Queensland Competition Authority

Final report

Rural irrigation price review 2020–24
Part A: Overview

January 2020

Level 27, 145 Ann Street, Brisbane Q 4000
GPO Box 2257, Brisbane Q 4001
Tel (07) 3222 0555
www.qca.org.au

Contents

EXECUTIVE SUMMARY

The Queensland Government (the Government) has directed the Queensland Competition Authority (the QCA) to recommend prices for the supply of water for irrigation services by Sunwater and Seqwater (the water businesses) in specified water supply schemes (WSSs) and distribution systems for the period 1 July 2020 to 30 June 2024.

This report is the final step in our pricing investigation, following on from our consultation on the water businesses' regulatory submissions (late 2018 and early 2019), and our draft report and Sunwater's supplementary submissions (September to November 2019). It sets out our recommendations on irrigation prices and explains how we have arrived at them.

We would like to thank all of the stakeholders who participated in our consultation process, including those that attended our workshops and made submissions. We have taken all submissions into account in recommending final prices to the Government.

Scope of our review

Our review is limited to pricing for irrigation customers in the specified WSSs and distribution systems (excluding water services provided by Burnett Water Pty Ltd in relation to Paradise Dam and Kirar Weir), as the Government has only directed us to look at those prices. The structure and level of prices for non-irrigation customers in the specified WSSs and distribution systems are outside the scope of this review.

Approach

We must undertake our investigation and make recommendations in accordance with the relevant legal framework ('the pricing framework'), including the referral notice for this investigation (the referral) and the QCA Act.

In recommending prices, we have emphasised the pricing principles set out in the referral, as these principles give effect to the Government's water pricing policy. One of the key objectives of that policy is that prices should increase gradually until they reach a cost-reflective level, where they recover the irrigation share of the scheme's operating, maintenance and capital renewal costs but do not recover a return on, or of, the scheme's initial asset base (as at 1 July 2000).

This report refers to this level of cost recovery, which underpins the pricing framework for our investigation, as 'the lower bound cost target'. It is important to note that while lower bound prices are referred to as being 'cost-reflective', they still involve a subsidy from taxpayers, as the water businesses are not earning a return on, or recovering the initial investment in the existing assets.

The Government has previously indicated that in setting this target and establishing a gradual transition path to this level, it has considered a range of matters, including historical/legacy issues, customers' capacity to pay and the benefits/costs arising from a subsidy targeting a particular sector or purpose.

Prices

Our recommended prices and other charges, for the period 2020–24, are detailed in Chapters 7 and 8 of each of the business-specific reports (Part B and Part C). These prices are also outlined in scheme-specific information sheets.

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

safety upgrade capex forecast to be incurred from 1 July 2020 onwards. We have also recommended two sets of prices for the Dawson Valley, Three Moon Creek and St George WSSs—one that maintains the existing tariff groups and one that applies alternative tariff groups. The decision about which sets of prices should apply is a matter for the Government when it determines prices for the price path period.

We have also sought to address scheme-specific pricing issues raised by stakeholders, including:

- Burdekin distribution system (Giru Benefited Groundwater Area) (Part B, section 6.4)—we have recommended prices that transition to a lower bound cost target for Giru Benefited Groundwater Area customers that is the same as for Burdekin Channel tariff group customers, as we do not consider that the costs of supply differ materially between these two tariff groups
- Central Brisbane Rivers WSS (Part C, section 6.3)—while we welcome customers and the water businesses working together to reach agreement on pricing issues, we consider that the proposed cost allocation is inappropriate and inconsistent with the requirements of the referral. However, we have recommended a fixed price that is lower than the prevailing fixed price, based on an improved approach to assigning benefits attributable to different customer groups.

We have developed our recommended prices using a two-step process. We first assessed the prudent and efficient (lower bound) cost base and calculated irrigation prices for each of the existing tariff groups based on this cost base. We then considered the matters required in the referral and the section 26 matters we are required to have regard for under the QCA Act.

Lower bound prices

The lower bound prices in the report reflect our recommended apportionment of fixed and variable costs. We recognise that the allocation of costs between the fixed and volumetric components of prices involves a degree of subjectivity and judgement. Similar to our approach in the previous review, we allocated 20 per cent of direct operations and maintenance costs to the volumetric price. We consider that this approach is appropriate, with a view to balancing complexity, cost and transparency.

For those schemes where electricity costs are correlated with water usage, we have allocated base year electricity costs based on the fixed and variable nature of the underlying electricity tariff components. This reflects the reality that standard business tariffs typically now include capacity charges that water businesses are likely to incur when they operate their pumping stations, irrespective of water usage. For all other schemes, we have treated electricity costs as fixed, as they are not related to water usage.

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

Transition to lower bound prices

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

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

Above lower bound prices

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

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

Below lower bound prices

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

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

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

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

Revenue and cost risks

The provision of irrigation services carry a number of risks that can have an impact on the water businesses or their customers. These risks manifest mainly as revenue risk (the risk that revenues received by the water businesses could differ from prudent and efficient cost allowances) or cost risk (the risk of changes in prudent and efficient costs during the price path period or that the business is not sufficiently efficient to achieve the ex ante assessed prudent and efficient costs).

We have assessed the key revenue and cost risks related to the provision of irrigation services and recommended approaches to addressing those risks within the pricing framework, including:

- dealing with revenue risks by maintaining existing tariff structures that closely align with the underlying cost structures of the water businesses.
- the businesses bearing cost risk for controllable costs but that certain categories of costs be eligible for review (if the risk eventuates and the change in cost is material).

Approach to apportioning dam safety upgrade capex

The primary service provided by most dams that are within the scope of our review is the supply of water to users. In order to provide that service, the water businesses must comply with a range of regulatory obligations, including dam safety requirements. As dam safety upgrades are a compliance cost, we consider that dam safety upgrade capex should be treated as a normal cost of operation in supplying water services to customers, unless there is a clear and justifiable basis for allocating some of the costs to other parties.

Consistent with that approach, we consider that where a dam provides a formal flood mitigation service, it should be recognised in allocating costs. Therefore, we are of the view that where a dam provides a formal flood mitigation service, the costs of dam safety upgrades should be shared with beneficiaries in the broader community. We also consider that the incidental flood moderation benefits of dams should be acknowledged in the allocation of dam safety upgrade capex for irrigation pricing purposes. We have exercised our judgment in determining the reduction to apply to the irrigation water users' allocation and consider that irrigators should only be allocated 80 per cent of their share of dam safety upgrade capex, with the remaining 20 per cent not included in the allowable cost base.

We have accepted the proposals by Sunwater and Seqwater that a regulatory asset base (RAB) approach is appropriate for calculating an appropriate allowance for the prudent and efficient capital expenditure on dam safety upgrades. We note that the impact on prices of including an appropriate dam safety upgrade capex allowance is limited in this price path period, so we have provided indicative longer-term pricing impacts for all dam safety upgrade projects commencing in this price path period (Chapter 4).

Costs

Our recommended prices seek to recover certain prudent and efficient costs. We therefore assessed the operating expenditure, renewals expenditure and dam safety upgrade capex proposed by Sunwater and Seqwater for prudency and efficiency.

We have also determined a nominal post-tax weighted average cost of capital (WACC) of 4.37 per cent for deriving appropriate allowances for renewals expenditure and dam safety upgrade capex.

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

For Seqwater, we have taken our findings in relation to our 2018–21 Seqwater bulk water price review into account in assessing prudent and efficient expenditure. We also note that costs proposed by Seqwater are significantly lower than the level we accepted in our previous review.

Recommendations

Our report was provided to the Government on 31 January 2020. The Government will consider our recommendations (summarised in Table 1) when it sets prices for irrigation customers in the relevant WSSs and distribution systems.

Table 1 Summary of recommendations

Number	*Recommendation*	*Chapter*
1	We recommend that short-term revenue risk be addressed through the use of a two-part tariff structure that closely aligns with the water businesses' cost structure.	3
2	We recommend: • the following events be eligible for the review of associated costs to determine prudency and efficiency: – a material change in electricity prices – a material change in insurance premiums – a material change in off-stream pumping costs – a material change in costs arising from a policy change or regulatory impost. • the use of a within-period price review mechanism where: – there is a material reduction in costs associated with a review event	3

Number	*Recommendation*	*Chapter*
	– there is a material increase in costs associated with a review event that the water businesses can demonstrate they are unable to manage during the price path period.	
3	We recommend that only prudent and efficient dam safety upgrade capex that is required to meet dam safety obligations should be included in the dam safety upgrade cost category.	4
4	We recommend that dam safety upgrade capex: • be treated as a normal cost of operation in supplying water services to users • be allocated to water users unless there is a clear and justifiable basis for allocating some of the costs to other parties.	4
5	We recommend that where a dam provides a formal flood mitigation service: • that service should be recognised in the allocation of costs, including dam safety upgrade costs • the costs associated with that service should not be apportioned to irrigators and should instead be allocated to the beneficiaries of that service (where possible) or the broader community.	4
6	We recommend that while the primary purpose of dam safety upgrades is to reduce the risks of dam failure to tolerable levels (as determined by the relevant dam safety regulators), the incidental flood moderation benefits for communities downstream of non-flood mitigation dams should be acknowledged in the allocation of dam safety upgrade capex for irrigation pricing purposes.	4
7	We recommend that, for dams that do not provide a formal flood mitigation service and are within the scope of this pricing review, dam safety upgrade capex should be: • allocated using a general allocation ratio, with dam-specific allocation ratios only used where there is sufficient evidence of a material difference between the general allocation and the appropriate allocation for a particular dam • the general allocation ratio for dam safety upgrade capex should allocate 80 per cent of the irrigation share of these costs to irrigation water users. The remaining 20 per cent should not be included in the allowable cost base for irrigation pricing purposes.	4
8–15	The executive summary in Part B summarises recommendations that specifically relate to Sunwater.	Chapters in Part B
16–20	The executive summary in Part C summarises recommendations that specifically relate to Seqwater.	Chapters in Part C

1 OVERVIEW OF OUR APPROACH

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

The key objective of this review is to recommend prices that the water businesses will be charging irrigation customers in the specified WSSs and distribution systems for the period 1 July 2020 to 30 June 2024.

In this chapter, we provide an overview of the principles guiding our review and our approach to calculating irrigation prices.

1.1 Background

The water businesses provide water supply services to irrigation customers. They also provide services to a range of other customers, including water retailers, other industrial customers, local government and other holders of water allocations, referred to in this report as water access entitlements (WAEs).

The Department of Natural Resources, Mines and Energy (DNRME) is responsible for long-term water planning and establishes the volume and priority of access (usually medium or high priority) of water that can be released under WAEs. Customers, and in some circumstances the water businesses, own the WAEs.

During the previous review of irrigation prices, we recommended price paths for irrigation customers for:

- 22 WSSs and 8 associated distribution systems operated by Sunwater, over the period 1 July 2012 to 30 June 2017 (the 2012 review)[1]
- 7 WSSs and 2 associated distribution systems operated by Seqwater, over the period 1 July 2013 to 30 June 2017 (the 2013 review)[2].

The Government is responsible for setting prices for irrigation customers in the relevant WSSs and distribution systems and following our reviews, it set price paths that were consistent with our recommendations.

