SunWater: Irrigation Price Review Submission

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SunWater: Irrigation Price Review Submission (November 2018)

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Delivering value through water solutions for today and tomorrow

SunWater is Queensland's largest bulk water service provider, currently owning and managing water infrastructure assets with a replacement value of around $13 billion and supplying approximately 40 per cent of all water used commercially in Queensland.

SunWater owns and manages a regional network of bulk water supply infrastructure, supporting more than 5000 customers in the agriculture, local government, mining, power and industrial sectors.

Contents

Abbreviations

Term	Definition
ABS	Australian Bureau of Statistics
AEMO	Australian Energy Market Operator
CEO	Chief Executive Officer
CPI	Consumer Price Index
CRG	Customer Reference Group (also referred to as Irrigation Customer Reference Group)
DIP	Dam Improvement Program
DNRME	Department of Natural Resources, Mines and Energy
EAP	Emergency Action Plan
ESOO	Electricity Statement of Opportunities
HUF	Headworks Utilisation Factor
IAC	Irrigator Advisory Committee
ICRG	Irrigation Customer Reference Group
IGEM	Inspector-General Emergency Management
LDMG	Local Disaster Management Groups
LMA	Local Management Arrangements
LME	Local Management Entity
NPV	Net Present Value
QCA	Queensland Competition Authority
QFF	Queensland Farmers' Federation
QTC	Queensland Treasury Corporation
RAB	Regulatory Asset Base
RBA	Reserve Bank of Australia
WACC	Weighted Average Cost of Capital
WPI	Wage Price Index

Overview

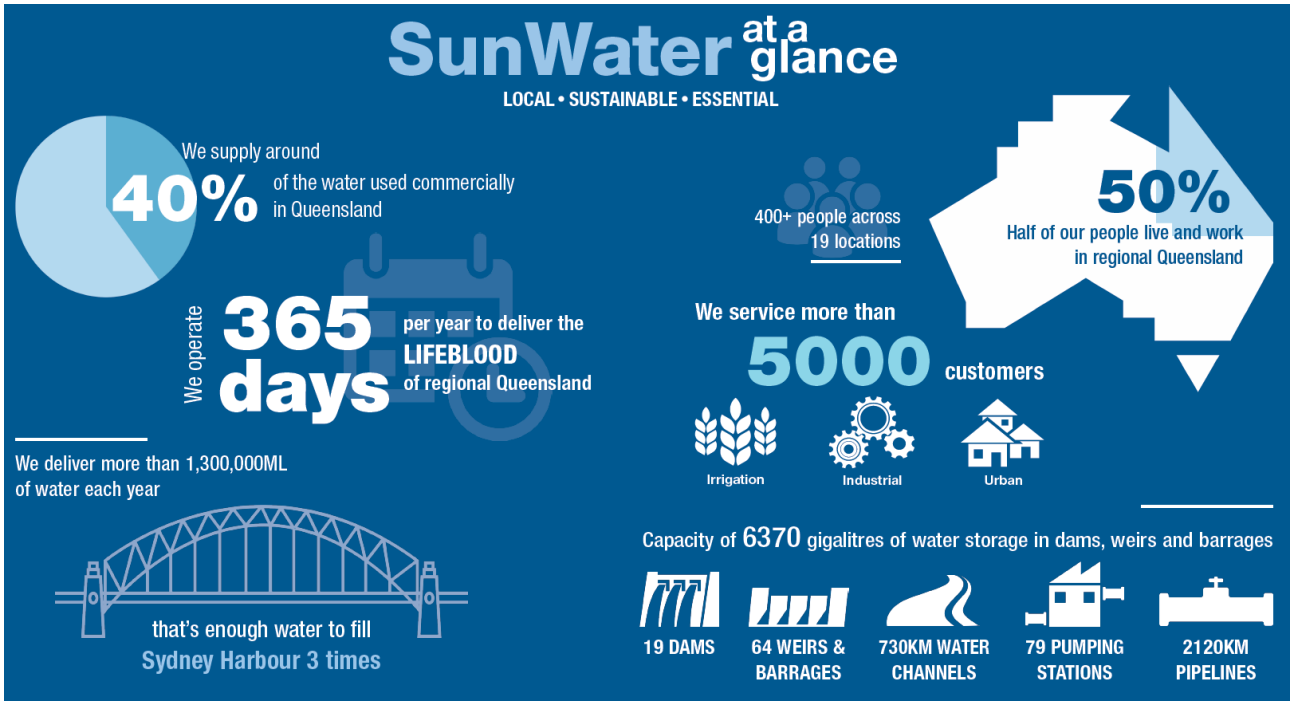
This submission to the irrigation price review has been prepared in consultation with customers. It transparently sets out our proposed costs for the 2020/21 to 2023/24 period for service contract areas that have irrigation customers. We look forward to continuing to work with customers and the Queensland Competition Authority (**QCA**) constructively throughout the review process.

SunWater at a glance

SunWater is Queensland's largest bulk water service provider, currently owning and managing water infrastructure assets with a replacement value of around $13 billion and supplying approximately 40 per cent of all water used commercially in Queensland.

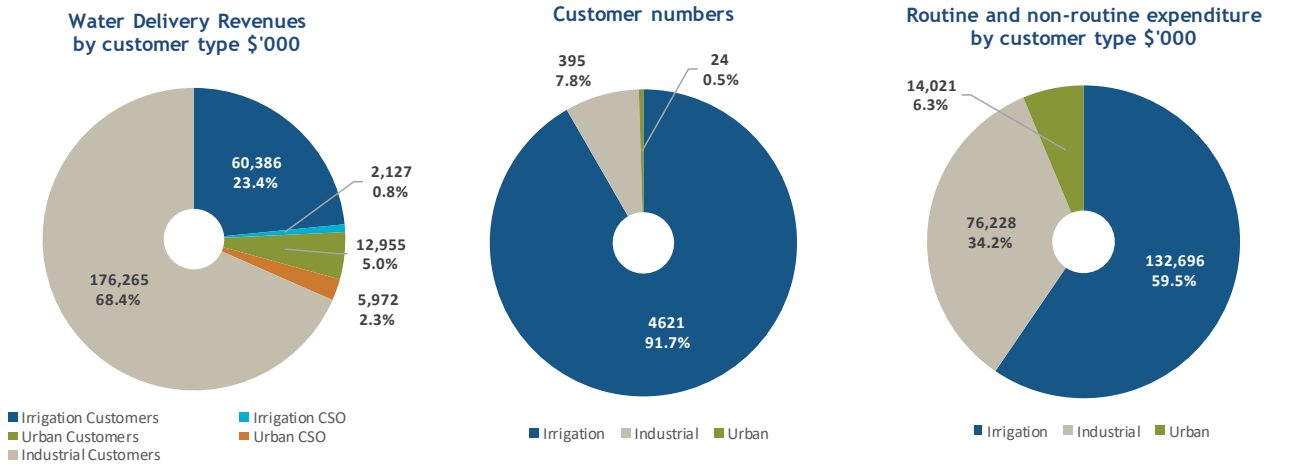
We are a Government Owned Corporation and a registered water service provider under the *Water Act 2000 (Qld).*

Figure OV.1: Who is SunWater?



Our extensive network of water supply infrastructure supports mining, power generation, industry, urban development and irrigated agriculture throughout rural and regional Queensland. Irrigation makes up over 90 per cent of our customer base and almost 60 per cent of our costs, but less than a quarter of our revenues, as shown below.

Figure OV.2: Indicative key customer statistics for 2018/19

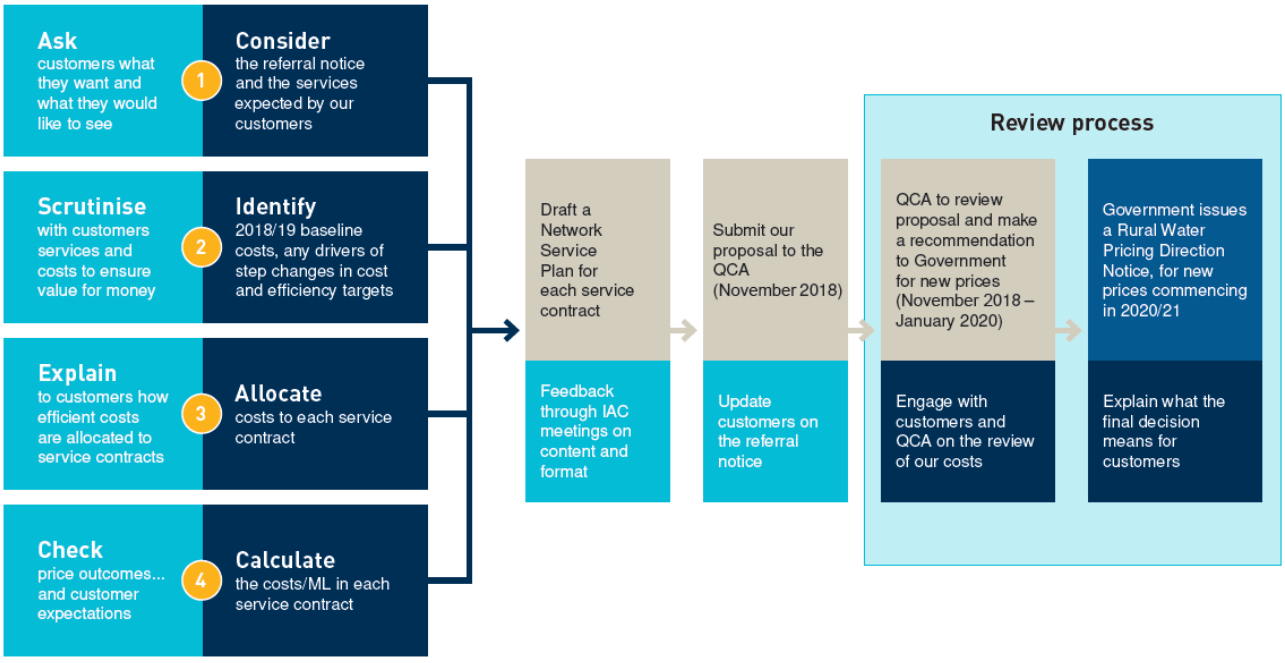


The review process

The irrigation price review allows for a thorough examination of our costs and provides an opportunity for stakeholders to present their views on issues affecting them before the QCA recommends future irrigation prices to the Queensland Government.

We want our customers to understand our costs and to view us as efficient, capable, responsive, trustworthy and transparent. We have therefore used this review as an opportunity to have a conversation with customers, primarily through Irrigator Advisory Committees, about what they want. Our submission to the QCA reflects this change in focus.

Figure OV.3: How we put together our submission[1]



1. IAC – Irrigator Advisory Committee.

The irrigation prices the QCA recommends are based on what is termed "lower bound costs", in line with Queensland Government policy. Lower bound costs keep prices for irrigation customers low by allowing SunWater to only recover our efficient routine costs and an annualised annuity allowance to reimburse us

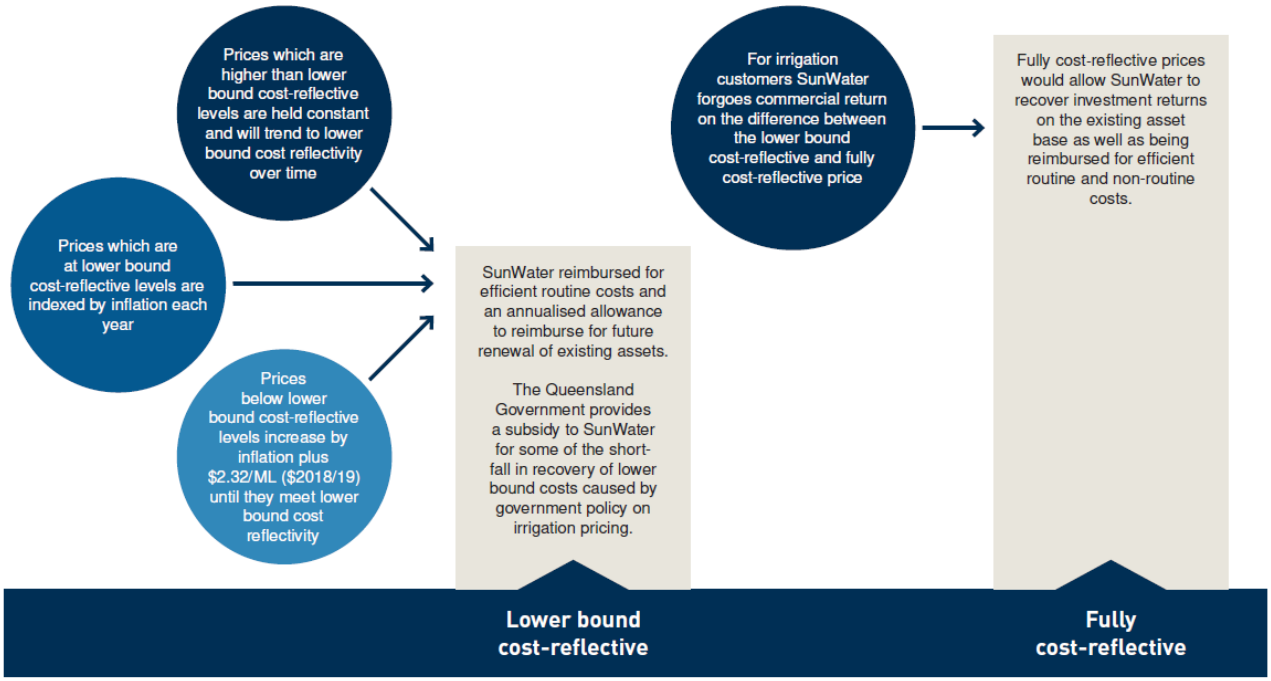
for the current and future renewal of existing assets over time. Lower bound cost-reflective pricing does not recover the costs of the assets we have already built.

In addition, the Queensland Government has directed the QCA to limit price increases on fixed charges, which recover the majority of our costs. These price caps have already been set and are not influenced by our submission or by the QCA's investigation.

If fixed prices are above the lower bound, the Queensland Government has specified that prices are to be frozen until lower bound costs catch up over time. If fixed prices are below the lower bound they cannot be increased by more than inflation plus an additional component of $2.32/ML ($2018/19)[1] maintained in real terms. This is described in Figure OV.4 below. SunWater currently receives a subsidy from the Queensland Government to make up some of the shortfall between the lower bound costs and what we are allowed to recover from customers.

The QCA will also be allowed to consider less than cost-reflective volumetric (Part B and Part D) prices where necessary to moderate bill impacts.

Figure OV.4: Queensland Government lower bound cost-reflective arrangements for irrigation customers



Dam Improvement Program

For the first time, the Queensland Government has asked the QCA to look at the costs associated with SunWater's Dam Improvement Program. Our Dam Improvement Program is focused on ensuring our dams continue to be able to pass excess volumes of water during periods of extreme rainfall and satisfy modern standards. Under current pricing arrangements, irrigation customers do not contribute towards the costs of this program.

The Minister's referral notice requires the QCA to present two sets of prices: one where all Dam Improvement Program costs remain excluded and one where an appropriate share of these costs incurred from 1 July 2020 are included in the cost base. The QCA will consult with stakeholders about possible pricing approaches for apportioning these costs as part of its review process, and will develop and apply an appropriate approach. The Queensland Government will then decide an appropriate course of action.

[1] $2.38/ML ($2020/21).

To assist the QCA in its review, our submission sets out our current cost estimates for the Dam Improvement Program in each of the affected service contract areas, as well as our proposed methodology for establishing the revenue allowance for this expenditure.

Listening to our customers

Customer representatives have appreciated a more open and transparent discussion with SunWater in all aspects of irrigation pricing. Generally, they have an improved understanding of the drivers of costs in each service contract area, how these costs convert into a revenue allowance and then how irrigation prices are established in relation to those costs. Nevertheless, customer representatives in some schemes still have strong views that prices need to be more linked to irrigation customer affordability and commodity prices.

Our submission responds to what customer representatives told us they were looking for in our submission. We have:

- tried to make our costs and the way we derived them more transparent, so they are easier to understand
- looked at ways to make our processes simpler — and we have implemented changes where customers agreed
- minimised the 'feathers' in this submission — the feedback from our customers was 'no pictures without purpose'. Many customers have issues with bandwidth and told us that high-resolution documents can be frustrating.
- changed our Network Service Plans to reflect what customers want to see, not what we wanted to show them. These plans are not only a key component of this submission, but are also part of our ongoing conversation with customers.

Figure OV.5: Customer feedback[1]

1. CRG – Customer Reference Group (also referred to as Irrigation Customer Reference Group).

Through our engagement with Irrigator Advisory Committees, customers have been able to scrutinise our operating costs and short-term non-routine program and, in some cases, we have adjusted our proposed

works in response to customer feedback. We also explained our long-term non-routine program and how it will impact lower bound cost-reflective prices in the next price path period. In addition, SunWater engaged with the Irrigation Customer Reference Group (**ICRG**) on our scheme Asset Management Plans.

We received the following feedback from customer representatives:

- Customers want an open and transparent consultation process with both SunWater and the QCA during this review.
- Customers expect the QCA to ensure that services provided by SunWater represent value for money and that only the prudent and efficient costs for service contracts with irrigation customers are recovered through irrigation prices.
- There was recognition in some schemes that many distribution systems had already been subject to scrutiny through the Local Management Arrangements (**LMA**) reviews. Recognising that the QCA review is a cost borne by customers, they are eager to ensure that these reviews are not duplicated and the QCA process itself represents value for money.
- For most schemes, the pricing outcome of the review has already been determined under the referral notice. Consequently, some customer representatives felt the QCA's review process is of limited relevance to customers and this should limit their share of the QCA's costs for undertaking the review.
- There is a need to move to simpler and more transparent arrangements for prices, particularly where this streamlines the regulatory process to deliver similar outcomes for customers.
- When considering the impact of price increases for water on customers, it is also necessary to take into account the recent increases in electricity prices, as well as future increases associated with the anticipated cessation of obsolete and legacy regulated retail electricity tariffs which will occur in the next price path period.

SunWater is supportive of these views and, where possible within the context of the referral notice, has sought to incorporate this feedback in our submission.

How to read this submission

Our submission is comprised of this main document and a series of supporting documents:

- Chapter 1 — sets out who our customers are and the services we provide them
- Chapter 2 — examines the key drivers impacting our past expenditure performance and future costs, and what we are doing to manage our costs
- Chapter 3 — details our forecast routine expenditure
- Chapter 4 — details our forecast non-routine expenditure
- Chapter 5 — explains how our costs are translated into revenue requirements
- Chapter 6 — provides information on pricing arrangements
- Appendices — provide additional information or data to assist the QCA in its review of our costs and the development of pricing arrangements:

Appendix	Description
Appendix A – Customer engagement	Summarises our process for engagement with customers, including issues raised during consultation with us and our response.
Appendix B – Governance arrangements and key legislative and regulatory obligations	Outlines the various national and state-based legislative and regulatory requirements SunWater complies with both as an owner of water infrastructure and as a Government Owned Corporation, as well as our governance arrangements and strategic planning framework.

Appendix	Description
Appendix C – 2012 QCA recommendations and other issues	Provides a recap of the recommendations that the QCA made as part of its final decision for the last irrigation price review and how we responded to these recommendations at the time. This appendix also sets out our current positions, taking into account changes to: • our operating environment and subsequent reprioritisation of resources to meet customer outcomes in light of these changes • regulatory practices and preferences • circumstances within the SunWater business, such as a strive toward a more customer-centric approach to service delivery.
Appendix D – 2019 Network Service Plans (including addendums)	These plans are our key tool for engaging with our customers and ensuring that they have all the information they need to participate constructively throughout the review process. The numbers in this submission align with the Network Service Plans, with the exception of: • 2017/18 actuals, which were not available until after the plans were finalised • routine expenditure forecasts from 2019/20, which have been revised for updated escalators • forecast Dam Improvement Program costs, which have been updated for cost estimates as at October 2018. We have therefore prepared an addendum for each Network Service Plan which restates several of the tables from the 2019 Network Service Plans. The addendums also include historical water usage and notional cost allocations.
Appendix E – Marsh report on insurance market	Marsh & McLennan commentary on the insurance market in the context of SunWater.
Appendix F – SunWater regulatory model	Calculates our forecast costs and revenue requirements for each service contract area, providing transparency to our customers of our costs and how these become costs per megalitre. It also allows the impact on costs per megalitre of changes in the annuity length and apportionment of Dam Improvement Program costs to be modelled.
Appendix G – Strategic Asset Management Plan	Details the asset management objectives for the next price path period (aligned with the business objectives) and describes our strategy for meeting these objectives using our asset management system and by developing scheme Asset Management Plans.
Appendix H – Forecast non-routine projects	Lists the non-routine projects currently planned to be undertaken over the 2018/19 to 2023/24 period.
Appendix I – Pricing arrangements for irrigation customers	Provides further detail supporting our proposed approach to allocating revenues to prices, as well as other supporting information at a service contract level to assist the QCA recommend irrigation prices.
Appendix J – Headworks Utilisation Factors Technical Paper	Provides an overview of the methodology for deriving the Headworks Utilisation Factors (**HUFs**) and sets out the HUFs which have changed since the 2012 review, including the rationale for each change.
Appendix K – OD Hydrology: Giru Benefited Area	This independent report has been provided to assist the QCA's consideration of prices in the Burdekin Haughton distribution system. It describes the approach, results and key outcomes associated with the development and application of a conceptual modelling tool for the simulation of the Giru Benefited Area alluvial aquifer, including surface water/groundwater interactions, supplementation and extractive use.

We expect that, in addition to this submission, the QCA and/or other stakeholders may require additional information to support their analysis. We will attempt to respond promptly to requests for information (subject to availability and any confidentiality claims).

SunWater regulatory model

In early 2018, SunWater provided a copy of our regulatory model to the QCA and provided demonstrations of the model to the Queensland Farmers' Federation (**QFF**) and interested members of our Irrigator Advisory Committees. The model contains inputs and assumptions supporting the calculation of our forecast revenue requirements over the next price path period. It also provides several options for allocating revenue requirements to fixed and variable pricing components. SunWater would like to work with the QCA and customers to make this model, or an alternative model, available at the time of the QCA's decision so that the QCA's final lower bound cost-reflective prices for irrigation customers can be simply and easily traced back to its decisions on key inputs and calculations.

Representation of costs in our submission

Throughout this submission we reference our costs in comparison either to the QCA's forecast allowances or between periods. This includes comparing six-year aggregated costs for the 2012/13 to 2017/18 period and the 2018/19 to 2023/24 period. To do this we often normalise annual financial data for inflation so meaningful comparisons can be made.

All dollars referred to in this submission are real $2018/19, unless otherwise stated. Our regulatory model contains information at a service contract level in nominal terms.

Regulatory assessment profiles

In each chapter we provide a regulatory assessment profile for key review items. Where possible, we have sought to leverage off existing QCA practices or recent price reviews and limited proposed changes to:

- material issues
- areas which, in our view, merit simplification
- changes supported by our customers.

In doing so, we aim to have a streamlined review process that maximises value for our customers.

We have used icons in these profiles to provide stakeholders with an 'at a glance' view of our positions and help focus their time and resources on key issues. These icons are explained below, with Figure OV.6 setting out our regulatory assessment profiles.

Table OV.1: Explanation of regulatory assessment profile icons

	Fit for purpose and/or no change is required.
	Minor change is proposed but only a high-level review is required due to customer support, or because there is not expected to be any value added to customers by undertaking a costly, detailed review.
	SunWater is proposing a change, or customers have asked for scrutiny.
	Any changes to current arrangements should be subject to stakeholder consultation.

Figure OV.6: Our positions at a glance

Revenue allowance	
Methodology	SunWater has adopted a building blocks methodology consistent with the QCA's approach in the last price path period.
Opening annuity balance	Annuity adjustments reflect changes in expenditure during the period and are consistent with the methodology adopted by the QCA in 2012.
Annuity length	SunWater has adopted a 30-year annuity period length reflecting the long asset life cycles and consistent with generally accepted regulatory practice. Customer response was generally accepting of the need to change.
Weighted Average Cost of Capital	SunWater's WACC parameters adopt the assumptions from recent QCA decisions, updated for latest market outcomes.
Working capital	SunWater has not proposed a working capital allowance.
Methodology for Dam Improvement Program costs	SunWater has adopted a RAB approach for Dam Improvement Program costs, with assumptions that reflect regulatory precedent consistent with SunWater's business.
Revenue allocation	
Methodology	Following consultation with customers, SunWater has adopted a simpler and more transparent approach to allocating revenues between fixed and volumetric prices, and high priority and medium priority groups.
HUF and water access entitlement assumptions	SunWater reviewed HUFs in some service contracts. Water access entitlements have been updated using the latest information, with some adjustments made as per the 2012 decision.
Usage assumptions	SunWater is now confident in our 15-year historical water usage data to use it as a basis for a long-term average, suitable for calculating volumetric charges.
Prices for services	
Lower bound cost reflectivity	SunWater has developed revenue forecasts that are consistent with a lower bound cost-reflective approach to revenue recovery (as per the Queensland Government's referral notice for irrigation pricing).
Pricing and tariff structures	SunWater has adopted the tariff structures determined by the QCA as part of its last decision, with any changes to be an issue for further consultation between the QCA, customers and the Queensland Government.
Pricing of other services	SunWater has adopted the approach to calculating prices for other services set out in the 2012 decision, except for drainage charges and drainage diversion charges. Changes should be subject to consultation.
Dam Improvement Program cost sharing	Our customers have told us that it is important for the QCA to fully consider the potential implications of a change in Queensland Government policy in relation to how Dam Improvement Program costs are shared.

1. Our customers

In this chapter we profile our customers, focusing specifically on those customers who benefit from the QCA's review of irrigation pricing:

- Section 1.1 sets out the core services we provide irrigation customers, classified into bulk water supply schemes and distribution systems.
- Section 1.2 outlines additional services that relate to these service contract areas.
- Section 1.3 explains how SunWater delivers value to customers through our strategic framework, service standards and approach to asset management.
- Section 1.4 highlights some of the challenges we face in providing services to our customers.
- Section 1.5 discusses our strategy to address risks and deliver value to our customers.
- Section 1.6 outlines our new strategic approach to put customers at the forefront of everything we do and some of the initiatives we are now developing to engage with and deliver value for customers.

Box 1: Regulatory assessment profile for customer engagement

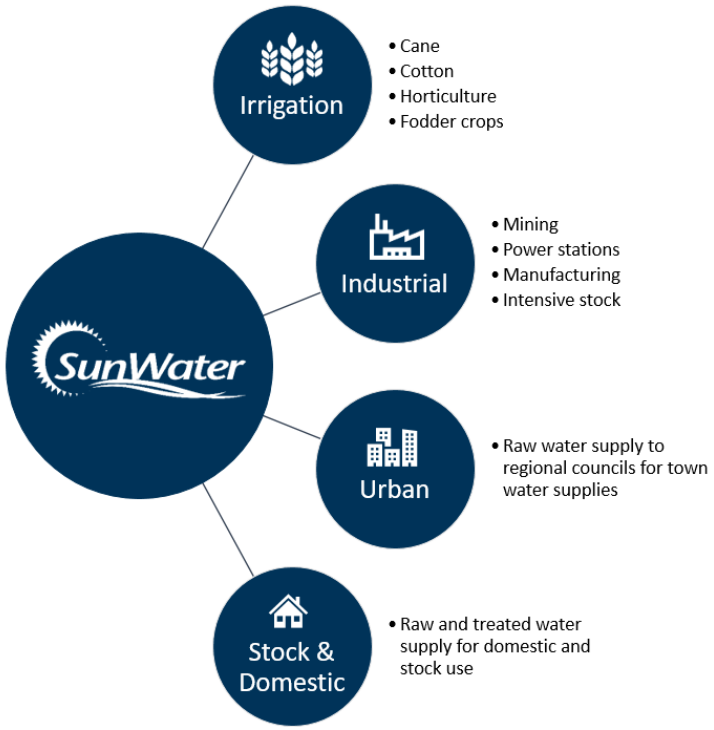
SunWater's approach to customer engagement has been discussed with the QCA and the Queensland Government. Irrigator Advisory Committees have been our primary engagement channel for this price review. A summary of our engagement with customers can be found in Appendix A to this submission.

Customer engagement	
Engagement on Network Service Plans	Customers have contributed to the development of SunWater's Network Service Plans through consultation processes at relevant Irrigator Advisory Committee meetings.
Engagement on submission	Customer representatives have had the opportunity to view and comment on key financial forecasts and price impacts for the period to 2023/24, as relevant to each service contract area.
Incorporating customer views	SunWater's submission focuses on areas important for customers including the need for simplicity and transparency in the modelling and streamlined presentation of information (with less pictures).
Addressing customer concerns	SunWater's consultation process included responding directly to a number of service contract level enquiries and, where necessary, engaging with the Queensland Government and the QCA on their views and concerns.

Some of Australia's biggest agricultural and industrial producers rely on SunWater to deliver reliable and affordable water for their commercial operations. Almost 5000 customers benefit from the water delivered through SunWater's infrastructure.

This submission relates to prices for the capture, storage and release (and in some areas distribution) of water for irrigation customers in regional Queensland. Prices for urban, industrial and stock and domestic customers are agreed by contract.

