and concluded that pump station regimes have been optimised to perform most of their pumping within off-peak tariff periods.[56] Relatively high pumping during peak periods can be explained by the supply requirements of the pumping station.

Efficiency of base year electricity costs

Electricity costs comprise a significant component of Sunwater's opex, with a key driver being the need to pump water, predominantly in distribution systems. In bulk schemes, key drivers of electricity costs are the need to balance off-stream storages (Bowen Broken, Dawson Valley and Eton WSSs) or pump water to supplement stream flows (Barker Barambah–Redgate Relift and Upper Condamine bulk water schemes).

Bulk WSSs

In our 2012 review, we concluded that electricity costs in bulk WSSs other than Barker Barambah and Upper Condamine WSSs were not correlated with water usage. Consistent with that review, we have allocated the electricity costs in bulk WSSs (excluding Barker Barambah and Upper Condamine WSSs) to fixed costs.

There are tariff groups within Barker Barambah and Upper Condamine WSSs for which electricity costs are driven by water usage. We have therefore treated these electricity costs as variable.

[54] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 69.
[55] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 69.
[56] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, pp. 68–69.

We have assessed Sunwater's proposed base year electricity costs for bulk WSSs by comparing these with alternate estimates derived by AECOM by applying its assessment of the optimal 2019–20 retail electricity tariff to historical electricity consumption and demand at the individual pump station level.

Since AECOM's estimates are based on determining an optimal tariff using a single year of consumption and demand data, we consider they may not reflect the optimal tariff over different operating conditions. Given this concern, and given Sunwater's base year estimates are not materially different from AECOM's alternate estimates, we have accepted Sunwater's June 2019 base year electricity cost estimates for bulk WSSs.

Table 7 AECOM's estimated base year electricity costs, bulk WSSs ($'000, $2018–19)

WSS	*Sunwater's original submission*	*Sunwater's June 2019 cost update*	*AECOM's alternate estimate*
Barker Barambah	40	40	86
Bowen Broken Rivers	182	183	163
Bundaberg	10	10	11
Burdekin-Haughton	110	127	83
Callide Valley	5	5	8
Dawson Valley	45	55	52
Eton	400	401	450
Lower Fitzroy	2	2	2
Macintyre Brook	4	4	–
Mareeba-Dimbulah	3	1	4
Nogoa-Mackenzie	18	19	42
Pioneer River	4	5	6
Proserpine River	8	8	8
St George	6	7	5
Three Moon Creek	22	22	10
Upper Burnett	6	6	7
Upper Condamine	90	90	50
Total	**956**	**984**	**991**

Note: Totals may not add due to rounding. Sunwater did not propose electricity costs in Boyne River & Tarong, Chinchilla Weir, Cunnamulla, Lower Mary, and Maranoa River WSSs.

Source: Sunwater, sub. 45; Sunwater, sub. 153; AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020, p. 93.

Distribution systems

Electricity costs in distribution systems are largely driven by water pumping requirements (which drive electricity consumption) and movements in electricity tariffs.

Table 8 shows Sunwater's base year electricity costs at the individual distribution system level.

Table 8 Sunwater's 2018–19 base-year electricity costs, distribution systems

Distribution system	*Original submission*			*June 2019 cost update*		
	Variable cost ($/ML)	*Water usage (ML)*	*Total cost ($'000)*	*Variable cost ($/ML)*	*Water usage (ML)*	*Total cost ($'000)*
Bundaberg	61.75	73,329	4,528	63.47	73,398	4,658
Burdekin-Haughton	27.95	234,827	6,564	23.95	236,165	5,656
Eton	23.61	27,533	650	22.74	28,597	650
Lower Mary	70.67	4,245	300	70.81	4,245	301
Mareeba-Dimbulah	6.46	97,692	631	6.49	97,692	634

Note: Sunwater's June 2019 estimates reflect electricity costs from their 2019–20 budget process. These were de-escalated to 2018–19 base year costs in Sunwater's revised regulatory model using AEMO 2018 escalation rates.

Source: Sunwater, sub. 45; Sunwater response to QCA RFI 23; Sunwater, sub. 153; Sunwater's financial model.

We have estimated a variable electricity cost per megalitre to apply to our forecast of water usage to derive efficient base year variable costs. We have then added our estimate of fixed costs.[57]

AECOM reviewed tariffs available at specific connection sites in the relevant schemes and selected optimal 2019–20 tariffs with which to determine its base year electricity cost estimates. AECOM determined energy consumption by averaging annual consumption between 2013–14 and 2017–18 and selecting a year of consumption that most closely matched the average consumption over this period (the 'representative year').[58]

We consider that using a 'representative year' as the basis for estimating electricity costs may be problematic. In section 2.4 we discuss the challenges of determining the efficient level of recurrent expenditure for operational and maintenance costs given that year-on-year variability in operational conditions will impact on costs. We consider that similar issues arise in relation to variable electricity costs and that year-on-year variability, brought about by factors such as storage volumes and climatic conditions, will have an impact on pumping requirements and therefore costs, for each connection site. In practice, the representative year may also result in a level of consumption that is materially different from the average consumption.

As with operational and maintenance costs, we consider that an average, rather than a representative, year should be the basis from which electricity costs are determined. We also consider this approach is consistent with the approach for deriving water usage estimates.

Accordingly, we have extended AECOM's analysis to incorporate average consumption and demand patterns over the past six years (2013–14 to 2018–19).[59] We calculated our base year electricity costs for the existing 2019–20 electricity tariffs that Sunwater is using at each site, noting this is generally consistent with AECOM's assessment of the optimal tariff.

We have assessed whether a component of electricity costs should be assigned to fixed costs. Since our 2012 review, there has been a rebalancing of some electricity tariff structures from variable to fixed tariff components. For example, the underlying pricing structure for some standard business tariffs will often include a capacity charge that is likely to be incurred by Sunwater in the operation of its pumping stations, irrespective of water usage. This rebalancing

[57] Our forecast water usage for each bulk water scheme and distribution system is detailed in Chapter 5.
[58] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 65.
[59] This is the longest period possible with historical and consumption data for the large connection sites.

is particularly prevalent in the standard business tariffs that Sunwater is expected to move to from 2021–22 onwards following the phasing out of transitional and obsolete tariffs.

Consistent with AECOM's approach, we have assigned our calculated base year electricity costs between fixed and variable costs based on the fixed and variable nature of the underlying tariff.

In response to our draft report, Sunwater's primary concern was the forecast water usage estimate that we applied to our variable electricity cost per megalitre estimate to derive base year variable electricity costs. We note our approach seeks to derive a variable electricity cost per megalitre of water used so that this can be incorporated in the volumetric price. Our application of the 20-year forecast of water usage to this variable cost per megalitre estimate was to generate total variable costs under average conditions.

We note that the incorporation of a variable electricity cost per megalitre estimate in the volumetric price ensures that revenues recovered by Sunwater vary with actual water usage.

Our recommended base year electricity costs in Sunwater's distribution systems are below.

Table 9 The QCA's recommended 2018–19 base-year electricity costs, distribution systems

Distribution system	*Variable cost ($/ML)*	*Water usage forecast (ML)*	*Variable cost ($'000)*	*Fixed cost ($'000)*	*Total base year cost ($'000)[a]*
Bundaberg	52.34	75,682	3,961	599	4,560
Burdekin-Haughton	17.68	232,035	4,102	1,346	5,448
Eton	24.60	22,488	553	5	558
Lower Mary	50.63	4,975	252	36	288
Mareeba-Dimbulah[b]	67.67	5,067	343	134	477

a *Totals may not add due to rounding.* ***b*** *Relates to the re-lift section. Source: QCA analysis.*

The impact on fixed and variable electricity costs associated with the expiry of transitional and obsolete tariffs in 2021–22 is discussed in section 2.11.

2.6 Base year insurance costs

2.6.1 Sunwater's submission

The bulk of Sunwater's insurance program is for industrial special risks (around 80 per cent) and combined general liability (around 15 per cent), with a range of other liability insurance making up the remainder.[60]

Costs for these insurance programs are generally allocated to irrigation schemes based on declared asset values. All other insurance programs held by Sunwater are part of non-direct costs that are separately allocated with other non-direct costs to irrigation schemes.

Sunwater said that the main driver of insurance costs over the previous price path period was a change in the risk tolerance of insurers. Market movements and extreme weather events (that caused significant flood damage in 2010–11 and 2012–13) have led to higher premiums. Premiums increased further in 2016–17 as a result of an increase in the declared asset values due to a revaluation of insured assets.[61]

[60] Sunwater response to AECOM RFI A37 and A66.
[61] Sunwater, sub. 11, p. 21.

Following its November 2018 submission, Sunwater submitted that its insurance broker Marsh had advised an expected 11 per cent increase in insurance costs from 2018–19 to 2019–20.[62]

Sunwater said that Marsh had advised that the insurance market is now a hard market with significant insurance losses between 2011 and 2017 leading to selective underwriting, increased premiums and restricted cover. Marsh considered this will affect industrial-specific risk premiums going forward.[63]

In its response to our draft report, Sunwater said that final insurance premiums for 2019–20 were four per cent ($0.3 million) higher than previously indicated and that advice from their insurance advisor Marsh pointed towards upward pressure on future premiums.[64] We note that these views were expressed prior to the east coast bushfires of late 2019 and early 2020.

2.6.2 Other stakeholders' submissions

Several stakeholders said that Sunwater should adopt an approach to insuring assets that recognises the relative risk of flood damage occurring in a specific scheme or asset.[65] For example, Barker Barambah IAC noted that premiums paid over the past six-year period for its scheme were more than double the claim proceeds despite having the two major floods on record in 2011 and 2013.[66] Fairbairn Irrigation Network noted that we did not comment on Sunwater's insurance policy claim process to ensure the maximum benefit is derived from the insurance program.[67]

Stakeholders also sought assurance that Sunwater was not insuring assets for which they could not successfully claim against ('uninsurable assets'), and that its insurance program was prudent and represented value for money.[68] MDIAC and Fairbairn Irrigation Network recommended an investigation of whether self-insurance would reduce Sunwater's insurance costs.[69]

Some stakeholders, including QFF, noted that Sunwater's insurance costs estimates had increased from $6.0 million to $6.6 million between Sunwater's November 2018 submission and its June 2019 cost update. They requested that we ensure the declared asset values excluded distribution schemes that have transitioned to a local management authority.[70]

WBBROC said that we had not undertaken a detailed comparison of insurance costs to water business in other jurisdictions, or assessed how events in schemes in north Queensland had impacted insurance costs for schemes in south Queensland.[71]

2.6.3 QCA assessment

We have assessed the prudency and efficiency of Sunwater's proposed insurance costs by reference to:

- the appropriateness of policies and procedures for procuring insurance

[62] Sunwater response to QCA RFI 24.
[63] Sunwater response to AECOM RFI A37 and A66.
[64] Sunwater, sub. 229, p. 44.
[65] Nogoa Mackenzie IAC, sub. 127, p. 3; CHCGIA, sub 99. p. 4, Canegrowers, sub. 91, p. 2; Theodore Water, sub. 140, p. 3.
[66] Barker Barambah IAC, sub. 83, p. 2.
[67] Fairbairn Irrigation Network, sub. 236, p. 5
[68] BRIA sub 85, p. 46; KCGO, sub 111, p. 3; Lower Burdekin Water, sub. 118. p. 16; Pioneer Valley Water Co-op, sub. 130, p. 5.
[69] MDIAC, sub. 123, p. 2; Fairbairn Irrigation Network, sub. 236, p. 5.
[70] MDIAC, sub. 203, p. 1. QFF, sub. 223, p. 6. Fairbairn Irrigation Network, sub. 236, p. 5
[71] WBBROC, sub. 234, p. 3

- the appropriateness of the level of insurance coverage, deductibles, and options for self-insurance
- the drivers of increases in actual costs relative to our recommended costs from the 2012 review.

Procurement policies and procedures

AECOM said that Sunwater had engaged a professional insurance broker to access the global market and provide advice on the appropriate level of insurance.[72] Prior to commencing its renewal process, Sunwater updates its insurance renewal strategy to document the proposed approach to renewal. Sunwater's insurance broker then facilitates the renewal process by making underwriting submissions to the market, and negotiating with potential insurance providers.

AECOM noted that Sunwater engages with insurance brokers with the intention of obtaining better premiums, by conducting workshops and infrastructure tours with providers to demonstrate its risk management capability.

AECOM concluded that Sunwater had an efficient procurement process, since Sunwater used the services of a professional broker to obtain competitive premiums via the global market and actively engaged with insurance providers with the intent of negotiating better premiums.

Insurance coverage, deductibles, and options for self-insurance

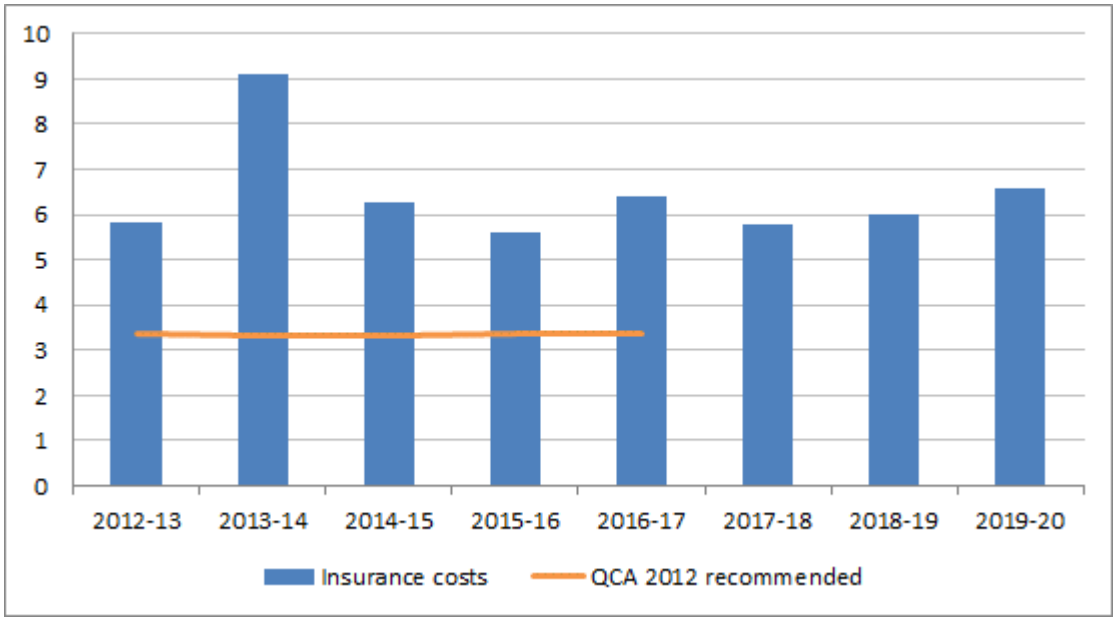
AECOM noted that Sunwater had sought external expert advice on the prudent scope of insurances and deductibles. Sunwater obtained indicative premium reductions that may be achieved if distribution system assets were excluded from insurance coverage from its insurance broker Marsh. Sunwater considered that any further reduction in premiums from self-insurance would not compensate Sunwater for the risk it would retain.

Efficiency of historical insurance costs

Sunwater's actual insurance costs over the period 2012–13 to 2017–18 were significantly higher than recommended by us (Figure 7).

[72] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 88.

Figure 7 Sunwater's insurance costs for irrigation service contracts ($2018–19, million)



Notes: The 2018–19 figure is the budgeted base year provided by Sunwater in its November 2018 submission. The 2019–20 figure is the budgeted base year provided by Sunwater in its June 2019 cost update.

Source: Sunwater, sub. 45; Sunwater, sub. 153; QCA analysis.

AECOM noted:

- The flood events of 2010–11 and 2012–13 placed considerable upward pressure in the pricing of industry special risk insurance policies in the following years for bulk water supply businesses.
- There was a material increase in insurance costs in 2013–14, reflecting flood damage caused by Cyclone Oswald in 2013, which had a significant impact on the pricing of industrial special risks policies.
- Sunwater's asset revaluation process has resulted in premium increases.[73]

Insurance costs would generally change over time due to changes in asset replacement costs and changes to asset risk assessment affecting insurance market rates. The key driver of higher insurance costs (as compared to those we forecast in the 2012 review) has been a change in asset risk assessment—in response to extreme weather events in 2010–11 to 2012–13— that affected insurance market rates. There was a step change in actual insurance costs in 2012–13 of up to $5.8 million ($2018–19 dollars), compared to $3.3 million approved by us.

We note that Sunwater's insurance costs were assessed as part of the Government's review of local management arrangements in 2014. Independent advice then was that the step change in 2012–13 actual costs was due to a change in asset risk assessment by insurers. In addition, in the short term, there was a further one-off adjustment forecast to occur in 2014–15 due to the 2012–13 flood event and above-inflation increases forecast over the medium term (5-year period).

Sunwater's actual insurance costs in the most recent year (2017–18) remained at a similar level in real terms to 2012–13, with some volatility over this period (Figure 7). This is expected, since

[73] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 91.

insurance premiums can be susceptible to market and environmental influences (such as flooding and cyclones), which can result in one-off adjustments.

Further, as noted by Marsh, global commercial insurance prices rose by 3 per cent on average in the first quarter of 2019 marking the sixth consecutive quarter of increases.[74]

Given that Sunwater has worked closely with its broker to conduct a competitive and rigorous process in selecting insurers over the past year, and given the recent cost drivers underlying Sunwater's insurance costs, we accept Sunwater's final insurance costs for 2019–20. We have used 2018–19 actual insurance costs for our base year, and escalated this base year amount in 2019–20 by the actual cost increase of 14.7 per cent (see section 2.10.2).

Allocation of insurance costs to schemes

Sunwater's current approach to allocating insurance costs to irrigation schemes is based on each schemes' asset value. We accept that declared asset values would be a cost driver for insurance costs, and accept this as a basis for allocating insurance that is primarily asset related. Also, the nature of the insurance cover is that it is a pooled cost that, at the scheme-level, would generally be lower than the stand-alone cost of insurance.

2.7 Summary of base year direct opex

Our recommended base year direct opex is summarised in Table 10 below.

Table 10 The QCA's recommended 2018–19 base direct opex for irrigation service contracts ($'million, nominal)

Cost category	*Sunwater's November 2018 submission*	*Sunwater's June 2019 cost update*	*QCA recommended*
Base operations and maintenance	20.8	23.4	22.4
Base electricity	13.6	12.9	12.3
Base insurance	6.0	6.6	6.1
Total base year costs	**40.4**	**42.8**	**40.7**

Note: Totals may not add due to rounding. Source: QCA analysis.

2.8 Base year non-direct opex

2.8.1 Sunwater's submission

Non-direct costs are allocated to service contracts based on the direct labour cost component of Sunwater's opex and renewals expenditure. Sunwater grouped non-direct costs into:

(a) Indirect costs capture costs such as billing and customer support, irrigation pricing regulation and asset management that are allocated to those service contracts that receive some benefit from the service.

(b) Local area support costs are spread across service contracts managed in each locality. They are costs incurred to support operational activities.

(c) Corporate support costs are allocated to all service contracts and include human resources and payroll, information and communication technology (ICT), legal, property, finance, internal audit, plus the costs of the CEO, Chief Financial Officer and the Sunwater Board.[75]

[74] Marsh, *Global Insurance Market Index*, 2019.
[75] Sunwater, sub. 11, p. 16.

In response to our draft report, Sunwater proposed we adopt their 2018–19 actuals for the base year for non-direct opex, along with adjustments to base year corporate support costs reflecting:

- expected reductions in future corporate support costs, notably rent
- corporate overhead allocation rates consistent with those accepted by us in our draft report
- adjustments for future corporate support costs that relate to:
  - investment for improved program and project delivery, as well as financial and asset management
  - resourcing of key activities for learning and development, and customer and stakeholder management.[76]

Sunwater's proposed base year non-direct opex is summarised in the table below.

Table 11 Sunwater's proposed 2018–19 base year non-direct opex for irrigation service contracts ($ million, nominal)

Cost category	*Original submission*	*June 2019 cost update*	*2018–19 actual costs*
Indirect	7.8	8.4	7.8
Local area support	13.5	6.3	8.2
Corporate support	7.0	8.4	9.4
Total non-directs	**28.2**	**23.1**	**25.4**

Note: Totals may not add due to rounding. Includes costs associated with the implementation of the Inspector General for Emergency Management's 2015 review (IGEM costs). 2018–19 actual costs do not include Sunwater's proposed adjustments in response to our draft report.

Source: Sunwater, sub. 45; Sunwater, sub. 153; Sunwater, sub. 229; QCA analysis.

Sunwater's proposed adjustments to its 2018–19 actual corporate support costs (before allocation to service contracts) total $3.4 million.[77] Sunwater also noted that an additional (unquantified) adjustment would need to be made for expected reductions in rental costs.[78]

Sunwater said that should we maintain the corporate support base year costs from our draft report, we should incorporate the above adjustments for future corporate support costs (excluding reduced rental costs) as well as additional step changes in the People and Transformation cost category. Sunwater's proposed adjustments to our draft report base year costs (before allocation to service contracts) total $4.1 million.[79] Sunwater also proposed an adjustment of $0.4 million to reflect additional rental costs following a reassessment of its new premises since its June 2019 update.

Sunwater submitted that some cost adjustments we made to the People and Transformation cost category were directly related to several new positions and programs which deliver Sunwater's continued efficiency, maintain customer service levels, meet community expectations and expand their technical capacity, at the lowest cost possible. Sunwater said that these roles are relevant to all aspects of its business, including the irrigation sector.[80]

[76] Sunwater, sub. 229, pp. 46–47.
[77] This equates to around $1.2 million allocated to non-direct opex for irrigation service contracts, based on the corporate overhead allocation rate that we have accepted in this report.
[78] Sunwater, sub. 229, p. 46.
[79] This equates to around $1.4 million allocated to non-direct opex for irrigation service contracts.
[80] Sunwater, sub. 229, pp. 47–51.

Table 12 Sunwater's proposed adjustments to corporate support base year ($2018–19, million)

Cost category	*$ million*
1. Proposed adjustments to 2018–19 actuals and QCA's draft report base year	
People and Transformation	0.6
Office of the CEO	0.4
CFO and Finance	0.3
2. Proposed additional adjustments to QCA's draft report base year (included in 2018–19 actuals)	
People and Transformation	0.7
Total proposed adjustments to QCA's draft report base year	**1.9**

Notes: Total may not add due to rounding. Excludes Sunwater's proposed adjustments for rental costs.

Source: Sunwater, sub. 229, pp. 47–51.

2.8.2 Other stakeholders' submissions

There was broad concern amongst stakeholders as to the increase in Sunwater's non-direct cost base, and the lack of clarity regarding how it allocated non-direct costs to irrigation service contracts.

QFF, BRIA, Canegrowers and Canegrowers Mackay each considered that further explanation was required as to the reason for the increase in non-direct opex between 2017–18 and 2018–19.[81] Kinchant Dam Users Association noted that despite Sunwater undertaking a number of restructures and downsizing, the flow-on to reducing overheads has not occurred.[82] Theodore Water notes that for Dawson Valley, forecasts for the new price path period are based on what seem to be abnormal increases in costs compared to previous years.[83]

In terms of Sunwater's proposed changes to its cost allocation methodology, QFF and BRIA requested we undertake a comparative assessment of the two methodologies to determine whether this results in a larger or smaller share to irrigators, and identify if there are opportunities for a more equitable and transparent method.[84]

WBBROC advocated for greater transparency and disaggregation of administrative costs in Sunwater's network service plans and annual performance report. It also considered these costs should be benchmarked for efficiency against water businesses and other Sunwater regions.[85]

2.8.3 QCA assessment

We have assessed Sunwater's submission to determine the prudency and efficiency of the proposed base year non-direct opex.

Changes to non-direct opex allocated to irrigation service contracts will be driven by:

- changes to Sunwater's total non-direct cost base (before allocation to service contracts)
- changes in direct labour between irrigation and non-irrigation service contracts (as direct labour is the basis for allocating non-direct costs).

[81] QFF, sub. 132, p. 3; BRIA sub. 85, p. 32; Canegrowers, sub 91, p. 2; Canegrowers Mackay, sub. 96, p. 4; CHRC, sub. 101, p. 2; Cotton Australia, sub. 102, p. 2.
[82] KDWUA, sub. 112, p. 6.
[83] Theodore Water, sub. 140, p. 3.
[84] QFF, sub. 132, p. 3; BRIA, sub. 85, p. 32.
[85] WBBROC, sub. 149, p. 19.

The following changes have also impacted our assessment:

- Sunwater undertook an organisational restructure in 2017–18, which has resulted in changes to the classification of some cost pools between Sunwater's non-direct cost categories from 2016–17 to 2017–18.
- Sunwater has made incremental changes to its cost allocation methodology in developing both its 2018–19 budgeted costs (provided in its November 2018 submission) and in its 2019–20 budgeted costs (provided in its June 2019 resubmission).

With the assistance of our consultant, AECOM, we assessed Sunwater's proposed non-direct opex through the following steps:

- We examined historical non-direct opex, comparing it with our recommended expenditure from the 2012 review and assessing the drivers behind any increases in costs.
- From this assessment, we selected a base year for further assessment. Given non-direct opex did not exhibit year-to-year variability in the same way as direct opex, AECOM said that 2017–18 was an appropriate base for developing an alternative base year estimate, as it reflected the most recent year of actual costs at the time of this assessment (August 2019).
- AECOM assessed budgeted increases in Sunwater's total 2017–18 non-direct cost base (before allocation to service contracts) and proposed adjustments to remove one-off or non-recurring costs, add costs that did not occur in 2017–18 but would generally occur on a recurring basis, and adjust for inefficiencies.
- AECOM then assessed Sunwater's proposed cost allocation methodology for allocating its non-direct cost base to irrigation and non-irrigation service contracts. AECOM developed alternative base year estimates by applying Sunwater's cost allocation methodology to its alternative non-direct cost base derived in the previous step.

Choice of base year

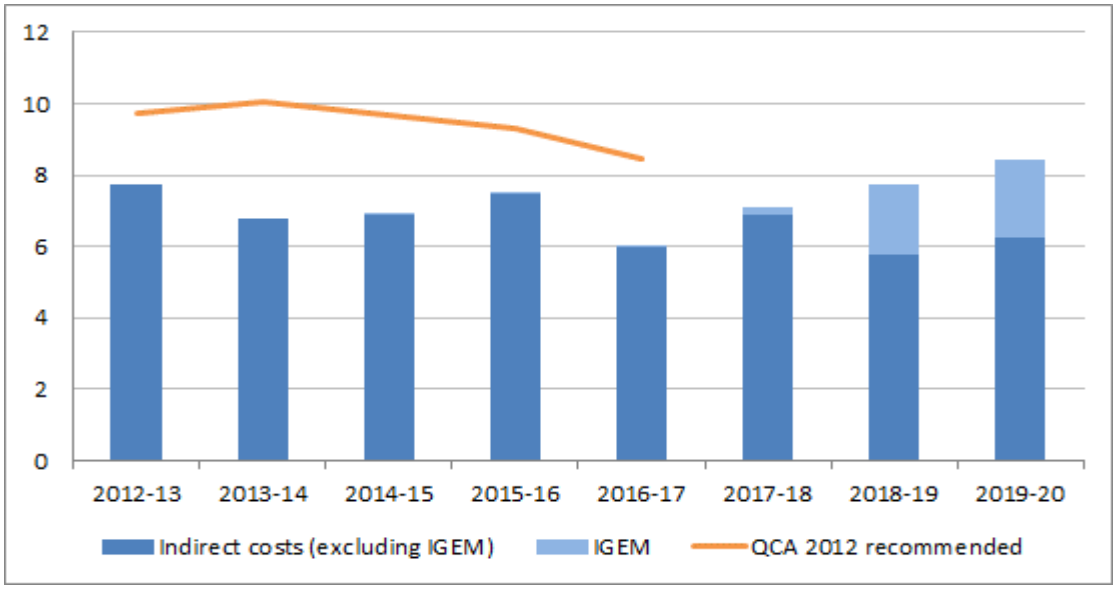
Indirect costs

Sunwater's actual indirect opex for irrigation service contracts have remained below our recommended levels from the 2012 review (Figure 8), although Sunwater expects to incur additional costs associated with the implementation of the Inspector General for Emergency Management's 2015 review (IGEM costs) from 2018–19.

Given costs were significantly below our recommended costs from the 2012 review, we used the most recent actuals for 2017–18 as the basis for assessing indirect costs. We note that indirect costs are lower in the 2018–19 and 2019–20 budgeted costs, due partly to changes to Sunwater's cost allocation methodology.[86]

[86] This increases the level of corporate costs allocated to service contracts rather than via indirect cost pools.

Figure 8 Sunwater's indirect costs for irrigation service contracts ($2018-19, million)



Notes: The 2017–18 figure reflects Sunwater's actual costs rather than the 'normalised' costs provided in Sunwater's submission. The 2018–19 figure is the budgeted base year provided by Sunwater in its November 2018 submission. The 2019–20 figure is the budgeted base year provided by Sunwater in its June 2019 cost update.

Source: Sunwater, sub. 45; Sunwater, sub. 153; QCA analysis.

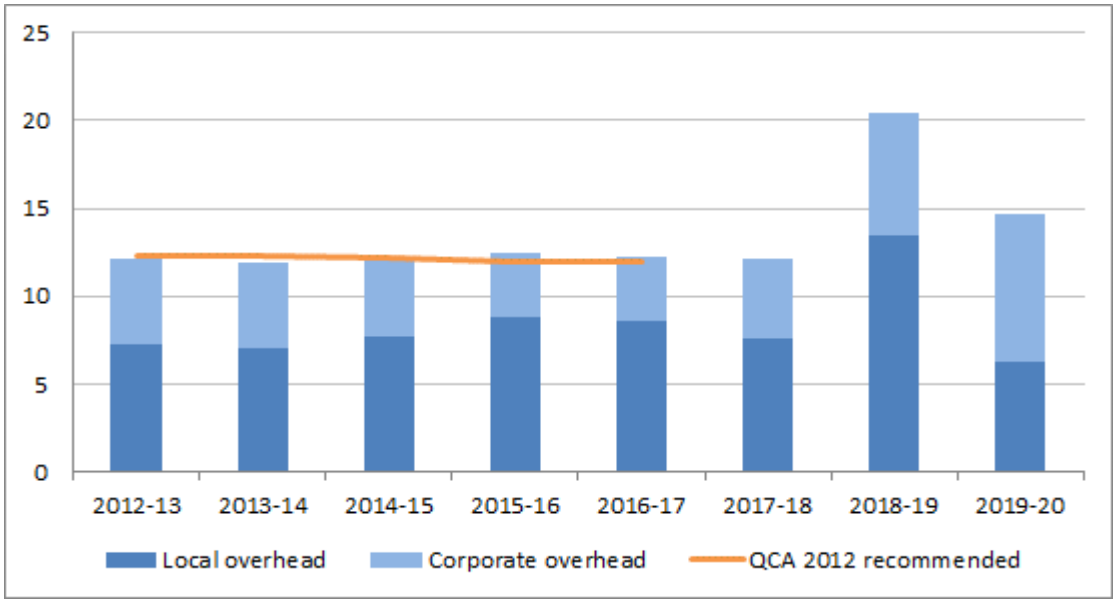
Local area and corporate support costs (overheads)

Sunwater's historical local area and corporate support costs have been broadly within the costs we recommended in the 2012 review (Figure 9).

Sunwater proposed a significant increase in these costs in its November 2018 submission (see Figure 9); then in June 2019, it provided us with lower revised estimates, which were still significantly higher than previous years' actuals.

A key driver of the increase in Sunwater's 2018–19 base year non-direct opex as compared to actuals was the significant increase in local area support costs. Local area support costs went from $7.6 million in 2017–18 to $13.5 million in Sunwater's budgeted costs for 2018–19. In its June 2019 cost update, Sunwater explained that it had reduced its local area support costs to $6.3 million partly reflecting improved direct charging of labour to service contracts and the transfer of fleet costs from local overheads to direct costs from 2019–20.

Figure 9 Sunwater's local area and corporate support costs for irrigation service contracts ($2018–19, million)



Notes: The 2017–18 figure reflects Sunwater's actual costs rather than the 'normalised' costs provided in Sunwater's submission. The 2018–19 figure is the budgeted base year provided by Sunwater in its November 2018 submission. The 2019–20 figure is the budgeted base year provided by Sunwater in its June 2019 update.

Source: Sunwater, sub. 45; Sunwater, sub. 153; QCA analysis.

We note that this level of expenditure is consistent with historical expenditure on local area support costs. However, corporate support costs are budgeted to increase from $4.5 million in 2017–18 to $8.4 million in 2019–20. This level of expenditure is significantly above the historical average from 2012–13 to 2017–18.

To complement our assessment of the prudency and efficiency of historical costs, we have undertaken benchmarking of Sunwater's local area and corporate support costs by comparing Sunwater's expenditure against that of other water utilities of a similar size and/or service offering that are also subject to independent regulatory oversight.[87]

Our comparator businesses include the rural water utilities Southern Rural Water[88] and Lower Murray Water (rural).

Given that corporate activities tend to be centralised[89] and relatively common across utilities[90], we consider that meaningful comparisons can be made with urban water utilities and have therefore also included three urban water utilities in our comparison:

- Goulburn Valley Water—a regional urban water business
- Barwon Water—a regional urban water business

[87] WaterNSW was excluded from this analysis, as corporate overheads costs were not publicly available. Information for the remaining businesses was sourced from price submission financial models submitted by each business to Essential Services Commission's 2018 water price review.

[88] Southern Rural Water's service area covers some urban centres. However, urban services are provided by Western Water and City West Water.

[89] Depending on geographical spread of a rural utility, some corporate staff may be located in regional centres.

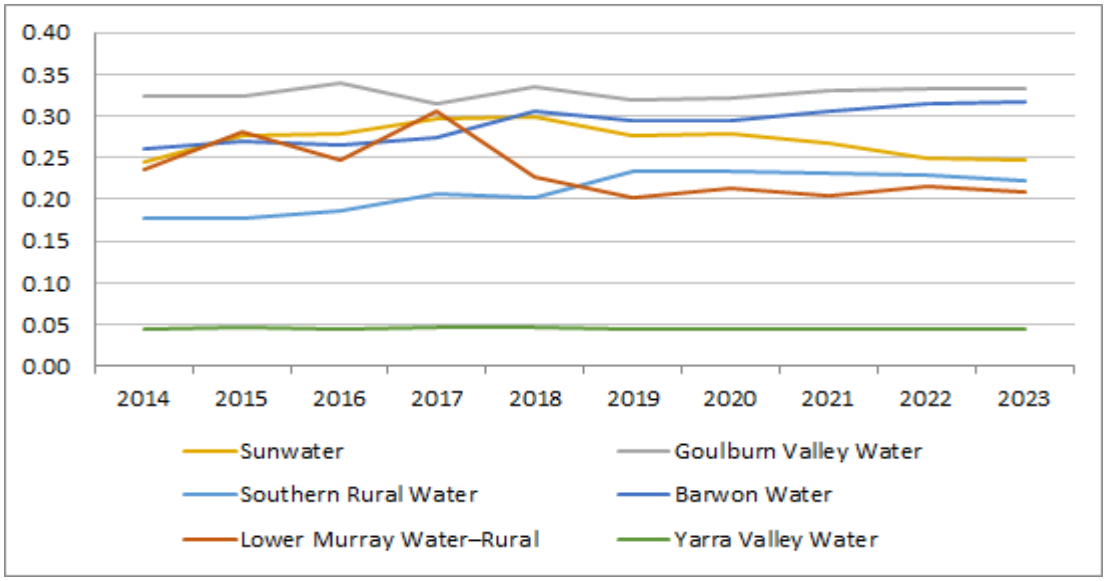
[90] A few differences in cost drivers are likely—for example, property expenses are likely to be higher in urban centres and stakeholder engagement could be higher in urban centres given the larger customer base.

- Yarra Valley Water—a metropolitan urban water business.

We compared these businesses across two metrics that reflect cost drivers relative to Sunwater's corporate expenditure including corporate expenditure per total operating expenditure and corporate expenditure per megalitre of water delivered. This analysis is indicative only and as with any unit cost based approach, is subject to qualification including differences in the activities undertaken by the businesses and the operating environments that they face.

Sunwater's corporate expenditure[91] per dollar of total operating expenditure is consistent with that of the comparator businesses over the course of the period (with the exception of Yarra Valley Water and the rural businesses) (Figure 10). The profile of the expenditure is also consistent with the other businesses. Following increases up to 2017–18 (representing lower direct charging of labour and higher local overheads), the ratio trends downward.

Figure 10 Corporate overhead costs per dollar of opex across comparator water businesses

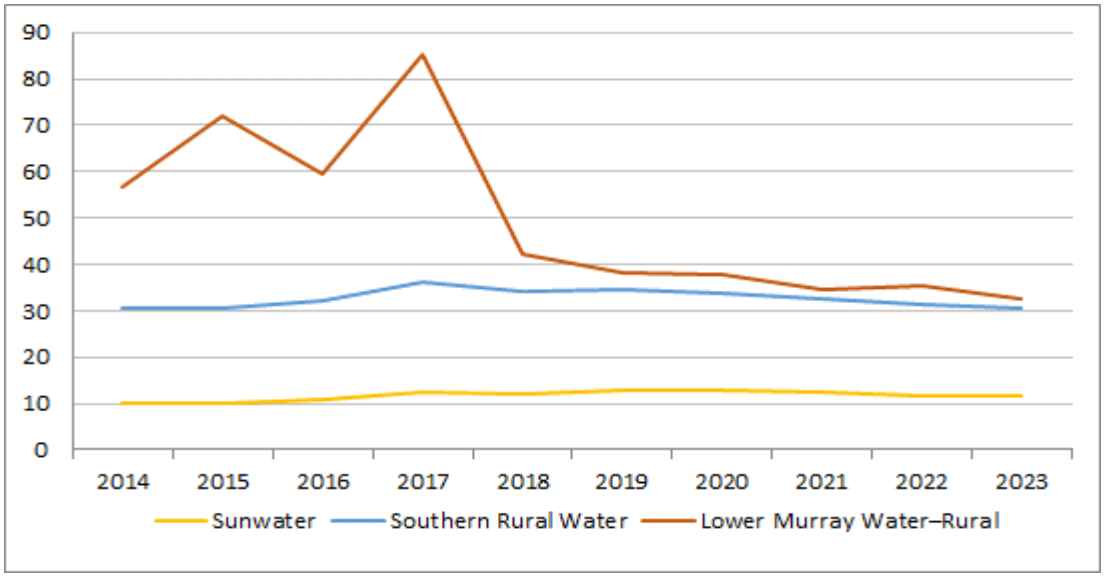


Source: Sunwater, sub. 153; Sunwater's financial model (SFM); Southern Rural Water—price submission financial model (2017); Lower Murray Water—price submission financial model (2017); Goulbourn Valley Water—price submission financial model (2017); Barwon Water—price submission financial model (2017); Yarra Valley Water—price submission model (2017); QCA analysis.

Sunwater's corporate expenditure per megalitre of water delivered is lower than that of Southern Rural Water and Lower Murray Water—Rural over the period, with Lower Murray Water (rural) exhibiting a high level of variability over the period 2014–15 to 2018–19 (Figure 11).

[91] Sunwater's corporate overhead costs combines local area support costs with corporate support costs, and includes overheads allocated to operating (or routine) costs and renewals (or non-routine) costs.

Figure 11 Corporate costs per megalitre of water delivered across comparator water businesses



Note: ML delivered refers to total water delivered from bulk WSSs.

Source: Sunwater, sub. 153; Sunwater's financial model (SFM); Southern Rural Water—price submission financial model (2017); Lower Murray Water—price submission financial model (2017); Goulbourn Valley Water—price submission financial model (2017); Barwon Water—price submission financial model (2017); Yarra Valley Water—price submission model (2017); QCA analysis.

As Sunwater's historical costs have been broadly consistent with our recommendations from the 2012 review, and trends in key corporate expenditure metrics have been broadly in line with comparator businesses, we have used the most recently revealed costs for 2017–18 as the basis for assessing Sunwater's proposed local area and corporate support costs.

As outlined in section 2.3.3 above, we do not consider it to be efficient to use 2018–19 actual costs as a base year as proposed by Sunwater in its November 2019 response to our draft report.

Prudency and efficiency of the base year non-direct cost base

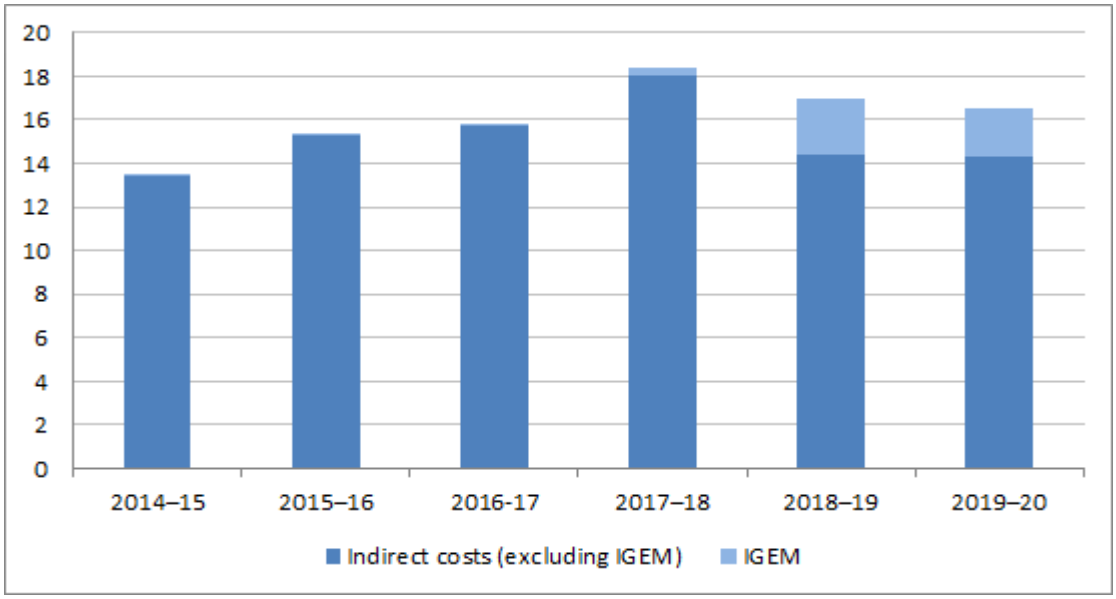
We have separately assessed the non-direct cost base (before allocation to service contracts) for indirect, local area support and corporate support costs, as each have different cost drivers.

Indirect costs

AECOM first assessed increases in Sunwater's total indirect cost base in 2017–18 and made adjustments to remove one-off or non-recurring costs. AECOM also assessed changes in Sunwater's indirect cost base to determine whether there are any costs in the 2018–19 and 2019–20 base year that did not occur in 2017–18 but would generally occur on a recurring basis.

In terms of Sunwater's total indirect cost base (before allocation to service contracts), 2017–18 actual costs were 16.5 per cent higher than for 2016–17. However, Sunwater's indirect cost base (excluding IGEM costs) was forecast to reduce by 2019–20 (Figure 12).

Figure 12 Sunwater's indirect cost base (before allocation to service contracts) ($2018–19, million)



Notes: The 2018–19 figure is the budgeted base year provided by Sunwater in its November 2018 submission. The 2019–20 figure is the budgeted base year provided by Sunwater in its June 2019 cost update.

Source: AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 87.

After reviewing the drivers of the recent historical increases, AECOM recommended that we accept Sunwater's proposed 2019–20 budgeted cost base (excluding IGEM costs) as an efficient level of base year costs.[92] We have accepted AECOM's recommendation as we consider this cost base appropriately accounts for the reallocation of some cost centres between non-direct cost categories, the removal of non-recurring costs, and adjustments to include recurring costs not included in 2017–18 costs.

We have considered IGEM costs as a step change (see section 2.9.2).

Local area support costs

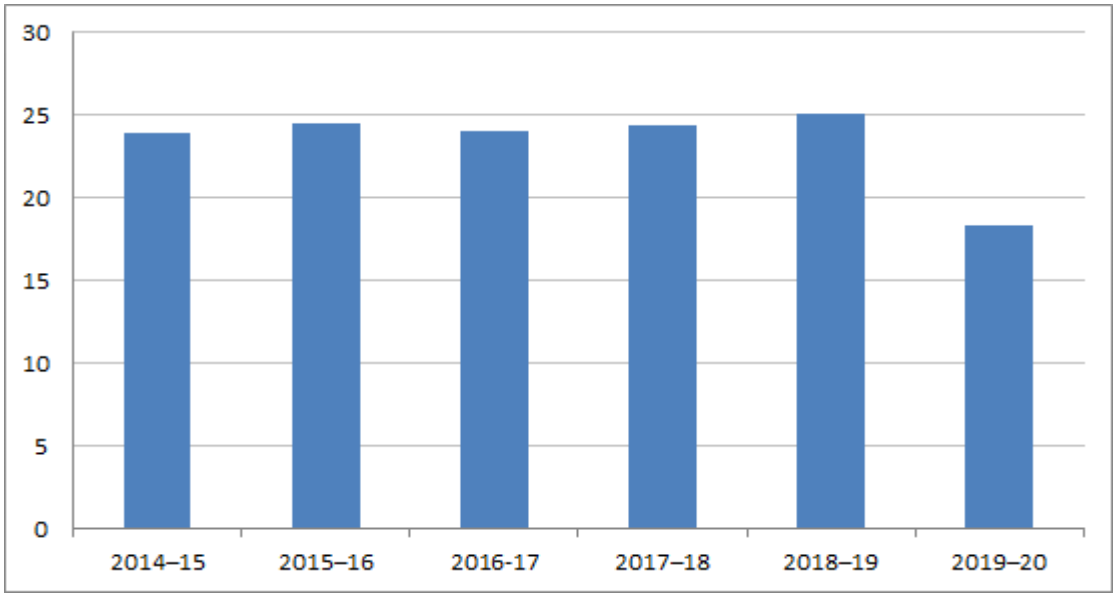
Sunwater has grouped local area support costs into eight cost centres including regional operational centres in the north, central and southern regions and Bundaberg.

AECOM reviewed actual costs for the 2017–18 base year including analysing FTE staff to determine prudency and efficiency and assessing historical trends in the cost base to identify one-off costs and adjust the base year costs accordingly.

Historical trends in local area support costs are summarised in the figure below.

[92] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 104.

Figure 13 Sunwater's local area support cost base (before allocation to service contract) ($2018-19, million)



Notes: The 2018–19 figure is the budgeted base year provided by Sunwater in its November 2018 submission. The 2019–20 figure is the budgeted base year provided by Sunwater in its June 2019 cost update.

Source: AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 79.

AECOM noted that local area support costs were relatively stable over the period 2014–15 to 2017–18. While Sunwater's budgeted cost for 2019–20 is lower than actual costs for 2017–18, this was as a result of:

- a shift in ICT costs from local area support to corporate support
- a shift in fleet costs from local area support to direct operations costs
- an increase in direct charging of labour to service contracts (resulting in a decrease in the residual to be recovered from local area support).

After reviewing the drivers of the historical and budgeted costs, AECOM recommended that we accept Sunwater's proposed 2019–20 budgeted cost base (provided in the June 2019 update) as an efficient level of base year costs. We have accepted AECOM's recommendation as we consider this cost base appropriately accounts for the reallocation of some costs since 2017–18, the removal of one-off or non-recurring costs, and adjustments to include recurring costs not included in 2017–18 costs.[93]

Corporate support costs

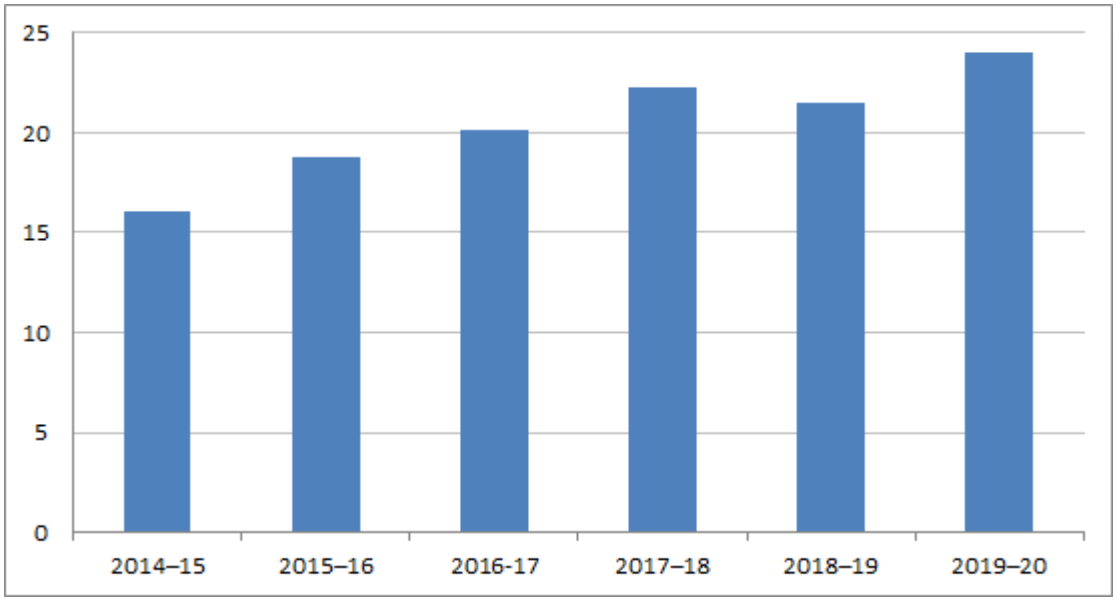
Corporate support costs include ICT, Finance, Corporate Development, People and Stakeholder Relations, Legal, Office of the CEO, Corporate Services and Procurement.

AECOM reviewed actual costs for the 2017–18 base year, including through analysing FTEs to determine prudency and efficiency and assessing historical trends in the cost base to identify one-off costs and adjust the base year costs accordingly.

AECOM reviewed Sunwater's actual corporate expenditure (before allocation to service contracts) and observed an increasing trend between 2014–15 and 2017–18, as shown below.

[93] AECOM, *Rural Irrigation Operating Expenditure Review: Sunwater*, August 2019, p. 80.

Figure 14 Sunwater's corporate support cost base (before allocation to service contract) ($2018–19, million)



Notes: The 2018–19 figure is the budgeted base year provided by Sunwater in its November 2018 submission. The 2019–20 figure is the budgeted base year provided by Sunwater in its June 2019 cost update.

Source: AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 115.

Corporate support costs for allocation using the direct labour cost allocator are higher in 2019–20 budgeted costs, due partly to changes to Sunwater's cost allocation methodology, including:

- removing the cascading of corporate overheads into indirect costs, thereby increasing the level of corporate costs allocated to service contracts rather than to indirect cost pools (which were subsequently allocated to service contracts through indirect costs)
- removing ICT desktop and network charges levied at resource centres on individual use of computers, and removing a recovery of corporate overhead through a 5 per cent loading on material costs, instead recovering these costs through corporate overheads.

After reviewing the drivers of this increase, AECOM recommended adjustments to 2017–18 actual corporate support costs to account for the reallocation of some cost centres to other non-direct cost categories, the removal of one-off or non-recurring costs, and adjustments to include recurring costs not included in 2017–18 costs.

AECOM's recommended adjustments included:

- a one-off reduction in rental costs for Sunwater's head office in 2019–20
- an increase in ICT costs for the Digital Enterprise Business Solutions (DEBS) project
- a number of staff reductions planned for 2019–20
- adjusting for the above changes to Sunwater's cost allocation methodology.[94]

AECOM did not accept substantial budgeted increases in the People and Transformation and Office of the CEO cost categories, as no justification was provided for the need for increased cost for non-growth irrigation business.[95]

[94] AECOM, *Rural Irrigation Operating Expenditure Review: Sunwater*, August 2019, p. 120.
[95] AECOM, *Rural Irrigation Operating Expenditure Review: Sunwater*, August 2019, p. 120.

Sunwater's proposed inclusions to 2017–18 base year costs

In response to our draft report, Sunwater proposed inclusions to base year corporate support costs (before allocation to service contracts) to account for additional costs it expects to incur in selected cost centres from 2018–19.

Sunwater said that we excluded costs to a number of its cost centres that directly relate to achieving continued efficiency, maintaining customer service levels, meeting community expectations and expanding its technical capacity.[96] Sunwater said that these costs relate to the following cost centres: People and Transformation ($1.3 million); Office of the CEO ($0.4 million); and CFO and Finance ($0.7 million).

As each of these inclusions is a new activity, we cannot leverage historical expenditure trends as an assessment tool. Further, the granular level at which the data is presented makes it impractical to benchmark individual expense items.

With AECOM's assistance, we have assessed the prudency and efficiency of the proposed inclusions against the following criteria:

- prudency—the proposed inclusion should be justified by reference to an identified need or cost driver (e.g. is required to deliver agreed service levels, is required to meet new legal or regulatory obligations, or there is a reasonable expectation of future benefits)
- efficiency—the expenditure must:
  - represent the least-cost means of providing the requisite level of service within the relevant regulatory framework
  - clearly specify and account for the value of the associated benefits, including any efficiencies expected to result from the expenditure
  - demonstrate consistency of the associated procedures and governance with good industry practice (including evidence of robust options analysis and businesses case where expense relates to material capital investments or material ongoing programs)
  - give appropriate consideration of customer values and needs.[97]

Many of the proposed inclusions are driven by an expectation of increased efficiencies or avoided future costs. In these cases, we would generally expect evidence of the value of these expected benefits in order to assess the efficiency of this expenditure. However, we accept there may be instances, such as in areas to improve culture and organisational capability, where businesses incur additional expenditure to improve aspects of their organisation where the quantification of the benefits of that expenditure may be difficult or speculative. We consider that absence of formal quantification of these benefits does not in itself make the expenditure inefficient.

In such cases, we may allow such expenditure to enter the cost base providing it is prudent and modest, the nature of benefits is identified and accepted by us, and the business puts in place a process to monitor benefits as they emerge. However, if the business cannot demonstrate realised benefits of these allowed expenditures on an ex post basis at a subsequent review, we would determine the expenditure inefficient and exclude it from the cost base moving forward.

[96] Sunwater, sub. 229, p. 47.
[97] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020, pp. 159–160.

People and Transformation (managerial roles)

Sunwater proposed the inclusion of $0.4 million for new managerial roles within certain teams, including:

- People and Transformation—Sunwater said that, in response to a review of its organisational structure in early 2018, it had merged its Health, Safety, Environment and Quality function with its People and Transformation function to ensure cultural alignment of these functions across the organisation, and consistency in communication with customers and other stakeholders
- change management—Sunwater said that a new role has been introduced to work across all business units and assist the business optimise productivity and opportunities that emerge from a range of anticipated changes
- learning and development—Sunwater said that a new role would internalise the provision of training compliance obligations, following an audit that indicated that Sunwater was not meeting its requirements; the new role would also be responsible for the development and administration of e-learning modules to meet Sunwater's compliance requirements.

AECOM considered these roles to be prudent as they could reasonably be expected to result in future benefits for the business.

In relation to efficiency, AECOM considered that Sunwater had not quantified the benefits expected to be achieved for the new roles in People and Transformation and change management, noting that:

- The restructure of the People and Transformation function reflected a change in the delivery of existing services intended to result in greater efficiencies rather than an increase in net costs and on this basis the cost of the new role should be funded from the expected efficiency gains.
- As the driver of the change management role is future efficiency benefits, these should at least net out the costs.

On this basis, AECOM concluded that the inclusions were not efficient.