From 2017–18 to 2019–20, the Government extended these price paths by applying an increase of 2.5 per cent each year to all tariff groups. In addition to this increase, tariff groups below cost-reflective levels have increased by $2 per megalitre (in real terms[3]), which will continue until revenues consistent with cost-reflective prices are reached.

1.2 Referral

The referral notice for this investigation (the referral)[4] is set out in several parts:

[1] QCA, *SunWater Irrigation Price Review: 2012–17*, final report, May 2012.
[2] QCA, *Seqwater Irrigation Price Review: 2013–17*, final report, April 2013.
[3] 2012–13 dollars for Sunwater schemes/systems, and 2013–14 dollars for Seqwater schemes/systems.
[4] Appendix A contains a copy of the referral.

- Part A asks us to investigate the pricing practices of the water businesses in relation to bulk water supply for irrigation services.
- Part B sets out the matters regarding which we need to make recommendations. This includes:
  - appropriate prices for monopoly business activities relating to irrigation services provided by the water businesses over the price path period
  - appropriate price review triggers and other mechanisms, to manage the risks associated with material cost changes outside the control of the water businesses
  - two pricing options for dam safety upgrade capital expenditure (capex)
  - alternative tariff groupings for specified WSSs.
- Part C sets out the matters that we are to consider when conducting the investigation.
- Parts D, E and F set out requirements for consultation, timeframes for conducting the investigation, and other matters clarifying the prices to apply for bulk water supply for non-irrigation services, as well as the QCA's powers under the QCA Act.

The key objective of the review is to recommend prices for irrigation customers in the specified WSSs and distribution systems for the period 1 July 2020 to 30 June 2024 (the price path period). The Government will consider our recommendations when it sets those prices.

1.3 Irrigation services

We have been directed to investigate, and provide recommendations regarding, prices for the monopoly business activities of the water businesses to the extent that those activities are undertaken for irrigation services.

An irrigation service is defined in the referral as the supply of water or drainage services for irrigation of crops or pastures for commercial gain.[5] This terminology is different to that used in the previous reviews[6] and means that our recommended prices may potentially apply to a narrower range of irrigation customers compared to our previous reviews.

This change in definition does not have an impact on the level of irrigation prices that we recommend. Our recommended prices for each irrigation tariff group are estimated by reference to the level of the cost-reflective price for medium priority water access entitlements (WAEs) or, where a high priority irrigation tariff group current exists, by reference to the cost-reflective price for high priority WAEs.

1.3.1 Local management arrangements

The Government has been looking at transitioning Sunwater's eight distribution systems to local management arrangements (LMA), where local irrigators would own and operate the systems.[7] We are not required to recommend prices for distribution systems that transferred to LMA before

[5] Consistent with schedule 4 of the Water Act 2000.
[6] In the previous reviews, we were required to more broadly recommend 'irrigation prices to apply' to specified water supply schemes.
[7] DNRME, Local management arrangements for SunWater irrigation channels, 2019, https://dnrme.qld.gov.au/land-water/initiatives/lma-sunwater.

we released our draft report.[8] Consequently, we have not recommended prices for the St George, Theodore and Emerald distribution systems.

We note that customer support was provided for the transition of the Eton distribution system to LMA in early December 2019. Subject to the completion of the transfer process, the Eton distribution system will transfer from Sunwater to the irrigator owned company Eton Irrigation Scheme Pty Ltd (Eton Irrigation) from 31 March 2020. However, consistent with the referral, we have recommended prices for Eton distribution system in this report.

We have also recommended prices for Sunwater's remaining distribution systems, as these are not transitioning to LMA.[9]

1.4 Key regulatory obligations

The water businesses must comply with a range of regulatory obligations when providing water services (see Appendix E).

1.5 Our approach to the investigation and recommending prices

In conducting our investigation, we have had regard to matters in section 26 of the QCA Act and considered the terms of the referral.[10] We have also considered all of the issues raised in stakeholder submissions.

In this part of the report (**Part A**), the guiding principles for this review and our broad approach to recommending prices are discussed:

- Chapter 2 provides an overview of the framework within which we must undertake our investigation and make recommendations regarding prices and other relevant matters. The chapter also includes a detailed discussion of the matters we are required to consider under the referral and section 26 of the QCA Act.
- Chapter 3 provides an outline of the key revenue and cost risks related to the provision of irrigation services and our approaches to addressing those risks within the pricing framework.
- Chapter 4 outlines our approach to apportioning dam safety upgrade capex.

In **Part B** (Sunwater) and **Part C** (Seqwater), our assessment of the costs of each water business and some scheme-specific pricing issues, along with our recommended prices and approach to bill moderation, are provided.

Figure 1 shows more detail on our approach to this investigation.

[8] Section 738N of the *Water Act 2000* states that irrigation services provided by a local irrigation entity is not a monopoly business activity for the purposes of the QCA Act.

[9] The Bundaberg and Lower Mary distribution systems formally withdrew from the LMA process in 2017. The assessment of business case proposals for the Burdekin-Haughton and Mareeba-Dimbulah distribution systems was completed in March 2019, with the conclusion that the most viable option was for Sunwater to continue the operation of these systems.

[10] Section 26(3) states that sections 26(1) and (2) do not limit the matters to which the QCA may have regard in conducting an investigation. This would include the Minister's stated matters for consideration under section 24(1)(b).

Figure 1 The QCA's approach to the review of irrigation prices from 1 July 2020 to 30 June 2024

	Step	Description	Relevant Section
1	Assess key aspects of the pricing framework	Provide an overview of the framework within which we must undertake our investigation. Consider the matters in section 26 of the QCA Act and the referral and determine which ones are relevant to this review.	Part A Chapter 2
2	Examine the risks and operating environment of the businesses, and decide on appropriate regulatory arrangements	Recommend appropriate price review triggers and other mechanisms, to manage the risks associated with material cost changes outside the control of the businesses.	Part A Chapter 3
3	Develop an appropriate approach for apportioning dam safety upgrade capex	Develop an appropriate approach for apportioning dam safety upgrade capital expenditure to irrigation customers.	Part A Chapters 4
4	Establish total costs at the scheme/system level	Assess cost components, such as the appropriate allowance for renewals expenditure, to establish total costs for each scheme/system.	Part B, C Chapters 2–4
5	Establish the forecast volume of water entitlements and usage	Determine volume of entitlements and usage for each tariff group to use as a basis for revenue allocation and calculating prices.	Part B, C Chapter 5
6	Determine the structure of cost-reflective fixed and volumetric prices	Determine the allocation of revenue between fixed and volumetric prices across all tariff groups in the specified schemes/systems.	Part B, C Chapter 6–7
7	Calculate recommend fixed and volumetric prices	Derive fixed prices consistent with the pricing principles in the referral. Consider less than cost-reflective volumetric prices to moderate bill impacts.	Part B, C Chapter 7
8	Calculate miscellaneous charges	Derive drainage charges, drain diversion charges, termination fees and water harvesting charges for relevant schemes/systems.	Part B, C Chapter 8
9	Undertake customer bill analysis	Evaluate the impact of our pricing recommendations on irrigation customers.	Part B, C Chapter 9

1.6 Review process

We have consulted extensively with the water businesses and other stakeholders throughout this investigation. To facilitate this review, we have:

- published a guidance note that outlined our approach to considering the matters in the referral, consulting with stakeholders, and managing information gathering processes
- published a targeted consultation paper on dam safety upgrade capital expenditure
- invited submissions from interested parties on the dam safety consultation paper and on the cost submissions from the water businesses
- met with stakeholders across 15 workshops over January and February 2019 to outline our review process and discuss relevant issues
- published notes on issues arising from this consultation
- published a draft report and a targeted consultation paper on Sunwater's access charge proposal
- invited submissions from interested parties on our draft report, the access charge consultation paper and Sunwater's supplementary submission on an electricity cost pass through mechanism
- met with stakeholders across 15 workshops over September and October 2019 to discuss our draft report, the access charge consultation paper, Sunwater's supplementary submission on an electricity cost pass-through mechanism and other relevant issues
- published notes on issues arising from this consultation
- undertaken some follow-up consultation on issues arising from the draft report workshops
- considered all submissions in preparing this report.

2 PRICING FRAMEWORK

In this chapter, we provide an overview of the framework within which we must undertake our investigation.

Our decisions on the pricing framework reflect what we consider to be an appropriate balancing of the relevant matters.

2.1 Introduction

We must conduct our investigation and recommend prices in accordance with the relevant legal framework ('the pricing framework'). For this investigation, the key components of that framework are the terms of the referral and the relevant provisions of Part 3 of the QCA Act. The Water Act 2000 and the broader water planning and management framework are also relevant to the extent that they have an impact on pricing considerations (e.g., level of entitlements, reliability and service standards).

The pricing framework defines the scope of our investigation and directs us to provide recommendations on particular issues. It also requires that we consider certain matters when undertaking our investigation. Some of these matters are set out in section 26 of the QCA Act and others in the referral. The matters are at times wide and diverse and may require us to make judgements about the relative importance of matters in particular circumstances.

In undertaking our investigation, we have considered all of the matters we are required to, including the matters set out in sections 26(1) and 26(2) of the QCA Act and the stated matters in the referral (consistent with section 24 of the QCA Act). We have determined the appropriate weight to be given to the matters that are required to be taken into account.[11] We have also considered all of the issues raised by stakeholders in submissions, even though we may not have referred directly to every submission in our report.

This chapter sets out our consideration of the required matters and stakeholder submissions on those matters. It also explains our evaluation of the relative importance of the relevant matters. We consider that our weighting of the relevant matters reflects an appropriate balancing of those matters.

We note that the nature of the pricing framework also means that in some instances we are not the party best placed to address an issue raised by stakeholders. For example, as our investigation focuses on pricing, we are not best placed to address stakeholder concerns about the reliability and potential augmentation of water supplies. In those instances, we have sought to provide guidance that may facilitate the consideration and resolution of the issues by the party(s) best placed to address the issue.

2.2 Scope of our investigation

The Government has referred only certain aspects of the monopoly business activities of the water businesses to us for an investigation about the pricing practices relating to those activities. The activities that have been referred are the storage and supply of water in specific water supply

[11] Per Jackson J in *Origin Energy Electricity Ltd v Queensland Competition Authority* [2012] QSC 414 and *Minister for Aboriginal Affairs v Peko-Wallsend Ltd.* (1985-1986) 162 CLR 24 at 41.

schemes (WSSs) and distribution systems, where those activities are undertaken for an irrigation service.[12]

Consequently, our investigation and recommendations are confined to pricing for irrigation customers in the specified WSSs and systems (excluding water services provided by Burnett Water Pty Ltd in relation to Paradise Dam and Kirar Weir[13]). The structure and level of prices for non-irrigation customers in the specified WSSs/systems, and for customers of the excluded Burnett Water services, are outside the scope of this review.