Figure 1.1: Our customer base



Reliable and affordable water supply is vital to the sustainability and growth of irrigation customers and the regional communities that support them:

- Queensland has the largest area of agricultural land of any Australian state with 138 million hectares dedicated to over 18,500 farms.[2]
- Queensland is the largest producer of sugar cane, tropical fruits and avocados, and is also a major producer of cotton, peanuts, macadamias, beans, lettuce, sweet corn and pumpkins.[3]
- Agriculture accounts for approximately 62 per cent of total water consumption in Queensland.[4]
- The total value of irrigated production in Queensland is around $3.8 billion per annum, representing 29 per cent of the state's total value of agricultural production.[5]
- Out of the $61 billion worth of food and fibre Australian farmers are expected to produce in 2018/19, 77 per cent ($47 billion) is expected to be exported. In recent years, food and fibre exports have represented between 13 to 15 per cent of Australia's total good and services exports.[6]

Customers expect SunWater to operate efficiently and make decisions that are prudent for customers. These actions should flow through to the efficient cost outcomes that customers want from SunWater.

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2 Australian Bureau of Statistics (**ABS**), 2018, ABS, Canberra, *7121.0 – Agricultural Commodities, Australia, 2016-17,* 28 June 2018, <http://www.abs.gov.au>

3 ABS, 2018, ABS, Canberra, *7120.0 – Agricultural Commodities, Australia, 2016-17,* 28 June 2018, <http://www.abs.gov.au>

4 ABS, 2017, ABS, Canberra, *4610.0 – Water Account, Australia, 2015-16,* 28 June 2018, <http://www.abs.gov.au>

5 ABS, 2017, ABS, Canberra, *4610.0.55.008 – Gross Value of Irrigated Agricultural Production, 2015-16,* 28 June 2018, <http://www.abs.gov.au>

6 Australian Bureau of Agricultural and Resource Economics and Sciences, 2018, Canberra, *Agricultural commodities: June quarter 2018,* 28 June 2018, <http://www.agriculture.gov.au/abares/publications>

1.1 Core services

Our fundamental service to customers is to store and release water to satisfy customer demand, subject to customers' rights to take water (water access entitlements). We provide this service in accordance with the *Water Act 2000 (Qld),* associated plans and resource operations licences. Further information on legislative and regulatory obligations that apply to SunWater is available in Appendix B.

We provide water storage, delivery, operation and maintenance of infrastructure, and engineering consultancy services to 57 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 area may include a dam, associated weirs, water accounting services, and a range of operational and maintenance services for customers in that area.

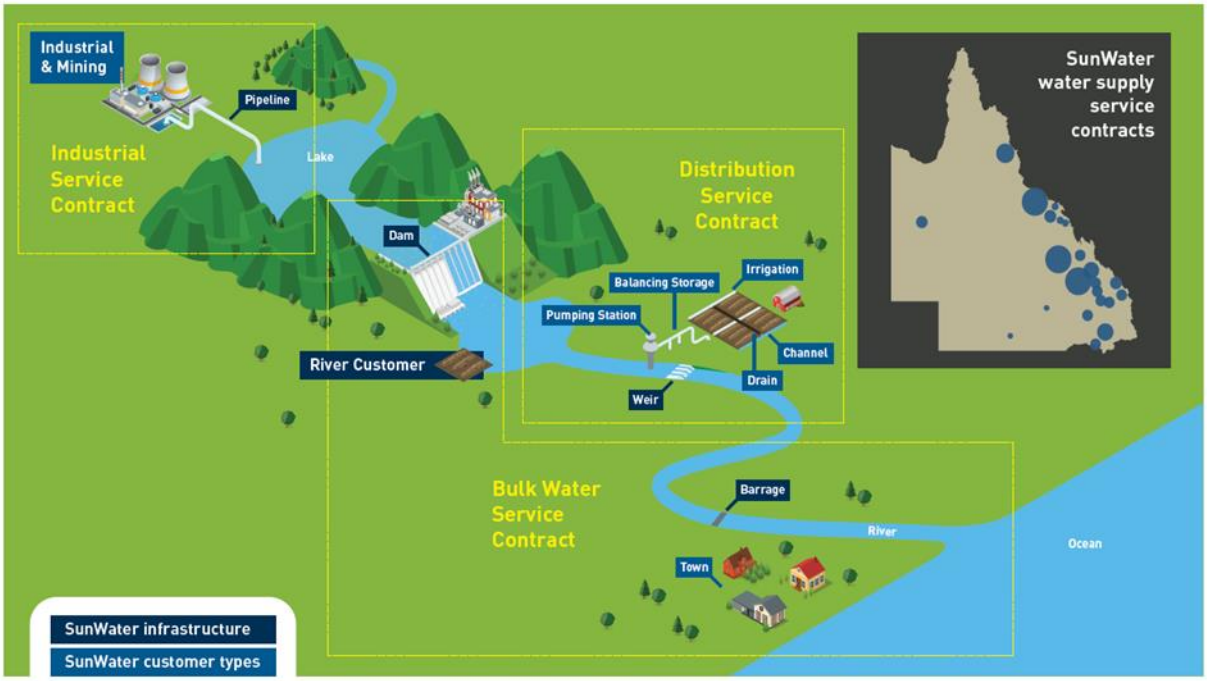
SunWater operates under a decentralised water delivery regime, which means:

- SunWater owns and maintains the service infrastructure.
- SunWater provides a contracted service to our customers according to their water access entitlements.
- Customers are responsible for managing their own demand and bear the risk of water not being available under their water access entitlement.
- SunWater does not have a primary role in demand-side management.

This particular submission relates to 28 service contract areas containing irrigation customers: 22 bulk water supply schemes and six distribution systems.[7]

In total, SunWater manages approximately 50,000 water assets that service irrigators and other customers through the 28 service contract areas.

Figure 1.2: What services does SunWater provide?



[7] The St George and Dawson Valley (Theodore) distribution schemes transitioned to LMA on 30 June 2018 and 30 September 2018, respectively. See Section 2.8.3 for further details.

1.1.1 Bulk water

Bulk water supply schemes supplement natural water resources with dams and weirs to increase the yield and reliability of watercourses such as rivers and streams. Dams and weirs can also be used to re-charge groundwater for use by irrigators.

We have 22 bulk water supply schemes providing bulk water services that involve storing for, and delivering raw water to, customers in accordance with customers' water access entitlements. We own and maintain the infrastructure required to provide these services. These schemes are listed in the Table 1.1 below.

Table 1.1: Bulk water supply schemes

Barker Barambah	Bowen Broken Rivers	Boyne River & Tarong	Bundaberg
Burdekin Haughton	Callide Valley	Chinchilla Weir	Cunnamulla
Dawson Valley	Eton	Lower Fitzroy	Lower Mary River
Macintyre Brook	Maranoa River[8]	Mareeba-Dimbulah	Nogoa Mackenzie
Pioneer River	Proserpine River	St George	Three Moon Creek
Upper Burnett	Upper Condamine		

The Department of Natural Resources, Mines and Energy (**DNRME**) determines the water access entitlements held by each customer. Announced allocations specify the portion of a customer's water access entitlement available for use (by priority group).

1.1.2 Distribution systems

Some customers use a network of SunWater owned pumps, pipes and/or channels to divert water available to the customer under their water access entitlement from bulk water storage to the customer's own offtake. Distribution systems can enable a greater geographical spread of irrigation away from the source (rivers) and can facilitate common infrastructure such as mills and processing facilities.

SunWater owns and operates six distribution systems, as listed in Table 1.2. All distribution system customers are also bulk water customers.

Table 1.2: Distribution systems

Bundaberg	Burdekin Haughton	Eton
Lower Mary River	Mareeba-Dimbulah	Nogoa Mackenzie (Emerald)

1.2 Other services

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

- For customers in the Burdekin Haughton, Emerald 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.
- For customers in the Emerald and Burdekin Haughton distribution systems, SunWater allows customers to extract tail water, and rain and storm run-off from the drainage network (**drainage diversion services**). Customers supply their own pump and other infrastructure, such as sumps and weirs, to access this water.
- In some schemes, such as Burdekin Haughton, customers also hold water harvesting entitlements. During naturally occurring high river flow events, SunWater facilitates the extraction of additional river

[8] Maranoa River is deemed to have efficient costs of zero as no services are currently being provided through this scheme.

water to supplement the water available under the customer's water access entitlement (**water harvesting**).

1.3 How SunWater delivers value to customers

SunWater wants to deliver value to our customers and communities by providing water solutions for today and tomorrow (our 'purpose'). To ensure the sustainability and long-term value of our network, we apply continuous improvement measures in managing all assets, and strive for best-practice and operational efficiencies across our organisation.

1.3.1 Strategic framework

SunWater's purpose is supported by four strategic goals:

- Commercially focused operations.
- A sustainable business.
- Supportive stakeholders.
- A high performance culture.

SunWater currently has 14 strategic work programs which articulate direct practical strategies and actions that focus our operations on our strategic goals and long-term plan. Some of these strategic work programs directly relate to this irrigation price review. For example, strategic work program 12 outlines a plan to deliver a quality submission to the QCA, which promotes a light handed regulatory approach and is supported by customers.

Our governance and organisational structure focuses on a 'One SunWater' unified approach to support a stronger customer and regional focus.

Further detail on our strategic framework can be found in Appendix B.

1.3.2 Service standards

SunWater is committed to the efficient and timely delivery of water to all of our customers. The current service standards are described in the Water Supply Arrangements and Service Targets (also referred to as the SunWater Scheme Rules or SunWater Rules). These rules describe the process for ordering water and delivery times, circumstances that require suspension or restriction of supply, and the duration and frequency of shutdowns. The commitments we have under each service contract are outlined below.

Table 1.3: Service targets[1,2]

Service target		Applicable schemes	Target	Target exceptions
Planned shutdowns - notification	For shutdowns planned to exceed 2 weeks	All	8 weeks	6 months – Mareeba-Dimbulah 4 weeks – Nogoa Mackenzie
	For shutdowns planned to exceed 3 days	All except Eton & Proserpine	2 weeks	3 weeks – Bowen Broken Rivers 4 weeks – Mareeba-Dimbulah
	For shutdowns planned to exceed 5 days	Eton & Proserpine	3 weeks	Nil
	For shutdowns planned to be less than 3 days	All except Mareeba-Dimbulah	5 days	2 days – Eton 7 days – Proserpine
	For shutdowns planned to be less than 4 days	Mareeba-Dimbulah	5 days	Nil
Unplanned shutdowns - duration	Unplanned shutdowns will be fixed so that at least partial supply can be resumed	Barker Barambah, Bowen Broken Rivers, Boyne River & Tarong, Bundaberg, Lower Fitzroy, Lower Mary River & Upper Burnett	48 hours	72 hours – Bundaberg 7 days – Bowen Broken Rivers
	During Peak Demand Period	Burdekin Haughton, Callide Valley, Chinchilla Weir, Cunnamulla, Dawson Valley, Eton, Macintyre Brook, Maranoa River, Mareeba-Dimbulah, Nogoa Mackenzie, St George & Upper Condamine	48 hours	72 hours – Eton & Mareeba-Dimbulah 4 days – Upper Condamine
	Outside Peak Demand Period	As per During Peak Demand Period	5 working days	7 working days – Upper Condamine
Unplanned shutdowns – notification	Affected customers will be notified of the likely duration of the interruption to supply	All	Within 24 hours of SunWater learning of the event or by the end of the first business day following the event, whichever is the earlier	Nil
Maximum number of interruptions	Planned or unplanned interruptions per water year	All	6	10 working days – Bundaberg, Burdekin Haughton, Eton & Mareeba-Dimbulah
Meter repairs	Faults causing restrictions to supply will be repaired	All	Within 1 working day	2 working days – Bowen Broken Rivers, Burdekin Haughton & Proserpine
Complaints & enquiries	Initial response (Acknowledge)	All	5 working days	Nil
	Resolve or provide written response	All	21 days	Nil

1. Service targets do not apply to the Pioneer River bulk water supply scheme.
2. For the Three Moon Creek bulk water supply scheme, service targets apply to meter repairs and complaints and enquiries only. SunWater is also required to notify customers in writing two weeks before scheduled releases and notify Irrigator Advisory Committee members if the timing of the release varies from the notice within two working days.

1.3.3 Asset management framework

Our asset management framework is focused toward ensuring our assets are maintained to the required standard at the lowest cost. Our approach is underpinned by the concept of 'optimised life cycle cost', which seeks to optimise capital outlays and ongoing operational and maintenance spending over the life of an asset.

Our asset operations planning processes are underpinned by our knowledge of our assets and we have a detailed understanding of the risk and condition profiles for our asset base. Asset planning is undertaken at a portfolio level and our five-year plans form a 'rolling' outlook of future years. Project works for the current year are prioritised and initiated based on latest information, including:

- operations environment
- customer requirements
- commercial conditions
- latest condition and risk data.

In this way our plans have built-in agility to change and optimise our asset life cycle strategy.

1.4 Challenges affecting service delivery

Like other infrastructure sectors, bulk water faces a range of pressures defined by growing, changing demand on the one hand, and challenging financial settings on the other. With Australia's population

expected to grow from circa 25 to nearly 40 million people in less than four decades,[9] we can assume a significant requirement across all infrastructure sectors to support this level of growth. At the same time, climate change impacts are likely to have a substantial, but uncertain impact on our operations. Queensland regional water security needs to be considered in our overall longer-term planning with the Queensland Government.

SunWater faces a number of acute challenges in providing services to our customers. Our geographic footprint covers areas prone to tropical cyclones which can damage our assets and our customers' crops, as well as reduce the window of time during which we can plan to undertake non-routine projects. Our assets must also be resilient to drought conditions and circumstances where water scarcity is an issue and water security becomes a priority.

Figure 1.3: Flood damage to the Boondooma Dam spillway, 2013

The vast expanse of our geographic area requires us to manage across a range of climate zones at the same time. Drought and flood are part of our landscape and our operating 'norm'. SunWater needs to ensure reliable storage and supply during these climatic conditions. We must be resilient to climate change impacts and accommodating to changes in the usage patterns in some schemes as customers diversify their crop types.

From late 1996 to 2007, much of Australia (including Queensland) experienced a prolonged period of dry conditions, known as the Millennium Drought, exacerbated by high temperatures. During this period, in 2006, Tropical Cyclone Larry also devastated regions in the far north coast and adjacent tablelands.

Since 2012, rainfall has been 36 per cent below the previous five years. However, above average winter rainfall in 2016 and late season rainfall in northern Queensland in 2018 provided respite to some customers, while rainfall amounts and intensity were lower throughout western Queensland. Over this period widespread floods and damage were associated with Tropical Cyclones Oswald (2013), Marcia (2015) and Debbie (2017).[10]

Changing technology, irrigation practices and crop types which were not contemplated in the original scheme design and capacity are impacting SunWater and customers in some schemes.

SunWater needs to ensure infrastructure is safe, reliable and affordable. Customers have told us of their issues in relation to affordability and, in response, SunWater looks for more cost-effective ways to deliver the same outcomes, including through alternative grant funding for modernising infrastructure.

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9 The Commonwealth of Australia, *2015 Intergenerational Report, Australia in 2055*, 2015, p.3, <https://static.treasury.gov.au/uploads/sites/1/2017/06/2015_IGR.pdf>

10 The Long Paddock, 1995-2018, Queensland Government, Brisbane, 29 August 2018, <https://www.longpaddock.qld.gov.au/>

In recent years we have sought to engage more closely with our customers on their priorities in each service contract area and how we can affordably respond to those priorities. This submission incorporates some of that customer centricity that we are seeking to adopt more routinely over the next price path period and beyond.

Box 2: Delivering better services for our customers

As just one example of how we strive to deliver better services to customers, SunWater plans to address issues of high seepage and water losses in the Nogoa Mackenzie and Mareeba-Dimbulah distribution systems which will create around 14,000 ML of new customer water allocations to support further growth, boosting local agriculture in these areas. The investment in channel lining and modernisation will also address concerns from existing customers around rising groundwater in these areas.

We will achieve these outcomes through investment in channel lining works in Nogoa Mackenzie and through modernisation works in Mareeba-Dimbulah which will improve control of water flows, create balancing storages to facilitate different customer irrigation practices, and minimise loss reduction. It also ensures that water can be fully allocated within each of the schemes.

The total cost of works in both schemes is around $40 million which is partially funded by the Federal Government under the National Water Infrastructure Development Fund. The remaining investment will be self-funded through conversion of loss allocations into saleable water allocations. SunWater expects that these new water allocations will attract the same water charges as existing allocations in the scheme.

1.5 Our strategy to address risks and deliver value to customers

SunWater deploys a Risk Management Framework which is integrated into our regular strategic planning process. The framework is designed to identify, monitor, assess and mitigate all potential enterprise risks including strategic risks. Highlights of our risk management processes include:

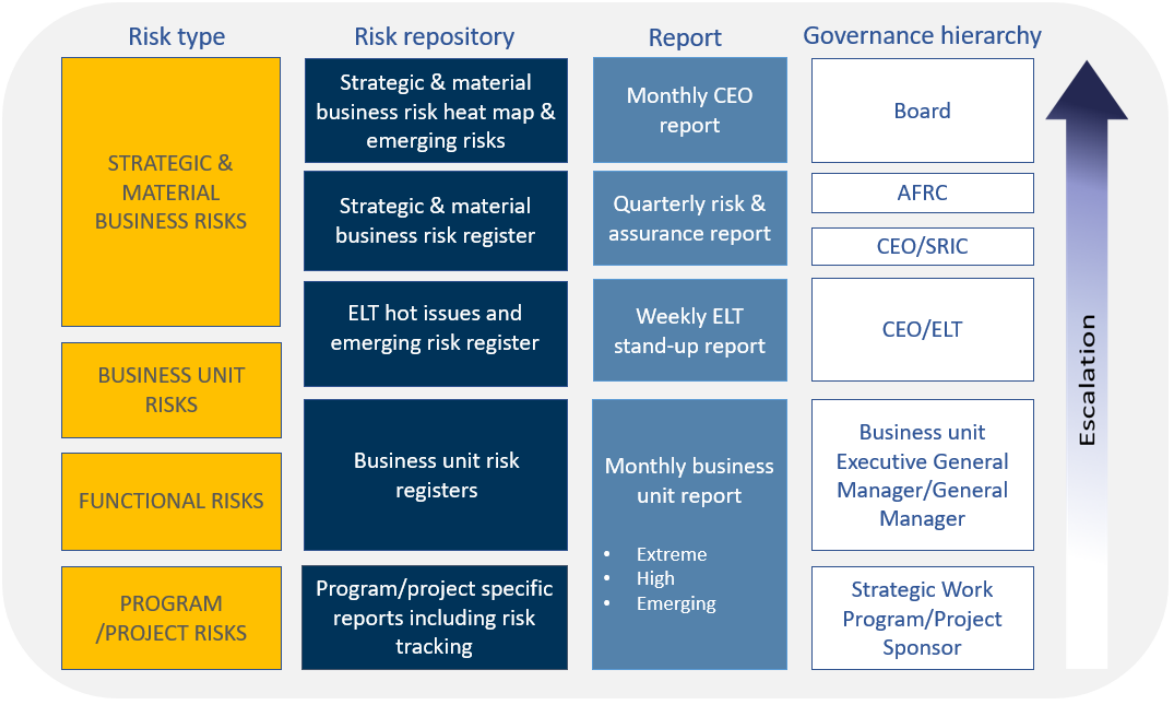
- identification and management of enterprise risks that have the potential to threaten our strategy, business model or viability
- monitoring of emerging risks triggered by unanticipated and potentially disruptive events of varying velocity, ranging from catastrophic events to existing risks unexpectedly enhanced by external or internal factors
- addressing ongoing business group management risks on an exception basis, underpinned by an escalation process
- integration with the Strategic Response program to support corporate response to changes in the external environment that affect critical assumptions underlying our strategy
- ensuring risk reporting is linked to key business objectives; realistic and measurable objectives that support our strategy and business plan
- aligning risk management with planning processes to support the achievement of business outcomes.

Risk appetite statements, aligned to SunWater's core strategic and enabling goals, articulate the level of uncertainty that the business is willing to take to achieve strategic goals and objectives. Risks are identified and categorised into the following risk types:

- strategic and material business risks
- business unit risks
- functional risks
- program/project risks.

Our risk management system then monitors and manages risk through the framework outlined in Figure 1.4.

Figure 1.4: SunWater's risk management system[1]



1. CEO – Chief Executive Officer; ELT – Executive Leadership Team; AFRC – Audit, Finance and Risk Committee; and SRIC – Strategic Risk and Investment Committee.

1.6 Opportunities to improve the quality of our engagement with our customers and service delivery

Our revised focus toward customers is a work in progress which has started with a clear strategic focus from within the business and has been partly evidenced with a greater level of transparency to our customers in respect of our inputs and approaches to this price review. We hope to expand on these early initiatives to demonstrate our ongoing commitment to better communication, engagement and customer experience.

1.6.1 Customer centric strategy

SunWater is positioning our business towards a strategy that is based on putting the customer first and at the heart of everything we do. Our customer service commitment underpins our purpose of delivering water solutions for today and tomorrow. The key objectives of our customer centric strategy are as follows:

- Engage and partner with customers to identify their needs and deliver improved services and customer satisfaction.
- Develop and maintain strong and transparent working relationships with all customer segments.
- Build a reputation with customers where we are responsive, we deliver on commitments and we seek to find solutions to customer issues.
- Build customer trust by proactively developing and implementing solutions that align with our goals.
- Have clear accountabilities and responsibilities for customer engagement and customer service across the business.
- Deliver on our commitment to efficient and transparent costs.

SunWater has appointed a new General Manager Customer Strategy to execute this strategy and drive improved engagement with customers.

1.6.2 Irrigator Advisory Committees

SunWater's approach to engagement for this price review used existing channels of communication, primarily through Irrigator Advisory Committees. These committees have been an important part of SunWater's customer consultation framework for many years. The aim of these committees is to:

- allow for customer advice, recommendations and feedback to SunWater regarding scheme operational issues
- represent the interests of the broader irrigation base in respect of the ongoing operation of the water supply scheme
- allow customers and SunWater to raise and discuss matters of mutual interest in relation to the scheme and its management.

1.6.3 SunWater Irrigation Customer Reference Group

In 2017, SunWater invited a cross-section of our irrigation customers to join our ICRG. Unlike the Irrigator Advisory Committees which are specific to each scheme, the role of the ICRG is to consider strategic matters that are relevant to all schemes to ensure the reliable and efficient delivery of water to irrigation customers.

The ICRG provides a forum for SunWater and customers to discuss a wide range of issues, including:

- the purpose and format of the Network Service Plans
- levels of service and customer reporting systems
- major changes, opportunities and challenges facing customers across water supply schemes
- feedback and advice on improved customer communication and education
- the design of non-routine expenditure programs
- water metering standards, improvements, reporting and compliance
- Standard Contract terms and conditions
- growth opportunities
- scheme modernisation and efficiency.

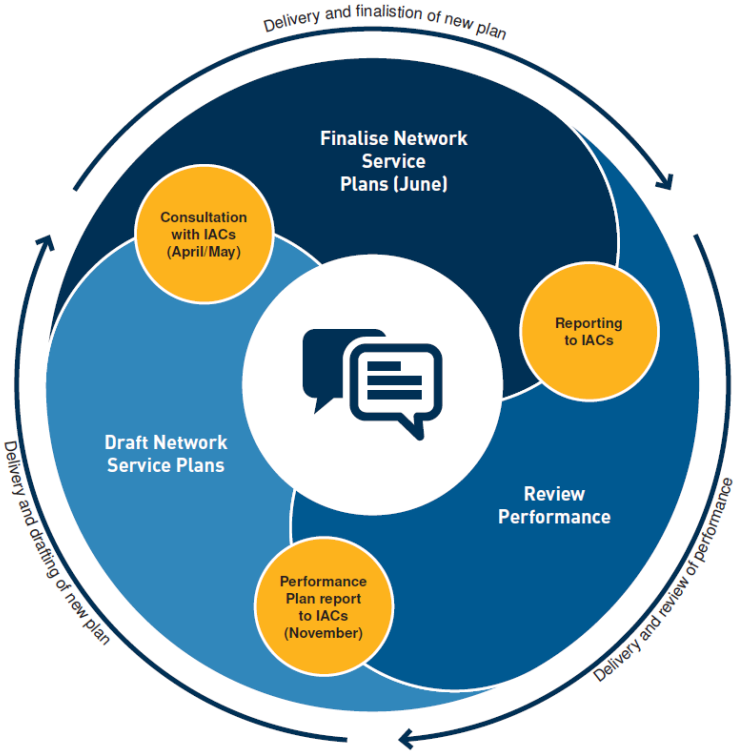
1.6.4 Our Network Service Plans

Each year, SunWater prepares a Network Service Plan for each of our irrigation service contract areas. These Network Service Plans detail a range of proposed immediate and longer-term improvement projects and provide a detailed breakdown of anticipated costs for review. Performance against the QCA's recommendations is detailed in Annual Performance Reports for each irrigation service contract area.[11]

Figure 1.5 shows the cycle for preparation of Network Service Plans and Annual Performance Reports, as well as the consultation and reporting we undertake with Irrigator Advisory Committees.

[11] See http://www.sunwater.com.au/schemes/nsp/annual-nsp-and-performance-reports.

Figure 1.5: Customer consultation and Network Service Plans[1]



1. The timeframes for the 2018/19 Network Service Plans were extended due to the delay in the release of the referral notice.

Network Service Plan evolution and customer consultation

We are committed to keeping our customers and partners informed, and working closely with them to identify and work towards solutions that deliver value.

Since the 2012 Irrigation Price Review, we have worked to continuously improve our Network Service Plans. Specifically, we:

- improved transparency of our routine and non-routine costs
- addressed recommendations flowing from the 2012 Irrigation Price Review (see Appendix C).

In 2018, SunWater undertook two rounds of consultation with Irrigator Advisory Committees. At the initial consultation held throughout February 2018, the Committees were asked to provide feedback on the format and proposed content of the Network Service Plans to ensure they met customer needs. We sought their views on:

- the value of benchmarking against other service contracts
- the use of infographics, text or both
- the length of the term of the annuity
- the need for options analysis for all material projects
- the materiality threshold for options analysis
- the value of including costs per megalitre as well as prices
- the use of pie charts as well as tables to provide expenditure data.

The second round of consultation occurred in June 2018, with Irrigator Advisory Committees being provided with the draft Network Service Plan for their service contract area. At the meetings customers were given the opportunity to ask questions, challenge assumptions and ask for further explanations.

Each round of consultation also included a discussion on the non-routine projects (or planning items) proposed to be undertaken in each service contract area.

Where appropriate, we amended our Network Service Plans to take into account feedback received. Appendix A summarises this feedback and our response.

The final Network Service Plans for each service contract area form a part of this price review submission (see Appendix D). These Network Services Plans cover:

- past performance for routine and non-routine expenditure
- forecast routine and non-routine expenditure for the 2018/19 to 2023/24 period.

1.6.5 Local Management Arrangements

Following the 2012 Irrigation Price Review, the Queensland Government began considering in more detail local management of SunWater's eight distribution schemes. The LMA process began with Stage 1, in which a report to the Queensland Government recognised that there was a high level of interest and support from the irrigation sector.

Stage 2 comprised an independent review of the costs and benefits of LMA, driven by the eight interim Boards. Stage 2 found that it was in the long-term interests of Queensland and customers to move to LMA due to productivity improvements, reduced subsidies and the opportunity for distribution systems to expand and modernise.

Stage 3 involved the appointment of LME Boards to represent the scheme customers and to either prepare updated business proposals or support the transition schemes to negotiate the terms of the transfer and to prepare an offer to be made to water users to become members of the new local management entity (**LME**).

SunWater has worked closely with the LME Boards throughout the review, providing information and access to staff resources. This necessarily required a reprioritisation of resources internally within the SunWater business. In particular, we note many of the actions in our implementation plan for the QCA's 2012 recommendations that related to distribution schemes were put on hold in order to prioritise LMA processes. Nevertheless, the costs that SunWater has incurred in supporting the LMA process ($8.6 million to August 2018) have been absorbed by the business with no additional costs passed on to irrigation customers. These costs are therefore not included in our base year costs and are excluded from our forecast costs for irrigation pricing. SunWater considers these costs to be an investment in future service delivery for our customers and an opportunity to improve the quality of our engagement with customers.

The LMA process has fundamentally changed the conversation between SunWater and our customers in the distribution schemes. It has allowed our customers the opportunity to 'look under the hood' of our business, to review in detail our systems and processes, and to consider how they might run the schemes differently themselves. St George and Dawson Valley (Theodore) have successfully transitioned from SunWater to LMA, while the Lower Mary and Bundaberg Boards found that it was in the best interests of customers to remain with SunWater. The remaining schemes are still going through the process and, at this stage, it is uncertain whether they will proceed to LMA or remain with SunWater.

For distribution schemes not proceeding to LMA, it is important that the knowledge and understanding gained through the LMA process can be used to ensure all customers benefit, by:

- minimising any duplication in the review of SunWater's activities, assumptions, inputs and processes
- ensuring recommendations that can be applied more broadly to SunWater's business are highlighted.

We understand this documentation has been made available by the LME Boards to the QCA so that these benefits can be realised.