AECOM considered the new role in learning and development to be partially efficient stating that while it would result in the upskilling of staff, it should be reduced to $42,000 by netting off the expected reduction in consultancy spend on e-learning modules.

We are satisfied that it would be prudent for Sunwater to establish these positions given that they are driven by regulatory obligations or the reasonable expectation of future benefits. We also consider the proposed expenditure for these positions to be reasonable given the remuneration for suitably qualified professionals in this area.

With regard to the new roles in People and Transformation and change management, we consider that the quantification of benefits associated with these expenditures would be difficult at this stage. On this basis, we are prepared to treat these expenditures as efficient provided Sunwater puts in place processes to enable it to quantify the associated benefits as they emerge.

For the new role in learning and development, we note that the resource is expected to build and administer ten e-learning modules to meet compliance requirements, avoiding a consultancy spend that would otherwise be included in base year costs. On that basis, we consider the expenditure to be efficient.

People and Transformation (new programs)

Sunwater also proposed additional expenditure in the People and Transformation cost centre to account for a cultural development plan ($0.4 million) and safety programs ($0.3 million).

Sunwater said that the objective of the cultural development plan was to improve Sunwater's leaders' capability and their impact on the organisation's culture in order to create improved individual, team and organisational outcomes. Sunwater provided a project brief that identified the associated cost, benefits (without quantification) and outcomes. Many of the benefits related to outcomes that appeared to be inherently difficult to measure, including improved employee engagement, retention of key personnel, improved ability to successfully implement its strategy and reduction in risk rating.

Sunwater said that the safety program comprised three components (Safe Driver Program, Health and Wellbeing Program and embedding of the 'Switched On' Program), which would deliver a range of benefits including reduced exposure over time to safety-related risks, a more engaged workforce and better vehicle utilisation.[98]

AECOM's review indicated that while these expenditures were not related to a new obligation or change in existing obligation, they could reasonably be expected to result in future benefits. On this basis, AECOM considered the expenditures to be prudent.

With regard to efficiency, AECOM noted that Sunwater had not identified offsetting efficiency gains and, on that basis, determined the expenditures to be inefficient.

As the proposed expenditures could reasonably be expected to result in future benefits, we consider them to be prudent.

We consider that it would be difficult to quantify the value of future benefits associated with these programs at this time. However, as they are likely to lead to quantifiable benefits and the associated expenditure is relatively modest, we are prepared to treat these expenditures as efficient provided Sunwater puts in place processes to enable it to quantify the associated benefits as they emerge.

Office of the CEO

The proposed increase of $0.4 million relates to a Strategic Program and Risk Reporting Manager and the Portfolio Assurance Committee (PAC) and Project Management Office (PMO).[99]

Sunwater said that it established the PAC and PMO to address identified shortcomings in Sunwater's current project management, following an independent audit. The PAC function independently oversees Sunwater's projects to ensure delivery of prescribed benefits and capabilities that maximise the value to the organisation and assist it to achieve its strategic goals.

AECOM considered the expenditure on the PAC and PMO to be prudent, as it was required to address compliance issues identified through an independent audit and is expected to deliver future efficiency benefits. The expenditure is also efficient, as it has a material focus on meeting compliance obligations with no offsetting efficiencies that can be quantified over the period.

AECOM considered that there was no clearly identified driver for the role of strategic program and risk reporting officer, noting that the role falls within the PAC and PMO function and on this basis, considered the expenditure was neither prudent nor efficient.

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[98] Sunwater, sub. 229, p. 49.

[99] Sunwater also sought an additional $32,000 in program coordination costs for a value improvement program noting that the program has been almost completely funded by achieved operational savings.

We consider that Sunwater has provided sufficient documentation to demonstrate that these roles are required in response to a change in compliance obligations and that the associated expenditure is reasonable for these types of roles. On that basis, we have assessed the expenditures to be prudent and efficient.

CFO and Finance

The proposed increase comprises of $0.3 million for a Contractor Management Framework and $0.4 million in additional rental costs.

Sunwater said that the inclusion for a Contractor Management Framework is the result of the appointment of two additional procurement roles to implement the findings of a review of the framework that Sunwater undertook as part of its strategic work program for 2018–19.

AECOM noted that this cost increase did not relate to a new obligation or a change in an existing obligation, and was not the result of an external review and that the expenditure was prudent only to the extent that it would deliver efficiency gains. However AECOM acknowledged that the project is expected to deliver heightened contractor performance.

As the expenditure was more than offset by a reduction in staffing levels in the procurement cost centre, AECOM considered the expenditure to be efficient.

As the proposed expenditure could reasonably be expected to result in future benefits and has already resulted in offsetting efficiency gains, we consider it to be prudent and efficient.

Sunwater said that its inclusion of $0.4 million of additional rental costs is a result of its need to expand into additional floorspace to accommodate the Rookwood Weir project team, and the growing needs of ICT and meeting spaces (both internal and external).[100]

We consider this proposed inclusion to be prudent given it is likely the team needed to deliver these projects will be maintained over the course of the price path period.[101] We also consider it to be efficient given that Sunwater applied a structured market based procurement approach and has actively sought to minimise the cost impost. We have therefore accepted this inclusion.

Summary

Our recommended additions to our draft report cost base are summarised in Table 15 below.

Table 13 Sunwater's proposed adjustments to corporate support base year ($2018–19, million)

Cost centre	*Sunwater proposed*	*QCA recommended*
People and Transformation	1.3	1.3
Office of the CEO	0.4	0.4
CFO and Finance	0.7	0.7
Total	**2.3**	**2.3**

Note: Total may not add due to rounding. Source: Sunwater, sub. 229, pp. 47–51; QCA analysis.

Our revised cost base for corporate support costs accepts Sunwater's proposed 2019–20 budgeted cost base (provided in the June 2019 update) for all corporate cost categories other than those in Table 13, for which we have accepted all of Sunwater's proposed adjustments in response to our draft report.

[100] Sunwater, sub. 229, p. 51.

[101] While this project does not directly relate to the irrigation service contracts, we note that the total head office rental cost base is allocated across all irrigation and non-irrigation service contracts.

Digital Enterprise Business Solutions (DEBS)

In response to our draft report, Sunwater submitted that we should adjust the allowance we made for the DEBS program.[102] Sunwater's proposed adjustment consists of:

- amortised cost for DEBS of $2.7 million per annum (from 2019–20), plus
- costs associated with a separate program (ICT roadmap) of $0.9 million per annum, less
- annual savings of $1.0 million, less
- the DEBS costs included in our draft report base year costs of $0.5 million.

We have verified that the costs associated with DEBS and the ICT roadmap sit under cost centres for which we accepted Sunwater's proposed June 2019 costs in the base year corporate support costs in our draft report.[103]

Given that we included Sunwater's proposed June 2019 ICT costs in our recommended base year corporate support costs in our draft report, we have accepted Sunwater's proposed corporate cost inclusions and Sunwater is not seeking to recover additional costs[104], we maintain our draft report position that our base year costs incorporate an appropriate allowance for DEBS costs (net of efficiency savings).

Allocation of non-direct cost base to irrigation service contracts

Sunwater uses direct labour to allocate:

- local area support costs to service contracts within a given region
- indirect costs to service contracts associated within a given cost pool[105]
- corporate support costs to all service contracts.[106]

We sought expert advice from AECOM in relation to the reasonableness of Sunwater's methodology for the allocation of indirect and overhead costs to its service contracts and customers.

AECOM assessed Sunwater's proposed methodology against the following principles:

- Wherever possible, costs should be directly identified and attributed to a service, segment or component.
- Where a cost cannot be directly identified and attributed, it should be allocated to a service, segment or component based on a causal driver of that cost.
- In the absence of a causal relationship, a reasonable (substitute) method of allocation should be used.

Sunwater's policy is to allocate labour costs directly to service contracts. Staff working in indirect, local area support or corporate support cost centres are expected to charge all time spent on

[102] Sunwater, sub. 229, p. 50.
[103] Sunwater response to RFI FR51.
[104] Prior to our draft report, Sunwater said that while the DEBS program had increased from $13 million (requiring annual amortised costs of $1.5 million) to $18 million (requiring annual amortised costs of $2.7 million), it was not seeking to recover the additional costs as it expected to offset this with efficiency savings (Sunwater response to RFI A11).
[105] IGEM and flood room operations costs are recovered on a risk-based approach and user-pays basis, respectively.
[106] Sunwater response to AECOM RFI A8.

activities directly benefitting specific service contracts to those contracts. Residual costs are then recovered from customers using direct labour costs as the allocator.

Sunwater has proposed a number of changes to its cost allocation methodology (CAM) for this review. AECOM's assessment of Sunwater's proposed changes are summarised in Table 14.

Table 14 Changes to Sunwater's cost allocation methodology

Cost category	*CAM (2012)*	*CAM (2018)*	*AECOM comment*
Indirect	Multiple cost pools allocated to subsets of service contracts on the basis of causality. Costs then recovered from service contracts in proportion to direct labour costs.	Indirect cost pools have been redefined. Some cost pools (e.g. IGEM) allocated to service contracts using a risk-based approach.	The restructuring of indirect costs reflects the changing structure of the organisation. The cost of IGEM and similar indirect activities is driven largely by risk, so use of this driver to allocate these costs more accurately reflects causality.
Local area support	Costs allocated across service contracts in proportion to direct labour costs.	Costs split between region-specific service contracts and allocated in proportion to direct labour costs.	The use of several regional overhead pools and allocation to regional schemes is more complex, but provides more accurate cost allocation, removes possible cross subsidies between regions, and makes cost control more transparent in each region.
Corporate support	A portion of cost base recovered through a 5 per cent loading on non-labour direct costs (excluding electricity and major projects). Remainder of cost base allocated across service contracts in proportion to direct labour costs.	The 5 per cent overhead loading on non-labour direct costs removed.	Loading of overhead to non-labour costs increases the cost of activities involving high material or contractor costs. The cost of senior management and head office functions is not usually closely correlated with the quantity of material used—it more commonly relates to staff effort (i.e. FTEs). Allocation of direct costs only avoids double allocation of overhead via indirect costs.

Source: AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 32.

Overall, we consider that a single allocator using direct costed labour is an appropriate approach for allocating non-direct costs to service contracts. The issue of under-reporting of direct charging may however affect the effectiveness of direct costed labour as an allocator; Sunwater should renew its efforts to improve time-sheeting practices.

We consider that the changes proposed by Sunwater to its cost allocation methodology are consistent with the principle that costs should be directly attributable where possible. For example, the proposal to move from a single overhead rate for all regions to a region-specific rate means that the costs incurred within a particular region are recovered within that region.

AECOM noted that the share of the corporate support cost base allocated to irrigation service contracts in 2017–18 was relatively high compared with the historical share.[107] AECOM considered that the corresponding share budgeted to be allocated to irrigation service contracts in 2019–20 was more reflective of Sunwater's forecast share over the price path period.

[107] AECOM, *Rural Irrigation Operating Expenditure Review: Sunwater, August 2019*, p. 123.

On that basis, we accept AECOM's recommendation that the share from 2019–20 is the appropriate share of our recommended cost base to be allocated to irrigation service contracts.

Summary

We have considered the cost drivers behind Sunwater's proposed increase in the corporate cost base and generally accepted Sunwater's proposed additions to our draft report non-direct opex. Our assessed non-direct opex is lower than Sunwater's June 2019 cost update, reflecting our acceptance of Sunwater's proposed corporate cost inclusions in response to our draft report.

Our recommended base year non-direct opex is summarised in Table 15 below.

Table 15 The QCA's recommended 2018–19 base year non-direct opex for irrigation service contracts ($'million, nominal)

Cost category	*Original submission*	*June 2019 cost update*	*QCA recommended*
Indirect	7.8	8.4	8.2
Local area support	13.5	6.3	6.2
Corporate support	7.0	8.4	8.2
Total non-directs	**28.2**	**23.1**	**22.6**

Note: Totals may not add due to rounding. Includes costs associated with the implementation of the Inspector General for Emergency Management's 2015 review (IGEM costs) (see section 2.9.2 below). Source: QCA analysis.

2.9 Step changes in base year opex

2.9.1 Recreational costs

Sunwater's submission

Sunwater stated that it separately accounts for recreation facility infrastructure and costs and that it removed costs, consistent with the requirements of the referral. Sunwater's total step reduction in its November 2018 submission was $1.6 million ($2018–19).

Sunwater's updated costs submitted in June 2019 removed step changes for Bundaberg and Callide Valley WSSs, as these assets had been handed over to the local council for management. Sunwater's step reduction in its June 2019 cost update was $1.7 million ($2019–20).

Other stakeholders' submissions

Stakeholders were strongly in support of removing costs associated with recreational activities from Sunwater's expenditure allowance, including costs associated with water treatment plants and costs associated with studies to establish underwater objects.[108]

Several stakeholders requested scrutiny of transitional costs incurred by Sunwater in the handover of recreational facilities to local councils, and considered these should be excluded.[109]

[108] Barker Barambah IAC, sub. 83, p. 3; BRIA sub. 85, p. 47; KDWUA, sub. 112, p. 7; MDIAC, sub. 123, p. 5; QFF, sub 132, p. 8; Lower Burdekin Water, sub. 118, p. 15; Canegrowers Isis, sub. 93, p. 6; Nogoa Mackenzie IAC sub. 127, p. 3.

[109] BRIA, sub. 85, p. 7; QFF, sub. 132, p. 8; Lower Burdekin Water, sub. 118, p. 15; Nogoa Mackenzie IAC, sub. 127, p. 3.

QCA assessment

We have accepted Sunwater's revised step changes for recreation costs and removed $1.7 million from base year costs.

2.9.2 IGEM costs

In 2015, the Inspector-General of Emergency Management (IGEM) conducted two reviews, one into the Callide Creek flood events during tropical cyclone Marcia and another following the May east coast low. The second review effectively confirmed that the findings from the Callide review should be rolled out across the state.

Sunwater's submission

Sunwater submitted costs associated with implementing IGEM recommendations that it proposed to recover from irrigation service contracts (Table 16).

Table 16 Sunwater's base year IGEM costs allocated to irrigation service contracts ($2018–19, million)

	Original submission	*June 2019 cost update*
IGEM costs	2.5	1.9

Source: Sunwater response to QCA RFI 25.

Sunwater's IGEM expenditure includes amortisation of its software development costs, which is capitalised in stages over two years, and amortised over eight years, starting in 2020.[110]

Other stakeholders' submissions

Most stakeholders generally considered that IGEM costs should be removed from Sunwater's opex allowance. In their view, IGEM primarily benefits the downstream community, and as such, the costs associated with IGEM recommendations should be apportioned among the broader community. [111]

Several stakeholders, including QFF and Cotton Australia, considered that in some instances, the presence of dams and weirs moderated or reduced the flooding impact caused by upstream rainfall. They considered that if dams were not in place, there would still be a requirement to manage the risk during events to assist populated areas within these zones.[112]

A number of stakeholders noted that IGEM costs are in addition to costs irrigators already pay for Sunwater's stream gauging stations, which are used for flood modelling and monitoring. They consider the IGEM recommendations have potentially duplicated, or transferred, flood monitoring responsibilities to Sunwater, which would have been carried out by another body in the past.[113] QFF, Canegrowers and Canegrowers Isis considered that Sunwater is providing a community service as the Bureau of Meteorology, local disaster management groups and the council used data from Sunwater's stream gauging stations to inform the public of flood risk.[114]

[110] Sunwater response to QCA RFI 25.
[111] See for example, Cotton Australia, sub. 102, p. 3; KCGO, sub. 111, p. 2; Lower Burdekin Water, sub. 118, p. 16; Pioneer Valley Water Co-op, sub. 130, p. 6; QFF, sub. 132, pp. 6–7; BRIA, sub. 161, p. 4; Canegrowers, sub. 179, p. 9; MDIAC, sub. 203, p. 2.
[112] See for example, Barker Barambah IAC, sub. 83, p. 2; Cotton Australia, sub. 102, p. 3; QFF, sub. 132, p. 6; Kinchant Dam Water Users Association, sub. 112, p. 6.
[113] See for example, BRIA, sub. 83, p. 47; MDIAC, sub. 123, p. 4; Central Highlands Regional Council, sub. 187, p. 3.
[114] Canegrowers, sub. 91, p. 3; QFF, sub. 132, p. 6; Canegrowers Isis, sub. 185, p. 3.

Canegrowers submitted that details of any reservations AECOM may have regarding the likelihood of achieving the outcomes expected, together with an appropriate response to any reservations, needed to be reflected in our recommendations.[115]

QCA assessment

We have assessed Sunwater's IGEM costs according to the following criteria:

- The step change should relate directly to a new obligation, a change in existing obligation or some other new expenditure.
- The step change should be material relative to the total opex proposed.
- The expenditure associated with the step change should be prudent and efficient.

Changes in Sunwater's regulatory obligations

The IGEM reviews revealed some gaps in relation to warning messages, community education and flood monitoring, and recommendations were made to improve emergency management protocols.

AECOM noted that the IGEM recommendations effectively gave Sunwater a formal role in flood warning for residents downstream of dams and weirs, where previously Sunwater had concentrated on water supply information, not flood prediction. AECOM also noted that prior to the IGEM review, Sunwater's dams and weirs had inadequate metering technology for it to perform a flood-monitoring role.

Based on advice from AECOM, we consider that Sunwater's regulatory obligations have considerably increased in scope, and measures to implement recommendations arising from the IGEM review are consistent with a step change in new regulatory obligations.

Efficiency of proposed expenditure

Sunwater's updated costs submitted in June 2019 included revised estimates for implementing IGEM recommendations. Sunwater revised its initial estimate of the share of IGEM costs to be allocated to irrigation service contracts to $1.9 million in 2019–20.

Sunwater stated that its IGEM costs are made up of labour, local support costs, advertising and amortisation.[116]

AECOM considered that given the risk Sunwater is required to mitigate, the costs incurred were prudent and cost-effective. We accept AECOM's assessment of prudent and efficient IGEM costs.

Allocation of expenditure to service contracts

Sunwater's June 2019 cost update included a revised risk-based cost allocation framework for assigning IGEM costs to service contracts. Sunwater considered that its previous cost allocation framework resulted in 'high risk' locations paying less than 'medium risk' locations, due to the numbers of sites involved.[117] Its revised cost allocation framework initially assigned 2.5 per cent of IGEM costs to each scheme with a referable dam or weir (around 57 per cent of total costs).

The remaining IGEM costs are allocated to service contracts based on Sunwater's risk assessment, which factors in messaging requirements, relationship with the local disaster management group, the population downstream of the dam and dam complexity.

[115] Canegrowers, sub. 91, p. 9.
[116] Sunwater response to QCA RFI 25.
[117] Sunwater response to QCA RFI 25.

Costs associated with a flood event are recovered on a user pays basis according to the location impacted by the event.

We consider that Sunwater's revised approach to allocating IGEM costs to schemes is appropriate. Within each scheme, we recommend that IGEM costs be allocated between medium and high priority customers using headworks utilisation factors (HUFs) for bulk WSSs and using WAE for distribution systems (see section 7.3.4).

We note that a number of stakeholders considered that IGEM costs should be apportioned to the general community, as they considered the main beneficiary of the IGEM recommendations is the downstream community. We consider that the purpose of the recommendations is to improve the provision of information to downstream communities to minimise harm as a result of dam outflows that are directly related to Sunwater's operation of its dams during flood events. On this basis, the IGEM recommendations are better viewed as a compliance obligation placed on Sunwater directly in relation to the safe operation of its dams and weirs during flood events.

2.9.3 QCA regulatory fees

Sunwater's submission

Sunwater said that the regulatory fees we charge it were not included in its cost submission, as this information was not available at the time of finalising its forecasts.[118]

Sunwater proposed the following cost allocation approach to allocate the regulatory fees charged by us to each irrigation service contract:

- Account directly for each hour spent addressing issues that can be directly attributed to a specific service contract.
- For expenditure on areas of the review that affect multiple service contracts but not all, allocate costs using a fixed percentage, for example, reviewing dam improvement cost shares would be borne only by service contracts with a referable storage.
- For expenditure on issues affecting all service contracts, allocate costs via a common allocator, potentially based on the share of total expenditure.[119]

Other stakeholders' submissions

Many stakeholders did not support the recovery of our regulatory fees through irrigation prices, and considered they should be excluded as per previous irrigation price reviews.[120] Some stakeholders believed irrigators should not pay for all of our regulatory fee because:

- Sunwater will potentially use recommended lower bound prices to set urban and industrial prices over the price path, therefore our regulatory fees should be allocated across all customers[121]
- customers were excluded from deciding on the terms of reference[122]

[118] Sunwater, sub. 11, p. 25.
[119] Sunwater, sub. 11, pp. 25–26.
[120] Canegrowers Mackay, sub. 96; CHCGIA, sub. 99, p. 4; MDIAC, sub. 123; Nogoa-Mackenzie IAC, sub. 127, p. 3; North Burnett Regional Council, sub. 128; WBBROC, sub. 149; MDIAC, sub. 203, p. 3.
[121] 2PH Farms, sub. 159, p. 3; BRIA, sub. 161, p. 4; Canegrowers, sub. 179, pp. 10–11; Kinchant Dam Water Users Association, sub. 199, p. 2; QFF, sub. 223, p. 5.
[122] Canegrowers Mackay, sub. 96, p. 4.

- our regulatory fee should exclude costs incurred to address issues associated with Sunwater not engaging effectively with customers[123]
- Sunwater's share of our regulatory fee should be at least 50 per cent, and treated as a non-allowable cost. Any residual regulatory fee cost should be allocated equally in proportion to total water charge value as prescribed.[124]

QCA assessment

We note that while our regulatory fees associated with other water pricing investigations have been recovered from water prices, the costs incurred in the 2012 review were not recovered from irrigation prices.

The apportionment of regulatory costs will generally have regard to fairly allocating the costs to the beneficiaries of the regulatory service, and also have regard to the terms of the referral. Where costs cannot be linked to a particular service or user, they would generally be allocated using a fair and reasonable cost allocation methodology.

We note that our review is limited to pricing for irrigation customers in Sunwater's irrigation service contracts. The structure and level of prices for non-irrigation customers in these service contracts are outside the scope of our review and are matters for Sunwater to negotiate with customers. We are undertaking this investigation to give effect to the key objectives of the Government's water pricing policy, including the lower bound cost target for irrigation customers and the gradual transition to that target. As such, we consider that irrigation customers are the key beneficiaries of the regulatory service and should be allocated the associated costs.

We consider that direct allocation of some of our regulatory costs to specific service contracts would increase administrative costs. In this review, we note that the need to allocate more of our resources to certain schemes has been partially due to Sunwater not effectively engaging with customers or proposing prices for certain tariff groups with complex, scheme-specific issues. We also consider that excluding costs incurred to address these issues would not materially impact total costs and certainly would not result in total regulatory costs attributable to irrigation customers being below the $2.5 million cap.

Our general approach is to apportion shared regulatory costs or fees based on water volume or another relevant measure. For example, shared regulatory costs or fees relating to Aurizon Network are allocated to the access holders in each coal system of the central Queensland coal network on a dollar per net tonne basis. For this investigation, we have allocated shared regulatory costs or fees based on water entitlements (ML) held by irrigation customers in each of the water supply schemes specified in the referral.

The total costs incurred by us in making recommendations under the referral are forecast to amount to $3.2 million. The following costs have been allocated to Sunwater's WSSs over each year of the price path (see Table 17).

Table 17 QCA regulatory fee allocated to Sunwater's WSSs ($ million, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
QCA regulatory fee	0.6	0.6	0.7	0.7

Note: Sunwater's share of the regulatory cost within the $2.5 million cap ($2.36 million) has been projected across the price path period in present value neutral terms using our proposed WACC.

[123] Canegrowers, sub. 179, pp. 10–11.
[124] WBBROC, sub. 149.

2.10 Escalation factors

2.10.1 Sunwater's submission

Sunwater has chosen to adopt, where appropriate, the same methodology to establish escalation factors for the price path period as the method applied by us in our review of Seqwater's bulk water prices 2018–21. Sunwater's escalation factors for each year of the price path are summarised in Table 18.

Table 18 Sunwater's proposed annual cost escalation factors (%)

Cost category	*Basis for escalation factor*	*Forecast period*	*Escalation factor (%)*
Materials and insurance	CPI using latest short-term inflation forecast of the RBA	2019–20	2.25
	Mid-point of the RBA target range	2020–24	2.50
Labour	Queensland Government Annual Budget 2018–19	2019–22	3.00
	10 year average wage price index (WPI) for all sectors in Queensland over 2008–18 (Australian Bureau of Statistics)	2022–24	2.91
Contracted services	Weighted average of labour and materials escalators, weighted by the contribution of maintenance and operations to 2018–19 routine costs	2019–24	2.38 (2019–20); 2.59 (2020–22); 2.57 (2022–24)
Electricity (default)	AEMO 2018 retail electricity price assumptions	2019–24	Between (7.40) and 9.04
Non-direct (labour and materials)	Weighted average with 50 per cent based on WPI and 50 per cent based on CPI	2019–24	2.63 (2019–20); (2.75 2020–22); 2.71 (2022–24)

Source: Sunwater, sub. 11, pp. 39–42.

In response to our draft report, Sunwater said that its insurance adviser Marsh maintained a negative outlook on future premiums. Sunwater said that due to the increasing value of their asset base it is likely that their premium will increase at a rate faster than inflation. Sunwater proposed that if their 2018–19 actual insurance costs were used as a base year, then insurance should escalate by 12 per cent in 2019–20 (to align with 2019–20 final insurance premium) and ten per cent per annum over the price path.[125]

Sunwater said that labour cost escalation should be based on the Sunwater enterprise agreement, currently being negotiated under the Queensland Government-approved bargaining framework for the period 2018–2021, which includes pay increases of 3 per cent per annum.[126]

Sunwater noted that in August 2019, AEMO released revised forecasts for wholesale electricity prices in Queensland. Sunwater requested that we use the updated escalators.[127]

2.10.2 QCA assessment

We have updated our general inflation forecasts based on the RBA's latest short-term inflation forecast (currently available to December 2021) outlined in its Statement on Monetary Policy

[125] Sunwater, sub. 229, p. 56.
[126] Sunwater, sub. 229, p. 53.
[127] Sunwater, sub. 229, p. 54.

(November 2019).[128] We have adopted the RBA's most recent short-term inflation forecasts for the years ended June 2020 (2.0 per cent) and June 2021 (1.75 per cent). For the year ended June 2022, we have estimated an annualised inflation rate of 2.2 per cent based on the RBA forecasts for the years ended June 2021 and December 2021 (2.0 per cent) coupled with an assumption of annualised inflation of 2.5 per cent for the six-month period to June 2022. We have then assumed the midpoint of the RBA's target range for the later years of the price path period.

AECOM generally agreed with the escalation factors adopted by Sunwater.

AECOM considered that the application of inflation forecasts to materials was appropriate, as inflation causes an increase in the overall price level within an economy, which would be reflected in the cost of materials used for routine works.

AECOM recognised that changes to insurance premiums were difficult to forecast as they are dependent on conditions in global markets. We note that while publicly available indicators suggest that insurance prices have increased in recent quarters, there were price decreases in some years over the previous price path period.[129] AECOM noted evidence to support Sunwater's view that the insurance market had tightened in the short term and that evidence from Sunwater's insurance adviser Marsh indicated large premium price increases in property insurance in the Pacific region. We note that this analysis was undertaken prior to the bushfires on the east coast of Australia in late 2019 and early 2020.

AECOM recommended accepting Sunwater's proposed 10 per cent increase for 2020–21 as it is below the price increases of between 10 and 20 per cent that Marsh is forecasting. For the later years of the price path, AECOM recommended returning to CPI for insurance escalation. We have accepted AECOM's recommendation for insurance cost escalation, noting that we have recommended that Sunwater can recover a material change in insurance premiums through an end-of-period adjustment (see Chapter 3, Part A).

AECOM noted that Sunwater's proposed enterprise agreement (EA) rate of 3 per cent does not include adjustments for associated efficiency improvements. AECOM noted that the EA would include a provision for efficiency improvements. AECOM considered that the efficiency gains should offset the cost of Sunwater's EA. AECOM recommended that labour cost escalation continue to be calculated using Queensland Treasury's wage price index (WPI) forecasts. Given that Sunwater has not quantified associated efficiency gains, we consider it is appropriate to use the WPI, an index that excludes productivity changes.

AECOM considered that AEMO's retail electricity price assumptions were appropriate as the default electricity cost escalator, and said that it was common practice for Australian businesses to use AEMO's escalation rates. AECOM updated its electricity cost escalators using AEMO's revised 2019 forecasts for wholesale electricity prices in Queensland.

Although Sunwater's approach to the non-direct cost escalator resulted in a relatively complex outcome, AECOM considered it to be a realistic projection of costs if labour and materials continue to be a significant proportion of Sunwater's cost base.

We have updated the labour escalation factor for Queensland Treasury's most recent forecasts of the Queensland WPI up to and including 2022–23. For 2023–24, we have used the 10-year

[128] RBA, *Statement on Monetary Policy, November 2019*, p. 68, Table 5.1.
[129] See, for example, Marsh, *Global Insurance Market Index*, First Quarter 2019.

average of the Queensland WPI of 2.73 per cent, consistent with our approach in our recent water pricing investigations.[130]

We generally accept AECOM's recommendations. Our recommended escalation factors are summarised in the table below.

Table 19 The QCA's recommended cost escalation factors (%)

Cost category	*Basis for escalation factor*	*Forecast period*	*Escalation factor (%)*
Materials	CPI using latest short-term inflation forecast of the RBA	2019–22	2.00 (2019–20); 1.75 (2020–21); 2.20 (2021–22)
	Mid-point of the RBA target range	2022–24	2.50
Insurance	Actual increase	2019–20	14.71
	Based on Marsh (broker) forecast	2020–21	10.00
	CPI forecast	2022–24	2.20 (2021–22); 2.50 (2022–24)
Labour	Queensland Government Annual Budget 2018–19	2019–23	2.25 (2019–20); 2.5 (2020–22); 2.75 (2022–23)
	10 year average WPI for all sectors in Queensland over 2009–19 (Australian Bureau of Statistics)	2023–24	2.73
Contracted services	Weighted average of WPI and CPI, using weighting approach proposed by Sunwater	2019–24	2.05 (2019–20); 1.89 (2020–21); 2.26 (2021–22); 2.55 (2022–23); 2.54 (2023–24)
Electricity (default)	AEMO 2019 retail electricity price assumptions, adjusted to nominal terms using our CPI assumption	2019–24	(4.07) (2019–20); 2.14 (2020–21); 1.57 (2021–22); 1.60 (2022–23); 1.38 (2023-24)
Non-direct costs (labour and materials)	Weighted average of WPI (50 per cent) and CPI (50 per cent)	2019–24	2.13 (2019–20); 2.13 (2020–21); 2.35 (2021–22); 2.63 (2022–23); 2.62 (2023–24)

Source: AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, January 2020, pp. 176–180; Queensland Treasury, Queensland Budget 2019–20, Budget Strategy and Outlook, Budget Paper No. 2, June 2019, p. 35; ABS, Wage Price Index, Australia, September 2019, Table 8a: Ordinary Hourly Rates of Pay Excluding Bonuses: All Sectors by State, Original, cat. no. 6345.0. AEMO, Retail Electricity Price ESOO 2019; QCA analysis.

2.11 Scheme–specific electricity step changes

2.11.1 Sunwater's submission

Sunwater engaged an independent market expert to model the step change associated with the cessation of transitional and obsolete regulated retail tariffs across their service contracts.[131]

Sunwater said that it had 63 sites subject to transitional and obsolete regulated retail tariffs:

- 31 sites were individually modelled (representing 97 per cent of consumption for transitional sites) to estimate the step change in the year after the transitional or obsolete tariff ends
- 32 sites had the 'QCA median step change', derived from our final determination for 2018–19 regulated retail tariffs, applied in 2020–21 or 2022–23.[132]

[130] QCA, *Seqwater Bulk Water Price Review 2018–21*, final report, March 2018; QCA, *Gladstone Area Water Board Price Monitoring 2015–2020,* final report, May 2015.

[131] Sunwater response to QCA RFI 11.

[132] On 21 June 2019, the Queensland Government announced that customers on obsolete and transitional electricity tariffs will have an additional 12 months to 30 June 2021 to transfer to standard electricity tariffs.

For the individually modelled sites, Sunwater said that the independent market expert modelled electricity costs under the current tariff at the site and compared this with costs that would apply under all non-transitional tariffs to determine the lowest cost tariff for each site. Costs were calculated by applying 2018–19 retail tariff rates to historical consumption and demand as follows:

- Large sites >100MWh: 4-year average consumption (March 2014 to February 2018) and demand (where applicable)
- Small sites <100MWh: 2017–18 actual consumption and demand (where applicable)

Where historical demand data was not available, Sunwater said that analysis was based on an assumed 3.2:1 kW:kWh factor for demand reads.

The cost difference between the current tariff and the lowest cost tariff was calculated to determine the step change to apply in 2020–21 or 2022–23 for the relevant site.

Sunwater said that for the pre-transition and post-transition years, the AEMO escalators were applied at the site level. The exception was when the AEMO escalator was negative in a pre-transition year. Escalators were not applied for connection sites on transitional or obsolete tariffs in these circumstances (i.e. the escalation is zero), as we had in the past either escalated transitional and obsolete tariffs at a rate of 1.1 of a like tariff, or left the rates unchanged.

The scheme-specific escalators were derived using the weighted average of the price movements for all connection sites in the service contract, weighted by average consumption for each site.

In response to our draft report, Sunwater proposed we review the scheme-specific electricity escalation adjustments associated with the cessation of transitional and obsolete electricity tariffs in 2021–22 in Bundaberg, Burdekin-Haughton and Eton distribution systems.[133]

2.11.2 Other stakeholders' submissions

Canegrowers considered that it is likely there will be a significant reduction in network prices in the 2019–20 electricity regulatory period, and it is important that these expected reductions are taken into account in the new irrigation water price path.[134]

Some stakeholders requested that we review the projected electricity escalation rates, to ensure that forecast future price changes are reflected in Sunwater's forecast costs and prices. Noting that retail electricity price escalation is problematic when electricity price forecasts are uncertain.[135] On this basis, BRIG considered that given we have already declared Ergon's tariffs for 2018–19, these tariffs should be used. They also noted that our determination on 2019–20 electricity tariffs has no price increase for obsolete tariffs.[136]

Kinchant Dam Water Users Association (KDWUA) noted that a number of Eton pumping sites will move from obsolete tariff 62 to demand tariffs, which will see a significant jump in costs. It noted that Sunwater's network service plan, however, does not show a step change in electricity costs from 2020–21, and that this demonstrates a lack of incentive to adequately review electricity costs where pass through arrangements are awarded.[137]

[133] Sunwater, sub. 229, p. 55.
[134] Canegrowers, sub. 91, p. 2.
[135] BRIA, sub. 85, p. 42; BRIG, sub. 54, pp. 11–12; Fairbairn Irrigation Network, sub. 59, p. 6.
[136] BRIG, sub. 54, pp. 11–12.
[137] KDWUA, sub 112, p. 4.

2.11.3 QCA assessment

Sunwater said that it was unable to provide us with the underlying calculations to model the step changes, as these were developed by an external consultant who did not provide this level of detail. To assess the prudency and efficiency of Sunwater's step changes, AECOM derived alternative step changes using data from 2013–14 to 2017–18 by:

- modelling electricity costs under the current optimal tariff at each connection site and compared this with costs that would apply under all non-transitional tariffs
- identifying the lowest-cost non-transitional tariff for each connection site
- calculating the difference in cost between the current optimal tariff and the future optimal tariff to get the step change to apply in 2021–22 for the particular site
- deriving a weighted average step change for each scheme using the average consumption of each meter, along with its corresponding escalation rate.

Costs were calculated by applying 2019–20 regulated retail tariff rates as follows:

- For large sites, AECOM compared the average annual consumption over 2013–14 to 2017–18 in each site to site energy data, to identify a representative year within the data set, using the year with total consumption closest to the calculated average annual consumption.
- For small connection sites, AECOM used actual consumption and demand for 2017–18 as the representative year to find electricity costs.

In response to Sunwater's comments on AECOM's tariff selection associated with the cessation of transitional and obsolete electricity tariffs in 2021–22, AECOM revised the relevant sites.

We note that Sunwater's proposed step changes are not materially different from AECOM's modelled step changes. In addition, we consider that Sunwater's approach of using average consumption and demand is more appropriate than AECOM's approach of using a 'representative year' (see section 2.5.3). We have therefore used Sunwater's proposed step changes in 2021–22, adjusted for the most recent AEMO escalation rates.

For the pre-transition and post-transition years, we have applied the updated 2019 AEMO escalators at the site level. The exception was connection sites on transitional or obsolete tariffs in 2019–20 (when the AEMO escalator was negative), with a zero escalation rate was applied.

We have modified Sunwater's analysis to take into account the specific step changes that will occur to fixed and variable costs when schemes move from transitional and obsolete tariffs in 2021–22, as the underlying tariff balance of standard business tariffs are materially different.

For example, Sunwater identified the optimal tariff that many of the large connection assets in the Bundaberg distribution system should transition to as being demand-based tariffs—either tariff 50, 51A or 51C. Standard business tariffs 51A, 51B, 51C, and 51D include capacity charges that are a fixed charge intended to reflect the network capacity required to accommodate large connection assets, regardless of demand.

We consider that, assuming there is minimal change to the way connection sites are operated or the underlying efficiency of the connection asset, fixed costs are likely to materially increase as a result of transitioning to standard business tariffs.

Our scheme-specific electricity costs for distribution systems are summarised in the table below.

Table 20 The QCA's recommended electricity costs, distribution systems (nominal)

Distribution system	*Fixed/variable*	*2019–20*	*2020–21*	*2021–22*
Bundaberg	Fixed ($'000)	589	601	2,500
	Variable ($/ML)	51.49	52.48	44.97
Burdekin-Haughton	Fixed ($'000)	1,300	1,325	1,250
	Variable ($/ML)	17.07	17.40	17.88
Eton	Fixed ($'000)	5	5	223
	Variable ($/ML)	24.50	24.98	26.32
Lower Mary River	Fixed ($'000)	36	37	40
	Variable ($/ML)	50.53	51.51	73.44
Mareeba-Dimbulah[a]	Fixed ($'000)	133	136	65
	Variable ($/ML)	67.42	68.73	91.43

a *These electricity costs relate to the re-lift section of this distribution system. Source: QCA analysis.*

2.12 Efficiency targets

Regulators typically apply two types of efficiency targets to controllable opex:

- a catch–up efficiency target—a firm-specific target to move a business closer to the efficient frontier (typically measured as the best performing comparable businesses)
- a continuing efficiency target—an industry-wide target reflecting the movement of the efficient frontier over time as productivity improves, for example, due to innovation.

We have also considered Sunwater's proposal to apply a continuing efficiency target of 0.2 per cent per year (cumulative) of base year controllable opex.

This is comparable to our recently approved target for Seqwater in our review of bulk water prices for 2018–21, and to other recent regulatory reviews of water businesses in other jurisdictions (on a growth-adjusted basis). In the absence of robust empirical evidence to the contrary, we have accepted Sunwater's proposed continuing efficiency target at this time.

2.13 Summary of total operating expenditure

Our recommended total opex for Sunwater over the price path period is $276.1 million. This compares to Sunwater's original submission of $290.8 million, and its revised June 2019 update of $286.9 million.

Table 21 The QCA's recommended opex for irrigation service contracts ($ million, nominal)

Cost category	*Price path period*				*QCA total (2020–24)*	*Sunwater (2020–24)*
	2020–21	*2021–22*	*2022–23*	*2023–24*		
Direct operations and maintenance	22.4	22.9	23.5	24.0	**92.9**	**88.0**
Electricity	12.3	14.2	14.4	14.5	**55.4**	**61.3**
Insurance	7.6	7.8	8.0	8.1	**31.5**	**25.9**
Total direct	**42.3**	**44.9**	**45.8**	**46.7**	**179.7**	**175.2**
Local area support	6.2	6.4	6.5	6.7	**25.8**	**56.6**
Indirect	8.3	8.5	8.7	8.9	**34.4**	**31.8**
Corporate support	8.2	8.4	8.6	8.8	**34.1**	**27.2**
Total non-directs	**22.8**	**23.3**	**23.8**	**24.4**	**94.3**	**115.6**
QCA regulatory fee	**0.6**	**0.6**	**0.7**	**0.7**	**2.6**	**–**
Total opex	**65.7**	**68.8**	**70.3**	**71.8**	**276.6**	**290.8**

Note: Totals may not add due to rounding. Source: Sunwater, sub. 11 and sub. 45; QCA analysis.

3 RENEWALS EXPENDITURE

This chapter assesses the prudency and efficiency of renewals expenditure and dam safety upgrade capex for the 27 irrigation service contracts (22 bulk WSS and 5 distribution systems) relevant to this investigation of Sunwater. This includes all expenditure for these service contracts, including costs allocated to irrigation and non-irrigation customers. We have excluded all expenditure associated with the three distribution systems that transitioned to local management arrangements prior to our draft report.[138]

Relative to Sunwater's November 2018 submission, we recommend a reduction of 1.8 per cent in historical renewals expenditure and 35.2 per cent in forecast renewals expenditure reflecting our assessment of the prudent and efficient level of expenditure.

3.1 Overview

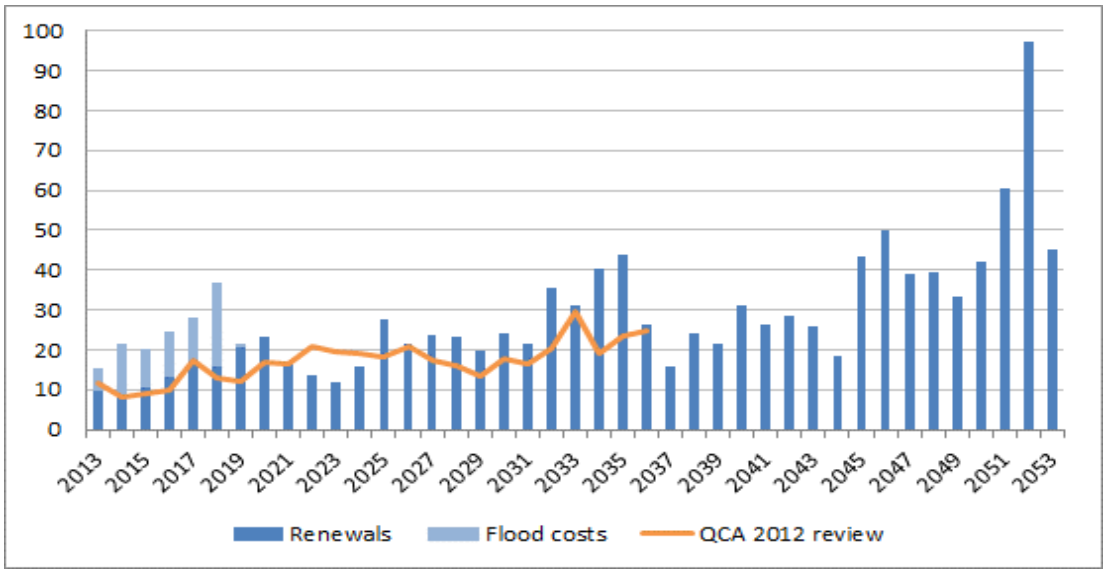
3.1.1 Sunwater's submission

Renewals expenditure

In its November 2018 submission, Sunwater said it expected to incur actual 'non-routine'[139] expenditure (excluding dam safety upgrade capex) of $173.5 million over 2012–13 to 2019–20, which it proposed to incorporate in its opening renewals annuity balance (see section 4.2). This included non-routine corrective maintenance expenditure (mainly flood-related) of $64.5 million[140], and compares to our forecast renewals expenditure over this period of $86.2 million.

Sunwater proposed a 30-year planning period for its rolling renewals annuity, requiring 34 years of forecast renewals expenditure up to and including 2052–53 (Figure 15).

Figure 15 Sunwater's renewals expenditure for irrigation service contracts ($2018–19, million)



Source: Sunwater, sub. 45, November 2018; QCA 2012.

[138] Emerald, St George and Theodore distribution systems.

[139] Sunwater (sub. 11, p. 15) described this as non-cyclical expenditure within the price-path period related to replacement or maintenance of infrastructure outside their normal schedule for maintenance.

[140] This amount is partially offset by insurance proceeds.

In June 2019, Sunwater provided us with a revised non-routine program of works in which it:

- updated forecasts leading to slight increases for 2018–19 and 2019–20 (up $1.0 million)
- updated forecasts over 2020–53 (down $57.7 million, or 3.3 per cent).

Dam safety upgrade capex

Sunwater proposed a regulatory asset base (RAB) based approach for calculating an allowance for dam safety upgrade capex.

In its November 2018 submission, Sunwater forecast dam safety upgrade capex over the price path period of $385.7 million (on an as-incurred basis).[141] In June 2019, Sunwater provided updated dam safety upgrade capex over this period of $359.8 million.[142]

3.1.2 Key issues for consideration

We have considered all aspects of Sunwater's proposal in assessing the prudent and efficient level of Sunwater's renewals expenditure and dam safety upgrade capex. Issues that attracted comment from stakeholders or we have identified for further consideration include Sunwater's asset planning and management framework and the prudency and efficiency of Sunwater's proposed expenditure.

3.1.3 QCA assessment approach

We have reviewed particular aspects of Sunwater's proposed renewals expenditure and dam safety upgrade capex in detail to assess their reasonableness.

Our assessment approach is summarised in Figure 16.

Figure 16 QCA assessment approach for renewals expenditure

Review Sunwater's asset planning and management framework	•Determine whether the planning process is informed by appropriate tools and strategies. •Determine whether the approach to asset management is appropriate. •Determine whether Sunwater has addressed relevant issues and actions arising from our 2012 review.
Assess prudency and efficiency of historical and price path period expenditure	•Obtain a representative sample of projects and determine whether they are supported by appropriate documentation. •Determine whether systemic issues may apply to non-sampled projects. •Make adjustments for prudency and efficiency as appropriate.
Assess prudency and efficiency of projects in the remainder of the planning period	•Determine whether approach to developing renewals portfolio is robust. •Review a sample of projects to determine any systemic issues in the development of the renewals portfolio. •Make adjustments for prudency and efficiency as appropriate.

Our approach to assessing Sunwater's renewals expenditure and dam safety upgrade capex involves first reviewing its asset planning and management practices to ensure that they are consistent with industry best practice.

[141] Sunwater, sub. 11, p. 53.
[142] Sunwater response to QCA RFI 58.

We have reviewed a sample of historical projects and projects in the price path period and extended planning period to assess the prudency and efficiency of projects over this period.

As projects beyond the price path period have a relatively high degree of uncertainty, there is unlikely to be a high level of documentation for these projects. We have therefore focused on the level of robustness with which Sunwater has developed its renewals program, including the forecast methodology and the approach to cost estimation.

In all instances, we extrapolated our findings to the rest of the renewals program where we have identified systemic issues in our assessment of sampled projects.

We engaged AECOM to assist us in this assessment. AECOM's review was informed by extensive information requests issued to Sunwater, as well as in-person interviews with key Sunwater staff. We have had regard to AECOM's analysis and recommendations in developing prudent and efficient renewals expenditure and dam safety upgrade capex estimates.

3.2 Asset planning and management

3.2.1 Sunwater's submission

Sunwater submitted that its asset planning methodology aims to maintain service standards at minimal cost using strategies that extend asset life while minimising the risk of asset failure. Depending on the nature and type of asset, Sunwater ensures reliability by using routine maintenance, periodic refurbishment or run-to-failure strategies.

Sunwater said that it conducts its asset planning at a portfolio level with five-year plans forming a 'rolling' outlook of future years. It prioritises and initiates project works for a year based on its understanding of the service life of its assets and the latest information on the operations environment, customer requirements, commercial conditions and condition assessments.[143]

In response to our draft report, Sunwater acknowledged deficiencies in aspects of its asset planning and management framework and said it would:

- clarify how it considers substitution possibilities between renewals expenditure and maintenance expenditure in future plans
- clarify how it uses service level expectations in its Water Supply Arrangements and Service Targets as an input for renewals planning
- refine its approach to options analysis so that projects are based on a program tier rating which defines both the methodology and type of options analysis to be used
- consider our recommendations in relation to opportunities to improve procurement procedures and practices.

However, with regard to decay curves, Sunwater said that it would continue to use a single decay curve as an indication of its renewals profile but would also use condition and performance data to inform and prioritise the works program.[144] Sunwater said that it would use asset age as an input into asset condition assessments where relevant data is not available or not financially practical to acquire, or where assets have an age dependent failure mode.

Sunwater said that deriving and maintaining decay curves for asset classes would be a time consuming and costly exercise and considered its approach of taking site-specific information into

[143] Sunwater, sub. 11, p. 46.
[144] Sunwater, sub. 229, p. 62.

account using the knowledge and experience of scheme and senior managers from across the state was preferable to decay curves.

3.2.2 Other stakeholders' submissions

Performance of asset management system

The Burdekin River Irrigators Association (BRIA) expressed concern that large increases in capex proposed by Sunwater under the AMS are not well justified and may not be prudent and efficient. It said that sample analysis carried out by Jacobs showed that Sunwater should not be recovering some of its proposed capex proposed from irrigation customers and that the large capex proposed for 2050 is not justified.[145]

Lower Burdekin Water and Central Highlands Regional Council submitted that we should assess the performance of the AMS to ensure that Sunwater is managing the works in a cost-effective manner and is progressing proposed projects to actual asset renewal works with the minimum practicable preliminary costs.[146]

Canegrowers, Canegrowers Isis, Central Highlands Regional Council and QFF also considered there should be a major review of the AMS, stating that the cost of running the system and inefficiencies of Sunwater's approach is driving up the costs of non-routine expenditure, with costly asset condition assessments continually pushing asset replacement into the future.[147]

KDWUA said that Sunwater has adopted processes that have led to reporting costs becoming a significant component of project costs. The association would like this aspect of renewals to be heavily scrutinised with only high value projects undergoing detailed prudency analysis.[148]

Opex versus capex classification

KDWUA submitted that the AMS must be subject to a rigorous and independent assessment to ensure that only valid asset renewal and replacement projects are included in non-routine expenditure.[149]

QFF and Fairbairn Irrigation Network also requested that small assets and projects such as air valves and patch painting be allocated to maintenance.[150]

3.2.3 QCA assessment

We have assesed Sunwater's asset planning and management framework by considering the extent to which it has adapted its framework to reflect recommendations from our 2012 review and whether the framework is consistent with current industry best practice.

Recommendations from the 2012 review

In our 2012 review, we identified a number of issues with Sunwater's AMS including the need for improved procedures for asset condition assessments, improved processes for planning the time profile of asset renewals and better estimates of asset replacement values.

[145] BRIA, sub. 85, p. 4.
[146] Lower Burdekin Water, sub. 118, p. 16; CHRC, sub. 101, p. 3.
[147] Canegrowers Isis, sub. 93, p. 5; CHRC, sub. 101, p. 3; Canegrowers, sub. 91, p. 2; QFF, sub. 132, p. 2.
[148] KDWUA, sub. 112, p. 2.
[149] KDWUA, sub. 112, pp. 2–3.
[150] QFF, sub. 132, p. 2; Fairbairn Irrigation Network, sub. 104, p. 3.

We also recommended that, in forecasting renewals expenditure, Sunwater should undertake options analysis for all material[151] renewals expenditures expected to occur over the planning period (with detailed options analysis for material renewals expenditures expected to occur within the subsequent regulatory period).[152]

Changes implemented by Sunwater since the 2012 review

Asset condition assessments

AECOM found that while there had been improvements in Sunwater's approach to asset condition assessments, Sunwater continues to use non-invasive testing methods in condition monitoring and age as a parameter in asset condition assessments.[153]

Asset replacement costs

AECOM found that while Sunwater reported that it conducted a revaluation of its irrigation system assets in 2016 and estimated asset replacement values using modern equivalent values where possible, not all assets have been valued on this basis, and Sunwater has provided no indication on the extent to which it has adopted this valuation method.

Options analysis

AECOM found that Sunwater currently conducts options analyses based on the complexity of the project rather than materiality and said that while this approach is reasonable in theory, Sunwater should at a minimum provide detailed guidelines outlining qualifications and thresholds for complexity. Overall, AECOM considered that a materiality threshold for options analysis remains a more appropriate approach.

Broader renewals planning approach

AECOM considered that Sunwater has been managing its assets long enough to enable it to have collected data to enable it to generate asset-specific decay curves (at least for some asset types). On this basis, AECOM considered that there was insufficient evidence of predictive maintenance taking place and that this was inconsistent with current industry best practice.

AECOM stated that it would expect that a suite of asset decay curves would be employed and continuously updated (informed by observed asset failure) in order to optimise predictive capability and recommended that Sunwater implement this improvement.

AECOM concluded that Sunwater had not adequately addressed numerous issues identified in the 2012 review and considered that the current planning approach had the potential to result in an overestimation of future renewals costs, or otherwise sub-optimal outcomes.

Based on AECOM's advice, we consider that there is room for improvement in Sunwater's asset management systems. As raised by a number of stakeholders, a robust asset management and planning system is essential to accurately forecasting renewals. We recommend that Sunwater undertake a detailed review of its asset management and planning process to address the shortcomings identified by AECOM.

We note Sunwater's November 2019 submission that it does not intend to adopt asset specific decay curves. However, based on AECOM advice, we consider that while the use of condition

[151] We defined material expenditure as expenditure that accounts for 10 per cent or more in present value terms of total forecast renewals expenditure over the planning period.
[152] QCA, *SunWater Irrigation Price Review: 2012–17,* final report, May 2012, p. 161.
[153] AECOM, *Rural Irrigation Capital Expenditure Review: Sunwater,* August 2019, p. 41.

assessments may be appropriate to validate renewals works in the short-term, this approach is inadequate over a 30-year planning window.

We note that moving away from a renewals annuity approach for funding asset renewals in favour of a RAB-based approach would reduce the need for robust forecasts of renewals expenditure over the longer term and would also provide a more transparent approach for distinguishing between opex and capex (see section 4.2.1).

Box 1— Potential improvements to Sunwater's asset planning and management framework

Sunwater should:

- improve its predictive maintenance and asset condition reporting arrangements to better inform the timing of asset replacement
- review its cost estimation approach and ensure that asset values are based on modern equivalent replacement values where appropriate
- develop transparent guidelines for options analyses.

3.3 Historical renewals expenditure

Sunwater's submission separately presented renewals expenditure, non-routine corrective maintenance and non-routine operations.