The exclusion of non-irrigation customers in the specified WSSs/systems from the scope of our investigation reflects the Government's water pricing policy. Under that policy, which aligns with its commitments under the National Water Initiative[14] (NWI), the Government applies different pricing frameworks and objectives to the two customer groups, with:

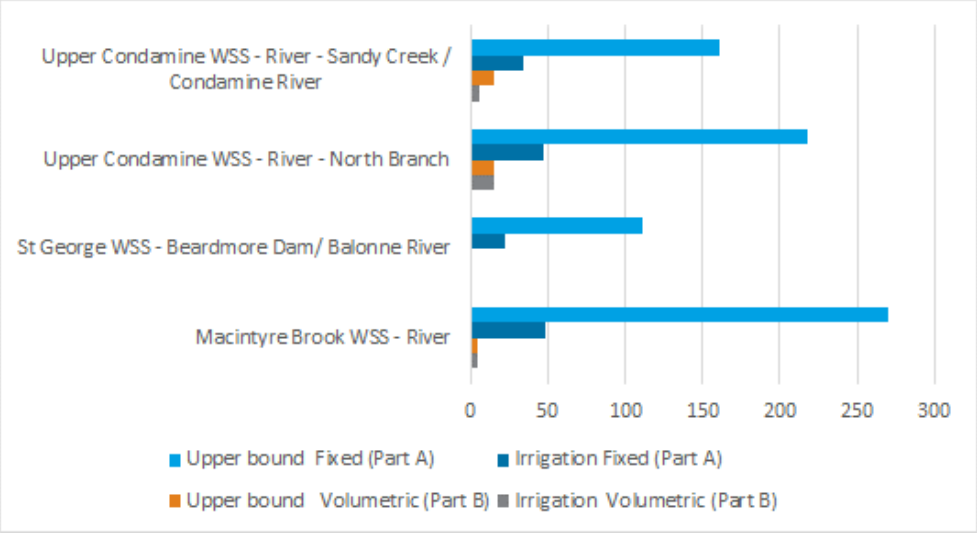
- prices for the irrigation customers in the specified WSSs/systems determined by the Government and expected to transition over time to prices that recover lower bound costs
- prices for other customers (for example, urban and industrial) in the specified WSSs/systems negotiated by the relevant water business with their customers and expected, where practicable, to transition over time to full commercial prices.

'Lower bound' prices, as previously defined by the Government, are prices, for each WSS/distribution system, that recover the prudent and efficient costs of operating, maintaining, administering and renewing each scheme.[15] These costs exclude certain costs, such as a return on and of existing assets (as at 1 July 2000). In contrast, full commercial or 'upper bound' prices include the same costs as lower bound prices as well as a provision for the costs of capital. It is important to note that while lower bound prices are referred to as 'cost-reflective', they still involve a subsidy from taxpayers, as the water businesses are neither earning a return on, nor recovering, the initial investment in the existing assets.[16]

Consistent with that water pricing policy, the Treasurer has clarified that nothing in the referral prevents the water businesses from 'negotiating full commercial prices to supply water' where the supply of that water is outside the scope of our investigation.[17] While commercial prices are not published for every scheme, Sunwater does publish some prices for schemes that fall within the Murray-Darling Basin. The figure below demonstrates the potential difference between the regulated prices that irrigation customers pay and the commercial prices that other customers pay for medium priority water in the same scheme.

[12] An 'irrigation service' is defined in schedule 4 of the Water Act 2000 as 'the supply of water or drainage services for irrigation of crops or pastures for commercial gain'.
[13] Paragraph A(1.2) of the referral specifically excludes these services from the scope of our investigation.
[14] The National Water Initiative is an intergovernmental agreement between the Australian Government and state and territory governments on the reform of water planning and management, including water pricing.
[15] See for example, the Rural Water Pricing Direction Notice (No. 1) 2006.
[16] For more information on lower bound costs, see CAOG, *Intergovernmental Agreement on a National Water Initiative*, 2004, schedule B(i) and Productivity Commission, *National Water Reform*, inquiry report no. 17, 2017, chapter 7.
[17] See paragraph F(1.1) of the referral.

Figure 2 Sunwater's 2019–20 medium priority prices for selected WSSs ($/ML, nominal)



Source: Sunwater Fees & Charges Schedule 2019–20 (Macintyre Brook WSS, St George WSS and Upper Condamine WSS).

The different pricing approaches for the two customer groups do not mean that one group of customers is cross-subsidising the other group. Irrigation customers are allocated their share of costs, and where the irrigation price is lower than the Government's lower bound costs, the Government provides a community service obligation (CSO) payment to cover the shortfall.

Stakeholders' submissions

Lockyer Water Users Forum raised concerns about the potential for irrigation prices to apply to a narrower range of irrigation customers as a result of the definition of irrigation service that the Government has used in the referral. It was also concerned that affected customers had not been adequately informed or provided with the opportunity to submit on this issue.[18] The Mareeba Dimbulah Irrigation Area Council (MDIAC) was concerned that the referral for our investigation did not reflect the Government's policy.[19]

Some stakeholders have raised concerns about the structure and level of prices—particularly in relation to dam safety upgrade capital expenditure (dam safety upgrade capex)—for customers in WSSs outside of the schemes/systems specified in schedule 1 of the referral.[20] Some stakeholders also raised concerns about water security, cost and price issues related to Paradise Dam.[21]

Burdekin River Water Allocation Holders was concerned about the prices charged by Lower Burdekin Water and having to pay these prices in addition to Sunwater's prices.[22]

QCA assessment

In its referral, the Government has directed us to investigate, and provide recommendations regarding, prices for the relevant monopoly water business activities to the extent that those activities are undertaken for irrigation services (as defined in schedule 4 of the Water Act 2000). We note that the terms of the referral, including the extent to which a monopoly business activity

[18] Lockyer Water Users Forum, sub. 200, p. 2.
[19] MDIAC, sub. 203, p. 2.
[20] LGAQ, sub. 115; Toowoomba Regional Council, sub. 143.
[21] Bundaberg Regional Council, sub. 87; Canegrowers Isis, sub. 185.
[22] Burdekin Water Allocation Holders, sub. 88.

is referred to us for investigation, are a matter for the Government. As such, the definition of irrigation service used in the referral and terms of the referral more generally are outside the scope of our investigation.

We also note that the relevant water business is responsible for determining whether an individual customer is eligible to access irrigation prices and it is for that business to engage with any of their customers that may be affected by the definition of irrigation service in the referral.

Consistent with the referral, the structure and level of prices for customers in schemes outside of the WSSs/distribution systems specified in schedule 1 of the referral are outside the scope of this review and are matters for the relevant dam owner and/or operator to negotiate with their customers.

As discussed above, matters relating to water services provided by Burnett Water Pty Ltd in relation to Paradise Dam and Kirar Weir have been specifically excluded from the scope of our investigation. Consequently any matters related to those services, including the water security provided by Paradise Dam and the impact that any measures to address the safety concerns identified with Paradise Dam may have on irrigators holding WAE supplied from that dam or on the broader community, are outside of the scope of our investigation.

While we acknowledge the concerns raised by the Burdekin River Water Allocation Holders, the scope of our investigation only covers the irrigation prices charged by Sunwater to recover its costs of operating, maintaining and renewing each WSS/distribution system and charges paid by irrigators to an unrelated third party water service provider are not a relevant consideration in that context. In addition, the prices that Lower Burdekin Water charges irrigation customers are outside the scope of our investigation.

2.3 Matters we are required to consider in undertaking our investigation

We are required to consider the matters listed in section 26(1) of the QCA Act in undertaking our investigation. These matters include:

- the need for efficient resource allocation
- the protection of consumers from abuses of monopoly power
- the cost of providing the goods or services in an efficient way, having regard to relevant interstate and international benchmarks, the actual cost of providing the goods or services, and the standard of the goods or services
- social welfare and equity considerations including community service obligations, the availability of goods and services to consumers and the social impact of pricing practices
- economic and regional development issues, including employment and investment growth
- water pricing determinations.

The list in section 26 is not exhaustive; we may have regard to any other matters that we consider relevant in undertaking our investigation.[23]

Under section 24 of the QCA Act, we are also required to consider any matters that we have been directed to consider by the Treasurer in the referral. For this investigation, the Treasurer has directed us to consider various stated matters, including:

[23] Section 26(3) of the QCA Act.

- the pricing principles in schedule 2 of the referral
- certain matters in relation to determining costs and recommending appropriate prices (for example, the costs that can be included)
- balancing the legitimate commercial interests of the water businesses with the interests of their customers, including considering less than cost-reflective volumetric prices, which are necessary to moderate bill impacts for customers
- ensuring, where possible, that revenue and pricing outcomes are both simple and transparent for customers.

2.4 Approach

The matters we are required to consider in undertaking an investigation are wide and diverse and may at times require us to make judgements about the relative importance of matters in particular circumstances (as discussed in section 2.1). For example, the requirement to consider social welfare and equity considerations may need to be balanced with the requirement to meet certain cost objectives.

Unfortunately, by their very nature, regulatory tools are often limited in their ability to achieve multiple objectives, and the pricing framework for this review is no different. The QCA Act does not provide guidance on the weightings that should be applied to each matter. Consequently, we need to have regard to the matters and determine which ones are relevant to our investigation. In the context of this investigation, we have considered all of the matters we are required to, including the stated matters in the referral and the matters in sections 26(1) and (2) of the QCA Act. We have determined the appropriate weight to be given to the matters that are required to be taken into account.

Our consideration of these issues in our report reflects what we consider to be an appropriate balancing of the relevant matters.

2.5 Stakeholders' submissions

A significant number of stakeholders indicated that certain matters in section 26 and the referral were relevant to our investigation. Those matters include:

- regional and economic development—some stakeholders were concerned about the impact of higher prices on irrigators' businesses, local communities and the regional economy
- social welfare—some stakeholders were concerned about the social impact that higher prices may have on local communities
- equity considerations—some stakeholders considered the following issues as not equitable:
  - the Government's previous and potential changes to the pricing framework (in particular, moving to base prices on lower bound costs and the possible inclusion of a share of an appropriate allowance for dam safety upgrade capex in prices); stakeholders said that irrigators had made investments based on a different pricing framework.
  - the potential inclusion of an appropriate allowance for dam safety upgrade capex incurred from 1 July 2020; stakeholders said the dam safety upgrade capex for some schemes had previously been covered by the Government

- balancing the legitimate commercial interests of the water businesses with those of their customers—some irrigation stakeholders considered that their ability to pay should be a relevant consideration in balancing those interests
- the pricing principles in schedule 2 of the referral—some stakeholders considered that the pricing principles in schedule 2 of the referral were not equitable.

2.6 Relevant matters for this investigation

After considering the required matters in section 26 and the referral and the issues raised by stakeholders in submissions, we are of the view that the following matters are particularly relevant in the context of our investigation:

- the pricing principles in the referral
- the efficient use of resources and the protection of consumers from monopoly power
- revenue adequacy
- social welfare and equity considerations including community service obligations, the availability of goods and services to consumers and the social impact of pricing practices
- economic and regional development issues, including employment and investment growth
- balancing the legitimate commercial interests of the businesses with the interests of their customers
- ensuring, where possible, that revenue and pricing outcomes are both simple and transparent for customers.

2.6.1 Pricing principles in the referral

In 2000, the Government established a lower bound cost target for irrigation prices in existing irrigation schemes, which it considered was the minimum level of cost recovery for a water business to be viable.[24] As noted in section 2.2, this target remains government policy and prices are expected to transition to it over time.