1.6.6 Lower Mary Customer Advisory Board pilot

Although the current Irrigator Advisory Committee structure that SunWater supports in all water supply schemes is invaluable for engaging with our customers on Network Service Plans and addressing operational issues, it is not suitable for new customer expectations to be involved in the long-term

sustainability of schemes. The Lower Mary LME Board proposed a new model for customer engagement in the Lower Mary River water supply scheme via the creation of a Customer Advisory Board.

The model for the new Board was developed in consultation with the Lower Mary LME Board and the Lower Mary River Irrigator Advisory Committee. It is different to the Irrigator Advisory Committees in a number of ways.

Firstly, membership will include representatives from all customer groups, including irrigation, industrial and urban customers. Secondly, the Board will be required to develop a plan for its medium and long-term priorities and objectives for the scheme. Finally, Board members will receive remuneration to acknowledge their valuable contribution.

SunWater is committed to the success of the pilot as a model of future engagement with customers. Once the pilot Board has been well established and early learnings incorporated into the model, SunWater intends to offer customers the opportunity to roll it out to their particular scheme, beginning with the Bundaberg scheme.

Box 3: Lower Mary Customer Advisory Board — a model for future collaboration with our customers

SunWater is in the process of establishing a Customer Advisory Board (Board) to capitalise on the learnings of the recent LMA process and build a partnership between SunWater, customers and stakeholders regarding the medium and longer-term strategic and sustainable management of the scheme.

The Board's objectives are to:

- improve water security for irrigators and the scheme
- facilitate genuine customer engagement
- ensure transparency in decision-making and information flow
- provide a scheme-specific focus, recognising the unique regional value of each scheme and the importance of the scheme to the local economy and community
- foster relationships and understanding between SunWater, scheme customers and local stakeholders
- increase understanding of, and ability to adapt to, industry drivers in terms of water use
- enable effective input and examination by customers and stakeholders to strategic planning and decision-making processes in relation to the scheme
- provide a commercial focus and recommend ways to improve the financial viability of the scheme to ensure its long-term sustainability.

The terms of reference for the pilot has been developed in consultation with customers and the initial Board is in the process of being appointed.

2. Managing our costs

This chapter:

- provides an overview of the costs required to provide necessary services to our irrigation customers
- compares our actual expenditure over the last six years to what the QCA recommended and our expected forecasts
- briefly explains our different cost categories and key drivers affecting our previous period performance and future period expenditure forecasts
- highlights reasons for why some cost drivers have changed significantly to what was assumed by the QCA in 2012
- explains some of SunWater's efficiency initiatives aimed at delivering better value for customers and how they have been incorporated into our forecasts.

Chapters 3 and 4 provide further detail on our forecast routine costs and non-routine costs at the total level, respectively. This includes key assumptions and methodologies underpinning the forecasts. Meanwhile, our Network Service Plans at Appendix D provide forecast costs at the service contract area level, including a list of non-routine projects currently planned to be undertaken in 2018/19 and over the next price path period.

2.1 Summary

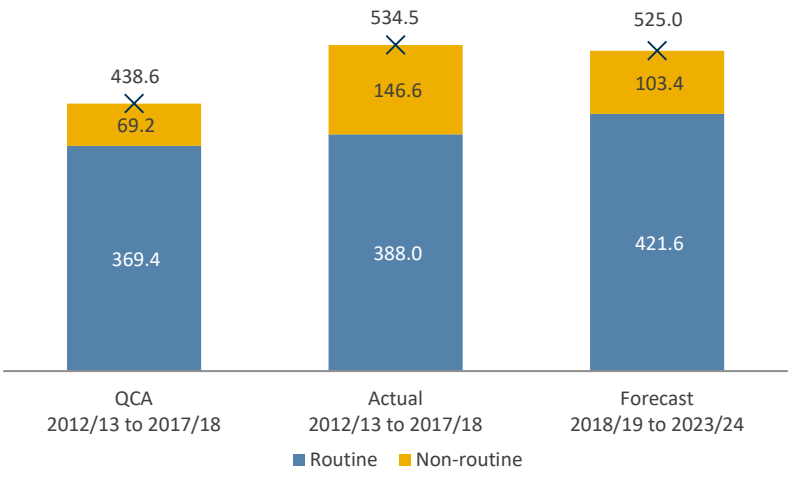
In order to deliver the services that irrigation customers require, SunWater expects to spend $525 million over the 2018/19 to 2023/24 period, comprising:

- $422 million over six years for operations maintenance and other routine costs
- $103 million on non-routine expenditure (excluding the Dam Improvement Program).

In real terms this is broadly in line with total actual expenditure in the previous six-year period (2012/13 to 2017/18) and reflects customer expectations around ensuring prices are kept low without affecting the service they currently receive.

Figure 2.1 compares SunWater's total expenditure over the previous six years and the forecast six years.

Figure 2.1: Comparison of total expenditure, by category (million, real $2018/19)

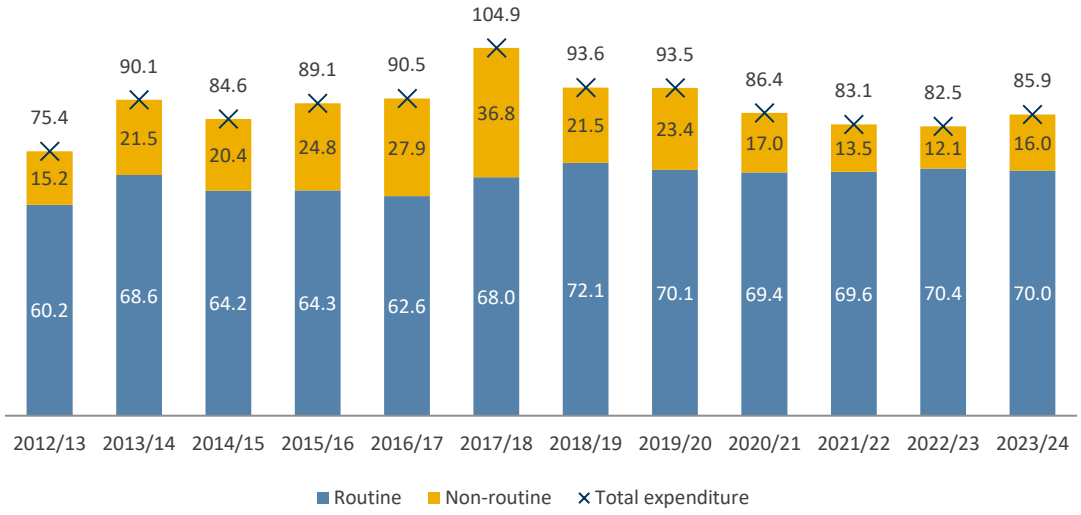


Routine costs in the forecast period incorporate higher electricity and insurance costs which ramped up in the previous period. Higher routine costs can also be attributed to the impact of implementing the Inspector-General Emergency Management (**IGEM**) Review recommendations. While we sought to reprioritise works to minimise impacts on annuity balances, flood damage nevertheless accounted for a large amount of non-routine corrective maintenance expenditure in the previous period. We provide more details in Section 2.5 on how this affected both our costs and insurance claims.

Both routine and non-routine costs have been positively impacted by the outcomes of the LMA Reviews and SunWater's own efficiency initiatives.

A year-on-year comparison of actual and forecast routine and non-routine costs over the 2013–24 period is shown in Figure 2.2 below.

Figure 2.2: Comparison of total expenditure, by year and category (million, real $2018/19)



2.2 Expenditure categories and cost allocation

For the purposes of allocating costs, SunWater splits costs into a number of categories, as illustrated in Figure 2.3 below.

2.2.1 Direct costs

Direct costs are those costs which are able to be directly attributable to either an asset or a service contract, eg maintenance or insurance of an asset or the electricity and other operations costs for a service contract. **Direct routine** (or annual) expenditure includes funds for operations activities (operations, electricity and insurance), preventative maintenance and corrective maintenance.

Non-routine expenditure is primarily funded via an annuity which allows the natural fluctuations in these costs to be smoothed over time for pricing. This expenditure could be capital or operating expenditure. **Direct non-routine costs** are non-cyclical within the price path period and relate to specific expenditure to replace or maintain infrastructure outside their normal schedule for maintenance. The majority of these costs relate to renewals expenditure. However, non-routine corrective maintenance — mainly to repair damage caused by floods — was a major driver for expenditure being above forecast in the previous price path period.

2.2.2 Non-direct costs

In order to ensure irrigation customers pay no more than they should for the services we provide, SunWater needs to separate costs that relate to irrigation prices from those costs in providing services to other customers.

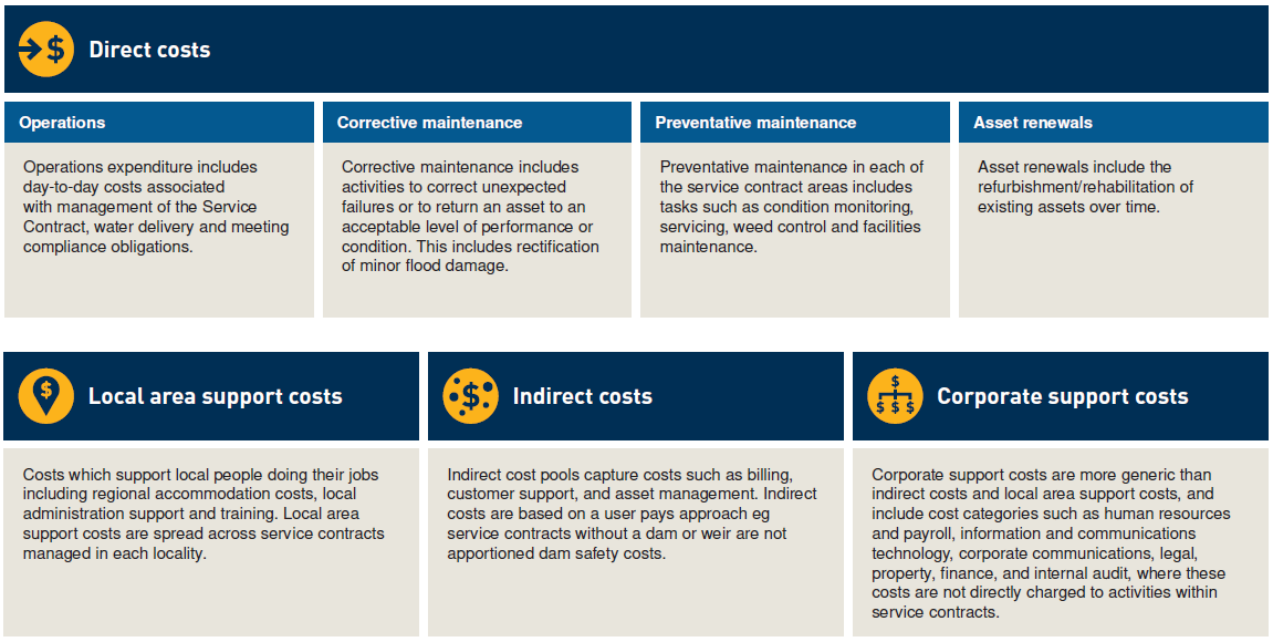
Direct costs are more simply allocated as they have a direct attribution to the service provided. For costs where there is not a direct attribution or where there is some form of cost sharing across the customer base, SunWater's cost allocation methodology applies rules to ensure the allocation of non-direct costs to irrigation customers is appropriate.

Non-direct costs therefore are allocated to direct expenditure based on the extent to which these costs support direct expenditure activities in accordance with an accepted cost allocation methodology. These costs cannot be directly attributed to a specific routine or non-routine activity within a service contract area but are necessary to support the operations of SunWater locally or across the business to deliver services to customers.

There are three broad categories of non-direct costs:

- **Local area support costs** are spread across service contracts managed in each locality. They are costs which support local people doing their jobs, eg regional accommodation costs, local administration support and training.
- **Indirect cost** pools capture costs such as billing and customer support, irrigation pricing regulation and asset management (including dam safety, asset systems, channels and drainage) that have not been directly charged. They also include flood room operations, the IGEM emergency management program, water planning, hydrographic services and environmental support costs. Indirect costs are attributed to direct labour and reflect a user pays approach, eg service contracts without a dam or weir are not apportioned dam safety costs.
- **Corporate support costs** are more generic than indirect costs and local area support costs, and are spread across all direct business activities, including service contract areas for irrigators, industrial and urban activities, based on direct labour. They include the cost of human resources and payroll, information and communications technology, corporate communications, legal, property, finance, and internal audit, plus the costs of the CEO, Chief Financial Officer and the SunWater Board, where these costs are not directly charged to activities within service contracts.

Figure 2.3: Expenditure categories[1]



1. This list is not exhaustive.

2.2.3 Cost allocation methodology

SunWater provides a range of services to different customers, with the largest portion of our revenues received from commercial and industrial customers under commercial (unregulated) contracts. Because we have revenues coming from both regulated and unregulated sources, SunWater wants to provide assurances to irrigation customers and the QCA that irrigation customers are not paying more than they should. We demonstrate this through a transparent methodology for allocating non-direct or shared costs (costs that are not directly attributable to either an asset or a service contract) between different types of services and between direct capital and operating expenditure.

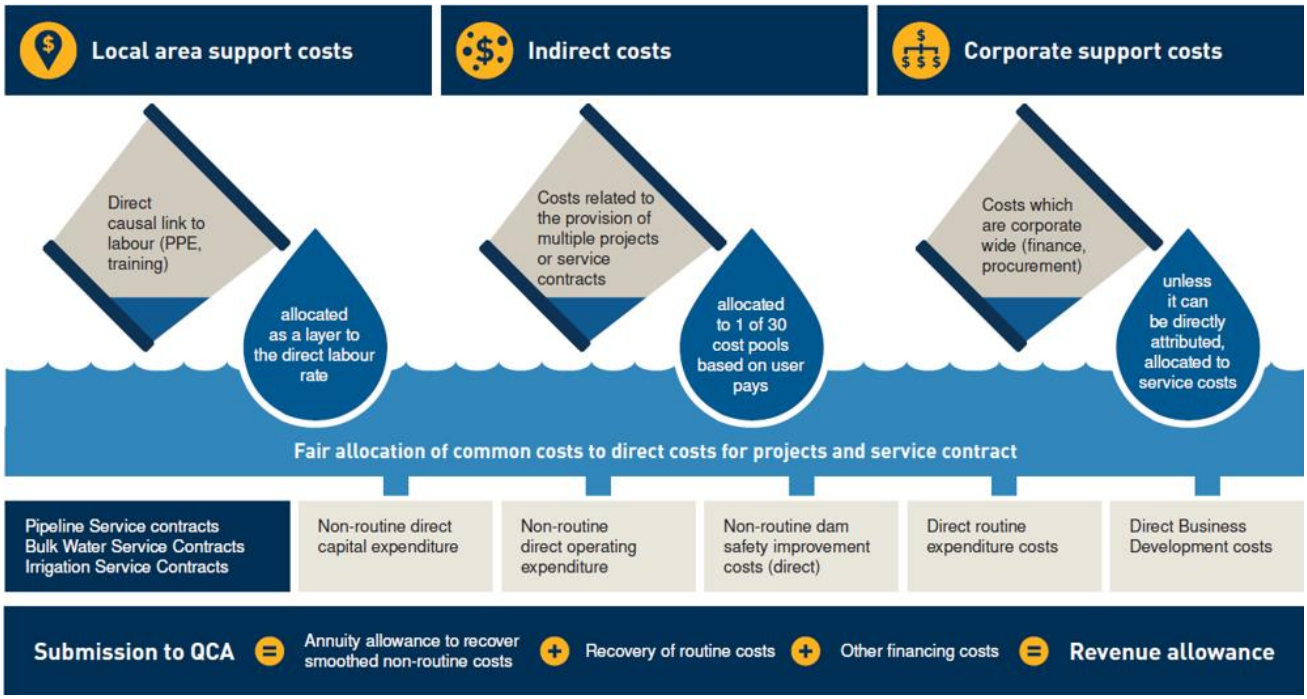
Cost allocation methodologies are, by nature, relatively complex as they drive the accounting treatment of expenses across the entire organisation. They are nevertheless necessary in a multi-business organisation like SunWater to ensure transparency in accounts between different revenue streams.

In the 2012 Irrigation Price Review, the QCA reviewed and accepted SunWater's cost allocation methodology for recovering non-direct costs. During 2018 we consulted with customers and the QCA on changes to the cost allocation methodology. These changes focused on increasing the transparency of local overhead costs and the allocation of corporate support costs to direct expenses. We also:

- removed the cascading of corporate overheads into indirect costs
- made the local overhead rate specific to each region
- simplified the cost drivers to labour only, removing the five per cent on direct cash costs excluding labour and electricity.

Forecast figures contained in our submission reflect this change in approach. The below figure illustrates the allocation of non-direct costs associated with providing services.

Figure 2.4: Approach to allocating non-direct costs



2.3 Performance against QCA decision

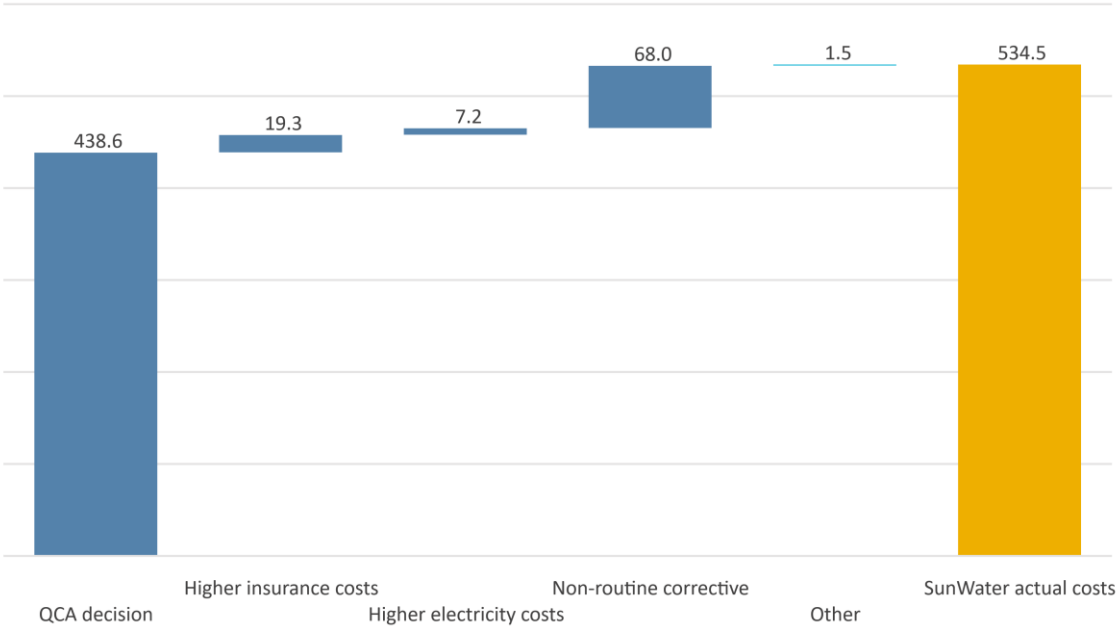
In May 2012, the QCA determined lower bound cost-reflective prices based on what it considered were SunWater's prudent and efficient costs for the 2012/13 to 2016/17 period. This included an allowance for:

- future renewals expenditure that was around 20 per cent lower than SunWater's forecasts
- operating expenditure (excluding electricity) that was around five per cent lower than SunWater's forecasts.

SunWater sought to deliver outcomes to customers consistent with the expenditure allowances recommended by the QCA and was relatively successful in managing controllable costs in order to achieve this outcome. However, in real terms, total expenditure was $96 million or 22 per cent higher over the six-year period. This variance is largely attributable to flood damage repairs in some service contract areas that could not have been foreseen at the time of the QCA decision. Higher electricity prices and insurance premiums that were not factored in the QCA's recommended costs were also key drivers of the variance.

SunWater's performance against the QCA's recommended forecast expenditure for the previous six-year period is shown in Figure 2.5 below. Sections 2.4 to 2.8 provide further details on the key drivers affecting the variance and how they impact future costs.

Figure 2.5: Reconciliation of QCA decision[1] to SunWater's actual expenditure, 2012/13 to 2017/18 (million, real $2018/19)



1. The QCA's decision applied to the 2012/13 to 2016/17 period only. For 2017/18, SunWater has used the following assumptions:
   - For routine costs, we have applied the 2016/17 QCA recommended routine costs (adjusted for inflation of 2.5 per cent).
   - Non-routine costs are based upon modelling undertaken by the QCA as part of the 2012 irrigation price review.

2.4 Electricity

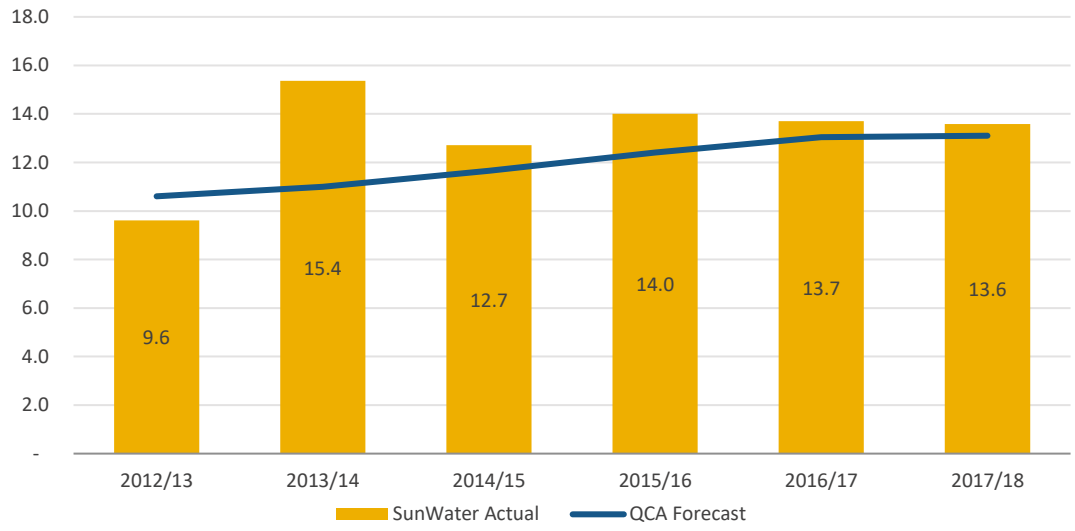
One of the key challenges shared by SunWater and our customers is managing the cost of electricity. The QCA's 2012 Irrigation Price Review decision set prices based on a forecast of electricity costs which was lower than what SunWater proposed in our submission. During the period SunWater devoted resources to optimising tariff selection each year to help minimise the impact of the electricity retail tariff increases which were higher than what the QCA forecast.

Additionally, SunWater regularly benchmarked the current state of energy management (through effective measuring, monitoring and reporting processes) and undertook annual tariff reviews with energy retailers to drive down costs. We also managed usage to reduce the impact of demand charges.

2.4.1 Previous period outcomes

Early in the price path, electricity prices were lower than the QCA's forecast. However, since 2014, actual electricity prices have been significantly higher than what both SunWater and the QCA had forecast, resulting in SunWater absorbing the impact of these higher price increases. A comparison of electricity costs in the previous period, against the QCA recommendations, is shown in Figure 2.6 below.

Figure 2.6: Comparison of electricity costs between QCA recommended forecasts[1] and actual costs (million, real $2018/19)



1. The QCA's decision applied to the 2012/13 to 2016/17 period only. For 2017/18, SunWater has used the 2016/17 QCA recommended electricity costs, adjusted for inflation of 2.5 per cent.

2.4.2 Future period assumptions

Our electricity price assumptions in the future period incorporate a mix of market-based electricity pricing assumptions and step change adjustments for some schemes impacted by a transition away from legacy or obsolete regulated retail electricity tariffs (see Section 3.5.5).

SunWater plans to do more to investigate cost effective energy management and solutions to manage the risks and meet the needs of the business, and support our customers for today and into the future. We have already started to explore renewable energy opportunities to facilitate more efficient and prudent management of energy across the business with an aim to effectively control costs and deliver on our commitments to customers and stakeholders. This will require the investigation of new and innovative solutions with partners in terms of sourcing and producing energy and may have downstream benefits for customers.

Box 4: Energy strategy

In a challenging energy pricing environment, SunWater has a strong track record in implementing activities such as tariff analysis, contestable contracting and invoice verification to achieve savings for our customers across our service contract areas.

Moving forward, SunWater has employed a dedicated resource to implement an energy strategy with the objectives of reducing costs and using energy more efficiently. The work programs which underpin the strategy are focused on three areas: energy costs, sustainable energy culture and energy efficiency.

Work programs such as demand management, tariff optimisation, market contracting, strategic procurement approach, installation of renewable generation sources and embedding an energy savings culture are planned.

An example of one part of the strategy which is currently underway is the targeted investment in renewable technologies as a mechanism to reduce electricity costs and consumption. SunWater is piloting the installation of solar panels during 2018/19 to monitor benefits and inform future investment decisions. We have recently installed a 22kW system at the SunWater Biloela Office at Callide Dam which is estimated to reduce the annual electricity invoice by $7500 (78%) with 98% of energy consumption being provided by solar. The next identified site for solar installation during 2018/19 is the Moranbah Office.

The energy strategy is being reviewed with a target date of 21 December 2018 to receive management approval and finalisation. At this time, we will share the strategy with the QCA.

2.4.3 Adjustments for cost risks relating to electricity prices

SunWater faces uncontrollable cost risks due to changes in market conditions for inputs or as result of regulatory imposts. In its 2012 Final Report, the QCA determined that SunWater should bear the risk of controllable costs and customers should be bear the risks of uncontrollable costs and changes in legislative/regulatory frameworks. The QCA recommended a number of mechanisms for managing these risks, including within-period revenue adjustments, end-of-period revenue adjustments and cost pass throughs.

Our modelling does not include any end-of-period adjustments for electricity costs that were higher than what the QCA forecast. We have consulted extensively with customer representatives regarding the impact of electricity price increases and we are extremely aware that our customers are facing exactly the same cost pressures. Customer representatives have expressed a view that it is not feasible for customers to bear the impact of price increases needed to fund future electricity costs plus further price increases to recover past electricity costs.

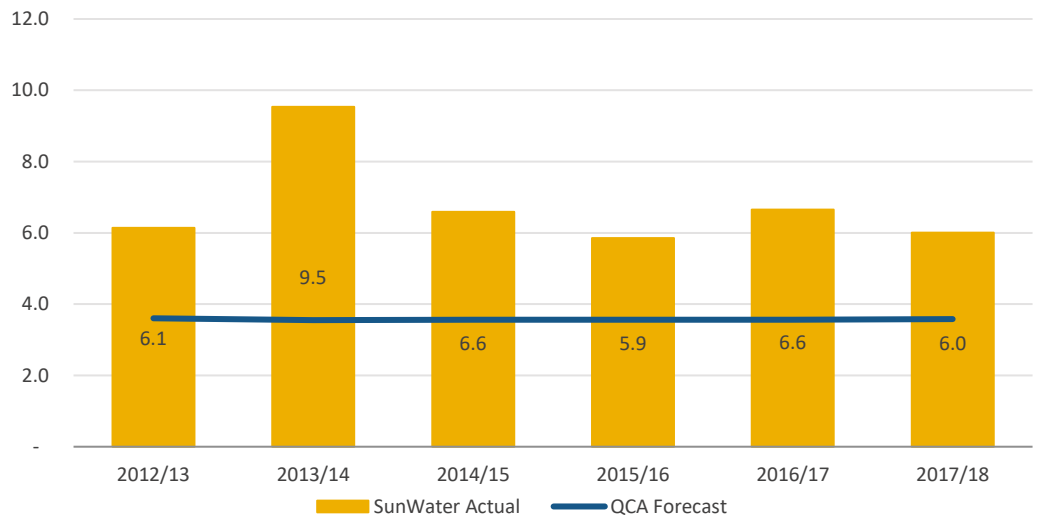
However, in respect of future electricity costs, the QCA should investigate mechanisms which recognise the expected volatility in costs over the period to ensure customers pay no more or less than what SunWater actually incurs. SunWater has proposed an alternative mechanism in Section 6.7.

2.5 Insurance costs

2.5.1 Previous period outcomes

As with electricity costs, the QCA recommended prices for irrigation customers were based on insurance costs which were below what SunWater forecast. During the 2012/13 to 2016/17 period, SunWater experienced extensive increases to insurance premiums which were higher than what both SunWater and the QCA had forecast. A comparison of insurance costs in the previous period, against the QCA recommendations, is shown in Figure 2.7 below.