3.3.1 Renewals expenditure (excluding operations and corrective maintenance)

Sunwater's submission

Sunwater identified the following as key drivers of the variance between actual renewals expenditure and QCA-recommended renewals expenditure:

- the bringing forward of 20-year dam safety reviews and associated input studies
- investigations into the condition of anchors and under-drainage on all concrete-lined spillways, following spillway issues experienced in 2015 at Fairbairn Dam.[154]

Other stakeholders' submissions

A number of stakeholders requested that we review Sunwater's historical renewals to ensure that only prudent and efficient expenditure is passed on to customers. BRIA submitted that we should review the five largest historical projects for prudency and efficiency.[155]

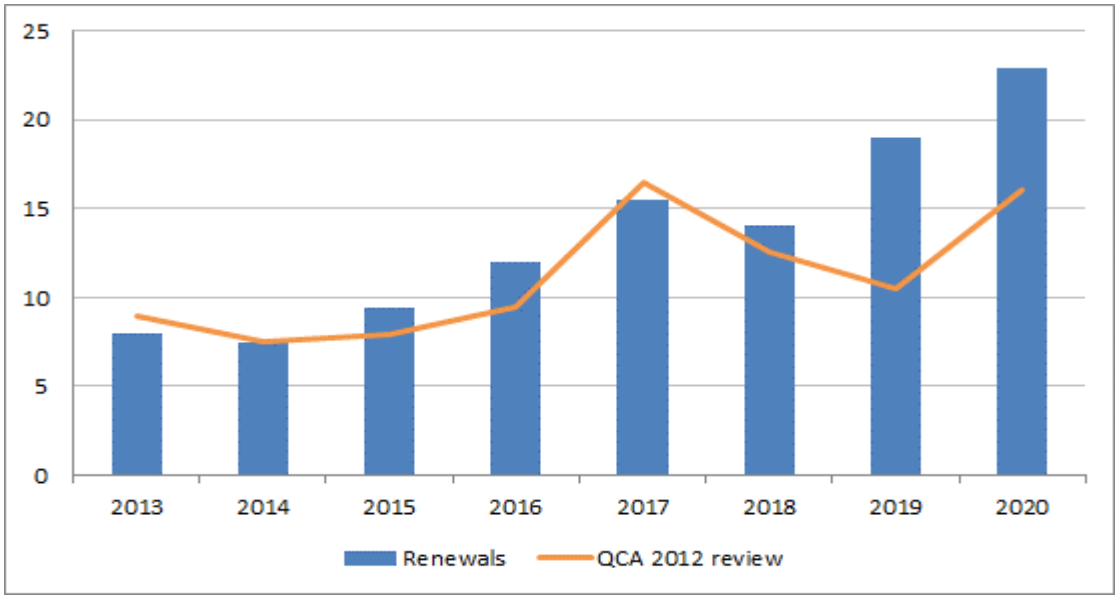
Theodore Water submitted that it had concerns with the prudency and efficiency of renewals expenditure in the Dawson Valley, singling out the Moura off-stream storage project as an example.[156]

QCA assessment

Sunwater's historical expenditure over the previous price path period (2012–13 to 2016–17) was slightly lower than the expenditure we recommended (Figure 17).

[154] Sunwater response to draft QCA information requirements, November 2018, p. 11.
[155] BRIA, sub. 85, p. 9.
[156] Theodore Water, sub. 232, p. 2.

Figure 17 Sunwater's historical renewals—irrigation service contracts ($ million, nominal)



Source: Sunwater, sub. 45; QCA analysis.

With AECOM's assistance, we selected 17 projects covering 13.6 per cent of Sunwater's proposed renewals expenditure over the historical period from 2012–13 to 2017–18.[157] These were selected from a cross-section of the major asset classes that were material in terms of potential price impact on an irrigation service contract.

AECOM undertook engineering analysis of the prudency and efficiency of the sampled projects. It initially identified inefficiencies in four of these 17 projects with key themes including:

- poor scoping and cost estimation at project inception with a piecemeal approach to scoping and consistent underestimation of costs
- ineffective approach to tendering including insufficient engagement with the market prior to tendering, inadequate bidding timelines and inefficient use of procurement exemptions
- inadequate project management and documentation including missing scoping documents and project management plans, undocumented changes to project scope, budget and schedule, inappropriate use of contingency amounts and lack of close-out reports.

In response to the draft report, Sunwater submitted additional information to demonstrate the efficiency of the Callide Flood Review project.

After reviewing the additional information submitted by Sunwater, AECOM recommended a systemic adjustment of 2.9 per cent to non-sampled renewals projects.

We have accepted AECOM's recommended adjustments for inefficiencies to account for the systemic issues identified (see Table 22). We note that Sunwater accepted a global deduction of 2.9 per cent for systemic issues, acknowledging inefficiencies in some of its historical renewals projects.[158]

In reviewing additional information provide by Sunwater, AECOM also noted that $0.4 million in historical costs for the Thurragi Channel Project should not be recovered as Sunwater had an

[157] AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, January 2020, pp. 16–19.
[158] Sunwater, sub. 229, p. 67.

agreement with customers to claim only half of the $0.8 million in historical costs incurred for this project. On the basis of this assessment, we have excluded a further $0.4 million from historical renewals projects.

Table 22 The QCA's recommended adjustments to historical renewals projects ($2018–19, million)

Project	*Submitted cost*	*Adjustment*	*QCA total*	*Per cent adjustment*
Sampled projects with adjustments	3.4	(0.7)	2.7	(**25.9**)
Sampled projects with no adjustments	8.2	–	8.2	–
Total sample	**10.6**	**(0.3)**	**10.2**	**(2.9)**
Adjustment for systemic issues				**(2.9)**

Note: Totals may not sum due to rounding. Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, January 2020, p. 67; QCA analysis.

With AECOM's assistance we selected 65 projects over the period from 2018–19 to 2052–53, 35 of which had expenditure over the tranisitional period from 2018–19 to 2019–20. These projects were selected from a cross-section of the major asset classes that were material in terms of potential price impact on an irrigation service contract.[159]

AECOM initially identified inefficiencies in six of the 35 projects sampled over the transitional period. The key themes associated with systemic issues over the transitional and forward periods are discussed in section 3.4.3. In response to our draft report, Sunwater submitted additional information for the Ben Anderson Barrage project. Sunwater considered that the adjustment for this project should not form part of the systemic adjustment for non-sampled historical projects.

Sunwater also provided actual expenditure for 2018–19 for historical projects.

After reviewing the additional information submitted by Sunwater, AECOM recommended increasing the systemic adjustment from 5.1 per cent to 6.7 per cent to reflect further inefficiences relating to actual expenditure for 2018–19.

In response to Theodore Water's submission on the specific MOSS project, AECOM recommended a downward adjustment of $0.3 million.[160]

We have accepted AECOM's recommended adjustments for inefficiencies to account for the identified systemic issues (see Table 23).

Table 23 The QCA's recommended adjustments to transitional renewals projects ($2018–19, million)

Project	*Submitted cost*	*Adjustment*	*QCA total*	*Per cent adjustment*
Sampled projects with adjustments	8.1	(1.5)	6.6	(18.5)
Sampled projects without adjustment	5.8	–	5.8	–
All projects reviewed	**13.9**	**(1.5)**	**12.4**	**(10.8)**
Adjustment for project-specific issues				**(2.4)**
Adjustment for systemic issues				**(6.7)**

Note: Totals may not sum due to rounding. Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, January 2020, p. 73; QCA analysis.

[159] AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, January 2020, pp. 19–29.
[160] AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, January 2020, p. 107.

Summary

Our recommended adjustments to Sunwater's historical renewals program are outlined below.

Table 24 The QCA's recommended historical renewals expenditure (excluding operations and corrective maintenance) for irrigation service contracts ($ million, nominal)

Cost	*2012–13*	*2013–14*	*2014–15*	*2015–16*	*2016–17*	*2017–18*	*2018–19*	*2019–20*	*Total*
Original submission	7.1	6.8	8.7	11.3	14.8	13.8	18.9	23.5	**104.9**
Sunwater's June 2019 update	7.1	6.8	8.7	11.3	14.8	13.8	19.3	20.8	**102.6**
QCA recommended	**6.9**	**6.6**	**8.4**	**11.0**	**14.1**	**13.2**	**16.7**	**21.7**	**98.6**

Note: Totals may not sum due to rounding. Source: Sunwater, sub. 45; QCA analysis.

3.3.2 Non-routine corrective maintenance

Sunwater's submission

Sunwater submitted that flood damage is by far the greatest driver of its non-routine corrective maintenance expenditure with flood damage costs of $63.0 million making up the majority of $63.5 million in non-corrective maintenance expenditure over the period 2012–13 to 2017–18.

At the time of its November 2018 submission, Sunwater had a number of insurance claims pending for flood events that occurred in 2010–11 (for the Boondooma Dam spillway damage) and 2012–13. In response to our draft report, Sunwater said that all claims in relation to flood events that occurred in 2010–11 and 2012–13 had been finalised.[161]

Other stakeholders' submissions

A number of stakeholders submitted that any flood repair costs with insurance claims yet to be finalised should be excluded from historical renewals expenditure.[162]

QFF submitted that we should examine the allocation of flood repair works to non-direct costs (often charged out at full commercial rates) to ensure there is no double counting.

QCA assessment

We note that since our draft report, Sunwater has informed us that all insurance claims have been finalised with respect to historical flood damage costs.

For flood damage projects, we have assessed the prudency and efficiency of flood damage costs (net of insurance claim recoveries) by considering, among other things:

- whether the costs cover repair activity undertaken as a direct result of the flood event—we have sought evidence that the repair activity was incremental to business-as-usual operations and relates to renewals rather than opex
- whether Sunwater's insurance policy is appropriate, with a level of cover consistent with the insurance cost allowance we approved as part of our 2012 review

[161] Sunwater, sub. 229, pp. 69–70.

[162] See for example, Canegrowers, sub. 90; Cotton Australia, sub. 101; QFF, sub. 131; Canegrowers Isis, sub. 92; BRIA, sub. 84; Theodore Water, sub. 140; Nogoa-Mackenzie IAC, sub. 127; Fairbairn Irrigation Network, sub. 104.

- whether Sunwater managed the claims process in a prudent and efficient manner.

With AECOM's assistance, we selected 11 flood repair projects that were material in terms of potential price impact on an irrigation service contract. AECOM undertook an engineering analysis of the prudency and efficiency of the sampled projects. AECOM's assessment found inefficiencies in two projects noting for one project that some rework costs could have been avoided with more appropriate testing and contractor oversight and for the other that it was impacted by a budget overrun and poor scoping. Owing to the urgent nature of flood damage projects, AECOM did not recommend a systemic adjustment to the non-sampled projects. We have accepted AECOM's recommended adjustments to account for the project-specific inefficiencies discussed above (see Table 25).

We have also netted off insurance proceeds received by Sunwater.

Table 25 The QCA's recommended adjustments to the value of flood related historical projects sampled by AECOM ($2018–19, million)

Cost	*Sunwater's proposed*			*Adjustment*	*QCA total*	*Per cent adjustment*
	Cost	*Insurance recoveries*	*Net cost*			
Sampled projects with adjustments	9.0	(5.9)	3.1	(0.3)	2.8	(9.7)
Sampled projects with no adjustments	43.5	(8.4)	35.1	–	35.1	–
Total sample	**52.4**	**14.3**	**38.2**	**(0.3)**	**37.9**	**(0.8)**

Note: Totals may not sum due to rounding. Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, August 2019, p. 65.

Our recommended renewals expenditure for corrective maintenance is summarised in Table 26.

Table 26 The QCA's recommended renewals expenditure (corrective maintenance) for irrigation service contracts ($ million, nominal)

Cost	*2012–13*	*2013–14*	*2014–15*	*2015–16*	*2016–17*	*2017–18*	*2018–19*	*2019–20*	*Total*
Original submission	5.1	11.7	7.5	9.5	9.6	20.1	0.9	–	**64.5**
Sunwater's June 2019 update	5.1	11.7	7.5	9.5	9.6	20.1	0.9	2.0	**66.4**
QCA recommended	**5.1**	**11.7**	**7.5**	**9.3**	**9.6**	**20.1**	**0.9**	**2.0**	**66.1**

Note: Totals may not sum due to rounding. Source: Sunwater, sub. 45; Sunwater, sub. 153; QCA analysis.

3.3.3 Non-routine operational expenditure

Sunwater's operations costs would not typically be treated as renewals as they do not consist of costs to renew or refurbish existing assets. However, we acknowledge that these costs are largely uncontrollable as they relate to activities required to deal with flood damage. We therefore consider it is appropriate to recover these costs through an end-of-period revenue adjustment.

We have not subjected Sunwater's proposed non-routine operations costs to review as they are generally relatively minor. We have accepted Sunwater's June 2019 cost estimates.

3.3.4 Summary

Our recommended adjustments to Sunwater's overall historical renewals program (inclusive of non-routine operations and corrective maintenance) are summarised in Table 27.

Table 27 The QCA's recommended historical renewals expenditure for irrigation service contracts ($ million, nominal)

Cost	*2012–13*	*2013–14*	*2014–15*	*2015–16*	*2016–17*	*2017–18*	*2018–19*	*2019–20*	*Total*
Original submission	12.0	19.0	17.6	22.1	25.2	34.2	19.9	23.5	**173.4**
Sunwater's June 2019 update	12.0	19.0	17.6	22.1	25.2	34.2	20.3	24.2	**174.5**
QCA recommended	**11.7**	**18.8**	**17.2**	**21.6**	**24.4**	**33.6**	**17.6**	**25.2**	**170.2**

Note: Totals may not sum due to rounding. Source: Sunwater, sub. 45; Sunwater, sub. 153; QCA analysis.

3.4 Renewals expenditure in price path period

3.4.1 Sunwater's submission

In its November 2018 submission, Sunwater forecast renewals expenditure over the price path period of $61.8 million, increasing to $70.7 million in its June 2019 cost update.[163]

3.4.2 Other stakeholders' submissions

A number of stakeholders requested that we review Sunwater's forecast renewals to ensure that Sunwater only passes on prudent and efficient expenditure to customers. BRIA considered that we should review the five largest forecast projects to determine the prudency and efficiency of the forecast expenditure.[164]

In response to our draft report, Theodore Water submitted that it continued to harbour concerns with the prudency and efficiency of renewals expenditure in the Dawson Valley WSS and requested that we further scrutinize the Glebe Weir project.[165] Dawson Valley Cotton Growers Association and Hutchinson Ag submitted that there appeared to be duplication with regards to risk assessments for the Moura Off-stream Storage with assessments scheduled for 2022, 2023 and 2024 and that this seemed excessive.[166]

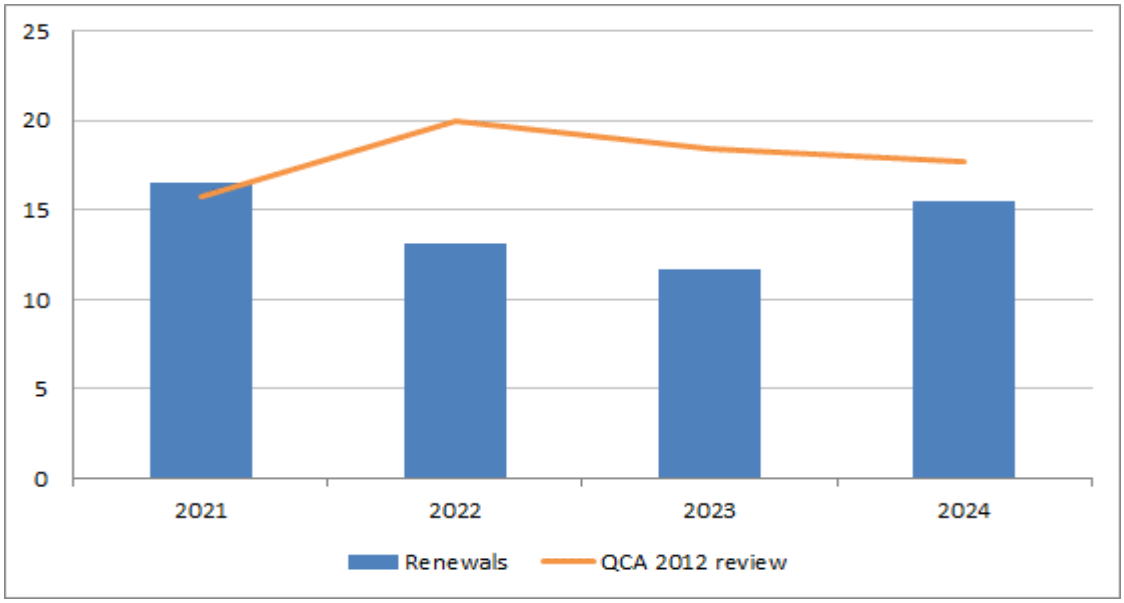
3.4.3 QCA assessment

Overview

Sunwater's forecast renewals expenditure over the price path period (Figure 18) is generally below the recommended expenditure from the 2012 review.

[163] Sunwater, sub. 45; Sunwater, sub. 153.
[164] BRIA, sub. 85, p. 14.
[165] Theodore Water, sub. 232, pp. 3–6.
[166] Dawson Valley Cotton Growers Association, sub. 191, p. 2; Hutchinson Ag, sub. 197, pp. 1–2.

Figure 18 Sunwater's forecast renewals—irrigation service contracts ($ million, nominal)



Source: Sunwater, sub. 45; QCA analysis.

Assessment of sampled projects

We have reviewed a sample of projects in the price path period to assess the prudency and efficiency of projects over this period.

With AECOM's assistance, we selected 65 projects over the period from 2018–19 to 2052–53. These projects were selected from a cross-section of the major asset classes that were material in terms of potential price impact on an irrigation service contract. Of these selected projects, 26 projects had expenditure within the price path period.

AECOM undertook engineering analysis of the prudency and efficiency of the sampled projects.

AECOM initially identified inefficiencies in 6 of the 26 projects sampled over the price path period with key themes including:

- inappropriate project timing
- lack of transparency and consistency in cost estimates
- separation of project costs into project development costs and implementation costs reducing the transparency of overall project costs.

Owing to these inefficiencies, AECOM recommended a 1.6 per cent reduction to non-sampled projects. We note that Sunwater accepted there were systemic inefficiencies identified by AECOM.[167]

In response to our draft report, Sunwater said that AECOM had incorrectly listed the claim for the Allan Tannock Weir project as $50.8 million rather than $50.6 million. AECOM has corrected for this but this has no impact on AECOM's assessment.

We have accepted AECOM's recommended adjustments for inefficiencies to account for the systemic issues identified above (see Table 28).

[167] Sunwater, sub. 229, p. 70.

Table 28 Recommended adjustments to the value of projects in the price path period ($2018–19, million)

Project	*Submitted cost*	*Adjustment*	*QCA total*	*Per cent adjustment*
Sampled projects with adjustments	1.6	(1.3)	0.3	81.3
Sampled projects without adjustments	4.9	–	4.9	–
All projects reviewed	**6.5**	**(1.3)**[a]	**5.2**[a]	**(20.7)**
Adjustment for project-specific issues				**(6.9)**
Adjustment for systemic issues (exclusive of adjustment to renewals profile)				**(1.6)**

a *The timing of a refurbishment program at Gattonvale Pump Station has been adjusted resulting in $10,000 of expenditure now occurring in the price path period, reducing the total adjustment by this amount. Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, August 2019, p. 70.*

3.4.4 Summary

Our recommended renewals expenditure in the price path period is summarised below.

Table 29 The QCA's recommended renewals expenditure for irrigation service contracts ($ million, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*	*Total*
Sunwater's original submission	17.4	14.1	12.8	17.5	**61.8**
Sunwater's June 2019 cost update	27.9	14.8	13.7	14.4	**70.7**
QCA recommended	**25.5**	**12.5**	**12.8**	**10.8**	**61.6**

Note: Totals may not sum due to rounding. Source: Sunwater, sub. 45; Sunwater, sub. 153; QCA analysis.

3.5 Renewals expenditure over remainder of planning period

3.5.1 Sunwater's submission

In its November 2018 submission, Sunwater forecast renewals expenditure over the remainder of its proposed 30-year planning period (2024–25 to 2052–53) of $1,689.4 million, decreasing slightly to $1,622.8 million in its June 2019 cost update.[168]

3.5.2 Other stakeholders' submissions

A number of stakeholders requested that we review Sunwater's forecast renewals to ensure that Sunwater passes on only prudent and efficient expenditure to customers. BRIA considered that we should review the five largest forecast projects to determine the prudency and efficiency of the forecast expenditure.[169]

3.5.3 QCA assessment

As projects beyond the price path period have a relatively high degree of uncertainty, there is unlikely to be a high level of documentation for these projects. We have therefore focused on the level of robustness with which Sunwater has developed its renewals program including the forecast methodology and the approach to cost estimation.

[168] Sunwater, sub. 45; Sunwater, sub. 153.
[169] BRIA, sub. 85, p. 14.

We have also assessed a sample of projects to identify any systemic issues in the practical application of the renewals planning process. We engaged AECOM to assist us in our assessment.

Forecast methodology

To forecast renewals expenditure over the 30-year planning period, Sunwater adopts standard expected asset lives for each asset class and, using this and the known age of each asset, plans for replacement at the expected end of service life (or a fraction earlier in the case of assets assessed to be critical).

Sunwater also plans for the refurbishment of assets at intervals during the service life of the asset to optimise lifecycle costs. Once the timing of asset replacement/refurbishment has been determined, Sunwater estimates the associated costs based on a review of recent work of similar type.

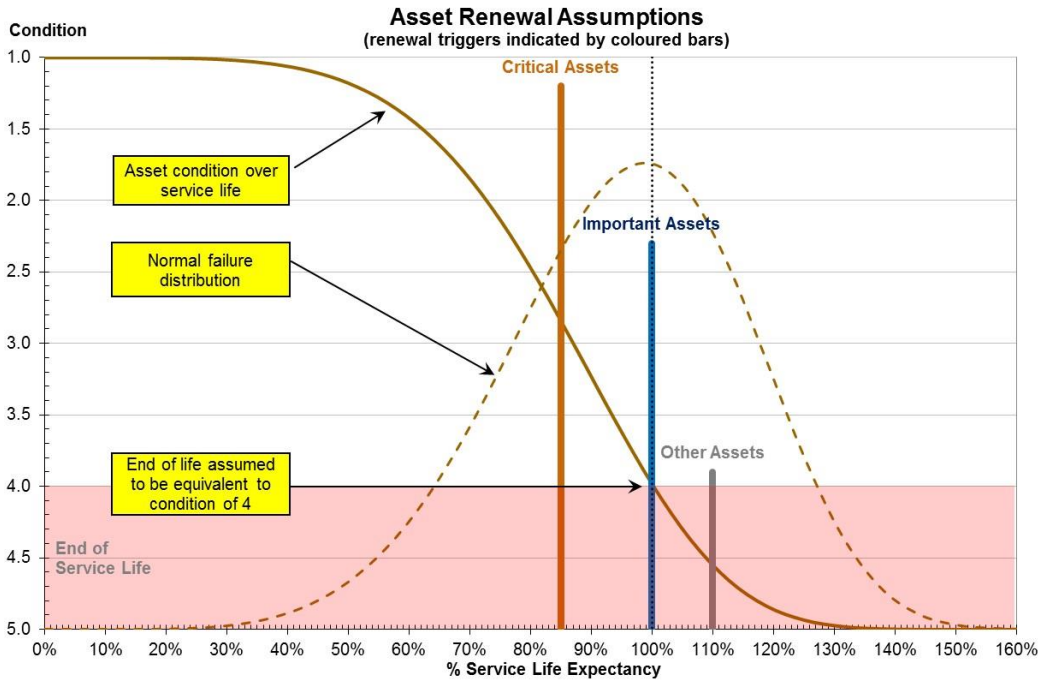
AECOM considered this approach to be reasonable with the exception of the use of a standard decay curve for all assets. AECOM said that not all assets would be expected to fail at the same rate and that the asset condition rating for a given class of assets should be informed by historical data on the failure rate of that class of assets.

AECOM considered these observations in assessing the prudency and efficiency of the 30-year renewals program.

Profile of the renewals program

In the absence of asset specific decay curves for Sunwater, AECOM assessed Sunwater's renewal program by using its in-house proprietary Weibull curve. This assumes a normal failure distribution (Figure 19). [170]

Figure 19 Failure rate of assets assuming a normal distribution of failure



Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, August 2019, p. 81.

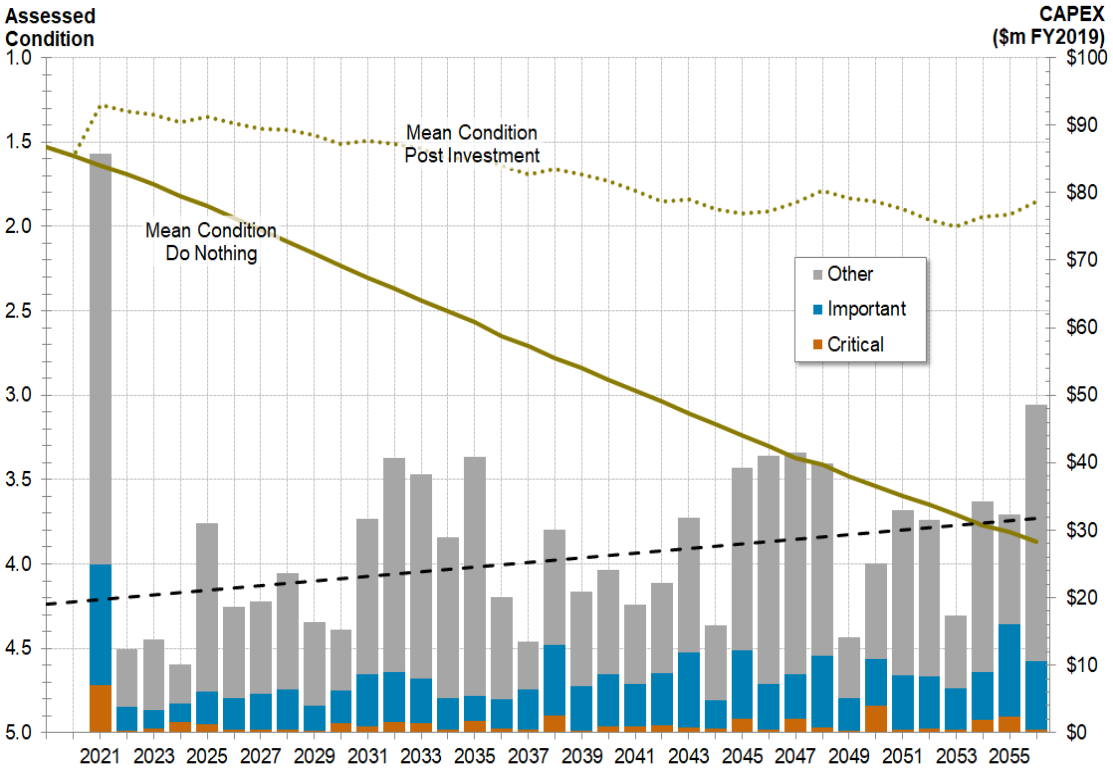
[170] In practice, failure rates would vary for different asset classes but in the absence of asset specific decay curves, AECOM assumed a normal distribution across asset classes.

Assets can be maintained in a condition ranging from 1 (excellent) to 5 (failed/inoperable) (Figure 19). Assuming a normal distribution of failure rates, the average condition rating of an asset at the end of its expected service life is 4. Critical assets would be renewed before reaching a condition rating of 3 (or about 85 per cent through their expected service life), important assets when they reached a condition rating of 4 and all other assets when they reached a condition rating of 4.5.

AECOM's modelling indicated that Sunwater is overly conservative in the timing of renewals as a consequence of using a single decay curve for all assets.

In particular, AECOM considered that under best practice arrangements, assets would be maintained in a range whereby the condition rating would be between 2 and 3 (the 'state of good repair'). However, Sunwater is currently maintaining assets to a condition rating well above this (Figure 20).

Figure 20 Weighted average condition rating by year of assets in the forward renewals program (under Sunwater's current planning assumptions)



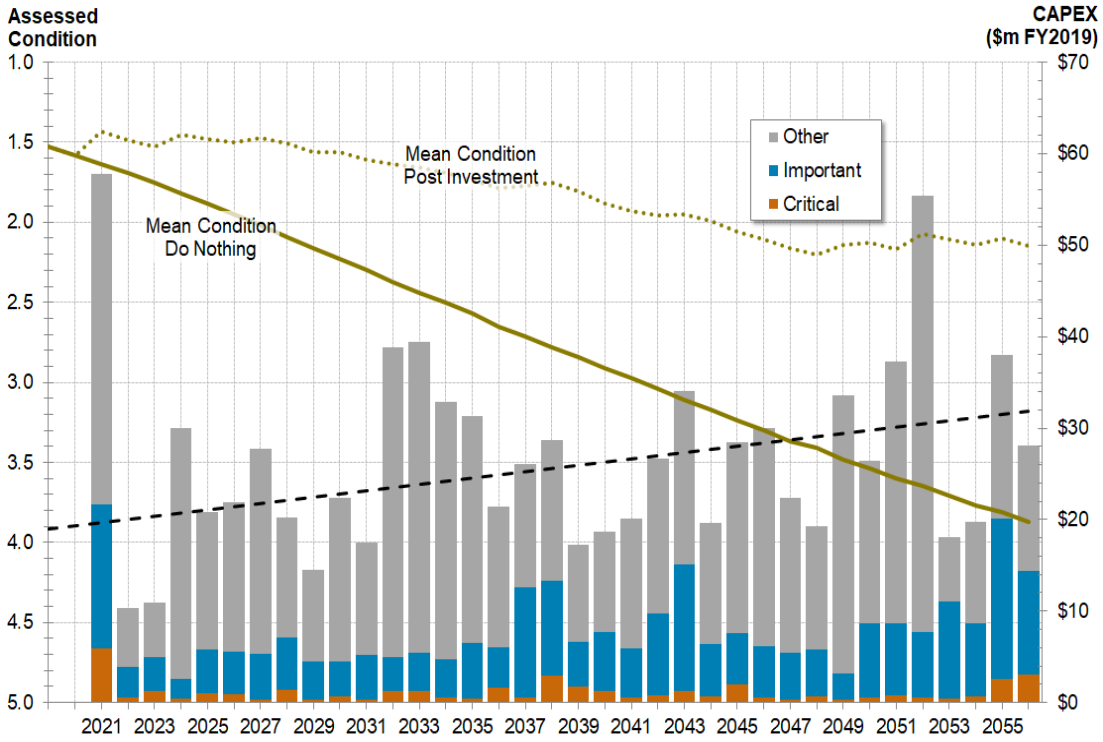
Notes: The solid brown line shows the weighted average asset condition (weighted by replacement value) in each year of the program assuming that no investment takes place. The dotted brown line shows the weighted average asset condition after the scheduled investment. The black line is a trend line of annual investment needed. It increases because higher value assets with longer service lives fall due for renewal later in the planning period.

Assumes, as per Sunwater, that critical (high risk) assets are renewed at 63 per cent of useful life, important (medium risk) assets at 88 per cent and other (low risk) assets at 100 per cent of useful life.

Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, August 2019, p. 82.

AECOM estimated that Sunwater's assets could be maintained in a state of good repair by extending the useful life uniformly by 10 per cent (Figure 21).

Figure 21 Weighted average condition rating by year of assets in the forward renewals program (under AECOM's assumptions)



Note: Assumes that critical (high risk) assets are renewed at 73 per cent of useful life, important (medium risk) assets at 98 per cent and other (low risk) assets at 110 per cent of useful life.

Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, August 2019, p. 83.

This analysis reduces the renewals program by $182.6 million in real terms.

We note that this analysis is focused on renewals projects. Given on-going concerns about the relatively high value of refurbishment projects in some schemes, AECOM undertook further analysis of refurbishment projects subsequent to the release of our draft report. AECOM noted that a class of asset refurbishments in bulk schemes described as 'Replace/Refurb: Grout Anchors, Drains, Concrete' appeared to be particularly significant in quantum (Table 30).

Table 30 Value of 'Replace/Refurb: Grout Anchors, Drains, Concrete' class of asset refurbishments beyond the price path period ($2018-19, million)

Scheme	*Facility*	*Timing*	*Value*
Proserpine	Peter Faust Dam	2050–51, 2051–52	24.6
Bundaberg WSS	Fred Haigh Dam	2033–34, 2034–35	32.7
Barker Barambah WSS	Bjelke-Peterson Dam	2044–45, 2045–46	15.7
Callide Valley WSS	Callide Dam	2031–32, 2032–33	40.5
Total			**113.5**

Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, updated final report, January 2020, pp. 98–100.

After further reviewing this class of asset refurbishments, AECOM advised that there was duplication of works in Callide Valley WSS. This reduced the value of projects in this scheme from $40.5 million to $20.3 million.

AECOM's assessment also indicated that the timing of these refurbishments was conservative. AECOM therefore adjusted the timing to better align with guidelines in Sunwater's asset refurbishment strategy document. The revised timing for these projects is shown in Table 31.

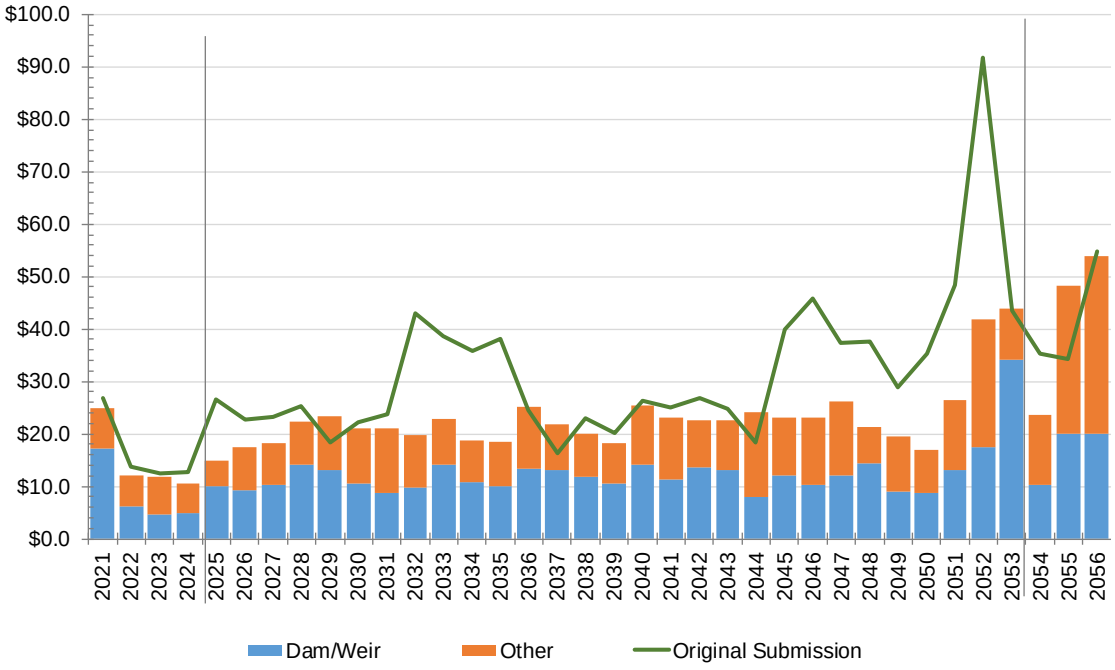
Table 31 Value of 'Replace/Refurb: Grout Anchors, Drains, Concrete' class of asset refurbishments after revised timing ($2018-19, millon)

Scheme	*Facility*	*Revised timing*	*Revised value*
Proserpine	Peter Faust Dam	After 2052–53	–
Bundaberg WSS	Fred Haigh Dam	Bulk of expenditure after 2052–53	2.0
Barker Barambah WSS	Bjelke-Peterson Dam	After 2052–53	–
Callide Valley WSS	Callide Dam	2052–53	20.3
Total			**22.3**

Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, updated final report, January 2020, pp. 98–100.

Overall, we have reduced Sunwater's renewals program over the remainder of Sunwater's proposed 30-year planning period (2024–25 to 2052–53) from $997.9 million to $724.1 million (Figure 22).

Figure 22 Renewals profile assuming a 10 per cent increase in useful life and adjusting for the frequency of asset refurbishments ($2018–19, million)



Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, Updated Final Report, January 2020, p. 101.

We note that this analysis is indicative only and is likely to be conservative as there are a number of data gaps in Sunwater's whole of life maintenance strategy, including:

- instances where an asset condition assessment has not been recorded
- lack of clarity around the nature of work undertaken in some cases (e.g. some works have been recorded as replace/refurbish)
- instances where no useful life has been recorded against the relevant asset

- instances where no risk assessment data has been recorded
- instances where no frequencies have been specified for refurbishment works or no data on historical refurbishment works is available.

Sample assessment

With AECOM's assistance, we selected 46 projects over the forward planning period for assessment to complement the above analysis.

These projects were selected from a cross section of the major asset classses that were material in terms of potential price impact on an irrigation service contract.

AECOM undertook engineering analysis of the prudency and efficiency of the sampled projects and identified inefficiencies in 11 of the 46 projects with key themes including overestimation of project costs and budget overruns. AECOM recommended a further adjustment of 3.0 per cent to non-sampled projects to account for systemic issues identified in the sample assessment.

In response to our draft report, Sunwater said that AECOM had incorrectly listed the claim for the Three Moon Creek Meter Replacement project as $1.20 million rather than $1.18 million. AECOM has corrected for this.

We have accepted AECOM's recommended adjustments for inefficiencies to account for the systemic issues identified above (see Table 32).

Table 32 Recommended adjustments to the value of projects outside the price-path period ($2018–19, million)

Project	*Submitted cost*	*Adjustment*	*QCA final*	*Per cent adjustment*
Sampled projects with adjustments	**19.7**	**(16.2)**	**3.5**	**(82.2)**
Sampled projects without adjustments	**22.3**	**–**	**22.3**	**–**
All projects reviewed	**42.0**	**(15.7)[a]**	**26.3[a]**	**(37.4)**
Adjustment for project-specific issues				**(2.3)**
Adjustment for systemic issues (exclusive of adjustment to renewals profile)				**(3.0)**

Notes: The timing of a switchboard replacement project at Owanyilla Pump Station has been adjusted resulting in $0.4 million in the planning period. This reduces the total adjustment by $0.4 million. Totals may not sum due to rounding. Source: AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, August 2019, p. 71.

3.5.4 Summary

We have made adjustments to Sunwater's proposed renewals expenditure over the remainder of the 30-year planning period (2024–25 to 2052–53) to address timing and cost issues. Overall, we have reduced Sunwater's proposed renewals expenditure over this period by 36.8 per cent.

Table 33 The QCA's recommended renewals expenditure for irrigation service contracts over the remainder of planning period ($ million, nominal)

Cost	*Total*
Original submission	**1,690.1**
Sunwater's June 2019 cost update	**1,622.8**
QCA recommended	**1,073.7**

Note: Totals may not sum due to rounding. Source: Sunwater, sub. 45; Sunwater, sub. 153; QCA analysis.

3.6 Dam safety upgrade capex

3.6.1 Overview of dam safety upgrade program

In its November 2018 submission, Sunwater forecast dam safety upgrade capex over the price path period of $385.7 million (on an as-incurred basis).[171] In June 2019, Sunwater provided updated dam safety upgrade capex over this period of $359.8 million.[172]

Sunwater adjusted forecast expenditure for projects at a preliminary business case stage by submitting 50 per cent of the forecast expenditure for pricing purposes.

The key driver of this expenditure is regulatory obligations (see Part A, Chapter 4). Specifically, Sunwater has reassessed its dam safety requirements in response to an improved understanding of extreme rainfall events and resultant floods, advances in knowledge about failure risks for dams, and increases in the consequences of failure at particular dams.

3.6.2 Other stakeholders' submissions

A number of stakeholders said that irrigators could not be expected to assess the need for, and costs of implementing dam safety upgrades in the absence of meaningful detail and costing on the proposal. They said that we could not be expected to assess the need for, and efficient costs of, implementing dam safety upgrades in the absence of detailed justification and costings.[173]

BRIA said that Sunwater would need to:

- provide greater detail on the projects included in the dam improvement program for each scheme (including an accurate breakdown of costs, timeframes and specification of works)
- engage with all parties likely to be affected by this proposed change and provide comprehensive information for each relevant scheme
- ensure these improvements are prudent/essential to meeting regulatory standards and costed and procured efficiently to ensure least cost.[174]

Central Downs Irrigators Ltd submitted that given that Leslie Dam has filled once in 15 years and in that time has had an average level of approximately 30 per cent, it seems overly cautious to spend $24 million when the dam rarely spills.[175] Central Highlands Cotton Growers and Irrigators Association expressed concern about the budget overspends on the Fairbairn Dam.[176]

In response to our draft report, Lower Burdekin Water submitted that AECOM's assessment of the Burdekin Falls Dam safety upgrade project did not include the source information on the criteria AECOM relied on to determine the prudency and efficiency of the project.[177] They considered that there was a lack of transparency in the costs associated with the project and that we should make available all information relied on by AECOM in assessing the preferred option.

[171] Sunwater, sub. 11, p. 53.
[172] Sunwater response to QCA RFI 58.
[173] See for example, BRIA, sub. 85, p. 15; CHCGIA, sub. 99; CHRC, sub. 101; QFF, sub. 132; Lower Burdekin Water, sub. 118; MDIA Council, sub. 123.
[174] BRIA, sub. 85, p. 24.
[175] Central Downs Irrigators Ltd, sub. 98, p. 3.
[176] CHCGIA, sub. 99, p. 3.
[177] Lower Burdekin Water, sub. 201, p. 3–8.

3.6.3 QCA assessment

We consider that the dam safety upgrade cost category should only include capex on dam upgrades that are required to meet the dam safety compliance obligations (Part A, Chapter 4).

We engaged AECOM to assist with our assessment. AECOM's assessment involved:

- undertaking detailed project reviews against Sunwater's key drivers and obligations (including the range of alternatives considered and efficiency of proposed cost estimates)
- identifying any systemic issues from the project reviews and drawing on the assessment of Sunwater's governance, capital planning and asset management frameworks
- assessing trade-offs between capex and opex.

AECOM's review was based on Sunwater's November 2018 submission and involved reviewing a sample of projects (Table 34).

Table 34 Sample of dam safety upgrade projects reviewed by AECOM ($'million, nominal)

Project	*$' million*
Value of sampled projects	**304.9**
Total value of projects	**385.7**
Proportion sampled (% by value)	**79**

Notes: Expenditure is that incurred within the price path period. Totals may not sum due to rounding.

Source: Sunwater response to AECOM RFI A25 and A27.

AECOM's assessment recommended no adjustments to Sunwater's proposed capex, and accepted updated capex estimates provided by Sunwater in June 2019.[178] In this update, the commissioning of the Burdekin Dam upgrade works was deferred to beyond 2023–24.

In response to concerns raised by Lower Burdekin Water, AECOM provided further documentation on the information it reviewed in its updated report.[179]

Based on AECOM's expert engineering advice, we have accepted Sunwater's updated capex estimates reflecting the prudency and efficiency of the projects reviewed. Table 35 shows Sunwater's revised dam safety upgrade capex for those projects forecast to be commissioned within the price path period.

Table 35 The QCA's recommended dam safety upgrade capex for irrigation service contracts ($ million, nominal)

WSS	*2020–21*	*2021–22*	*2022–23*	*2023–24*	*Total*
Macintyre Brook	0.8	1.7	0.3	–	**2.8**
Nogoa-Mackenzie	21.9	–	–	–	**21.9**
Pioneer River	0.8	2.4	1.0	–	**4.3**
Upper Condamine	11.2	1.7	–	–	**12.9**
Total	**34.8**	**5.8**	**1.3**	**–**	**41.9**

Note: Capex is on an as-incurred basis. Sunwater adjusted forecast expenditure for projects at a preliminary business case stage by submitting 50 per cent of the forecast expenditure for pricing purposes. Only includes projects that are commissioned prior to the end of the price path period. Totals may not sum due to rounding.

Source: Sunwater response to QCA RFI 58.

[178] Sunwater response to QCA RFI 58.
[179] AECOM, Rural Irrigation Capital Expenditure Review: Sunwater, Updated report, January 2020, p. 105.

4 TOTAL COSTS

This chapter explains how we have calculated total prudent and efficient costs for each irrigation service contract, consisting of:

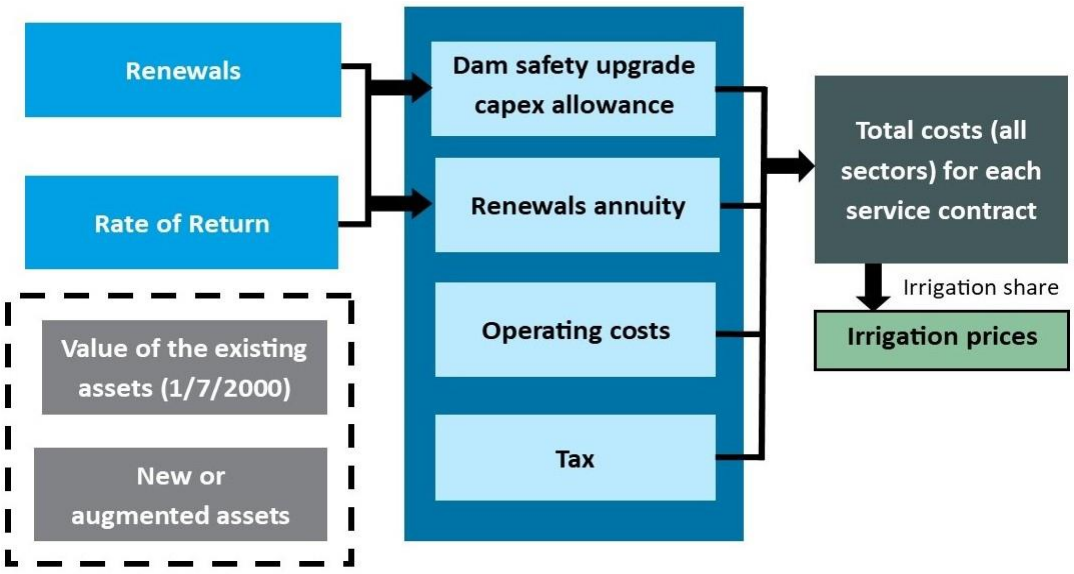
- *prudent and efficient operating costs*
- *an allowance for the prudent and efficient costs of renewing assets*
- *an allowance for prudent and efficient dam safety upgrade capex forecast to be incurred from 1 July 2020, to be applied in the set of prices where this allowance is included*
- *other cost components, including revenue offsets and a tax allowance.*

4.1 Calculating total costs

We have used a building block approach to calculate the total prudent and efficient costs for each irrigation service contract, covering all sectors including irrigation, urban and industrial. Under this approach, we considered the following cost components:

- opex—the ongoing costs of running the business and maintaining assets (Chapter 2), including operations, maintenance and administration costs
- renewals expenditure allowance—an appropriate allowance for the costs of renewing existing assets (section 4.2), reflecting our assessment of renewals expenditure (Chapter 3) and an appropriate rate of return (Part A, Appendix C)
- revenue offsets–identified on a service contract basis (section 4.5)
- tax—consistent with our post-tax nominal approach to the weighted average cost of capital (WACC), we include an allowance for tax as part of total costs (section 4.6).

Figure 23 Calculating total costs for each irrigation service contract



Notes: As per the referral, costs recovered from irrigation prices are not to consider the value of existing assets (as at 1 July 2000) or the costs associated with new or augmented assets (unless we are satisfied that existing customers will benefit and they have been consulted). The dam safety upgrade capex allowance is only considered in the alternative set of prices that we are required to recommend under the terms of the referral.

Sunwater proposed the following total costs across its irrigation service contracts (Table 36).

Table 36 Sunwater's proposed costs for irrigation service contracts, 2020–24 ($ million, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*	*Total*
Operating costs	69.6	71.5	74.2	75.5	**290.8**
Renewals annuity	30.9	32.2	34.5	35.6	**133.3**
Revenue offsets	(1.7)	(1.7)	(1.7)	(1.8)	**(6.9)**
Tax	–	–	–	–	**–**
Total costs	**98.9**	**102.0**	**107.0**	**109.4**	**417.2**

Notes: Excludes dam safety upgrade capex allowance. Totals may not add due to rounding. Source: Sunwater, sub. 45; QCA analysis.

We have also assessed an additional cost component—an appropriate allowance for dam safety upgrade capex forecast to be incurred from 1 July 2020 onwards—in order to calculate the alternative pricing option that includes an appropriate allowance for dam safety upgrade capex (see section 4.3).

4.2 Renewals expenditure allowance

4.2.1 Approach

Sunwater's submission

Consistent with previous price path periods, Sunwater proposed a rolling annual annuity approach to recovering prudent and efficient expenditure on renewing existing assets.

Sunwater said in principle, and if applied appropriately, a renewals annuity will achieve the same outcomes as the alternative approach—using a regulatory asset base (RAB) based approach.

Sunwater noted that most regulators have moved away from the renewals annuity approach and transitioned to a RAB-based approach, due to:

- the difficulties in accurately forecasting expenditure over the full asset cycle to achieve an appropriate renewals annuity
- increased intergenerational risks inherent in current users paying for services that deliver benefits for future users.

Sunwater said that the RAB option should remain open for future reviews, if the transition can be managed in a way that preserves the cash flows that Sunwater requires to maintain its financial viability and service delivery.

Other stakeholders' submissions

No other stakeholder provided comments on this issue.

Other jurisdictions

While historically rural water businesses across a number of Australian jurisdictions have used annuity approaches for calculating the appropriate allowance for asset renewals, since the early 2000s a growing number of the larger rural water businesses have transitioned to RAB-based approaches. This transition has been universally supported by economic regulators.

This is particularly evident in NSW and Victoria. Prior to 2006, the Independent Pricing and Regulatory Tribunal (IPART) required WaterNSW (formerly State Water) to apply the annuity

approach. However, in 2006 IPART accepted State Water's proposal to transition to a RAB-based approach. IPART considered that the RAB-based approach was generally superior to the annuity approach in terms of economic efficiency and regulatory effectiveness. IPART determined the initial RAB value by capitalising the annuity that IPART approved in its 2001 determination using a capitalisation rate comprising the applicable WACC plus a depreciation rate.[180]

The Essential Services Commission of Victoria (ESC) approved the RAB-based approach for all rural water businesses. The ESC's rationale for approving the transition was the re-configuration of rural irrigation systems, which meant that it was unlikely that existing assets would be replaced with like assets.[181] In 2005, Goulburn-Murray Water ended its annuity approach, while in 2013 Southern Rural Water decided to transition from the annuity approach to the RAB approach.[182]

The ESC's decision was made within the context of the Victorian Minister for Water setting an initial RAB of zero for rural water assets as at 1 July 2004 for Southern Rural Water, Lower Murray Water, GWMWater and Goulburn Murray Water. Capital expenditure from 1 July 2004 was incorporated in the RAB.

QCA assessment

Over the life of the asset and using identical costs, the present value of a renewals annuity should be the same as the present value of the RAB-based approach.[183] The key difference between the annuity and RAB-based approaches is the time profile of capital costs received by the regulated business.

Under the annuity approach, forecast renewals expenditure required to maintain assets is smoothed over a set period of time. While this may result in customers paying upfront for expenditure that is forecast to be incurred in future years, it may also result in businesses incurring expenditure upfront that is recovered through payments over a set period of time. A water business that has built up an annuity reserve will not have to rely on raising finance for renewals expenditure; therefore, it will not generally receive a return on capital spent to renew existing assets.

Under the RAB-based approach, renewals expenditure is smoothed so that the firm recovers a return on, and of, capital over the life of the renewal (starting from when the expenditure is incurred or the asset is commissioned). The return of capital will exactly recover the cost of the asset, and the return on capital will recover financing costs (interest on debt and a return to equity holders).

In theory, a renewals annuity should be calculated over a term equivalent to the longest life asset in the asset base. Where the term for a renewals annuity is shorter than the term of the longest life asset, an under- or overestimate of the annual capital costs applicable to an asset may occur, depending on the timing of the calculation within the life cycle of the asset. For the purposes of this review, Sunwater proposed an annuity based on a 30-year period (see section 4.2.3).

Potential issues with renewals annuity approaches

There are a number of potential issues inherent to renewals annuity approaches that have driven the transition to RAB-based approaches. These include:

[180] IPART, *Bulk Water Prices for State Water Corporation and Water Administration Ministerial Corporation from 1 October 2006 to 30 June 2010*, final report, September 2006.
[181] ESC, *2008 Water Price Review Consultation—Framework and Approach*, December 2006.
[182] Southern Rural Water, Water Plan 2013 to 2018.
[183] QCA, *Issues in the Application of Annuities*, information paper, 2014.

- uncertainty associated with costs and demand
- effective engagement with customers.

Uncertainty associated with costs and demand

An annuity approach is a forward looking approach that by definition requires a business to have clear and accurate expectations of future outcomes. In practice the forecasting of renewals expenditure is subject to uncertainty in relation to:

- Timing of renewals works—the annuity payment is dependent on the timing profile of the renewals program. While planning for renewals is typically based on best estimates of the assets remaining lives, in practice as businesses approach peaks in their planned renewals they will typically engage in greater levels of preventative maintenance, and undertake more detailed asset conditioning that can often extend the useful lives of assets.
- Costs of renewals—the cost of renewals is subject to movement in input prices. The costs of energy, labour (including engineering labour), contracting, materials etc. can and do move over time. The difficulty associated with forecasting these costs and the potential for error increases exponentially the greater the time period forecast.
- Uncertainty of demand—changes in customer behaviour and long run trends in the availability of water can materially impact on the accuracy of an annuity program. As with cost forecasting, the potential for error in demand forecasts increases exponentially the greater the time period forecast.

A robust asset management plan is an essential requirement for determining the appropriate allowance under a renewals annuity approach. The calculation of renewals annuities requires high quality information about the total asset system, including about scheduled maintenance, refurbishment and the expected timing for replacement of each component asset of the system. Given the potential pricing impact of future asset renewals, a longer-term perspective is required in asset management plans. The plans should be based on sufficient detail to support long-term asset plans and facilitate customer scrutiny and input to this planning.

We note that a RAB-based approach is less reliant on long term forecasts and is more closely aligned with actual renewals expenditure. While forward looking in the sense that the renewals program itself still needs to be planned, actual funding is based on what is happening in the short term not on what is happening in the long term.

We also note that the scope of the renewals annuity in the case of Sunwater is complicated as it includes some opex associated with refurbishments and renewals, and excludes some capex associated with non-infrastructure assets such as corporate information and communication technology (ICT) assets. Under a RAB-based approach the need to distinguish between renewals expenditure and other opex and capex is less problematic as all opex is recovered on a dollar for dollar basis and all capex is capable of earning both a return on and of the associated assets.

Effective engagement with customers

The forward looking nature of annuities charges can potentially impact on customers. In particular there is a concern that it can lead to an inequitable temporal distributions of costs. Annuities can result in customers funding future expenditures in the present. Where the composition of the customer base changes over time this can cause a redistribution of costs with present customers funding works associated with the provision of service to future customers. This aspect of forward look annuity approaches is often referred to as intergenerational inequity.

The issue of intergenerational inequity also impacts on the ability of a renewals funding approach to support pricing principles such as "user pays". Over collecting now (or under collecting now) for expenditure that occurs in the future, can result in the annuity payment diluting the user pays principle. Current customers may not be the users in the future and given the timeframes involved in the annuity calculation this is potentially true for a material number of customers. The annuity approach can only satisfy a user pays principle if the customer base is static over the annuity period.

The other potential impact that an annuity approach may have on customers is that it may adversely impact on dynamic efficiency. Dynamic efficiency relates to a business's ability to achieve efficiency through either process or product innovation. In the case of irrigation and bulk water networks this may include adoption of new service technologies and the rationalisation or optimisation of the existing network over time.

Managing funding through an annuity can become complicated when there is structural change occurring such as network rationalisation or alternatively where there is material investment in service improvement. At the heart of an annuity approach is the assumption that the network being renewed will remain in a steady state into perpetuity. The adoption of annuity funding for renewals can lock businesses into a predefined outcome for service provision. Under a RAB-based approach businesses are incentivised to achieve efficiencies and have the flexibility to reprioritise their expenditure in order to pursue least cost opportunities as and when they arise (given a defined level of service). Dynamic efficiency has a direct impact on the businesses ability to be response to changes in customer preferences, especially if addressing these preferences result in expenditures outside of those that would be incorporated in the renewals calculation.

The forward looking nature of an annuity also necessitates a relatively high level of detailed information be made available to customers in order for them to participate in an informed and effective manner. The primary focus of the current Sunwater NSPs involves customer scrutiny of near term expenditures that will generally have minimal pricing impacts. Customers generally do not receive enough information about large replacement expenditures later in the planning period that may have significant pricing impacts.