The pricing principles in the referral give effect to this longer-term government policy objective and include:

- Prices are to be based on all tariff groups transitioning to cost-reflective prices.[25]
- In considering tariff structures, regard should be had to the fixed and variable nature of the underlying costs.[26]
- Fixed prices (Part A and Part C) are to be derived independently of volumetric prices (Part B and Part D).[27]
- In calculating the bulk fixed price (Part A) and the total fixed price (Part A plus Part C) for each tariff group:

[24] Queensland Treasury and Department of Energy and Water Supply, submission to the Australian Competition and Consumer Commission, *Review of Water Charge Rules*, *draft advice*, March 2016, p. 6.
[25] Schedule 2, paragraph A of the referral. The cost-reflective price for each WSS/distribution system is the price that recovers lower bound costs—see section 2.2 in this chapter.
[26] Schedule 2, paragraph B of the referral.
[27] Schedule 2, paragraph C of the referral.

  - if the total fixed price for 2019–20 is above the total cost-reflective price for 2020–21, the total fixed price should be maintained in nominal terms over the price path period until the cost-reflective price is reached.[28]
  - if the total fixed price for 2019–20 is below the cost-reflective price for 2020-21, the total fixed price should increase by inflation plus $2.38 (to be adjusted for inflation on an annual basis) per megalitre from 2020–21 until the cost-reflective price is reached.[29]
- Volumetric prices should have regard to moving to cost-reflective immediately.[30]

Stakeholders' submissions

A significant number of irrigation stakeholders raised concerns about the Government's water pricing policy (in particular, the requirement for prices for all tariff groups to transition over time to lower bound costs[31]) and the impact that higher prices may have on individual irrigators and/or the longer-term viability of some WSSs and distribution systems.[32] The Queensland Farmers' Federation (QFF) also recommended that the QCA review the implications of long-term transition pricing and high fixed charges, and questioned whether the cost-reflective target was appropriate for schemes with significant water availability problems or very high costs relative to the customer base.[33]

Canegrowers Isis considered this underlying premise was flawed as the scheme was never intended to be a stand-alone commercial venture and would not have been constructed if the current pricing methodology was in place. It also considered that 'modify bill impacts' translated to capacity to pay over the price period, and that its consultant's report showed that irrigators did not have the capacity to absorb further price increases.[34]

Pioneer Valley Water Co-operative (PV Water) indicated that the Teemburra Dam project only proceeded after the Government provided indicative subsidised pricing that encouraged irrigators to take up allocations and make significant investments in on-farm irrigation infrastructure. It considered that irrigators had a reasonable expectation that the subsidised pricing would continue and the move to the government-defined level of cost recovery conflicted with those expectations and with the original design premise of the Teemburra Dam.[35]

Some stakeholders considered that the price caps contained in the pricing principles should be adjusted. Canegrowers and MDIAC proposed that the annual price cap of $2.38 per megalitre plus inflation should apply to the combined fixed and volumetric water price increases (Parts A and B combined for bulk customers and Parts A, B, C and D combined for distribution system customers).[36] The Burdekin River Irrigators Association (BRIA) indicated that the application of the annual price cap of $2.38 per megalitre would have an adverse impact on irrigator viability. It

[28] Schedule 2, paragraphs D and E of the referral.
[29] Schedule 2, paragraphs D and E of the referral.
[30] Schedule 2, paragraph E of the referral.
[31] See for example, PV Water, sub. 130 and sub. 221; Werner, J, sub. 146; Canegrowers Isis, sub. 93, Burnett Valley Vineyards, sub. 163; WBBROC, sub. 234.
[32] See for example, Invicta Cane Growers Organisation, sub. 64 and 109; Kookaburra Farms, sub. 114; WBBROC, sub. 149 and sub. 234; Bundaberg Fruit and Vegetable Growers, sub. 86; Kinchant Dam Water Users Association, sub. 112; Scocan Holdings, sub. 135; Three Moon Creek Irrigator Advisory Committee (IAC), sub. 142; Lockyer Water Users Forum, sub. 200; PV Water, sub. 221.
[33] QFF, sub. 131 and 132.
[34] Canegrowers Isis, sub. 93.
[35] PV Water, sub. 130 and sub. 221.
[36] Canegrowers, sub. 91; MDIAC, sub. 70 and 123.

proposed that the annual increases in the combined fixed and volumetric water prices should be no more than inflation during the next price path.[37]

Central Downs Irrigators Ltd was concerned that medium priority users in the Upper Condamine WSS were paying 190 per cent of cost recovery for the Part A prices and might potentially be faced with a significant increase in Part B prices if volumetric prices were to transition to being cost-reflective immediately. It considered that there should be better recognition of the overrecovery of fixed costs in Sunwater's accounting and the annuity fund. It also asked that the QCA cap the increases in charges in a similar manner offered to other schemes operating below cost recovery for Part A charges.[38]

Canegrowers was of the view the QCA must consider the capacity of cane growers to pay higher prices in the next price period and that we should exercise our discretion to set lower than existing fixed and volumetric prices, when considering the moderation of bill impacts. It also considered that the QCA should not increase prices for schemes where cane growing is the dominant activity.[39]

Other stakeholders also raised concerns about irrigators' capacity to pay higher prices.[40]

QCA assessment

Rising costs and the transition over time to prices that recover lower bound costs are key concerns for many stakeholders. Some stakeholders are also concerned about the appropriateness of transitioning to prices that reflect lower bound costs given that some of the specified WSSs/systems may not have been built with cost-reflective prices in mind.

While historical pricing policies may be a relevant consideration, those policies are not binding on successive governments in perpetuity, even though their cessation may have an adverse impact on a particular customer or group of customers. Governments are elected with a mandate to set, modify or replace policies on a broad range of issues, including water pricing. The shift in water pricing policy that has taken place since the specified schemes and systems were constructed reflects that reality.

As we discussed in section 2.2, the lower bound cost target and the gradual transition to that target are key objectives of the Government's water pricing policy, and these objectives underpin the referral for our investigation. The Government has indicated that, in setting the lower bound cost target for irrigation water prices and establishing a gradual transition path to that target, it has considered a range of matters, including historical/legacy issues, customers' capacity to pay and the benefits/costs arising from a subsidy targeting a particular sector or purpose.[41]

---

[37] BRIA, sub. 84 and 85.

[38] Central Downs Irrigators, sub. 98.

[39] Canegrowers, sub. 179.

[40] See for example, Burnett Valley Vineyards, sub. 163; WBBROC, sub. 234; BRIA, sub. 161; Lower Mary Customer Advisory Board, sub. 161; Hasselbach family, sub. 195; Canegrowers Isis, sub. 185; QFF, sub. 223. A large number of stakeholders from the Giru Benefited Groundwater Area raised concerns about capacity to pay, including Canegrowers Burdekin, sub. 180 - 183; Pixi Pastoral Co, sub. 212; BDCG, sub. 162; Wessel, A, sub. 235; Stockham, D, sub. 177 and sub. 214; Pilla, P, sub. 212, Cogill, R, sub. 188.

[41] Queensland Treasury and Department of Energy and Water Supply, submission to the ACCC, *Review of the Water Charge Rules*, *draft advice*, March 2016, p.7; Queensland Government, submission to the Productivity Commission, *National Water Reform*, *issues paper*, March 2017, pp. 5–7; Queensland Government, Seqwater and Sunwater irrigation pricing overview, https://www.business.qld.gov.au/industries/mining-energy-water/water/industry-infrastructure/pricing/irrigation.

For example, in its submission to the Productivity Commission National Water Reform Inquiry in 2017, the Government stated:

> To manage irrigators' capacity to pay considerations, the Government sets transitional price path arrangements and/or have an accompanying CSO or indirect Government subsidy…[42]

Consequently, the price target for irrigators is lower than that for other customers (for example, urban and industrial customers) in the specified schemes/systems, with other customers expected, where practicable, to transition over time to full commercial prices. For example, the irrigation price targets for the Upper Condamine—Sandy Creek or Condamine River tariff group are $17.51 (Part A) and $5.44 (Part B) but Sunwater's 2019–20 upper bound prices for supplying other customers in the same area are $161.04 (Part A) and $15.19 (Part B).[43]

We do not agree with Canegrowers' view that, in framing the referral for our investigation, the Government did not take into account cane growers' capacity to pay over the next price period. In setting the terms of the referral for our investigation in late 2018, the Government had to turn its mind to the appropriateness of the lower bound cost target and the transitional price path arrangements. This is because the referral sets out the lower bound costs that should be included in the lower bound cost target and provides clear guidance on transitional price path arrangements for the fixed and volumetric components of prices.

We also note that the Government has made a number of refinements to the lower bound cost target and transitional price path arrangements for this investigation, including:

- excluding recreation costs incurred from 1 July 2020 onwards from the lower bound cost target
- providing more specific guidance on the transitional price path arrangements for fixed prices that are above or below the lower bound cost target
- directing us to consider moderating bill impacts on the volumetric side.

Given that the Government has indicated that a key purpose of the lower bound cost target and transitional price path arrangements is to manage irrigators' capacity to pay considerations[44] and adjusted both of these measures in framing the referral for our investigation, it is our view that the Government has considered irrigators' capacity to pay in the context of our investigation and, consequently, the next pricing period. We also note that the Government will have another opportunity to consider this matter when it sets prices for the next pricing period.

We consider that we should recommend prices that are consistent with the pricing principles in the referral as these principles:

- give effect to key objectives of the Government's water pricing policy, including the lower bound cost target for irrigation customers and the gradual transition to that target. These objectives underpin the referral for our investigation and are a key reason that we are recommending prices for irrigation customers.

[42] Queensland Government, submission to the Productivity Commission, *National Water Reform*, *issues paper*, March 2017, pp. 7.
[43] Sunwater, *Fees & Charges Schedule 2019-20 for Upper Condamine WSS*, 2019.
[44] Queensland Treasury and Department of Energy and Water Supply, submission to the ACCC, *Review of the Water Charge Rules, draft advice*, March 2016, p.7; Queensland Government, submission to the Productivity Commission, *National Water Reform, issues paper*, March 2017, pp. 5–7.

- have been included to manage capacity to pay considerations consistent with the Government's water pricing policy.

As we have decided to recommend prices that are consistent with the pricing principles, we do not consider it is appropriate to:

- freeze prices for some WSSs and distribution systems at existing levels
- apply transitional price paths to fixed costs that are different to those set out in the referral
- set different lower bound cost targets for some high cost WSSs or distribution systems.

This is because doing so would be inconsistent with the pricing principles in the referral.

Consequently, we are limited in our capacity to use the pricing framework to address stakeholder concerns about:

- schemes with a Part A price that is well above the cost-reflective price (for example, the Upper Condamine WSS)[45]
- schemes with consistently low reliability (in particular, the Central Lockyer Valley and Lower Lockyer Valley WSSs)[46]
- high-cost schemes such as the Eton and Cedar Pocket WSSs and the Pie Creek distribution system.[47]

While we understand stakeholders' concern over the guidance in the referral for Part A prices that are above the cost-reflective price for 2020–21 to be maintained in nominal terms over the price period, this approach is government policy. While our decision to recommend prices that are consistent with the pricing principles in the referral restricts our ability to reduce the Part A price, we note that it does not prevent the water businesses from returning the surplus revenue above the cost target to the relevant schemes. Indeed, Seqwater has proposed such an arrangement for the three schemes that it expects to be above the lower bound cost target during the upcoming price period, with the gap between actual revenue collected and the lower bound cost target to be credited to the renewals annuity account in each scheme.[48] We would encourage Sunwater to consider proposing a similar arrangement for its irrigation customers in the Upper Condamine WSS.