Figure 2.7: Comparison of insurance costs between QCA recommended forecasts[1] and actual costs (million, real $2018/19)



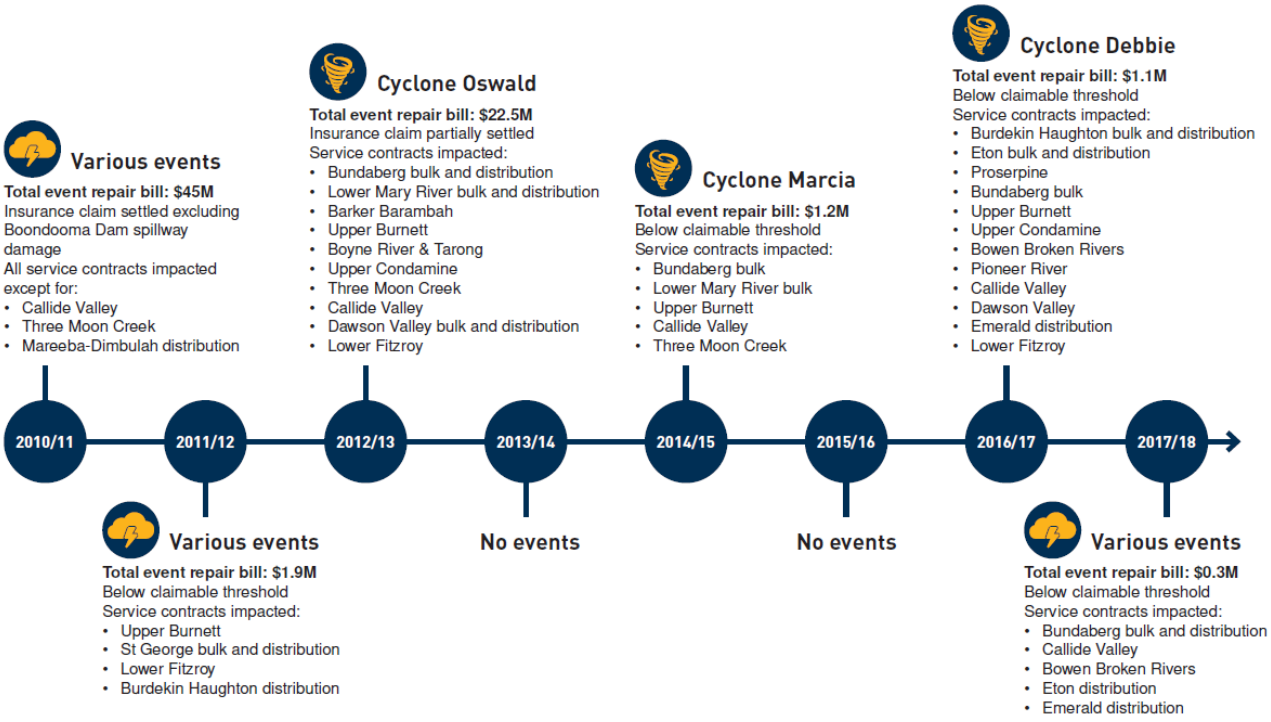
1. The QCA's decision applied to the 2012/13 to 2016/17 period only. For 2017/18, SunWater has used the 2016/17 QCA recommended insurance costs, adjusted for inflation of 2.5 per cent.

Appendix E provides market commentary from Marsh & McLellan. The main driver of insurance costs is the risk appetite among insurers which is largely outside the control of SunWater. While SunWater cannot control the market forces and external factors in the pricing of insurance premiums, we have nevertheless been actively managing insurance premium costs by reviewing SunWater's risk profile, identifying and removing possible overlaps in coverage level and reviewing policy specifications (including deductibles) to ensure that our insurance coverage is appropriate and reflective of the risks faced by our business.

Market movements and extreme weather events causing flood damage were key drivers in higher premiums, with 2010/11 and 2012/13 being significant in terms of size and subsequent damage to infrastructure (see Figure 2.8). The 2016/17 premiums also increased as a result of an increase to the declared asset values due to a revaluation of assets insured, netted off by a reduction in the premium rate.

SunWater goes to extensive lengths to engage with insurers and enhance their understanding of the risks involved, with a view to lowering premiums. We regularly conduct workshops and infrastructure tours with insurance providers to increase their understanding of SunWater's risk management capability.

Figure 2.8: Timeline of extreme weather events affecting SunWater infrastructure[1]



1. Includes only those service contracts with irrigation customers (excluding Burnett Water Pty Ltd).

2.5.2 Concerns raised by customer representatives

As part of our pre-submission consultation, QFF noted the increase over time in insurance premiums and wanted assurances that all options have been considered in terms of insuring risks. QFF particularly noted that some electricity businesses have opted to self-insure some aspects of their operations. These concerns were also shared by some Irrigator Advisory Committees.

2.5.3 Future period assumptions

SunWater has been examining options to improve efficiencies in expenditure on insurance premiums. While the market has been competitive since 2012, an increase in claims since 2016 has a flow on impact with higher premiums moving forward. As a result, SunWater has reviewed our level of risk insured, deductibles, limit of liability and claim history, and has forecast modest reductions to insurance costs in 2018/19 compared to the 2017/18 budget.

SunWater has also been investigating self-insurance for some distribution assets but believes further consultation with customers is required before the new arrangements can come into effect. Following a review of major contracts, we had already decided this year to self-insure for business interruption. We are currently working with external support on a risk financing optimisation exercise which, among other things, will assess the cost/benefit to SunWater from moving to self-insurance arrangements for a broader range of risks.

We will then consult with customers on self-insurance and provide the QCA with an update of the outcomes of the risk financing optimisation exercise and our consultation process, particularly where it derives additional benefit to customers in terms of lower costs. We expect this to occur well in advance of the QCA's draft decision.

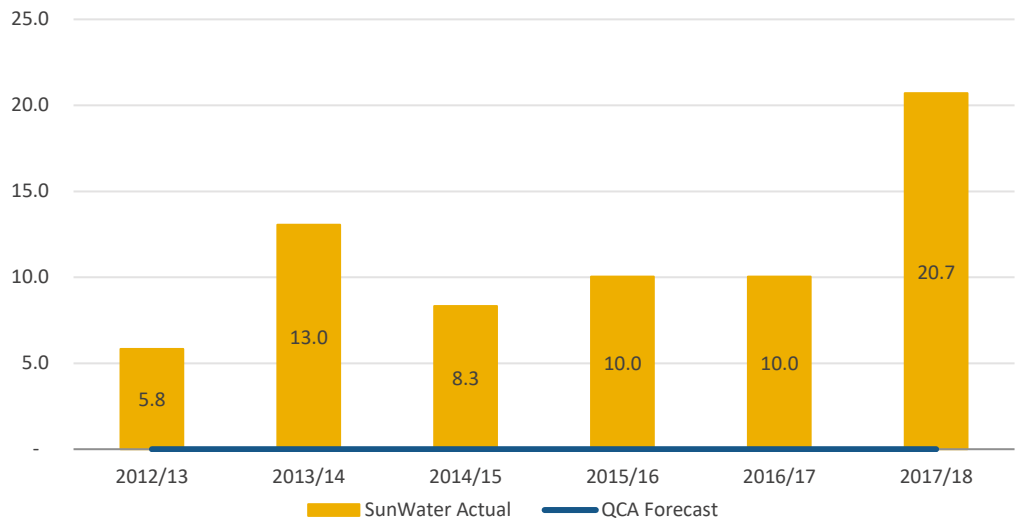
2.5.4 Adjustments for cost risks relating to insurance costs

SunWater has decided to absorb differences between actual and forecast insurance costs for the 2012/13 to 2017/18 period, rather than seek to pass on the costs to irrigation customers through a price increase in the next price path period.

2.6 Non-routine corrective maintenance

SunWater does not forecast non-routine corrective maintenance as part of our expenditure forecasts. This is primarily because of the uncertainty of the service contract area and year in which the corrective maintenance may occur. Between 2012/13 to 2017/18, $68 million was spent on non-routine corrective maintenance in various service contract areas as shown in Figure 2.9 below.

Figure 2.9: Comparison of non-routine corrective maintenance costs between QCA recommended forecasts and actual costs (million, real $2018/19)



Flood damage is by far the greatest driver of the non-routine corrective maintenance expenditure with SunWater rectifying damage from floods and weather events across the period. The majority of these costs were incurred against bulk water assets, principally dams. Some of these costs will be reimbursed through insurance proceeds in future years (see Section 5.3.4).

2.7 New and emerging compliance obligations since 2012

2.7.1 Dam Improvement Program

SunWater is undertaking a Dam Improvement Program to ensure safety for our dams is maintained. Through this program our dams will continue to be able to pass excess volumes of water during periods of extreme rainfall and satisfy modern standards.

While SunWater's dams were designed and constructed to meet the relevant engineering and construction methods of the time, changes have since occurred to warrant the Dam Improvement Program. These changes relate to:

- a better understanding of the likelihood of extreme rainfall and flood events
- increases in populations at risk downstream of the dams
- a better understanding of what causes dams to fail
- new engineering methods relating to dam design and construction.

SunWater invested $94 million[12] in the Dam Improvement Program between 2012 and 2018. This expenditure was not funded by irrigation customers and has no impact on future pricing arrangements.

To ensure the Dam Improvement Program is based on the most up-to-date information, SunWater has brought forward aspects of our dam management program. This includes 20-year dam safety reviews

[12] Excludes Paradise Dam.

(which are part of the dam safety conditions schedule issued by the Dam Safety Regulator for each referable dam), comprehensive risk assessments and associated input studies such as dam hydrology studies and dam break analyses.[13]

Further information on the program can be found on SunWater's website: http://www.sunwater.com.au/development/projects/dam-improvement-program. Arrangements for the recovery of dam improvement projects through prices is covered in Section 6.9.

2.7.2 Emergency event management

In 2015, IGEM's review of the Tropical Cyclone Marcia floods in the Callide Valley found that SunWater had adequately undertaken our role in accordance with established Emergency Action Plans (**EAP**). However, the review also found that SunWater should have done more by notifying the community about the emerging flood risk sooner.

Later in 2015 IGEM undertook a second, related review into warnings provided by Seqwater and SunWater after separate criticism of Seqwater following a release of water from one of its dams. The IGEM reports for both of these reviews can be accessed at: https://www.igem.qld.gov.au/Pages/default.aspx.

IGEM noted that "the public expects notifications and warnings will be disseminated as soon as an issue is known by the dam owners. They also expect that messages will include timings to guide their decisions and actions, will convey the urgency of the developing situation, that regular updates will be provided and when the next update can be expected".[14]

IGEM recommended that:

- SunWater focus immediate attention and action on issues of collaboration with Local Disaster Management Groups (**LDMG**), addressing information sharing, messaging responsibilities, terminology and timing.
- Emergency Alert messages for dam related events are: pre-formatted, consistent and current polygons (or warning zones) are identified; content aligned with the Queensland Emergency Alert Guidelines; and stored and practised in consultation with the State Disaster Coordination Centre.
- SunWater (and other referable dam owners where relevant) proactively engage with relevant local governments to develop and implement a community education and information program for identified communities at risk of dam release scenarios where the downstream flooding can be directly related to dam outflow.

In January 2016 SunWater's Shareholding Ministers wrote to the SunWater Board in relation to the above IGEM recommendations outlining their expectation for SunWater to take the lead in the ongoing improvement of EAPs. They also requested a detailed work program.

SunWater completed the plan and began to implement the emergency event program. Key project outcomes and activities include:

- the establishment of a dedicated control room that will be staffed continuously during events. The control room will provide continuous monitoring of weather, stream and storage conditions, and activate early warnings and notifications
- upgrading and integrating data sources on weather forecasts, rainfall and streamflow from various sources such as the Bureau of Meteorology, local councils and state agencies
- developing probabilistic forecast modelling and impact mapping
- developing and sustaining emergency planning processes and documentation that will update EAPs to reflect LDMG engagement and agreed messages

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13 The dam break analyses take into account changes to industry hydrology guidelines released in 2016 by the Bureau of Meteorology.

14 IGEM, *Review of Seqwater and SunWater Warnings Communications*, *Report 1: 2015-16,* 2015, p.44, <https://www.igem.qld.gov.au/reports-and-publications/Documents/DamWarningsCommunications.pdf>

- implementing communication and engagement arrangements for partnering with LDMGs to develop new tailored messages and triggers for each dam and redevelop all EAPs. This will also develop a real-time graphical interface and messaging platform that will provide both a push and pull information service directly to communities.
- deploying a community education and staff training program that will ensure communities understand their flood risk and have personal emergency plans in place ready for an event.

Under the Minister's referral notice, SunWater is allowed to recover prudent and efficient costs incurred by us to implement the IGEM Review recommendations. Consistent with this approach, our actual and forecast expenditure in this submission includes one-off non-routine establishment costs and ongoing routine expenditure related to the IGEM Review recommendations. These costs are treated as indirect costs and are apportioned to each service contract in proportion to the number of referable storages located within the service contract. The 2019 Network Service Plans contain information on the budgeted ongoing costs attributed to each affected service contract area in 2018/19.

Box 5: Exploring opportunities from our investment in emergency management

Much of the data, modelling tools and water information developed in response to the IGEM Review recommendations might also be used to operate schemes more efficiently and provide customers with much more information and accuracy around water volumes. SunWater expects the following benefits to be made available:

- Modelling skills and additional data will be used to develop scheme wide real-time models that will be tested to help decision-making around water releases and travel times. We anticipate water savings and improved water security will be an output from the initiative. The data will also be used to assess how we can manage schemes better by using weirs to their maximum advantage.
- Decisions around irrigation could be based on probabilistic wind/rain and temperature data individually tailored to locations.
- Rating curves, that estimate the relationship between water level and discharge, will gradually be updated to give a more accurate picture of water flow.
- Eventually, the new weather information will be used to assess rain shut downs in advance — potentially saving water and providing customers with individual rain forecasts for the land.

2.7.3 QCA review costs

Under the Minister's referral notice, SunWater is allowed to recover the regulatory fees charged by the QCA to make its recommendations under the notice. The costs associated with the QCA's irrigation price review for the next price path period have not been included in this submission as this information was not available at the time of finalising our forecasts. In consultation with customers, SunWater proposes a cost allocation approach similar to SunWater's to allocate the costs efficiently incurred by the QCA in completing the review to each service contract.

Under this approach, the QCA would:

- account directly for each hour spent addressing issues which can be directly attributed to a specific service contract, eg issues raised by customers that affect only their service contract
- for expenditure on areas of the review that affect multiple service contracts but not all, allocate costs using a fixed percentage, eg 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, eg the expenditure efficiency review.

This approach will ensure that customers pay only for what adds value to them and can directly impact the quantum of QCA costs attributed to them.

2.7.4 Changes to the Water Act

Amendments to the *Water Act 2000 (Qld)* were implemented on 6 December 2016, with a focus on achieving a more efficient and responsive approach to water planning in Queensland. A key change from the updated legislation is how requests from a customer or Irrigator Advisory Committee to make changes to water supply scheme rules are managed. In the past, SunWater would refer these requests to the DNRME and they would investigate and determine the outcome, eg they might have commenced a planning process to make necessary adjustments.

Under the new framework, these customer enquiries will be investigated by SunWater and, if a change is determined to be required, SunWater will need to undertake consultation with affected stakeholders and hydrologic modelling. The proposed change will then be submitted to DNRME for their approval. SunWater incurs extra costs to perform this new function.

Other changes are being implemented through the Mineral, Water and Other Legislation Amendment Bill 2018, which is likely to be passed by the end of 2018. The change of most significance for SunWater relates to the requirement to capture sale prices when processing seasonal water assignments (also known as temporary transfers) and report this data to DNRME. This will result in increased processing costs, both in system upgrade costs and in personnel costs.

At this stage, however, we have not incorporated any step change in expenditure from our 2018/19 budget to reflect increases in costs that may be associated with the above arrangements.

Appendix B provides further details on the current water planning framework and possible future changes to the framework.

2.8 Other drivers in the previous period impacting future costs

2.8.1 QCA recommendations

SunWater has worked hard to implement the recommendations of the QCA since the last review and a number of processes have been modified and changed as a result. We have also monitored our expenditure against the QCA's targets throughout the previous price path period.

Our response to the QCA recommendations was initiated through an implementation plan which was developed in consultation with the QCA and irrigation peak bodies, via QFF. SunWater published the implementation plan in September 2012. Our progress against our implementation plan was explained in eight progress reports which were published on our website.

Appendix C details SunWater's implementation of the QCA recommendations and our current positions. It notes that many of our implementation plan actions have been expanded upon and will continue to apply throughout the next price path period. The appendix also highlights other implementation actions which have not continued, or were put on hold, as a result of the changing operating environment and a reprioritisation of effort to meet customer outcomes in light of these changes.

We note that some QCA recommendations supported regulatory practice at the time which have since been superseded. For example, the QCA (and other regulators) now routinely adopt a base-step-trend methodology to establish efficient operating costs and therefore actions which were aimed at supporting legacy forecasting approaches have not been continued.

Finally, in some circumstances, we have evolved further from actions we implemented in 2012 to deliver better value and outcomes for customers or to further adapt to the changing environment or strategic focus.

2.8.2 Unplanned renewals expenditure

SunWater's program of works at the time of the 2012 Irrigation Price Review was not a specific forecast of when individual projects were expected to be executed, but rather a portfolio-level estimate based on the best available risk and condition information. The actual work undertaken by SunWater is determined annually based on assessments of condition and risk. In many cases, the work performed was not originally included in the 2012 QCA project listing and/or the timing of works varied significantly. Wherever possible, SunWater tries to meet the needs of unplanned non-routine expenditure within existing allowances by re-prioritising the upcoming non-routine program.

One area of unplanned renewals expenditure relates to learnings identified following spillway issues experienced in 2015 at Fairbairn Dam where the anchors were corroded and the under-drainage was blocked. As a result, dam safety risk at Fairbairn Dam changed from a tolerable position to SunWater's highest life safety risk for urgent improvement. This also led to an additional requirement to investigate the condition of all anchors and under-drainage on all concrete lined spillways. This work typically costs over $100,000 per dam.

Further examples of unplanned renewals expenditure, at the service contract area level, are contained in the 2019 Network Service Plans (Appendix D).

Finally, in some cases, the final cost of projects came in higher than allowed by the QCA. This is largely attributable to the difficulty in accurately scoping and forecasting the budget of projects so far in advance of the project being executed — in some cases up to eight years since the original estimates were provided to the QCA — when, by their nature, projects are driven by condition and risk assessment. Significant projects only proceeded during the 2012/13 to 2016/17 period after comprehensive options analyses were completed and tabled with customers. Nevertheless, SunWater recognises that in a limited number of projects some of the costs incurred were inefficient and we have proposed adjustments to the opening balances in 2020/21 to remove this inefficient expenditure from the annuity (refer to Section 2.9.2).

2.8.3 Local Management Arrangements reviews

Since 2012, the Queensland Government has worked with SunWater and distribution system customers to investigate whether there is a business case for transferring the eight distribution systems from SunWater ownership to new entities owned and controlled by customers within the distribution systems.[15]

Activities continued in 2017 and 2018 to further investigate the viability and, where agreement was reached between the Queensland Government and scheme customers, facilitate the transfer of schemes to local management. The outcomes of these activities and the corresponding impact on this submission are outlined in Table 2.1.

[15] Further information is available at http://lmairrigation.com.au.

Table 2.1: Distribution system schemes under consideration for LMA

Scheme	Outcome	Impact on submission
Bundaberg	Withdrew from the LMA process.	Included.
Burdekin-Haughton	Pending. The LME Board submitted a revised business proposal to the Queensland Government in December 2017. The government is currently deciding whether to progress the scheme to the transition phase.	Included.
Nogoa Mackenzie (Emerald)	Pending. At the time of this submission, the LME Board has agreed the terms of transfer with the Queensland Government and are preparing an offer document for irrigators.	Included.
Eton	Pending. The LME Board have requested additional separation funding from the Queensland Government to address material adverse findings. The government is currently assessing whether to approve the additional funding.	Included.
Lower Mary	Withdrew from the LMA process.	Included.
Mareeba-Dimbulah	Pending. The LME Board submitted a revised business proposal to the Queensland Government in December 2017. The government is currently deciding whether to progress the scheme to the transition phase.	Included.
St George	Transitioned to LME on 30 June 2018.	• Costs are not included for review. • Impacts corporate support costs for all service contract areas due to a declining cost base over which to apportion these costs. • Transferred distribution loss water access entitlements to the irrigation customer segment.
Dawson Valley (Theodore)	Transitioned to LME on 30 September 2018.	Refer to St George.

Part of this process involved an independent review of the feasibility, costs and benefits of local management including the engagement of experts to review and advise on legal, financial, engineering, policy and other issues related to a move to local management. The opportunity to be transparent with all aspects of our business, allowing our customers to assess our capability and efficiency in preparing their business case, gives SunWater and our customers some confidence that our underlying cost levels are robust.

Box 6: Findings on SunWater costs using LMA due diligence reviews

The LMA due diligence process involved, among other things, engineering and cost reviews from independent expert consultants. These independent reviews are similar to what the QCA would undertake as part of its assessment of cost efficiencies. This due diligence assessment for LMA involved several independent experts including SKM, Aither and Jacobs.

Engineering due diligence involved Jacobs reviewing SunWater's Asset Strategy (Overall Strategy Common to all Irrigation Schemes by Object Type) which was issued in 2016. The review focused on the consistency of SunWater's asset strategy relative to general industry standards and included an assessment of:

- SunWater's capital expenditure forecasting model
- SunWater's asset management strategy
- SunWater's asset condition and risk assessment adequacy process
- key asset categories
- the adequacy of risk ratings
- risk ratings by key asset categories.

Jacobs found that SunWater's current asset strategy is generally consistent with industry standards with the exception of some minor adjustments to service lives for pipeline and channel assets. Our scheme condition and risk data was also analysed and found to be consistent with industry experience, with some minor exceptions.

The reports contained numerous examples of SunWater's asset management being found to be best practice, such as:

- Jacobs supports the current SunWater decision-making approach to pipe replacement. This approach uses economic analysis and service targets to compare the options of continuing to repair pipe joints, or prematurely replace pipelines.
- Jacobs recommended that the prudent and efficient management strategy for drains is to continue operating expenditure maintenance programs consistent with SunWater's historical practices in the respective districts (Burdekin Haughton, Emerald, Mareeba-Dimbulah, St George and Theodore), subject to detailed reviews of drain performance.

Customers and stakeholders participating in the LMA review process have expressed to us a preference for this independent assessment to be used by the QCA for its own assessment, to avoid duplication and minimise the costs of the QCA review process.

2.9 SunWater's efficiency initiatives

Our customers have told us that they expect SunWater to deliver value for money services. Moving forward, SunWater is focused on driving costs down where we can, while still delivering the services customers require. Our strategy is multipronged and looks at the following opportunities:

- aligning costs to a customer centric business (refer to Box 7: SunWater's 2018 restructure — aligning costs and organisational structures to a customer centric model)
- improving our approach to asset planning and management
- reviewing previous expenditure and proposing adjustments for inefficient expenditure
- procurement initiatives aimed at streamlining and improving purchasing efficiency
- improving operational efficiency with better systems.

Box 7: SunWater's 2018 restructure — aligning costs and organisational structures to a customer centric model

In late 2017, SunWater embarked upon a corporate restructure aimed at making SunWater regionally focused, improving customer service and cost efficiency. The main initiatives included:

- Dividing our operations across the state into four areas — to provide more accessible leadership and a flatter structure to improve communication and provide greater autonomy for our regions.
- Greater support for the regions — five Project Manager roles were moved from Brisbane to become regionally based, to deliver on our non-routine works program and enable better engagement with our customers.
- Extending the operating hours for the Customer Service team to be more accessible for our customers and integrate with the Operations Centre.
- Structural changes to align 'like' functions by moving teams and functions. For example, the dam safety team was moved into the Operations Centre with hydrology and flood modelling.
- Flattening the structure and increasing the span of control of our leaders and managers to provide greater empowerment.

The restructure is intended to reduce travel costs, deliver greater efficiencies and integration across planning and delivery arms and improve engagement between customers and our planning processes. A net reduction of 20 full-time equivalents, predominantly from the Brisbane office, has also resulted from these changes.

2.9.1 Improving our approach to asset management and planning

We have always had a strong focus on asset management strategy at SunWater, with our company value drivers underpinning our asset policy and strategy. Our refocus on customer engagement at a corporate level has also been a driver to our asset management value chain offering. Some of this refocus began in 2016 with the merger of bulk water and irrigation asset management divisions, as an impetus for striving towards a more unified approach to asset management across our customer base. We have also evaluated and strengthened our asset management processes within the organisation, primarily through an alignment to the ISO 55000:2014 standard of asset management.

More information on our Strategic Asset Management Plan (Appendix G) and our approach to asset planning and management is included in Chapter 4.

2.9.2 Adjustments for inefficient expenditure

As noted above, SunWater reviewed our expenditure in the previous period and identified inefficiencies in a limited number of projects. Table 2.2 details our proposed adjustments to the opening balances in 2020/21 to remove this inefficient expenditure from their respective annuities. As the QCA will review past expenditure, we have not made these adjustments in our regulatory model.

Table 2.2: Proposed adjustments to annuity opening balances in 2020/21

Service contract	Description	Proposed adjustment
St George	Relates to a project to address sand boils affecting the outlet structure to Thuraggi Channel and temporary mitigation works to address immediate dam safety concerns. SunWater initially underestimated the complexity of the project and the time it would take to complete, and did not keep customers adequately informed about the project. SunWater has subsequently reviewed our project governance around dam safety related projects to improve the efficiency of similar projects in the future.	$437,000
	Inefficient procurement process for the refurbishment of the electrical system at Beardmore Dam.	$46,000
Bundaberg (bulk)	Error made in the placement of concrete during repairs to Ben Anderson Barrage.	$135,000
Upper Burnett	Project management inefficiencies of the Jones Weir concrete wing wall repairs project.	$15,000

2.9.3 Procurement initiatives

SunWater has undertaken several procurement initiatives aimed at streamlining and improving purchasing efficiency. These include:

- Developing a planned approach to SunWater spend for regular servicing and maintenance of SunWater's equipment and plant to increase efficiency and productivity and potentially reduce operating costs associated with regular maintenance of plant and equipment.
- Simplifying processes for conducting business with our supplier base to increase efficiency and reduce administrative costs, which in turn allows SunWater to complete purchasing more effectively. SunWater is improving our engagement, performance and management of our vendors with new initiatives being introduced to manage risks and drive improved relationship management.
- SunWater is revising our suite of standard terms and conditions within supplier contracts including the use of more vendor friendly, industry accepted terms and conditions with new conditions already implemented for low risk purchases. These are available online improving transparency and visibility of how to conduct business with SunWater which in turn enhances the pool of vendors keen to do business with us.

Moving forward SunWater will be implementing a category management framework with targeted strategies aimed at improving business efficiency in key cost areas. This will deliver two main outcomes:

- The direct costs of materials and services will be reduced.
- We expect to minimise administrative burden through procurement processes and activity.

2.9.4 Improving operational efficiency with better systems

In its 2012 Irrigation Price Review, the QCA recommended that SunWater improve the usefulness of our information systems to attain greater operating efficiency and transparency to facilitate future price reviews. Our response to the QCA's recommendations (Appendix C) outlines the various initiatives we undertook in the previous period to better utilise our existing information systems. Many of the existing information systems have been fully amortised and are at the point where support services are becoming costly to maintain. In addition to being outdated, many of our information technology solutions were developed and built over time and therefore run on multiple technologies and are supported by multiple suppliers.

A business case is currently being prepared which will bring SunWater in line with other utility organisations in terms of current information technologies. This investment, along with a structured program of works to achieve streamlined, standardised, efficient and simple business processes, will reduce business risk and ultimately add value to what SunWater provides all our customers in terms of service delivery and efficient costs.

Importantly, many of the costs of these initiatives are not in our base year expenditure and therefore are not passed on to irrigation customers in prices. SunWater will need to absorb the costs of these initiatives through greater efficiencies across the business.

2.9.5 Benchmarking SunWater costs

As part of the 2012 Irrigation Price Review, the QCA invested heavily in consultancy reviews of the prudency and efficiency of cost forecasts. This included engaging consultants to use private and public data sources for the purposes of benchmarking SunWater's costs against peers. While some expert subjective assessments were made in the context of wider analysis, including benchmarking, consultant reports in general heavily qualified any conclusions drawn from benchmarking assessment. This tended to be consistent with SunWater's view at the time that the complex undertaking of comparing the efficiency of a particular business with other entities is magnified in SunWater's circumstance. Business characteristics such as the age of assets, scope of services, business size, number of customers and geographic spread can vary significantly between entities and are likely to materially influence the outcomes of any benchmarking exercise. In SunWater's case, our particular business model and environment distinguishes us from most water utilities.

As part of the last review the QCA agreed with Deloitte's assessment that there was a wide dispersion of some financial data. The QCA also agreed with Deloitte's conclusion that comparisons are likely to be unreliable due to differences in operating conditions and business characteristics, variations in expense category definitions and the unaudited nature of the data.[16]

Nevertheless, the QCA made adjustments to SunWater's forecasts based on advice from consultants and partly informed by benchmarking analysis at the time. As noted above, our costs are generally consistent with the forecasts recommended by the QCA with the exception of unforeseen price increases in insurance and electricity, as well as non-routine corrective maintenance costs (largely attributed to flood repairs).

Should the QCA wish to engage consultants to assess SunWater's operating expenditure using benchmarking, we would note the outcomes of the previous review. We also expect that similar qualifications will still be required for any benchmarking undertaken. On this basis, there may be more benefit in comparing expenditure to the benchmark forecasts already established rather than re-prosecute a similar benchmarking exercise.

Box 8: Efficient water management

Customers have told us they expect efficient delivery of services including water transportation and delivery. In response, SunWater has embarked on a strategic work program to measure/assess channel outflows and other distribution losses with an aim to maximise the efficiency of water transportation and delivery across the business. Specific initiatives include:

- improving water accounting to drive business performance
- sustainable modernisation, augmentation or enhancement of distribution infrastructure
- increasing efficiency through operational and customer compliance and customer practices which value the true cost of water.