Sunwater noted that several Irrigator Advisory Committees (IACs) were interested in seeing further detail on planned renewals projects towards the end of the 30-year planning period, and in response Sunwater provided a full list of future renewals projects (excluding costs).[184] We consider that the lack of detailed information provided to customers on these longer-term renewals project does not allow detailed customer scrutiny of the outcomes of Sunwater's asset management strategy.

We consider that there are benefits in transitioning to a RAB-based approach. Such an approach can be more transparent as it allows customer to see the pricing impacts of near-term renewals expenditure and requires the business to provide the capital and service the associated financing costs. This aligns closely with the planning focus of Sunwater's NSPs, which provide detail on renewals expenditure in over the short-term to the end of the next price path period.

Implications of transitioning to a RAB based approach

There are a number of implications to consider in moving to a RAB-based approach. It is important to ensure that Sunwater has sufficient funds to adequately maintain and replace its infrastructure, as well as appropriate incentives to undertake this work cost-effectively.

[184] Sunwater, sub. 12, p. 9.

There are two principal considerations, both of which are interrelated and could potentially impact on the financial sustainability of Sunwater. These include, the ability of a RAB-based approach to generate sufficient cash flows, and the value of the opening RAB.

A transition from an annuity approach to a RAB-based approach should only directly impact on the manner in which renewals expenditure is funded, not on the governance and procurement arrangements associated with Sunwater's renewals program. Under both approaches expenditure must be prudent and efficient and represent good or best practice.

Generating sufficient cash flows

The RAB-based approach has been applied to regulated businesses' capex programs and RAB-based approaches to funding renewals expenditure have been managed in the water, energy, transport and telecommunications sectors. RAB-based approaches to pricing, such as those adopted in other jurisdictions, have been designed to achieve full cost recovery. Such approaches typically set prices to generate a revenue stream that funds a business's opex, a return on and of its assets and its tax liability.

Within the context of Sunwater, the issue of cost recovery is complicated by the Government's policy of not recovering a return on, or of, the scheme's initial asset base. However, this issue relates specifically to the valuation of assets, and affects both renewals annuity approaches and RAB-based approaches equally. In the context of transitioning from an annuity, financial sustainability is addressed by:

- determining which of the activities currently funded through an annuity are appropriate for capitalisation. Under a RAB-based approach those activities more appropriately categorised as opex would be funded by prices in a dollar for dollar relationship
- passing through those expenditures appropriately treated as capital to the asset base where they will earn:
  - a return of the asset through regulatory depreciation—regulatory depreciation is a simple concept that guarantees full recovery of the businesses investment over the useful life of the asset.
  - a return on the asset commensurate with its value over time and the WACC.

Combined the return on and of assets provide the businesses with an ability to fund its renewals program through (benchmark) capital raisings.

Under a RAB-based approach, where the existing negative balances are capitalised in an asset base, the businesses will have positive RABs that generate a return and ensure that prices reflect the opportunity cost of capital. We note that the Government's policy with respect to existing assets (as at 1 July 2000) applies to assets constructed over 19 years ago. The risk associated with a transition to a RAB timed for the next price review will be reduced where pre-2000 assets are nearing the end of their useful lives.

It is possible that a transition to a RAB-based approach will decrease cash flows over the short to medium term. This will most likely occur where significant increases in renewals expenditure are forecast over the annuity period (such as a bow wave). If such increases exist, the annuity calculation itself will be relatively high as it represents an average of the cost over of the annuity period. Where this is the case, decreases in cash flow relating to a transition to a RAB-based approach reflect changes in the timing of businesses recouping renewals expenditure, not changes in the total level of expenditure recouped. Under a RAB-based approach renewals expenditure is fully recovered through regulatory depreciation and the return earned on renewals expenditure compensates the business for the cost of capital.

The following stylised example illustrates the difference between the renewals expenditure associated with Sunwater's current forward looking annuity and the potential revenue requirement that would result from a transition to a RAB-based approach. The RAB related revenue requirement is based on Sunwater's proposed WACC of 5.85 per cent (nominal post-tax) and a useful life of 50 years for both the existing asset base and for renewals related capex.

Table 37 Comparison of annuity and RAB-based approach, stylised example ($million)

Cost component	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Renewals annuity approach				
Sunwater proposed (June 2019)	31.1	32.3	34.5	35.6
RAB-based approach				
(a) Opex component of renewals	23.0	10.0	7.8	8.3
(b) Existing assets (based on capitalisation of negative anuity balances)				
Opening RAB	77.3	75.7	74.2	72.6
Depreciation	1.5	1.5	1.5	1.5
Closing existing RAB	75.7	74.2	72.6	71.1
Return on assets—existing assets	4.5	4.4	4.3	4.2
(c) New renewals assets (capex component)				
Opening value new assets	–	4.8	9.4	15.0
Capex	4.9	4.8	5.9	6.1
Depreciation	0.1	0.2	0.3	0.4
Closing new assets	4.8	9.4	15.0	20.6
Return on assets—capex	0.1	0.4	0.7	1.0
Total RAB-based revenue	**29.3**	**16.6**	**14.7**	**15.6**

Notes: Totals may not add due to rounding. This stylised example reflects Sunwater's current asset capitalisation policy, including capitalisation thresholds adopted, developed in accordance with the applicable accounting standard. We note that there may be differences in the treatment of capitalised expenditure under a RAB-based approach and Sunwater's existing annuity approach that will impact on forecasted operating expense (e.g. Sunwater's current treatment of ICT capex, which is amortised and treated as opex).

Source: Sunwater response to QCA RFI 1; QCA analysis.

The value of the opening asset base

In order to transition to a RAB-based approach Sunwater will need to establish a value for its opening RAB. In the context of economic regulation the value of the opening asset base should reflect the value of the future stream of benefits associated with the assets. The opening value of the asset base is important as it forms the basis for the determination of the return on and off assets included in Sunwater's revenue requirement. The value of the opening RAB will also have an impact on the level of cash flow.

A number of issues need to be addressed in setting the value of the opening RAB. How these issues are addressed will impact on the method used to value the opening RAB. In particular, Sunwater will need to show consideration for the existing annuity balances (positive and negative) and the temporal cash flow impacts of moving to a RAB-based approach, and will need to ensure that it does not over-recover future expenditures.

One of the principle issues in transitioning to a RAB-based approach relates to the treatment of the existing balances in the annuity bank. Where the balance is positive (i.e. customers have to date paid more in annuity charges than the amount that was incurred through actual renewals expenditure), an approach would need to be determined on how to best return the balance to customers. Options include:

- returning the balance directly through prices—Sunwater could return positive balances through rebates, price decreases or by offsetting future price increases
- offsetting the positive balance against the value of the RAB.

If the balance is in positive at the time of transition, there would be merit in establishing explicit reporting requirements as part of subsequent price reviews on the progress in transitioning. These reporting requirements would not need to be overly onerous but may be a simple accounting of how the balance has been addressed over time.

Negative annuity balances[185] can be addressed by rolling the outstanding liability into the RAB and allowing for a return on and of the asset. The RAB-based approach would allow Sunwater to service any debt associated with the liability. The impact of rolling the annuity liability into the RAB on Sunwater's debt profile should be minimal if the negative balance is currently funded by debt.

Alternative approaches to capitalising the existing balances include:

- Set the value of the opening RAB such that it generates a revenue stream that equates with that of the current annuity revenue. This approach involves determining an asset value based on the current renewals revenue stream, the average life of the assets included in the annuity calculation and the current discount rate. Adoption of this approach can be problematic where the current annuity reflects relatively high levels of future expenditure. Backing out the opening value of the RAB from current annuities would generate a RAB value that reflects future expenditure and may necessitate discounting those future expenditures in the future, as and when they are rolled into the RAB, to ensure the RAB value is not overstated.
- Preserve the annuity balances and allow prices to increase to recover the negative balances over a set period of time (e.g. 10 years). This approach was recommended by the ESC in the transition of Lower Murray Water and Goulburn-Murray Water. It is similar to the capitalisation approach with the practical difference being that the balance would be recovered over a set period of time and not over the remaining life of the assets.

Key considerations in transitioning to a RAB based approach

The primary consideration for Sunwater in transitioning to a RAB-based approach is to ensure that the resulting efficiencies are passed through to customers appropriately, that is, in a way that is consistent with the interests and outcomes sought by Sunwater's broader customer base. A successful transition will rely on Sunwater's ability to develop the supporting tools and functionality necessary to inform the process, including:

- financial, pricing and billing models, developed at the scheme level, which is necessary for accurately determining the long-term financial impacts of the transition and the billing impacts for customers both in the immediate and long-term
- a comprehensive consultation strategy and program that allows all effected customers to understand the benefits and costs of a transition and its impacts along with identifying the desired outcomes and objectives of its customers in relation to the maintenance and renewal of their assets and the associated tariff and billing structure.

[185] That is, customers have to date paid less in annuity charges than the amount that was incurred through actual renewals expenditure.

We would expect Sunwater to be able to show that its proposed transition to a RAB-based approach is consistent with the long-term interests of its customer base. Ideally, Sunwater should adopt a logically structured process to determine the form and functionality of its potential transition. Such a process would be evidence-based and customer-centric and include:

- a comprehensive review of the current renewals expenditure profile that identifies appropriate opex and capex treatments under a RAB-based approach
- a review of the renewals works program itself, to ensure the timing and extent of works are consistent with what would be expected under a RAB-based approach
- engagement of the broader customer base and stakeholders to:
  - identify customers' objectives and the outcomes they wish to see
  - inform and educate customers on the implications (including pricing impacts).

Conclusion

We accept Sunwater's proposal that a renewals annuity approach will provide for an appropriate renewals expenditure allowance. That approach will result in allowed revenues or prices such that renewals expenditure incurred is expected to be recovered in present value terms, with the discount rate equal to the rate of return on investment that is commensurate with the regulatory and commercial risks involved with providing access to the service. This ensures that Sunwater is adequately compensated for its renewals expenditure; hence, efficient investment will be made in the future, and at the same time, customers pay reasonable prices.

However, we consider that Sunwater should investigate options with its customers and with the Government to move to a RAB-based approach prior to the next price review. We note that transitioning to a RAB-based approach may have direct impacts on customers and Sunwater will need to engage with its customer base to both assess their preferences and to inform or educate customers on the potential impacts associated with transition.

We also acknowledge that a transition to a RAB-based approach needs to have regard for current government pricing policy. A RAB transition that resulted in lower prices (in the short to medium term) would not be consistent with the pricing principles in the referral.

Recommendation 8

We recommend that Sunwater should work with its customers and with the Government to develop a proposal on transitioning to a RAB-based approach for consideration by the QCA prior to 30 June 2021.

4.2.2 Opening annuity balance

Sunwater's submission

Sunwater proposed opening annuity balances for 2020–21 that were different to the 2019–20 closing balances calculated in its regulatory model. Sunwater said that these differences mainly reflected adjustments for amendments to the originally reported estimates.[186]

QCA assessment

A rolling renewals annuity involves the calculation of a separate new annuity path each year, based on the closing value of the annuity fund for the previous year and the present value of the

[186] Sunwater response to QCA RFI 3.

forecast renewals for the term of the annuity (20 or 30 years)[187]. This process is repeated for each subsequent year. The term rolling refers to the progressive annual iterative process whereby the annuity calculation is moved forward annually.

Sunwater's 2012–13 opening annuity balances across all schemes are significantly different to our recommended 2012–13 opening annuity balances.[188] As a starting point for our analysis, we have therefore reconciled the 2011–12 opening annuity balances for each scheme between those used in the 2012 review, and those underlying Sunwater's November 2018 submission.

The difference between prudent and efficient renewals expenditure over previous price path periods (past renewals expenditure) and the renewals annuity received over the same period is an important determinant of opening annuity balances for 1 July 2020. We assessed the prudency and efficiency of historical renewals expenditure (from 2011–12 to 2019–20) in Chapter 3.

We have rolled forward the opening 2011–12 annuity balance for each scheme through to end of the previous price path in 2016–17. The roll-forward occurs each year by making the following adjustments to each year's opening balance:

- Adding the renewals annuity allowance from our 2012 review.
- Subtracting our recommended prudent and efficient renewals costs (see Chapter 3).
- Adjusting for interest each year using the post-tax nominal WACC of 7.49 per cent from our 2012 review.

The opening 2017–18 annuity balance is then rolled forward to the commencement of the new price path by using the same approach. Our approved annuity revenue allowance for 2016–17 was increased by forecast inflation (2.5 per cent) each year, in line with the increase in the lower bound cost target used by the Government to set the transitional price path over this period.

Our recommended opening 2020–21 annuity balances for bulk WSSs are shown below.

Table 38 The QCA's opening annuity balances for 1 July 2020, bulk WSSs ($'000, nominal)

WSS	*Sunwater (November 2018)*	*Sunwater (June 2019)*	*QCA recommended*
Barker Barambah	(2,545)	(2,583)	(2,081)
Bowen Broken Rivers	(5,127)	(6,222)	(5,407)
Boyne River and Tarong	(48,162)	(48,110)	(42,569)
Bundaberg	(14,314)	(14,948)	(12,236)
Burdekin-Haughton	6,059	6,180	6,798
Callide Valley	(8,441)	(8,170)	(8,254)
Chinchilla Weir	(405)	(485)	(337)
Cunnamulla	(50)	(50)	(49)
Dawson Valley	828	911	1,247
Eton	(2,640)	(2,551)	(1,350)
Lower Fitzroy	(602)	(606)	(579)
Lower Mary	(2,465)	(2,416)	(2,540)
Macintyre Brook	(3,443)	(3,335)	(3,265)

[187] We assess the appropriate term of the annuity (or planning period) in section 4.2.3.
[188] QCA, *SunWater Irrigation Price Review: 2012–17*, final report, May 2012, p. 135.

WSS	*Sunwater (November 2018)*	*Sunwater (June 2019)*	*QCA recommended*
Maranoa River	(162)	(29)	(3)
Mareeba-Dimbulah	(794)	(684)	(580)
Nogoa-Mackenzie	(5,894)	(6,797)	(5,904)
Pioneer River	(5,122)	(5,192)	(4,749)
Proserpine River	(2,123)	(1,080)	(820)
St George	(1,171)	(1,521)	(5,639)
Three Moon Creek	(1,755)	(2,133)	(2,202)
Upper Burnett	(4,320)	(4,123)	(3,486)
Upper Condamine	577	481	672
Total	**(102,071)**	**(103,463)**	**(93,333)**

Note: Totals may not add due to rounding. Source: Sunwater, sub. 45 and sub. 153; QCA analysis.

Our recommended opening 2020–21 annuity balances for distribution systems are shown below.

Table 39 The QCA's opening annuity balances for 1 July 2020, distribution systems ($'000, nominal)

Distribution system	*Sunwater (November 2018)*	*Sunwater (June 2019)*	*QCA recommended*
Bundaberg	6,593	6,937	9,035
Burdekin-Haughton	5,079	4,929	5,913
Eton	19	(109)	144
Lower Mary	2,254	2,389	2,437
Mareeba-Dimbulah	11,809	12,062	12,799
Total	**25,753**	**26,208**	**30,329**

Note: Totals may not add due to rounding. Source: Sunwater, sub. 45 and sub. 153; QCA analysis.

4.2.3 Planning period

To calculate a renewals annuity, it is necessary to determine the length of the planning period. This is the period over which forecast renewals expenditures are incorporated into the calculation of the renewals annuity. In the 2012 review, we applied a 20-year planning period.

Sunwater's submission

In its November 2018 submission, Sunwater proposed a rolling annuity approach with a 30-year planning period.[189] Sunwater indicated that the majority of customer representatives supported a 30-year approach, although some support existed for retaining the 20-year approach.[190]

Other stakeholders' submissions

Irrigation stakeholders in the Barker Barambah WSS indicated support for a 20-year renewals period, as the the 30-year period included a large spend for repair works for dam anchors when the assessment of the anchors will occur within the next five years.[191]

[189] Sunwater, sub. 11, p. 60.
[190] Sunwater indicated that support for the 30-year approach was formally endorsed by the Proserpine Irrigator Advisory Committee and the Mareeba-Dimbulah Irrigation Area Council.
[191] Barker Barambah IAC, sub. 83, p. 3; Weier Farming, sub. 145, p. 1; Silverleaf Farming Pty Ltd, sub. 137, p. 1; S Nicholson, sub. 126, p. 1; Hetherington Farming, sub. 107, p. 3.

Canegrowers Proserpine supported a 30-year annuity period, which it considered addressed the intergenerational issues associated with the 20-year approach.[192]

QCA assessment

In the 2012 review, we were concerned that the 30-year period could result in increases in the renewal annuity based on projects with a high degree of cost uncertainty. The assessment from our consultant AECOM for this review concluded that while there have been some improvements made in Sunwater's renewals planning approach, there is still significant room for improvement.

For this review, we have assessed the impact on the renewals annuity allowance of moving from a 20-year to a 30-year planning period. Across all bulk WSSs, the total renewals annuity allowance is 3.9 per cent lower under a 30-year planning period than under a 20-year period (Table 40).

Table 40 Total renewals annuity allowance—20-year vs 30-year planning period, bulk WSSs ($'000, nominal)

WSS	*20-year period*	*30-year period*	*% difference*
Barker Barambah	3,105	3,733	20.2
Bowen Broken Rivers	3,438	3,412	(0.7)
Boyne River and Tarong	12,381	9,803	(20.8)
Bundaberg	11,436	9,655	(15.6)
Burdekin-Haughton	4,350	5,060	16.3
Callide Valley	5,557	6,062	9.1
Chinchilla Weir	805	722	(10.3)
Cunnamulla	134	179	33.9
Dawson Valley	3,377	3,674	8.8
Eton	3,059	3,084	0.8
Lower Fitzroy	718	577	(19.6)
Lower Mary	1,052	901	(14.4)
Macintyre Brook	2,606	2,578	(1.1)
Maranoa River	94	190	103.1
Mareeba-Dimbulah	2,662	2,742	3.0
Nogoa-Mackenzie	5,777	5,322	(7.9)
Pioneer River	4,063	4,382	7.8
Proserpine River	1,912	1,938	1.3
St George	3,681	3,411	(7.3)
Three Moon Creek	2,454	2,313	(5.7)
Upper Burnett	3,334	3,140	(5.8)
Upper Condamine	3,061	3,077	0.5
Total	**79,056**	**75,955**	**(3.9)**

Note: Totals may not add due to rounding. Source: QCA analysis.

For distribution systems, the total renewals annuity allowance is 18.9 per cent higher under a 30-year than under a 20-year planning period, with all distribution systems having a higher annuity allowance under a 30-year planning period. However, the annual annuity allowance under a 30-

[192] Canegrowers Proserpine, sub. 97, p. 1.

year planning period for all distribution systems is lower than the level we recommended in the 2012 review (Table 41).

Table 41 Total renewals annuity allowance—20-year vs 30-year planning period, distribution systems ($'000, nominal)

Distribution system	*20-year period*	*30-year period*	*% difference*
Bundaberg	5,356	6,718	25.4
Burdekin-Haughton	7,501	8,384	11.8
Eton	1,964	2,161	10.0
Lower Mary	801	863	7.8
Mareeba-Dimbulah	2,475	3,664	48.0
Total	**18,097**	**21,790**	**20.4**

Note: Totals may not add due to rounding. Source: QCA analysis.

We consider that there are difficulties in accurately forecasting expenditure over a 20-year or 30-year planning period. While our preference under a renewals annuity approach would be a planning period of longer than 30-years, we consider that our concerns with accurately forecasting expenditure would be exacerbated over a longer period.

Our preference for this review is a 30-year rather than 20-year planning period. We consider that the pricing impacts of moving to a 30-year period are lessened with the adjustments that we have made to extend the timing of longer-term renewals (section 3.5). The longer planning period also smooths the pricing impact of large negative annuity balances in some schemes.

4.2.4 Calculating the renewals annuity

In calculating the renewals annuity, the following is required:

- opening annuity balance at the beginning of the price path period (see section 4.2.2)
- forecast renewals expenditure over the price path and planning period
- an appropriate discount rate that reflects Sunwater's opportunity cost of funds.

Sunwater's submission

Sunwater proposed calculating the renewals annuity in real terms using a real discount rate equivalent to its real post-tax WACC, and indexing the renewals annuity using an assumed inflation rate.[193] Sunwater said that this was consistent with the approach in the 2012 review.

Other stakeholders' submissions

Wide Bay Burnett Regional Organisation of Councils (WBBROC) submitted that the financing costs for negative annuity balances should be underwritten by the Government and calculated at the Commonwealth discount rate of interest or the Reserve Bank reference rate under a community service obligation (CSO) or transparent subsidy.[194]

QCA assessment

Consistent with the 2012 review, we consider that the discount rate used to calculate the renewals annuity should reflect Sunwater's opportunity cost of funds. On this basis, we accept

[193] Sunwater, sub. 11, p. 57.
[194] WBBROC, sub. 148, p. 8.

Sunwater's proposed approach in principle. However, we recommend a different post-tax WACC than that proposed by Sunwater (see Part A, Appendix C).

In indexing the annuity, our estimate of inflation of 2.39 per cent is derived by taking the 10-year geometric average of the RBA short-term forecast for 2020–21, our derived inflation forecast for 2021–22 (see section 2.10), and the midpoint of the RBA's inflation target range (2.5 per cent) for 2022–23 to 2029–30. We consider that the 10-year geometric average for the inflation rate is consistent with the 10-year risk-free rate impounded in the nominal post-tax WACC.

Based on the findings in this section, we have calculated recommended renewals annuities for Sunwater's schemes (Table 42). Scheme-level information is provided in Appendix B.

Table 42 The QCA's recommended renewals annuities for 2020–24 ($ million, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Original submission	30.9	32.2	34.5	35.6
Sunwater's June 2019 update	31.1	32.3	34.5	35.6
QCA recommended	**23.1**	**23.8**	**24.9**	**26.0**

Source: QCA analysis.

Seqwater has, based on engagement with customers, proposed to reinvest surpluses from schemes with prices above the cost-reflective level into the annuity balance going forward. While we accept this approach based on Seqwater's proposal, we note that Sunwater has not proposed a similar approach.

In its response to our draft report, Sunwater said that Seqwater's proposal to reinvest surplus revenue above the lower bound cost target in certain schemes was primarily due to issues with Seqwater's HUF calculations in the previous price path period.[195] However, Seqwater did not provide this rationale in its submission.[196]

4.3 Dam safety upgrade capex allowance

4.3.1 Sunwater's submission

Sunwater proposed a RAB-based approach for calculating the allowance for dam safety upgrade capex. Sunwater said that it had proposed a RAB-based approach rather than the annuity approach it generally uses for renewals, as the magnitude of the dam safety costs would result in large price increases under a renewal approach.[197]

Sunwater proposed to incorporate dam safety upgrade expenditure in the RAB on an as-incurred basis[198] for the following reasons:

- This approach provided greater cost transparency to stakeholders, since it assists stakeholders to gauge the potential cost impact over the 2020–21 to 2023–24 period.
- This approach allowed Sunwater to be compensated for any financial hardship experienced on constructing assets with long commissioning times (by providing a return on capital).

[195] Sunwater, sub. 229, pp. 111–112.
[196] Seqwater, sub. 1, pp. 44–45.
[197] Sunwater, sub. 11, p. 63.
[198] Sunwater, sub. 11, p. 53.

- Since dam safety upgrade capex is largely driven by regulatory compliance, the commissioning date is irrelevant to customer service delivery as no additional services are provided after the capex is commissioned.
- Since the referral indicated that dam safety upgrade capex incurred from 1 July 2020 onwards should be included, this implies that an 'as-incurred' approach is an appropriate basis for recovery of costs.[199]

Sunwater proposed using a pre-tax nominal WACC to determine the rate of return on the RAB for the following reasons:

- For regulatory purposes, Sunwater has assumed infinite lives (i.e. no regulatory depreciation) for dam safety upgrade capex. If the equivalent assumption was adopted for tax depreciation purposes, there should be no difference between regulatory outcomes under both pre-tax and post-tax WACC approaches.
- Different asset lives (for regulatory and tax depreciation purposes) would result in a material divergence in future regulatory and tax asset values and potential intergenerational equity issues between current and future customers.
- The estimation of tax liabilities on dam safety upgrade capex would require separation of notional tax liabilities between dam safety upgrade capex and other Sunwater assets.
- A pre-tax approach is simpler and easier for customers to understand.[200]

Sunwater proposed no return of capital (regulatory depreciation) for the dam safety upgrade based on these assets being maintained in perpetuity.[201] That is, Sunwater proposed an infinite regulatory asset life.

In response to our draft report, Sunwater supported the use of a RAB-based approach for calculating the dam safety upgrade capex allowance.[202]

4.3.2 QCA assessment

As a regulatory compliance cost, dam safety upgrade capex differs in nature to other renewals costs in the renewals annuity that seek to provide for the future cost of refurbishment and replacement of all assets within a defined system of existing assets. Dam safety upgrades do not reflect like-for-like or modern equivalent replacement of existing assets—rather, these projects upgrade existing assets to meet dam safety compliance requirements. We consider that capital costs that lead to the upgrade of existing infrastructure should be recovered using a separate capital annuity or RAB based approach.

We also do not consider that a renewals annuity with a 20- or 30-year planning period is appropriate for deriving an allowance for dam safety upgrade capex. Under the renewals annuity approach, the recovery of dam safety upgrade capex would substantially take place over the 20- or 30-year planning period, rather than over the life of the asset as would occur under a RAB based approach. In other investigations, we have assumed an asset life of 150 years for similar dam safety upgrades to those proposed by Sunwater.[203]

[199] Sunwater response to RFI 14.
[200] Sunwater, sub. 45; Sunwater response to RFI 15.
[201] Sunwater, sub. 11, p. 63.
[202] Sunwater, sub. 229, p. 81.
[203] QCA, *Seqwater Bulk Water Price Review 2018–21,* final report, March 2018.

We accept Sunwater's proposal that a RAB-based approach is appropriate for calculating an appropriate allowance for the dam safety upgrade capex. However, in this case, we consider that a RAB-based approach should recover only the return of and on the initial dam safety upgrade capex over the useful life of the asset, and not the return of and on any progressive capex outlays required to maintain the serviceability of the initial dam safety upgrade asset.

In our view, these progressive capex outlays would normally be included in Sunwater's renewals program. This is because, as a practical matter, it would be difficult in most cases to separate such works physically from other renewals activities associated with the particular dam of concern. Therefore, to avoid the double counting of these progressive capex outlays (that is, in both renewals and RAB-based allowances), it would be necessary for Sunwater to clearly identify the treatment of dam safety upgrade expenditures in its accounts, so that only the return of the initial dam safety upgrade outlay through the depreciation allowance, and the return on its progressive depreciated amount, is recovered through RAB-based allowances.

Moving to a RAB-based approach for renewals expenditure (see section 4.2.1) would resolve this issue and provide for consistency in Sunwater's approach to recovering capex.

In previous investigations, we have generally recognised capex in the RAB from the year in which a project is commissioned (i.e. on an as-commissioned basis), as it is from this point in time that capex starts delivering a service and providing benefits. We consider that dam safety upgrade capex is similar in nature to capex that seeks to increase the service or productive capacity of the existing asset base, in that it upgrades existing assets and provides benefits over the term of its economic useful life.

We consider it is appropriate to align the timing the incurrence of this capex when commissioned as is the usual practice, rather than based on preliminary estimates. Recognising capex in the RAB from the year it is incurred (i.e. on an as-incurred basis) would bring forward the cost recovery and impact on customers' prices prior to the benefit being delivered. While we note Sunwater's concerns in relation to compensation for any financial hardship experienced in constructing assets with long commissioning times, we note that the as-commissioned and as-incurred approaches will be net present value neutral over the life of the asset.

Under the existing regulatory framework for irrigation prices, an ex post review of actual capex would be undertaken if costs are higher than previously approved forecasts to ensure that only prudent and efficient costs are recovered in prices.

For existing major long-life assets capable of being maintained in perpetuity, we consider that it would be reasonable for a business to expect a return of capital over a defined period, as there is a need for commercial certainty about investment. We consider that an asset life of 150 years is appropriate for regulatory depreciation.

Table 43 The QCA's recommended dam safety upgrade capex allowance for 2020–24 ($'000, nominal)

WSS	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Macintyre Brook	–	–	50	102
Nogoa-Mackenzie	371	757	770	783
Pioneer River	–	–	75	153
Upper Condamine	–	227	463	471
Total allowance	**371**	**984**	**1,358**	**1,509**

Note: Totals may not add due to rounding. The allowances above are derived using dam safety upgrade capex incurred after 1 July 2020 and commissioned prior to the end of the price path period (30 June 2024).

Source: Sunwater response to QCA RFI 58; QCA analysis.

4.4 Working capital allowance

4.4.1 Sunwater's submission

Sunwater has not proposed a working capital allowance.[204]

4.4.2 QCA assessment

By far the largest portion of irrigators' payments to Sunwater relates to fixed (Part A and C) prices, which are paid in advance. This means that, for irrigation activities, it is likely that average creditors exceeds average debtors, and Sunwater would not generally suffer an economic cost resulting from the timing difference between receivables and payables.

As a result, we consider that a zero working capital allowance is appropriate. This is consistent with our approach in the 2013 (Seqwater) review, where we decided not to incorporate a working capital allowance.

4.5 Revenue offsets

4.5.1 Sunwater's submission

Sunwater submitted that it had reduced its cost building block by offsets that are recovered through other charges, notably drainage charges and access charges. Sunwater said that most of these amounts are immaterial in nature, with the annual revenue offset across all schemes totalling $1.7 million[205] in 2020–21.

In response to our draft report, Sunwater said it had updated the revenue offset amounts and provided these with its submission.

4.5.2 QCA assessment

We have not subjected Sunwater's proposed revenue offsets to review as they are generally relatively minor. These revenue offsets were deducted from the scheme total costs, and as a result, these offsets are effectively shared between irrigation and other scheme users. We have applied Sunwater's updated estimates, which are not materially different to our draft report estimates.

4.6 Tax allowance

4.6.1 Sunwater's submission

While Sunwater used a post-tax nominal WACC to derive its renewals annuity allowance, it proposed to use a pre-tax WACC to derive the return on capital component of the dam safety upgrade capex allowance.[206] Sunwater said that the use of a pre-tax WACC meant that there was no requirement to estimate the tax component related to dam safety upgrade capex.

In response to our draft report, Sunwater noted that our proposed treatment of tax depreciation for Sunwater's existing asset base was consistent with the referral.[207]

[204] Sunwater, sub. 11, p. 55.
[205] Sunwater, sub. 45. Note that this figure excludes the Emerald distribution system.
[206] Sunwater, sub. 45.
[207] Sunwater, sub. 229, p. 82.

With regard to future dam safety upgrade capex, Sunwater noted that it was common regulatory practice to adopt shorter asset lives for taxation purposes.[208] However, Sunwater said it was unusual to have a large discrepancy between regulatory asset lives (150 years) and taxation lives (one year). Sunwater said that while existing customers would benefit from the immediate tax deductibility of capex, future customers would pay more once forward tax losses were exhaused. Sunwater said that to avoid the intergenerational impacts, we may wish to consider whether the existing assumption is in fact representative of a benchmark business.

4.6.2 QCA assessment

In the 2012 review, we said that the QCA-recommended efficient costs were equivalent to the definition of lower bound.[209] Given the definition of lower bound pricing excludes income tax, we did not calculate a separate tax allowance.

For Sunwater's irrigation business, our recommend prices do not consider Sunwater's existing asset base, and therefore do not allow a return on the historical investment. Under the renewals annuity approach that has been used since 2000, renewals expenditure are excluded from the asset base and treated as 'operational'—that is, deductible for tax purposes. As a result, there is no tax liability associated with renewing existing assets.

The implication is that Sunwater is required to generate sufficient cash flows to cover only the returns to the providers of equity and debt capital. This is the post-tax, not pre-tax, WACC.

For the purpose of deriving an appropriate allowance for dam safety upgrade capex, we accept Sunwater's proposal that prudent and efficient capex on dam safety upgrades be included in its asset base.

Sunwater said that under current tax rules, Sunwater is considered an irrigation water provider and applies subdivision 40-F of the Income Tax Assessment Act 1997.[210] As an irrigation water provider, Sunwater fully deducts all capital costs for tax purposes in the year in which the capital cost is incurred.

As we apply a nominal post-tax WACC to calculate the renewals and dam safety allowances (see sections 4.2 and 4.3), our general approach is to include an explicit allowance for tax that reflects the benchmark tax liabilities of the regulated business. We calculate tax by applying a tax rate of 30 per cent (adjusted for the effects of dividend imputation) to taxable income.

We have calculated a tax allowance that treats Sunwater's dam safety upgrade capex as immediately deductible for tax purposes. The opportunity to immediately expense non-routine costs is an option available to Sunwater to reduce the present value of tax costs. We consider that an approach that reflects lower tax costs in irrigation prices is consistent with the notion of deriving benchmark tax liabilities.

We acknowledge Sunwater's concerns with the discrepancies between regulatory and tax asset lives for dam safety upgrade capex. However as noted by the Australian Energy Regulator (AER) in its review of its regulatory tax approach, the present value of tax depreciation for a short-lived tax asset will be greater than for an asset with a longer tax asset life.[211] If capex is expensed immediately for tax purposes, but for regulatory purposes the tax asset base is assumed to

[208] Sunwater, sub. 229, pp. 82–83.
[209] QCA, *SunWater Irrigation Price Review: 2012–17*, final report, May 2012, p. 408.
[210] Sunwater response to QCA RFI 46. Sunwater said that this rule applies to all QCA-regulated bulk WSSs and distribution systems in Sunwater except Lower Fitzroy, Bowen Broken and Boyne River.
[211] AER, *Review of regulatory tax approach*, final report, December 2018, p. 61.

depreciate over the asset's life, the present value of the assumed regulatory tax depreciation will be higher than actual tax depreciation. As noted by the AER, this could result in a material differences between tax paid and the regulatory tax allowance.

Moving to a RAB-based approach for renewals expenditure (see section 4.2.1) may result in future customers also benefitting from the immediate tax deductibility of capex.

Consistent with Sunwater's actual tax costs over the price path period for the irrigation service contracts, we consider that a zero tax allowance is appropriate for this investigation.

4.7 Total costs

Total costs are presented in Table 44 below. These reflect the total costs across Sunwater's schemes that are the subject to our investigation, and will be allocated between irrigation and other scheme users in Chapter 7. Scheme-level costs are outlined in Appendix B.

Table 44 The QCA's recommended total costs, 2020–24 ($million, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*	*QCA total*	*Sunwater total*
Operating costs	65.7	68.8	70.3	71.8	**276.6**	**290.8**
Renewals annuity	23.1	23.8	24.9	26.0	**97.7**	**133.3**
Revenue offsets	(1.6)	(1.7)	(1.7)	(1.7)	**(6.8)**	**(6.9)**
Total costs	**87.2**	**90.9**	**93.4**	**96.0**	**367.6**	**417.2**

Notes: Excludes dam safety upgrade capex allowance. The Sunwater total is based on its November 2018 submission. Totals may not add due to rounding.

Source: Sunwater, sub. 45; QCA analysis.

5 FORECAST ENTITLEMENT AND USAGE VOLUMES

For the tariff groups considered in this investigation, the fixed (Part A and Part C) price is derived using water access entitlements (WAEs) in each tariff grouping, while the variable (Part B and Part D) price is based on an assumed level of water use for the scheme as a whole.

This chapter outlines and explains our estimated WAEs and usage volumes, which are used to convert Sunwater's total costs into prices for each tariff group.

5.1 Water access entitlements

Most WAEs held by irrigators are medium priority WAEs, although there are relatively low volumes of high priority irrigation WAEs in some schemes. In addition to calculating prices, forecast WAEs are also used to allocate some fixed costs[212] between medium and high priority WAEs customers in each scheme.

5.1.1 Sunwater's submission

Sunwater said that its forecast water access entitlements were based on 2016–17 data that had been reconciled with information published on the Government's website (where available).[213]

Adjustments to WAE data

Sunwater proposed some adjustments to the 2016–17 data to reflect adjustments for costing and pricing purposes made in the 2012 review (Table 45).

Table 45 Sunwater's adjustments to WAE consistent with 2012 review

Scheme	*Adjustment*
Burdekin-Haughton (distribution)	Removed 110,000 ML of medium priority WAE that Sunwater holds on behalf of the Townsville Thuringowa Water Supply Joint Board, consistent with our 2012 review approach of not allocating distribution costs to these entitlements.
Bundaberg (bulk)	Excluded WAEs for Paradise Dam. Paradise Dam is owned and operated by Burnett Water Pty Ltd (a wholly owned Sunwater subsidiary). The referral for the 2012 review specifically excluded these services from the scope of our investigation (as is the case for the current review).
Bundaberg (distribution)	Included WAEs and associated water deliveries for distribution services provided to customers with WAEs for Paradise Dam.
Eton (bulk & distribution)	Added 700 ML of High-A priority WAEs (equivalent to high priority) to the industrial customer segment, relating to WAEs in the Pioneer River WSS delivered through the Eton bulk and distribution system.
Lower Mary River (bulk)	Added 1,360 ML of high priority and 2,690 ML of medium priority WAEs for Teddington Weir (owned by Wide Bay Water). Under the existing ROP, Sunwater must transfer water from the Lower Mary River WSS to the Teddington Weir WSS when certain conditions are met.
Upper Burnett	Excluded WAEs associated with Kirar Weir (owned by Burnett Water Pty Ltd). The referral excludes these services from the scope of our investigation.

Source: Sunwater, sub. 49, pp. 12–13.

[212] Except for asset-related headworks (bulk) costs, which are allocated between medium and high priority WAE customers using the headworks utilisation factor.

[213] Business Queensland, Current locations, https://www.business.qld.gov.au/industries/mining-energy-water/water/water-markets/current-locations.

In addition to incorporating the 2012 review adjustments, Sunwater also excluded 504 ML of risk priority water entitlements from the Eton distribution WAEs. This relates to the Mirani diversion channel customers who do not use the distribution system.

Free water allocations

In the 2012 review, some WAE holders in the Barker Barambah and Burdekin-Haughton WSSs had pre-existing rights to free water (referred to as free water allocations). In the 2012 review, we said that these rights should be maintained where they continue as part of an existing agreement or as part of current legislative or Government policy. The costs of providing the free water allocations were shared across the other customers of the relevant scheme, including irrigation customers.

Table 46 outlines Sunwater's proposed adjustments for WAEs treated as free water allocations in the 2012 review.

Table 46 Adjustments to the free water allocations in the 2012 review

Scheme	*Adjustment*
Barker Barambah	1,058 ML that was treated as free water allocations in the 2012 review is now assigned to high priority urban customers following changes in legislative requirements.
Burdekin-Haughton (bulk)	Sunwater said that 185,000 ML of bulk water supplied to Lower Burdekin Water is covered under the CSO payment from the Government and is no longer covered by Burdekin-Haughton WSS customers.

Source: Sunwater, sub. 49, p. 13.

5.1.2 Other stakeholders' submissions

Lower Burdekin Water supported the allocation of the 185,000 ML of free water with the costs covered by the CSO. [214]

5.1.3 QCA assessment

We have reconciled Sunwater's proposed WAE forecasts at the scheme level with our forecasts in the 2012 review and with information published on the Government's website (where available).

We note that the treatment of the 185,000 ML of bulk water supplied to Lower Burdekin Water is consistent with the requirements of the referral. Specifically, paragraph G in schedule 2 directs us to recommend prices that do not recover the costs of Sunwater supplying 185,000 ML to Lower Burdekin Water from remaining water entitlements (including irrigators).

We are satisfied that Sunwater's proposed adjustments result in WAE forecasts that are an appropriate basis for deriving fixed prices.

5.2 Usage volumes

Water usage volumes are used to derive the volumetric (Part B and Part D) prices. For each WSS and distribution system, the variable costs are divided by the estimated water usage to calculate the volumetric price.

[214] Lower Burdekin Water, sub. 118, p. 3.

5.2.1 Previous investigation

In the 2012 review, we sought to align our approach to estimating annual volumes for deriving volumetric prices with the 'typical year' basis upon which direct operations and maintenance expenditure was estimated. Sunwater based its forecasts of direct operations and maintenance expenditure on an average of historical costs, with adjustments for costs not considered to be representative—such as costs driven by severe drought and/or flood impacts.

Given that Sunwater's eight-year average (eight years up to and including 2009–10) included up to three abnormally low water usage years, we recommended the removal of the three lowest water usage years and estimated average water year from the remaining five years of data.

5.2.2 Sunwater's submission

Sunwater proposed a 15-year simple average for each scheme over the period 2002–03 to 2016–17 with no removal of individual water use years.[215] Sunwater submitted that a typical year that does not include drought or flood is not representative of its customers' operating environment. Sunwater submitted that a 15-year simple averaging approach is consistent with IPART's 2017 decision for WaterNSW.

In June 2019, Sunwater provided updated estimates for 16-year average water use, covering the period 2002–03 to 2017–18.

In response to our draft report, Sunwater provided in-principle support for the use of a 20-year simple average to determine volumetric prices. However, Sunwater said that given issues with the extended dataset that we used to create the 20-year series, it proposed that a 17-year simple average with an additional year of data (2018–19) be used.[216]

Sunwater's main concern with the 20-year dataset was that Sunwater allocations including distribution losses had been excluded. Sunwater said that our approach of estimating distribution losses using average distribution losses from 2002–03 to 2017–18 failed to consider the correlation between water deliveries and distribution loss deliveries on an annual basis.[217]

Sunwater also noted that water harvesting data had been included in some schemes prior to 2002–03 despite this data being excluded from 2002–03 to 2017–18 data sets. Sunwater also noted scheme-specific data issues (Table 47).

5.2.3 Other stakeholders' submissions

Bundaberg Regional Irrigators Group (BRIG) requested that we review the 15-year average and the application of distribution losses and the Burnett Water[218] adjustment to the Bundaberg water use.[219] Canegrowers Isis did not agree that a 20-year forecast was appropriate for Bundaberg, based on Paradise Dam providing increased reliability and usage in recent years.[220]

[215] Sunwater, sub. 11, p. 72.
[216] Sunwater, sub. 229, p. 86.
[217] Sunwater, sub. 229, p. 85.
[218] Burnett Water is a subsidiary of Sunwater that owns Paradise Dam. Under the referral, we are not required to recommend prices for water services provided by Burnett Water. However, the WAE and usage estimates need to include Burnett Water allocations delivered through the Bundaberg distribution system.
[219] BRIG, sub. 87, p. 13.
[220] Canegrowers Isis, sub. 185, p. 3.

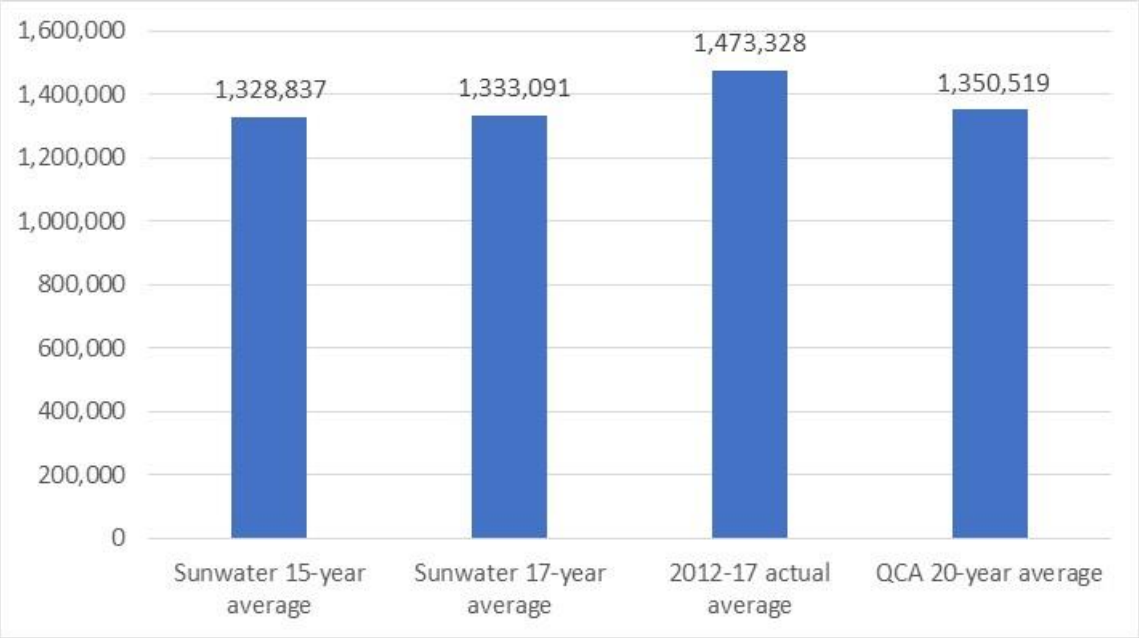
5.2.4 QCA assessment

To establish a meaningful water use denominator, we consider that the approach to estimating the assumed level of water use should be representative of normally occurring conditions, consistent with our approach to estimating base year variable costs.

We have used, as for Seqwater, an extended 20-year averaging period obviating the need to exclude any data points. This is consistent with IPART's approach to deriving variable tariffs for WaterNSW. A simple averaging approach results in revenue and pricing outcomes that are both simple and transparent to customers.

Figure 24 shows water use estimate derived using a 20-year averaging period, compared with actual water use over the previous price path period—from 2012–13 to 2016–17.

Figure 24 Comparison of total water use, total bulk water (ML per year)



Notes: This data includes water deliveries to Lower Burdekin Water in the Burdekin-Haughton WSS. Also includes bulk water delivered to distribution system customers. Sunwater's 15-year average and 17-year average relates to the period from 2002–03. Our 20-year average relates to the period from 1999–00 to 2018–19.

Source: Sunwater, sub. 45 and sub. 229; QCA analysis.

The variability in climatic conditions throughout Queensland makes accurately forecasting water usage at the scheme level over a multi-year period challenging. Climatic conditions involve extreme conditions that will influence water usage by irrigators. We consider that a 20-year averaging period appropriately covers a range of conditions.

We have analysed the 10-year water usage to 2018–19 against the 20-year water usage to 2018–19 for the Bundaberg WSS and distribution system. This analysis shows that while the average water use is higher in the 10-year period, it is also more variable. Given that the variability is lower in the 20-year scenario, and given the challenges of forecasting water usage over a multi-year price path period, we consider that a 20-year averaging period appropriately covers a range of conditions.

Use of available historical data

We note Sunwater's concern with our estimation of distribution losses. In the absence of actual distribution losses, we used 16 years of actual distribution losses from 2002–03 to 2017–18 to estimate an average for each of the four years prior to 2002–03. We agree with Sunwater's view

that distribution losses can vary year-to-year and using an average may not align with the operating conditions in a particular year. However, we disagree that this averaging approach, which is applied to 4 years out of 20 years, distorts the overall 20-year average water use estimate. Actual distribution losses are a small portion of the total water use in a given year. In November 2019, Sunwater provided an additional year of data, which we have incorporated into our analysis, resulting in us applying a 17-year average distribution loss to three years of data.

For all distribution systems, we have compared distribution losses to usage excluding distribution losses on an annual basis over the 20-year period. This analysis concluded that our estimate of distribution losses relative to usage excluding distribution losses in each year from 1999–00 to 2001–02 was consistently in the range of the results of the other 17 years. We are satisfied that our approach to the estimation of distribution losses for 1999–00 to 2001–02 has not impacted on the overall 20-year average usage with the subsequent flow on impacts to the volumetric price under Part B or D.

In response to Sunwater's comments on water harvesting, we have removed water harvesting data from the period prior to 2002–03 to align the pre- and post-2002–03 datasets.

Table 47 outlines our response to other scheme specific data issues identified by Sunwater.

Table 47 The QCA's response to Sunwater's scheme-specific usage comments

Scheme	*Sunwater comments*	*QCA response*
Burdekin-Haughton (bulk and distribution)	Sunwater said that: • there was a mismatch between the 1999–00 data source for distribution and bulk • the Giru Benefited Groundwater Area (GBGA) and groundwater data for 2000-01 was excluded.	In response to Sunwater's concerns, we: • reviewed both data sources and the usage figures for 1999–00 have confirmed that the figures are identical • added the GBGA and groundwater data to be consistent with the post 2002–03 data series.
Eton distribution	Sunwater noted that the 1999–00 and 2000–01 data reflected total WSS.	We updated the 1999–00 and 2000–01 data to be channel only.
Lower Mary WSS (bulk and distribution)	Sunwater said that: • there was no data for 2001–02, and that we calculated a 20-year rather than 19-year average • we excluded urban and industrial customer data in 1999–00 and 2000–01 • we incorrectly applied regulated stream instead of chanel data to the distribution system in 2000–01.	In response to Sunwater's concerns, we: • retained the 19-year average using available data that we derived in our draft report • added the urban and industrial customer segments to the 1999–00 and 2000–01 data • updated the 2000–01 distribution data to the channel data instead of regulated stream data.
Mareeba-Dimbulah (bulk and distribution)	Sunwater said that: • we had created their own estimate of water usage in 2001–02 • we excluded water deliveries in 1999–00 and 2000–01 associated with an industrial customer.	In response to Sunwater's concerns, we: • adjusted our draft report approach by excluding 2001–02 data • adjusted our approach by excluding 1999–00 and 2000–01 data given anomalous industrial usage data.
Nogoa Mackenzie WSS	Sunwater noted that we excluded the Blackwater pipeline data in 1999–00.	We added the Blackwater pipeline data to the 1999–00 data to be consistent with the post 2002–03 data series.
St George WSS	Sunwater noted that we excluded the urban customer segments in 1999–00 and 2000–01.	We added the urban customer segments added to the 1999–00 and 2000–01 data sets to be consistent with the post 2002–03 data series.

Source: Sunwater, sub. 229, pp. 85–86; QCA analysis.

In response to Sunwater's concerns about the simplicity and transparency of our approach, we note that our additional three years of input data has been sourced from publicly available sources. We also acknowledge that Sunwater noted that the differences between its November 2019 estimates and our estimates are marginal.

Summary

Table 48 outlines our recommended water usage assumptions (as a percentage of WAE[221]) for each bulk WSS, compared to our 2012 review forecasts and Sunwater's proposed water usage.

Table 48 The QCA's recommended water usage (% of WAE) in bulk WSSs

WSS	*QCA 2012 review (forecast) (%)*	*Sunwater proposed (simple 15-year average) (%)*	*QCA recommended (simple 20-year average) (%)*
Barker Barambah	55	38	42
Bowen Broken Rivers	43	39	37
Boyne River and Tarong	54	50	56
Bundaberg	47	44	47
Burdekin-Haughton	56	55	55
Callide Valley	52	58	62
Chinchilla Weir	61	54	58
Cunnamulla	74	61	59
Dawson Valley	71	57	62
Eton	54	39	42
Lower Fitzroy	70	66	66
Lower Mary	33	28	33
Macintyre Brook	81	64	63
Maranoa River	6	3	3
Mareeba-Dimbulah	69	65	65
Nogoa-Mackenzie	83	70	73
Pioneer River	44	34	34
Proserpine River	62	43	42
St George	94	84	89
Three Moon Creek	51	38	42
Upper Burnett	66	53	57
Upper Condamine	54	45	45

Source: Sunwater, sub. 45; SunWater, 2000–01 Annual Report, 2001, pp. 42-43; SunWater, 2001–02 Annual Report, 2002, p. 54-55; DNR Annual Water Statistics 1999–2000; QCA analysis.

Table 49 outlines our recommended water usage assumptions (as a percentage of WAE[222]) for each distribution system.

[221] As outlined in section 5.1.1 we have used 2016–17 WAE as our base for determining the water use percentage.

[222] Sunwater, sub. 11, pp. 71–72.

Table 49 The QCA's recommended water usage (% of WAE) in distribution systems

Scheme	*QCA 2012 review (forecast)*	*Sunwater proposed (simple 15-year average)*	*QCA recommended (simple 20-year average)*
Bundaberg	48	45	48
Burdekin-Haughton	76	66	65
Eton	54	39	42
Lower Mary	43	30	31
Mareeba-Dimbulah	67	65	63

Source: Sunwater, sub. 45; DNR Water Statistics (State Library) 1999–00; SunWater, 2000–01 Annual Report, 2001, pp. 42-43; SunWater, 2001–02 Annual Report, 2002, p. 54-55; QCA analysis.

To derive the distribution system volumetric (Part D) price, we calculated the estimated water usage by applying these percentages to total distribution system WAE excluding all distribution losses.

We note BRIG's concern about the removal of excess distribution losses from total water use. However, consistent with our approach in the 2012 review, we recommend that Sunwater bear the bulk holding (fixed) costs associated with excess distribution losses (see section 6.2).

6 PRICING FRAMEWORK ISSUES IN SUNWATER SCHEMES

The referral directs us to recommend irrigation prices for all current tariff groups. We are also required to review the tariff groups in certain specified water supply schemes (WSSs) and develop alternative tariff groups as a second pricing option.

This chapter outlines our assessment of pricing framework issues relevant to tariff groups in Sunwater's schemes that stakeholders raised, or that were identified for further consideration.

6.1 Background

The following pricing framework issues attracted comment from stakeholders or were identified for further consideration:

- the appropriate treatment of distribution loss WAEs held by Sunwater to manage losses that occur when diverting water to customers in the distribution system (section 6.2)
- the implementation of access charges to cover the applicable costs (section 6.3)
- scheme-specific pricing issues, including tariff groups in Burdekin-Haughton, Mareeba-Dimbulah, Lower Mary and Bundaberg schemes (section 6.4)
- the review of certain tariff groups in certain specified WSSs, as required under the referral (section 6.5).

6.2 Distribution losses

To account for water losses incurred in the delivery of water in distribution systems, Sunwater owns distribution loss WAEs. These WAEs were granted to Sunwater under the Water Act 2000 when the associated schemes were included into a resource operation plan (ROP). These allocations are held by Sunwater to ensure that distribution system customers receive a reliable supply of water.

Many factors are responsible for distribution losses, including pipe leakage, evaporation, storage seepage, overflows and drainage for maintenance. Distribution losses are applicable to each of the distribution systems operated by Sunwater.

6.2.1 Previous investigation

In the 2012 review, we noted that in recent years for most distribution systems, actual distribution losses had been below the distribution loss WAEs held by Sunwater.

Therefore, we recommended that only prudent and efficient bulk costs associated with distribution loss WAEs should be recovered from distribution system customers. Any bulk holding (fixed) costs in excess of what is required to provide a reliable supply of water should be borne by Sunwater.

To establish the magnitude of these excess loss WAEs, we calculated the maximum per cent of distribution loss WAEs required for each priority group over the period 2002–03 to 2010–11, adjusted for water usage. If in one year all losses were required, costs associated with existing distribution loss WAEs would be fully recovered from distribution system customers.

6.2.2 Sunwater's submission

Sunwater proposed the following principles to apply to allocating bulk costs associated with distribution losses for this price path period:

- Where a distribution system is not transitioning to local management arrangements (LMA), the costs associated with distribution loss WAEs should be allocated using the same methodology adopted by us in the 2012 review (updated for maximum actual distribution loss deliveries that would have been required over the 2002–03 to 2016–17 period).
- Where a distribution system is considering transitioning to LMA, customers should be allocated the bulk costs associated with the full distribution loss WAEs.
- Where a distribution system has transitioned to LMA (or transitions to LMA during the irrigation review process), distribution loss WAEs will become entitlements held by distribution system customers and will therefore bear an appropriate share.[223]

Sunwater said that once the outcomes of the LMA review process were known for all distribution systems, Sunwater would review their distribution loss WAEs and develop a strategy on their future treatment.