While we acknowledge the concerns raised by customers in schemes with consistently low reliability, we do not consider that this issue is best addressed through adjusting the prices for these schemes.[49] Aside from potentially being inconsistent with the pricing principles outlined in the referral, rebalancing the fixed and volumetric components may mask the underlying reliability problems in these schemes and delay the timely consideration and resolution of those problems (for example, the consideration of potential augmentation options).

[45] Central Downs Irrigators, sub. 98 and sub. 186; Tyunga Farms, sub. 223.
[46] Barden Produce, sub. 82; Lockyer Water Users Forum, sub. 116 and sub. 200; Lockyer Valley Regional Council, sub. 117; Mayor of Lockyer Valley Regional Council, sub. 121; Member for Lockyer, sub. 125; QFF, sub. 131; Gold Finch Lawns, sub. 61; Somerset Regional Council, sub. 76.
[47] Kinchant Dam Water Users Association, sub. 112; Canegrowers Mackay, sub. 96; Kookaburra Farms, sub. 114.
[48] Seqwater, sub. 1, pp. 44–45.
[49] Barden Produce, sub. 82; Lockyer Water Users Forum, sub. 116 and sub. 200; Lockyer Valley Regional Council, sub. 117; Mayor of Lockyer Valley Regional Council, sub. 121; Member for Lockyer, sub. 125; QFF, sub. 131; Gold Finch Lawns, sub. 61; Somerset Regional Council, sub. 76.

We note that the Government is currently working with irrigators in the Central Lockyer Valley and Lower Lockyer Valley WSSs to investigate potential options to address the reliability issues in those schemes. We encourage both parties to continue those investigations.

We understand the concerns of stakeholders in the Eton WSS regarding the high cost nature of that scheme and the transition to the Government's lower bound cost target, and their view that irrigation customers in this scheme have limited scope to transition to alternative, more commercially viable crops due to the local climate and growing conditions. We also acknowledge the request on the part of the Canegrowers Mackay and Kinchant Dam Water Users Association that we consider an exit strategy for customers in this scheme.[50]

We note that under section 162 of the Water Act 2000, irrigators can also surrender their water allocations, but this surrender is contingent on consent of the holder of the licence, which may be given with or without conditions. We consider that any changes to this mechanism are a matter for the Government.

While the pricing principles direct us to have regard to moving volumetric prices to the lower bound cost target immediately, the referral also provides us with scope to consider volumetric prices that are less than the lower bound cost target where necessary to moderate bill impacts. In light of our consideration of the bill impacts and the affordability concerns raised by stakeholders, we are of the view that we should exercise our discretion and recommend volumetric prices that are less than the lower bound cost target.

As discussed above, it is our view that capacity to pay has been taken into account in the design of the pricing framework and through our decision to recommend prices that are consistent with pricing principles in the referral. We therefore consider that moderating bill impacts involves staging any price increases required to meet the lower bound cost objective in a manner that allows users time to adjust. Our approach to moderating bill impacts is discussed in section 2.7.

2.6.2 The efficient use of resources and the protection of consumers from monopoly power

Economic efficiency is usually considered in three contexts:

- allocative efficiency—requires allocating scarce resources to their most highly valued uses
- productive efficiency—requires that output is produced at minimum cost
- dynamic efficiency—the achievement of allocative and productive efficiency over time, including the timely and profitable introduction of new processes, systems and services.

These efficiency objectives are generally achieved where prices are:

- cost-reflective—that is, they reflect the fixed costs of providing the service at a specified standard (including a return on capital invested) and the marginal cost of producing each additional unit
- forward-looking— that is, they represent the least-cost way of providing the requisite level of service over the relevant planning period.

In other pricing investigations, unless otherwise directed by the Government, we have treated economic efficiency as the primary objective of economic regulation. This reflects the interpretation that economic efficiency represents the overall public interest under the

[50] Kinchant Dam Water Users Association, sub. 112; Canegrowers Mackay, sub. 96.

assumption that social concerns are being addressed by other government policies and activities.[51]

Stakeholders' submissions

The Wide Bay Burnett Regional Organisation of Councils (WBBROC) considered that the current arrangement for cost-reflective and lower bound pricing did not adequately encourage commercial levels of efficiency in Sunwater.[52]

QCA assessment

Prices that reflect prudent and efficient costs are transparent and help to signal the efficient cost of providing water supply services to irrigation customers. This in turn may help to encourage efficient consumption and investment decisions. Recommending prices to reflect prudent and efficient costs also helps to protect consumers from abuses of monopoly power.

As discussed above, we consider that we should recommend prices that are consistent with the pricing principles in the referral, given that the lower bound cost target and the gradual transition to that target are key objectives of the Government's water pricing policy. In regards to efficiency, the decision to apply the pricing principles does limit to some extent our ability to recommend prices that reflect prudent and efficient costs. For example, the principles limit the costs that can be recovered through prices to lower bound costs and also set out a transition path for reaching the lower bound cost target. However, the pricing principles do not prevent us from considering the prudency of the water businesses' costs and we have done so as part of this pricing investigation.

Consequently, we have had regard to economic efficiency matters subject to these constraints.

2.6.3 Revenue adequacy

Revenue adequacy or sufficiency requires that a regulated business should earn sufficient revenue to cover its prudent and efficient costs and enable it to invest in asset maintenance and expansion.

Stakeholders' submissions

No stakeholder comments on this issue were received.

QCA assessment

In general, revenue adequacy (cost recovery) is a key principle underlying any pricing framework, requiring that a regulated business achieves sufficient revenue to ensure the efficient delivery of water services and the ability to invest in asset maintenance and expansion. Recommending prices consistent with the revenue adequacy principle also limits the ability of the regulated business to generate monopoly profits, thereby helping to protect its customers.

However, in the context of this pricing investigation, the revenue adequacy considerations are tempered by our decision to recommend prices that are consistent with the pricing principles in the referral. Those principles limit the costs that can be included in prices to lower bound costs

[51] QCA, *Statement of Regulatory Pricing Principles*, August 2013.

[52] WBBROC, sub. 234, p. 3. WBBROC also considered that the current arrangements did not clearly align with the competitive neutrality provisions of the Queensland Productivity Commission Act 2015. We note that competitive neutrality matters are a matter for the Queensland Productivity Commission and, as such, are outside the scope of our investigation.

(see section 2.2) and provide a transition path for reaching the lower bound cost target which does not seek to fully recover capital costs.

As discussed above, we consider that we should recommend prices that are consistent with the pricing principles in the referral, given that the lower bound cost target and the gradual transition to that target are key objectives of the Government's water pricing policy. Consequently, we have taken revenue sufficiency into account, subject to the constraints imposed by our decision to apply the pricing principles in the referral.

The Government has also taken revenue adequacy into account to some extent in its water pricing policy by providing a community service obligation payment to the relevant water business to cover the difference between the revenue recovered through prices and the revenue that would be recovered under the lower bound cost target.

2.6.4 Social welfare and equity considerations

In the irrigation context, social welfare and equity issues mainly relate to the ongoing viability of typical family farm enterprises, and the communities that are built around them, and the equitable sharing between users and over time, of prudent and efficient costs.

Stakeholders' submissions

Some stakeholders considered that the Government's previous and potential changes to the pricing framework (in particular, moving to base prices on lower bound costs and the possible inclusion of a share of dam safety upgrade capex in prices) were not equitable, as irrigators had made investments based on a different pricing framework.[53]

A significant number of irrigation stakeholders considered that it was not equitable to include a share of dam safety upgrade capital expenditure in prices, based on the following:

- Irrigators have, in the absence of a formal direction from the Government, assumed that these costs would not be included in prices, and they have made investment decisions based on that assumption.[54]
- Customers in affected schemes will be disadvantaged, relative to customers in schemes where the Government has paid for the upgrade.[55]

A number of stakeholders in the Barker Barambah WSS also requested that consideration be given to the fact that the region is one of the most stressed socio-economic regions in the country and is currently drought-declared.[56]

QCA assessment

Equity is an inherently subjective concept and an ‘equitable’ pricing structure is likely to be interpreted differently by different stakeholders. Relevant issues are the management of

[53] See for example, PV Water, sub. 130 and sub. 221; Werner, J, sub. 146; Canegrowers Isis, sub. 93, Burnett Valley Vineyards, sub. 163; WBBROC, sub. 234.
[54] See for example, Canegrowers Isis, sub. 93, p. 5; Central Highlands Cotton Growers and Irrigators Association, sub. 100, p. 4; QFF, sub. 133, p. 7.
[55] See for example, LGAQ, sub. 115, p. 8; BRIA, sub. 85, p. 16; Lower Burdekin Water, sub. 118, p. 12; QFF, sub. 133, p. 7, Cotton Australia, sub 190, p. 2.
[56] Barker Barambah IAC, sub. 83; Burnett Inland Development Organisation, sub. 90; GKM Cooney, sub. 106; Hetherington Farming, sub. 107; Mayne, A and C, sub. 120; Nicholson, S, sub. 126; Preema Partnership, sub. 129; S&J Reeves Enterprises, sub. 134; Silverleaf Farming, sub. 137; Weier Farming, sub. 145.

potential price shocks for customers, effects of pricing policies on vulnerable groups, and implications of subsidies and cross-subsidies.

For example, the 'user pays' principle of cost recovery may be considered to be equitable, as the user of a service, or an individual that causes costs to be incurred, pays the relevant costs. However, others may view this principle as not being equitable, as it does not take into account the ability of disadvantaged customers to pay cost-reflective prices.

Some stakeholders are concerned about the appropriateness of transitioning to prices that reflect lower bound costs, given that some of the specified schemes/systems may not have been built with cost-reflective prices in mind. As discussed in section 2.6.1, this target and the gradual transition to it underpin the pricing framework for our investigation and the Government has indicated that, in setting the lower bound cost target for irrigation water prices and establishing a gradual transition path to that target, it has specifically considered a range of matters, including customers' capacity to pay and the historical regional development driver for many of the schemes.[57]. As such, we consider that we should recommend prices that are consistent with these policy objectives.

We also note that the alignment of water pricing policy to lower bound cost reflectivity (or in some cases slightly above) has been a part of Government policy for some 20 years. The broad pricing policy is therefore known to the irrigation sector and provides certainty for irrigators in their investment decisions. Notwithstanding this, over time, lower bound costs have been subject to variations in operating and renewals costs, and the economic circumstances of individual schemes/systems have changed.

We are required to develop and apply an appropriate approach to apportioning dam safety upgrade capex as part of this review (see Chapter 4). However, the decision regarding which set of prices is to apply is a matter for the Government when it determines prices for the pricing period. Given that the equity concerns raised by stakeholders primarily relate to that decision and that we are not recommending which set of prices should apply, we consider that the Government is best placed to take these equity considerations into account. This issue is discussed in more detail in Chapter 4.