[16] QCA, *Final Report, SunWater Irrigation Price Review: 2012-17, Volume 1*, May 2012, p.230, <http://www.qca.org.au/Water/Rural/SunWater-s-Irrigation-Prices/Final-Report/Irrigation-Prices-for-2012-17#finalpos>

3. Routine expenditure forecasts

In this chapter we explain how we have derived our routine expenditure forecasts for the next price path period:

- Section 3.2 outlines the base-step-trend approach adopted for forecasting routine expenditure, as well as some of the assumptions underpinning it.
- Section 3.3 explains the rationale for using 2018/19 as the base year for establishing forecasts.
- Sections 3.4 to 3.6 provide information on the key inputs supporting the forecast routine expenditure including: step changes; escalation assumptions and efficiency savings.

Box 9: Regulatory assessment profile for routine costs

SunWater has largely adopted cost forecast methodologies consistent with QCA precedent or common regulatory practice. Customers have told us they want to participate in the QCA's review of variances to forecasts in the previous period. They also want simple and transparent outcomes from any review with a focus on efficiency in the review.

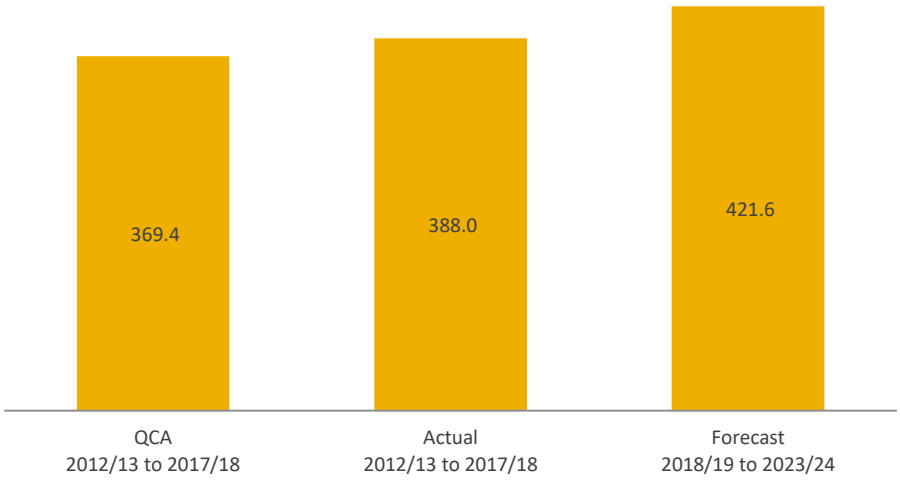
Routine costs	
Methodology	SunWater has consulted with customer representatives on adopting the base-step-trend methodology the QCA recently endorsed in its decision for Seqwater's bulk water prices.
Efficiency of base year costs	SunWater has discussed with customer representatives the major variances in our historic costs to QCA forecasts, with major variances due to higher electricity and insurance costs than the QCA's forecast allowance.
Price escalation (excl. electricity)	SunWater has largely adopted the same price escalation assumptions the QCA recently determined for Seqwater (updated for most recent market information, where relevant).
Price escalation (electricity)	SunWater has some connection points subject to obsolete or legacy regulated retail electricity tariffs. Our forecasts include adjustments to reflect the transition to alternative tariffs for those connection points.
Step changes	SunWater's step changes include the removal of costs associated with recreation facilities, as well as a one-off reduction to routine non-direct costs in 2019/20.
Insurance (distribution systems)	SunWater has been investigating self-insurance for some distribution assets but believes further consultation with customers is required before new arrangements can come into effect.

3.1 Summary

Over the 2018/19 to 2023/24 period SunWater expects to spend around $422 million to deliver routine maintenance and operations services to our irrigation customers. This is $34 million above our actual expenditure in the previous period and reflects:

- new ongoing costs associated with the IGEM Review recommendations
- higher electricity and insurance costs which began rising during the previous period and, in respect of electricity, increase even more in some schemes due to changes to obsolete and legacy regulated retail electricity tariffs.

Figure 3.1: Comparison of routine expenditure (million, real $2018/19) [1]



1. The QCA's decision applied to the 2012/13 to 2016/17 period only. For the 2017/18 QCA recommended routine costs, SunWater has used the 2016/17 QCA recommended routine costs (adjusted for inflation of 2.5 per cent).

3.2 Methodology and approach to forecasting routine expenditure

We have adopted a 'base-step-trend' approach to forecast our routine expenditure for 2018/19 to 2023/24. At a high level, this involved the following steps:

- We selected a base year upon which to the build the forecast. We have used the 2018/19 estimate as our base year, noting that both 2016/17 and 2017/18 are both abnormal years in that they involve some restructuring costs and two distribution schemes that are no longer part of SunWater's cost base.
- We made a number of 'base year adjustments' to the 2018/19 estimate so it could be used for the forecast routine costs in 2019/20. These adjustments included the following:
  - For each service contract, removing any costs associated with recreation areas. The reduction to the base year therefore flows through to each year of the price path period.
  - Escalating cost categories such as labour, contractors, materials, insurance and non-direct costs across all service contracts to reflect forecast changes in Consumer Price Index (**CPI**) and other input prices between years.
  - Escalating electricity costs for each service contract based on the latest projection of electricity price movements between years from the Australian Energy Market Operator (**AEMO**), with specific adjustments where we have identified connection points that are transitioning to new cost reflective electricity tariffs (undertaken at the service contract level).
  - Making base year reductions across all service contracts to corporate support costs and local area support costs to reflect targeted efficiency improvements in our forecast routine costs. The base year reduction therefore carries across to each year of the price path period.
  - Making specific base year reductions in each service contract area to reflect targeted reductions in indirect costs. The base year reduction therefore carries across to each year in the price path period.
  - Applying a global reduction of 0.2 per cent across all routine costs to reflect an annual efficiency target.

- For the four years between 2020/21 and 2023/24 we made further adjustments between years to reflect:
  - changes in CPI and other input prices between years which are applied across all service contract areas to cost categories such as labour, contractors, materials and insurance and non-direct costs
  - adjustments to electricity costs at a service contract level between years based on expected price movements
  - a global reduction of 0.2 per cent across all routine costs to reflect an annual efficiency target.

3.2.1 Outputs from the base-step-trend approach

SunWater has prepared a regulatory model which incorporates the relative inputs and assumptions to calculate routine cost forecasts for all service contract areas using the base-step-trend methodology. Our regulatory model (Appendix F) includes all inputs necessary to establish cost forecasts and revenue requirements for each of our service contract areas.

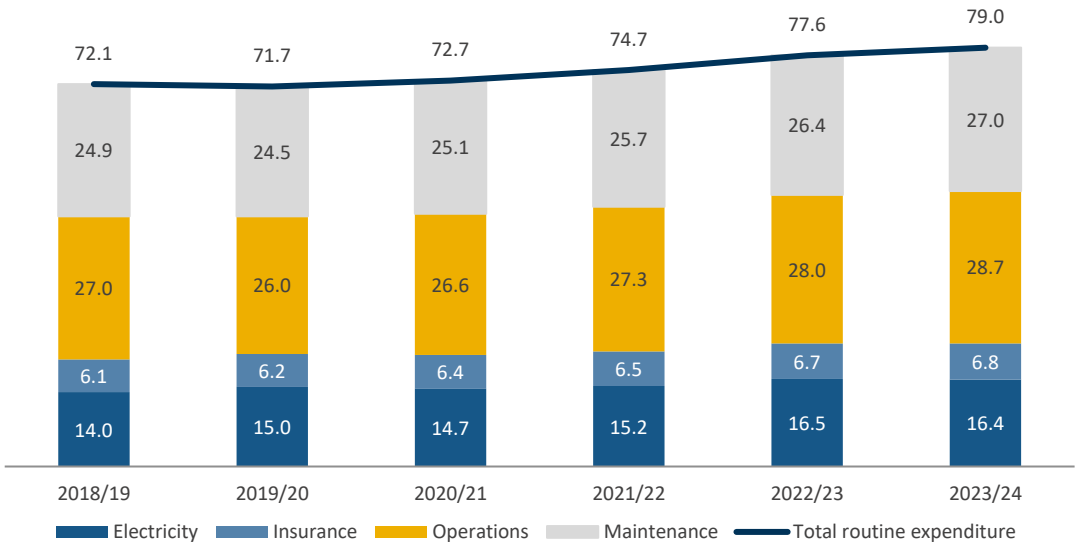
The table below shows the outputs from the base-step-trend approach. For the purposes of transparency, we have separated out electricity costs from other routine costs.

Table 3.1: Routine cost outputs using base-step-trend methodology (million, $nominal)

	2019/20	2020/21	2021/22	2022/23	2023/24
Routine costs (excluding electricity) for previous year	**58.05**	**56.66**	**58.10**	**59.57**	**61.05**
CPI and other price movements	1.51	1.55	1.59	1.60	1.64
Adjustment for recreation areas	(1.80)	0.00	0.00	0.00	0.00
Base year efficiency target (non-direct expenditure)	(0.98)	0.00	0.00	0.00	0.00
Annual efficiency target	(0.12)	(0.11)	(0.12)	(0.12)	(0.12)
Total change (nominal)	**(1.39)**	**1.43**	**1.47**	**1.48**	**1.52**
Closing value (excluding electricity)	**56.66**	**58.10**	**59.57**	**61.05**	**62.57**
Electricity costs for previous year	**14.05**	**14.99**	**14.65**	**15.16**	**16.50**
CPI and other price movements	0.98	(0.31)	0.54	1.37	(0.07)
Annual efficiency target	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Total change (nominal)	**0.95**	**(0.34)**	**0.51**	**1.34**	**(0.11)**
Closing value (electricity)	**14.99**	**14.65**	**15.16**	**16.50**	**16.40**
Closing value (all routine costs)	**71.66**	**72.75**	**74.73**	**77.56**	**78.97**

Figure 3.2 shows the forecast routine expenditure, by category, based on the above approach.

Figure 3.2: Forecast routine expenditure, 2018/19 to 2023/24 (million, $nominal)



3.3 Establishing a base year for future forecasts

While it is a common convention for the base year to be sourced from the most recent revealed costs (representing the most recent audited financial statements), 2017/18 costs are unlikely to be appropriate for a base year for the following reasons:

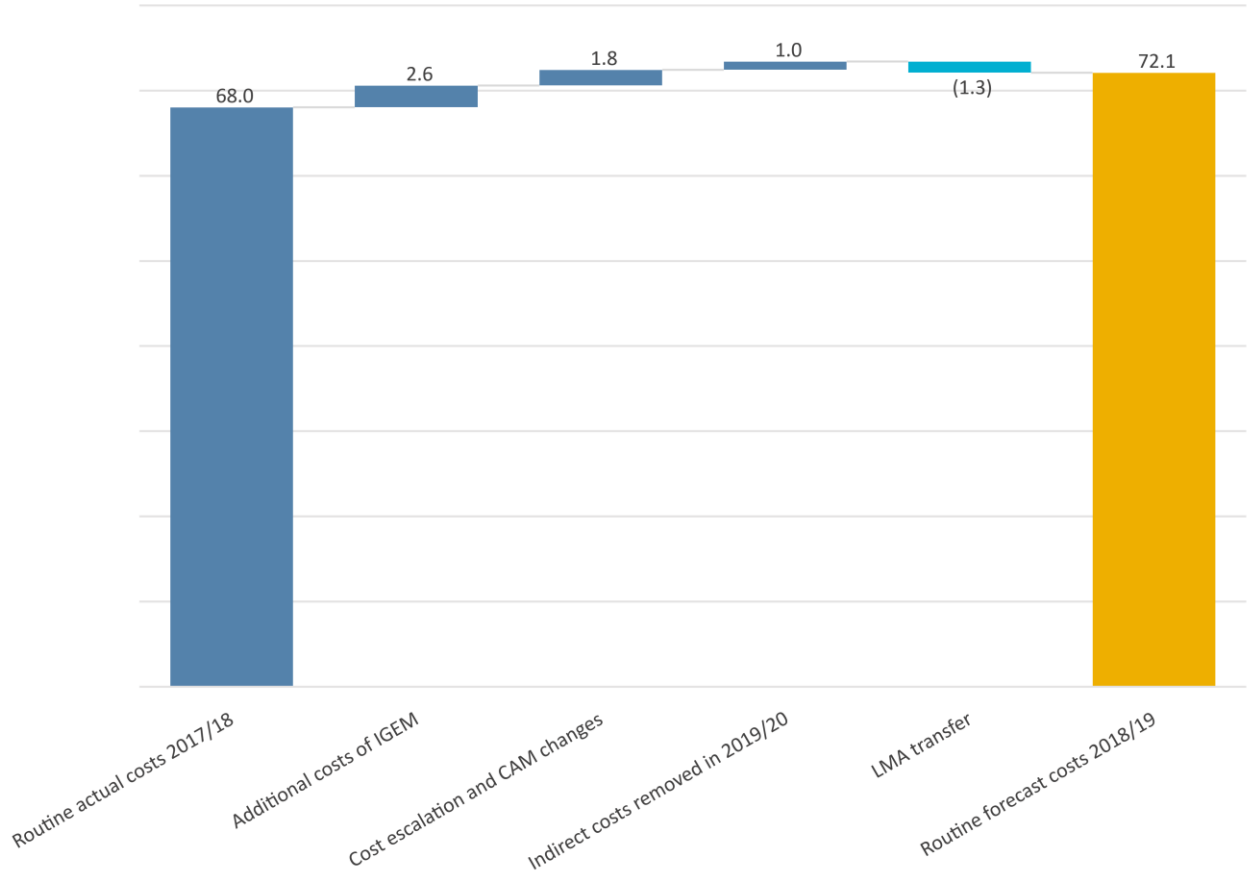
- The 2017/18 financial year incorporates a number of adjustments for corporate restructuring which have occurred in recent years. In terms of our organisational structure, 2018/19 represents a more reflective base from which to establish forecasts.
- 2017/18 costs include the direct costs (and indirect allocations) for the St George and Dawson Valley (Theodore) distribution service contract areas. These schemes transferred ownership to LMEs on 30 June 2018 and 30 September 2018, respectively.
- 2018/19 is more representative of the ongoing non-direct routine costs associated with implementing the recommendations from the IGEM Review.

SunWater is therefore proposing to use the 2018/19 year as the base year for developing future costs. This is consistent with the approach adopted by the QCA in respect of Seqwater's bulk water pricing determination.

3.3.1 Reconciliation to 2017/18 actuals

SunWater has the benefit of finalised 2017/18 actuals to provide a basis of comparison to 2018/19 base year forecasts. The below chart illustrates the main changes in routine cost allowances.

Figure 3.3: Reconciliation between 2017/18 and 2018/19 base year costs (million, $nominal)



The main contributors to the movement in routine costs between 2017/18[17] and 2018/19 are:

- Higher costs associated with the IGEM Review recommendations.
- General price movements, as well as a higher reallocation of overheads attributed to the cost allocation methodology.
- The removal of direct costs for the Dawson Valley (Theodore) and St George distribution systems, which transferred to LMEs in 2018.

The next section outlines the additional reductions made to the 2018/19 routine cost forecast to make it consistent with an efficient base year for forecasting purposes.

3.4 Step changes to base year costs

SunWater has applied the following negative step changes to the 2018/19 base year costs:

- The removal of all non-routine costs from the base year. Non-routine costs are separately forecast as they do not follow a normal trend, tending to fluctuate over time (refer to Chapter 4).
- Removal of all costs associated with the provision of recreation facilities, consistent with the Minister's referral notice.
- A base year reduction in routine non-direct expenditure which reduces forecast expenditure in 2019/20 and each year of the next price path period (refer to Section 3.4.2 below).

We have not proposed any step change increases in costs for the next price path period.

[17] A normalised level of direct expenditure and associated overheads were included in 2017/18 routine costs to rectify an under-representation of time-sheet reporting for direct cost activities (and partially as a result of the organisational changes occurring) during that year.

3.4.1 Recreation facilities

The QCA previously defined recreation facilities as assets that are provided for general public use, eg picnic shelters, barbeques, lookouts, public toilets, parks and boat-ramps. As such, they do not form part of core water infrastructure.

The Minister's referral notice states that costs associated with the provision of recreation facilities that would not otherwise be incurred to supply water are not to be included from 2020/21, unless the QCA is satisfied that there is customer support for these costs to remain included. SunWater separately accounts for recreation facility infrastructure and costs and has removed these costs from the base year consistent with the referral notice.[18] Table 3.2 sets out routine expenditure for recreation facilities for the affected service contract areas.

Table 3.2: Step changes (reduction) for recreation facilities, by affected service contract area ($'000, nominal)

Service contract area	Recreation facilities
Barker Barambah	21
Bowen Broken Rivers	260
Bundaberg (bulk)	6
Burdekin Haughton (bulk)	427
Callide Valley	23
Eton	141
Macintyre Brook	76
Mareeba-Dimbulah (bulk)	25
Nogoa Mackenzie (bulk)	303
Proserpine River	126
St George (bulk)	23
Upper Burnett	69
Upper Condamine	96

3.4.2 Base year reduction to routine non-direct expenditure

Following consultation with customers on the draft 2019 Network Service Plans and a further review of potential savings in non-direct costs, SunWater proposes a reduction in routine non-direct expenditure which reduces the expenditure forecast in 2019/20. The base year reduction is comprised of:

- an 8 per cent reduction in corporate support costs
- a 1 per cent reduction in local area support costs
- a service contract area specific reduction in indirect costs, ranging from 0.92 per cent to 3.08 per cent.

Importantly the removal of these costs from the base year carries through to each year of the next price path period.

These savings targets are indicative and largely represent stretch targets for SunWater to aim for, rather than delivered outcomes through initiatives already developed. SunWater is developing strategies to deliver outcomes consistent with these targeted savings. We expect to deliver some of these savings through reductions in office costs and administration, leveraging new technologies to streamline services,

[18] Recreation facilities have also been removed from non-routine expenditure forecasts from 2020/21 onwards.

and initiatives to reduce costs in specific indirect cost pools such as asset planning and support and operations.

3.5 Applying cost escalation factors to base year costs

Under traditional base-step-trend methodologies, base year costs are escalated using cost indices referenced to the underlying inflation rate. The choice and application of cost escalation factors was examined in the QCA's bulk water pricing review for Seqwater. Where appropriate, SunWater has chosen to adopt the same methodology to establish the escalation factors for the next price path period.

We consulted with our customers on the use of parameters that are externally sourced based on the latest market data and are therefore continually changing based on the existing economic conditions. Market conditions will change during the QCA's review and should be updated accordingly in the QCA's Final Report. However, to the extent that the QCA wishes to choose alternative sources to what it has previously adopted for Seqwater, we expect that any proposal to make such changes will be consulted with customers and SunWater first.

Individual escalation factors are outlined below.

3.5.1 Inflation

SunWater consulted with the QCA on their preferred methodology for establishing inflation. We have adopted the QCA's preferred approach for inflation forecasts which combines the Reserve Bank of Australia's (**RBA**) latest short-term inflation forecast with the mid-point of the target range.

Our forecasts of inflation therefore reflect the RBA's most recent Statement on Monetary Policy, which assumes CPI growth of 2.25 per cent for both 2018/19 and 2019/20.[19] Beyond that time, we have assumed the mid-point of the RBA's inflation target range, being 2.50 per cent. SunWater acknowledges the RBA's expectation that CPI will remain at 2.25 per cent annualised until December 2021. However, we have not updated the 2020/21 CPI forecast at this stage.

We expect the QCA will continue to monitor short-term expectations of inflation and adjust forecasts for 2020/21 and forward years accordingly.

Our proposed inflation forecasts are outlined in Table 3.3.

Table 3.3: Inflation forecasts

	2019/20	2020/21	2021/22	2022/23	2023/24
CPI assumptions	2.25%	2.50%	2.50%	2.50%	2.50%

3.5.2 Labour cost drivers

Our labour cost escalation assumptions are also consistent with the approach the QCA has adopted in other decisions.

In its most recent decision for Seqwater, the QCA adopted short-term cost escalators (2019/20 and 2020/21) for labour which were consistent with movements in the Wage Price Index (**WPI**), which is developed as part of the Queensland Government's annual budgeting process.

The most recent Budget Papers show WPI movements to remain at 3.00 per cent in 2021/22. We have therefore adopted labour escalators consistent with this forecast.[20]

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19 RBA, *Statement on Monetary Policy*, August 2018, <http://www.rba.gov.au/publications/smp/2018/aug/pdf/statement-on-monetary-policy-2018-08.pdf>

20 Queensland Government, *State Budget 2018-19, Budget Strategy and Outlook, Budget Paper No. 2,* Table 2.1, <https://budget.qld.gov.au/files/BP2-2018-19.pdf>

We have applied the same methodology the QCA used for Seqwater in April 2018 to determine the trend in annual movements for 2022/23 onwards. The QCA used the long-term average in WPI sourced from the ABS. Based on this methodology, and taking into account the most recent August update, we have assumed labour escalation at 2.91 per cent for 2022/23 onwards.[21]

Using the QCA methodology and assumptions, the forecast labour escalation rates applying to SunWater are shown in Table 3.4.

Table 3.4: Labour escalators (nominal)

	2019/20	2020/21	2021/22	2022/23	2023/24
Labour escalation	3.00%	3.00%	3.00%	2.91%	2.91%

3.5.3 Materials cost drivers

Materials used for jobs within operations and maintenance activities include items such as pipes, fittings, concrete, chemicals, plant and equipment hire. With the exception of chemicals such as Acrolein, prices for materials are usually forecast consistent with inflation.

Over the previous price path period, SunWater experienced volatility in the price for chemicals which resulted in out-turn costs above CPI in some years. While we were successful in negotiating contracts for the purchase of future chemicals in line with CPI, SunWater wears some risk that changes in the market for Acrolein will result in higher costs once the existing contract expires in December 2018.

Subject to this qualification, SunWater's materials escalation forecasts are shown in Table 3.5.

Table 3.5: Materials escalators (nominal)

	2019/20	2020/21	2021/22	2022/23	2023/24
Materials escalators	2.25%	2.50%	2.50%	2.50%	2.50%

3.5.4 Contracted services cost drivers

Contracted services will often incorporate both labour and materials cost elements, meaning that any price escalation is likely to reflect movements in both cost elements. Consistent with the QCA's approach to Seqwater for contract cost escalators, SunWater has applied a simple and transparent approach:

- Any contracted services related to preventative and corrective maintenance applies the assumed materials escalator.
- Any contracted services related to operations applies the assumed labour escalator.

The escalator for contracted services is therefore the average of labour and materials escalators, weighted by the contribution of maintenance and operations to total routine costs in the 2018/19 base year. Our regulatory model includes the calculation of this weighted average. The resultant forecast escalators for contracted services are in Table 3.6.

Table 3.6: Contracted services escalators (nominal)

	2019/20	2020/21	2021/22	2022/23	2023/24
Contracted services escalators	2.38%	2.59%	2.59%	2.57%	2.57%

[21] ABS, 2018, ABS, Canberra, *6345.0 – Wage Price Index, Australia, Jun 2018,* 15 August 2018, <http://www.abs.gov.au>

3.5.5 Electricity cost drivers

As noted in Chapter 2, we propose to apply a mix of market-based electricity pricing assumptions and step change adjustments for some schemes impacted by a transition away from legacy or obsolete regulated retail electricity tariffs.

The market-based electricity pricing assumptions are based on the most recently available market information which was sourced from AEMO's 2018 Electricity Statement of Opportunities (**ESOO**). This included a revised forecast of retail price changes for the commercial sector in Queensland. These escalators are shown in Table 3.7.

SunWater supports the QCA's adoption of the most recent retail price assumptions published by AEMO for the purpose of determining our escalation forecasts and expects the QCA to update these escalators in its Final Report.

Table 3.7: Default electricity escalators (nominal)[22]

	2019/20	2020/21	2021/22	2022/23	2023/24
AEMO 2018 retail electricity price assumptions (ESOO)	(7.40%)	(2.09%)	3.70%	9.04%	(0.45%)

SunWater notes the significant volatility in electricity forecast assumptions between the QCA's decision for Seqwater, which was based on AEMO's 2017 Electricity Forecasting Insights, and the 2018 ESOO. The price uncertainty and the complexity in accurately reporting adjustments to transitioning tariffs was a common topic in consultation with customer representatives and our proposed true-up arrangements identified in Chapter 6 are an attempt by SunWater to address customer concerns in this area.

Adjustment for obsolete tariffs

Where a service contract area includes a connection point that is assigned to a QCA determined 'obsolete' or 'legacy' tariff that is being transitioned,[23] and there is a substantial price increase associated with the transition in that year, SunWater applies a price escalator based on the weighted average of the price movements for all transitioning tariffs and non-transitioning tariffs in the service contract area, weighted by average use for each of the connection points.

The service contract areas with individual electricity escalators applied in 2019/20 are:

- Barker Barambah
- Bowen Broken Rivers
- Bundaberg (distribution)
- Burdekin Haughton (bulk and distribution)
- Eton (bulk and distribution)
- Lower Mary River (distribution)
- Nogoa Mackenzie (Emerald) (distribution)
- Mareeba-Dimbulah (distribution)
- Upper Condamine.

The individual electricity escalators are contained in our regulatory model (Appendix F). We are reviewing these obsolete tariff impacts in further detail and will advise the QCA if this review identifies any material changes compared to the forecasts used in this submission.

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22 See https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/NEM-Electricity-Statement-of-Opportunities.

23 On 31 May 2018, the QCA noted that any customers still on tariffs 20 (large), 21, 22 (small and large), 37, 62, 65 and 66 will be moved to a standard business tariff that best reflects their consumption profile in 2020. Refer to the QCA's Final Determination: Regulated Retail Prices for 2018-19, May 2018.

3.5.6 Insurance

As noted in the previous chapter, insurance costs are influenced by market conditions and were quite volatile in the previous price path period. While SunWater proposes CPI escalation in respect of insurance costs, we also note that changes in the market environment or claims activity could change our costs relative to forecast. Subject to this clarification, our forecasts are consistent with the assumptions for inflation and are outlined in Table 3.8 below.

Table 3.8: Insurance escalation (nominal)

	2019/20	2020/21	2021/22	2022/23	2023/24
Insurance escalation	2.25%	2.50%	2.50%	2.50%	2.50%

3.5.7 Non-direct costs

Non-direct costs were explained in the previous chapter. Similar to contractors, non-direct costs will usually comprise a mixture of cost elements requiring some weighted average of cost elements to be assumed.

To establish escalators for non-direct costs we applied a simple methodology which assumes 50 per cent of non-direct costs relate to labour and are indexed consistent with the labour escalator. The remaining costs are assumed to escalate at CPI. This provides a weighted escalator for non-direct costs consistent with Table 3.9.

Table 3.9: Non-direct costs escalation (nominal)

	2019/20	2020/21	2021/22	2022/23	2023/24
Non-direct costs escalation	2.63%	2.75%	2.75%	2.71%	2.71%

3.6 Efficiency drivers

We noted above that SunWater's forecasts include a one-off reduction in routine non-direct expenditure in 2019/20. The base year reduction is comprised of:

- an 8 per cent reduction in corporate support costs
- a 1 per cent reduction in local area support costs
- a service contract area specific reduction in indirect costs, ranging from 0.92 per cent to 3.08 per cent.

Importantly the removal of these costs from the base year carries through to each year of the next price path period. This is also in the context of increasing cost pressures associated with our business (in the areas of electricity and insurance) as well as forced efficiencies through a declining cost base (through the transfer of operations under LMA).

In addition to these base year targeted savings, SunWater's forecasts incorporate a global 0.2 per cent reduction to all routine costs for each year between 2019/20 and 2023/24. This reduction will be applied to all direct and non-direct routine costs in service contract areas. This saving is cumulative for each year of the period, meaning the 0.2 per cent savings 2023/24 is on top of reductions made for each of the previous years.

We note that these savings may not be as ambitious when benchmarked against savings targets proposed by other water businesses or in other jurisdictions. It is important to note that, unlike metropolitan water businesses with an increasing customer base over which to spread their fixed costs (or associated volume growth), SunWater can only achieve efficiencies via cost reduction or by pursuing new business growth opportunities to deliver value for customers.

4. Non-routine expenditure forecasts

In this chapter we review our performance in the previous period and explain how we forecast non-routine expenditure:

- Section 4.2 compares our actual performance between 2012/13 and 2017/18 to the QCA's recommended allowance.
- Section 4.3 summarises our approach to asset management and planning, including our asset management philosophy and framework and our approach to options assessment.
- Section 4.4 highlights our forecast non-routine expenditure for the next price path period, as well as some of our currently planned non-routine projects.
- Section 4.5 describes our Dam Improvement Program and sets out our forecast efficient costs for the program for the next price path period.

Box 10: Regulatory assessment profile for non-routine costs

SunWater has largely adopted cost forecast methodologies consistent with QCA precedent or common regulatory practice. Customers have told us they want to participate in the QCA's review of variances to forecasts in the previous period, assessment of future non-routine costs and irrigation customers' share of Dam Improvement Program costs. However, they also want simple and transparent outcomes from any review with a focus on efficiency in the review.

Non-routine costs	
Historic expenditure	Historic renewals expenditure is largely consistent with the QCA's forecasts and, in some circumstances, has been scrutinised through the LMA process. Other non-routine costs are mainly flood related.
Renewals forecasts	SunWater consulted with customers on our forecast renewals expenditure and has made some adjustments in respect of concerns raised. We have not forecast any other non-routine expenditure for the price path period.
Dam Improvement Program	SunWater consulted with customer representatives on the forecast costs of the Dam Improvement Program in mid-2018. Cost estimates were revised in October 2018 following our latest portfolio risk assessment.