In response to our draft report, Sunwater submitted that it believed the efficient level of distribution losses in our final report should take into consideration 2018–19 distribution loss deliveries and the expiry of the current water plans.[224]

Sunwater submitted that it has recently commenced discussions with the Department of Natural Resources, Mines and Energy (DNRME) to initiate amendments to the rules to allow it to seasonally assign distribution loss allocations. Although Sunwater can seek approval from DNRME to change the Operations Manuals, Sunwater said that DNRME confirmed that the upcoming reviews of the water plans will provide the best opportunity for such a significant change to the existing rules to be assessed.[225]

Sunwater said that it did not believe that it should bear costs associated with the excess distribution losses until after the reviews of the water plans have been completed, and the required amendments to the rules to permit seasonal assigment of distribution loss allocations have been made.

Sunwater said it would continue to investigate water infrastructure efficiencies to minimise distribution losses. In these circumstances, Sunwater would make a submission to DNRME under section 159 of the Water Act to convert these distribution loss allocations permanently to tradeable allocations.[226]

6.2.3 Other stakeholders' submissions

Canegrowers, Canegrowers Isis, Canegrowers Mackay, MDIAC and QFF all stated that Sunwater has the ability to seasonally trade unused distribution loss WAEs, or in some schemes carry them over from one water year to the next.[227]

[223] Sunwater, sub. 11, pp. 71–72.
[224] Sunwater, sub. 229, p. 90.
[225] Sunwater, sub. 229, p. 91.
[226] Sunwater, sub. 229, pp. 90–93.
[227] Canegrowers, sub. 91, p. 3; Canegrowers Isis, sub. 93, pp. 5–6; Canegrowers Mackay, sub. 96, p. 5; MDIAC, sub. 123, p. 3; QFF, sub. 132, p. 7.

Both BRC and MDIAC supported methods to reduce distribution losses, including cost-effective strategies that address aging assets, and requiring Sunwater to review each scheme's distribution losses to identify areas where losses can be reduced and projects put forward for external funding.[228]

BRIG expressed support for us to review Sunwater's application of distribution losses.[229] However, BRIG considered that surplus distribution losses should continue to be included in water usage estimates for the purpose of calculating prices.

MDIAC proposed a new approach to allocating distribution loss WAEs, based on calculating an average distribution loss volume required to deliver water, where only the costs associated with that volume should be included in the distribution system costs.[230]

QFF, Canegrowers Mackay and the Burdekin River Irrigators Association (BRIA) all submitted that only the efficient requirement of distribution loss WAEs should be allocated to irrigators.[231] BRIA supported our 2012 review methodology based on updated distribution loss data from 2014–15 onwards, since Sunwater has improved the efficiency of the scheme as a result of LMA scrutiny.[232]

In response to our draft report, BRIA submitted that it supports our decision to allocate excess distribution loss costs to Sunwater and to adopt the most recent five years of data as the basis for that decision. However, BRIA proposed that we recommend that Sunwater increase its efforts to improve metering across the Burdekin-Haughton WSS. BRIA also rejects the cost allocation of high priority distribution loss WAEs to medium priority irrigation customers.[233]

6.2.4 QCA assessment

We have considered stakeholder submissions and have reassessed the appropriateness of the 2012 review approach. We note that irrigation stakeholders showed general support for a methodology that allowed prudent and efficient costs associated with an efficient level of distribution loss WAE to be recovered from customers. We also note in Sunwater's original submission it proposed to maintain the 2012 review approach for distribution systems not transitioning to LMA.

Since Sunwater provided its original submission, the LMA assessment for the Burdekin-Haughton and Mareeba-Dimbulah distribution systems has shown that the most viable option for irrigators and customers at this time is for Sunwater to continue the operation of the schemes in partnership with the local community. Eton is expected to transition to LMA on 31 March 2020 subject to the completion of the transfer process.[234] With this in mind, we consider that the recovery of costs associated with distribution loss WAEs for Burdekin-Haughton and Mareeba-Dimbulah distribution systems should be consistent with other distribution systems operated by Sunwater that are not transitioning to LMA.

While we acknowledge there are upcoming reviews of the water plans, Sunwater still has the ability to apply to DNRME to change the purpose of distribution loss WAEs prior to the reviews commencing. Distribution customers are unable to control the level of distribution loss WAEs.

[228] BRC, sub. 87, p. 3; MDIAC, sub. 123, p. 3.
[229] BRIG, sub. 54, p. 13.
[230] MDIAC, sub. 123, p. 3.
[231] QFF, sub. 132, p. 7; Canegrowers Mackay, sub. 96, p. 5; BRIA, sub. 85, p. 5.
[232] BRIA, sub. 85, p. 5.
[233] BRIA, sub. 161, p. 5.
[234] DNRME, Local management arrangements for Sunwater irrigation channels, https://www.dnrme.qld.gov.au/land-water/initiatives/lma-sunwater.

Sunwater, as the owner of distribution loss WAEs, is responsible for the management of distribution loss WAEs within its distribution systems. Therefore, we consider that distribution system customers should continue to only be allocated the bulk costs associated with the level of distribution loss WAEs required to meet actual losses.[235]

We consider that Sunwater is best placed to manage the risk of distribution loss WAE in excess of what is needed to ensure a reliable supply to distribution customers. The water planning framework allows Sunwater to apply to change the purpose of distribution loss WAEs, which it could then sell to customers (see Box 2). Therefore, we consider that the appropriate incentives are in place for Sunwater to minimise losses and maximise saleable WAEs.

> **Box 2—Water planning framework under the Water Act 2000**
>
> Since the 2012 review, the Water Act 2000 has changed, to allow a new water planning framework to be implemented. This has seen resource operations plans (ROPs) replaced with water management protocols (WMPs), with some water plan areas yet to transition to the new framework. Other changes to the Water Act 2000 include the section under which an application to change to a water allocation is made.
>
> Applicants can apply to change the purpose of distribution loss WAE under section 159 ("Applying for water allocation dealing consistent with water allocation dealing rules"), whereas previously this was done under sections 129A or 130 of the Act.[236] This is stated in the relevant WMPs and ROPs, along with criteria that must be met for the change to be approved. The applicable water dealing rules can be prescribed to apply to the whole state or to a water plan area under section 158 of the Act. Where a WMP or ROP does not specify the water dealing rules for a water plan area, the state water dealing rules apply, which are listed under section 73 of the Water Regulation 2016.
>
> The relevant WMPs or ROPs specify the criteria that must be met for a change of purpose to distribution loss WAEs to be approved by DNRME. These criteria are unique to each scheme, but generally specify that Sunwater must provide evidence of permanent efficiency gains and that a sufficient volume of distribution loss WAEs is held to provide for actual losses in the system.

When announced allocations are less than 100 per cent, the water to provide for losses is lower than the distribution loss WAEs. As water available to customers is also reduced, usage within the system will decrease. Consequently, we have adjusted the actual distribution loss data to account for the level of distribution system water usage.

To calculate the efficient level of distribution loss WAEs, we have generally taken the maximum distribution loss WAEs required after adjusting for distribution system water usage.

Sunwater also said it has a five-year water efficiency strategy, which is targeted at improving water use efficiency year-on-year in its distribution systems.[237] This should result in actual distribution losses decreasing in the future.

The maximum actual distribution loss deliveries for Bundaberg, adjusted for the level of water use that year, has been less than 100 per cent for each of the years from 2012–13 (see Table 50).

Table 50 Distribution loss WAEs used, Bundaberg distribution system

	2012–13	***2013–14***	***2014–15***	***2015–16***	***2016–17***	***2017–18***	***2018–19***
High priority (HP) distribution loss WAE	16,080	16,080	16,080	16,080	16,080	16,080	16,080
Medium priority (MP) distribution loss WAE	25,440	25,440	25,440	25,440	25,440	25,440	25,440

[235] We note that our recommendation only makes adjustments for two distribution systems.
[236] *Water Act 2000* (Qld) (Water Act), s. 159.
[237] Sunwater response to QCA RFI 52.

	2012–13	*2013–14*	*2014–15*	*2015–16*	*2016–17*	*2017–18*	*2018–19*
Actual distribution losses (HP + MP)	15,856	33,236	18,614	16,927	24,551	16,981	30,745
HP distribution loss WAE used	15,856 (99%)	16,080 (100%)	16,080 (100%)	16,080 (100%)	16,080 (100%)	16,080 (100%)	16,080 (100%)
MP distribution loss WAE used	–	17,156 (67%)	2,534 (10%)	847 (3%)	8,471 (33%)	901 (4%)	14,665 (58%)
Distribution system water use as a percentage of WAE	45%	85%	53%	65%	70%	50%	83%
MP distribution loss WAE used, adjusted for actual water use	–	80%	19%	5%	48%	7%	70%

Source: Sunwater response to QCA RFI 29; QCA analysis.

Sunwater informed us that in 2013–14, releases were made through the Bundaberg distribution system into the Burnett Scheme. This was because releases could not be made from Paradise Dam due to severe flood damage.[238] We consider that Bundaberg distribution system customers should not bear the costs of abnormal events related to Paradise Dam, for which the costs of water services are not to be recovered from our recommended prices, and have excluded 2013–14 from our consideration of efficient distribution loss WAEs.

We have calculated the efficient level of current distribution loss WAEs for Bundaberg to be 100 per cent high priority, and 70 per cent medium priority distribution loss WAEs. Based on available data from the 2012 review, we note that this level also reflects the maximum actual distribution loss deliveries for Bundaberg over the 15 years to 2018–19 (excluding 2013–14).

Table 51 shows the actual distribution loss deliveries for Burdekin-Haughton distribution system, adjusted for the level of water use that year, from 2012–13 onwards.

Table 51 Distribution loss WAEs used, Burdekin-Haughton distribution system

	2012–13	*2013–14*	*2014–15*	*2015–16*	*2016–17*	*2017–18*	*2018–19*
High priority (HP) distribution loss WAE	16,260	16,260	16,260	16,260	16,260	16,260	16,260
Medium priority (MP) distribution loss WAE	190,477	190,477	190,477	190,477	190,477	190,477	190,477
Actual distribution losses (HP + MP)	108,934	173,757	134,449	103,287	69,718	62,440	51,253
HP distribution loss WAE used	16,260 (100%)	16,260 (100%)	16,260 (100%)	16,260 (100%)	16,260 (100%)	16,260 (100%)	16,260 (100%)
MP distribution loss WAE used	92,674 (49%)	157,497 (83%)	118,189 (62%)	87,027 (46%)	53,458 (28%)	46,180 (24%)	34,993 (18%)
Distribution system water use as a percentage of WAE	60%	81%	103%	88%	78%	93%	74%
MP distribution loss WAE used, adjusted for actual water use	81%	102%	60%	52%	36%	26%	25%

Source: Sunwater response to QCA RFI 29; QCA analysis.

[238] Sunwater response to QCA RFI 52.

BRIA noted that Sunwater has improved the efficiency of the Burdekin-Haughton distribution system since 2014–15 as a result of scrutiny as part of the local management arrangements (LMA) review. BRIA said this included the appointment of a full-time metering officer in the Burdekin-Haughton system, and replacement of meters.[239] Sunwater has also said it has a five-year water efficiency strategy which is targeted at improving water use efficiency year-on-year in its distribution systems.[240]

Sunwater informed us that in 2013–14, it experienced significant water delivery challenges in the Burdekin-Haughton distribution system associated with excessive growth of aquatic weed. This caused the flow of water to slow down, resulting in a higher than normal level of distribution losses. Since 2014–15, Sunwater has adopted a more formalised shutdown and treatment schedule for aquatic weed.[241]

Therefore, we consider that data from 2014–15 onwards provides a better representation of distribution losses in the Burdekin-Haughton distribution system. After adjusting for distribution system water usage, the data shows that actual distribution losses have been lower than distribution loss WAEs.

We have calculated the efficient level of current distribution loss WAEs for Burdekin-Haughton to be 100 per cent high priority, and 60 per cent medium priority distribution loss WAEs. Based on the information from the 2012 review, we note that this maximum level remains higher than actual distribution loss deliveries over the preceding period from 2004–05 to 2010–11.

Sunwater informed us that, over a number of years, new customer meters are being installed across both the Burdekin-Haughton and Mareeba-Dimbulah distribution systems. This will contribute to greater accuracy in measuring distribution losses in the future.[242]

After adjusting for distribution system water usage in the Eton and Lower Mary distribution systems, it is apparent that all distribution loss WAEs are consistently used over the period from 2012–13 onwards. Consequently, we have calculated the efficient level of current distribution loss WAEs for Eton and Lower Mary to be 100 per cent high and medium priority distribution loss WAEs.

Based on the information from the 2012 review for the Mareeba-Dimbulah distribution system, we note that actual distribution loss deliveries (adjusted for water use) have been higher than distribution loss WAEs in some years over the preceding period from 2004–05 to 2010–11. We therefore consider that actual distribution loss deliveries for Mareeba-Dimbulah distribution system, adjusted for the level of water use that year, sometimes require the full use of distribution loss WAEs.

Some stakeholder submissions stated that Sunwater should investigate areas where losses can be reduced and put forward projects for external funding. We note that this has recently been achieved for the Mareeba-Dimbulah distribution system, where capital works will improve operating efficiency and reduce water losses by up to 8,000 ML. Sunwater is funding these works by selling the converted distribution loss WAEs to customers upon completion in June 2021, and by seeking support from the National Water Infrastructure Development Fund (NWIDF).[243]

[239] BRIA, sub. 85, p. 5.
[240] Sunwater response to QCA RFI 52.
[241] Sunwater response to QCA RFI 52.
[242] Sunwater response to QCA RFI 52.
[243] Sunwater, *2017–18 Annual Report*, 2018, p. 21

However, Sunwater does not expect any WAEs to be converted until the end of the new price path at the earliest.[244]

While we support Sunwater investigating projects that deliver positive outcomes for customers, this recapturing of distribution loss WAEs does not address any existing excessive holding of loss WAEs by Sunwater. Therefore, the remaining distribution loss WAEs may still be in excess of what is required to meet actual losses. We consider that, regardless of capital works to recapture distribution loss WAEs, distribution customers should still only pay for distribution loss WAEs required to meet actual losses.

Many irrigator stakeholders stated that Sunwater has the ability to seasonally trade unused distribution loss WAEs, or in some schemes carry over from one water year to the next. However, it is our understanding that Sunwater's ability to temporarily trade unused distribution loss WAEs is restricted by rules identified in the relevant scheme operations manuals or ROPs. The relevant rules require the resource operations licence holder not to approve the seasonal water assignment of a water allocation with a purpose of distribution loss.

BRIG raised concerns about Sunwater's proposed removal of surplus distribution losses from total water use when deriving distribution system volumetric (Part D) prices. We note that our 2012 review approach only assigned bulk holding (fixed) costs of distribution loss WAEs not required to service distribution system customers to Sunwater. We accept that Sunwater has not had the opportunity to address our recommendations from the 2012 review in relation to reviewing its distribution loss WAEs due to the LMA review process. We have therefore maintained our 2012 review treatment of excess holdings of distribution loss WAEs in calculating our recommended prices.

BRIA raised concerns with medium priority irrigation customers bearing the cost of high priority distribution loss WAEs. Sunwater have confirmed that high priority distribution loss WAEs are used to fill the distribution system at the beginning of each year. This is because maintenance work requires the distribution system to be emptied. High priority distribution loss WAEs, therefore, benefit both high and medium priority distribution system customers. Where there are no high priority distribution system customers, high priority distribution loss WAEs exclusively benefit medium priority distribution system customers.[245]

It is clear that high priority distribution loss WAEs are routinely used for the benefit of medium priority irrigation customers. Therefore, we consider it appropropriate medium priority irrigation customers continue to pay for their share of that benefit.

For the next price review process, we would expect to be assessing the reasonableness of Sunwater's proposed strategy for its holdings of distribution loss WAEs, including Sunwater's views on the efficient level of its distribution loss WAE holdings. However, for the purpose of this review, we have sought to estimate an efficient level of distribution loss WAEs in the absence of Sunwater having a strategy for the treatment of its holdings of distribution loss WAEs.

Table 52 outlines our proposed efficient distribution loss for each of the relevant distribution systems compared to the 2012 review outcomes.

[244] Sunwater response to QCA RFI 52.
[245] Sunwater response to post draft report QCA information request RFI 19.

Table 52 Efficient distribution loss WAE in Sunwater schemes compared to 2012 review

Distribution system	*2012 review*		*2020–24 review*	
	High priority loss WAE (%)	*Medium priority loss WAE (%)*	*High priority loss WAE (%)*	*Medium priority loss WAE (%)*
Bundaberg	78	–	100	70
Burdekin-Haughton	100	59	100	60
Eton	100	100	100	100
Lower Mary	100	34	100	100
Mareeba–Dimbulah	100	100	100	100

Note: Adjusted distribution loss WAE (per cent) has been round to the nearest integer.

Source: Sunwater response to QCA RFI 29; Sunwater sub. 229; QCA analysis.

Recommendation 9

We recommend that:

- prudent and efficient bulk costs associated with necessary distribution loss WAEs should be recovered from distribution system customers.
- the bulk holding (fixed) costs of distribution loss WAEs not required to service distribution system customers should be borne by Sunwater
- Sunwater should review its distribution loss WAEs and develop a strategy for their future treatment prior to the next price review.

6.3 Access charge

6.3.1 Previous investigation

Prior to the 2012–17 price path period, Sunwater imposed a minimum charge in many schemes to cover the customer cost of metering and/or billing for very small holdings of WAEs (for example, up to 5 ML). The minimum charge applied when the sum of all charges applied to a customer's account was less than the prescribed minimum charge. The minimum charge varied across different WSS and distribution systems.

In the 2012 review, Sunwater did not submit a detailed cost basis for its minimum charge and did not propose to impose the charge over the 2012–17 price path.

6.3.2 Sunwater's submission

In its November 2018 submission, Sunwater said that QFF had raised the possibility of a minimum access charge in all service contract areas to cover the fixed administration costs associated with maintaining each customer account and to ensure there is no cross-subsidisation between customers who hold a small number of water allocations and those who hold larger amounts.[246]

On 5 July 2019, Sunwater provided a supplementary submission to us outlining its proposal to introduce an access charge of $950 ($2018–19) per customer with the possibility of a seven per cent discount for customers who demonstrated certain behaviours. Sunwater said that since

[246] Sunwater, sub. 11, p. 75.

providing its November 2018 submission, it had worked closely with QFF to explore the possibility of an administratively simple access charge that supported cost-reflective pricing by:

- ensuring that all customers pay the fixed costs associated with their account and that there is no cross-subsidisation between customers
- incentivising customer behaviours that enable Sunwater to reduce those fixed costs (for example, paying bills on time).[247]

Sunwater said that as part of the proposal, revenues generated by the access charge would be offset by reductions in fixed (Part A) prices, and customers whose behaviours contribute to Sunwater reducing our customer administration costs would be entitled to a discount on the access charge.[248]

Sunwater said that the fixed administrative costs that could be recovered through an access charge included:

- billing, water accounting, water sharing, call centre, Resource Operations Licence compliance, account management and water account management
- depreciation costs associated with Sunwater's water accounting systems (e.g. Orion, Bills).[249]

Sunwater said that it believed that it had demonstrated sufficient irrigation customer support for its access charge proposal to be favourably considered by us. Sunwater said that it engaged with various groups during the development of its access charge proposal, including:

- QFF—an extensive engagement process with the QFF over a six month period, including the QFF Water Energy and Policy Committee, to explore the possibility of an access charge
- Mareeba-Dimbulah Irrigator Advisory Committee (MDIAC)— two rounds of consultation to obtain feedback on the benefits of the existing Access Charge in that scheme
- ICRG—an Access Charge discussion paper was provided to the ICRG to seek their feedback. This was also presented to the Lower Mary Customer Advisory Board.[250]

Sunwater said that all engaged parties expressed in-principle support for the access charge[251] and provided evidence of this support and the engagement that was undertaken to us.[252]

As part of Sunwater's engagement with the ICRG, the ICRG also recommended further customer consultation and consideration of the impacts on small (generally non-irrigation) customers.

Sunwater's November 2019 response to our draft report indicated that we should consider the access charge on a scheme-by-scheme basis, allowing an access charge where it is supported and maintaining the current tariff structure where an access charge is not supported.[253]

Sunwater noted that the seven per cent discount to incentivise certain behaviour will be lower if the required 80 per cent of customers do not adopt the access charge.[254]

[247] Sunwater, sub. 154, p. 1.
[248] Sunwater, sub. 154, p. 1.
[249] Sunwater, sub. 154, A-1.
[250] Sunwater, sub. 154.
[251] Sunwater, sub. 154.
[252] Sunwater response to final report RFI 21.
[253] Sunwater, sub. 229, p. 94.
[254] Sunwater, sub. 229, p. 94.

Sunwater said they have advised all customers of the access charge proposal in October 2019.[255]

6.3.3 Other stakeholders' submissions

In the March 2019 submissions, some stakeholders provided views on the implementation of an access charge.

QFF indicated that current water charges do not recover the costs of providing supply for small users using 2 ML per year or less.[256] QFF said that if introduced, the existing water charges should be offset so that the implementation is revenue neutral across all irrigation customers.

Cotton Australia strongly supported an access charge that covers the account management costs associated with small customers.[257] Kinchant Dam Water Users Association submitted that the current pricing policy results in large customers subsidising smaller customers.[258]

In terms of Sunwater's July 2019 supplementary submission, QFF provided in-principle support for Sunwater's proposed access charge that was subject to a number of conditions, including:

- QFF Water and Energy Policy Committee (WEPC) members were only supportive of a revenue neutral proposal.
- WEPC members were broadly supportive of a specific account keeping charge, subject to the provision for particular schemes to 'opt-out' where there are not a significant number of small users, or for those schemes who do not want to disincentivise small water users.
- WEPC member support was dependent on an appropriate and formalised hardship program for irrigators who experiencing genuine adversity
- QFF's support was without prejudice to the Mareeba-Dimbulah scheme which currently charges customers an access charge which offsets selected fixed charges.
- QFF's support was without prejudice to distribution systems owned and operated by local management entities, who may apply charges as gazetted.
- The charge must be simple and transparent to all users.
- The charge must be levied only once to a customer's account, regardless of the number of off-takes.[259]

In September 2019, we released an issues paper on Sunwater's proposed access charge. Stakeholder views on the proposed access charge were mixed.

Some stakeholders considered that further consultation was required for them to provide further comment.[260] Canegrowers and Canegrowers Isis indicated, in principle, the objectives of the approach seem supported.[261] Canegrowers noted that the caveats such as opt-out, hardship program, impact compared to current costs were yet to be developed.

[255] Sunwater, sub. 229, p. 94.
[256] QFF, sub. 132, p. 9.
[257] Cotton Australia, sub. 102, p. 3.
[258] KDWUA, sub. 112, p. 7.
[259] QFF, sub. 155.
[260] Canegrowers, sub. 179, p. 14. Canegrowers ISIS, sub. 185, p. 2; WBBROC, sub. 234, p. 2–3; Central Downs Irrigators, sub. 186, p. 3.
[261] Canegrowers, sub. 179, p. 14. Canegrowers ISIS, sub. 185, p. 2.

Some stakeholders questioned the prudency and efficiency of the proposed access charge.[262]

The Lower Mary Customer Advisory Board provided in principle support to the access charge with a test for no individual disadvantage being applied. The Lower Mary Customer Advisory Board were also concered that some customers do not have the technology to access the potential benefits under the access charge.[263] Central Downs Irrigators agrees with an access charge but questions the need for online access to receive the discount.[264]

Some stakeholders said that the access charge is not fair for small access entitlement holders.[265]

Cotton Australia and QFF provided support for a revenue neutral access charge.[266]

Fairbairn Irrigation Network, QFF and PV Water indicated that schemes should retain the ability to opt out.[267] Mr Francis indicated that it must be based on a decision from scheme users with a postal ballot to be used to determine if scheme users are supportive of the access charge.[268]

6.3.4 QCA assessment

We welcome the water businesses working with their customers to reach agreement on issues of concern. We are generally receptive to recognising such agreements when we determine our recommended irrigation prices for the period 1 July 2020 to 30 June 2024, subject to any agreement being consistent with the requirements set out in the referral.

Economic efficiency

We consider that a tariff structure that includes an access charge levied on a fixed per customer basis, if appropriately defined, may be more cost-reflective than the existing two-part tariff structure. Some activities (and costs) are likely to vary per customer, rather than with WAE. Such activities may include meter reading, billing and customer service.

More closely aligning prices with the costs of supply may lead to more informed consumption and investment decisions by customers, thereby resulting in increased economic efficiency.

Sunwater's proposed access charge of $950 per customer ($2018–19) is based on 2017–18 costs of $4.8 million ($2018–19) associated with two indirect cost centres—customer support ($4.0 million); and billing and compliance ($0.8 million).[269] We note that this amount relates to Sunwater's total indirect cost for these two cost centres across its entire business. We note also that total customer accounts used to derive the access charge also include irrigation and non-irrigation customers across irrigation service contracts and other non-irrigation service contracts.

The customer support indirect cost centre includes customer enquiries, processing of transfers, processing of water orders and meter reads, and managing customer complaints and feedback.[270] We acknowledge that customer service and meter reading activities are likely to be driven by the number of customers, rather than by WAE. However, apportioning an equal access charge to all customers may not reflect the customer support costs associated with small as compared to

[262] Canegrowers, sub. 179, p. 14. Canegrowers ISIS, sub. 185, p. 2. Cotton Australia, sub. 190, p. 4. QFF, sub. 223, p. 6; Fairbairn Irrigation Network, sub. 236, p. 5.
[263] Lower Mary Customer Advisory Board, sub. 202, p. 3.
[264] Central Downs Irrigators, sub. 186, p. 3.
[265] Philips, A, sub. 217, p. 1; Oxenford, M, sub. 208, p. 1.
[266] Cotton Australia, sub. 190, p. 4; QFF, sub. 223, p. 6.
[267] PV Water, sub. 221, p. 5.
[268] Francis, P, sub. 193, p. 1.
[269] Sunwater response to QCA RFI 31.
[270] Sunwater response to QCA post draft report RFI 25.

larger customers. For example, very small customers who use water for rural residential purposes may have accounts that are easy to administer and do not have many WAE related enquiries.

The billing and compliance indirect cost centre includes water accounting, processing of meter reads and meter maintenance requests, quarterly billing and statutory reporting obligations. The billing and compliance function is largely driven by compliance requirements, the operational needs of the business and the size and scale of the business. We would expect that most customer transactions would have high levels of automation. On this basis, we have concerns with recovering the billing and compliance function through an access charge levied on a fixed per customer basis.

As part of our review of Sunwater's indirect cost base (see Chapter 2), AECOM recommended the following adjustments to Sunwater's 2017–18 costs for these two indirect cost centres in developing our recommended base year opex:

- reduction of $0.6 million through the removal of the cascading of corporate overheads to indirect cost centres, in line with Sunwater's change to its cost allocation methodology in 2018–19
- reduction of $0.5 million reflecting the reduction in the base year non-routine customer support costs associated with the depreciation of Sunwater's water accounting and billing system (Orion), with the revised estimate of $1.3 million broadly representative of the ongoing depreciation cost from 2019–20 onwards.[271]

We also note that as part of Sunwater's revised cost allocation methodology, these two indirect cost centres have merged into the new customer service indirect cost centre. Our revised base year cost of this cost centre of $3.1 million reflects budgeted changes to costs of this new indirect cost centre provided in Sunwater's June 2019 cost update. Note that of this $3.1 million across all service contracts, we allocated $2.5 million to irrigation service contracts using direct labour costs, and the balance to other service contracts.

Given that we are only recommending prices for irrigation customers, we consider that both total costs and number of customer accounts should relate to the irrigation sector. This would imply an access charge of no higher than around $494 ($2018–19) before any allowance for discounts.

Bill impact

We also note that there may be material bill impacts on customers with small WAE volumes from implementing an access charge of $950 per customers ($2018–19). The volume of WAE holdings for a customer to not be worse off is significantly higher than the two mega litres per year holding mentioned in QFF's initial submission.

Sunwater's proposal does not fully outline how it has appropriately taken into account the interests of all customers, in particular smaller customers. While Sunwater has addressed concerns raised by QFF and ICRG on the potential impact of the proposed access charge on smaller users, it does not appear as though the measures introduced to support small water users have been adequately consulted on or have subsequently received support from the affected customers.

[271] AECOM, Rural Irrigation Operating Expenditure Review: Sunwater, August 2019, p. 104.

Pricing principles

We also note that while the introduction of an access charge would reduce the fixed costs to be recovered from the other fixed (Part A) prices, we are required to have regard to the transitional approach for fixed (Part A) prices in the pricing principles in the referral. Specifically:

- For schemes where the fixed (defined as Part A) price is higher than the fixed component of the lower bound cost target, the fixed (Part A) price can only reduce to the cost-reflective price for distribution system customers.
- For schemes whether the fixed (Part A) price is below cost recovery, the fixed (Part A) price should increase each year by inflation plus $2.38 per megalitre (from 2020–21, increasing by inflation) until the fixed component of the lower bound cost target is reached.

We note that our decision to apply the pricing principles in the referral (see Chapter 2, Part A) does limit our ability to recommend reductions in fixed (Part A) prices that offset revenues generated by the access charge.

Customer support

We consider that Sunwater has evidenced effective engagement with the QFF, MDAIC and ICRG in relation to its proposed access charge and demonstrated in-principle support for the proposed charge from all three groups.

While engagement with representative bodies such as the QFF, MDAIC and ICRG is an essential component of effective consultation, it is not a substitute for the engagement of the broader customer and stakeholder base, particularly on important issues such as tariff reform that have the potential to affect the whole customer base. Typically the purpose of engagement with representative bodies is to test and refine input from customers, facilitating the business's interaction and engagement of the broader customer base.

For example this validation exercise was evident during the 2018 price review of Southern Rural Water in Victoria, who were able to evidence its effective utilisation of the customer committees in informing the feedback it received from across the its wider customer base. Similarly, as part of its engagement during the 2020 price review, GMW created working groups comprising of Water Service Committee chairs and deputies, and stakeholder, such as the Victorian Farmer's Federation, Catchment Management Authorities, environmental water holders and industry representatives to balance and validate input from the broader customer and stakeholder base.

Meaningful engagement on important issues such as tariff reform that affects a large number of customers requires a collaborative approach with a representative sample across all customer segments, customer size, location, production and service type. Sunwater has also indicated that its threshold for implementation requires approximately 80 per cent of from bulk and distribution scheme customers, implying a need to augment its current focus on representative bodies to include engagement with the broader customer base.

This is particularly important in the context of concerns raised by QFF and ICRG on the potential impact of the proposed access charge on smaller users. In response to these concerns, Sunwater is implementing a new hardship policy that provides payment assistance to customers experiencing financial difficulties. Sunwater has also explored the possibility of providing a limited number of schemes to opt-out of introducing the access charge, although it is not clear which schemes will be eligible for the 'opt-out provisions'.

While Sunwater has sought to address the concerns raised by the QFF and ICRG, it is not clear whether the access charge proposal and the measures introduced to support small water users have been adequately consulted on or have subsequently received support from the affected

customers. Sunwater advised that it had distributed an access charge factsheet to all customers with a registered email address or mobile phone number on 24 October 2019, however it had received only one customer enquiry.

The low response rate raises concerns on the level of broader customer representation in the engagement. Sunwater should seek to supplement its approach with additional processes, such as its Irrigation Advisory Committees or focus groups in each scheme, to ensure that all customers have had a fair and reasonable opportunity to be involved.

Summary

Given the importance of the access charge and its impact on affordability, we recommend not to approve the introduction of the access charge until further consultation is undertaken with Sunwater's customers, particularly with small water users.

6.4 Scheme-specific pricing issues

6.4.1 Bundaberg and Gin Gin main channel

Previous investigation

In the 2012 review, we said since the water planning framework makes a provision for Gin Gin main channel to serve a bulk water function, a relevant portion of the costs of the Gin Gin main channel (part of the Bundaberg distribution system) should be included in bulk water costs. This transfer of costs was based on the need to pump water from the Kolan sub-system (in the distribution system) to supplement supplies in the Burnett River (for supply to bulk customers).[272]

Stakeholders' submissions

In response to our draft report, Sunwater said that it supported our draft report approach to apply a 5 per cent cost allocation factor.

QCA assessment

The water plan allows Sunwater to make releases from Fred Haigh Dam into the Gin Gin main channel, then releases at the end of the channel into Sheepstation Creek to supplement Bundaberg bulk water allocations that access water from the Burnett River.[273] Up to 15 per cent of the full supply volume of Fred Haigh Dam is available to be released in this way.

Sunwater proposed a cost allocation of 5 per cent since there had been minimal releases since 2012–13.[274]

We consider that given the requirements of the water plan, Gin Gin main channel continues to serve a bulk water function and it is appropriate that a proportion of its costs be allocated to bulk. Given the very low usage of the Gin Gin main channel as a bulk asset since 2012, we consider that 5 per cent is a reasonable cost allocation.

6.4.2 Burdekin-Haughton distribution system

There are currently three tariff groups for irrigation customers in the Burdekin-Haughton distribution system:

[272] QCA, *SunWater Irrigation Price Review: 2012–17*, Volume 2: Bundaberg Distribution System, final report, April 2012, p. 22.
[273] Shedule 9, part 3 of the Burnett Basin Water Plan 2014.
[274] Sunwater response to QCA RFI 50.

- Burdekin Channel (medium priority)
- Giru Benefited Groundwater Area (medium priority)
- Glady's Lagoon (medium priority).

In the 2012 review, we approved a differentiated price for the Giru Benefited Groundwater Area (GBGA) and Glady's Lagoon tariff groups.

Giru Benefited Groundwater Area (GBGA)

The GBGA receives a supplemented supply through the Haughton Main Channel and Balancing Storage and consists of weirs (Val Bird and Giru Weirs), natural channels, relift pump stations and lagoons to distribute water via a combination of surface supply and groundwater recharge.

In the 2006–11 price review, the charge for irrigators in the GBGA was assessed as half the total channel price (bulk plus distribution excluding the drainage charge).

Previous investigation

In the 2012 review, we recommended that:

- the 2006–11 price path arrangements continue and that the charge be set to recover revenue equivalent to 51 per cent of the bulk charge and 51 per cent of the distribution system charge. We considered that this level of cost recovery reflected the cost incurred by Sunwater, based on the information available at the time of the review
- for the future, Sunwater investigate the hydrological circumstances of the area to confirm the current cost allocation, or negotiate alternative arrangements with the irrigators.

Stakeholders' submissions

Submissions focused on regulatory framework issues, hydrological issues, the basis for differential pricing, and capacity to pay.

Regulatory framework

GBGA stakeholders generally supported and recommended that we continue with the long-standing pricing arrangements recommended in the 2012 review.[275]

The BDCG and Canegrowers Burdekin noted that the pre-dam Haughton River contribution of 19,700 ML was acknowledged in the Interim Resource Operation Licence (IROL) under the Burdekin Basin Water Plan.[276] These stakeholders also suggested that pre-dam flows should be formally recognised in regulatory instruments to retain the original expectations.[277] The BDCG considered that the GBGA free water entitlement is equivalent to that of the Lower Burdekin Water Board due to the aquifer's historical existence, regulatory precedent in the form of the 2007 Water Plan, and the availability of pre-dam flows.[278]

The BDCG provided historical evidence that the Val Bird and Giru Weirs were to supplement groundwater and stated that the weirs were not envisaged to be used as a distribution system.[279] Canegrowers Burdekin said these assets were intended for aquifer recharge but in a unilateral

[275] Canegrowers Burdekin, sub. 92; GBA Sub Committee, sub. 60; Invicta Cane Growers Organisation, sub. 109.
[276] BDCG, sub. 238, p. 7; Canegrowers Burdekin, sub. 180, p. 1.
[277] BDCG, sub. 238, p. 12; Canegrowers Burdekin, sub. 180, p. 2.
[278] BDCG, sub. 238, p. 12.
[279] BDCG, sub. 238, pp. 36–37.

decision unbeknown to irrigators were reclassified as distribution assets.[280] BRIA said that the weirs have been reclassified and should be considered as distribution system assets.[281]

Hydrological issues

Sunwater commissioned a report (prepared by OD Hydrology) in 2017–18 to assess the groundwater hydrology and the interaction of surface and groundwater in the GBGA.[282] As part of this report, groundwater modelling and a yield assessment were completed to determine the natural yield being captured and utilised in the system. The report indicated that if the aquifer was unsupplemented (i.e. no discharge from Sunwater), then a sustainable, reliable supply of approximately 30 to 50 per cent of current demands was feasible.

Sunwater submitted that the OD Hydrology report provides the most recent and representative analysis of the level of supplementation and natural yield within the GBGA and requests we review the level of natural yield to be recognised and applied to customers in the system when considering the final recommendations.[283] Sunwater said that the availability of natural yield is dependent on seasonal rainfall—there are significant periods where natural yield is the predominant supply to the Haughton Zone A[284] customers (including the GBGA).[285]

Some GBGA stakeholders were concerned with Sunwater's commissioned reports[286] on GBGA, particularly that there may be deficiencies or inaccuracies in the reports.[287]

The BDCG was concerned that the analysis in our consultant's report (Water Solutions) and also Sunwater's OD Hydrology report relied on data from the 2017 Kavanagh Report.[288] They claimed that the data in this report is inaccurate and unreliable as it does not take into account system inefficiencies arising from water transmission losses, or water taken and used outside of the GBGA including by water harvesting.[289] The BDCG said there was no allowance for inaccuracies in measurement of releases (for example by weeds blocking the gates), losses at the back end of the system or environmental flows.[290] Concerns about hydrological assumptions of the reports were also noted in other submissions.[291]

A report to Invicta Canegrowers Organisation by Groundwater Australia, attached to the BDCG submission, noted that in practice the system is so oversupplied by freshwater that the natural flows are no longer recognised, but they are still there. The report said that Sunwater has supplied so much water for so long that water levels are continuously elevated resulting in the threat of rising groundwater which is detrimental to cane production.[292]

BRIA did not support further hydrological assessments. It said that metered releases from the Haughton Balancing Storage (HBS) and metered usage by GBGA customers provides a reliable

[280] Canegrowers Burdekin, sub. 180, p. 2.
[281] BRIA, sub. 161, p. 7.
[282] Sunwater, sub. 51.
[283] Sunwater, sub. 229, pp. 10, 94.
[284] GBGA is part of Haughton Zone A in the Burdekin-Haughton WSS.
[285] Sunwater, sub. 229, p. 94.
[286] Sunwater also commissioned a report prepared by Geoffrey Kavanagh in 2017 (the 'Kavanagh report') that sought to assist in understanding the requirements of meeting GBGA water demands (Sunwater, sub. 52).
[287] Canegrowers Burdekin, sub. 92; GBA Sub Committee, sub. 60; Invicta Cane Growers Organisation, sub. 109.
[288] BDCG, sub. 238, p. 8.
[289] BDCG, sub. 238, pp. 13, 21.
[290] BDCG, sub. 238, p. 17.
[291] Canegrowers Burdekin, sub. 180, p. 2; MH Premium Farms, sub. 207, p. 1; Wessel, A, sub. 235, p. 1.
[292] BDCG, sub. 238,

comparison. The original arrangements were based on hydrological assessments that have proven unreliable.[293]

Differential pricing

The BDCG submitted that the supply to customers in the Burdekin channel tariff group and the GBGA requires different service levels and infrastructure. The systems are differentiated on infrastructure requirements, operating and maintenance, and peak flow entitlements.[294] Many other submissions noted that GBGA irrigators receive a lesser product than in the channel area due to the cost of pumping and electricity to bring the water to the crop.[295]

The BDCG also said there was evidence that the purpose of the existing pricing arrangements was to provide an incentive to continue the use of groundwater, to ensure the water table did not come to the surface as has happened elsewhere in the BRIA.[296]

BRIA said that the GBGA pricing structure required resolution to provide certainty to all customers.[297] BRIA submitted that should the discounted tariff for GBGA be continued, the under-recovery of costs should not be included in the costs for the remainder of BHWSS customers.

Capacity to pay

The BDCG provided detailed analysis to show that irrigators would not be able to sustain the proposed increases in irrigation water charges from current differentiated levels.[298] The main points raised were that:

(a) Cane crop yields are lower in the Giru area, at an average 102 t/ha compared to 120 t/ha in the Burdekin district

(b) Cane growers have additional pumping and maintenance costs in sourcing groundwater.[299]

Canegrowers Burdekin also submitted that production metrics for sugar cane in the Giru area are in the lower decile of the productivity zones in the Burdekin. Growers have established their businesses on the basis of recognition of the natural yield in the GBGA.[300] A number of individual submissions supported these views.[301]

QCA assessment

As discussed in Chapter 2 of our Part A report, we have decided to recommend prices that align with the pricing principles in the referral. Consistent with that decision, we have recommended prices that are based on our assessment of prudent and efficient costs that Sunwater incurs to provide bulk water supply services and meet its legislative and regulatory obligations. This required us to assess the prudent and efficient costs attributable to each irrigation tariff group.

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[293] BRIA, sub. 161, p. 7.
[294] BDCG, sub. 238, p. 25.
[295] Canegrowers Burdekin, sub. 180, p. 2; Pixi Pastoral, sub. 222, p. 1; Wessel, A, sub. 235, p. 1; Parise, G, sub. 209.
[296] BDCG, sub. 238, p. 25.
[297] BRIA Irrigators, sub. 85.
[298] BDCG, sub. 238, p. 27
[299] BDCG, sub. 238, pp. 29, 31.
[300] Canegrowers Burdekin, sub. 180, p. 3.
[301] Wessel, A, sub. 235, pp. 1–2; Zabala, A, sub. 216; Parison, G, sub. 210; Stockham, G, sub. 215; Coghill, R, sub. 188; Huston, W, sub. 196; Pilla, S, sub. 213; Pilla, P, sub. 212; Pilla, M, sub. 211; Stockham, D, sub. 214; Pierotti, J, sub. 218; Bahr, J, sub. 160; Kersh, J, sub. 198; MH Premium Farms, sub. 207; Parise, G, sub. 209; Pixi Pastoral, sub. 222.

Our assessment has considered stakeholder submissions and additional information provided to us by Sunwater in response to our requests for information. We have also considered the advice provided by our consultant, Water Solutions.

Regulatory framework

We recognise that the GBGA was historically established as a groundwater area and the weirs were built for groundwater recharge purposes. At the time, the free allocation of 19,700 ML reflected an estimate of the natural flows available to recharge the aquifers. The Burdekin Haughton WSS IROL in 2005 acknowledged a natural groundwater yield in the GBGA of 19,700 ML with an additional volume of 20,549 ML supplied through scheme infrastructure.

However, under the 2007 Burdekin Basin Water Plan (Water Plan), groundwater in the GBGA is now treated as water in a watercourse, i.e. no distinction is made between groundwater and surface water. A new hydrologic model was used to determine the volumes to be stated on supplemented water allocations when they were issued in 2009—the volume on these allocations took into consideration the combined yield of both groundwater and surface water. The Burdekin-Haughton WSS ROL, issued in 2009, superseded and replaced the IROL, with the IROL now bearing no legal standing.

Further, the current Water Plan and ROL do not recognise natural flows for the GBGA but rather treat each allocation as a single supplemented entitlement. In accordance with the Water Act framework, all users in the Burdekin-Haughton WSS share the natural flows in the scheme in proportion with their entitlements and consistent with the environmental flow objectives.

Consistent with our 2012 review, we consider it appropriate to recognise pre-existing rights to free water where they are part of a current agreement, legislation or Government policy. For free water allocations totalling 185,000 ML held by Lower Burdekin Water, the pricing principles in the referral specifically outline this aspect of Government policy. However, in the case of the pre-dam allocation for GBGA customers, no such Government policy is currently in place. It is a matter for the Government if this is to be recognised.

We note that some stakeholders considered that the Haughton River weirs were to supplement groundwater and stated that the weirs were not envisaged to be used as a distribution system. Sunwater advised that the Haughton River weirs are now operated as part of a distribution system rather than as bulk assets to recharge the aquifers.[302] We note that this is consistent with the categorisation of GBGA customers as distribution system customers, as these customers rely on distribution system assets for supply. This is also consistent with customers in other schemes located on a watercourse that rely on supplementation by a channel.[303]

In summary, we consider that our recommended prices should be consistent with the current Water Act framework and associated operational conditions. Under this framework, there is no recognition of natural flows in the GBGA.

Hydrological issues

Since GBGA remains a separate tariff group, there is potential for GBGA customers' prices to be differentiated from other distribution system customers to reflect cost differences. In the case of watercourses supplemented by channel systems, costs could differ if materially less than 100 per cent of water supplied is sourced from the channel system. Under this case, a possible approach

[302] Sunwater advised us that it had consulted with the Burdekin River Irrigation Area committee in 2014 and announced the change in 2014–15 Network Service Plans (Sunwater response to QCA RFI 34).
[303] For example, in Bundaberg and Mareeba-Dimbulah distribution systems.

may be to assign a portion of channel system costs (based on the percentage of water supplied from the channel system) plus the full cost of the customer-specific assets in the watercourse.

In the case of GBGA, releases are made from the HBS for the purposes of supplying water for users in Haughton Zone A (including GBGA). Water Solutions said that the other (non-HBS) water source is not well defined by the word 'natural'. They defined this other water source as non-HBS release sources, noting that this includes all other processes that affect water availability in Haughton Zone A including, for example, rainfall on the Haughton River catchment, unregulated diversion from the catchment, operational losses and environmental requirements.[304]

We note that Water Solutions identified a number of issues with the modelling in the OD Hydrology report and recommended that the model should not be used for pricing purposes.[305] We accept this recommendation given the significance of the modelling issues identified. Our assessment has therefore focussed on whether metered releases from the HBS and metered usage by GBGA customers provide a reliable basis for cost allocation.

To address data reliability concerns, we asked Water Solutions to review the data on volumes released and diverted at the HBS and volumes used by GBGA customers and other Haughton Zone A customers. Water Solutions conducted a site visit as part of this review. Water Solutions further analysed data from Sunwater on HBS releases using data from 2002–03 to 2018–19. Data pre-2002 was not available from Sunwater and there were concerns about the reliability of data from DNRME sources. Overall, Water Solutions considered the release and extraction data to be of sufficient quality for the purposes of its assessment.[306]

To assess the extent to which non-HBS release sources are supplying Haughton Zone A demand, Water Solutions defined Haughton Zone A efficiency ('HZA efficiency') as the total extraction of regulated water in Haughton Zone A ('HZA extraction') divided by the total releases made from the HBS for the purpose of supplying regulated water for Haughton Zone A users ('HBS releases').

Water Solutions found that there were missing observations in the HBS release data. If the missing observations were replaced with the volumes released the day before, HZA efficiency was 99 per cent.[307] Water Solutions noted that there are a number of years where HBS releases were higher than HZA extraction, indicating that there was little contribution from non-HBS release sources in dry periods. If the missing data was replaced with zero observations, HZA efficiency was 105 per cent (average supplementation from the channel system of about 95 per cent).[308]

Water Solutions made a number of observations as part of its analysis:

(a) The gauging of HBS releases appeared reasonable pending the availability of calibration details from Sunwater's most recent assessment. The gauging of HZA extractions is likely reasonable given incentives on the part of Sunwater and customers to ensure accuracy.

(b) Overflows from HBS should not be included as part of total supplemented inflows into Haughton Zone A as they only occur over short periods of time and it is likely that much of the water overflows Giru Weir and is lost to the system.

[304] Water Solutions, *Rural Irrigation Price Review 2020–24: Assessment of Hydrologic Factors*, prepared for the QCA, September 2019, p. 16.
[305] Water Solutions 2019, pp. 39–49; Water Solutions, *Rural Irrigation Price Review 2020–24: Assessment of Hydrologic Factors: Further Assessment—Giru Benefited Groundwater Area*, prepared for the QCA, January 2020, p. 5.
[306] Water Solutions 2020, p. 25.
[307] Water Solutions 2020, p. 21–22.
[308] Water Solutions 2020, pp. 27–29.

(c) There is no doubt there are significant losses associated with delivery of water but the calculation of efficiency takes into account the net effect of rainfall, evaporation, seepage, storage and usage. Removing losses was considered not appropriate.

(d) The extent of weed blockage is likely minimal due to Sunwater surveillance.

(e) The Haughton River weirs would capture flows for use in irrigation or in groundwater recharge, but an accurate estimate of this would require detailed hydrologic modelling.

(f) The effect of usage by non-GBGA users immediately below the HBS may be to reduce the average efficiency slightly (and increasing the level of supplementation).

(g) Temporary transfers are net inwards to the GBGA and if taken into account may decrease the average efficiency of supply.[309]

Water Solutions said that its initial conclusions were unchanged, that is, GBGA irrigators were receiving little contribution from non-HBS release sources in dry periods. Water Solutions concluded that there did not appear to be a strong basis for differential pricing of medium priority users in the GBGA users on the basis of non-HBS release sources.[310]

We acknowledge stakeholders' concerns that there would be significant losses in the watercourse (Haughton River) from delivering water to users in the GBGA. However, we do not consider it appropriate to remove losses when determining the average proportion of water sources from channel releases. We are seeking to apportion shared costs related to the channel system based on the portion of water supplied that is sourced from channel releases. We consider that up to the HBS, infrastructure will be shared between all distribution system customers. Beyond the HBS, the infrastructure is specifically for Haughton Zone A (including GBGA) customers.

We also acknowledge that in some years or over some extended periods, non-HBS release sources may be the predominant source of supply for GBGA customers. In response to the BDCG's concern with Water Solutions' initial conclusions based on total releases and usage for the 6 months to 30 September 2019, Water Solutions said that this period was comparatively wet and sub-annual efficiencies provide little account for inter-seasonal variability and are not recommended for pricing purposes.[311] In addition, being part of a supplemented system provides GBGA customers with benefits from the water supply security and flexibility of supply that the bulk and distribution system infrastructure provides.

On the basis of information available, we do not consider that non-HBS releases are sufficient to warrant a cost offset in any calculation of a separate tariff for GBGA for the 2020–24 price path. The system is on average 95–100 per cent supplemented, and this is potentially reflecting a switch by GBGA customers from naturally replenished groundwater to supplemented surface water.

We suggest that the analysis of releases against extraction volumes can be re-evaluated at the start of the next regulatory period when more years of data are available.

Differential pricing

If a separate charge for the GBGA was based on allocated infrastructure costs (assuming all usage is supplemented water), it would include a share of the Burdekin Channel infrastructure, plus all of the costs associated with the Giru and Val Bird Weirs and Haughton River infrastructure. However, our analysis indicates that charges based on this cost allocation would not result in a

[309] Water Solutions 2020, pp. 22–32.
[310] Water Solutions 2020, p. 38.
[311] Water Solutions 2020, p. 23.

lower charge for GBGA customers since all of the Haughton River weir and associated costs would be allocated to GBGA customers and not shared across the distribution system.

We also note concerns about the potentially different level of service received by GBGA customers as compared to other channel system users. GBGA customers access their water by pumping from groundwater or surface water sources whereas channel users have water delivered on farm. Further, GBGA customers have indicated they do not have a guarantee of peak flow entitlements. However, these service quality variations likely occur in all distribution systems and on-farm costs will vary according to the individual farm circumstances. We do not consider that distribution system costs should be adjusted to reflect different on-farm costs.

Finally, we also note that there are concerns about the rising water table due to reduced use of groundwater. An option to address this would be to set differentiated prices for groundwater as distinct from supplemented surface water to reflect a proportion of the operating cost of the weirs as well as a share of overhead and operating costs. Such a pricing arrangement would send a cost-reflective signal that would help to alleviate the risk of the rising water table. The BDCG noted that incentives to manage the water table are essential to long-term viability and sustainability within the GBGA[312]. For this investigation we have adopted current tariff groups as directed by the Government, but we consider that a new groundwater tariff group may be warranted.

Capacity to pay

In relation to capacity to pay issues, we note that capacity to pay concerns have also been taken into account in the design of the pricing framework and through our application of the pricing principles in the referral (see Chapter 2, Part A).

In this respect, we recommend that the annual tariff increase for GBGA customers is limited to inflation plus $2.38 per megalitre of WAE (from 2020–21, increasing by inflation) (see section 7.5) and the existing tariff is already low compared to other Burdekin-Haughton distribution system customers. The transition to cost recovery over a number of years is intended to moderate the bill impacts and provide time for GBGA customers to adjust to the new charges.

Summary

Based on the above, our final recommendation is that:

(a) the GBGA be treated as part of the distribution system and that the same price apply across the Burdekin distribution system.

(b) annual real price increases are limited to $2.38 per megalitre ($2020–21)

(c) for the next review period, actual usage be compared to releases to the GBGA taking account of additional years of data.

Glady's Lagoon

The Glady's Lagoon irrigation section is a natural watercourse and lagoon located between the Haughton Main Channel and Ravenswood Road within the Burdekin-Haughton distribution system.

Previous investigation

In the 2012 review, Sunwater advised that the total WAE in Glady's Lagoon is 1,752 ML, of which 360 ML was natural flows.

[312] BDCG, sub. 238, p. 25.

In the absence of more recent details related to hydrological assessments of natural yields at Glady's Lagoon, we recognised the natural flows to Glady's Lagoon for cost recovery purposes and recommended a zero price for the first 360 ML, as Sunwater did not incur costs in the supply of this volume. We determined that standard charges should apply after the first 360 ML.

We recommended that Sunwater investigate the hydrological circumstance of Glady's Lagoon to confirm the current cost allocation or negotiate alternative arrangements with irrigators.

Sunwater's submission

In its November 2018 submission, Sunwater submitted that pending budget approval, the level of natural flow will be estimated as part of an investigation into Glady's Lagoon in 2019–20.[313]

In response to our draft report, Sunwater submitted that DNRME is:

- about to commence hydrological assessments in the Burdekin Basin
- best placed to undertake hydrological assessments[314]

Other stakeholders' submissions

BRIA submitted that the price structure for Glady's Lagoon requires resolution to provide long-term price certainty.[315] BRIA recommended that we ensure the transition to full cost-reflective channel prices for Gladys Lagoon customers is gradual and that the cost of transition is covered by a CSO and not by other irrigators.[316]

BRIA recommended that Sunwater install a bulk meter and float valve at the inlet structure into Gladys Lagoon, and all water delivered through the bulk meter be charged at channel distribution rates. BRIA said that any additional water taken from Gladys Lagoon should attract no charge.[317]

In response to our draft report, BRIA said that rather than conduct another hydrological assessment they recommended that Gladys Lagoon should only pay the volumetric price for water diverted from the channel distribution system.[318]

QCA assessment

As outlined above, our approach to cost allocation is that irrigation customers in each tariff group should be allocated those costs that need to be incurred by Sunwater to service them, given the regulatory framework[319] in place.

In the absence of updated information on Sunwater's cost of supply to this tariff group, we have maintained the existing pricing arrangements on the basis of stability in pricing and consistency of approach.

We recommend that Sunwater investigate the cost of supply to customers in this tariff group. If this assessment does not confirm the current cost allocation, Sunwater should engage with its customers and propose an alternative cost allocation for the next review of irrigation prices.

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[313] Sunwater, sub. 14, p. 18.
[314] Sunwater, sub. 229, p. 96.
[315] BRIA, sub. 85, p. 51.
[316] BRIA, sub. 85, p. 52.
[317] BRIA, sub. 85, p. 52.
[318] BRIA, sub. 161, p.8.
[319] This includes regulatory obligations (including water sharing rules and other operational requirements) such as those specified in a water management protocol, resource operations plan or resource operations licence.

6.4.3 Mareeba-Dimbulah WSS

The Mareeba-Dimbulah WSS has two charging approaches that are unique to the scheme, an access charge and a three-part block tariff for customers in the 'channel outside a relift' section. In addition to these charges there is also a separate tariff groups for Walsh Riverand the channel relift section, and apportionment of costs associated with the Barron Falls hydro-electric facility.