In relation to schemes impacted by drought, we consider that any relief from Part A charges during a drought is a matter more appropriately determined by the Queensland Government. Drought assistance provided by the Queensland and Australian governments generally encompasses a range of measures and any relief from Part A charges needs to be considered in that context.

2.6.5 Economic and regional development issues

In many cases, irrigation schemes represent a significant source of income and employment on a regional or local area basis, and may be a key driver for other investments into the regions. It is therefore appropriate that the irrigation pricing framework facilitates the best use of a region's resources and provides certainty and stability for investment decisions.

[57] Queensland Treasury and Department of Energy and Water Supply, submission to the ACCC, *Review of the Water Charge Rules, draft advice*, March 2016, pp. 5–7; Queensland Government, submission to the Productivity Commission, *National Water Reform*, *issues paper*, March 2017, p. 7; Queensland Government, Seqwater and Sunwater irrigation pricing, https://www.business.qld.gov.au/industries/mining-energy-water/water/industry-infrastructure/pricing/irrigation.

Stakeholders' submissions

Irrigation and local government stakeholders raised concerns about the impact that higher prices and the longer-term shift to prices that recover lower bound costs will have on irrigators, the regional economy and local communities.[58]

QFF and other stakeholders argued that there should be assessments of the cumulative impacts where customers are trying to cope with other increasing costs on farm such as electricity. They considered that the cost impacts would have flow-on impacts for local and regional economies that need to be investigated.[59]

WBBROC indicated that pricing needed to consider customers' capacity to pay and contingent public interest at local, regional and state economy perspectives. In its view, an economic impact risk assessment should be conducted as part of the review to explore structural economic impacts at regional scale.[60]

QCA assessment

We consider that economic and regional development issues are a relevant matter for our pricing investigation and we have taken these issues into account through our decision to apply the pricing principles in the referral. As discussed in section 2.6.1, the pricing principles give effect to key objectives of the Government's water pricing policy, including its lower bound cost target and the gradual transition to that target.

The Government has indicated that its lower bound cost target is based on, among other matters, a consideration of customers' capacity to pay and the benefits/costs arising from a subsidy targeting a particular sector or purpose.[61] The Government has also indicated that its water pricing policy has taken into account considerations such as transition paths for pricing for irrigation customers, regional development and the benefits of industry to the Queensland economy.[62] As we noted above, the consequence of the Government's policies is that the long-term cost recovery target for irrigation customers is generally lower than the long-term cost recovery for non-irrigation customers in the specified schemes/systems.

---

[58] See for example, QFF sub. 131 and 132; LGAQ, sub. 115; WBBROC, sub. 149 and sub. 234; Barker Barambah IAC, sub. 83; GKM Cooney, sub. 106; S Nicholson, sub. 126; Bundaberg Fruit & Vegetable Growers, sub. 86; Bundaberg Regional Council, sub. 87; Canegrowers Isis, sub. 93 and sub. 185; Isis Central Sugar Mill, sub. 110; BRIA, sub. 85 and sub. 161; Invicta Cane Growers Organisation, sub. 109; Kalamia Cane Growers, sub. 111; Kinchant Dam Water Users Association, sub. 112; Canegrowers Mackay, sub. 96; Scocan Holdings, sub. 135; MDIAC, sub. 123; Central Highlands Cotton Growers and Irrigators Association, sub. 99; Nogoa-Mackenzie IAC, sub. 127; Fairbairn Irrigation Network, sub. 104; PV Water, sub. 130 and sub. 221; Werner, J, sub. 146; Canegrowers Proserpine, sub. 97; Three Moon Creek IAC, sub. 142; Central Downs Irrigators, sub. 98; Burnett Valley Vineyards, sub. 163; Lockyer Water Users Forum, sub. 200; Hasselbach family; sub. 195; BDCG, sub. 162.

[59] QFF, sub. 131 and 132. These submissions were supported by a number of other stakeholders including Bundaberg Fruit & Vegetable Growers, sub. 86; Canegrowers Burdekin, sub. 92; and Cotton Australia, sub. 102.

[60] WBBROC, sub. 149 and sub. 234.

[61] Queensland Treasury and Department of Energy and Water Supply, submission to the ACCC, *Review of the Water Charge Rules, draft advice*, March 2016, pp. 5–7; Queensland Government, submission to the Productivity Commission, *National Water Reform, issues paper,* March 2017, p. 7; Queensland Government, Seqwater and Sunwater irrigation pricing overview, https://www.business.qld.gov.au/industries/mining-energy-water/water/industry-infrastructure/pricing/irrigation.

[62] Queensland Treasury and Department of Energy and Water Supply, submission to the ACCC, *Review of the Water Charge Rules, draft advice*, March 2016, pp. 5–7; Queensland Government, submission on the Productivity Commission, *National Water Reform, issues paper*, March 2017, p. 7; Queensland Government, Seqwater and Sunwater irrigation pricing overview, https://www.business.qld.gov.au/industries/mining-energy-water/water/industry-infrastructure/pricing/irrigation.

2.6.6 Balancing interests

We are required to consider balancing the legitimate commercial interests of the water businesses with the interests of their customers, including considering less than cost-reflective volumetric prices, which are necessary to moderate bill impacts for customers.

Stakeholders' submissions

Some irrigation stakeholders considered that their ability to pay should be a relevant consideration in balancing those interests. For example, Canegrowers Isis considered that 'modify bill impacts' translated to capacity to pay over the price period and, as shown by its consultant, irrigators did not have the capacity to absorb further price increases.[63]

QCA assessment

We have had regard to the requirement to balance the legitimate commercial interests of the water businesses with the interests of their customers in the context of our review. In particular, in setting recommended prices, we have balanced the commercial interests of irrigators and the water businesses, by moderating the bill impact of higher volumetric prices (our approach to this issue is set out in section 2.7) and establishing prices to at least cover fixed operating costs to facilitate the viability of the water supply business.

We also consider that the need to balance the commercial interests of the businesses with the interests of their customers has been taken into account through our decision to recommend prices that are consistent with the pricing principles in the referral.

As discussed in section 2.6.1, the pricing principles give effect to key aspects of the Government's water pricing policy, including its lower bound cost target and the gradual transition to that target. The Government has set these objectives based on its consideration a range of issues, including customers' capacity to pay. Given that, it is our view that capacity to pay has been taken into account in the design of the pricing framework and through our decision to recommend prices that are consistent with the pricing principles in the referral. We also consider that the pricing principles balance the revenue adequacy requirements of the water businesses with the interests of their irrigation customers by setting a cost recovery target for prices that is lower than that for other customers in the specified schemes/systems and by providing a gradual transition path for achieving that target.

2.6.7 Simple and transparent revenue and pricing outcomes

We have been directed to have regard to ensuring, where possible, that revenue and pricing outcomes are both simple and transparent for customers.

Stakeholders' submissions

Sunwater considered that there was a need to move to simpler and more transparent arrangements for prices.[64] Both water businesses have also proposed approaches to revenue allocation that they consider will deliver a simpler and more transparent allocation of costs between the fixed and variable components of prices.

Some irrigation stakeholders indicated that they wanted a more transparent method for establishing and allocating some costs (for example, non-direct costs and electricity costs).[65]

---

[63] Canegrowers Isis, sub. 93.
[64] Sunwater, sub. 11.
[65] BRIA, sub. 85; QFF, sub. 131.

QCA assessment

We have sought, where possible, to recommend revenue and pricing outcomes that are simple and transparent for customers. In particular, we have sought to balance complexity, cost and transparency in undertaking key tasks such as the allocation of costs between the fixed and volumetric components of prices.

2.6.8 Other matters

Burdekin District Cane Growers (BDCG) raised the environmental issue of rising groundwater in Burdekin-Haughton region and indicated that to address this problem we should consider recommending a price reduction for irrigators to incentivise groundwater use.[66]

QCA assessment

Consistent with the terms of the referral, we must adopt current tariff groups when we recommend prices for the Burdekin-Haughton distribution system and these tariff groups are based on location rather than the type of water (surface water or groundwater). As such, we do not have scope to recommend different prices for groundwater and surface water in this system.

2.7 Approach to bill moderation and the transition to lower bound prices

Given our consideration of bill impacts and the affordability concerns raised by stakeholders, we consider it is appropriate to moderate the bill impact of higher volumetric prices.

We have sought to recommend prices that transition gradually to the lower bound cost target, as this will give users time to adjust.

Our recommended fixed prices reflect the transitional path to the fixed component of the lower bound cost target. This approach aligns with our decision to recommend prices that are consistent with the pricing principles in the referral (see section 2.6.1). We have also generally assessed the appropriate level of any volumetric price increase with reference to the maximum level of annual real price increases that have occurred over the previous two price path periods of $2.38 per megalitre of water access entitlement (WAE) ($2020–21).

We have separately assessed appropriate transition paths for two key categories of tariff groups:

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

Above lower bound prices

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

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

[66] BDCG, sub 162.

Below lower bound prices

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

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

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

While this results in volumetric prices that are lower than the cost-reflective level, we do not consider that the difference is significant. We consider that a lower than cost-reflective volumetric price will not have material implications on signalling efficient costs, noting that any price signals may also be tempered to some degree by our decision to recommend prices that are consistent with the pricing principles in the referral.

2.8 Summary of approach to relevant matters

We have had regard to all of the matters we are required to, including the stated matters in the referral and the matters in section 26(1) and (2) of the QCA Act and we have determined the appropriate weight to be given to the matters that are required to be taken into account.

We have also considered all of the issues raised in submissions in deciding the relative importance to attach to the relevant matters, even though we may not have referred directly to every submission in our report. Our approach to the relevant issues reflects what we consider is an appropriate balancing of the relevant matters.

In undertaking our investigation and recommending prices, we have emphasised the pricing principles set out in the referral, as these principles give effect to the lower bound cost target and the gradual transition to that target. As we have discussed in this chapter, these policy objectives are key aspects of the Government's water pricing policy and underpin the pricing framework for our investigation.

Recommending prices that are consistent with those pricing principles also takes into account social welfare, capacity to pay and regional development considerations. As we have discussed throughout this chapter, the Government has indicated that, in setting the lower bound cost target for irrigation water prices and establishing a gradual transition path to that target, it has considered a range of matters including customers' capacity to pay and benefits of industry to the Queensland economy.

We have also emphasised efficiency factors, as prices that reflect efficient costs will promote efficient resource allocation, including efficient investment, and protect consumers from abuses of monopoly power.

We have sought to recommend prices that transition gradually to the lower bound cost target, as this will give users time to adjust.

3 RISK AND THE REGULATORY FRAMEWORK

The referral directs us to consider recommending prices that are based on all tariff groups transitioning to cost-reflective prices, which incorporate efficient costs allowable under the referral. As discussed in Chapter 2, we have decided to recommend prices that are consistent with that principle. The referral also requires us to recommend appropriate price review triggers and other mechanisms to manage the risks associated with material changes in allowable costs outside the control of the water businesses.

We have considered mechanisms for managing key revenue and cost risks, taking into account stakeholder submissions where relevant. We have assessed these mechanisms by considering the matters required under section 26 of the QCA Act and the referral.