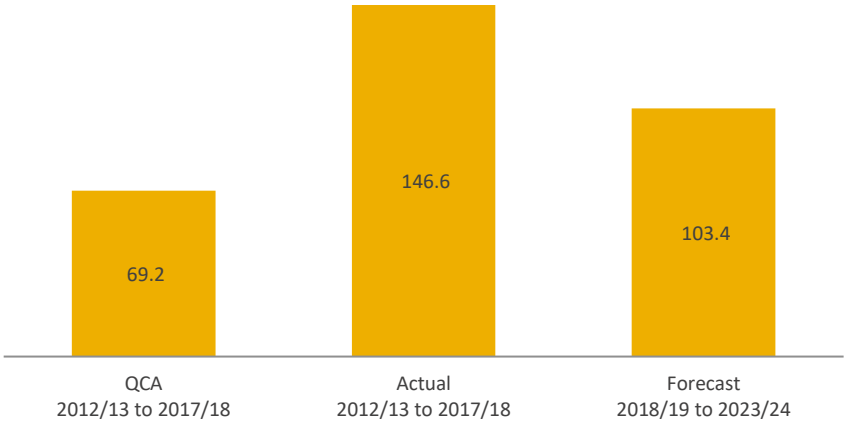
4.1 Summary

As discussed in Chapter 2, non-routine expenditure is comprised of renewals expenditure and non-routine operating and maintenance costs. This expenditure is recovered through annuity contributions.

SunWater generally forecasts renewals expenditure only. Renewals expenditure refers to works intended to maintain the ongoing performance and service capacity of water infrastructure as close as possible to the original design standards. The majority of the assets managed by SunWater are managed to maintain a specific standard of service in perpetuity. This means that while assets when considered at a higher level have indefinite lives, individual components need to be progressively replaced as they reach the end of their service life. It also means that individual assets are refurbished throughout their service lives in order to maintain the service potential of the bulk water supply scheme or distribution system.

Our total proposed non-routine expenditure for the 2018/19 to 2023/24 period is $103 million (excluding the Dam Improvement Program). This is $43 million below our actual non-routine expenditure in the previous period. However, it should be noted that our actual expenditure in the previous period included substantial costs related to flood events, which have not been forecast for the next price path period.

Figure 4.1: Comparison of non-routine expenditure (million, real $2018-19) [1]



1. The QCA's decision applied to the 2012/13 to 2016/17 period only. The 2017/18 QCA recommended non-routine costs are based on modelling undertaken by the QCA as part of the 2012 irrigation price review.

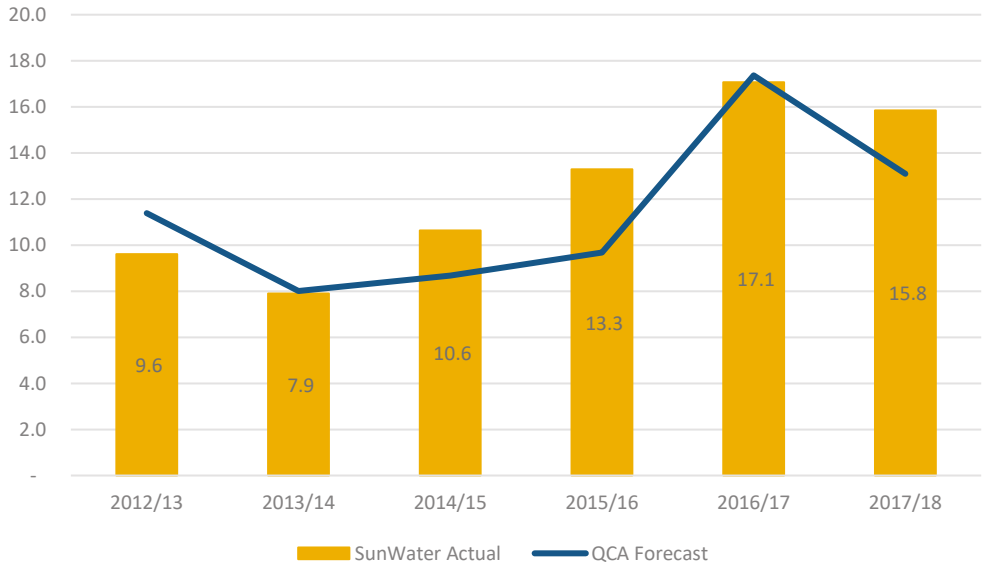
4.2 Previous period performance

This section compares SunWater's actual non-routine expenditure, by category, for the 2012/13 to 2017/18 period with the QCA's allowance.

4.2.1 Renewals expenditure

SunWater's expenditure on renewals projects over the 2012/13 to 2017/18 period was $6 million above the QCA forecast. As explained in Section 2.8.2, the actual work undertaken by SunWater is determined annually based on assessments of condition and risk. This results in a disconnect between the program of works set at the time of the 2012 Irrigation Price Review and the actual program of works. Examples of unplanned renewals projects are set out in Chapter 2 and in the 2019 Network Service Plans (Appendix D).

Figure 4.2: Comparison of renewals expenditure (million, real $2018/19) [1]



1. The QCA's decision applied to the 2012/13 to 2016/17 period only. The 2017/18 QCA recommended renewals expenditure is based on modelling undertaken by the QCA as part of the 2012 irrigation price review.

4.2.2 Non-routine corrective maintenance

As discussed in Section 2.6, SunWater (and the QCA) does not forecast non-routine corrective maintenance expenditure. We spent $68 million on non-routine corrective maintenance during the 2012/13 to 2017/18 period, as illustrated by Figure 2.9 in Chapter 2. Flood damage repair works represented the majority of our expenditure in this category.

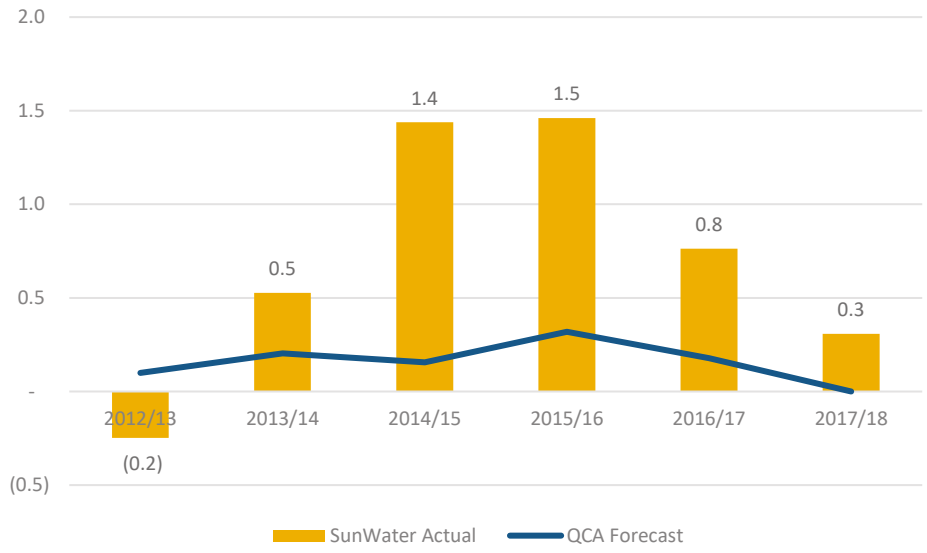
4.2.3 Non-routine operations

SunWater spent more on non-routine operations activities over the 2012/13 to 2017/18 period than the QCA forecast. The main drivers of the over expenditure were largely uncontrollable and related to:

- flood operations
- the Callide Flood Review following the flooding of Callide Creek during Tropical Cyclone Marcia in February 2015
- costs associated with Boondooma Dam following flood events.

We also undertook a research project into Copper Sulphate to control algae in the Mareeba-Dimbulah distribution system and incurred transfer costs related to handing over recreation facilities to councils.

Figure 4.3: Comparison of non-routine operations expenditure (million, real $2018/19) [1,2]



1. The QCA's decision applied to the 2012/13 to 2016/17 period only. The QCA did not model any non-routine operations expenditure for 2017/18.
2. The negative costs in 2012/13 are related to the removal of costs associated with Bedford Weir which were incorrectly attributed to regulated costs in 2011/12.

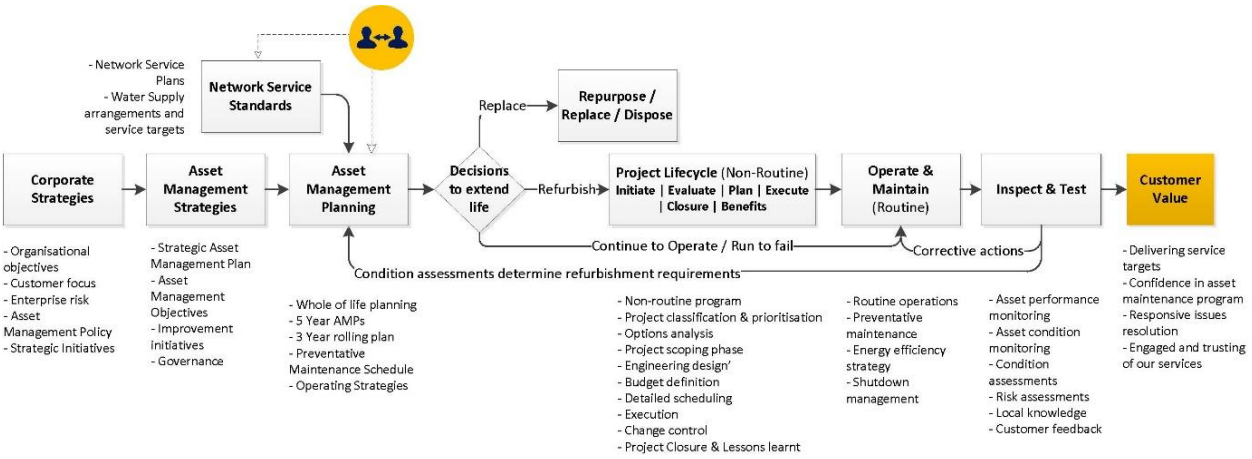
4.3 Our asset management framework and renewals forecasts

As noted in Chapter 2, SunWater's asset management approach is linked to our corporate strategy delivering value to our customers at each step of the asset management life cycle. Our asset management approach considers the 'whole-of-life' implications of acquiring, operating, maintaining and disposing of our assets to meet our customer service targets. SunWater's long-term 'whole-of-life' approach means that service contracts are maintained consistent with specific standards of service in perpetuity, with assets refurbished throughout their service lives as much as is economically feasible and progressively replaced at the end of their service lives to maintain the relevant service standards.

Operating and capital expenditure components are jointly considered as part of the life cycle of our assets, with a continual feedback loop from monitoring and inspection activities back into our asset management planning cycle.

Our asset management life cycle, shown in Figure 4.4 below, should be seen as a value-chain.

Figure 4.4: Asset management life cycle at SunWater



This section provides an overview of our asset management framework. Further detail can be found in our Strategic Asset Management Plan (Appendix G).

4.3.1 Line of sight strategy

Our Strategic Asset Management Plan for 2019–24 contains asset management objectives which are consistent with our asset management policy and corporate strategies and will be updated in line with our asset management strategy and planning cycles.

4.3.2 Asset management planning and delivery

Asset renewals portfolio and program

Our asset planning methodology is based on maintaining service standards at minimal cost in a safe and environmentally responsible manner. To do this we use strategies to extend asset life in a way that minimises the risk of our assets failing in order that they continue to meet these standards at lowest cost. To extend asset life we use reliability centred maintenance techniques to routinely maintain, periodically refurbish or run assets to fail depending on the nature and type of the asset. Typically, at the end of an asset's serviceable life, the asset is replaced to maintain the service standards required.

Our asset strategies apply to groups of similar asset types and are used to build our plans into the 30-year planning horizon. Our asset planning is done at a portfolio level and our five-year plans form a 'rolling' outlook of future years. Project works for the current year are prioritised and initiated based on our understanding of our assets' service lives as well as the latest information on the changing: operations environment; customer requirements; commercial conditions; and latest condition assessments. In this way our plans have built in agility to change and optimise our asset life cycles.

Risk assessment is a key component to the creation of our maintenance strategies. In early 2018, we engaged Jacobs to undertake a review and confirm our existing risk assessments, as well as add risk assessments to assets where there were perceived gaps.

We continually seek to improve our asset management planning and the robustness of our forecast program. One issue that we have identified with the whole-of-life asset maintenance approach is that high replacement costs are automatically forecast for similar assets at the end of their predicted service lives whereas, in practice, lower cost options are considered. To smooth out this cost imbalance our maintenance strategies are reviewed and updated, based on historical data and learnings across similar assets.

In 2015 we reviewed our irrigation asset strategies to examine ways in which we could extend our asset lives or manage assets in perpetuity to continue with ongoing refurbishment instead of asset replacements.

The strategy provided significant reduction in end of life costs, with emphasis placed on SunWater undertaking regular condition monitoring and condition assessments to manage portfolio risk to an acceptable level. An independent review was conducted by Jacobs on these strategies which found them to be prudent and efficient. These strategies are in use today to inform our program and planning.

Jacobs was also commissioned in 2018 to review our latest bulk water asset strategies. These reviewed strategies are being progressively applied to our project planning and Works Management System across our 22 bulk water supply schemes as part of our ongoing improvements to the planned non-routine program. In addition to this, AECOM was commissioned in 2018 to generate project scopes and cost estimates for a number of higher value maintenance projects in order to provide confidence in the capital budget proposed for 2019 to 2021.

Box 11: SunWater's non-routine maintenance strategy

The prudent and efficient maintenance of SunWater's water supply infrastructure is critical to sustaining water delivery service targets for our customers while meeting our commercial objectives now and into the future.

The annual non-routine maintenance program, excluding flood damage rectification and Dam Improvement Program projects, typically consists of projects ranging in value from approximately $5000 to $1 million with a combined value in the order of $40 million.

Non-routine maintenance is prioritised and scheduled in accordance with SunWater's Asset Management Planning Methodology.

We have governance processes embedded within our non-routine maintenance planning and delivery with the key focus area being improved compliance and achieving continuous improvement. Delivery of 'major' (>$250,000) non-routine projects is managed through our Major Project Governance Framework. Delivery of 'minor' (<$250,000) non-routine projects is managed through the SAP Works Management System. Minor projects represent the vast majority of non-routine maintenance projects (typically 95% of the total number of projects).

The most recent restructure has resulted in a number of positive changes to accountabilities. The accountabilities for planning, delivery and budgets have moved to the Operations group, with the majority of delivery being driven regionally. This has presented significant opportunities for streamlining and customer involvement in annual planning.

SunWater has identified further opportunities to improve the planning and delivery of the annual non-routine maintenance portfolio which we intend to roll out during 2018/19, including:

- bedding in the change to local/regional accountability for delivery of portfolio commitments and budgets
- more co-ordinated scheduling and reporting of condition schedules
- implementing a mobility solution for dam inspections
- reducing asset inspection costs through a greater use of regional employees
- establishing a transparent portfolio contingency
- reviewing the level of project governance for low risk maintenance.

Options analysis

In Appendix C we note that, in response to a recommendation from the QCA in 2012, SunWater has been preparing options analyses for renewals projects within the planning period with a value of more than 10 per cent of the service contract present value of works (the 'materiality threshold'). In some instances,

this meant projects with values of around $10,000 were required to have a supporting detailed options analysis.

An options analysis considers all repair and replacement options, including 'do nothing' and 'decommission'. The analysis is usually based on preliminary design engineering estimates and includes a Net Present Value (**NPV**) analysis of the options.

SunWater discussed current arrangements with customers in March and April 2018 in the context of whether they represent the most efficient approach. We also proposed an alternative which still provides customers with reassurance that SunWater's renewals expenditure is prudent and justified. This follows our experience in applying the current methodology which sometimes resulted in unnecessarily higher costs of preparing options analyses which yielded little benefit to customers as the optimal solution was obvious.

Following positive feedback from these discussions, our proposed new process was incorporated in our draft Networks Service Plans and presented for further feedback to Irrigator Advisory Committees in June 2018. Under the new process SunWater will continue to prepare an options analysis and supporting investigation where:

- there is no obvious solution
- the current maintenance strategy is changing
- technology has changed significantly, or
- there is a high risk in the project execution.

However, for less complex (more routine) renewals projects with fewer practical outcomes, SunWater will use customer, operator and engineering consultation and experience to determine the optimum solution.

We believe this approach provides better outcomes for customers as it:

- takes the emphasis off the value of the project and focuses on solutions and risk
- ensures that SunWater invests resources appropriately in those projects that would benefit from an options analysis.

Customers will be given an opportunity to view and comment on projects which fall under the current materiality threshold[24] as part of the Network Service Plans consultation process. This may include further investigation of options where customers request it. However, the changes decouple the need for an options assessment purely on the basis of materiality. Instead, the above criteria will be used.

Project delivery

Execution and delivery of projects is managed through a project governance framework which dictates financial delegation of authorities and approvals. Our existing Project Governance system captures project management and is integrated with the condition and risk matrix of our assets. This system has been successful in driving due diligence and rigour in our project delivery processes.

[24] SunWater does not intend to amend the materiality threshold or definition as a result of our changes to the options analysis procedures.

Box 12: Improving our approach to asset planning and delivery

Opportunities for better integration of asset management planning with our project delivery processes has driven us towards a more regional project management base with program managers communicating more regularly with the asset planning group and the horizon of projects scoped for work extended beyond the existing one-year to three-year outlook.

The Asset Management Plans created for the 2019–2024 price path period will underpin our future planning works and provide us with insight of the water scheme's drivers and our customer needs. The plans are a whole of asset portfolio level outlook and not rigid in their explicit detail, and adjustments will be made to continually refine and optimise the program each year, based on current data and a renewed focus on customer engagement during the planning phase.

Moving forward, we are looking at a renewed portfolio, program and project management framework system to modernise our project management functionality and support improvements in the way we manage projects. These improvements mean we can manage projects based on a project classification, and make use of management and controls which are appropriate to the type of project within the portfolio.

4.3.3 Routine operation and maintenance of assets

The optimal operation and maintenance of our assets is required to meet our customer service standards. Our operations are guided by the resource operations licences and scheme operations manuals regulated by DNRME. Our regionally based operations ensure that we can be responsive to our customer needs and provide the required degree of surveillance and inspections to ensure our assets are maintained.

Our routine preventative maintenance program has been tailored to suit the needs of the differing age base of our assets and we have a process of continual improvement to drive the execution of these programs and feedback enhancements required to the asset planning group.

Monitor and inspect

Our monitoring and inspection activities feed back into the rolling five-year plans to refine, prioritise, enhance and optimise the non-routine program for the year.

We have a comprehensive asset condition and risk matrix built into our internal systems which is updated from periodic condition and risk assessments conducted depending on the recommended asset inspection frequency.

Opportunities for improvement

Opportunities have been identified to align the efforts of our routine condition monitoring activities with our periodic condition assessments for increased efficiency and to improve our asset decision-making processes.

End of asset life and future opportunities

Once assets have reached their end of life, a decision is made by the business in consultation with customers to dispose or replace. The asset may have been simply 'run to failure' or will be replaced to extend the value of the asset within the context of the scheme, depending on:

- the nature of the asset
- redundancies in the system
- the required asset value or intent.

Through our water investment portfolios and evaluation of water trends and opportunities in Queensland, we are constantly looking at ways to add value to our customers now and into the future. Opportunities,

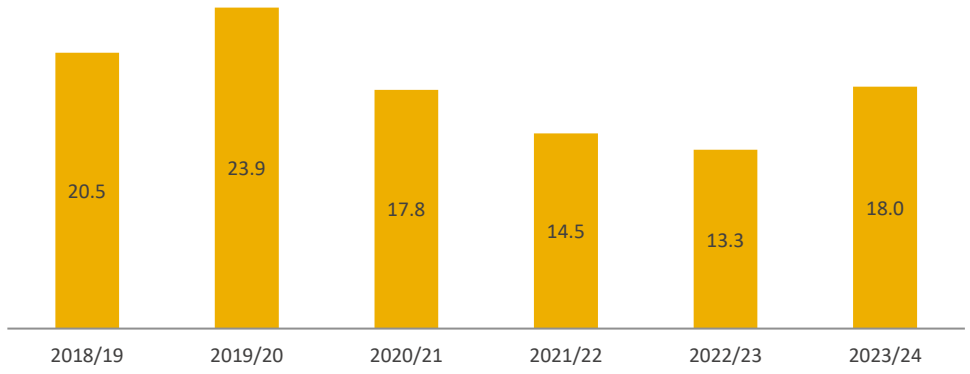
such as renewable energy sources, partnerships with customers, redesigning for energy efficiency and considering future industry growth opportunities, are all part of how we build a sustainable water industry to support the growth of rural Queensland.

4.4 Forecast non-routine expenditure

Based on SunWater's 2018/19 budget, a total of $109 million will be required over the 2018/19 to 2023/24 period for non-routine expenditure. The majority of this is renewals expenditure (see Figure 4.5), plus $0.97 million forecast for non-routine operations and maintenance expenditure in 2018/19.

Consistent with the referral notice, this forecast excludes any expenditure related to recreation facilities from 2020/21. It also excludes costs associated with the Dam Improvement Program as they are separately treated for revenue and pricing purposes (see Section 4.5).

Figure 4.5: Forecast renewals expenditure, 2018/19 to 2023/24 (million, $nominal)[25]

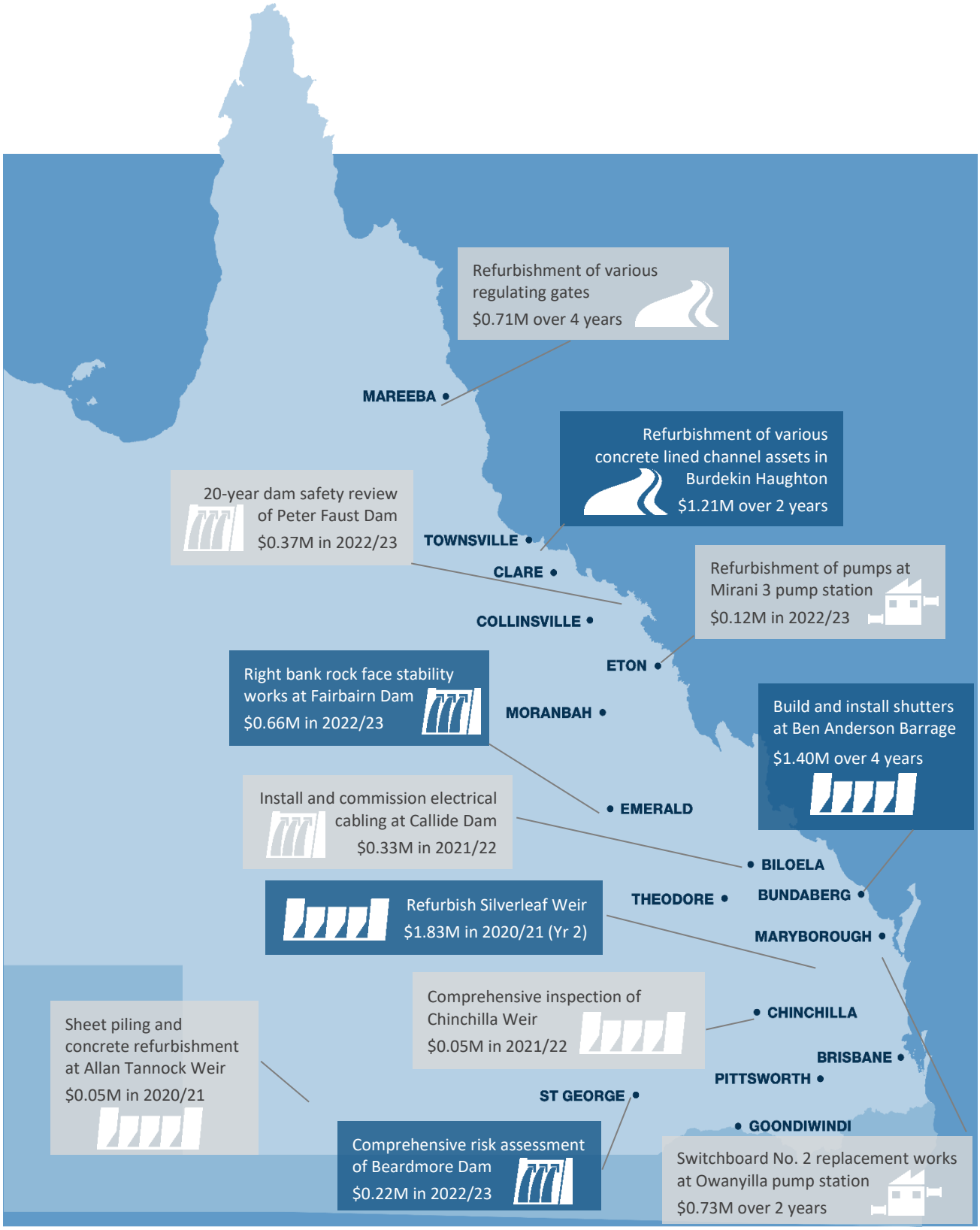


Highlights of our currently planned future non-routine projects are shown in Figure 4.6, with a complete project listing available at Appendix H.

As outlined in Section 4.3.2, SunWater is continually reviewing and improving our asset planning and the robustness of our forecast non-routine program. By the time the new price path commences in 2020, the forecasts in this submission will be over two years old and are likely to differ materially from the planned program at that time. SunWater believes it is in the interests of customers for irrigation prices to reflect the best program available. SunWater proposes to work with the QCA to agree the most appropriate timeframe to provide an updated non-routine program and any associated changes in routine maintenance expenditure, for example where it is more efficient to deliver repetitive, low dollar value tasks through the routine maintenance program.

[25] Figures do not include Dam Improvement Program costs. Longer-term forecasts are provided in the regulatory model for each service contract area.

Figure 4.6: Non-routine project highlights, 2020/21 to 2023/24 ($nominal)



4.5 Dam Improvement Program

SunWater's Dam Improvement Program is a critical and complex program that seeks to:

- ensure the long-term viability of various dams across SunWater's portfolio in line with current guidelines and design standards
- respond to various factors for each dam, including:
  - general wear and tear over time since construction
  - a greater understanding of existing ground conditions and dam performance following significant flood events
  - new information arising following routine surveillance activities, annual, five-yearly and 20-yearly inspections, comprehensive risk assessments and dam safety reviews
  - improved understanding and revised Bureau of Meteorology rainfall projections to ensure our dams can cope with extreme weather conditions
  - current population and revised assessment of downstream impacts
- respond to industry and state guidelines, including a regulatory obligation to progressively complete dam safety upgrades in accordance with the Queensland Government's Guidelines on Acceptable Flood Capacity for Water Dams.

The program impacts a number of dams across our service contract areas over time and includes investments such as spillway repairs, wall strengthening and drainage improvements.

Table 4.1 sets out SunWater's estimates of Dam Improvement Program expenditure for the next price path period, from 1 July 2020 to 30 June 2024. These estimates are based on our latest portfolio risk assessment and the current list of projects in the program for each scheme as at October 2018. The portfolio risk assessment ranks the Dam Improvement Program on a risk-based approach using the 'as low as reasonably practicable' principle in accordance with the guidelines.[26] Dams with higher risks are prioritised first.

Due to the timing of this assessment, SunWater did not have an opportunity to consult with customers on the revised expenditure forecasts, including new projects in the Barker Barambah, Bowen Broken Rivers and Bundaberg bulk water supply schemes, before we lodged this submission. We intend to consult with customers further on these matters during the review process.

Table 4.1: Current Dam Improvement Program expenditure forecasts ($'000, nominal)

Service contract	2020/21	2021/22	2022/23	2023/24
Barker Barambah	210	806	2202	6772
Bowen Broken Rivers	-	215	551	1354
Bundaberg (bulk)[1]	1572	2793	55	-
Burdekin Haughton (bulk)	31,642	143,423	155,216	14,028
Macintyre Brook	1467	3416	826	-
Nogoa Mackenzie (bulk)	9600	-	-	-
Pioneer River	7724	806	-	-
Upper Burnett	210	806	2202	5643
Upper Condamine	22,407	1611	-	-

1. Excludes Paradise Dam as this project is outside of the scope of the referral notice and therefore will not impact prices.

[26] The 'as low as reasonably practical' principle states that risks, lower than the limit of tolerability, are tolerable only if risk reduction is impracticable or if its cost is grossly disproportionate (depending on the level of risk) to the improvement gained.

SunWater notes that, with a number of projects still in the preliminary business case phase, the accuracy of the project budget will mature with time. We have therefore used standard industry cost estimating guidelines to develop our forecast efficient Dam Improvement Program costs for this submission. These guidelines take into account the delivery phase and risk profile of the project, as shown in Table 4.2.