Customer access charge

Mareeba-Dimbulah WSS and distribution system are the only irrigation service contracts with an annual fixed customer access charge. This charge increased by actual inflation over the 2006–11 price path period, and increased by forecast inflation since the beginning of the 2012–17 price path period. The 2019–20 fixed customer access charge is $687.77.

Previous investigation

In the 2012 review, we recommended that the fixed annual access charge should be maintained in real terms. We acknowledged that some activities (and costs) were likely to vary per customer, rather than by WAE but was not provided with the data to determine the costs per customer. We decided to maintain the access charge in real terms.

Stakeholders' submissions

Sunwater said that it consulted with MDIAC on whether an access should continue to apply in the next price path period. Sunwater said that MDIAC supported continuation of the charge. As such, Sunwater did not propose and changes to the current pricing arrangements.[320]

MDIAC indicated that Sunwater should define the costs that the access charge covers and that any increase in the access charge should not exceed inflation.[321]

QCA assessment

We acknowledge that some activities (and costs) are likely to vary per customer, rather than by WAE. Such activities may include meter reading, billing and customer service.

Sunwater has not been able to provide us with sufficiently disaggregated cost data at the scheme level to allow us to determine the quantum of costs that vary per customer. In the absence of updated costing information that would support a change from the current charge, combined with customer support for its retention, we recommend that the Mareeba fixed access charge be maintained in real terms (Table 53).

Table 53 Annual fixed customer access charge ($ per customer, nominal)

	2019–20	***2020–21***	***2021–22***	***2022–23***	***2023–24***
Access charge ($/customer)	687.77	703.18	718.93	735.03	751.50
Annual increase (per cent)		2.24	2.24	2.24	2.24

Source: Sunwater Fees & Charges Schedule 2019–20 (Mareeba-Dimbulah); QCA analysis.

Channel customers outside the relift section

There are currently five tariff groups for irrigation customers of the Mareeba-Dimbulah distribution system:

- Channel (outside a relift up to 100 ML WAE)

[320] Sunwater, sub. 11, p. 75.
[321] MDIAC, sub. 123, p. 5.

- Channel (outside a relift 100–500 ML WAE)
- Channel (outside a relift over 500 ML WAE)
- River Supplemented Streams and Walsh River
- Channel (relift) (medium priority).

The three tariff groups in the outside relift section differ only in terms of their distribution system (Part C) fixed price.

The three distinct tariff groupings for the 'outside a relift' areas of the distribution system is largely the result of historical pricing arrangements, which prior to 2000, were based mainly on crop type.[322]

Previous investigation

In the 2012 review, we concluded that there is sufficient evidence to suggest a material difference in fixed costs between the tariff groups[323] and recommended the retention of the different prices for the channel outside a relift customer groups.

Stakeholders' submissions

Sunwater said that specific pricing arrangements were a matter for us and the Government.

MDIAC submitted that the declining block tariff[324] should be maintained as this system ensures the long-term viability and the capacity to pay of the larger irrigators who hold the majority of the water allocation, which in turn ensures the long term viability of the scheme.[325]

The MDIAC said that approximately 4 per cent of large medium priority irrigators (over 500 ML WAE) hold 53 per cent of the medium priority WAE.

The MDIAC suggested:

- It must be cheaper to deliver 77,208 ML of water to 38 MP customers than it is to deliver 66,434 ML of water to 919 MP customers.
- On a per unit of water basis, it is cheaper to administer one 500 ML allocation account than it is to administer ten 50 ML allocation accounts.
- Larger water users order large, constant volumes of water for extended periods of time in one order (i.e. repeat / standing orders), resulting in administrative and operational savings.
- Larger water users are more flexible to the needs of Sunwater, helping to reduce losses and manage water delivery.

The MDIAC concluded that we do not have an economic argument for removing the declining block tariff and that this tariff grouping has the support of the irrigators. The MDIAC requested that we undertake a detailed cost analysis that they considered would show that the unit costs of supplying larger users are lower.

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[322] Sunwater, *Tariff Principles and Structures*, working paper no. 13, August 2005, p. 5.
[323] QCA, *SunWater Irrigation Price Review: 2012–17*, Volume 2: Mareeba-Dimbulah Distribution System, final report, April 2012, p. 16.
[324] While stakeholders in this scheme referred to these pricing arrangements as a declining block tariff, we note that the three tariff blocks reflect distinct tariff groupings. Each irrigation customer is assigned to one of these three groups based on their WAE, and the Part C charge for that block is applied to the full WAE held.
[325] MDIAC, sub. 123, p. 1.

2PH Farms supported the removal of the declining block tariff on the basis that it:

- is an impediment to the trading of water and allocation
- does not promote competition across industries
- does not consider economic and regional development issues
- does not promote the best use of water.[326]

2PH Farms indicated that the combination of the access charge and tariff structure results in small users subsidising large users. 2PH Farms enquired as to why small users are subsidising large users given that the access charge covers the cost in supplying small water users.[327]

QCA assessment

Under the terms of the referral, the three blocks in the outside relift section are distinct tariff groups for which we are required to recommend a price.

In the previous review, we concluded that there was sufficient evidence to suggest that a material difference existed in fixed costs between the three tariff groups (particularly given the unique diversity of customers in the scheme).

We note that the diverse characteristics of water users in the scheme remains in place. There are a large number of small-scale irrigators and a small number of large scale irrigators in the channel outside a customer relift area. Sunwater has a large number of (bulk and distribution) customers in the scheme, accounting for around 20 per cent of its total scheme customer base.

We note discounted charges for large customers occur elsewhere for infrastructure pricing.

For Hunter Water, IPART accepted a proposal to apply a discounted charge to a small number of large customers over 50,000 kL per year.[328] This discount varied according to location, up to 25 per cent in some locations. IPART noted that if the discount was not applied, large customers may bypass the system and use alternative sources, such as artesian bores. Any decrease in consumption by these large customers would see a small decline in Hunter Valley's costs, but a large fall in revenue would need to be recovered from other customers through higher prices.

In the UK, large user tariffs are applied by water companies for users taking more than a threshold volume, for example, 50 ML per year. These tariffs reflect lower costs due to a single off-take point being used for a large volume and not all of the delivery system being used.[329]

Sunwater said that it does not have the detailed cost information required to assess the existing differential between the tariffs in the channel outside a relift customer groups.[330]

In the absence of updated information on Sunwater's cost of supply to the three different customer groups, we are unable to update the pricing differential that exists for the Part C charge in the channel outside a relift area. We note that the differential is widely supported through the Mareeba-Dimbulah distribution system and has been in place for an extended period.

Sunwater, in consultation with irrigator advisory committees and customers, is best placed to consider the interests of customers and provide greater transparency as to the costs underlying

[326] 2PH Farms, sub. 138, p. 2; 2PH Farms, sub. 159, p. 1.
[327] 2PH Farms, sub. 159, p. 3.
[328] IPART, *Hunter Water Corporation's water, sewerage, stormwater drainage and other services, Review of prices from 1 July 2013 to 30 June 2017*, final report, June 2013.
[329] Ofwat, *Charging principles and guidelines: planned revisions*, September 2012.
[330] Sunwater response to QCA RFI 32.

the three distinct tariff groups in the channel outside the relift section. This is particularly relevant for this tariff structure that has been refined over time to deal with local circumstances.

Walsh River and supplemented streams

The Walsh River and supplemented streams are identified as a separate tariff grouping. The 2019–20 prices for this group lie below the other tariff groups in this distribution system.

The constructed channels in the Mareeba-Dimbulah distribution system are used to supplement a number of natural watercourses. The Mareeba-Dimbulah WSS ROL identifies 18 supplemented streams, including the Walsh River.

Previous investigation

Historically, costs associated with the Walsh River and supplemented streams section were allocated on the assumption that, on average, 60 per cent of water taken by customers in this section was sourced from volume supplied by Sunwater's infrastructure (i.e. releases to supplement the natural watercourses including the Walsh River).

In the absence of updated information on the proportion of flows that are supplied by Sunwater's infrastructure, we accepted the historical position and recommended that Sunwater further investigate the cost of supply for the Walsh River and supplemented streams segment.[331]

Stakeholders' submissions

Sunwater indicated that subject to budget approval, a hydrological assessment will be undertaken as part of the business case for Nullinga Dam.[332]

No other submissions were received on this issue.

QCA assessment

In the absence of updated information on Sunwater's cost of supply to this tariff group, we have maintained the existing pricing arrangements on the basis of stability in pricing and consistency of approach.

We recommend that Sunwater investigate the cost of supply to customers in this tariff group. If this assessment does not confirm the current cost allocation, Sunwater should engage with its customers and propose an alternative cost allocation for the next review of irrigation prices.

Barron Falls Hydro-Electricity

The Tinaroo Falls Dam releases (unallocated) water to the Barron Falls Hydroelectric Power Station. While environmental releases to meet river flow requirements can be used to generate hydro-electricity, additional releases for hydro purposes may be made.

Previous investigation

In the 2012 review, we accepted that the headworks utilisation factor (HUF) approach takes account of the expected hydro volumes. However, costs allocated based on water allocations (i.e. variable operating costs and fixed operations costs) do not take into account these volumes.

In the 2012 review, Sunwater estimated that 20 per cent was an average of the hydro releases as a proportion of total water taken under WAEs for the three years 2007–08 to 2009–10.

[331] QCA, SunWater Irrigation Price Review: 2012–17, Volume 2: Mareeba-Dimbulah Distribution System, final report, April 2012, p. 16.
[332] Sunwater, sub. 14, p. 19.

In the absence of any alternative information on a longer period, we accepted Sunwater's proposed 20 per cent allocation of variable operating costs and fixed operating costs not otherwise allocated by the HUF (i.e. 50 per cent of fixed operations costs) to the facility (i.e. this 20 per cent was removed from the irrigation cost base).

Stakeholders' submissions

In response to our draft report, Sunwater said it supported our draft report approach.[333]

QCA assessment

Sunwater proposed that 18 per cent of the operating expenditure for the Mareeba-Dimbulah bulk WSS should be attributed to the Barron Falls hydro-electric facility. This was based on the average of the annual hydro releases from 2007–08 to 2017–18.[334]

Consistent with the 2012 review, we consider that an average of the hydro releases as a proportion of total water taken under WAEs is an appropriate cost allocation approach. We accepted that 18 per cent of operating expenditure for the Mareeba-Dimbulah bulk WSS should be attributed to the Barron Falls hydro-electric facility based on the most recent six-year average.

6.4.4 Lower Mary River WSS

There are currently two tariff groups for irrigation customers of the Lower Mary River WSS:

- Tinana Barrage and Teddington Weir
- Mary Barrage.

Previous investigation

In the 2012 review, Sunwater submitted that the Owanyilla pump station and main channel perform a bulk water function, as they supplement the Tinana Barrage and Teddington Weir. These assets also form part of the assets of the Lower Mary distribution system.

Sunwater submitted that hydrological modelling indicated that 27 per cent of water transported through the Owanyilla pump station and main channel related to bulk water for customers in the Tinana Barrage and Teddington Weir tariff group. We accepted the 27 per cent allocation of Owanyilla pump station and main channel costs to the bulk tariff group for the Tinana Barrage and Teddington Weir.[335]

Stakeholders' submissions

In response to our draft report, Sunwater said it supported our draft report approach.[336]

QCA assessment

We requested from Sunwater an updated figure for the costs associated with the Owanyilla pump station. Sunwater provided a six-year history (2012–13 to 2017–18) on the water diversions for Tinana Barrage and Teddington Weir customers as a percentage of total volumes pumped.

Sunwater proposed to use the simple average of the annual percentage results, which is 40 per cent. However, we consider it more appropriate to derive the weighted average, with the weight being the total volume pumped each year. The weighted average (59 per cent) is equivalent to

[333] Sunwater, sub. 229, p. 99.
[334] Sunwater response to QCA RFI 33.
[335] QCA, *Sunwater Irrigation Price Review: 2012–17*, Volume 2: Lower Mary River Water Supply Scheme, final report, April 2012, p. 19.
[336] Sunwater, sub. 229, p. 99.

the overall diversions for the Tinana Barrage and Teddington Weir as a percentage of total water volume pumped over the six year period.

The 59 per cent figure is used combined with the operations cost allocator (20 per cent) and electricity cost allocator (36 per cent) to determine a cost transfer amount for the base year.[337]

For renewals expenditure, we have also transferred 59 per cent of costs from the distribution system to the Tinana Barrage and Teddington Weir tariff group over the planning period.

6.5 Alternative tariff groups

Under the referral, we have been directed to provide two sets of recommended prices for specified tariff groups: one that maintains the existing tariff group(s), and one that applies an alternative tariff group(s). For the tariff groups that we have been asked to review, the recommendations we make are not required to specify which set of prices are to apply.

Table 54 Sunwater tariff groups to be reviewed

Water supply scheme	*Categories of prices*	*Existing tariff groups*
Dawson Valley	Fixed (Part A) Volumetric (Part B)	(1) Dawson River (2) Dawson River at Glebe Weir
St George	Fixed (Part A) Volumetric (Part B)	(1) River—Beardmore Dam/Balonne River (2) River—Thuraggi Watercourse
Three Moon Creek	Fixed (Part A) Volumetric (Part B)	(1) River (2) Groundwater

In developing alternative tariff groups for these schemes, we have considered the relevant matters under section 26 of the QCA Act and the referral—in particular, economic efficiency and balancing the legitimate commercial interests of Sunwater with the interests of its customers.

6.5.1 Dawson Valley WSS

There are currently two tariff groups for irrigation customers of the Dawson Valley (bulk) WSS:

- Dawson River
- Dawson River at Glebe Weir.

The Glebe Weir tariff group relates to irrigators upstream of Glebe Weir that source water directly from the Glebe Weir pondage area. Customers downstream pay the Dawson River charge.

Previous investigation

In the 2012 review, Sunwater advised that the lower fixed (Part A) price for the Glebe Weir irrigators was a legacy arrangement whereby Glebe Weir customers paid slightly lower charges on the basis that water was often not available at their foot valves after releases from the weir for downstream users.

We concluded that there was no basis to differentiate costs between the two tariff groups. However, given that existing prices for both tariff groups were above lower bound, the fixed (Part A) price in each tariff group increased by inflation and maintained the existing price differential. We recommended the same volumetric (Part B) tariff for these tariff groups.

[337] Sunwater response to QCA RFI 41.

Stakeholders' submissions

In response to our draft report, Sunwater said that its May 2018 data showed there were 109 megalitres of high priority water allocations held by irrigation customers in the Dawson Valley WSS. Sunwater encouraged us to review and propose high priority irrigation prices for the Dawson Valley bulk WSS in our final report.[338]

No submissions from other stakeholders were received on this issue.

QCA assessment

We note that there is not a current tariff group covering Dawson Valley high priority WAE held by irrigation customers, other than prices that apply to customers of Theodore Water. We have considered an alternative tariff group for these customers.

We are proposing the following alternative tariff groups for the Dawson Valley WSS:

- the existing tariff groups for Dawson River and Dawson River at Glebe Weir that reflect continuing legacy arrangements
- a new alternative Dawson River tariff group that combines the two existing tariff groups with prices based on moving to the scheme level cost-reflective pricing from 2020–21
- a new Dawson River tariff group for high priority WAE held by irrigation customers.

The price path for the fixed (Part A) price for the current and new bundled tariff group are shown in Table 55. The volumetric (Part B) price will remain the same across all scheme customers.

Table 55 Dawson Valley WSS current and alternate tariff groups: fixed (Part A) price ($/ML WAE)

Tariff group	*Existing*	*Cost-reflective*	*QCA recommended*			
	2019–20	*2020–21*	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Existing tariff groups						
Dawson River	18.04	21.64	20.82	22.13	22.62	23.13
Dawson River at Glebe Weir	16.18	21.64	18.92	21.78	22.62	23.13
Alternative tariff groups						
Dawson Valley WSS	n.a.	21.64	20.82	22.13	22.62	23.13
Dawson River (high prioritiy)	n.a.	113.21	46.11	49.57	53.17	56.91

Source: QCA analysis.

6.5.2 St George WSS

There are currently two tariff groups for irrigation customers in the St George (bulk) WSS:

- Beardmore Dam / Balonne River
- Thuraggi Watercourse.

[338] Sunwater, sub. 229, p. 105.

Previous investigation

Consistent with the 2006–11 price path, we considered that there was no basis to differentiate costs between these two tariff groups. Given existing prices were identical, we recommended identical prices for these two tariff groups.

QCA assessment

We consider that an alternative tariff group should combine the multiple tariff groups into a single tariff group. As there has been no price differential between the two existing tariff groups, the alternative single price will be the same as the existing tariff groups.

6.5.3 Three Moon Creek WSS

There are currently two tariff groups for irrigation customers in the Three Moon Creek WSS:

- River
- Groundwater.

Previous investigations

In the 2012 review, we concluded that there was no basis for differentiated costs between the two tariff groups.

Stakeholders' submissions

The Three Moon Creek Irrigator Advisory Committee (IAC) said that it understood that Sunwater did not incur any extra costs in supplying surface water as compared to groundwater WAEs. However, it noted that electricity costs for irrigators accessing surface water are lower than for those accessing groundwater.

Three Moon Creek IAC outlined five potential tariff group options for the scheme (Table 56).

Table 56 Tariff group options for Three Moon Creek WSS

Option	*Three Moon Creek IAC's comments*
1. Raise Groundwater fixed (Part A) price to the River fixed (Part A) price.	This option would result in an increase of around 36 per cent in fixed (Part A) prices for groundwater users. This option is unacceptable, as it will jeopardise affected irrigators' economic viability with consequent flow-on to the local economy.
2. Lower River fixed (Part A) price to the Groundwater fixed (Part A) price.	While this option would significantly benefit surface water users, irrigators recognise the difficulty in reducing Sunwater's revenue, given the current Government policy of moving schemes to cost-reflective prices over time.
3. Raise Groundwater fixed (Part A) and reduce River fixed (Part A) to achieve a neutral revenue outcome for Sunwater.	Groundwater irrigators would receive a modest cost increase that could be absorbed and surface water users would receive a price reduction. However, all users would benefit from overall increased efficiency in the scheme through reduced administration costs, compared to the existing situation where Sunwater manages two tariff groups across the scheme.
4. Fix fixed (Part A) River charges at current levels until the Groundwater fixed (Part A) incrementally reaches the same fixed (Part A) River charge.	This provides similar outcomes to option 3, except that the efficiency gains of moving to a single tariff will be delayed by 4 to 5 years.
5. No change	While this option is simplest to implement, it entrenches inefficiencies inherent in the current system.

Source: Three Moon Creek Irrigator Advisory Committee, sub. 141.

Out of the five approaches, the Three Moon Creek IAC nominated the third approach as the best option.[339]

In response to our draft report, Sunwater indictated that they support the alternative tariff groups, subject to support being received from customers in the affected schemes.[340]

QCA assessment

We have assessed the options in the submission from Three Moon Creek IAC. We welcome stakeholders working together to develop pricing options that consider efficiency implications and balance the legitimate commercial interests of Sunwater and the interests of its customers.

In the 2012 review we considered that there was no basis to differentiate costs between groundwater and river WAE.

Given there is no basis to differentiate costs, we consider that the alternative tariff group we are required to recommend should be a single tariff group for both groundwater and river customers.

We consider that option 3 posed balances the legitimate commercial interests of Sunwater with the interests of its customers, by maintaining Sunwater's existing level of revenue and moderating bill impacts for all customer groups in the scheme.

The fixed (Part A) price for the current tariff group and our alternative tariff groups are shown below. The volumetric (Part B) price will remain the same across all scheme customers.

Table 57 Three Moon Creek WSS current and alternative tariff groups: fixed (Part A) price ($/ML)

Tariff group	*Existing*	*Cost-reflective*	*QCA recommended*			
	2019–20	*2020–21*	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Existing tariff groups						
River	32.43	51.00	35.54	38.77	42.12	45.61
Groundwater	23.58	51.00	26.49	29.51	32.66	35.94
Alternative tariff group						
Option 3 (weighted average)—QCA-recommended	n.a.	51.00	27.72	30.77	33.95	37.25

Source: QCA analysis.

[339] Three Moon Creek Irrigator Advisory Committee, sub. 142, pp. 1–2.
[340] Sunwater, sub. 229, p. 100.

7 RECOMMENDED PRICES

The referral directs us to recommend irrigation prices for all current tariff groups in the 27 irrigation service contracts (22 bulk WSSs and 5 distribution systems) relevant to this investigation. These prices should include two sets of prices in relation to dam safety upgrade capex. We are also required to review the tariff groups in certain specified water supply schemes (WSSs) and develop alternative tariff groups as a second pricing option.

This chapter outlines how we have converted total scheme costs to our recommended irrigation prices for the period 1 July 2020 to 30 June 2024.

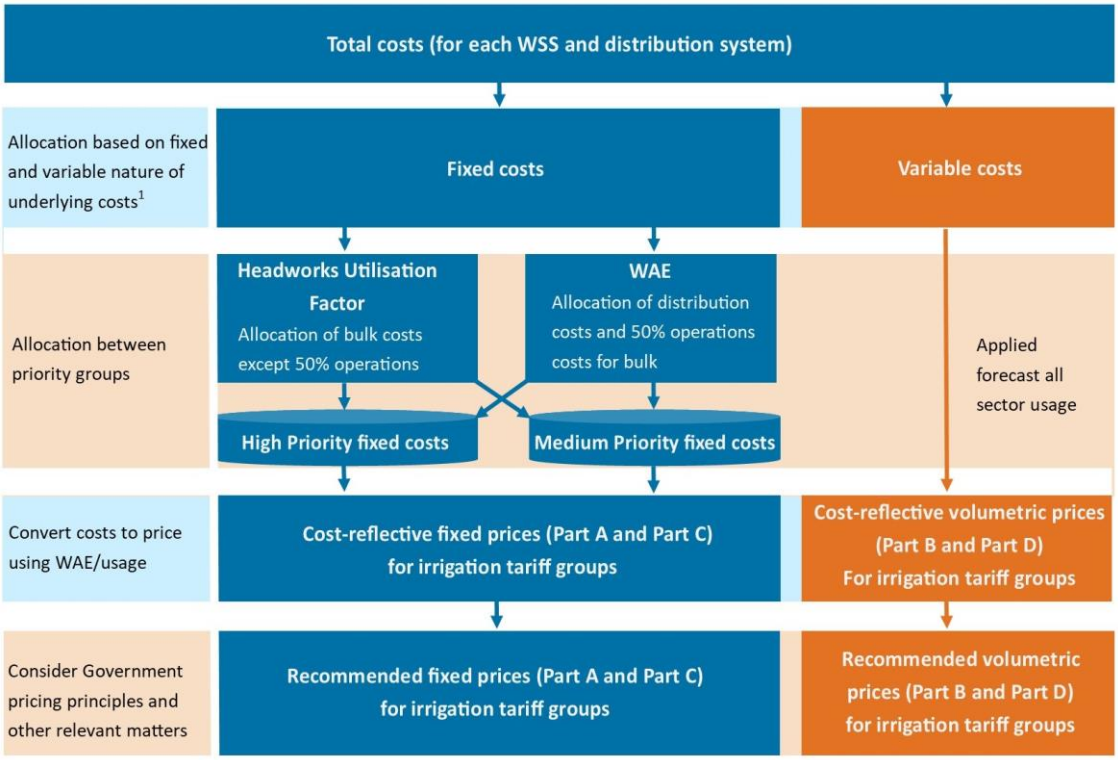
7.1 Background

Our approach to deriving recommended irrigation prices (Figure 25) is largely consistent with the approach adopted in the 2012 review.

The main steps in converting total scheme costs (Chapter 4) to prices are the following:

- Allocate costs to be recovered from the fixed (Part A and Part C, if applicable) prices and volumetric (Part B and Part D, if applicable) prices using a simple and transparent approach that broadly aligns with the fixed and variable nature of underlying costs (see section 7.2).
- Allocate fixed costs between medium and high priority WAE customers (see section 7.3).
- Convert costs to a fixed and volumetric price that reflects the lower bound cost target (referred to in the referral as the 'cost-reflective' price in each tariff group) (see section 7.4).
- Consider matters in the referral (including the Government's pricing principles) and in section 26 of the QCA Act when calculating recommended prices (section 7.5).

Figure 25 Approach to deriving recommended irrigation prices



7.2 Allocating costs to fixed and volumetric prices

We consider that the tariff structure should include a volumetric price that covers variable costs associated with the delivery of water services (see Chapter 3, Part A). The fixed price should reflect the balance of the total costs allocated to the particular tariff group.

7.2.1 Previous investigation

Current irrigation prices reflect the allocation of costs between fixed and variable costs based on advice provided by Indec as part of the 2012 review.[341] Indec considered whether a causal relationship could exist between costs and water usage over a five-year period, undertook a statistical analysis of past costs, and considered the most appropriate management approach to deliver services. The analysis was undertaken on a scheme-wide basis (that is, other customer sectors were included, as well as irrigation).

Indec concluded that, with the exception of electricity to pump water (considered a variable cost), and some indirect and overhead costs (considered fixed costs), many other expenditure types were semi-variable[342] in relation water use. We accepted Indec's findings for operating costs but recommended that renewals costs should be fixed in relation to water use.

Table 58 presents the findings for operating costs for both bulk and distribution systems.

Table 58 Variable operating costs by activity—2012 review (%)

Activity	*Variable in bulk*	*Variable in distribution*
Direct operations and maintenance[a]	20	20–35
Electricity pumping costs	100	100
Other electricity costs	—	—
Non-direct costs	—	—

a *Excludes electricity costs. Source: Indec 2011; QCA analysis.*

The application of these proportions resulted in the following:

- For bulk WSSs, the volumetric price was recommended to recover between 4 and 11 per cent of the total scheme costs.
- For distribution systems, the volumetric price was recommended to recover between 30 and 37 per cent of the total scheme costs.

7.2.2 Sunwater's submission

Sunwater said that it had proposed a simpler revenue allocation between fixed and volumetric charges based on a high-level estimate of variable costs that also considered some level of incentive for water efficiency.[343] Sunwater said that its approach maintained the same relative proportions of fixed and volumetric allocations for all service contracts, and avoided the complexity of the allocation method used in the 2012 review.

[341] Indec, *Qualitative Framework and Assessment of Fixed and Variable Cost Drivers*, final report, prepared for the QCA, December 2011.

[342] Semi-variable costs are costs that have a fixed minimum component and a variable component that does not exhibit a constant relationship with incremental units of usage (but do vary in a less direct manner).

[343] Sunwater, sub. 49, pp. 7–8.

Sunwater proposed the allocation of 10 per cent of total operating costs (excluding electricity and insurance, but including non-direct costs), and 100 per cent of electricity cost to variable costs.[344]

Table 59 Variable operating costs by activity—Sunwater's proposed approach (%)

Activity	*Variable (per cent)*
Direct operations and maintenance[a]	10
Electricity pumping costs	100
Other electricity costs	100
Non-direct costs	10
Renewals annuity	—
Dam safety upgrade capex	—

a *Excludes electricity and insurance costs. Source: Sunwater, sub. 49, p. 8.*

Sunwater said that of all cost categories, electricity costs are most likely to be driven by water use and therefore should be 100 per cent allocated to usage charges.[345] However, in responding to our query on how base year electricity costs had been calculated, Sunwater identified that electricity costs in most schemes were not usage-related.[346]

In response to our draft report, Sunwater accepted our approach with respect to fixed and variable electricity costs.[347]

In response to our draft report, Sunwater said that it maintained its position that the majority of its costs were fixed and, consequently, our proposed allocation of 20 per cent of direct operations and maintenance expenditure to volumetric prices in our draft report was not reflective of the fixed nature of these costs. Sunwater said that this approach would increase the volatility in its revenues which, given that its costs were predominantly fixed, represented a regulatory risk not present in the 2012 review. In addition, Sunwater said it was concerned that the misalignment in fixed/variable costs and fixed/volumetric prices may distort pricing signals to customers.

7.2.3 Other stakeholders' submissions

Irrigator stakeholders were generally more concerned about the classification of costs as fixed or variable than they were about the approach of allocating fixed costs to the fixed component of prices and variable costs to the volumetric component of prices.

The classification of electricity costs was a particular concern, with irrigator stakeholders generally advocating that a higher proportion of these costs should be classified as fixed.

Some irrigation stakeholders said that we should investigate the underlying fixed and variable nature of electricity costs.[348] In particular, BRIA and BRIG considered that QCA should investigate whether access charges ($ per day) and demand charges for electricity should be re-assigned as fixed costs. BRIG provided a proposed electricity cost pass-through mechanism (see Part A, Chapter 3), and said that demand charges should be assigned to volumetric charges if this type of mechanism was adopted; otherwise, demand charges should be assigned to fixed charges.

[344] Sunwater, sub. 49, p. 8.
[345] Sunwater, sub. 49, p. 8.
[346] Sunwater response to QCA RFI 23.
[347] Sunwater, sub. 229, pp. 101–102.
[348] QFF, sub. 132; BRIA, sub. 85; BRIG, sub. 88; KDWUA, sub. 112.

Kinchant Dam Water Users Association (KDWUA) said that given the nature of operations in the Eton bulk WSS, all pumping (electricity) costs in this scheme should be fully assigned to fixed cost (consistent with the 2012 review).[349]

7.2.4 QCA assessment

Electricity costs

Sunwater's electricity costs comprise a significant component of its overall operating costs, due to the cost of pumping water, predominantly in distribution systems. However, there is also some relatively minor electricity use in bulk WSSs that require pumping to supplement stream flows (Barker Barambah—Redgate relift and Upper Condamine WSS—North Branch).

We have treated a significant component of electricity costs as variable with water usage in these two bulk WSS tariff groups and the five distribution systems (section 2.5). In these schemes, we have assigned our calculated 2019–20 base year electricity costs between fixed and variable costs based on the fixed and variable nature of the underlying electricity tariff components.

We consider that our approach of assigning some electricity costs to fixed costs based on the underlying nature of the electricity tariffs better meets the requirements set out in the referral notice, which requires us to have regard to the underlying fixed and variable nature of costs in setting prices.

Table 60 shows our proposed split between fixed and variable costs for those schemes with variable electricity costs, as identified above.

Table 60 The QCA's 2018–19 base-year electricity costs for selected schemes

Tariff group	*Variable cost ($/ML)*	*Water usage forecast (ML)*	*Total variable cost ($'000)*	*Total fixed cost ($'000)*	*Total base year cost ($'000)*
Barker Barambah—Redgate relift	46.66	690	32	8	40
Upper Condamine—North Branch	13.30	6,693	89	1	90
Bundaberg distribution	52.34	75,682	3,961	599	4,560
Burdekin-Haughton distribution	17.68	232,035	4,102	1346	5,448
Eton distribution	24.60	22,488	553	5	558
Lower Mary distribution	50.63	4,975	252	36	288
Mareeba-Dimbulah distribution—relift	67.67	5,067	343	134	477

Notes: For Barker Barambah WSS (Redgate Relift) and Upper Condamine (North Branch), as outlined in Chapter 2 we have accepted Sunwater's proposed base year costs. We have derived fixed costs based on the costs of the connection sites that are not pump stations plus the fixed component of the electricity tariffs for the pump stations.

Source: QCA analysis.

Other costs

We consider that the fixed/variable splits recommended by Indec as part of the 2012 review are an appropriate starting point for the current review. Sunwater has advised that it has not made

[349] KDWUA, sub. 112.

any significant changes to operational and maintenance processes since 2012 that would materially affect the level of variable costs.[350]

The allocation of costs between the fixed and variable components of prices involves a degree of subjectivity and judgement. We accept Sunwater's concern that the 2012 review approach was overly complex, with scheme-specific fixed/variable splits for the activity-level categories (direct operations, preventative maintenance and corrective maintenance) in Sunwater's distribution systems that differed across systems by increments of 5 or 10 per cent.[351] For this review, the referral directs us to have regard to ensuring, where possible, that revenue and pricing outcomes are both simple and transparent to customers.

We have considered Sunwater's proposed allocation of 10 per cent of operations and maintenance expenditure (including direct and non-direct opex) to variable costs. We note that Sunwater's proposed allocation is broadly similar to the 2012 review (given that around half of operations and maintenance expenditure was non-direct opex in the 2012 review). However, Sunwater's proposed costs in this review reflect a higher non-direct share of scheme costs as compared to the 2012 review.

We have allocated 20 per cent of direct operations and maintenance expenditure to variable costs for bulk WSS and distribution systems in this investigation. We consider that this approach is appropriate, with a view to balancing complexity, cost and transparency. This is consistent with the approach we applied in the 2012 review for bulk WSSs and reflects the lower end of the range of the cost category level proportions we applied for distribution system costs.

We note that our recommended allocation of 20 per cent of direct operations and maintenance expenditure to the volumetric component of prices reflects a lower allocation than we applied in the 2012 review and reflects a lower allocation of total operations and maintenance expenditure to volumetric prices than Sunwater proposed in its November 2018 cost submission. We consider that this approach provides a simplified approach that reflects Sunwater's largely fixed cost structure and reflects an appropriate allocation of risk between Sunwater and its customers.

Summary

Table 61 presents our recommended fixed/variable cost allocations for Sunwater.

Table 61 Variable costs by activity—the QCA's recommended approach (per cent)

Activity	*Sunwater proposed*	*QCA recommended*
Direct operations and maintenance[a]	10	20
Electricity pumping costs	100	Scheme-specific
Other electricity costs	100	—
Non-direct costs	10	—
Renewal annuity	—	—
Dam safety upgrade capex	—	—

a *Excludes electricity and insurance costs. Source: QCA analysis.*

We note that our approach is generally consistent with IPART's most recent WaterNSW price determination. In that review, IPART considered that fixed costs should be recovered through

[350] Sunwater response to QCA RFI 37.

[351] In each distribution system, the costs allocated to variable costs were either 20, 25, 30 or 35 per cent for each of the operations, preventative maintenance and corrective maintenance categories.

fixed charges, and variable costs should be recovered through variable (usage) charges, as this promoted the economically efficient use of water infrastructure assets.

Given that WaterNSW's costs were largely fixed, it considered that an 80:20 fixed to variable tariff structure better reflected WaterNSW's largely fixed cost structure, and struck a reasonable balance of risk sharing between WaterNSW and its customers. However, it did approve existing tariff structures that did not align with those views, contingent on the use of a risk management product that would result in WaterNSW receiving revenues that aligned with its preferred 80:20 split.[352]

Table 62 shows the proportion of revenue allocated to the fixed and variable charges for each bulk WSS, prior to the application of the Government's pricing principles in the referral.

Table 62 The QCA's recommended fixed and variable cost split for bulk WSSs, 2020–24

WSS	*2012 review (%)*		*2020–24 review (%)*	
	Fixed	*Variable*	*Fixed*	*Variable*
Barker Barambah	90	10	95	5
Bowen Broken Rivers	93	7	95	5
Boyne River and Tarong	91	9	99	1
Bundaberg	93	7	97	3
Burdekin-Haughton	93	7	95	5
Callide Valley	92	8	97	3
Chinchilla Weir	90	10	97	3
Cunnamulla	91	9	97	3
Dawson Valley	92	8	97	3
Eton	93	7	96	4
Lower Fitzroy	92	8	95	5
Lower Mary	92	8	97	3
Macintyre Brook	94	6	96	4
Maranoa River	91	9	97	3
Mareeba-Dimbulah	90	10	95	5
Nogoa-Mackenzie	92	8	96	4
Pioneer River	94	6	96	4
Proserpine River	89	11	95	5
St George	95	5	96	4
Three Moon Creek	93	7	97	3
Upper Burnett	93	7	96	4
Upper Condamine	91	9	92	8
Bulk supply average	**93**	**7**	**96**	**4**

Note: Whole of scheme costs.

Source: QCA, SunWater Irrigation Price Review: 2012–17, final report, May 2012; QCA analysis.

Table 63 shows the proportion of revenue allocated to the fixed (Part C) and variable (Part D) charges for each of the distribution systems operated by Sunwater, prior to the application of the pricing principles in the referral.

[352] IPART, *WaterNSW—Review of prices for rural bulk water services from 1 July 2017 to 30 June 2021*, final report 2017, Chapter 11.

Table 63 The QCA's recommended fixed and variable cost apportionment for distribution systems, 2020–24

Distribution system	*2012 review (%)*		*2020–24 review (%)*	
	Fixed	*Variable*	*Fixed*	*Variable*
Bundaberg	59	41	71	29
Burdekin-Haughton	60	40	72	28
Eton	72	28	79	21
Lower Mary	78	22	71	29
Mareeba-Dimbulah	83	17	86	14
Distribution system average	**67**	**33**	**74**	**26**

Source: QCA, SunWater Irrigation Price Review: 2012–17, final report, May 2012; QCA analysis.

7.3 Allocating costs between medium and high priority users

Sunwater's customers hold water access entitlements (WAEs) specifying the reliability of priority group of the entitlement, for example, medium or high priority WAEs. Holders of high priority WAEs can usually rely on being able to access their nominal volume more often than holders of a lower priority WAE (e.g. medium priority).

When water supplies are low, high priority WAE holders tend to be allocated a larger share of their WAE than lower priority WAE holders. Medium priority customers often do not get any water until high priority customers have received 100 per cent of their nominal volume.

It is therefore necessary for our cost allocation approach to account for these differing priority groups of water entitlements.

7.3.1 Previous investigation

In the 2012 review, variable costs were allocated between medium and high priority WAEs according to water use. This approach effectively assumed the same volumetric price for medium and high priority customers.

Our recommended approach for allocating fixed costs between medium and high priority WAEs used the headworks utilisation factor (HUF) for asset-related costs in bulk WSS, and WAEs for service-related costs in bulk WSSs and for all costs in distribution systems. This approach is summarised in Table 64.

Table 64 Fixed cost allocation between medium and high priority WAE—2012 review

Cost component	*Fixed cost allocation methodology*	
	Bulk WSSs	*Distribution systems*
Operations	50% by HUF, 50% by WAE	WAE (excluding distribution losses)
Corrective maintenance	HUF	WAE (excluding distribution losses)
Preventative maintenance	HUF	WAE (excluding distribution losses)
Renewals annuity	HUF	WAE (excluding distribution losses)

7.3.2 Sunwater's submission

For bulk WSSs, Sunwater proposed allocating fixed asset-related costs[353] between medium and high priority WAEs (including among urban, industrial and irrigation customers) using the HUF methodology. Sunwater's submission described the methodology as reflecting the benefit or level of service from bulk water assets attributable to each WAE priority group.[354]

Sunwater revised the HUF in some WSSs for the latest hydrological assessments and water supply arrangements, including revisions to water plans, since the 2012 review.

7.3.3 Other stakeholders' submissions

Central Highlands Regional Council, QFF and 2PH Farms said that we should review the cost allocation approach for IGEM costs.[355] 2PH Farms said that if the costs are to be allocated to water users, this should be done through the HUF.[356]

QFF, Canegrowers and Theodore Water recommended that a detailed review of insurance costs be completed to establish the correct allocation of the costs as well as the prudence and efficiency of the costs being proposed by Sunwater.[357]

In response to our draft report, Mareeba Dimbulah Irrigation Area Council (MDIAC) recommended that we review the cost allocation of dam safety upgrades and IGEM costs to ensure that distribution customers are not being charged twice.[358]

QFF said that changes to the HUFs are contributing to price increases for medium priority customers, particularly in some distribution systems. QFF said that distribution customers also pay for the costs of distribution losses, which are determined by high priority distribution losses.

Stakeholders commented on Sunwater's proposed HUFs in the following bulk WSSs: Barker Barambah WSS; Lower Mary River WSS; Nogoa-Mackenzie WSS; and Pioneer River WSS.[359] Our assessment on these scheme-specific comments is in Table 65 below.

Central Downs Irrigators said that it welcomed the reduction of the HUF for irrigators in the Upper Condamine WSS from 9 per cent to 8 per cent, and said that this clearly reflects the reduced access for irrigators as the result of changes to the scheme Operations Manual.[360]

Some Dawson Valley stakeholders said that the Moura Off-Stream Storage (MOSS) was built specifically for a single high priority customer and as such did not benefit medium priority users. These stakeholders said that 100 per cent of the costs should be allocated to high priority users.[361]

2PH Farms and CHRC recommended that we calculate the HUF using the total period of the IQQM model and using the actual rather than maximum volume of allocations within the scheme.[362]

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[353] Except for 50% of fixed operations costs (relating to service provision costs) which were allocated based on current nominal WAE, consistent with the last price review.
[354] Sunwater, sub. 50, p. A-3.
[355] CHRC, sub. 101; QFF, sub. 132, p. 5; 2PH Farms, sub. 138.
[356] 2PH Farms, sub. 138.
[357] QFF, sub. 132, p. 5.
[358] MDIAC, sub. 203.
[359] Barker Barambah IAC, sub. 83; FCRC, sub. 105; 2PH Farms, sub. 138; CHRC, sub. 101; PV Water, sub. 130
[360] Central Downs Irrigators Limited, sub. 186.
[361] Dawson Valley Cotton Growers Association, sub. 191; Hutchinson Ag, sub. 197; Theodore Water, sub. 232.
[362] 2PH Farms, sub. 159, pp. 2–3.

7.3.4 QCA assessment

The HUF methodology seeks to calculate the relative share of storage assets in each WSS required to supply medium and high priority WAE. This recognises that relatively more infrastructure is required to deliver high priority WAE than medium priority WAE and, consequently, relatively greater headworks costs are associated with high priority WAE than medium priority WAE.

Essentially, the storage capacity required for each WAE category is the cost driver for the purpose of cost allocation. It indicates that storage-related infrastructure costs, associated with each megalitre of high priority WAE, are greater than the storage costs for each megalitre of medium priority WAE.

We accept that the storage capacity required to deliver the priority of water required is an appropriate driver of costs and is therefore a reasonable approach to apportion costs between medium and high priority WAEs.

We have reassessed the bulk WSS costs that are allocated to priority groups using the HUF, particularly for new compliance costs relating to Inspector-General Emergency Management (IGEM) review costs and dam safety upgrade capex. We have also reassessed the allocation approach for insurance costs, in response to stakeholders' comments and in light of Sunwater's proposed treatment of flood damage costs and associated insurance claim revenues.

We have also reviewed the underlying input data, assumptions and calculations used to obtain the Sunwater's proposed HUF values that have materially changed since the 2012 review.

Costs allocated to priority groups using the HUF

Asset renewals and maintenance expenditure

In the 2012 review, we recommended that asset-related costs in bulk WSSs such as renewals expenditure, fixed preventative maintenance, fixed corrective maintenance costs and 50 per cent of fixed operations costs be allocated to medium and high priority customers using HUFs. We consider that allocating these headworks-related costs using the HUF remains appropriate.

Dam safety costs

As outlined in Sunwater's submission, Sunwater's obligations in relation to dam safety include:

- having an effective dam safety management program to minimise the risk of dams failing, and protect life and property, in accordance with the Queensland Dam Safety Management Guidelines[363]
- complying with the national guidelines of the Australian National Committee on Large Dams
- having an approved emergency action plan (EAP) in place for each referable dam[364]
- meeting requirements relating to acceptable flood capacity in the Guideline on Acceptable Flood Capacity for Water Dams[365]
- complying with IGEM review recommendations, including Sunwater being directed by its shareholding Ministers to improve the EAPs and implement an emergency event program.[366]

[363] DNRM, *Queensland Dam Safety Management Guidelines*, February 2002.
[364] Water Supply (Safety and Reliability) Act 2008, ss. 352E and 352T.
[365] DEWS, *Guidelines on Acceptable Flood Capacity for Water Dams*, July 2017.
[366] Sunwater, sub. 13, pp. 14–15.

Our preferred approach is for beneficiaries of the dam to meet the associated compliance costs. The HUF is an appropriate cost allocation approach for asset-related costs like dam safety, as it takes into account the differential in benefits received by priority groups.

In response to MDIAC's concerns of possible double-counting, we note that customers of distribution systems will pay bulk water prices (Part A and Part B) that recover only bulk WSS costs and distribution system prices (Part C and Part D) that recover only the costs of the distribution system. This ensures that there is no double-counting of costs.

In relation to bulk WSSs, we therefore recommend that dam safety upgrade capex and IGEM costs of each bulk WSS should be allocated to medium and high priority customers by using HUFs.

For distribution systems, we have allocated dam safety upgrade capex and IGEM costs to medium and high priority customers using nominal WAEs, consistent with the approach for all other costs.

Insurance costs

In the 2012 review, we allocated insurance costs in bulk WSSs between medium and high priority customers on the basis of 50 per cent HUFs and 50 per cent nominal WAE.

For this review, Sunwater proposed to recover historical flood damage costs through the renewals annuity. We have accepted recovering flood damage costs through the annuity if the associated insurance claims have been finalised (see Chapter 3).

Sunwater proposed that insurance proceeds received are used to offset flood damage costs to lower the renewals annuity allowance to be paid by irrigation customers.[367] We consider it appropriate that the prudent and efficient costs of Sunwater's insurance and risk arrangements associated with water supply services and assets should be recovered from customers. This would comprise prudent and efficient insurance costs and the prudent and efficient costs arising from the risk such as flood damage costs, net of insurance claim recoveries.

In contrast to the 2012 review approach that allocates insurance costs between medium and high priority customers based on 50 per cent HUF and 50 per cent WAE, the benefit received from insurance claims recoveries will be allocated between medium and high priority customers using the HUF. Given that HUFs provide a higher share to high priority customers to recognise the higher benefits received from headworks, irrigation customers are currently paying a higher share of insurance costs as compared to the share of benefits they receive.

We note that Sunwater holds a range of insurance policies including Industrial and Special Risks (ISR) (around 80 per cent of insurance costs), combined general liability (around 15 per cent) and contracts work and construction liability. All other insurance programs held by Sunwater are part of overheads that are separately allocated with other overheads to irrigation schemes.

Since the 2012 review, Sunwater's insurance premium costs for its ISR coverage (asset-related) have more than doubled from 2010–11 to 2018–19, due to the 2011 and 2013 flood events and an increase in declared asset values.[368] The relatively smaller liability coverage has increased by less than 10 per cent over this period.

We consider that liability coverage is also likely to be more asset-related than service-related. In this regard, we note that this coverage is a necessary cost of providing water supply services, as it relates to risks associated with water supply services and assets. Since for bulk WSSs this cost will largely relate to the management and operation of headworks, we prefer that the

[367] Sunwater response to QCA RFI 4.
[368] Sunwater, sub. 43, p. 4.

beneficiaries of the dam meet this cost. We consider that the HUF is the appropriate cost allocation approach as it takes into account the differential in benefits received by priority groups.

In relation to bulk WSSs, we therefore recommend that insurance costs should be allocated to medium and high priority customers using HUFs.

For distribution systems, we have allocated insurance costs to medium and high priority customers using nominal WAEs, consistent with the approach for all other costs.

Assessment of proposed HUFs

In the 2012 review, we commissioned Gilbert & Sutherland Pty Ltd (G&S) to conduct an independent review of Sunwater's proposed HUF methodology. Based on this independent review, we modified Sunwater's methodology for apportioning the top layer of storage between medium and high priority to reflect the ratio of nominal WAE volumes for medium and high priority customers.[369]

In response to submissions from 2PH Farms and CHRC, we note that HUFs are calculated over the driest 15-year period and the maximum volume of high priority WAE that can exist. We note the purpose of the HUF methodology is to determine the proportion of storage capacity dedicated to high priority WAE, which is driven by worse-case scenarios rather than long-term averages.

We engaged Water Solutions to undertake an independent quality assurance of Sunwater's proposed headworks utilisation factors (HUF) in specified WSSs, to assess whether the underlying data, assumptions and calculations result in appropriate calculations for HUF factors.

We selected schemes with material changes in the HUF since the 2012 review:

- Barker Barambah (reduction in medium priority HUF from 76 per cent in 2012 review, to 72 per cent)
- Callide Valley (increase in medium priority HUF from 10 per cent to 27 per cent)
- Lower Mary (increase in medium priority HUF from 42 per cent to 48 per cent)
- Nogoa-Mackenzie (reduction in medium priority HUF from 45 per cent to 28 per cent, with offsetting increase for irrigation customers with high priority WAE)
- Pioneer River (reduction in medium priority HUF from 44 per cent to 38 per cent)
- Upper Burnett (increase in medium priority HUF from 18 per cent to 64 per cent).

In summary, Water Solutions said that its quality assurance audit concluded that Sunwater's underlying data, assumptions and calculations resulted in appropriate calculations for HUFs. While Water Solutions noted some calculation errors, these only had a modest impact on the calculated HUF, differing less than 1 per cent from the values proposed by Sunwater.

Our responses to stakeholders' comments are summarised in Table 65.

Table 65 Stakeholders' submissions on Sunwater's proposed HUF

WSS	*Stakeholder comment*	*QCA response*
Barker Barambah	Barker Barambah Irrigator Advisory Committee (IAC) requested we reduce the HUF to 68% in order to reflect the reliability reduction from 40% down to	The HUF approach takes into account changes to water sharing rules and operational requirements.[b] Sunwater has amended the HUF in this scheme from 76% to 72%, reflecting changes to water

[369] QCA, *SunWater Irrigation Price Review: 2012–17*, final report, May 2012, pp. 183–192.

WSS	*Stakeholder comment*	*QCA response*
	36% for medium priority water users over the last 15 years.[a]	sharing rules. Water Solutions reviewed this estimate and determined it has been appropriately calculated.
Lower Mary	Fraser Coast Regional Council's (FCRC) said that the Mary Barrage provided no superior access or security for high priority allocation and the suitability of the HUF on the Lower Mary River WSS should be reviewed.[c]	DNRME is responsible for determining the volume and reliability of medium and high priority WAE. The HUF approach then takes into account the water planning framework (including water sharing rules and other operational requirements) determined by DNRME in estimating the relative benefits of bulk water assets attributable to medium and high priority customers. Water Solutions reviewed the proposed HUF for this scheme and determined that it has been appropriately calculated.
Nogoa-Mackenzie	2PH Farms said that changes to the HUF in the Nogoa-Mackenzie scheme were having a substantial impact on the prices for high priority customers and we should review the HUF for this scheme.[d] Central Highlands Regional Council (CHRC) recommended that we review the HUF methodology used to allocate costs in this scheme. CHRC said that if the removal of the Bedform Weir fabridam is having such a large impact on the HUF, the weir needs to be upgraded to the previous capacity.[e]	Sunwater has confirmed that its HUF calculation has been done with the Bedford Weir fabridam removed. Water Solutions reviewed the proposed HUF for this scheme and determined that the changes noted for the scheme have been appropriately accounted for.
Pioneer River	PV Water said that changes to the HUF need to look at yield and reliability.[f]	Water Solutions reviewed the proposed HUF for this scheme and determined that it has been appropriately calculated.

***a** Barker Barambah IAC, sub. 83. **b** This includes regulatory obligations specified in a water management protocol, resource operations plan or resource operations licence. **c** FCRC, sub. 105. **d** 2PH Farms, sub. 138. **e** Central Highlands Regional Council, sub. 100. **f** PV Water, sub. 130.*

We acknowledge concerns from Dawson Valley stakeholders that the Moura Off-Stream Storage (MOSS) was primarily built to provide additional high priority water to one high priority commercial user.

However, Sunwater said that at the end of the calendar year when conditions are dry and demand is high, water is released from MOSS to the Moura Weir Pool to top up the pool and support the weir, providing direct benefits to those pumping directly from the pool.[370] Sunwater said that other customers benefit indirectly, as this topping up from MOSS means that water does not need to be released from the upstream weirs to meet supply needs.

We understand that, as a consequence, the storage in MOSS is included in the announced allocation calculation for the whole scheme.[371] Given that all scheme customers benefit from the operation of all the scheme assets, we consider that the asset-related costs in this scheme should

[370] Sunwater response to final report RFI 22.
[371] DNRME, *Dawson Valley Water Supply Scheme Operations Manual*, 2018, p.6.

be allocated using the HUF. We note that the HUF allocates a higher proportion of asset-related costs to high priority customers as they receive greater benefit from the assets.[372]

We therefore recommend that Sunwater's proposed HUFs be adopted. Table 66 compares our recommended HUFs with those used in the 2012 review.

Table 66 The QCA's recommended HUF allocation to medium priority (%)

WSS	*2012 review*	*QCA recommended*
Barker Barambah	76	72
Bowen Broken Rivers	–	–
Boyne River and Tarong	10	4
Bundaberg	82	62
Burdekin-Haughton	79	79
Callide Valley	10	27
Chinchilla Weir	12	12
Cunnamulla	100	100
Dawson Valley	70	61
Eton	79	79
Lower Fitzroy	10	10
Lower Mary	42	48
Macintyre Brook	87	87
Maranoa River	100	100
Mareeba-Dimbulah	47	47
Nogoa-Mackenzie	45	28
Pioneer River	44	38
Proserpine River	29	29
St George	94	94
Three Moon Creek	60	61
Upper Burnett	17	64
Upper Condamine	11	8

Source: QCA, SunWater Irrigation Price Review: 2012–17, final report, May 2012; Sunwater, sub. 45; QCA analysis.

Approach to allocating fixed costs to priority group

Table 67 summarises our approach to allocating fixed costs between high and medium priority WAE.

Table 67 Fixed cost allocation between high and medium priority WAE

Cost component	*Fixed cost allocation methodology*	
	Bulk WSSs	*Distribution systems*
Operations (excluding electricity, insurance and IGEM)	50% by HUF, 50% by WAE[a]	WAE (excluding distribution losses)
Electricity	HUF	WAE (excluding distribution losses)
Insurance	HUF	WAE (excluding distribution losses)
IGEM costs	HUF	WAE (excluding distribution losses)

[372] In the case of Dawson Valley WSS, the HUF results in high priority customers paying 39 per cent of asset-related costs, despite only holding 9 per cent of total WAE.

Cost component	*Fixed cost allocation methodology*	
	Bulk WSSs	*Distribution systems*
Corrective maintenance	HUF	WAE (excluding distribution losses)
Preventative maintenance	HUF	WAE (excluding distribution losses)
Renewals annuity	HUF	WAE (excluding distribution losses)
Dam safety upgrade capex	HUF	WAE (excluding distribution losses)

a *Includes distribution losses.*

7.4 Cost-reflective prices

To establish recommended prices, we have first derived cost-reflective prices for each tariff group that reflect the lower bound cost target and increase by our measure of inflation over the price path period.

For schemes with multiple tariff groups, total scheme costs are generally allocated between tariff groups using WAE for fixed costs and usage for variable costs. Table 68 summarises those schemes with scheme-specific approaches to cost allocation between tariff groups.

Table 68 Summary of scheme-specific pricing issues

Scheme/system	*Tariff group*	*QCA assessment*
1. Bulk WSSs		
Barker Barambah WSS	Redgate relift	Higher volumetric tariff than the rest of the scheme reflecting the recovery from these customers of relift pumping costs.
Bundaberg (bulk WSS and distribution system)	River Channel	We accept Sunwater's proposed reallocation of 5 per cent of the costs associated with this asset from the distribution system to the bulk tariff group (see section 6.4.1).
Lower Mary WSS	Tinana Barrage & Teddington Weir	We recommend a reallocation of 59 per cent of the costs associated with these assets from the distribution system to this tariff group (see section 6.4.4).
Upper Condamine WSS	North Branch North Branch—Risk A	Higher volumetric tariff than the rest of the scheme reflecting the recovery from these customers of relift pumping costs. In the 2012 review, Sunwater submitted that the North Branch – Risk A WAE has a lower priority than medium priority as it has similar characteristics to water harvesting as opposed to the provision of supplemented supply. We accepted a lower fixed (Part A) price reflecting no recovery of renewals costs. For this review, we maintain our 2012 review approach, including a lower fixed (Part A) price with no recovery of renewals costs or dam safety upgrade capex.
2. Distribution systems		
Burdekin-Haughton distribution system	Giru Groundwater Area	As outlined in section 6.4.2, we consider that there is no material cost difference between this tariff group and the tariff group for other distribution system customers. We have removed the previous 49 per cent discount when deriving cost-reflective prices.
Mareeba-Dimbulah distribution system	Outside a relift section	We maintain our 2012 review conclusion that there was sufficient evidence to suggest that a material difference existed in fixed costs between the three 'outside a relift section' tariff groups (see section 6.4.3).
	Walsh River and Supplemented Streams	We maintain our 2012 review approach of setting fixed (Part A + Part C) and variable (Part B + Part D) cost-reflective prices to recover 60 per cent of the bundled bulk and distribution system charge (see section 6.4.3).