We recommend dealing with revenue risks by aligning tariff structures closely with cost structures, and dealing with cost risks by using within-period reviews or an end-of-period revenue adjustment for material changes in costs associated with specified cost risks.

We have reviewed Sunwater's proposal for an electricity cost pass through mechanism but continue to have concerns with the automatic pass through of costs including the potential for large bill impacts and reduced incentives for the efficient use of electricity. We consider that further work would need to be done on the proposal and clear customer support demonstrated before it could be implemented. We encourage Sunwater to continue to engage with its customers to achieve broad based agreement among the customer base. The Government may wish to consider any such agreement were one to be reached subsequent to this final report.

3.1 Background

There are a range of risks related to the provision of irrigation services that can have an impact on the water businesses or their customers.

These risks manifest mainly as revenue risk (the risk that revenues received by the water businesses during the price path period differ from prudent and efficient costs determined through the pricing investigation) or cost risk (the risk of changes in prudent and efficient costs during the price path period or that the business is not sufficiently efficient to achieve the ex ante assessed prudent and efficient cost).

3.1.1 Sources of revenue risk

Revenue risk may be short-term or long-term in nature. In the short term, it derives from uncertainties around the volume of water that will be:

- demanded by customers during the price path period (i.e. short-term demand risk)
- available for supply during the price path period (i.e. short-term supply risk).

In the longer term, this risk relates to the possibility of structural changes in demand or supply (long-term revenue risk) that might affect the viability of a scheme if not adequately addressed.

Short-term demand risk

Short-term demand risk is higher where tariffs do not closely reflect the underlying cost structure of the business. For example, if tariffs are fully volumetric but costs are mostly fixed, then there is a risk of revenue under-recovery (if expected demand does not materialise) or over-recovery (if actual demand is higher than forecast).

In either case, there is a potential risk of increased price volatility for customers due to the need to adjust prices to address revenue under or over recovery.

Short-term supply risk

In the short term, the water businesses' ability to supply water depends on the availability of water in storages, which in turn depends on rainfall and hydrology. However, future rainfall and evaporation levels are difficult to forecast with any certainty; therefore, water availability cannot be predicted with any degree of accuracy. Under these circumstances, the water businesses face a risk to revenue adequacy, should storage levels remain depressed, as this could lead to a decline in sales revenue required to recover their costs.

Irrigation customers also face supply risk in terms of their irrigation businesses. Should storage levels remain depressed, they would face reduced crop yields and therefore reduced revenues from which to cover their input costs. This would hamper the profitability of their businesses.

Long-term revenue risk

In the longer term, irrigation schemes may face the risk of declining demand (e.g. due to permanent trading out of the scheme) or reductions in available supplies (e.g. due to long-term changes in rainfall patterns) that could impact the long-term viability of these schemes.

3.1.2 Mechanisms for addressing revenue risk

There are a range of mechanisms that could be used to manage revenue risk, depending on whether the risk is short-term or long-term.

In the short term, mechanisms aim to maintain revenue adequacy, taking into account appropriate risk-sharing and incentive implications.

In the longer term, the regulatory framework could be designed to provide an enabling environment within which the water businesses and their customers can adjust to structural changes in a way that minimises costs and maintains scheme viability.

Short-term revenue risk

Regulatory mechanisms used for managing short-term revenue risk include:

- tariff structure—a two-part tariff that closely aligns the volumetric component with variable costs allows revenues collected from the volumetric tariff to adjust to reflect changes in customer demand while ensuring sufficient revenue is collected from the fixed component to cover fixed costs
- end-of-period revenue adjustment—adjusting allowable revenues for the subsequent regulatory period to account for revenue over- or under-recovery in the current period
- revenue cap—a form of price control that gives businesses discretion to adjust prices within the regulatory period, subject to the constraint that the resulting change in revenue does not exceed a predetermined cap. This contrasts with a price cap, which directly caps the rate at which the business can change its prices in the interest of price stability.

Long-term revenue risk

In the longer term, the water businesses and their customers may employ a range of strategies to mitigate revenue risk, depending on the nature of the risk and the legislative framework in place. For example, the water businesses could attempt to mitigate long-term demand risk by finding opportunities to rationalise the network of assets to reduce costs or finding ways to sustain the customer base where practical (e.g. through commercial negotiations). With regard

to long-term supply risk, the water businesses could augment supply infrastructure to increase available supplies.

We note that the current legislative arrangements limit the way in which these incentives can operate in practice. For example, irrigators can only surrender their water allocations upon the consent of the water businesses (noted in Chapter 2). This arrangement could limit the ability of irrigators to exit a scheme even when it may be efficient to do so, and dampen the incentive for the water businesses to find ways to reduce scheme costs.

We also note that, under existing legislative arrangements[67], the water businesses have no effective means of increasing storage capacity.

The Water Entitlement Notice (WEN) specifies the individual volumes held by customers when granted as water access entitlements (WAEs). Resource operations licences (ROLs) state the infrastructure details, any environmental management rules, and monitoring and reporting requirements. In order to increase current storage capacity ROLs need to be amended. Strategic infrastructure reserves are generally provided for under the water plan and Water Management Protocol (WMP). Under the *Water Act 2000*, the ROL and WMP may only be amended by the chief executive of the Department of Natural Resources, Mines and Energy (DNRME).

Further, water plans may also require legislative amendment where they do not make provision for strategic reserves.

3.1.3 Sources of cost risk

Cost risk may arise from actual costs over the price path period differing from forecast costs as a result of:

- changes in market conditions for inputs (leading to changes in input costs)
- regulatory imposts, such as changes in taxation, legislation or regulation
- other unforeseen events, such as major flooding.

It is important to note that changes in costs may also arise out of inefficiencies on the part of the water businesses or at the expense of required service standards. These types of risk, which are within the ability of the water businesses to control, should not be borne by their customers.

3.1.4 Mechanisms for managing cost risk

The mechanisms typically used to manage costs risks include:

- end-of-period revenue adjustments—accounting for revenue over- or under-recovery through an adjustment to allowable revenues for the subsequent regulatory period. Only efficient costs beyond the ability of the business to manage are eligible following a receipt of an application from the business
- within-period revenue adjustments—provisions that allow a review to be triggered within the regulatory period. The trigger is generally initiated by reference to the business' revenues or costs arising from events that cause costs to diverge significantly from initial forecasts

[67] Legislative arrangements are discussed in Appendix E.

- cost pass-throughs—a mechanism for automatically passing-through cost changes to customers within the regulatory period (typically where these are reasonably foreseeable with little expected volatility).

3.1.5 Existing regulatory framework

In the 2012 and 2013 reviews, our primary consideration in deciding whether to allocate a risk to the water business or their customers was the relative ability of either party to control the particular type of risk.

We assessed the risks and operating environment within which the water businesses operated and recommended, among other things:

- Short-term volume risks should be managed through a cost-reflective tariff structure, with the balance between fixed and volumetric charges closely aligned with the fixed and variable nature of the underlying costs of the business.
- Risks associated with distribution losses should be allocated to the businesses on the basis that they have some capacity to manage distribution system infrastructure and losses.
- Costs risks arising from specific events (changing market conditions for inputs or regulatory imposts) outside of the control of the businesses should be managed through a within-price path review[68], or otherwise through an end-of-period adjustment.

The Government accepted these recommendations in full, and issued us with a direction notice under section 23 of the QCA Act to enable us to undertake a within-period price review if the water business or irrigators sought that and we considered that the party seeking the review had demonstrated that the unforeseen costs were material.

3.1.6 Key issues for consideration

We have considered mechanisms for managing revenue and cost risks, taking into account stakeholder submissions where relevant.

We have assessed these mechanisms by considering the matters required under section 26 of the QCA Act and the referral, including economic efficiency, revenue adequacy, economic and regional development issues, social welfare and equity considerations and balancing the legitimate commercial interests of the water businesses with those of their customers.

3.2 Revenue risk

3.2.1 Previous investigations

In the 2012 and 2013 reviews, we identified short-term volume risk (i.e. unanticipated changes in demand and/or short-term fluctuations in storage levels) as a key form of revenue risk over the regulatory period.

We recommended that this risk be allocated to customers on the basis that the water businesses had little ability to manage it and that, under the existing legislative arrangements, supply risk was the responsibility of customers. For example, standard supply contracts between the water

[68] We did not predefine a threshold for a review trigger, but instead proposed to make an assessment on application from Sunwater or Seqwater, or their customers.

businesses and their customers required the water businesses to only supply water to customers when there was sufficient water available.[69]

On that basis, we recommended that this risk should be managed through cost-reflective tariff structures, with all fixed costs recovered through fixed price components (Part A and Part C) and variable costs recovered through the volumetric price components (Part B and Part D). We also said that this tariff balance would also send efficient price signals.

With respect to long-term volume risk, we noted that the water businesses have little capacity to augment bulk infrastructure as responsibility for this rests with government. However, we allocated risks associated with reducing distribution system losses to the water businesses on the basis that they had some capacity to manage these losses. We also recommended that they benefit from the revenues associated with reducing distribution system losses.

3.2.2 Stakeholders' submissions

Some stakeholders, particularly in schemes with low reliability and/or drought conditions (for example, Barker Barambah WSS, Central Lockyer Valley WSS and Lower Lockyer Valley WSS) expressed concern about the high proportion of fixed costs in the current fixed/volumetric split and paying the fixed component of prices when there is no or little water supplied.[70]

In the Lockyer Valley schemes (Central Lockyer Valley WSS and Lower Lockyer Valley WSS), stakeholders commented on supply reliability concerns and requested that the QCA look at pricing alternatives.[71] In particular, stakeholders said:

- Water availability over the life of water assets has been unreliable, and water is not available for significant periods.
- A future price path with a heavy weighting (up to 95 per cent) on a fixed charge is not sustainable, as water users rely on the availability of water for their production to generate revenue.
- Consideration should be given to pricing alternatives that specify a higher operational cost with limited fixed costs, enabling users to generate revenue and pay for water use when the seasons allow for such use.
- Equity would be compromised by charging for water that is simply not available from poorly performing assets. This inequity would lead to clear social impacts on the short-term viability of businesses and communities.

Bundaberg Regional Council (BRC) said it has some concerns with the current fixed/volumetric tariff structure, in that the structure is heavily weighted to the Part A component.[72] This concern relates to paying a fixed fee when there is little water available. BRC would support a more flexible

[69] Section 122A of the *Water Act 2000* empowers the chief executive of DNRME to approve standard supply contracts under which the businesses' obligation to release water was subject to resource operations licences requirements, customer allocations, estimated likely demand of other customers, the availability of water and the capacity of the businesses' infrastructure among other requirements.

[70] Mayne A and C, sub. 120; Barker Barambah IAC, sub. 83; Burnett Inland Economic Development Organisation, sub. 90; GKM Cooney Pty Ltd, sub. 106; Preema Partnership, sub. 129; S & J Reeves Enterprises Pty Ltd, sub. 134; Silverleaf Farming Pty Ltd, sub. 137; Nicholson, S, sub. 126.