Table 4.2: Standard industry cost estimating guidelines

Estimate	Phase/estimate basis	Project definition level	Expected accuracy range
Class 5	Conceptual planning – Strategic Business Case	0 – 2%	Low: -20% to -50% High: +30% to +100%
Class 4	Options assessment – Preliminary Business Case	1 – 15% (concept engineering)	Low: -15% to -30% High: +20% to +50%
Class 3	Project Funding Authorisation – Detailed Business Case	10 – 40% (preliminary engineering)	Low: -10% to -20% High: +10% to +30%
Class 2	Execution Phase – Material & construction quotes	30 – 100% (varies pending delivery model)	Low: -5% to -15% High: +5% to +20%
Class 1	Execution Phase – Major contract award		Low: -3% to -10% High: +3% to +15%

For projects at the preliminary business case stage, we have assumed a conservative estimate of 50 per cent of current expenditure forecasts. The need for these projects is underpinned by our portfolio risk assessment and as a consequence it would not be prudent or efficient to assume zero cost for these projects. Similarly, assuming the full cost estimate at a preliminary stage increases the risk of inaccurate forecasts. For the Burdekin Haughton and Nogoa Mackenzie schemes, we have applied 100 per cent of the current expenditure forecasts, as this program of work has been sufficiently developed with a P90 cost estimate[27] and, in the case of Fairbairn Dam, works are currently in the construction phase.

The following table sets out the forecast efficient costs for the Dam Improvement Program from 1 July 2020 to 30 June 2024, after applying the cost estimating guidelines approach discussed above.[28]

Table 4.3: Dam Improvement Program expenditure forecasts for irrigation pricing purposes ($'000, nominal)

	2020/21	2021/22	2022/23	2023/24
Barker Barambah	105	403	1101	3386
Bowen Broken Rivers	-	107	275	677
Bundaberg (bulk)	786	1397	28	-
Burdekin Haughton (bulk)	31,642	143,423	155,216	14,028
Macintyre Brook	734	1708	413	-
Nogoa Mackenzie (bulk)	9600	-	-	-
Pioneer River	3862	403	-	-
Upper Burnett	105	403	1101	2822
Upper Condamine	11,203	806	-	-

[27] Note, SunWater intends to review the scope of the Burdekin Haughton dam improvement project to take into account revised hydrology assessments due to be finalised by late 2018.

[28] Under the Minister's referral notice, the QCA is required to make an assessment of an appropriate allowance for capital expenditure expected to be incurred from 1 July 2020 onwards.

In addition to the immaturity of current cost estimates for projects not yet at the detailed business case stage, Dam Improvement Program costs and timing are also heavily impacted by potential latent conditions associated with unforeseen risks, such as ground conditions, and by weather; particularly managing the construction risks associated with the probability of dams overtopping, especially during the wet season. This is a risk that SunWater is currently monitoring closely at Fairbairn Dam. SunWater will provide updates on the progress of this project during the review.

5. Recovering the costs of providing services to customers

In this chapter we explain the various components that make up our lower bound cost building blocks and how these components are derived. This includes:

- an explanation of the annuity allowance calculation
- details of the inputs to the annuity including opening annuity balances, the annuity period, the discount rate and other adjustments
- an explanation of other adjustments required to derive the annual revenue requirement used for irrigation pricing.

Chapter 6 then provides details on how the revenue requirement for each service contract area translates to fixed and volumetric bulk and distribution prices for irrigation customers.

Our regulatory model includes the inputs and calculations we have used to derive our revenue requirements for irrigation customers at an aggregate level, as well as for each service contract area. We would like to work with the QCA and customers to make this model, or an alternative model, available at the time of the QCA's decision so that revenue requirements supporting this decision can be simply and easily traced back to key inputs and calculations.

In this chapter we also set out our preferred methodology for Dam Improvement Program costs.

Box 13: Regulatory assessment profile for revenue calculation

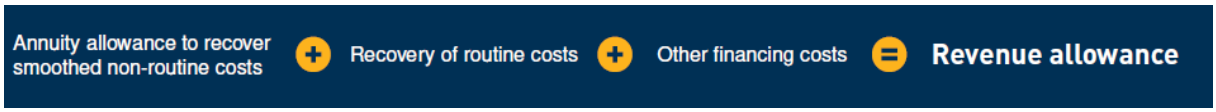
SunWater has adopted methodologies consistent with current regulatory approaches, with the proposed approach to a change in annuity length and methodology for Dam Improvement Program costs to be discussed with customers.

Revenue allowance	
Methodology	SunWater has adopted a building blocks methodology consistent with the QCA's approach in the last price path period.
Opening annuity balance	Annuity adjustments reflect changes in expenditure during the period and are consistent with the methodology adopted by the QCA in 2012.
Annuity length	SunWater has adopted a 30-year annuity period length reflecting the long asset life cycles and consistent with generally accepted regulatory practice. Customer response was generally accepting of the need to change.
Weighted Average Cost of Capital	SunWater's WACC parameters adopt the assumptions from recent QCA decisions, updated for latest market outcomes.
Working capital	SunWater has not proposed a working capital allowance.
Methodology for Dam Improvement Program costs	SunWater has adopted a RAB approach for Dam Improvement Program costs, with assumptions that reflect regulatory precedent consistent with SunWater's business.

5.1 Summary

In the previous period, revenue requirements were determined with respect to the below formula.

Figure 5.1: Calculation of revenue allowance

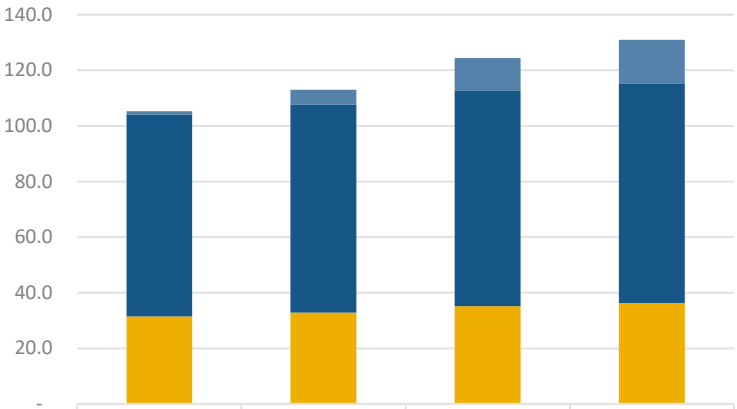


Going forward, the revenue allowance may also include the recovery of Dam Improvement Program expenditure (in accordance with the Minister's referral notice). We have included this expenditure in our future revenue requirements to assist with stakeholder consultation on this matter.

SunWater will require approximately $474 million to recover the lower bound costs of providing our services to service contract areas with irrigation customers over the 2020/21 to 2023/24 period (see Figure 5.2). This is made up of:

- $136 million to finance non-routine expenditure
- $34 million for future Dam Improvement Program investments (return on assets only)
- $304 million to recover routine expenditure over the four years.

Figure 5.2: Lower bound cost building blocks (million, $nominal)[1]



	2020/21	2021/22	2022/23	2023/24
Working capital	-	-	-	-
DIP capital return	1.17	5.39	11.73	15.65
Recovery of routine costs	72.75	74.73	77.56	78.97
Non-routine annuity	31.42	32.87	35.17	36.35

1. Revenue offsets and distribution loss transfers have been excluded from this table. Refer to Section 5.8 for further details.

5.2 Routine costs

Routine costs included in the lower bound cost building blocks are established in accordance with the methodology set out in Chapter 3.

5.3 Annuity allowance for non-routine costs

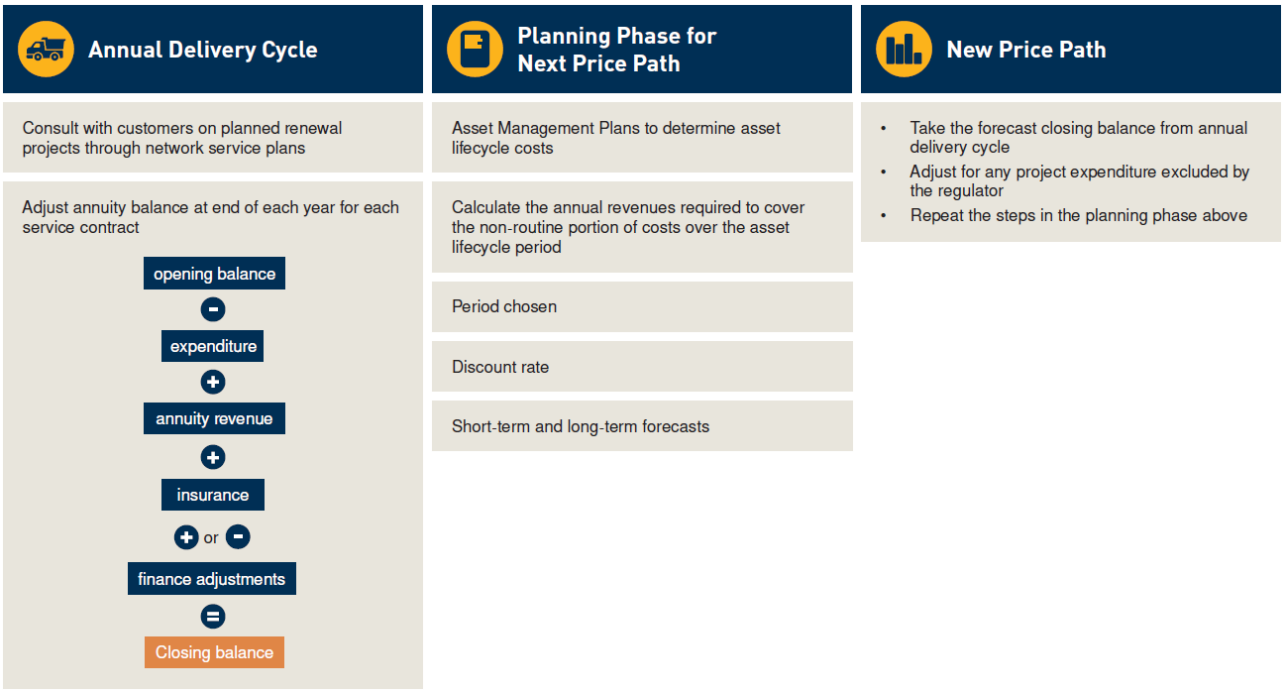
Annuities are managed by SunWater on behalf of each service contract. They allow for customer charges to reflect a constant amount necessary to recoup the costs of refurbishment/rehabilitation of the assets over a pre-determined period of time. A renewals annuity is one of the two main acceptable approaches for recovering capital expenditure for water businesses on the basis that infrastructure of water utilities is to be continuously renewed.

The following key assumptions underpin our annuity calculations:

- We have established a renewals annuity consistent with previous decisions.
- We have applied a 30-year annuity term, representing an increase from the 20-year term used in the 2012 decision.

Figure 5.3 illustrates how non-routine expenditure becomes part of the annuity and how the annuity balance is calculated each year.

Figure 5.3: How does non-routine expenditure become part of the annuity?



5.3.1 Issues with renewals annuity and alternative options

In principle, and if applied appropriately, the renewals annuity will achieve the same outcomes as the alternative approach — using a Regulatory Asset Base (**RAB**) to calculate future revenues. However, regulators in other jurisdictions have found that the renewals annuity term needs to capture a full asset cost cycle for a business. As many water assets are long lived, confidence with the accuracy of forecasts necessarily decreases as the annuity term increases.

Given the difficulties in accurately forecasting expenditure to achieve an appropriate renewals annuity and increased intergenerational risks inherent in current users paying for services that deliver benefits for future users, most regulators have moved away from the renewals annuity approach to calculate revenues and instead have transitioned to a RAB approach. SunWater believes that the RAB option should remain open for future reviews, if the transition can be managed in a way that preserves the cashflows that SunWater requires to maintain our financial viability and service delivery.

5.3.2 Indexed annuity and adoption of a real discount rate

SunWater's revenue calculations include the following assumptions which are consistent with the QCA's decision for the previous price path period:

- Calculating the renewals annuity in real terms using a real discount rate.
- Indexing the renewals annuity using an assumed inflation rate.

- When calculating the annuity:
  - using cost escalators of 2.50 per cent for all categories for the price path period, except labour. The cost escalators applying to labour are 3.00 per cent for 2019/20 to 2022/23 and 2.50 per cent for 2023/24.
  - using an inflation rate of 2.50 per cent for cost escalation outside the price path period.

5.3.3 Opening balances

The calculation of the renewals annuity begins with an opening balance of the Asset Restoration Reserve (also referred to as the 'annuity balance'). The forecast opening balances for all service contract areas for the next price path period are presented in Figure 5.4 below, with opening balances by service contract area available in the regulatory model and the Addendum to the 2019 Network Service Plans in Appendix D.[29]

SunWater will provide 2018/19 actual expenditure to the QCA during the review process so they can update the 2020/21 opening balances with the latest available information.

5.3.4 Adjustments from the previous period

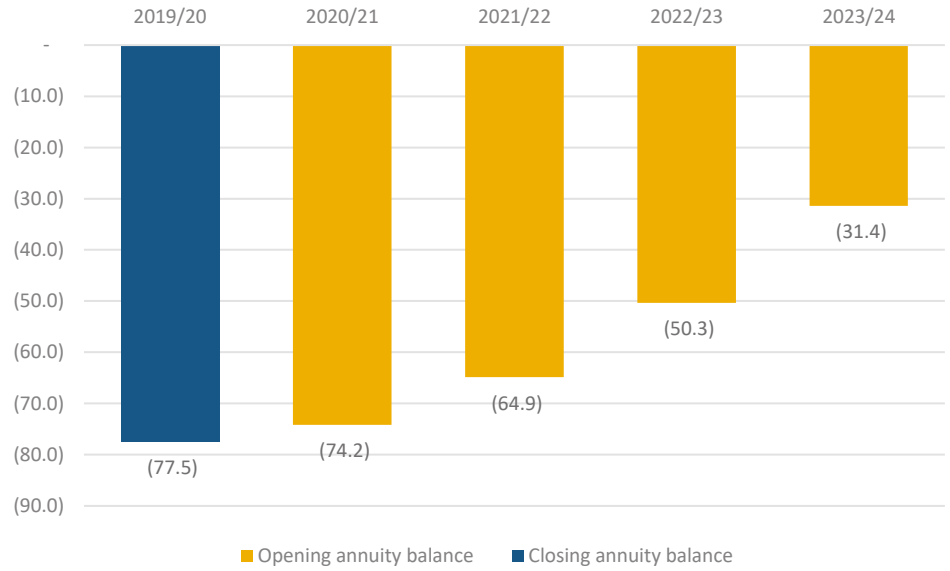
The 2020/21 opening balances are not the same as the 2019/20 closing balances. This is because SunWater has made adjustments to the opening balances in 2020/21:

- to recognise SunWater's actual full year 2012 annuity funded spend in the roll-forward of annuity balances to 2020/21
- to ensure consistency between annuity income and the underlying data from the 2006–11 price path period
- to ensure that the impact of flood damage expenses during the previous price path period is recognised in the opening balance
- to correct a reporting error in relation to project management costs for the Intersafe project. This project was undertaken in previous price path periods to reduce safety risks to staff and the general public.
- for other necessary adjustments for financing/interest costs.

These adjustments have a positive net impact of $3.3 million across all service contract areas (refer to Figure 5.4). Further detail on these adjustments, by service contract area, can be found in the Addendums to the 2019 Network Service Plans (Appendix D).

[29] The opening balances in this submission and the Addendums differ to the 2019 Network Service Plans due to updates for 2017/18 actuals.

Figure 5.4: Forecast aggregate closing annuity balance for 2019/20 and opening annuity balances for the next price path period (million, $nominal)



SunWater has a number of insurance claims pending for flood events that occurred in 2010/11 (for the Boondooma Dam spillway damage) and 2012/13. As these insurance claims are not yet resolved, we have not been able to include an adjustment for insurance proceeds in our modelling. Flood damage costs have, however, been included in our past actual non-routine expenditure. SunWater will inform the QCA of the outcome of our insurance claims (if known) during the review process.

5.4 Annuity period length

SunWater has a view of future replacement based on the existing age of the asset and the value of its replacement. Asset age profiles provide a view of the expected profile of asset renewal over a long period. However, they are unlikely to be a proper representation of actual capital expenditure in any given year because:

- Renewal is based on the condition of an asset not its age. Some assets may need to be replaced earlier than expected while other assets will maintain their condition well beyond their expected age.
- For large assets, it is unlikely that the renewal will occur all at the one time or in the one year. For example, it is unlikely that 10 kilometres of the same channel/pipeline would be refurbished in any one year. Rather, the condition of the asset itself will result in small sections of the asset being refurbished over a number of years, with larger sections being refurbished as the condition of the asset deteriorates.

Renewal forecasts beyond a certain timeframe (five years) are therefore likely to contain a degree of inherent uncertainty and/or forecasting error.

There may be arguments to suggest that such costs should be excluded from any NPV analysis of future costs in the absence of a more reliable forecast. However, this is likely to underestimate the present value of future costs — in some circumstances significantly — and has the potential to create price shocks if not managed prudently.

In its 2012 decision, the QCA concluded that it would normally recommend that a 30-year planning period be adopted. However, there were a number factors with their analysis of SunWater that favoured a shorter 20-year planning period:

- At the time of the last decision, the QCA felt that SunWater did not apply high-level options analysis to forecast renewals expenditure in the early out-years, let alone in the period beyond 20 years. This exacerbates the uncertainty of taking account of expenditures beyond 20 years.

- The QCA felt the issue was further exacerbated because, for many schemes, there was substantial expenditure planned for that period, such that the post Year 20 expenditures (which are highly uncertain) make a material difference to the proposed annuities.

The QCA was therefore concerned that adopting a 30-year planning period may result in substantial increases in renewals annuity payments that are based on highly uncertain project costs and scope. The appropriate response to such uncertainty is not to reduce the planning period but to improve the reliability of the projects' costs and scope — and the QCA made recommendations in this regard. In fact, the QCA felt a planning period shorter than 20 years could be rationalised but was concerned that the volatility of renewals expenditure is such that any shorter period could lead to too much volatility from one pricing period to the next.

In recommending a 20-year period, the QCA suggested that the length of the planning period be revisited in subsequent price reviews (or as a result of a price trigger) should problems of intergenerational equity arise as a result of significant capital expenditure proposals (such as those relating to metering or dam spillway expenditures).

SunWater revisited the idea of moving to a 30-year annuity after the Bundaberg LME Board raised concerns regarding intergenerational inequity associated with the shorter annuity and recommended moving to the 30-year annuity. A comparison of the annuity lengths for other rural water businesses demonstrates that 50-year or even 100-year annuities are not unusual given the long-life assets owned by these businesses.[30]

We have also made several improvements to our approach to forecasting non-routine expenditure since the 2012 review, which better manage outer-year expenditure profiles and ensure the lowest whole-of-life cost. These changes began with our distribution systems, as part of the LMA process (see Box 14), with a focus on addressing the QCA's previous concerns about substantial expenditure planned post Year 20 and to support the adoption of a 30-year annuity period in the next price path period.

As noted in Section 4.3.2, we have also been working on refining our longer-term forecasts for bulk water, as well as further refinement of remaining distribution assets. In developing our forecasts, we have been working closely with external consultants to ensure longer-term forecasts reflect our whole-of-life refurbishment and replacement strategy. We are internally reviewing changes made in a number of service contract areas with a view to providing updated long-term forecasts well in advance of the QCA's draft decision. These refinements have improved, and will continue to improve, the robustness of our 30-year forecasts compared to 2012.

SunWater consulted with our customer representatives on the pros and cons of extending the annuity to 30 years, where necessary modelling the impact on the annuity contribution of adopting a longer period. The majority of customer representatives were supportive of a 30-year annuity, although there remain a minority that would prefer that SunWater retains a 20-year annuity. The Proserpine Irrigator Advisory Committee and the Mareeba-Dimbulah Irrigation Area Council formally endorsed moving to a 30-year annuity.

In light of this customer consultation and our improved approach to forecasting non-routine expenditure, SunWater proposes that the annuity be extended to 30 years, noting that the impact on the annuity contribution varies by service contract.

[30] See, for example, Coleambally Irrigation Co-operative Limited (CICL), 2009, CCIL, Coleambally, 16 July 2018, <http://new.colyirr.com.au/Information/NetworkServicePlan.aspx> and Murray Irrigation Limited, 2018, Murray Irrigation Limited, Deniliquin, 16 July 2018, <http://www.murrayirrigation.com.au/media/1758/Network%20Service%20Plan.pdf>

Box 14: Improvements to non-routine forecasts since the 2012 review

At the time of the 2012 review, SunWater's asset refurbishment and replacement program was based on defined asset lives, and condition and risk profiles. The generation of a 30-year capital program using this data could create short periods of high asset replacement costs and unnecessarily bring into the planning period major replacement items where, in practice, lower cost strategies would be considered.

In order to better manage outer-year expenditure profiles and ensure the lowest whole-of-life cost, SunWater developed an alternative asset strategy for our distribution systems, in consultation with Irrigator Advisory Committees and Interim LME Boards. The strategy considers the changes in asset risk through longer service lives by placing greater emphasis on condition assessment rigor and individual asset risk review.

For example, a concrete lined channel was previously forecast to be replaced at its full replacement cost at a standard asset life of 80 years. Under the new strategy, concrete lined channels are subject to ongoing refurbishment over time and all concrete panels are replaced over a 60-year period by targeting the worst bays (condition assessed) on a five-year budget cycles. Works are scheduled to start 40 years after initial construction so the asset will be refurbished within 100 years (the revised asset life).

Most customer representatives were positive about the changes and we subsequently updated our Works Management System in 2016 to reflect the new strategy.

Overall, the changes reduced the 30-year provisioning (based on forecasts at that time) by 53 per cent, from around $510 million to $240 million, while ensuring assets remain functional, reliable and meet the agreed service standards.

5.5 Weighted Average Cost of Capital

A necessary step in calculating the renewals annuity is to calculate the present value of the forecast renewals expenditure using an appropriate discount rate. The WACC is also applied annually to the annuity balance:

- as an interest revenue where the annuity balance is positive
- as a financing cost where the annuity balance is negative.

The discount rate chosen often reflects the Weighted Average Cost of Capital (**WACC**) for a benchmark firm with a similar degree of systematic risk as SunWater. Regulators such as the QCA use empirical techniques to determine appropriate parameters for establishing the WACC.

The QCA has been given criteria to guide its decision on the appropriate discount rate. SunWater has adopted parameters for a discount rate that are consistent with the QCA's decision for Seqwater. We have also included an indexed annuity approach for establishing prices.

The Minister's referral notice requires recommended prices which recover prudent and efficient expenditure on the current and future renewal of existing assets over time. This would implicitly include the discount rate applied to any renewals annuity for establishing the recovery of prudent and efficient forward costs. Any discount rate applied would need to take into account:

- the need to balance the legitimate commercial interests of the businesses with the interests of their customers
- the findings of the investigation into Seqwater's urban bulk water prices for the 2018–21 period.

5.5.1 QCA recent decision for Seqwater

In its final decision for Seqwater's urban bulk water prices, the QCA determined a WACC using a cost of equity as determined by the QCA for the equity component, and Seqwater's cost of debt, as estimated by Queensland Treasury Corporation (**QTC**), for the debt component.

In terms of firm specific values, the QCA found that the following parameters were most appropriate for Seqwater:

- A capital structure assumption of 60 per cent gearing, based on Australian regulatory precedent for water businesses, noting that this gearing is higher than comparison firms in the United States and the United Kingdom, as well as the Gladstone Area Water Board.
- A cost of debt based on QTC's advice that declines from 5.55 per cent in 2018/19 to 4.55 per cent in 2027/28.
- A risk-free rate of 2.14 per cent, reflecting a 20-day averaging period to 28 February 2018.
- A benchmark equity premium of 5.36 per cent based on:
  - a market risk premium of 7 per cent
  - debt beta of 0.12
  - asset beta of 0.41
  - equity beta of 0.77
  - gamma of 0.41.

The resultant WACC determined by the QCA for the Seqwater bulk water final determination was 6.33 per cent.

5.5.2 Applicability to SunWater

Rather than incurring costs of employing our own consultant to determine the appropriateness of the QCA's decision on WACC, SunWater has generally adopted the same approach to WACC parameters that the QCA recommended to the Minister for Seqwater, subject to its terms of reference. This approach recognises that, for SunWater, the WACC is not currently applied as a return on capital, merely a discount rate. SunWater notes that the WACC methodology has continued to evolve in the Australian regulatory community. For example, many regulators have recently adopted new approaches to the cost of debt. SunWater looks forward to participating in a future WACC review when the QCA next reviews its methodology.

In making a decision for SunWater, we expect the QCA will take into account the relative risk profile of SunWater versus Seqwater and other comparator businesses. In particular, we note:

- the existing regulatory arrangements with pricing irrigation customers and the under-recovery of costs
- regulatory arrangements including the use of an annuity renewals approach to determining prices
- the increasing annuity balance deficit noting delays in 'resetting' the five-year price path
- the nature of SunWater's customers.

5.5.3 Discount rate assumptions included in the submission

For the purposes of calculating revenues, SunWater has adopted parameters equivalent to those determined by the QCA for Seqwater, with the exception of:

- the risk-free rate, which we have updated to reflect a 20-day average as at 27 August 2018
- the cost of debt, which is 4.67 per cent for each year based on figures provided by the QTC.

The resultant post-tax nominal (vanilla) WACC is shown in Table 5.1.

Table 5.1: SunWater's proposed WACC parameters

Parameter	Value
Capital structure	60%
Cost of debt	4.67%
Cost of equity	7.62%
Post-tax nominal (vanilla) WACC	**5.85%**

5.6 Revenue allowance for Dam Improvement Program

We noted in the previous chapter that allowances associated with Dam Improvement Program expenditure are separately calculated. This is because of the magnitude of the costs, if imposed under an annuity approach, would result in significant increases in revenue allowances for customers.

SunWater has therefore consulted with customer representatives on establishing allowances for Dam Improvement Program expenditure using a RAB-based methodology. A RAB-based methodology seeks to recover expenditure incurred over a future period, as opposed to an annuity-based methodology which seeks to recover all future expenditure through an annuity.

We are proposing that Dam Improvement Program investments attract a return on assets only, as our assets are maintained in perpetuity under the renewals annuity approach. The return on assets, at a total level, is shown in Table 5.2.

Table 5.2: Dam Improvement Program return on assets ($'000, nominal)

	2020/21	2021/22	2022/23	2023/24
Return on assets	1175	5387	11,731	15,648

5.7 Working capital

5.7.1 The QCA's historical approach to determining a working capital allowance

Working capital is a measure of operating liquidity. For regulated utilities, regulators allow revenues based on the economic cost of timing differences in cash flows due to volatility between current assets and current liabilities.

The QCA previously determined an allowance for SunWater to recover the economic cost of maintaining an annual working capital requirement. The QCA accepted the working capital allowance compensates SunWater for the economic costs of maintaining sufficient liquidity to manage our day to day cash flow requirements, including the costs of maintaining inventory. The QCA's consultant, Deloitte, also considered that a working capital allowance is appropriate for SunWater on the basis that SunWater has a relatively small customer base and will subsequently have less regular revenues compared to other entities.[31]

The QCA established its own forecast based on 0.9 per cent of revenues for each scheme, multiplied by the WACC. This approach was preferred to a more complicated approach of establishing working capital requirements based on a 10-year historical analysis. In addition, the QCA recommended that SunWater explore the feasibility of basing future working capital requirements on efficient forecasts of revenue and cash flows for irrigation only.

[31] QCA, p.256

5.7.2 Changes in the QCA methodology

Most recently, the QCA applied a different methodology for Seqwater's bulk water business based on a measurement of accounts receivable plus inventory minus accounts payable:

- accounts receivable = building block costs x days receivable / days in a year = building block costs x 45 / 365
- inventory = operating expenditure x days in inventory / days in a year = operating expenditure x 3 / 365
- accounts payable = operating expenditure x days payable / days in a year = operating expenditure x 30 / 365.

Discussions with the QCA prior to our submission indicated their preference for this revised approach for SunWater rather than the simple benchmarking working capital percentage which currently applies.

5.7.3 Applying the new QCA methodology to SunWater

The QCA's revised methodology creates a number of complications that cannot be easily applied to SunWater's circumstances:

1. The development of a methodology to establish working capital requirements for future irrigation revenues and cash flows is complex. We would need to establish a methodology to forecast a range of additional inputs at an irrigation service and potentially a service contract level.
2. It requires SunWater to make complex adjustments between different debtor arrangements for each service contract area and potentially separate arrangements for bulk water and distribution customers. We bill for Part A and C charges in advance, while Part B and D charges are in arrears.
3. Revenue relates only to the charges that the Minister's referral notice allows us to recover, not the actual lower bound cost-reflective price. It would be inappropriate to apply the methodology to the calculated revenues as these are not the revenues we collect from customers.

5.7.4 Our working capital modelling assumptions

While we agree with the QCA that SunWater should be entitled to some (albeit a small) allowance for working capital to reflect volatility in the timing of different cashflows, adapting the QCA's new methodology to reflect SunWater's specific circumstances would be a complex exercise and one which we have not consulted with customers on. Given our preference for simplicity and transparency, consistent with the Minister's referral notice, we are therefore not proposing a working capital allowance.

5.8 Calculating the Annual Revenue Requirement

Before determining prices for customers, the lower bound cost building blocks need to be adjusted for both revenue offsets and distribution loss transfers. The Annual Revenue Requirement is then allocated between irrigation customers and urban and industrial customers.

SunWater's Annual Revenue Requirement is outlined in Table 5.3.