Scheme/system	*Tariff group*	*QCA assessment*
	Channel relift	Higher volumetric tariff than the rest of the scheme reflecting the recovery from these customers of relift pumping costs.

The fixed (Part A and Part C) prices are based on WAE in each tariff grouping. The volumetric (Part B) price reflects the average water use for the scheme as a whole based on the average 20-year water use (see section 5.2).

Our estimate of inflation over the price path period of 2.24 per cent is derived by taking the four-year geometric average of the RBA short-term forecast for 2020–21, our derived inflation forecast for 2021–22 (see section 2.10), and the midpoint of the inflation target range (2.5 per cent) for 2022–23 and 2023–24. We have used this estimate of inflation to derive cost-reflective prices.

For most tariff groups, our estimates of cost-reflective fixed prices are higher in real terms than our cost-reflective tariffs in the 2012 review. This is due to:

- higher operating expenditure, including indirect and overhead costs, compared to the 2012 review
- higher renewals annuity costs, reflecting higher actual renewals costs and higher forecast renewals costs over the planning period.

In the distribution systems, the generally lower cost-reflective volumetric tariff in real terms is due to the rebalancing of standard electricity tariffs from variable to fixed costs.

7.5 Government pricing principles

7.5.1 Sunwater's submission

Sunwater said that the structure and setting of irrigation prices was largely a matter for the Government to determine, on advice from us as part of this irrigation price review.[373] Sunwater said that its submission detailed the services it provided to irrigation customers and the associated costs of providing these services. Sunwater's regulatory model calculated scheme-level cost-reflective prices and side constrained prices. The latter applied the Government's pricing principles outlined in the referral.[374]

Sunwater said that its customer engagement showed that pricing was a major concern for its customers. However, Sunwater's response was confined to noting the concern.[375]

In addition, Sunwater did not provide any proposals in regard to the treatment of schemes where revenues were above lower bound costs.

7.5.2 Other stakeholders' submissions

See Part A (section 2.6.1) for our assessment of stakeholders' submissions on the Government's pricing principles.

7.5.3 QCA assessment

As outlined in Part A (section 2.6.1), we have decided to recommended prices that are consistent with the pricing principles outlined in the referral.

[373] Sunwater, sub. 11, p. 67.
[374] Sunwater, sub. 45. Note that this model did not provide prices at the individual tariff group level for those schemes with multiple tariff groups.
[375] Sunwater, sub. 12, pp. A-2–A-3.

Our recommended fixed prices reflect the transitional path to the fixed component of the lower bound cost target. We have assessed the appropriate level of any volumetric price increase with reference to the maximum level of annual real price increases that have occurred over the previous price path periods of $2.38 per megalitre of WAE ($2020–21) (see section 2.7, Part A).

We have used our estimate of inflation over the price path period of 2.24 per cent (see section 7.4) in deriving the increases in recommended prices in this section.

Recommended prices excluding dam safety upgrade capex allowance

As outlined in section 2.7 in Part A, we have separated our assessment of irrigation prices into two key categories of tariff groups:

- above lower bound prices—those tariff groups with existing prices that are already more than sufficient to recover the lower bound cost target
- below lower bound prices—those tariff groups with existing prices that are not yet sufficient to recover the lower bound cost target.

Above lower bound prices

For those tariff groups with existing prices above the lower bound cost target, we have sought to transition to prices that reflect the lower bound cost target by maintaining fixed prices in nominal terms until this cost target is reached. Of these tariff groups, we have applied the following approach in recommending volumetric prices:

- Where existing volumetric prices are above the volumetric component of the lower bound cost target (cost-reflective volumetric prices), we have reduced the existing volumetric price to the cost-reflective volumetric price immediately.
- Where existing volumetric prices are less than or equal to cost-reflective volumetric prices, we have increased the existing volumetric price each year by our estimate of inflation until overall prices reach the lower bound cost target.

Table 69 below shows bulk WSS tariff groups with existing prices above the lower bound cost target, with the volumetric prices above cost-reflective volumetric prices.

Table 69 Tariff groups with existing prices above the lower bound cost target, with the volumetric price above cost-reflective—bulk WSS ($/ML, nominal)

Tariff group	*2019–20 current prices*		*2020–21 cost-reflective prices*	
	Fixed ($/ML)	*Volumetric ($/ML)*	*Fixed ($/ML)*	*Volumetric ($/ML)*
Bowen Broken Rivers	12.50	6.95	7.14	7.36
Bundaberg	13.06	1.31	12.29	1.01
Burdekin-Haughton	12.71	0.54	3.83	0.33
Lower Fitzroy	13.55	1.41	12.09	0.99
Lower Mary—Mary Barrage	15.10	1.98	6.21	0.86
Nogoa-Mackenzie (medium priority)	12.22	1.32	6.64	0.84
Nogoa-Mackenzie (medium priority local management supply)	8.84	1.32	6.64	0.84

Source: QCA analysis.

There are no distribution system tariff groups with both existing fixed and volumetric prices above the respective fixed and volumetric cost-reflective prices.

Table 70 shows bulk WSS tariff groups with existing prices that are above the lower bound cost target, with existing fixed prices above cost-reflective fixed prices but existing volumetric prices below cost-reflective volumetric prices.

Table 70 Tariff groups with existing prices above the lower bound cost target, with the volumetric price below cost-reflective—bulk WSS ($/ML, nominal)

Tariff group	*2019–20 current prices*			*2020–21 cost-reflective prices*		
	Fixed ($/ML)	*Volumetric ($/ML)*	*Revenue ($'000)*	*Fixed ($/ML)*	*Volumetric ($/ML)*	*Revenue ($'000)*
Boyne River and Tarong	28.58	1.77	268	17.43	1.96	166
Chinchilla Weir	30.17	3.45	82	19.51	3.69	56
Lower Mary—Tinana & Teddington	24.83	9.51	209	17.63	27.47	199
Mareeba-Dimbulah—River Tinaroo/Barron	15.87	0.59	108	5.52	0.64	39
Upper Condamine—North Branch	47.64	15.19	409	16.86	19.36	189
Upper Condamine—Sandy Creek or Condamine River	34.03	5.57	537	16.79	5.79	284

Note: Revenue has been derived by applying irrigation WAE to the fixed price, and 15-year irrigator-only average usage to the volumetric price. Source: QCA analysis.

The existing prices for these tariff groups generate revenues that are above the lower bound cost target (i.e. cost-reflective revenues). Consistent with the key pricing principle in the referral of transitioning existing irrigation prices to lower bound costs, we have maintained volumetric prices in real terms over the price path period for these tariff groups.

There are no distribution system tariff groups with existing prices above the lower bound cost target but volumetric prices below cost-reflective.

Below lower bound prices

For those tariff groups with existing prices below the lower bound cost target, we have sought to transition fixed prices to the fixed component of the lower bound target by the annual increase of inflation plus $2.38 per megalitre of WAE (from 2020–21, increasing by inflation) outlined in the pricing principles in the referral. Of these tariff groups, we have applied the following approach in recommending volumetric price:

- Where existing volumetric prices are above the volumetric component of the lower bound cost target (cost-reflective volumetric prices), we have reduced the existing volumetric price to the cost-reflective volumetric price immediately.
- Where existing volumetric prices are less than or equal to cost-reflective volumetric prices, we have assessed the transitional path for volumetric prices based on the matters in the referral and the section 26 matters we are required to have regard for under the QCA Act.

Table 71 (for bulk WSS) and Table 72 (for distribution systems) below show tariff groups with existing prices that are less than the lower bound cost target, with the existing volumetric price above cost-reflective.

Table 71 Tariff groups with existing prices below the lower bound cost target, with the volumetric price above cost-reflective—bulk WSS ($/ML, nominal)

Tariff group	*2019–20 current prices*		*2020–21 cost-reflective prices*	
	Fixed ($/ML)	*Volumetric ($/ML)*	*Fixed ($/ML)*	*Volumetric ($/ML)*
Barker Barambah—River	25.93	4.60	43.59	4.26
Cunnamulla	31.75	3.58	33.53	1.94
Dawson Valley—River (medium priority river customers)	18.04	2.01	21.64	1.62
Dawson Valley—River (medium priority local management supply)	13.98	2.01	21.64	1.62
Dawson Valley—River (high priority local management supply)	42.77	2.01	113.21	1.62
Dawson Valley—River at Glebe Weir	16.18	2.01	21.64	1.62
Macintyre Brook	48.62	4.54	62.14	4.11
Nogoa-Mackenzie (high priority)	28.88	1.32	46.54	0.84
Nogoa-Mackenzie (high priority local management supply)	28.88	1.32	46.54	0.84
St George—Beardmore Dam or Balonne River (MP river customers)	21.91	1.38	22.91	1.09
St George—Thuraggi Watercourse (medium priority river customers)	21.91	1.38	22.91	1.09
St George (medium priority local management supply)	20.86	1.38	22.91	1.09
St George (high priority local management supply)	29.04	1.38	37.37	1.09

Source: QCA analysis.

Table 72 Tariff groups with existing prices below the lower bound cost target, with the volumetric price above cost-reflective—distribution systems ($/ML, nominal)

Tariff group	*2019–20 current prices*		*2020–21 cost-reflective prices*	
	Fixed ($/ML)	*Volumetric ($/ML)*	*Fixed ($/ML)*	*Volumetric ($/ML)*
Bundaberg channel	52.62	60.25	81.57	55.36
Burdekin-Haughton channel	42.59	30.14	46.76	23.61
Burdekin-Haughton—Glady's Lagoon (other than Natural Yield)	42.59	30.14	46.76	23.61
Lower Mary channel	54.31	72.25	61.48	67.87
Mareeba-Dimbulah—outside a relift up to 100 ML	55.27	8.86	59.11	6.54
Mareeba-Dimbulah—outside a relift 100 ML to 500 ML	48.72	8.86	52.74	6.54
Mareeba-Dimbulah—outside a relift over 500 ML	37.78	8.86	42.11	6.54
Mareeba-Dimbulah—river supplemented streams and Walsh River	26.85	5.32	30.94	4.18

Note: These are 'bundled' prices, with the fixed price comprising bulk (Part A) and distribution system (Part C) fixed prices, and the volumetric price comprising bulk (Part B) and distribution system (Part D) volumetric prices.

Source: QCA analysis.

For these tariff groups, we recommend fixed prices that reflect the transitional path to cost-reflective fixed prices outlined in the referral. We have reduced the existing volumetric price to the cost-reflective price immediately.

Tables 73 (for bulk WSS) and 74 (for distribution systems) below show tariff groups with existing prices that are less than the lower bound cost target, with the existing volumetric price below cost-reflective.

Table 73 Tariff groups with existing prices below the lower bound cost target, with the volumetric price below cost-reflective—bulk WSS ($/ML, nominal)

Tariff group	*2019–20 current prices*		*2020–21 cost-reflective prices*	
	Fixed ($/ML)	*Volumetric ($/ML)*	*Fixed ($/ML)*	*Volumetric ($/ML)*
Barker Barambah—Redgate Relift	25.93	22.56	43.85	53.47
Callide Valley—Callide and Kroombit Creek	18.50	8.84	70.53	8.88
Callide Valley—Benefited Groundwater Area	18.50	8.84	70.53	8.88
Eton (medium priority)[a]	31.36	4.05	33.56	4.11
Eton (high priority local management supply)[b]	117.49	4.05	125.30	4.11
Maranoa River	53.17	65.01	95.07	74.16
Pioneer River	14.81	3.13	20.50	3.75
Proserpine River	13.26	3.02	14.19	3.47
Proserpine River—Kelsey Creek Water Board	12.14	3.02	14.19	3.47
Three Moon Creek—River	32.43	4.78	51.00	6.05
Three Moon Creek—Groundwater	23.58	4.78	51.00	6.05
Upper Burnett—Regulated Section of the Nogo/Burnett River	30.58	4.08	43.30	4.58
Upper Burnett—John Goleby Weir	28.96	4.08	43.30	4.58
Upper Condamine—North Branch—Risk A	13.44	15.19	14.30	19.36

a *Includes High-B priority WAE and risk priority WAE.* ***b*** *High-A priority WAE. Source: QCA analysis.*

Table 74 Tariff groups with existing prices below the lower bound cost target, with the volumetric price below cost-reflective—distribution systems ($/ML, nominal)

Tariff group	*2019–20 current prices*		*2020–21 cost-reflective prices*	
	Fixed ($/ML)	*Volumetric ($/ML)*	*Fixed ($/ML)*	*Volumetric ($/ML)*
Burdekin—Giru Groundwater	21.35	15.36	46.76	23.61
Eton[a]	69.76	37.68	104.57	42.98
Mareeba-Dimbulah—relift	42.78	86.81	58.09	89.70

a *Includes High-B priority WAE and excludes risk priority WAE.*

Note: These are 'bundled' prices, with the fixed price comprising bulk (Part A) and distribution system (Part C) fixed prices, and the volumetric price comprising bulk (Part B) and distribution system (Part D) volumetric prices. Source: QCA analysis.

We consider the price paths with an annual increase of inflation plus $2.38 per megalitre of WAE (from 2020–21, increasing by inflation) reflect the maximum level of increases that have occurred

over the previous two price path periods and allow prices to transition to the lower bound cost target in a staged manner that allows users time to adjust.

We therefore recommend that total volumetric (Part B + Part D) prices for these tariff groups increase by inflation (unless a lower than inflation increase reaches the cost-reflective volumetric price in the first year) until the corresponding fixed price reaches the fixed component of the lower bound cost target, after which the volumetric price increases each year by inflation plus $2.38 per megalitre (from 2020–21, increasing by inflation) until the lower bound cost target is reached. This approach ensures a maximum annual real increase of $2.38 per megalitre of WAE ($2020–21).

Inclusion of dam safety upgrade capex allowance

The referral requires that our recommendations should include a second pricing option where an appropriate allowance for dam safety upgrade capex is included.

We have derived (non-zero) dam safety upgrade capex allowances over the price path period (see section 4.3) for the following schemes with dam safety upgrade projects forecast to be commissioned during the price path period:

- Macintyre Brook WSS
- Nogoa-Mackenzie WSS
- Pioneer River WSS
- Upper Condamine WSS.

Within these four schemes, our application of the pricing principles in the referral resulted in the following tariff groups having different recommended prices to those derived excluding a dam safety upgrade capex allowance (Table 75).

Table 75 Existing and recommended prices, including dam safety upgrade capex allowance ($/ML, nominal)

Bulk WSS	*Price*	*Existing*	*Cost-reflective*	*Final recommended prices*			
		2019–20	*2020–21*	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Nogoa-Mackenzie (MP local management supply)	Part A	8.84	7.60	7.60	7.77	7.95	8.13
	Part B	1.32	0.84	0.84	0.86	0.88	0.90
Pioneer River	Part A	14.81	20.92	17.52	20.35	21.87	22.36
	Part B	3.13	3.75	3.20	3.27	3.92	4.01

Source: QCA analysis.

In the remaining tariff groups in these schemes, our application of the pricing principles in the referral resulted in no change to our recommended prices to those derived excluding a dam safety upgrade capex allowance (Table 76).

Table 76 Existing and recommended prices, including dam safety upgrade capex allowance ($/ML, nominal)

Bulk WSS	*Price*	*Existing*	*Cost-reflective*	*Final recommended prices*			
		2019–20	*2020–21*	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Macintyre Brook	Part A	48.62	63.38	52.09	55.69	59.42	63.30
	Part B	4.54	4.11	4.11	4.20	4.30	4.39
Nogoa-Mackenzie (medium priority)	Part A	12.22	7.60	12.22	12.22	12.22	12.22
	Part B	1.32	0.84	0.84	0.86	0.88	0.90
Nogoa-Mackenzie (high priority)	Part A	28.88	56.56	31.91	35.05	38.33	41.73
	Part B	1.32	0.84	0.84	0.86	0.88	0.90
Nogoa-Mackenzie (HP local management supply)	Part A	28.88	56.56	31.91	35.05	38.33	41.73
	Part B	1.32	0.84	0.84	0.86	0.88	0.90
Upper Condamine—Sandy Creek or Condamine River	Part A	34.03	22.88	34.03	34.03	34.03	34.03
	Part B	5.57	5.79	5.69	5.82	5.95	6.09
Upper Condamine—North Branch	Part A	47.64	22.95	47.64	47.64	47.64	47.64
	Part B	15.19	19.36	15.53	15.88	16.23	16.60

Source: QCA analysis.

Summary of recommended prices

Our recommended prices for Sunwater's WSSs and distribution systems are presented in Appendix A.

Recommendation 10

We recommend that prices for irrigation customers for each WSS and distribution system should be set according to the prices presented in Appendix A. This includes pricing options for certain tariff groups.

8 MISCELLANEOUS CHARGES

The referral directs us to make recommendations on appropriate prices including termination fees, drainage prices, drainage diversion prices and water harvesting prices.

In this chapter, we present our recommendations on these types of prices.

8.1 Termination fees

Termination fees are applicable when distribution system water access entitlements (WAEs) are permanently transferred to a different section of the scheme, generally the river or in some instances other scheme sub-systems.

Termination fees also apply in the Lower Mary WSS when WAEs are transferred from the Lower Mary (Tinana Barrage and Teddington Weir) tariff group to the Lower Mary (Mary Barrage) tariff group.

The termination fee is intended to allow Sunwater to recover fixed costs associated with permanently transferred WAEs. This protects remaining customers from any price increases to ensure Sunwater's revenue adequacy.

8.1.1 Previous investigation

In the 2012 review, we recommended that Sunwater's termination fee should be calculated as up to 11 times (including GST) the relevant fixed cost-reflective price. This was based on the Water Charge (Termination Fees) Rules 2009 for the Murray-Darling Basin (MDB), which applied to the St George distribution system. The ACCC released amended guidelines in 2011 that allowed for the inclusion of GST and a termination fee multiple of up to 11 times (including GST).[376]

This was recommended, as the net present value of the ongoing cost-reflective fixed prices was close to 11; it was also based on achieving administrative simplicity and consistency.[377] A lower multiple could be applied at Sunwater's discretion should it be consistent with Sunwater's commercial interests (e.g. in the interests of more efficient system management).

This approach recovered up to 60 per cent of Sunwater's relevant fixed costs from the exiting customer. We said that the balance should be allocated to Sunwater, thereby providing Sunwater with a further incentive to reduce its fixed distribution system costs and/or attract new customers. Importantly, remaining customers should not pay any of the outstanding costs.

8.1.2 Sunwater's submission

Sunwater did not propose any changes to the way termination fees are calculated.[378]

8.1.3 Other stakeholders' submissions

Wide Bay Burnett Regional Organisation of Councils Inc (WBBROC) submitted that 11 times the relevant fixed price is excessive, and the scale and application of all fees should be assessed for prudency and efficiency.[379]

[376] ACCC, *ACCC final advice on an amendment to the Water Charge (Termination Fees) Rules 2009*, June 2010.
[377] QCA 2012, pp. 65–70.
[378] Sunwater, sub. 11, pp. 73–74.
[379] WBBROC, sub. 149, pp. 6–7.

Canegrowers Isis submitted that irrigators do not have any negotiating power due to the high termination fees. When deemed service contracts were first established the fixed/variable charge split was different, with no consideration of the impact on termination fees of recent changes to the fixed/variable split.[380]

The Nogoa-Mackenzie Irrigator Advisory Committee and Central Highlands Cotton Growers and Irrigators Association both submitted that consideration needs to be given to how the revenue from termination fees is utilised. In addition, the Central Highlands Cotton Growers and Irrigators Association was concerned that exit fees are deterring industrial customers from trading water back into the irrigation market.[381]

8.1.4 QCA assessment

We have considered stakeholder submissions and have reassessed the appropriateness of the 2012 review approach. We note that Sunwater proposed no changes to the way termination fees are calculated. We also note that stakeholders are concerned with the current multiplier used to calculate termination fees, and how the revenue collected is utilised.

In 2016, the ACCC completed its review of the water charge rules for the MDB, and proposed amendments to these rules including to the Water Charge (Termination Fees) Rules 2009. Based on this review, the current Water Charge (Termination Fees) Rules 2009 will be repealed under the Water Charge Amendment Rules 2019 on 1 July 2020. Termination fees rules will subsequently be contained in Part 10 of the Water Charge Rules 2010.

In its final advice, the ACCC stated that the imposition of a termination fee ensured a contribution from exiting irrigators for the ongoing fixed costs of operating the infrastructure and provided a degree of revenue certainty for infrastructure operators.[382] Accordingly, the ACCC considered that the calculation of the maximum termination fee should only include fixed infrastructure charges imposed per unit of water delivery right held. This means that any variable charges and fixed charges levied on rights other than volume of water delivery right held (such as an access charge) would not be included in the termination fee calculation.[383]

We note that the ACCC recommended termination fees be based on actual fixed prices (not cost-reflective). Most operators in the MDB have historically set fixed prices at a level that is considerably lower than fixed costs. The ACCC considered that, by setting the termination fee based on actual fixed prices, operators may be incentivised to move towards cost-reflective pricing.[384] Sunwater, however, does not have the discretion to alter its tariff structure or set prices to cost-reflective levels. Therefore, we consider that it is appropriate for Sunwater termination fees to be based on cost-reflective prices.

Based on balancing the interests of the terminating and remaining customers, and the water business, the ACCC considered that there was no strong reason to change the termination fee multiple of 11 times (including GST).[385]

[380] Canegrowers Isis, sub. 93, p. 4.
[381] Nogoa-Mackenzie IAC, sub. 127, p.3; CHCGIA, sub. 99, p. 4.
[382] ACCC, *Review of the Water Charge Rules*, final advice, 2016, p. 14.
[383] ACCC, *Review of the Water Charge Rules*, final advice, 2016, p. 263.
[384] ACCC, *Review of the Water Charge Rules*, final advice, 2016, p. 277.
[385] ACCC, *Review of the Water Charge Rules*, final advice, 2016, pp. 265, 271.

We consider that a termination fee applied as up to 11 times (including GST) the relevant cost-reflective fixed price balances the interests of Sunwater and its customers with providing appropriate incentives for Sunwater to supply only those services required by its customers.

In response to submissions stating that a multiplier of up to 11 times (including GST) the cost-reflective fixed price is too high and does not give irrigators negotiating power, we note that a lower multiple could be applied at Sunwater's discretion, should it be consistent with Sunwater's commercial interests (e.g. in the interests of more efficient system management).

We also note that customers do have the option of permanently trading their water entitlements to other distribution system users. Alternatively, customers can choose to retain ownership of their distribution system WAE and engage in temporary trading.

Under our recommended two-part tariff structure (see Part A, Chapter 3), the cost-reflective fixed price will generally align with the associated prudent and efficient fixed costs of that system. Consequently, as the purpose of the termination fee is to provide revenue adequacy for Sunwater, it is appropriate that it should be based on the underlying cost-reflective fixed price.

With regard to how Sunwater uses the revenue from termination fees, we note that our recommended approach ensures that the shortfall should not be recovered from remaining customers as result of other customers terminating. Sunwater should, therefore, have the appropriate incentive to either find a new customer or use the termination revenue to invest in better scheme operations to reduce scheme costs. If not, Sunwater will bear the revenue risk if it is not able to sell the terminated WAE.

The table below shows the maximum termination fee for each tariff group, based on the cost-reflective prices calculated in Chapter 7.

Table 77 Maximum termination fees per tariff group ($/ML WAE, nominal)

Tariff group	*2020–21*	*2021–22*	*2022–23)*	*2023–24*
Bundaberg channel	762.11	779.18	796.64	814.48
Burdekin channel	472.17	482.75	493.56	504.61
Burdekin—Giru Groundwater	472.17	482.75	493.56	504.61
Burdekin—Glady's Lagoon (other than Natural Yield)	472.17	482.75	493.56	504.61
Eton	781.15	798.65	816.54	834.83
Lower Mary—Tinana and Teddington	193.89	198.24	202.68	207.22
Lower Mary channel	607.94	621.56	635.48	649.72
Mareeba-Dimbulah—outside a relift up to 100 ML	589.47	603.95	618.76	633.89
Mareeba-Dimbulah—outside a relift 100 ML to 500 ML	519.42	532.33	545.54	559.04
Mareeba-Dimbulah—outside a relift over 500 ML	402.43	412.72	423.25	434.00
Mareeba-Dimbulah—river supplemented streams and Walsh River	279.56	285.82	292.23	298.77
Mareeba-Dimbulah—relift	578.25	591.21	604.45	617.99

Source: QCA analysis.

Recommendation 11

We recommend that:

- termination fees should be calculated as up to 11 times (including GST) the relevant cost-reflective fixed price
- Sunwater should have the discretion to apply a lower multiple to the relevant cost-reflective fixed price or waive the termination fee
- Sunwater should never recover any revenue shortfall from remaining customers upon exit of the scheme by another customer.

8.2 Drainage charges

Sunwater provides drainage services to remove water as a result of farm run-off and stormwater from irrigated properties. This involves customers diverting water from their farms through a drain inlet into a drainage channel. Drainage charges apply to the Burdekin-Haughton distribution system, with current charges the result of legacy pricing arrangements.

8.2.1 Previous investigation

In the 2012 review, we considered that the drainage price should represent the costs associated with providing drainage services. With a fixed charge recovering fixed drainage costs to ensure Sunwater does not face volume and revenue risk.

We recommended that Sunwater put processes in place to record drainage costs from 1 July 2012 to enable a cost-reflective price to be established in the next price review. [386]

8.2.2 Sunwater's submission

Sunwater carried out work to separately identify drainage costs to support the determination of cost-reflective drainage tariffs during 2013 and 2014, and provided this information to us. In addition, Sunwater put processes in place which now allow drainage costs to be allocated to drainage profit centres within its financial system.

However, Sunwater identified that there are still issues in correctly separating drainage-related direct costs (primarily in relation to operations labour) from other direct costs. Consequently, Sunwater does not believe an accurate bottom-up estimate of costs to determine cost-reflective drainage charges is available at this stage, and the additional costs to establish a more precise charge may be greater than the benefit.[387]

8.2.3 Other stakeholders' submissions

BRIA submitted that there should be no increase in drainage charges in real terms, as current drain maintenance does not reflect the drainage charge revenue received by Sunwater. BRIA also recommended that Sunwater should provide full transparency on drainage maintenance expenditure in the future.[388]

[386] QCA, *SunWater Irrigation Price Review: 2012–17*, final report, May 2012, pp. 93–97.
[387] Sunwater, sub. 11, p. 74.
[388] BRIA, sub. 85, p. 54.

8.2.4 QCA assessment

We have considered stakeholder submissions and have reassessed the appropriateness of the 2012 review approach. We note that Sunwater proposed that we consult with customers on whether to increase current drainage charges in line with labour escalation rates. We also note that BRIA proposed that there should be no real increase to current charges.

We recognise that significant costs and complexities are involved with establishing an appropriate methodology for separating drainage costs. In order to calculate cost-reflective drainage charges, renewals annuities would have to be unbundled and a new annuity for drainage established. This would be difficult, given inaccurate historical drainage cost data.

Considering the difficulties of separating drainage costs, it is most likely that the costs associated with establishing a cost-reflective drainage charge will outweigh the benefits to customers.

For these reasons, and considering BRIA's submission, we recommend that current drainage charges for Burdekin-Haughton distribution system should be increased each year in line with our measure of inflation (2.24 per cent as per Chapter 7). Drainage revenues should continue to be treated as a revenue offset, with any revenue shortfalls being recovered from the Part C price.

Recommendation 12

We recommend that:

- current drainage charges for the Burdekin-Haughton distribution scheme should be increased each year by our measure of inflation
- drainage costs associated with the Mareeba-Dimbulah distribution system should continue to be recovered from the fixed (Part C) price.

8.3 Drainage diversion charges

In the Burdekin-Haughton distribution system, Sunwater allows customers to use water from the drainage network. Current charges are a result of legacy pricing arrangements, where prices were set in consultation with customers and not based on cost.

8.3.1 Previous investigation

In the 2012 review, we considered that Sunwater should be able to recover prudent and efficient costs associated with drainage diversion. Drainage diversion charges should be set at the cost-reflective level, and charged only to customers who use the service.

However, data provided by Sunwater did not allow drainage diversion costs to be isolated. Therefore, we recommended that as the current charges were a result of customer consultation and were not significant, drainage charges be maintained in real terms. In addition, as drainage costs and drainage diversion costs could not be separated, it was proposed that revenues from the drainage diversion charges also be treated as a revenue offset.[389]

8.3.2 Sunwater's submission

Sunwater submitted that it has not progressed any work to separate drainage diversion costs from drainage costs. Sunwater said that the costs of establishing a framework and processes to

[389] QCA, *SunWater Irrigation Price Review: 2012–17,* final report, May 2012, pp. 97–99.

correctly establish revenue allocation on a fully cost-reflective basis exceed the benefits for customers. Many of the activities undertaken on the drainage network are required to both maintain the drainage network and to allow customer diversions. The expenditure for drainage diversion is also relatively immaterial compared to other costs.[390]

8.3.3 QCA assessment

We have considered Sunwater's submission and have reassessed the appropriateness of the 2012 review approach. We understand that due to the interrelationship between drainage and drainage diversion services, many costs for these services are shared. In order to establish cost-reflective drainage diversion charges, all costs associated with drainage diversion need to be isolated. Sunwater has also said that expenditure for drainage diversion is relatively immaterial compared to other costs.

Considering the immateriality of drainage diversion costs, the difficulties involved in separating drainage diversion costs and a reduced customer base, it is most likely that the costs associated with establishing a cost-reflective drainage diversion charge will outweigh the benefits to customers.

For these reasons, and as current charges were a result of customer consultation, we recommend that current charges should increase each year by our measure of inflation over the price path period (2.24 per cent as per Chapter 7). Drainage diversion charge revenues should continue to be treated as a revenue offset.

> **Recommendation 13**
>
> We recommend that current drainage diversion charges should be increased each year by our measure of inflation.

8.4 Water harvesting charges

Distribution system water harvesting is where customers are able to access water—in excess of their holding of WAE—from a channel or pipeline during authorised or announced high flow periods, such as flood events. Sunwater currently holds distribution system water harvesting WAEs for the Burdekin-Haughton distribution system.

8.4.1 Previous investigation

In the 2012 review, we identified that distribution system water harvesting charges could consist of three components:

- DNRME's water harvesting charge per megalitre used
- a distribution system charge per megalitre used
- a Sunwater lease fee. [391]

However, as the Water Regulation 2000[392] did not stipulate that the DNRME water harvesting fee was payable in the Burdekin-Haughton distribution scheme, this fee was not charged to customers. For the distribution system charge, we considered that the charge for distribution

[390] Sunwater, sub. 11, p. 74.
[391] QCA, *SunWater Irrigation Price Review: 2012–17,* final report, May 2012, pp. 99–101.
[392] The Water Regulation 2000 has since been replaced by the Water Regulation 2016.

system water harvesting should reflect the cost of delivery, which was equal to the Part D charge. Sunwater had not introduced a lease fee for the Burdekin-Haughton distribution scheme.

8.4.2 Sunwater's submission

Sunwater proposed no change to the current pricing arrangements for distribution system water harvesting charges.[393]

8.4.3 QCA assessment

We have considered Sunwater's submission and have reassessed the appropriateness of the 2012 review approach. We note that Sunwater proposed no changes to pricing arrangements.

Distribution system water harvesting charges can still consist of the three components listed above.

Schedule 14 of the Water Regulation 2016 sets out DNRME's water harvesting charges that are applicable to Sunwater schemes.[394] As these charges are a direct cost to Sunwater for providing water harvesting services, we believe these should be treated as a straight pass-through to distribution system customers. However, as these charges are still not applicable to the Burdekin-Haughton distribution system, customer charges will not include a DNRME fee.

Sunwater incurs a cost for diverting water through distribution channels for the purpose of water harvesting. We consider that the charge for distribution system water harvesting should reflect cost of delivery. This is represented by the Part D charge, which we calculate based on prudent and efficient distribution system costs.

The Sunwater lease fee is set by Sunwater for providing water harvesting services. Water harvesting WAEs held by Sunwater are traded to customers within the water trading market. Consequently, the lease fees are determined within the market setting. We consider that Sunwater should have an appropriate incentive to sell its excess WAEs to customers, maximising water available for irrigation purposes. Therefore, we recommend any applicable lease fee should apply and be set in this way. Currently, Sunwater has not set a lease fee for the Burdekin-Haughton distribution system.

Recommendation 14

We recommend that distribution system water harvesting charges should comprise any applicable DNRME water harvesting charges, our recommended volumetric Part D price, and a Sunwater lease fee if relevant.

[393] Sunwater, sub. 11, p. 74.
[394] Water Regulation 2016, s. 133, schedule 14.

9 IMPACTS ON CUSTOMER BILLS

The referral directs us to consider how our recommended appropriate prices might be reflected in customer bills for each irrigation tariff group. This chapter outlines bill impacts for Sunwater's irrigation customers.

The customer bill impacts are presented in nominal dollar values. This means that prices **include forecast inflation**.[395] Our analysis of bill impacts has been based on the 15-year irrigator-only average usage for each water supply scheme and distribution system.

The customer bill impacts presented in this chapter are indicative only—an irrigator's unique water use profile will determine the individual bill impacts. We have also provided indicative customer bill estimates as part of our recommendations—these can be found in Appendix C.

In addition, scheme information sheets provide indicative customer bill impacts for varying levels of usage.

9.1 Customer bill impacts excluding dam safety upgrade costs

In making our recommendations, we have considered the likely impact on Sunwater's customers.

For bulk WSS prices, indicative bill impacts are derived by using the fixed (Part A) price and by applying average irrigation water use (at the scheme level) to the volumetric (Part B) price. For distribution system prices, bill impacts are derived using the sum of the fixed (Part A and Part C) price and the average irrigation water use applied to the volumetric (Part B and Part D) price.

The per cent change has been calculated from 2019–20 to 2020–21, and over the price path period (from 2019–20 to 2023–24).

9.1.1 Indicative bill impacts

The table below shows indicative bill impacts (in $/ML) for existing tariff groups after bill moderation (see Chapter 7 for details on how we have moderated bill impacts).

Table 78 Indicative bill impacts compared to current prices ($/ML, nominal)

Tariff group	*Average usage (%)*	*2019–20 ($/ML) (a)*	*2020–21 ($/ML) (b)*	*2023–24 ($/ML) (c)*	*Change from (a) to (b) (%)*	*Change from (a) to (c) (%)*
Barker Barambah—River	36	27.57	30.41	40.13	10	46
Barker Barambah—Redgate relift	36	33.98	37.12	47.30	9	39
Bowen Broken Rivers	13	13.40	13.42	13.49	0	1
Boyne River and Tarong	39	29.27	29.29	29.34	0	0
Bundaberg	32	13.48	13.39	13.48	(1)	(0)
Bundaberg Channel	52	84.08	85.08	98.56	1	17
Burdekin-Haughton	56	13.01	12.90	12.91	(1)	(1)
Burdekin Channel	76	65.37	63.77	69.05	(2)	(6)

[395] We have forecast inflation over the regulatory period to be 2.24 per cent (see Chapter 7).

Tariff group	*Average usage (%)*	*2019–20 ($/ML) (a)*	*2020–21 ($/ML) (b)*	*2023–24 ($/ML) (c)*	*Change from (a) to (b) (%)*	*Change from (a) to (c) (%)*
Burdekin—Giru Groundwater	76	32.96	36.09	46.19	9	40
Burdekin—Glady's Lagoon	76	65.37	63.77	69.05	(2)	(6)
Callide—Callide & Kroombit Creek	57	23.53	26.35	35.79	12	52
Callide–Benefited Groundwater	57	23.53	26.35	35.79	12	52
Chinchilla Weir	66	32.45	32.50	32.66	0	1
Cunnamulla	65	34.09	34.80	37.19	2	9
Dawson Valley—River (MP river)	59	19.23	21.78	24.16	13	26
Dawson—River at Glebe Weir	59	17.37	19.88	24.16	14	39
Dawson Valley—River (MP LMA)	59	15.17	17.63	24.16	16	59
Dawson Valley—River (HP LMA)	59	43.96	47.07	57.93	7	32
Eton MP	7	31.64	33.84	36.17	7	14
Eton (HP LMA)	7	117.77	122.78	134.20	4	14
Eton Channel	32	81.88	86.10	99.64	5	22
Lower Fitzroy	5	13.63	13.60	13.61	(0)	(0)
Lower Mary—Mary Barrage	32	15.74	15.38	15.40	(2)	(2)
Lower Mary—Tinana and Teddington	32	27.89	27.96	29.18	0	5
Lower Mary Channel	53	92.70	93.98	104.25	1	12
Macintyre Brook	67	51.67	54.85	66.25	6	28
Maranoa River	4	55.50	59.13	70.82	7	28
Mareeba-Dimbulah—River	45	16.13	16.14	16.16	0	0
Mareeba-Dimbulah– up to 100 ML	66	61.12	63.21	68.14	3	11
Mareeba–Dimbulah—100 ML to 500 ML	66	54.57	56.51	61.33	4	12
Mareeba-Dimbulah—over 500 ML	66	43.63	45.33	49.97	4	15
Mareeba-Dimbulah– Walsh River	66	30.36	32.59	36.01	7	19
Mareeba-Dimbulah– Relift	66	100.07	104.70	119.52	5	19
Nogoa Mackenzie MP	73	13.19	12.84	12.88	(3)	(2)
Nogoa Mackenzie HP	73	29.85	32.52	42.39	9	42
Nogoa Mackenzie (MP LMA)	73	9.81	7.25	7.75	(26)	(21)
Nogoa Mackenzie (HP LMA)	73	29.85	32.52	42.39	9	42
Pioneer River	22	15.49	18.22	22.78	18	47
Proserpine River	47	14.68	15.82	16.91	8	15
Proserpine River: KCWB	47	13.56	15.82	16.91	17	25
St George– Beardmore Dam or Balonne River (MP River)	73	22.92	23.71	25.34	3	11

Tariff group	*Average usage (%)*	*2019–20 ($/ML) (a)*	*2020–21 ($/ML) (b)*	*2023–24 ($/ML) (c)*	*Change from (a) to (b) (%)*	*Change from (a) to (c) (%)*
St George—Thuraggi Watercourse	73	22.92	23.71	25.34	3	11
St George (MP LMA)	73	21.87	23.71	25.34	8	16
St George (HP LMA)	73	30.05	32.87	40.80	9	36
Three Moon Creek—River	38	34.24	37.39	47.59	9	39
Three Moon Creek—Groundwater	38	25.39	28.34	37.92	12	49
Upper Burnett—Regulated Section	52	32.69	35.81	45.90	10	40
Upper Burnett—John Goleby Weir	52	31.07	34.15	44.13	10	42
Upper Condamine—Sandy Creek or Condamine River	42	36.36	36.42	36.58	0	1
Upper Condamine—North Branch	42	54.00	54.15	54.59	0	1
Upper Condamine—North Branch, Risk A	42	19.88	21.57	23.96	9	21

Source: Sunwater, sub. 11; QCA analysis.

9.2 Customer bill impacts including dam safety upgrade costs

9.2.1 Indicative bill impacts

The table below shows indicative bill impacts (in $/ML) for tariff groups with dam safety upgrade expenditure, after bill moderation. Only tariff groups where dam safety upgrade expenditure impacts our recommended prices (within the price path period) have been included. All other dam safety upgrade expenditure either falls outside of this period or has no impact on recommended prices.

See Chapter 4 of Part A of this report for details on how we have apportioned dam safety expenditure.

Table 79 Indicative bill impacts compared to current prices ($/ML nominal)—Tariff groups with dam safety upgrade expenditure

Tariff groups	*Average usage (%)*	*2019–20 ($/ML) (a)*	*2020–21 ($/ML) (b)*	*2023–24 ($/ML) (c)*	*Change from (a) to (b) (%)*	*Change from (a) to (c) (%)*
1. Nogoa Mackenzie MP (local management supply)						
Excluding dam safety	73	9.81	7.25	7.75	(26)	(21)
Including dam safety	73	9.81	8.22	8.79	(16)	(10)
2. Pioneer River						
Excluding dam safety	22	15.49	18.22	22.78	18	47
Including dam safety	22	15.49	18.22	23.23	18	50

Source: Sunwater, sub. 11; QCA analysis.

9.3 Customer bill impacts for alternative tariff groups

9.3.1 Indicative bill impacts

The table below shows indicative bill impacts (in $/ML) for existing tariff groups transitioning to our recommended alternative tariff groups, after bill moderation. See Chapter 6 for details on how we have derived alternative tariff groups.

Table 80 Indicative bill impacts compared to current prices ($/ML nominal)—Alternative tariff groups

Existing tariff group	*Average usage (%)*	*2019–20 ($/ML) (a)*	*2020–21 ($/ML) (b)*	*2023–24 ($/ML) (c)*	*Change from (a) to (b) (%)*	*Change from (a) to (c) (%)*
1. Dawson Valley (medium priority), alternate tariff group						
Dawson Valley—River (MP river)	59	19.23	21.78	24.16	13	26
Dawson—River at Glebe Weir	59	17.37	21.78	24.16	25	39
2. Dawson Valley—River (high priority river customers), alternative tariff group						
Dawson Valley - River (HP river)	59	n.a	47.07	57.93	n.a	n.a
3. St George (medium priority), alternate tariff group						
St George– Beardmore Dam or Balonne River (MP river)	73	22.92	23.71	25.34	3	11
St George– Thuraggi Watercourse	73	22.92	23.71	25.34	3	11
4. Three Moon Creek (medium priority), alternate tariff group						
Three Moon Creek—River	38	34.24	29.57	39.23	(14)	15
Three Moon Creek—Groundwater	38	25.39	29.57	39.23	16	55

Source: Sunwater, sub. 11; QCA analysis.

10 CUSTOMER ENGAGEMENT

In the 2012 review, we made recommendations relating to Sunwater improving its customer engagement processes. We consider that effective customer engagement provides opportunities for closer alignment of the outcomes sought by businesses and their customers.

This chapter provides an assessment of the customer engagement conducted by Sunwater against what is currently considered good practice in the Australian water sector.

10.1 Background

Customer engagement is important in competitive markets to define customer expectations that firms can seek to address. Customer engagement is even more important in monopoly markets because, in the absence of alternative service providers, it provides an opportunity for customers to reveal their preferred combinations of service quality and price.

Customer involvement is also an important mechanism for providing appropriate checks and balances on the activities of regulated service providers.

To meet these objectives, it is essential that customers are meaningfully engaged in decision-making on an ongoing basis.

In its November 2018 submission, Sunwater provided information on its customer engagement activities including:

- its customer engagement strategy
- the key issues raised by customers during customer engagement and its response to the issues raised
- its learnings from customer engagement, and whether each business considers views expressed were sufficiently representative of the broader customer base.

10.2 Sunwater's submission

Sunwater said that its primary engagement channel for the irrigation price review process was via Irrigator Advisory Committees (IACs).[396]

An IAC consists of a group of Sunwater customers either within an individual scheme or a group of schemes that are representative of the broader irrigation customer base. The purpose of the committee is to:

- represent the interests of the broader irrigator base
- provide a mechanism by which Sunwater and customers raise and discuss matters of mutual interest
- provide advice and recommendations to Sunwater regarding scheme operational issues.

Other engagement channels used by Sunwater to engage with customers include:

[396] Sunwater, sub. 12, p. 2.

- Irrigation Customer Reference Group (ICRG)—consists of a cross-section of irrigation customers. During the price review process the ICRG were engaged on high-level strategic issues relevant to all customers
- peak industry bodies—engagement with peak industry groups on rural water pricing matters and specific policy issues
- customer surveys—to provide feedback on Sunwater's service and customer interaction, with the results used to identify key customer objectives
- website—to provide general information to customers and engage with them on specific matters, such as the draft Network Service Plans (NSPs)
- email and SMS notification—used for general communication with customers, seek feedback on the draft NSP and to notify irrigation customers about the commencement of the price review process.[397]

Customers were engaged across three phases from late 2017 to October 2018 during the development of Sunwater's cost submission. This included:

- Phase 1
  - August 2017—customer survey (5.5 per cent response rate) to provide insights on what customers wanted and help guide initial objectives for the price submission around cost efficiency, transparency and preferences for the format and content of the NSPs
  - November to December 2017—presentation to the IACs and ICRG to gain preliminary feedback on customer information needs
- Phase 2
  - February to March 2018—consultation with the ICRG and IACs to review the NSP template, draft infographics and cost drivers, and confirm Sunwater's interpretation of the customer objectives were accurate
- Phase 3
  - May to October 2018—meeting with IACs and customers to review draft NSPs. Sunwater also made efforts to reach a broader range of irrigation customers via publishing the draft NSPs on its website and inviting feedback. However, Sunwater did not receive any feedback in response.[398]

Key messages about what customers wanted, from Sunwater's first phase of consultation included:

- efficiency—customers were concerned about price and wanted more cost-effective services and better value for money
- simplicity and transparency—many customers found it hard to meaningfully comment on prices and costs because they did not understand how they were derived
- improve NSPs—customers wanted more information on corporate overheads, shorter NSPs and no pictures without purpose

[397] Sunwater, sub. 12, p. 3.
[398] Sunwater, sub. 12, pp. 6–8.

- asset management and non-routine projects—customers wanted more consultation on upcoming non-routine projects.[399]

In its submission, Sunwater said that specific irrigation pricing arrangements were a matter for us and the Government.[400] Sunwater's submission does not outline its proposed prices for some of the tariff groups that have complex, scheme-specific issues. Its submission describes its proposed approach to calculating cost-reflective fixed and volumetric charges, and derives indicative scheme-level prices in its published regulatory model.[401]

Sunwater proposed that we consult with customers on specific pricing issues including pricing and tariff structures[402], apportioning dam safety costs[403], drainage charges and drainage diversion charges[404].

10.3 Other jurisdictions

Water businesses and regulators across other jurisdictions are actively seeking to improve their engagement with customers. This trend is most evident in Victoria with the implementation of the PREMO framework, and in South Australia with SA Water adopting customer-centric planning.

To assess Sunwater's customer engagement against what is considered good practice, we have compared Sunwater's proposal against the practice of other water utilities of a similar size and/or service offering that have recently been through regulatory review processes. The water businesses included in the analysis are:

- Southern Rural Water (SRW)—SRW provides irrigation services in Victoria and was rated by the ESC as leading under the PREMO framework with regard to its customer engagement.
- WaterNSW—WaterNSW is the primary provider of irrigation services in NSW and is subject to economic oversight by IPART.
- SA Water—SA Water is a vertically integrated water service provider in SA and is regulated by ESCOSA. SAWater provides irrigation and rural services.

Southern Rural Water

SRW uses various mechanisms to engage with its customers. These include:

- Customer Consultative Committees—members are selected to ensure a broad range of customer views are heard and meet regularly with SRW to provide input on a range of issues including helping to shape tariff structures or system and service improvements
- Board engagement—board meetings are held at locations across SRW's region, which provides the board with direct insight into the issues and concerns of customers at a local level. The director and board also meets regularly with the customer committees to listen to issue and concerns raised

[399] Sunwater, sub. 12, p. 7.
[400] Sunwater, sub. 12, p. A-3.
[401] Sunwater, sub. 45.
[402] Sunwater, sub. 11, p. xiv.
[403] Sunwater, sub. 11, p. viii.
[404] Sunwater, sub. 11, p. 74.

- field days—SRW staff attend a number of field days and similar events to provide a forum for customers to speak directly with staff
- Customer First Team—provides a regular forum for staff from across SRW to share their perspectives and promote opportunities to improve customer service. The team also visits customer sites to get a better appreciation of the issues that are of most interest for customers
- project engagement—irrigation district modernisation and other specific projects have significant and ongoing customer engagement programs of their own, including price impacts and project works.[405]

Face-to-face engagement described above is also supported by other channels including:

- detailed biennual customer surveys
- short transactional customer surveys and feedback
- regular newsletters, websites and social media.

Additional engagement took place during the development of SRW's price submission in order to design and test its proposals. A range of methods were used including on-line and phone surveys, regional focus groups, one on one interviews, social media and attendance at industry field days. This process started about a year before the price submission was due.

Topics covered in SRW's customer engagement included:

- service improvements related to water trading, maintenance of irrigation assets, water security and its strategy for the Macalister Irrigation District
- support for customers experiencing financial hardship
- prices and affordability
- tariff structures including the mix of fixed and variable charges in residential customer bills.

WaterNSW

In the lead-up to the 2017 price review, WaterNSW engaged in face-to-face meetings with customers where they presented information and sought direct feedback from customers. These included conversations with key stakeholders including WaterNSW Customer Service Committees (CSCs), the Fish River Customer Council, the NSW Irrigators Council, the NSW Office of Environment and Heritage, Commonwealth Environmental Water Office and other large customers.[406]

The CSC Reference Group was also established to assist WaterNSW with the development of the pricing proposal and comprised nominated leads from each of the CSCs. The group provided input on issues such as:

- key themes and matters of importance
- the package of information to present during consultation
- issues to consult on

[405] SRW, *2018 Water price review*, 2017.
[406] WaterNSW, *Pricing proposal to the Independent Pricing and Regulatory Tribunal: Regulated prices for NSW Rural Bulk Water Services from 1 July 2017 to 30 June 2021*, 2016.

- how to conduct the consultation process
- pricing matters that would not change.

WaterNSW engages with its customers on an ongoing basis. However WaterNSW engaged in a more targeted consultation program for the purposes of the pricing proposal. This involved five phases:

- Phase 1—establishment of CSC Reference Group and agreement on key matters and principles (November to December 2015)
- Phase 2—key customer representatives provided with necessary background information to enable them to assess pricing information and analysis (January to March 2016)
- Phase 3—presentation of pricing information and analysis and opportunities for customers to provide feedback (April to June 2016)
- Phase 4—ongoing consultation with customers and IPART as part of its public consultation process on WaterNSW's proposal (July 2016 to June 2017)
- Phase 5—post-determination consultation (June 2017 onwards).

Key matters for consultation included:

- tariff structures including the fixed to variable split
- impact of the unders and overs mechanism
- proposing the introduction of a mechanism to address WaterNSW revenue volatility
- how prices are derived from costs.

SA Water

SA Water used a number of mechanisms to engage with its customers during the 2016 pricing proposal at Stage 1, 3 and 5 of its engagement program:

- At Stage 1, SA Water used 15 focus groups with 118 customers and consultation with Customer Advisory Groups to understand customer values, needs and expectations.
- At Stage 3, SA Water used 9 workshops (116 residential and 28 business customers), engagement with Customer Advisory Groups and an online survey (1232 customers) to engage customers about service improvements and investment opportunities developed by SA Water in response to the Stage 1 findings.
- At Stage 5, SA Water used 4 workshops (36 residential and 11 business customers) to gain customer feedback on SA Water's proposed response to the Stage 3 insights. Workshop participants were selected from those customers that attended the Stage 3 workshops.

SA Water engaged with its customers on an ongoing basis through its Customer Engagement Program. However, for the purposes of the 2016 price submission (due August 2015), SA Water engaged with customers on a more targeted basis from November 2013 to March 2015:

- Stage 1—November 2013 to February 2014 (understand customer values, needs and expectations)
- Stage 2—internal business planning to develop potential service improvement and improvement opportunities in response to feedback from Stage 1

- Stage 3—June 2014 (provide customers with the opportunity to consider costs and benefits of proposed investment and service improvement opportunities. Customers were provided with a level of education to enable them to make an informed decision at the workshops)
- Stage 4—internal business planning using feedback from Stage 3 to refine service improvement opportunities which customers supported
- Stage 5—March to April 2015 (consultation on expenditure proposals for the 2016 to 2020 regulatory period).

The topics discussed centred around six core areas that were developed at Stage 1 and tested during the customer engagement process. These included:

- customer experience (e.g. SMS technology)
- service standards
- service delivery and investment (e.g. investments in preventative maintenance)
- water quality (e.g. taste of water supplies)
- water recycling
- water for growth (e.g. opportunities to support economic development through initiatives such as partnering with industry and business).

For all the topics, potential service improvements and investment opportunities were presented to customers in the form of cost impacts and implications on prices/bills.

10.4 QCA assessment

We have assessed the following elements of the Sunwater's engagement with customers, based on the information provided in its November 2018 submission and its response to our draft report:

- structure—this element refers to the form or structure of the engagement, and covers the formal arrangements used and the stated purpose of each of these arrangements
- timing—this element refers to the timing or scheduling of consultation, including during the development of the price submission and on an ongoing basis
- scope—this element refers to the scope of issues covered in the engagement.

10.4.1 Structure

In our draft report we noted that the primary engagement channels used during the price review process were the IACs, the ICRG and the customer survey.

In its response to our draft report, Sunwater outlined a broad range of engagement channels that it already has in place, but that were not fully reflected in its original submission, to demonstrate its commitment to improving its engagement with its customers. We acknowledge that combined these channels form solid foundations for good practice engagement and are commonly adopted by other water businesses.

However, it is not clear how the form of customer engagement undertaken by Sunwater within these channels is tailored to suit the content on which it is seeking to engage, and recognises the differing needs and interests of its customers and stakeholders. For example, the introduction of a new tariff that impacts a significant number of customers (such as the access charge) may

benefit from having workshops or focus groups within each scheme to ensure that its customers across the entire region have a fair and reasonable opportunity to participate in the process.

Moving forward, Sunwater should consider developing an engagement strategy that:

- provides a detailed understanding of the engagement needs, behaviours and preferences of its customers and stakeholders
- allows Sunwater to plan and design engagement programs that are fit-for-purpose depending on the topic or critical decision to be made and its customers and stakeholders preferences.

10.4.2 Timing

In our draft report we noted that Sunwater appeared to have given customers a reasonable amount of time to provide input on the development of the NSPs.

However, we raised concerns on the lack of clarity in Sunwater's submission regarding the ongoing nature of engagement, including how Sunwater intends to maintain engagement beyond our pricing investigation.

We recommended that Sunwater should engage customers on an ongoing basis to support and confirm insights provided during the development of the submission to us. This will also help facilitate a more targeted approach to engagement that focuses on the matters that are important to customers, particularly in relation to service delivery and price/bill impacts.

In its response to our draft report, Sunwater outlined a number of engagement channels that it uses on an ongoing basis to inform its proposals. While ongoing engagement is good practice, we maintain our recommendation that in the next price review, Sunwater should be able to demonstrate how it is using its ongoing engagement to continuously test proposals with its customers and leverage learnings throughout the process. It is important to demonstrate that Sunwater is listening, responding and focusing on issues that are important to its customers.

10.4.3 Scope

In our draft report we noted that pricing issues were a major concern for customers. However, customers were not given the opportunity to provide input on pricing related issues. We noted that there were a number of pricing issues in the 2012 review that we recommended Sunwater should investigate and consult with customers on prior to this price review, which, in many cases Sunwater has not provided evidence of doing.