Table 5.3: Annual Revenue Requirement (million, $nominal)

	2020/21	2021/22	2022/23	2023/24
Total lower bound cost building block[1]	105.34	112.99	124.46	130.97
Revenue offsets	(2.02)	(2.07)	(2.13)	(2.18)
Transfer of distribution losses[2]	(0.25)	(0.25)	(0.25)	(0.26)
Annual Revenue Requirement	**103.07**	**110.66**	**122.08**	**128.53**

1. As per Figure 5.2. Includes future Dam Improvement Program investments (return on assets only).
2. Net distribution losses transferred to non-irrigation service contracts.

5.8.1 Revenue offsets

Revenue offsets are discounted from the cost building block to reflect necessary offsets that are recovered through other charges, notably drainage charges and access charges. Most of these amounts are immaterial in nature, as illustrated in Table 5.4.

Table 5.4: Indicative revenue offsets (million, $nominal)

	2020/21	2021/22	2022/23	2023/24
Access charges	(0.76)	(0.77)	(0.79)	(0.81)
Drainage diversion charges	(0.06)	(0.07)	(0.07)	(0.07)
Drainage levies	(1.11)	(1.14)	(1.17)	(1.20)
Other fees and charges	(0.04)	(0.04)	(0.04)	(0.05)
Rent received	-	-	-	-
Land leases	(0.05)	(0.05)	(0.05)	(0.06)
Termination fees	-	-	-	-
Total	**(2.02)**	**(2.07)**	**(2.13)**	**(2.18)**

5.8.2 Distribution loss transfers

SunWater has been granted allocations for distribution losses, representing the higher volumes of water that need to be stored and released to account for losses of water in the distribution system or the pipeline system.

As distribution customers (and pipeline customers) are the ultimate beneficiaries of losses, the bulk water costs associated with distribution loss water allocations need to be transferred from bulk water customers to distribution customers (or pipeline customers). That is, costs associated with distribution losses are accrued in the bulk water system but should be paid for by the distribution system or pipelines (where appropriate). Across all of SunWater's 57 service contracts, distribution losses net to zero.

6. Pricing arrangements for irrigation customers

In this chapter, we outline the process used for allocating revenues to prices paid by irrigation customers:

- Sections 6.1 and 6.2 explain how this submission fits into the irrigation price review process and the key issues for our customers in relation to setting tariff structures.
- Section 6.3 outlines, at a high level, our proposed approach to allocating revenues to irrigation prices which will deliver a similar outcome to what was achieved in the previous price path period, but through a simpler and more transparent methodology.
- Sections 6.4 through 6.6 summarise how we derived our inputs which allow revenues to be allocated to medium and high priority users and to fixed and volumetric rates.
- Section 6.7 sets out our proposed true-up mechanism to accommodate uncertainty in electricity prices over the next price path period.
- Section 6.8 outlines the QCA's approach to establishing other charges for services we provide.
- Section 6.9 sets out what our customers have told us in relation to the sharing of Dam Improvement Program costs.

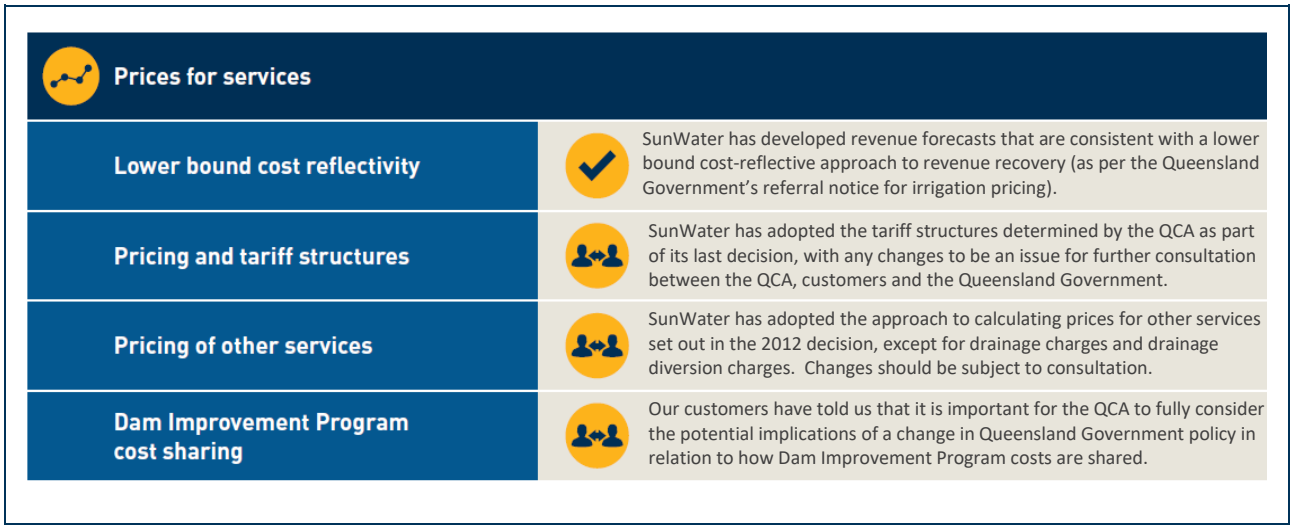
This chapter should be read in conjunction with Appendix I – Pricing arrangements for irrigation customers. This appendix provides additional context and service contract level information relevant to the calculation of irrigation prices in the next price path period.

Our regulatory model, combined with inputs in the appendix, contains information required by the QCA to calculate final irrigation prices for each service contract area. SunWater would like to work with the QCA and customers on this model, or an alternative model, so that final prices can be simply and easily traced back to the QCA's decisions on key inputs and calculations.

Box 15: Regulatory assessment profile for pricing arrangements

We have consulted with customer representatives on our approach to allocating revenues to prices and our assumptions for entitlements. We also discussed our concerns with the 2012 approach to usage assumptions and our intention to propose a historical average approach which does not exclude drought years. Customers are looking forward to engaging with the QCA on pricing matters, including the sharing of Dam Improvement Program costs.

Revenue allocation	
Methodology	Following consultation with customers, SunWater has adopted a simpler and more transparent approach to allocating revenues between fixed and volumetric prices, and high priority and medium priority groups.
HUF and water access entitlement assumptions	SunWater reviewed HUFs in some service contracts. Water access entitlements have been updated using the latest information, with some adjustments made as per the 2012 decision.
Usage assumptions	SunWater is now confident in our 15-year historical water usage data to use it as a basis for a long-term average, suitable for calculating volumetric charges.



6.1 SunWater's approach to pricing in this submission

The structure and setting of irrigation prices is largely a matter for the Queensland Government to determine, on advice from the QCA as part of this irrigation price review. To assist the QCA in its review, our submission details the services we offer to irrigation customers and the associated costs of providing these services.

The QCA assesses this, and other submissions, and makes recommendations on the revenues that should enable SunWater to fully recover efficient lower bound costs consistent with the referral notice. The QCA then calculates draft recommended irrigation prices consistent with the referral notice set by the Queensland Government.

On this basis, the focus of our submission relates to the costs that we expect to incur and the revenues that we require to recover these costs. These issues are largely covered in Chapters 1 to 5 of this submission.

This chapter covers issues of methodology in allocating revenues to prices and the inputs the QCA may need to establish tariff structures. In this submission we argue strongly for simpler and more transparent arrangements for the allocation of the revenue allowance into the volumetric charging component and the fixed charging component. We also provide an explanation of how we derived the inputs that allow the QCA to calculate prices consistent with the referral notice.

6.2 Key issues for our customers

While accepting tariff structures are largely a decision for the QCA, we note that our customers have expressed strong preferences for tariff structure arrangements that are:

- simpler
- more transparent
- efficient.

Under the terms of reference for this review, the QCA has been specifically asked to, where possible, ensure that prices are both simple and transparent. Customer representatives have similarly expressed a view in our consultation with them that they want simpler and more transparent pricing outcomes.

More can be done to improve final price outcomes for customers. SunWater has found it difficult to explain to customers the relationship between the costs we incur, the revenues allowed and the final recommended prices. This is largely due to the fact that there is an inherent complexity in allocating revenues between volumetric and fixed components based on the QCA's subjective assessment of appropriate splits of revenue for each service contract area. More importantly, the level of complexity does not necessarily add to the accuracy of the underlying price signal for customers.

6.3 Proposed revenue allocation methodology

6.3.1 Current process

The method for converting revenues into prices for the previous price path period involved three main steps:

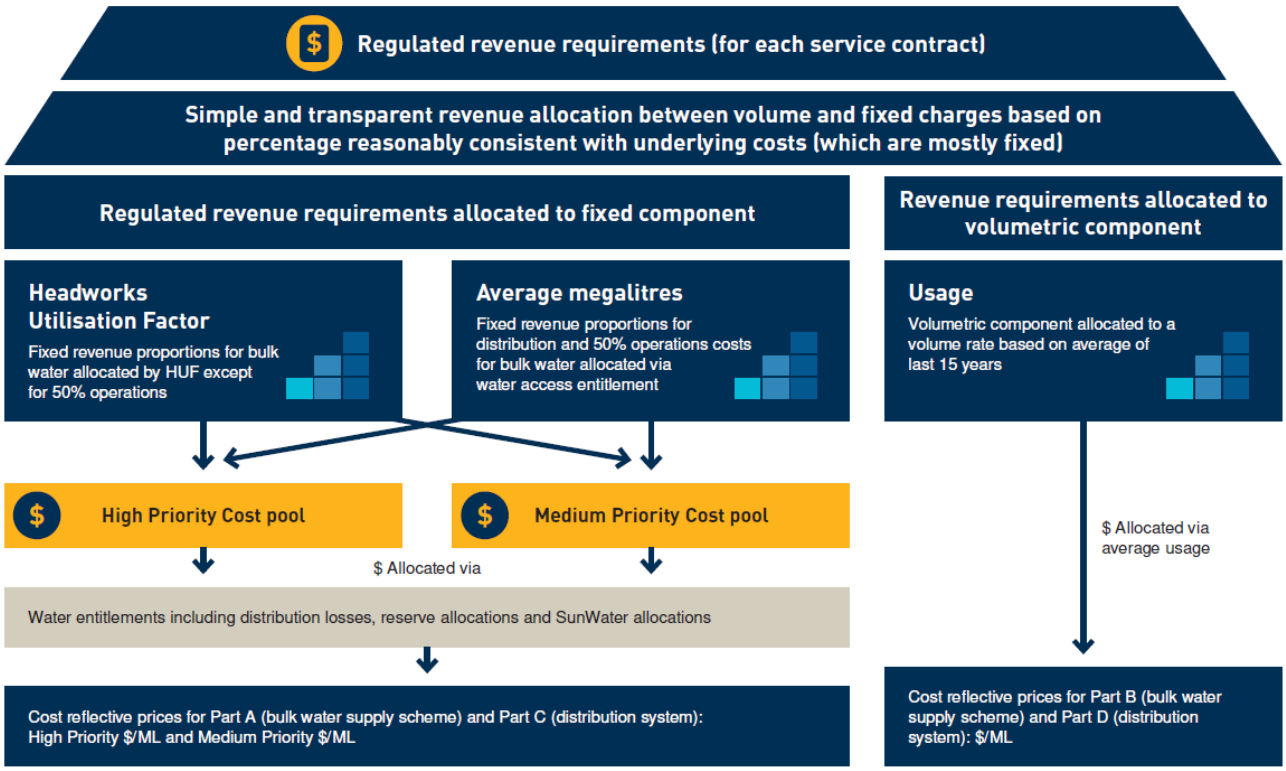
1. The first step involved revenues for each service contract being allocated into two pricing categories. The first category related to the revenues that will be recovered through a fixed charge. The second category related to revenues that will be recovered through a volumetric charge. This was done by breaking each cost category into sub-components and applying different fixed/variable splits to each.
2. The second step related to the revenue allocated to the fixed charge component. For these revenues a further allocation of the fixed allowance to reflect different water priorities (high priority and medium priority) occurred. There was no separate allocation for different water priorities for the volumetric component.
3. The third and final step was to establish the fixed (Part A and C) and volumetric (Part B and D) charging components based on the revenues allocated to each of the pricing categories calculated in steps one and two. Revenues allocated to fixed charges were based on water access entitlements (separated into high and medium priority). Revenues allocated to volumetric charges were allocated based on average usage.

6.3.2 Simplification of current process to improve customer outcomes

Based on our experience throughout the previous price path period, SunWater believes the first step in the 2012 methodology is unnecessarily complicated and confusing and can be simplified without materially changing the outcomes for customers. Importantly, this simplification is permitted under the referral notice.

Our proposed process is highlighted in Figure 6.1 below.

Figure 6.1: How do regulated revenue requirements become costs/ML?



6.4 Methodology and inputs for allocating irrigation revenues between volumetric and fixed revenue recovery

SunWater is proposing a much simpler approach to allocating revenues, using the approximate allocation percentages applied by the QCA in the last review, but ensuring the volumetric component recovers at least the electricity costs associated with the service contract area.

There is no greater need for simplicity and transparency than in the QCA's approach to allocating revenues to prices. Our pricing arrangements for irrigation customers appendix (Appendix I) provides details of the current revenue allocation approach and why we believe it does not meet the principles of simplicity and transparency and the QCA's own efficient pricing principles. This includes the determination of subjective splits between fixed and volumetric charges based on views of 'semi-fixed' and 'semi-variable' components related to our cost base. We understand this includes reversing non-direct cost allocation to fixed components under the cost allocation methodology and reallocating these costs to fixed and non-fixed portions.

We note in Appendix I that this level of complexity is unlikely to provide a more accurate delineation between marginal and residual cost, and the costs of interrogating financial information at a granular level seems to outweigh any benefits of a suggested split of underlying fixed and variable costs using a subjective process. Undertaking a similar exercise for the purpose of this irrigation price review is not in customers' best interests, given the cost and complexity involved.

A simpler and more transparent approach to allocating revenues between usage and fixed charges is warranted for the following reasons:

- By the very nature of the service, the marginal cost for an extra unit of water is very small for our schemes.
- Assigning 100 per cent of residual costs to a fixed or capacity charge may result in inequitable outcomes so some recovery of residual costs through usage is warranted.
- Electricity costs are the most likely to be driven by water use and therefore should be 100 per cent allocated to usage charges — this allows for some ability to manage risks to customers from volatile electricity pricing (as explained in Section 2.4).

6.5 Methodology and inputs for allocating fixed charges between high and medium priority users

We do not propose changes to the existing QCA allocation process between high priority and medium priority users. Under the existing QCA process, revenues that are to be recovered by the fixed charge component need to be allocated between high and medium priority water allocations (including among urban, industrial and irrigation water users). Allocations for irrigation purposes are mainly assigned as medium priority whereas allocations for urban and industrial purposes are predominantly assigned a high priority status.

Essentially, higher priority represents a higher reliability of water supply. This means access to medium priority water is often prohibited before access to higher priority water begins to reduce. On this basis, high priority water allocations have a higher proportion of fixed revenues allocated to them as they derive greater benefit from the infrastructure. This allocation of costs between high and medium priority customers is undertaken through two methodologies:

1. Allocation of revenues based on the Headworks Utilisation Factor (**HUF**).
2. Allocation of revenues based on the water access entitlement.

6.5.1 Headworks Utilisation Factor

For bulk water supply schemes, the revenues to be recovered by the fixed charge component are allocated between different water allocation groups based on the relevant HUF (except for 50 per cent of the fixed

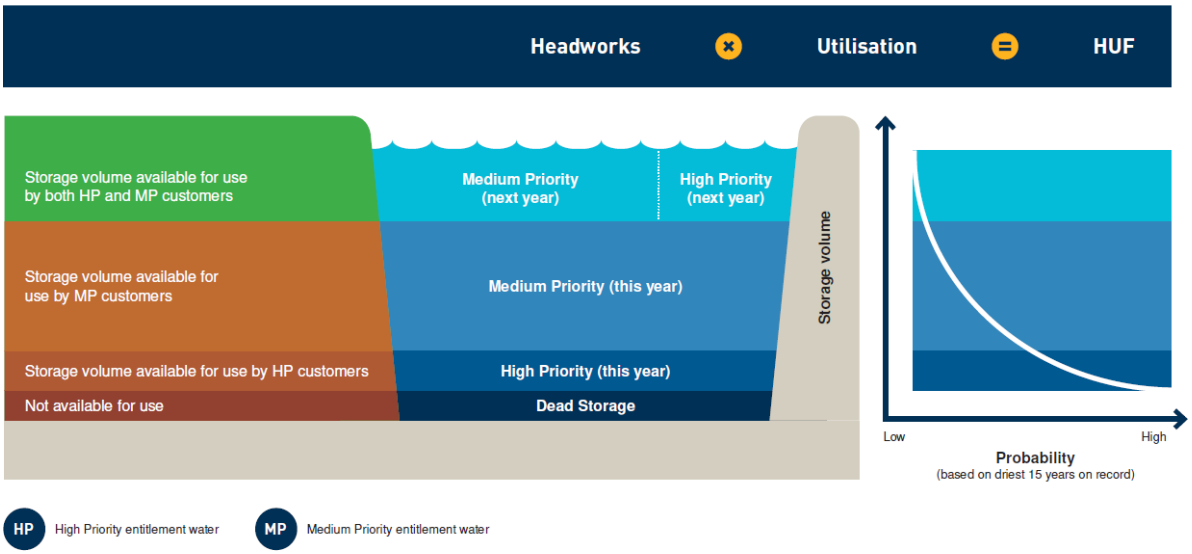
revenue portion of operating costs which are allocated based on water access entitlements, see below). The HUF methodology seeks to identify the percentage of volumetric capacity able to be used by different priority groups, taking into consideration:

- the application of operational requirements, water sharing rules and Critical Water Supply Arrangements
- using hydrological assessment, the probability of utilisation of the scheme storages under conditions of relative supply shortage.

The methodology is outlined in Figure 6.2 and involves the following steps:

1. Headworks — the total storage in a water supply scheme is determined and partitioned as shown. The partitioning depends on the size of the storage and the operational rules (including water sharing rules).
2. Utilisation — the driest 15-year period is found in the hydrological model for the corresponding water plan and probabilities are calculated for the storage being in each of these partitions.
3. Headworks x Utilisation = HUF. The final medium priority HUF is calculated by taking both the headworks partition volumes and their utilisation into account.

Figure 6.2: How is the HUF calculated?



SunWater's HUF methodology is consistent with the approach approved by the QCA in 2012. To assist with the QCA review, HUFs were recently revised and updated for the latest hydrological assessments and water supply arrangements. The revised HUFs, including detailed information on the revisions, are provided in Appendix J.

6.5.2 Water access entitlements

For distribution schemes, the revenue component allocated to fixed charges is allocated on the basis of water access entitlements. This methodology is also used to allocate 50 per cent of the fixed revenue portion of operations costs for bulk water supply schemes.

There are several different water access entitlements which are explained in Figure 6.3 below.

Figure 6.3: Common water allocations and who bears the costs[1]

1. In the 2012 decision, the QCA determined that SunWater should bear the costs of surplus distribution losses. Refer below for a further explanation.

Customer allocations

SunWater has sourced 2016/17 water access entitlement data from our system and made adjustments to the allocation of certain water access entitlements for the purposes of cost allocation for pricing. An explanation of the adjustments we made can be found in our pricing arrangements for irrigation customers appendix (Appendix I). The final water access entitlement data used for modelling purposes is contained in our regulatory model at Appendix F.

Distribution losses

Distribution losses arise from operational factors including pipe leakage, distribution system or balancing storage seepage, evaporation losses from balancing storages and systems losses such as distribution system overflows or releases of water from distribution systems to allow for maintenance. SunWater was granted water allocations for the purpose of 'distribution loss', which account for losses involved in delivering water to customers in the distribution system.

In its 2012 decision, prices were based on what the QCA considered were the prudent and efficient costs associated with distribution loss water allocations; excluding the costs associated with distribution loss water allocations held by SunWater that the QCA believed were more than that needed to meet required actual loss releases. Any costs associated with these surplus distribution loss water allocations were absorbed by SunWater and not paid for by distribution customers. The QCA based its estimates on the maximum actual distribution loss deliveries over the 2002/03 to 2010/11 period (nine years), adjusted for the level of water use in that year.

SunWater has reviewed the approach applied by the QCA in the previous decision and proposes to apply the following principles in the next price path period:

- Where a distribution system is considering a transition to LMA, customers will bear the full distribution loss water allocations. This approach was supported by the Burdekin River Irrigation Area Board during consultation in June 2018.

- Where a distribution system has transitioned to LMA (or transitions to LMA during the irrigation review process), all distribution loss water allocations will become entitlements held by customers and will therefore bear an appropriate share of costs.
- Where a distribution system is not transitioning to LMA, distribution losses will be allocated using the same methodology as the QCA adopted in the 2012 decision (updated for maximum actual distribution loss deliveries that would have been required over the 2002/03 to 2016/17 period). In these cases, SunWater intends to investigate the level of sufficient distribution losses we must have to meet water deliveries and may propose adjustments in future price reviews. We will consult with customers on our proposed approach at that time.

Further details of our distribution loss allocations by distribution system and our proposed approach for the next price path period are in Appendix I.

Free water allocations

In the past some water access entitlement holders in the Barker Barambah and Burdekin Haughton water supply schemes have been exempt from paying bulk water charges to SunWater. These costs were recovered from other customers in the scheme. However, SunWater now receives a Community Service Obligation payment from the Queensland Government for 185,000 ML of bulk water we supply to Lower Burdekin Water free of charge. We have reflected this new arrangement in our regulatory model.

In addition, the legislative requirement[32] to provide 1058 ML of free water allocations to South Burnett Regional Council in the Barker Barambah water supply scheme was repealed under the *Water and Another Regulation Amendment Regulation (No. 1) 2013.*[33] We have therefore assigned the 1058 ML of high priority water access entitlements to urban customers. This means irrigation customers no longer pay for this water.

6.6 Methodology and inputs for calculating the volumetric charge

For the next price path period, SunWater recommends a 15-year average with no removal of 'abnormal' observations to determine the volumetric charges. The use of a long-term average to forecast usage volumes is consistent with the QCA's preferred approach to estimating volumes and the Independent Pricing and Regulatory Tribunal's 2017 decision for WaterNSW which applied either a 20-year moving average, 20-year average or 12-year average of actual historical usage (depending on the region).[34]

The forecast usage volumes for each service contract area, using average usage over 2002/03 to 2016/17, are outlined in Appendix I. The 15-year data underlying these forecast usage volumes is available for each service contract area in the respective Addendum to the 2019 Network Service Plan at Appendix D.

6.7 Arrangements to accommodate uncertainty in electricity prices

There is significant uncertainty in forecasting electricity prices moving forward. Because of this, some customer representatives have suggested to us that the QCA should investigate mechanisms which recognise the expected volatility in costs over the period to ensure customers pay no more or less than what SunWater actually incurs. Given the uncertainty, customers may prefer to trade-off ex-ante incentives to improve efficiency for some protection should electricity prices fall below what was forecast.

SunWater supports this approach and has been developing possible models which would allow for an effective 'true-up' for differences between forecast and actual electricity prices.

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32 Section 109 of the *Water Regulation 2002 (Qld),* which stated that any condition about payment for the storage and supply of water, in the supply contract between SunWater and South Burnett Regional Council under which interim water allocation 102944 held by the Council is managed, does not apply.

33 See https://www.legislation.qld.gov.au/view/html/asmade/sl-2013-0190#sl-2013-0190.

34 See https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/investigation-legislative-requirements-water-bulk-water-review-of-prices-for-waternsws-rural-bulk-water-services-from-1-july-2017-formerly-state-water-corporation/final-report-waternsw-review-of-prices-for-rural-bulk-water-services-from-1-july-2017-june-2017.pdf.

6.7.1 Engagement with customer representatives

To deliver this outcome for customers, SunWater proposed the following arrangements to QFF for an electricity true-up during the next price path period:

- Electricity costs to be fully allocated to the volumetric component of the irrigation charge.
- The QCA recommendation for irrigation prices to include a transparent electricity cost per megalitre in each year of the price path period for each service contract.
- The QCA recommendation to include a requirement for SunWater to report to the QCA actual electricity costs for each service contract area, reconciled to audited annual reports in each financial year. This report would be due no later than 31 December of the year the financial year ends.
- The QCA recommended Part B and D prices for the Minister in 2022/23 include an adjustment factor representing the difference between:
  - the actual electricity costs for 2020/21 in each service contract reconciled to financial year actuals divided by the forecast megalitres used by the QCA in 2020/21 to establish the volumetric charge for each service contract area
  - the forecast electricity costs in 2020/21 divided by the forecast megalitres used by the QCA in 2020/21 to establish the volumetric charge for each service contract area.
- The QCA recommended Part B and D prices for the Minister in 2023/24 include an adjustment factor representing the difference between:
  - the actual electricity costs for 2021/22 in each service contract reconciled to financial year actuals divided by the forecast megalitres used by the QCA in 2021/22 to establish the volumetric charge for each service contract area
  - the forecast electricity costs in 2021/22 divided by the forecast megalitres used by the QCA in 2021/22 to establish the volumetric charge for each service contract area.

In response, QFF expressed a willingness to explore options further with the aim to review options that ensure customers are not worse off/better off purely because of adverse movements in electricity prices compared to what is forecast. However, QFF was keen to ensure the arrangement be tested against different schemes. QFF noted, for instance, in low water use years Eton's cost per megalitre for water delivered is double the cost per megalitre in higher water use years. Under the proposed true-up mechanism, QFF is concerned that applying the true-up to the volume charge would mean water users using most of the allocation will bear a greater proportion of the true-up adjustment compared to those who do not.

There was a recognition that all options will have imperfections. However, there was a genuine interest in exploring mechanisms further using sample schemes to model different options. SunWater will look at exploring this and other options further using case studies from both Eton and Burdekin Haughton.

Further explanation of the proposed approach and an example of its application can be found in Appendix I.

6.8 Other charges and price components

SunWater also charges some scheme-specific costs. These are described below.

6.8.1 Termination fees

Termination fees apply when a distribution system water access entitlement is permanently transferred to another section of the scheme, generally the river (or in some cases to other scheme sub-systems).

Termination fees also apply in the Lower Mary bulk water supply scheme when a water access entitlement is transferred from the Lower Mary River (Tinana Barrage and Teddington Weir) tariff group (a relatively higher cost tariff group) to the Lower Mary River (Mary Barrage) tariff group (a relatively lower cost tariff group).

SunWater's termination fees for a particular scheme are currently calculated as a multiple of 11 times (including GST) the relevant lower bound cost-reflective fixed tariff. SunWater does not propose any changes to the way termination fees are calculated.

6.8.2 Drainage charges and drainage diversion charges

Drainage charges and drainage diversion charges are currently maintained in real terms and are treated as revenue offsets to overall distribution revenues.[35] In the 2012 Irrigation Price Review, the QCA recognised a strong case for a separate drainage fee structure and cost-reflective tariffs in the future and recommended a review of drainage charges be initiated by SunWater for consideration by the QCA prior to 30 June 2014. They also recommended that we review drainage diversion charges at the same time.

Drainage charges

As discussed in Appendix C, SunWater carried out work to separately identify drainage costs to support the determination of cost-reflective drainage tariffs during 2013 and 2014. Processes are now in place which allow drainage costs to be allocated to drainage profit centres within our financial system.

Nevertheless, some issues in correctly separating drainage related direct costs (primarily in relation to operations labour) from other direct costs remain. We therefore do not believe an accurate bottom up build 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. This is particularly the case given the ongoing nature of the LMA review which has already resulted in the transfer of drainage assets in two schemes to LMEs.

SunWater proposes that the QCA consult with customers on whether existing drainage charges should be increased in line with the labour escalation rates determined for the base-step-trend model (with revenues from these charges treated as revenue offsets).

Drainage diversion charges

We have not progressed any work to separate drainage diversion costs from drainage costs.

In our view, the costs of establishing a framework and processes to 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.

SunWater proposes that the QCA consult with customers on whether existing drainage diversion charges should be increased in line with the labour escalation rates determined for the base-step-trend model (with revenues from these charges treated as revenue offsets).

6.8.3 Distribution system water harvesting charges

Distribution system water harvesting charges currently reflect the applicable distribution system volumetric charge (regulated by the QCA) plus the DNRME water harvesting charge per ML of water delivered. A lease fee may also be charged by SunWater (non-regulated). SunWater proposes no change to the current pricing arrangements for distribution system water harvesting charges.

6.8.4 Access charge

A fixed annual access charge per customer currently applies in the Mareeba-Dimbulah water supply scheme. In the 2012 decision, the QCA decided to adjust the access charge each year for inflation.

[35] Drainage costs in the Mareeba-Dimbulah distribution system are incorporated in the Part C fixed tariffs, as opposed to separate charges.

SunWater consulted with the Mareeba-Dimbulah Irrigation Area Council on whether an access charge should apply in the next price path period. The Council supported its continuation. As such, we do not propose any changes to the current pricing arrangements.

During our pre-submission consultation, QFF 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. SunWater believes there may be some merit in this proposal and we are currently investigating this further in conjunction with QFF. We will keep the QCA informed of the outcome of this investigation.

6.9 Dam Improvement Program cost sharing

Under the referral notice, the QCA is required to present two sets of prices: one where all Dam Improvement Program costs remain excluded and one where an appropriate share of the costs incurred from 1 July 2020 is included in the cost base. Our irrigation customer representatives have told us that the QCA needs to fully consider the potential implications on customers when developing an appropriate price approach for apportioning this expenditure.