Although the setting of irrigation prices is in the remit of the Government, we considered that Sunwater, given its direct relationship with its customer base, is better placed to engage with customers on these types of pricing issues, rather than us. We considered that meaningful customer engagement provides opportunities for closer alignment of outcomes sought by Sunwater and its customers, and relies on drawing a clear link between proposed expenditure and both prices and services. In terms of Sunwater's engagement, we noted that there was no clear link between the proposed costs and pricing outcomes for customers even though pricing was expressed as a major concern from Sunwater's customer engagement.

We noted that there is no clear link between the proposed costs and service level outcomes for customers and no clear identification of the billing and service level outcomes that customer wanted.

We raised concerns at the lack of a targeted approach to engagement that focused on what customers value in relation to service delivery and price/bill impacts. Sunwater’s process did not

clearly delineate between negotiable and non-negotiable issues, making it difficult to tailor engagement processes such that they are fit for purpose. Some of the issues presented to customers was highly technical in nature and would require specialised knowledge for customers to actively participate. We also noted that Sunwater had consulted on topics that would not be typically included within the scope of a consultation program. As a result, some of these topics were not overly informative of the customer's ultimate pricing and service preferences.

In its response to our draft report, Sunwater noted that the number and quality of stakeholders' submissions to the review, including several which drew heavily on the Sunwater regulatory model, was evidence that it had achieved its engagement objectives of:

- increasing the transparency of information it provided customers
- improving the understanding of customers of the difference between prices and costs.

While publicly releasing regulatory models provides for greater transparency, these models are highly technical in nature and are not overly informative of the outcomes that are important to customers.

We maintain our recommendation that Sunwater should ensure that its consultation draws a clearer link between proposed expenditure and both prices, billing and service level outcomes for customers.

For example, a key outcome that customers might want delivered is a water supply system that enables good practice irrigation. In order to meet this outcome, Sunwater should be able to articulate:

- the proposed actions that it seeks to implement in order to meet the customer outcome (e.g. invest in improved asset management and upgrading assets)
- the associated expenditure (opex and capex) from delivering the proposed actions
- the expenditure impacts on prices and billing
- proposed key performance indicators to track performance against delivery of the customer outcome (e.g. the percentage of water released into an irrigation system that is actually delivered to customers).

10.4.4 Summary

Based on our findings above, we consider that Sunwater should refine the structure, timing and scope of its customer engagement.

Recommendation 15

We recommend that Sunwater improve its engagement with customers by:

- engaging with them on an ongoing basis, to keep a strong focus on what is important to customers over the course of the price path period and to provide a better understanding of customer requirements prior to the next price review
- drawing a clearer link for customers between proposed expenditure and both prices and service level outcomes for customers
- engaging with its customers prior to the next price review to develop a pricing proposal that incorporates its proposed prices for all of its tariff groups with irrigation customers.

APPENDIX A: RECOMMENDED PRICES

Table 81 below shows the existing 2019–20 price and our recommended prices for Sunwater's bulk WSSs. Prices exclude dam safety upgrade unless otherwise stated.

Table 81 Existing and recommended prices—bulk WSSs ($/ML, nominal)

Bulk WSS	*Price*	*Existing*	*Final recommended prices*			
		2019–20	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Barker Barambah—River	Part A	25.93	28.89	31.97	35.18	38.51
	Part B	4.60	4.26	4.35	4.45	4.55
Barker Barambah—Redgate Relift	Part A	25.93	28.89	31.97	35.18	38.51
	Part B	22.56	23.07	23.58	24.11	24.65
Bowen Broken Rivers	Part A	12.50	12.50	12.50	12.50	12.50
	Part B	6.95	7.11	7.26	7.43	7.59
Boyne River and Tarong	Part A	28.58	28.58	28.58	28.58	28.58
	Part B	1.77	1.81	1.85	1.89	1.93
Bundaberg	Part A	13.06	13.06	13.06	13.06	13.13
	Part B	1.31	1.01	1.03	1.06	1.08
Burdekin-Haughton	Part A	12.71	12.71	12.71	12.71	12.71
	Part B	0.54	0.33	0.34	0.35	0.36
Callide—Callide and Kroombit Creek	Part A	18.50	21.29	24.20	27.23	30.39
	Part B	8.84	8.88	9.08	9.29	9.50
Callide—Benefited Groundwater Area	Part A	18.50	21.29	24.20	27.23	30.39
	Part B	8.84	8.88	9.08	9.29	9.50
Chinchilla Weir	Part A	30.17	30.17	30.17	30.17	30.17
	Part B	3.45	3.53	3.61	3.69	3.77
Cunnamulla	Part A	31.75	33.53	34.28	35.05	35.84
	Part B	3.58	1.94	1.98	2.02	2.07
Dawson Valley—River (medium priority river customers) (pricing option 1)	Part A	18.04	20.82	22.13	22.62	23.13
	Part B	2.01	1.62	1.66	1.69	1.73
Dawson Valley—River at Glebe Weir (pricing option 1)	Part A	16.18	18.92	21.78	22.62	23.13
	Part B	2.01	1.62	1.66	1.69	1.73
Dawson Valley—Alternate tariff group (pricing option 2)	Part A	n.a.	20.82	22.13	22.62	23.13
	Part B	n.a.	1.62	1.66	1.69	1.73
Dawson Valley—River (medium priority local management supply)	Part A	13.98	16.67	19.48	22.40	23.13
	Part B	2.01	1.62	1.66	1.69	1.73
Dawson Valley—River (high priority river customers) (alternative tariff group)	Part A	n.a.	46.11	49.57	53.17	56.91
	Part B	n.a.	1.62	1.66	1.69	1.73
Dawson Valley—River (high priority local management supply)	Part A	42.77	46.11	49.57	53.17	56.91
	Part B	2.01	1.62	1.66	1.69	1.73

Bulk WSS	*Price*	*Existing*	*Final recommended prices*			
		2019–20	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Eton (medium priority)	Part A	31.36	33.56	34.31	35.08	35.87
	Part B	4.05	4.11	4.20	4.29	4.39
Eton (high priority local management supply)	Part A	117.49	122.50	127.68	130.97	133.91
	Part B	4.05	4.11	4.20	4.29	4.39
Lower Fitzroy	Part A	13.55	13.55	13.55	13.55	13.55
	Part B	1.41	0.99	1.01	1.03	1.05
Lower Mary—Mary Barrage	Part A	15.10	15.10	15.10	15.10	15.10
	Part B	1.98	0.86	0.88	0.90	0.92
Lower Mary—Tinana and Teddington	Part A	24.83	24.83	24.83	24.83	24.83
	Part B	9.51	9.72	9.94	10.16	13.49
Macintyre Brook (pricing option 1)	Part A	48.62	52.09	55.69	59.42	63.30
	Part B	4.54	4.11	4.20	4.30	4.39
Macintyre Brook including dam safety (pricing option 2)	Part A	48.62	52.09	55.69	59.42	63.30
	Part B	4.54	4.11	4.20	4.30	4.39
Maranoa River	Part A	53.17	56.74	60.45	64.29	68.27
	Part B	65.01	66.47	67.96	69.48	71.03
Mareeba-Dimbulah—River Tinaroo/Barron	Part A	15.87	15.87	15.87	15.87	15.87
	Part B	0.59	0.60	0.62	0.63	0.64
Nogoa-Mackenzie (medium priority) (pricing option 1)	Part A	12.22	12.22	12.22	12.22	12.22
	Part B	1.32	0.84	0.86	0.88	0.90
Nogoa-Mackenzie (medium priority) including dam safety (pricing option 2)	Part A	12.22	12.22	12.22	12.22	12.22
	Part B	1.32	0.84	0.86	0.88	0.90
Nogoa-Mackenzie (high priority) (pricing option 1)	Part A	28.88	31.91	35.05	38.33	41.73
	Part B	1.32	0.84	0.86	0.88	0.90
Nogoa-Mackenzie (high priority) including dam safety (pricing option 2)	Part A	28.88	31.91	35.05	38.33	41.73
	Part B	1.32	0.84	0.86	0.88	0.90
Nogoa-Mackenzie (medium priority local management supply) (pricing option 1)	Part A	8.84	6.64	6.79	6.94	7.09
	Part B	1.32	0.84	0.86	0.88	0.90
Nogoa-Mackenzie (medium priority local management supply) including dam safety (pricing option 2)	Part A	8.84	7.60	7.77	7.95	8.13
	Part B	1.32	0.84	0.86	0.88	0.90
Nogoa-Mackenzie (high priority local management supply) (pricing option 1)	Part A	28.88	31.91	35.05	38.33	41.73
	Part B	1.32	0.84	0.86	0.88	0.90
Nogoa-Mackenzie (high priority local management supply) including dam safety (pricing option 2)	Part A	28.88	31.91	35.05	38.33	41.73
	Part B	1.32	0.84	0.86	0.88	0.90
Pioneer River (pricing option 1)	Part A	14.81	17.52	20.35	21.42	21.90
	Part B	3.13	3.20	3.27	3.92	4.01
Pioneer River including dam safety (pricing option 2)	Part A	14.81	17.52	20.35	21.87	22.36
	Part B	3.13	3.20	3.27	3.92	4.01

Bulk WSS	*Price*	*Existing*	*Final recommended prices*			
		2019–20	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Proserpine River	Part A	13.26	14.19	14.51	14.83	15.16
	Part B	3.02	3.47	3.55	3.63	3.71
Proserpine River—Kelsey Creek Water Board	Part A	12.14	14.19	14.51	14.83	15.16
	Part B	3.02	3.47	3.55	3.63	3.71
St George—Beardmore Dam or Balonne River (medium priority river customers) (pricing option 1)	Part A	21.91	22.91	23.42	23.95	24.48
	Part B	1.38	1.09	1.11	1.14	1.16
St George—Thuraggi Watercourse (medium priority river customers) (pricing option 1)	Part A	21.91	22.91	23.42	23.95	24.48
	Part B	1.38	1.09	1.11	1.14	1.16
St George—Alternate tariff group (pricing option 2)	Part A	n.a.	22.91	23.42	23.95	24.48
	Part B	n.a.	1.09	1.11	1.14	1.16
St George (medium priority local management supply)	Part A	20.86	22.91	23.42	23.95	24.48
	Part B	1.38	1.09	1.11	1.14	1.16
St George (high priority local management supply)	Part A	29.04	32.07	35.22	38.50	39.94
	Part B	1.38	1.09	1.11	1.14	1.16
Three Moon Creek—River (pricing option 1)	Part A	32.43	35.54	38.77	42.12	45.61
	Part B	4.78	4.89	5.00	5.11	5.22
Three Moon Creek—Groundwater (pricing option 1)	Part A	23.58	26.49	29.51	32.66	35.94
	Part B	4.78	4.89	5.00	5.11	5.22
Three Moon Creek—Alternate tariff group (pricing option 2)	Part A	n.a.	27.72	30.77	33.95	37.25
	Part B	n.a.	4.89	5.00	5.11	5.22
Upper Burnett—Regulated Section of the Nogo/Burnett River	Part A	30.58	33.64	36.83	40.14	43.59
	Part B	4.08	4.17	4.26	4.36	4.46
Upper Burnett—John Goleby Weir	Part A	28.96	31.99	35.14	38.41	41.82
	Part B	4.08	4.17	4.26	4.36	4.46
Upper Condamine—Sandy Creek or Condamine River (pricing option 1)	Part A	34.03	34.03	34.03	34.03	34.03
	Part B	5.57	5.69	5.82	5.95	6.09
Upper Condamine—Sandy Creek or Condamine River including dam safety (pricing option 2)	Part A	34.03	34.03	34.03	34.03	34.03
	Part B	5.57	5.69	5.82	5.95	6.09
Upper Condamine—North Branch (pricing option 1)	Part A	47.64	47.64	47.64	47.64	47.64
	Part B	15.19	15.53	15.88	16.23	16.60
Upper Condamine—North Branch including dam safety (pricing option 2)	Part A	47.64	47.64	47.64	47.64	47.64
	Part B	15.19	15.53	15.88	16.23	16.60
Upper Condamine—North Branch—Risk A	Part A	13.44	14.30	14.62	14.95	15.29
	Part B	15.19	17.35	19.80	20.24	20.69

Source: QCA analysis.

Table 82 shows the existing 2019–20 price and our recommended prices for Sunwater's distribution systems.

Table 82 Existing and recommended prices—distribution systems ($/ML, nominal)

Distribution system	*Price*	*Existing*	*Final recommended prices*			
		2019–20	**2020–21**	**2021–22**	**2022–23**	**2023–24**
Bundaberg Channel	Part A	7.54	10.09	12.56	12.84	13.13
	Part B	1.31	1.01	1.03	1.06	1.08
	Part C	45.08	46.09	47.31	50.86	54.54
	Part D	58.94	54.35	55.57	56.81	58.08
	Total fixed	**52.62**	**56.18**	**59.87**	**63.70**	**67.67**
	Volumetric	**60.25**	**55.36**	**56.60**	**57.87**	**59.16**
Burdekin Channel	Part A	3.49	3.83	3.92	4.01	4.10
	Part B	0.54	0.33	0.34	0.35	0.36
	Part C	39.10	42.09	43.89	44.87	45.87
	Part D	29.60	23.28	23.80	24.33	24.88
	Total fixed	**42.59**	**45.92**	**47.81**	**48.88**	**49.97**
	Volumetric	**30.14**	**23.61**	**24.14**	**24.68**	**25.24**
Burdekin—Giru Groundwater	Part A	3.49	3.83	3.92	4.01	4.10
	Part B	0.54	0.33	0.34	0.35	0.36
	Part C	17.86	20.38	23.26	26.27	29.40
	Part D	14.82	15.37	15.71	16.07	16.43
	Total fixed	**21.35**	**24.21**	**27.18**	**30.28**	**33.50**
	Volumetric	**15.36**	**15.70**	**16.06**	**16.42**	**16.78**
Burdekin—Glady's Lagoon (other than Natural Yield)	Part A	3.49	3.83	3.92	4.01	4.10
	Part B	0.54	0.33	0.34	0.35	0.36
	Part C	39.10	42.09	43.89	44.87	45.87
	Part D	29.60	23.28	23.80	24.33	24.88
	Total fixed	**42.59**	**45.92**	**47.81**	**48.88**	**49.97**
	Volumetric	**30.14**	**23.61**	**24.14**	**24.68**	**25.24**
Eton	Part A	31.36	33.56	34.31	35.08	35.87
	Part B	4.05	4.11	4.20	4.29	4.39
	Part C	38.40	40.14	43.48	46.94	50.53
	Part D	33.63	34.41	35.19	35.98	36.78
	Total fixed	**69.76**	**73.70**	**77.79**	**82.02**	**86.40**
	Volumetric	**37.68**	**38.52**	**39.39**	**40.27**	**41.17**
Lower Mary channel	Part A	7.31	6.21	6.35	6.50	6.64
	Part B	1.98	0.86	0.88	0.90	0.92
	Part C	47.00	51.70	55.29	57.77	59.07
	Part D	70.27	67.01	68.51	70.05	71.62
	Total fixed	**54.31**	**57.91**	**61.64**	**64.27**	**65.71**
	Volumetric	**72.25**	**67.87**	**69.39**	**70.95**	**72.54**

Distribution system	*Price*	*Existing*	*Final recommended prices*			
		2019–20	**2020–21**	**2021–22**	**2022–23**	**2023–24**
Mareeba-Dimbulah—outside a relift up to 100 ML	Part A	3.45	5.52	5.64	5.77	5.90
	Part B	0.59	0.64	0.65	0.67	0.68
	Part C	51.82	53.37	54.91	56.25	57.63
	Part D	8.27	5.90	6.04	6.17	6.31
	Total fixed	**55.27**	**58.89**	**60.55**	**62.02**	**63.53**
	Volumetric	**8.86**	**6.54**	**6.69**	**6.84**	**6.99**
Mareeba-Dimbulah—outside a relift 100ML to 500 ML	Part A	3.45	5.52	5.64	5.77	5.90
	Part B	0.59	0.64	0.65	0.67	0.68
	Part C	45.27	46.67	48.40	49.60	50.82
	Part D	8.27	5.90	6.04	6.17	6.31
	Total fixed	**48.72**	**52.19**	**54.04**	**55.37**	**56.72**
	Volumetric	**8.86**	**6.54**	**6.69**	**6.84**	**6.99**
Mareeba-Dimbulah—outside a relift over 500 ML	Part A	3.45	5.52	5.64	5.77	5.90
	Part B	0.59	0.64	0.65	0.67	0.68
	Part C	34.33	35.49	37.52	38.48	39.46
	Part D	8.27	5.90	6.04	6.17	6.31
	Total fixed	**37.78**	**41.01**	**43.16**	**44.25**	**45.36**
	Volumetric	**8.86**	**6.54**	**6.69**	**6.84**	**6.99**
Mareeba-Dimbulah—river supplemented streams and Walsh River	Part A	3.45	5.52	5.64	5.77	5.90
	Part B	0.59	0.64	0.65	0.67	0.68
	Part C	23.40	24.31	25.99	26.57	27.16
	Part D	4.73	3.54	3.63	3.70	3.79
	Total fixed	**26.85**	**29.83**	**31.63**	**32.34**	**33.06**
	Volumetric	**5.32**	**4.18**	**4.28**	**4.37**	**4.47**
Mareeba-Dimbulah—relift	Part A	3.45	5.52	5.64	5.77	5.90
	Part B	0.59	0.60	0.62	0.63	0.64
	Part C	39.33	40.60	43.94	47.41	51.02
	Part D	86.22	88.15	90.12	92.15	94.21
	Total fixed	**42.78**	**46.12**	**49.58**	**53.18**	**56.92**
	Volumetric	**86.81**	**88.75**	**90.74**	**92.78**	**94.85**

Note: The fixed prices are the Part A and Part C prices, and the volumetric prices are the Part B and Part D prices.

Source: QCA analysis.

APPENDIX B: TOTAL COSTS BY SCHEME/SYSTEM

Barker Barambah WSS

Table 83 Total whole of scheme costs, Barker Barambah WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	248.0	253.5	259.7	266.0
Operations—non-direct	291.9	298.2	305.4	312.8
Electricity	40.5	44.1	44.7	45.3
Insurance	260.8	266.0	272.1	278.3
IGEM	91.1	93.1	95.3	97.6
Maintenance—direct	58.6	59.8	61.3	62.8
Maintenance—non-direct	69.6	71.1	72.9	74.6
Renewals annuity	688.1	756.4	1,139.4	1,148.8
Revenue offsets	(3.3)	(3.4)	(3.5)	(3.6)
QCA regulatory fee	13.9	14.2	14.5	14.8
Total costs	**1,759.1**	**1,853.0**	**2,261.8**	**2,297.5**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Bowen Broken Rivers WSS

Table 84 Total whole of scheme costs, Bowen Broken Rivers WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	294.3	300.7	30.8.0	315.5
Operations—non-direct	285.6	291.7	298.8	306.0
Electricity	185.4	268.2	272.0	275.2
Insurance	182.2	185.8	190.1	194.5
IGEM	79.3	81.0	82.9	84.9
Maintenance—direct	237.7	242.7	248.4	254.3
Maintenance—non-direct	110.2	112.6	115.3	118.1
Renewals annuity	844.3	847.9	854.4	865.6
Revenue offsets	–	–	–	–
QCA regulatory fee	2.5	2.6	2.6	2.7
Total costs	**2,221.6**	**2,333.2**	**2,372.6**	**2,416.9**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Boyne River and Tarong WSS

Table 85 Total whole of scheme costs, Boyne River and Tarong WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	189.7	193.8	198.5	203.3
Operations—non-direct	193.7	197.8	202.6	207.5
Electricity	–	–	–	–
Insurance	379.4	387.0	395.9	405.0
IGEM	72.6	74.2	76.0	77.8
Maintenance—direct	47.3	48.4	49.6	50.8
Maintenance—non-direct	54.1	55.3	56.6	58.0
Renewals annuity	2,444.1	2,443.4	2,442.4	2,473.0
Revenue offsets	(1.0)	(1.1)	(1.1)	(1.1)
QCA regulatory fee	4.0	4.1	4.2	4.3
Total costs	**3,383.9**	**3,402.9**	**3,424.7**	**3,478.6**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Bundaberg WSS

Table 86 Total whole of scheme costs, Bundaberg ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	398.6	407.2	417.2	427.4
Operations—non-direct	455.1	464.9	476.2	487.7
Electricity	9.6	9.7	9.8	9.9
Insurance	323.6	330.1	337.7	345.4
IGEM	78.1	79.8	81.7	83.7
Maintenance—direct	155.2	158.6	162.5	166.5
Maintenance—non-direct	183.8	187.7	192.3	196.9
Renewals annuity	2,375.1	2,396.4	2,423.0	2,460.1
Revenue offsets	(2.1)	(2.1)	(2.2)	(2.2)
QCA regulatory fee	81.9	83.8	85.7	87.6
Total costs	**4,058.8**	**4,116.0**	**4,183.9**	**4,263.0**
Costs transferred from Bundaberg distribution system	48.0	52.5	54.0	54.8
Total costs to be allocated to tariff groups	**4,106.8**	**4,168.5**	**4,237.9**	**4,317.9**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Burdekin-Haughton WSS

Table 87 Total whole of scheme costs, Burdekin¬Haughton WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	604.2	617.2	632.1	647.4
Operations—non-direct	649.4	663.4	679.5	695.9
Electricity	128.9	116.6	118.2	119.6
Insurance	974.5	994.0	1,016.9	1,040.2
IGEM	109.3	111.7	114.4	117.1
Maintenance—direct	386.7	394.9	404.4	414.1
Maintenance—non-direct	260.1	265.6	272.1	278.7
Renewals annuity	1,173.4	1,207.9	1,288.3	1,390.8
Revenue offsets	(1.0)	(1.1)	(1.1)	(1.1)
QCA regulatory fee	198.9	203.4	207.9	212.6
Total costs	**4,484.3**	**4,573.6**	**4,732.7**	**4,915.3**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Callide Valley WSS

Table 88 Total whole of scheme costs, Callide Valley WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	349.1	356.6	365.3	374.1
Operations—non-direct	335.9	343.1	351.5	360.0
Electricity	4.8	4.8	4.9	5.0
Insurance	406.7	414.8	424.4	434.1
IGEM	278.2	284.1	291.0	298.1
Maintenance—direct	189.4	193.5	198.3	203.2
Maintenance—non-direct	223.5	228.3	233.8	239.5
Renewals annuity	1,345.9	1,351.6	1,382.0	1,982.8
Revenue offsets	(1.0)	(1.1)	(1.1)	(1.1)
QCA regulatory fee	5.9	6.1	6.2	6.4
Total costs	**3,138.4**	**3,182.1**	**3,256.4**	**3,901.9**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Chinchilla Weir WSS

Table 89 Total whole of scheme costs, Chinchilla Weir WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	36.1	36.9	37.8	38.7
Operations—non-direct	44.6	45.6	46.7	47.8
Electricity	–	–	–	–
Insurance	17.0	17.3	17.7	18.1
IGEM	–	–	–	–
Maintenance—direct	6.8	7.0	7.2	7.3
Maintenance—non-direct	9.8	10.0	10.2	10.5
Renewals annuity	177.5	178.4	180.1	186.0
Revenue offsets	(1.0)	(1.1)	(1.1)	(1.1)
QCA regulatory fee	1.1	1.1	1.2	1.2
Total costs	**291.9**	**295.2**	**299.8**	**308.5**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Cunnamulla WSS

Table 90 Total whole of scheme costs, Cunnamulla WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	12.6	12.9	13.2	13.5
Operations—non-direct	22.1	22.6	23.2	23.7
Electricity	–	–	–	–
Insurance	6.1	6.3	6.4	6.6
IGEM	–	–	–	–
Maintenance—direct	2.2	2.3	2.3	2.4
Maintenance—non-direct	3.1	3.2	3.2	3.3
Renewals annuity	32.6	48.4	48.7	49.7
Revenue offsets	–	–	–	–
QCA regulatory fee	1.1	1.1	1.1	1.1
Total costs	**79.9**	**96.7**	**98.2**	**100.4**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Dawson Valley WSS

Table 91 Total whole of scheme costs, Dawson Valley WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	215.9	220.7	226.2	231.8
Operations—non-direct	317.9	324.8	332.6	340.7
Electricity	53.9	54.7	55.5	56.2
Insurance	151.9	154.9	158.5	162.1
IGEM	71.0	72.5	74.3	76.1
Maintenance—direct	91.6	93.6	95.9	98.2
Maintenance—non-direct	102.8	105.0	107.6	110.2
Renewals annuity	869.2	908.7	938.9	956.6
Revenue offsets	(2.1)	(2.1)	(2.2)	(2.2)
QCA regulatory fee	24.4	25.0	25.5	26.1
Total costs	**1,896.6**	**1,957.9**	**2,012.9**	**2,055.8**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Eton WSS

Table 92 Total whole of scheme costs, Eton WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	277.8	283.8	290.8	297.8
Operations—non-direct	291.5	297.8	305.0	312.4
Electricity	407.6	451.1	457.5	462.9
Insurance	245.2	250.1	255.9	261.8
IGEM	123.5	126.2	129.3	132.4
Maintenance—direct	266.2	271.9	278.5	285.1
Maintenance—non-direct	173.0	176.7	181.0	185.3
Renewals annuity	755.2	761.5	776.1	791.6
Revenue offsets	–	–	–	–
QCA regulatory fee	23.3	23.9	24.4	24.9
Total costs	**2,563.5**	**2,643.0**	**2,698.3**	**2,754.3**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Lower Fitzroy WSS

Table 93 Total whole of scheme costs, Lower Fitzroy WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	70.5	72.0	73.8	75.6
Operations—non-direct	87.0	88.9	91.0	93.2
Electricity	1.9	1.9	2.0	2.0
Insurance	28.3	28.8	29.5	30.2
IGEM	–	–	–	–
Maintenance—direct	23.2	23.7	24.2	24.8
Maintenance—non-direct	23.6	24.1	24.7	25.3
Renewals annuity	141.3	141.2	142.7	152.2
Revenue offsets	–	–	–	–
QCA regulatory fee	1.4	1.4	1.4	1.5
Total costs	**377.1**	**382.0**	**389.4**	**404.7**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Lower Mary WSS

Table 94 Total whole of scheme costs, Lower Mary WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	43.9	44.9	46.0	47.2
Operations—non-direct	62.6	63.9	65.4	67.0
Electricity	–	–	–	–
Insurance	18.5	18.9	19.3	19.7
IGEM	–	–	–	–
Maintenance—direct	5.0	5.1	5.3	5.4
Maintenance—non-direct	6.8	7.0	7.1	7.3
Renewals annuity	222.3	224.4	226.2	227.7
Revenue offsets	–	–	–	–
QCA regulatory fee	10.0	10.3	10.5	10.7
Total costs	**369.2**	**374.5**	**379.9**	**385.1**
Costs transferred from Lower Mary distribution system	253.4	279.6	284.4	287.7
Total costs to be allocated to tariff groups	**622.6**	**654.1**	**664.3**	**672.8**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Macintyre Brook WSS

Table 95 Total whole of scheme costs, Macintyre Brook WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	183.8	187.8	192.5	197.2
Operations—non-direct	265.2	270.9	277.4	284.1
Electricity	3.8	3.9	3.9	4.0
Insurance	212.1	216.3	221.3	226.4
IGEM	146.2	149.3	153.0	156.6
Maintenance—direct	139.5	142.6	146.1	149.7
Maintenance—non-direct	202.9	207.3	212.3	217.4
Renewals annuity	611.2	620.5	669.5	676.4
Revenue offsets	–	–	–	–
QCA regulatory fee	7.6	7.7	7.9	8.1
Total costs excluding dam safety	**1,772.1**	**1,806.3**	**1,883.9**	**1,920.0**
Dam safety	–	–	49.9	101.9
Total costs including dam safety	**1,772.1**	**1,806.3**	**1,933.9**	**2,021.9**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Maranoa River WSS

Table 96 Total whole of scheme costs, Maranoa River WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	9.2	9.4	9.6	9.8
Operations—non-direct	6.2	6.3	6.5	6.6
Electricity	–	–	–	–
Insurance	14.7	15.0	15.3	15.7
IGEM	–	–	–	–
Maintenance—direct	0.8	0.8	0.8	0.9
Maintenance—non-direct	1.4	1.4	1.4	1.5
Renewals annuity	47.3	47.3	47.6	47.6
Revenue offsets	–	–	–	–
QCA regulatory fee	0.4	0.4	0.4	0.4
Total costs	**79.9**	**80.6**	**81.7**	**82.4**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Mareeba-Dimbulah WSS

Table 97 Total whole of scheme costs, Mareeba-Dimbulah WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	349.0	356.5	365.1	373.9
Operations—non-direct	367.8	375.7	384.9	394.1
Electricity	0.9	0.9	1.0	1.0
Insurance	196.3	200.2	204.8	209.5
IGEM	140.4	143.4	146.9	150.5
Maintenance—direct	166.9	170.5	174.7	178.9
Maintenance—non-direct	194.1	198.2	203.1	208.0
Renewals annuity	668.8	675.1	690.7	707.3
Revenue offsets	(91.6)	(93.6)	(95.9)	(98.3)
QCA regulatory fee	66.8	68.3	69.8	71.4
Total costs	**2,059.4**	**2,095.4**	**2,145.0**	**2,196.3**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Nogoa-Mackenzie WSS

Table 98 Total whole of scheme costs, Nogoa-Mackenzie WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	506.8	517.8	530.4	543.3
Operations—non-direct	490.5	501.1	513.2	525.6
Electricity	19.0	19.3	19.5	19.8
Insurance	624.1	636.5	651.2	666.2
IGEM	100.4	102.6	105.1	107.6
Maintenance—direct	201.3	205.7	210.7	215.8
Maintenance—non-direct	192.4	196.6	201.3	206.2
Renewals annuity	1,270.0	1,302.1	1,345.1	1,405.1
Revenue offsets	(2.1)	(2.1)	(2.2)	(2.2)
QCA regulatory fee	84.7	86.6	88.6	90.6
Total costs excluding dam safety	**3,487.3**	**3,566.1**	**3,663.0**	**3,777.9**
Dam safety	370.9	756.9	769.8	782.9
Total costs including dam safety	**3,858.1**	**4,323.1**	**4,432.8**	**4,560.8**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Pioneer River WSS

Table 99 Total whole of scheme costs, Pioneer River WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	212.1	216.6	221.9	227.3
Operations—non-direct	205.5	209.9	215.0	220.2
Electricity	5.1	6.4	6.5	6.5
Insurance	426.9	435.4	445.4	455.7
IGEM	76.0	77.7	79.5	81.5
Maintenance—direct	286.3	292.4	299.5	306.7
Maintenance—non-direct	216.8	221.5	226.9	232.4
Renewals annuity	995.7	1,079.1	1,141.6	1,165.5
Revenue offsets	–	–	–	–
QCA regulatory fee	20.9	21.4	21.9	22.4
Total costs excluding dam safety	**2,445.3**	**2,560.4**	**2,658.2**	**2,718.1**
Dam safety	–	–	75.2	153.5
Total costs including dam safety	**2,445.3**	**2,560.4**	**2,733.4**	**2,871.5**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Proserpine River WSS

Table 100 Total whole of scheme costs, Proserpine River WSS ($000s, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	319.2	326.0	333.9	341.9
Operations—non-direct	301.3	307.8	315.2	322.8
Electricity	8.1	8.2	8.3	8.4
Insurance	224.8	229.3	234.5	239.9
IGEM	97.0	99.1	101.5	104.0
Maintenance—direct	139.9	143.0	146.4	150.0
Maintenance—non-direct	129.6	132.3	135.6	138.8
Renewals annuity	447.8	483.3	501.5	505.3
Revenue offsets	(2.7)	(2.8)	(2.8)	(2.9)
QCA regulatory fee	18.0	18.4	18.9	19.3
Total costs	**1,683.0**	**1,744.7**	**1,792.9**	**1,827.5**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

St George WSS

Table 101 Total whole of scheme costs, St George WSS ($000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	235.0	240.1	246.0	252.0
Operations—non-direct	287.5	293.6	300.8	308.0
Electricity	6.5	6.6	6.7	6.8
Insurance	138.0	140.7	144.0	147.3
IGEM	127.1	129.8	133.0	136.2
Maintenance—direct	172.7	176.5	180.9	185.3
Maintenance—non-direct	235.6	240.6	246.5	252.4
Renewals annuity	820.4	825.5	877.2	887.6
Revenue offsets	(2.1)	(2.1)	(2.2)	(2.2)
QCA regulatory fee	36.0	36.8	37.6	38.5
Total costs	**2,056.6**	**2,088.3**	**2,170.4**	**2,211.8**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Three Moon Creek WSS

Table 102 Total whole of scheme costs, Three Moon Creek WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	112.7	115.1	117.9	120.8
Operations—non-direct	113.0	115.4	118.2	121.0
Electricity	21.0	21.3	21.6	21.9
Insurance	136.9	139.6	142.8	146.1
IGEM	78.5	80.2	82.2	84.2
Maintenance—direct	77.0	78.7	80.7	82.7
Maintenance—non-direct	94.4	96.4	98.8	101.2
Renewals annuity	548.3	573.8	593.4	597.9
Revenue offsets	(1.0)	(1.1)	(1.1)	(1.1)
QCA regulatory fee	6.2	6.3	6.5	6.6
Total costs	**1,187.0**	**1,226.0**	**1,261.0**	**1,281.2**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Upper Burnett WSS

Table 103 Total whole of scheme costs, Upper Burnett WSS ($000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	288.7	295.0	302.2	309.6
Operations—non-direct	310.4	317.1	324.7	332.6
Electricity	5.7	5.8	5.9	6.0
Insurance	134.0	136.7	139.8	143.1
IGEM	75.0	76.6	78.5	80.3
Maintenance—direct	82.2	84.0	86.0	88.1
Maintenance—non-direct	99.7	101.9	104.4	106.9
Renewals annuity	764.9	777.5	795.4	802.3
Revenue offsets	(1.3)	(1.4)	(1.4)	(1.4)
QCA regulatory fee	11.7	12.0	12.3	12.6
Total costs	**1,771.0**	**1,805.2**	**1,847.8**	**1,880.0**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Upper Condamine WSS

Table 104 Total whole of scheme costs, Upper Condamine WSS ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	315.9	322.8	330.8	338.9
Operations—non-direct	437.4	446.8	457.6	468.7
Electricity	91.7	94.8	96.1	97.2
Insurance	164.6	167.9	171.7	175.7
IGEM	99.7	101.8	104.3	106.8
Maintenance—direct	126.3	129.1	132.3	135.5
Maintenance—non-direct	171.2	174.9	179.1	183.4
Renewals annuity	739.0	761.9	784.7	791.1
Revenue offsets	(1.0)	(1.1)	(1.1)	(1.1)
QCA regulatory fee	13.4	13.7	14.0	14.3
Total costs excluding dam safety	**2,158.1**	**2,212.6**	**2,269.6**	**2,310.5**
Dam safety	–	227.0	463.3	471.2
Total costs including dam safety	**2,158.1**	**2,439.6**	**2,732.9**	**2,781.7**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Bundaberg distribution system

Table 105 Total whole of scheme costs, Bundaberg distribution system ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	1,203.7	1,229.9	1,260.1	1,290.8
Operations—non-direct	1,244.3	1,271.0	1,301.8	1,333.3
Electricity	4,572.9	5,903.8	5,986.6	6,057.4
Insurance	951.8	970.8	993.2	1,016.0
IGEM	129.8	132.6	135.8	139.1
Maintenance—direct	1,923.5	1,964.6	2,012.0	2,060.4
Maintenance—non-direct	1,451.5	1,482.8	1,518.7	1,555.4
Renewals annuity	1,586.7	1,656.3	1,701.1	1,773.8
Revenue offsets	(3.1)	(3.2)	(3.3)	(3.3)
QCA regulatory fee	–	–	–	–
Total costs	**13,061.2**	**14,608.6**	**14,906.1**	**15,222.8**
Costs transferred to Bundaberg WSS	(48.0)	(52.5)	(54.0)	(54.8)
Total costs to be allocated to tariff groups	**13,013.1**	**14,556.1**	**14,852.0**	**15,168.0**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Burdekin-Haughton distribution system

Table 106 Total whole of scheme costs, Burdekin-Haughton distribution system ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	2,736.7	2,795.8	2,863.9	2,933.2
Operations—non-direct	2,902.9	2,965.3	3,037.2	3,110.6
Electricity	5,363.5	5,398.4	5,474.2	5,538.9
Insurance	614.3	626.5	641.0	655.7
IGEM	–	–	–	–
Maintenance—direct	4,016.4	4,101.0	4,199.0	4,299.1
Maintenance—non-direct	2,374.3	2,425.3	2,484.1	2,544.1
Renewals annuity	2,032.1	2,101.2	2,154.0	2,096.5
Revenue offsets	(850.4)	(869.1)	(890.8)	(913.1)
QCA regulatory fee	–	–	–	–
Total costs	**19,189.8**	**19,544.6**	**19,962.6**	**20,265.1**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Eton distribution system

Table 107 Total whole of scheme costs, Eton distribution system ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	520.6	532.1	545.2	558.6
Operations—non-direct	627.9	641.4	657.0	672.8
Electricity	566.8	815.3	826.8	836.5
Insurance	255.4	260.6	266.5	272.7
IGEM	–	–	–	–
Maintenance—direct	915.0	934.2	956.5	979.2
Maintenance—non-direct	479.3	489.6	501.5	513.6
Renewals annuity	514.4	524.7	558.4	563.7
Revenue offsets	(1.5)	(1.5)	(1.5)	(1.6)
QCA regulatory fee	–	–	–	–
Total costs	**3,877.9**	**4,196.3**	**4,310.3**	**4,395.6**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Lower Mary distribution system

Table 108 Total whole of scheme costs, Lower Mary distribution system ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	154.0	157.4	161.3	165.3
Operations—non-direct	186.4	190.4	195.0	199.7
Electricity	293.0	405.1	410.8	415.7
Insurance	70.9	72.4	74.0	75.7
IGEM	–	–	–	–
Maintenance—direct	196.5	200.8	205.7	210.7
Maintenance—non-direct	202.2	206.6	211.6	216.7
Renewals annuity	186.8	193.2	222.1	261.1
Revenue offsets	–	–	–	–
QCA regulatory fee	–	–	–	–
Total costs	**1,289.9**	**1,425.9**	**1,480.6**	**1,545.0**
Costs transferred to Lower Mary WSS	(253.4)	(279.6)	(284.4)	(287.7)
Total costs to be allocated to tariff groups	**1,036.5**	**1,146.3**	**1,196.2**	**1,257.3**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

Mareeba-Dimbulah distribution system

Table 109 Total whole of scheme costs, Mareeba-Dimbulah distribution system ($'000, nominal)

Cost	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Operations—direct	1,201.0	1,227.0	1,257.0	1,287.5
Operations—non-direct	1,344.3	1,373.2	1,406.5	1,440.5
Electricity	484.2	528.7	536.1	542.4
Insurance	465.0	474.3	485.2	496.4
IGEM	–	–	–	–
Maintenance—direct	1,427.7	1,458.4	1,493.9	1,530.0
Maintenance—non-direct	1,404.6	1,434.8	1,469.6	1,505.1
Renewals annuity	829.2	909.5	937.8	987.5
Revenue offsets	(661.2)	(675.7)	(692.6)	(709.9)
QCA regulatory fee	–	–	–	–
Total costs	**6,494.8**	**6,730.3**	**6,893.5**	**7,079.5**

Notes: Totals may not add due to rounding. Total whole of scheme costs, including those costs allocated to irrigation and non-irrigation customers.

APPENDIX C: ESTIMATED BILLS BY SCHEME/SYSTEM

We have been directed to consider how our recommended prices might be reflected in customer bills.

For bulk WSS prices, indicative bill estimates are derived using the fixed (Part A) price and by applying average irrigation water use (at the scheme level) to the volumetric (Part B) price.

For distribution system prices, indicative bill estimates are derived using the sum of the fixed (Part A and Part C) price and the average irrigation water use applied to the volumetric (Part B and Part D) price. Average irrigation water use per scheme/system can be found in Chapter 9.

Indicative bill estimates excluding dam safety upgrade costs

The tables below show indicative bill estimates for tariff groups excluding dam safety upgrade costs, after bill moderation. Indicative bills have been estimated for three levels of WAE.

Table 110 Bill estimates compared to current prices excluding dam safety upgrade costs ($, nominal)

Tariff group	*2019–20 (current)*	*2020–21*	*2023–24*	*Change 2019–20 to 2020–21 (%)*	*Change 2019–20 to 2023–24 (%)*
Barker Barambah–Redgate Relift					
100 ML WAE	3,398	3,712	4,730	9	39
500 ML WAE	16,990	18,561	23,652	9	39
1,000 ML WAE	33,980	37,122	47,303	9	39
Barker Barambah–River					
100 ML WAE	2,757	3,041	4,013	10	46
500 ML WAE	13,786	15,205	20,065	10	46
1,000 ML WAE	27,571	30,411	40,131	10	46
Bowen Broken Rivers					
100 ML WAE	1,340	1,342	1,349	0	1
500 ML WAE	6,702	6,712	6,744	0	1
1,000 ML WAE	13,404	13,425	13,488	0	1
Boyne River and Tarong					
100 ML WAE	2,927	2,929	2,934	0	0
500 ML WAE	14,637	14,645	14,669	0	0
1,000 ML WAE	29,274	29,289	29,338	0	0
Bundaberg					
100 ML WAE	1,348	1,339	1,348	(1)	(0)
500 ML WAE	6,741	6,693	6,740	(1)	(0)
1,000 ML WAE	13,483	13,386	13,480	(1)	(0)
Bundaberg Channel					
100 ML WAE	8,408	8,508	9,856	1	17
500 ML WAE	42,038	42,541	49,280	1	17
1,000 ML WAE	84,076	85,082	98,561	1	17
Burdekin–Haughton					
100 ML WAE	1,301	1,290	1,291	(1)	(1)
500 ML WAE	6,505	6,448	6,454	(1)	(1)
1,000 ML WAE	13,010	12,896	12,909	(1)	(1)

Tariff group	*2019–20 (current)*	*2020–21*	*2023–24*	*Change 2019–20 to 2020–21 (%)*	*Change 2019–20 to 2023–24 (%)*
Burdekin Channel					
100 ML WAE	6,537	6,377	6,905	(2)	6
500 ML WAE	32,687	31,886	34,523	(2)	6
1,000 ML WAE	65,374	63,772	69,045	(2)	6
Burdekin–Giru Groundwater					
100 ML WAE	3,296	3,609	4,619	9	40
500 ML WAE	16,481	18,043	23,093	9	40
1,000 ML WAE	32,961	36,086	46,185	9	40
Burdekin - Glady's Lagoon					
100 ML WAE	6,537	6,377	6,905	(2)	6
500 ML WAE	32,687	31,886	34,523	(2)	6
1,000 ML WAE	65,374	63,772	69,045	(2)	6
Callide and Kroombit Creek					
100 ML WAE	2,353	2,635	3,579	12	52
500 ML WAE	11,765	13,175	17,896	12	52
1,000 ML WAE	23,530	26,350	35,792	12	52
Callide–Benefited Groundwater Area					
100 ML WAE	2,353	2,635	3,579	12	52
500 ML WAE	11,765	13,175	17,896	12	52
1,000 ML WAE	23,530	26,350	35,792	12	52
Chinchilla Weir					
100 ML WAE	3,245	3,250	3,266	0	1
500 ML WAE	16,227	16,252	16,332	0	1
1,000 ML WAE	32,453	32,504	32,665	0	1
Cunnamulla					
100 ML WAE	3,409	3,480	3,719	2	9
500 ML WAE	17,045	17,398	18,594	2	9
1,000 ML WAE	34,089	34,797	37,188	2	9
Dawson Valley - River (medium priority river customers)					
100 ML WAE	1,923	2,178	2,416	13	26
500 ML WAE	9,615	10,892	12,079	13	26
1,000 ML WAE	19,231	21,784	24,157	13	26
Dawson Valley - River (medium priority local management supply					
100 ML WAE	1,517	1,763	2,416	16	59
500 ML WAE	7,585	8,817	12,079	16	59
1,000 ML WAE	15,171	17,633	24,157	16	59
Dawson Valley - River (high priority local management supply)					
100 ML WAE	4,396	4,707	5,793	7	32
500 ML WAE	21,980	23,534	28,967	7	32
1,000 ML WAE	43,961	47,068	57,933	7	32

Tariff group	*2019–20 (current)*	*2020–21*	*2023–24*	*Change 2019–20 to 2020–21 (%)*	*Change 2019–20 to 2023–24 (%)*
Dawson - River at Glebe Weir					
100 ML WAE	1,737	1,988	2,416	14	39
500 ML WAE	8,685	9,941	12,079	14	39
1,000 ML WAE	17,371	19,883	24,157	14	39
Eton (medium priority)					
100 ML WAE	3,164	3,384	3,617	7	14
500 ML WAE	15,818	16,920	18,083	7	14
1,000 ML WAE	31,635	33,840	36,165	7	14
Eton (high priority local management supply)					
100 ML WAE	11,777	12,278	13,420	4	14
500 ML WAE	58,883	61,390	67,102	4	14
1,000 ML WAE	117,765	122,781	134,205	4	14
Eton Channel					
100 ML WAE	8,188	8,610	9,964	5	22
500 ML WAE	40,942	43,048	49,822	5	22
1,000 ML WAE	81,884	86,096	99,644	5	22
Lower Fitzroy					
100 ML WAE	1,363	1,360	1,361	(0)	(0)
500 ML WAE	6,813	6,801	6,803	(0)	(0)
1,000 ML WAE	13,625	13,603	13,606	(0)	(0)
Lower Mary - Mary Barrage					
100 ML WAE	1,574	1,538	1,540	(2)	(2)
500 ML WAE	7,869	7,689	7,698	(2)	(2)
1,000 ML WAE	15,738	15,377	15,396	(2)	(2)
Lower Mary - Tinana and Teddington					
100 ML WAE	2,789	2,796	2,918	0	5
500 ML WAE	13,947	13,981	14,588	0	5
1,000 ML WAE	27,893	27,962	29,176	0	5
Lower Mary Channel					
100 ML WAE	9,270	9,398	10,425	1	12
500 ML WAE	46,349	46,988	52,127	1	12
1,000 ML WAE	92,699	93,976	104,254	1	12
Macintyre Brook					
100 ML WAE	5,167	5,485	6,625	6	28
500 ML WAE	25,835	27,426	33,126	6	28
1,000 ML WAE	51,670	54,851	66,251	6	28
Maranoa River					
100 ML WAE	5,550	5,913	7,082	7	28
500 ML WAE	27,752	29,564	35,411	7	28
1,000 ML WAE	55,505	59,128	70,822	7	28

Tariff group	*2019–20 (current)*	*2020–21*	*2023–24*	*Change 2019–20 to 2020–21 (%)*	*Change 2019–20 to 2023–24 (%)*
Mareeba–Dimbulah					
100 ML WAE	1,613	1,614	1,616	0	0
500 ML WAE	8,067	8,069	8,079	0	0
1,000 ML WAE	16,133	16,139	16,157	0	0
Mareeba–Dimbulah Outside a relift up to 100 ML					
100 ML WAE	6,112	6,321	6,814	3	11
Mareeba–Dimbulah Outside a relift 100 ML to 500 ML					
500 ML WAE	27,284	28,254	30,667	4	12
Mareeba–Dimbulah Outside a relift over 500 ML					
1,000 ML WAE	43,627	45,327	49,975	4	15
Mareeba–Dimbulah River supplementary streams and Walsh River					
100 ML WAE	3,036	3,259	3,601	7	19
500 ML WAE	15,180	16,295	18,005	7	19
1,000 ML WAE	30,361	32,590	36,010	7	19
Mareeba–Dimbulah Relift					
100 ML WAE	10,007	10,470	11,952	5	19
500 ML WAE	50,035	52,348	59,760	5	19
1,000 ML WAE	100,071	104,695	119,520	5	19
Nogoa Mackenzie (medium priority)					
100 ML WAE	1,319	1,284	1,288	(3)	(2)
500 ML WAE	6,594	6,418	6,440	(3)	(2)
1,000 ML WAE	13,188	12,837	12,879	(3)	(2)
Nogoa Mackenzie (high priority)					
100 ML WAE	2,985	3,252	4,239	9	42
500 ML WAE	14,924	16,262	21,195	9	42
1,000 ML WAE	29,848	32,524	42,389	9	42
Nogoa Mackenzie (medium priority local management supply)					
100 ML WAE	981	725	775	(26)	(21)
500 ML WAE	4,904	3,627	3,876	(26)	(21)
1,000 ML WAE	9,808	7,253	7,752	(26)	(21)
Nogoa Mackenzie (high priority local management supply)					
100 ML WAE	2,985	3,252	4,239	9	42
500 ML WAE	14,924	16,262	21,195	9	42
1,000 ML WAE	29,848	32,524	42,389	9	42
Pioneer River					
100 ML WAE	1,549	1,822	2,278	18	47
500 ML WAE	7,747	9,111	11,391	18	47
1,000 ML WAE	15,494	18,222	22,782	18	47
Proserpine River					
100 ML WAE	1,468	1,582	1,691	8	15
500 ML WAE	7,340	7,912	8,455	8	15
1,000 ML WAE	14,680	15,823	16,910	8	15

Tariff group	*2019–20 (current)*	*2020–21*	*2023–24*	*Change 2019–20 to 2020–21 (%)*	*Change 2019–20 to 2023–24 (%)*
Proserpine River: Kelsey Creek Water Board					
100 ML WAE	1,356	1,582	1,691	17	25
500 ML WAE	6,780	7,912	8,455	17	25
1,000 ML WAE	13,560	15,823	16,910	17	25
St George - Beardmore Dam or Balonne River (medium priority river customers)					
100 ML WAE	2,292	2,371	2,534	3	11
500 ML WAE	11,461	11,853	12,668	3	11
1,000 ML WAE	22,923	23,707	25,336	3	11
St George - Thuraggi Watercourse (medium priority river customers)					
100 ML WAE	2,292	2,371	2,534	3	11
500 ML WAE	11,461	11,853	12,668	3	11
1,000 ML WAE	22,923	23,707	25,336	3	11
St George (medium priority local management supply)					
100 ML WAE	2,187	2,371	2,534	8	16
500 ML WAE	10,936	11,853	12,668	8	16
1,000 ML WAE	21,873	23,707	25,336	8	16
St George (high priority local management supply)					
100 ML WAE	3,005	3,287	4,080	9	36
500 ML WAE	15,026	16,435	20,398	9	36
1,000 ML WAE	30,053	32,870	40,796	9	36
Three Moon Creek–River					
100 ML WAE	3,424	3,739	4,759	9	39
500 ML WAE	17,121	18,695	23,795	9	39
1,000 ML WAE	34,242	37,389	47,589	9	39
Three Moon Creek–Groundwater					
100 ML WAE	2,539	2,834	3,792	12	49
500 ML WAE	12,696	14,171	18,960	12	49
1,000 ML WAE	25,392	28,341	37,919	12	49
Upper Burnett–Regulated Section of the Nogo/Burnett River					
100 ML WAE	3,269	3,581	4,590	10	40
500 ML WAE	16,346	17,903	22,948	10	40
1,000 ML WAE	32,693	35,805	45,896	10	40
Upper Burnett–John Goleby Weir					
100 ML WAE	3,107	3,415	4,413	10	42
500 ML WAE	15,536	17,074	22,063	10	42
1,000 ML WAE	31,073	34,149	44,126	10	42
Upper Condamine Sandy Creek or Condamine River					
100 ML WAE	3,636	3,642	3,658	0	1
500 ML WAE	18,182	18,208	18,290	0	1
1,000 ML WAE	36,364	36,416	36,580	0	1

Tariff group	*2019–20 (current)*	*2020–21*	*2023–24*	*Change 2019–20 to 2020–21 (%)*	*Change 2019–20 to 2023–24 (%)*
Upper Condamine North Branch					
100 ML WAE	5,400	5,415	5,459	0	1
500 ML WAE	27,002	27,073	27,297	0	1
1,000 ML WAE	54,004	54,147	54,594	0	1
Upper Condamine North Branch - Risk A					
100 ML WAE	1,980	2,157	2,396	9	21
500 ML WAE	9,902	10,786	11,979	9	21
1,000 ML WAE	19,804	21,572	23,957	9	21

Source: Sunwater, sub. 11; QCA analysis.

Indicative bill estimates including dam safety upgrades

The tables below show indicative bill estimates for tariff groups including dam safety upgrade costs, after bill moderation. Indicative bills have been estimated for three levels of WAE.

Table 111 Bill estimates compared to current prices including dam safety upgrade costs ($, nominal)

Tariff group	*2019–20 (current)*	*2020–21*	*2023–24*	*Change 2019–20 to 2020–21 (%)*	*Change 2019–20 to 2023–24 (%)*
Nogoa Mackenzie (medium priority local management supply)					
100 ML WAE	981	822	879	(16)	(10)
500 ML WAE	4,904	4,111	4,393	(16)	(10)
1,000 ML WAE	9,808	8,221	8,786	(16)	(10)
Pioneer River					
100 ML WAE	1,549	1,822	2,323	18	50
500 ML WAE	7,747	9,111	11,616	18	50
1,000 ML WAE	15,494	18,222	23,233	18	50

Source: Sunwater, sub. 11; QCA analysis.

Indicative bill estimates for alternative tariff groups

The tables below show indicative bill estimates existing tariff groups transitioning to our recommended alternative tariff groups, after bill moderation. Indicative bills have been estimated for three levels of WAE.

Table 112 Bill estimates compared to current prices for alternative tariff groups ($, nominal)

Tariff group	*2019–20 (current)*	*2020–21*	*2023–24*	*Change 2019–20 to 2020–21 (%)*	*Change 2019–20 to 2023–24 (%)*
Dawson – alternate tariff group from Dawson Valley - River (medium priority river customers)					
100 ML WAE	1,923	2,178	2,416	13	26
500 ML WAE	9,615	10,892	12,079	13	26
1,000 ML WAE	19,231	21,784	24,157	13	26
Dawson – alternate tariff group from Dawson - River at Glebe Weir					
100 ML WAE	1,737	2,178	2,416	25	39
500 ML WAE	8,685	10,892	12,079	25	39
1,000 ML WAE	17,371	21,784	24,157	25	39
Dawson Valley - River (high priority river customers)					
100 ML WAE	n.a	4,707	5,793	n.a	n.a
500 ML WAE	n.a	23,534	28,967	n.a	n.a
1,000 ML WAE	n.a	47,068	57,933	n.a	n.a
St George – alternate tariff group from St George - Beardmore Dam or Balonne River (medium priority river customers)					
100 ML WAE	2,292	2,371	2,534	3	11
500 ML WAE	11,461	11,853	12,668	3	11
1,000 ML WAE	22,923	23,707	25,336	3	11
St George – alternate tariff group from St George - Thuraggi Watercourse (medium priority river customers)					
100 ML WAE	2,292	2,371	2,534	3	11
500 ML WAE	11,461	11,853	12,668	3	11
1,000 ML WAE	22,923	23,707	25,336	3	11
Three Moon Creek – alternate tariff group from Three Moon Creek - River					
100 ML WAE	3,424	2,957	3,923	(14)	15
500 ML WAE	17,121	14,785	19,616	(14)	15
1,000 ML WAE	34,242	29,570	39,233	(14)	15
Three Moon Creek – alternate tariff group from Three Moon Creek - Groundwater					
100 ML WAE	2,539	2,957	3,923	16	55
500 ML WAE	12,696	14,785	19,616	16	55
1,000 ML WAE	25,392	29,570	39,233	16	55

Note: Indicative bill estimates (in $) are derived using the fixed (Part A) price and applying average irrigation water use (at the scheme level) to the volumetric (Part B) price.

Source: Sunwater, sub. 11; QCA analysis.