[71] Barden Produce, sub. 82; Golden Finch Lawns, sub. 61; Member for Lockyer, sub. 125; Lockyer Valley Regional Council, sub. 117; Lockyer Valley Irrigators, sub. 116; QFF, sub. 131; Somerset Regional Council, sub. 76.

[72] Bundaberg Regional Council, sub. 87.

tariff structure, which could accommodate the diversity of users and the seasonal influences without unduly compromising Sunwater's charter.

Wide Bay Burnett Regional Organisation of Councils (WBBROC) submitted that the current allocation of risk is biased against customers.[73] They supported a more flexible tariff structure to accommodate the diversity of users and seasons, without unduly compromising a general principle of cost reflectivity stating that a full review of tariff structures should be undertaken, with a view to allowing customers to select more appropriate tariff structures.

In their November 2019 submission on our draft report, Lockyer Water Users Forum said that the continued application of the pricing principles in the referral will eventually drive commercial irrigation out of the Atkinson Dam Scheme.[74] They said that the Government should engage with the scheme customers and Seqwater to investigate the long term impacts of high fixed charges on the Lower Lockyer irrigation scheme and measures that can be implemented to address these impacts including water trading policy changes to allow improved adjustment arrangements for tariffs.[75]

Burnett Valley Vineyards said that it is unfair and unconscionable to have a Part A charge when Sunwater cannot provide any water.[76] They said that if the Government were to provide drought relief, this should happen contemporaneously with any increase in the Part A charge.

3.2.3 Approach in other jurisdictions

We have reviewed the approaches that regulators in other Australian jurisdictions use to manage revenue risk within their regulatory frameworks. We have focused on jurisdictions that have rural irrigation businesses.

New South Wales

In New South Wales (NSW), the Independent Pricing and Regulatory Tribunal (IPART) regulates WaterNSW's rural irrigation business.

IPART considers that the tariff structure of WaterNSW (an 80:20 fixed to variable split)[77] is the appropriate mechanism for managing revenue risk. This approach ensures that customers receive an appropriate price signal about their water use decisions while ensuring that WaterNSW is able to recover the fixed costs of providing the service.

IPART acknowledges that WaterNSW retains a residual amount of risk given that its fixed costs exceed 80 per cent of its total costs. However, IPART considers this is appropriate, as business revenues are not guaranteed in markets.[78]

Victoria

The Essential Services Commission (ESC) regulates a number of rural water businesses in Victoria. Prior to its 2018 determination, the ESC issued a guidance paper to the businesses in which it articulated its preferred approach to risk management. The ESC stated that:

> Efficiency is promoted when risk is adequately identified, quantified, allocated and, where appropriate, managed by a water business. Prices should reflect the costs incurred in delivering

[73] WBBROC, sub. 149, pp. 19–20.
[74] Lockyer Valley Water Users Forum, sub. 200, p. 1.
[75] Lockyer Valley Water Users Forum, sub. 200, p. 5.
[76] Burnett Valley Vineyards sub. 163, p. 1.
[77] Some customers have a fixed to variable ratio of less than 80:20 but pay a revenue volatility premium to achieve an 80:20 split through a financial swap arrangement between WaterNSW and a third party.
[78] IPART, *Review of prices for WaterNSW from 1 July 2016 to 30 June 2020*, final report, June 2016, pp. 86, 91–94.

> services, incorporating reasonable assumptions about risk. A water business's price submission must be informed by a robust risk identification process. A water business's proposals should allocate risk appropriately, and where a business is best placed to do so, specify the mechanisms it will use to manage risk. [79]

The ESC listed a range of mechanisms for dealing with risk, and mentioned tariff structure and the form of price control as specific mechanisms for dealing with revenue risk.[80] The ESC sought information about risk management in the businesses' proposals in these areas.[81] In its final decision, the ESC approved hybrid revenue caps[82] for some businesses (Southern Rural Water and Lower Murray Water) to mitigate revenue risk, although it also approved a price cap form of regulation for other businesses (GWMWater and Gippsland Water). These latter businesses had a two-part tariff structure, and the ESC considered they were in a position to manage demand risk.

3.2.4 QCA assessment

In considering appropriate risk management mechanisms, we have considered the matters required under section 26 of the QCA Act and the referral including economic efficiency, revenue adequacy, economic and regional development issues, social welfare and equity considerations, and balancing the legitimate commercial interests of the water businesses with those of their customers.

Short-term demand risk

One manifestation of short-term demand risk is its implications for revenue adequacy of the water businesses, particularly where they have limited control over customer demand.

Demand for water can fluctuate over the price path period for many reasons, such as:

- rainfall and changes in rainfall patterns
- changes in crop composition or areas irrigated due to changes in commodity prices
- changes in on-farm costs
- customer access to alternative water supplies
- irrigation water prices.

We consider that these factors are outside the control of the water businesses, as they depend on movements in commodity markets and climatic conditions or, in the case of irrigation water prices, the Government, who sets the prices. The water businesses therefore have limited control over demand.

Customers, on the other hand, may vary their demand for irrigation services in response to changing rainfall patterns, changes in commodity prices, access to alternative water supplies and changes in input costs, including the price of irrigation services.

On this basis, a two-part tariff structure would strike an appropriate balance in allocating demand risk between the water businesses and their customers. By closely aligning the volumetric

[79] ESC, *2018 Water Price Review*, guidance paper, November 2016, p. 18.
[80] ESC, *2018 Water Price Review*, guidance paper, November 2016, pp. 75–76.
[81] ESC, *2018 Water Price Review*, guidance paper, November 2016, p. 19.
[82] The businesses could rebalance tariffs under the revenue cap, but subject to a rebalancing constraint. This was intended to limit price volatility during the regulatory period.

component of tariffs with variable costs, revenues collected from the volumetric tariff will adjust to reflect changes in customer demand.

At the same time, the water businesses would collect sufficient revenue from the fixed component of tariffs to recover their fixed costs and customers would be protected from paying any more than is required for the water businesses to recover prudent and efficient costs.

The approach of using a two-part tariff structure therefore meets the criterion of revenue adequacy while also providing efficient pricing signals.

It is also consistent with our decision to apply the pricing principles in the referral (see Chapter 2), one of which requires tariff structures to align closely with the water businesses' cost structures. Further, to the extent that customers are able to adjust their decisions in response to changes in costs (e.g. sourcing alternative supplies), the approach may also support economic efficiency by providing customers with more appropriate signals on the cost of their water use; this may however be muted by our decision to apply the Government's pricing principles, as these limit the extent to which tariff structures may be rebalanced over the price path period.

Short-term supply risk

As with short-term demand risk, the water businesses have little ability to manage short-term supply risk, as they cannot influence water availability in the short-term. They may be able, though, to access strategic reserves identified in WPs in limited circumstances.

Customers also have limited ability to manage short-term supply risk, but they may have the options of trading WAEs, making short-term changes in crop composition or areas under irrigation or sourcing alternative water supplies (e.g. groundwater). However, the current legislative arrangements allocate supply risk to customers.

All water allocations managed under a ROL require the allocation holder (i.e. the irrigation customer) and the licence holder (i.e. the water business) to have a supply contract for the allocation. Standard supply contracts provide details of the arrangements for the storage and delivery of water under water allocations.[83]

Under current supply contracts, the water businesses may restrict the release of water as required by the ROL, the customer's allocation, likely demand of other customers, the availability of water and the capacity of infrastructure.

Further, under the national water initiative, to which the Government is a signatory, WAE holders are responsible for bearing the risks of any reduction in water allocation, including the reliability of allocations, resulting from seasonal or long-term changes in climate and periodic natural events such as bushfires and drought.[84]

We consider that these factors support the use of a two-part tariff for managing short-term supply risk.

Long-term revenue risk

As noted above, there are a few areas where current legislative arrangements could potentially limit the extent to which the water businesses and their customers could mitigate long-term revenue risk.

[83] Section 146 of the *Water Act 2000*.
[84] COAG, *Intergovernmental Agreement on a National Water Initiative*, 2004, clause 48, available at http://www.agriculture.gov.au/water/policy/nwi.

For example, as discussed in section 2.6.1, irrigators can only surrender their water allocations with the consent of the water businesses. We note that this could limit the ability of irrigators to exit a scheme and mask signals to the water businesses to find ways to reduce scheme costs.

The water planning arrangements place the responsibility for supply augmentation with the Government. However, in the case of distribution systems, the water businesses have some ability to control system losses and may have an incentive to do so where they are able to benefit from extra sales revenue from the entitlements created. For that reason, we consider it appropriate to allocate the risk of distribution losses to the water businesses (see Chapter 6, in each of Part B and Part C).

Summary

A large proportion of the water businesses' costs is fixed and independent of volumes, and they are limited in their ability to avoid these costs. On the other hand, structuring tariffs so that they more closely reflect the cost structure of the businesses may provide customers with better signals on the cost of their water use—although this effect may be muted, given our decision to apply the Government's pricing principles and the ability of customers to adjust to these signals.

In general, we consider that a two-part tariff structure that closely aligns with the water businesses' cost structure reflects an appropriate allocation of demand risk, as it mitigates the businesses' revenue risks without fully shielding them from this risk.

On balance, we consider that irrigators are generally in a better position than the water businesses to manage short- and long-term supply risks. Particularly for long-term risks, the water businesses have limited options beyond better management of system losses or seeking augmentation. Irrigators can potentially trade their entitlements, switch to crops that use less water or reduce the area under irrigation, implement more efficient water use technologies, or source alternative water supplies. While in most schemes it is better if this balance of risks is placed on irrigators, in some schemes it is clear that irrigators have few options to manage this risk—in which case neither party is able to adequately manage the risks. For example, schemes that have persistently low reliability of supply, where irrigators have no alternative water supplies and have limited dryland cropping options but may still be required to meet the fixed costs of the water supply schemes.

As discussed in Chapter 2, we have decided to recommend prices that are consistent with the pricing principles that the Government has set out in the referral.

In this regard, while we acknowledge the concerns raised by customers in schemes affected by drought (in particular, the Barker Barambah WSS, Central Lockyer Valley WSS and Lower Lockyer Valley WSS), we consider that any relief from fixed (Part A) prices during a drought is a matter more appropriately determined by the Government. Drought assistance provided by the Queensland and Australian governments generally encompasses a range of measures and any relief from Part A prices needs to be considered in that context.

We consider that the water businesses are in a good position to manage any residual risk. They could use a range of strategies, including refining their demand forecasts (see Chapter 5, in each of Part B and C) and, where appropriate and possible to do so, hedging against any residual risk through, for example, purchasing financial instruments to limit revenue volatility where customers are willing to share the cost.

Consistent with the previous reviews, we consider it is appropriate to allocate the risk associated with reducing distribution system losses to the water businesses (see Chapter 6, in each of Part B and C).

> **Recommendation 1**
>
> We recommend that short-term revenue risk be addressed through the use of a two-part tariff structure that closely aligns with the water businesses' cost structure.

3.3 Cost risk

3.3.1 Previous investigations

In the 2012 and 2013 reviews, we allocated cost risk (that is, risks associated with input cost changes) to the businesses (where the costs were controllable), with an end-of-period adjustment for uncontrollable costs and a within-price path review (on application by businesses or customers) in limited circumstances.

We allocated the risk of regulatory imposts (that is, changes in taxation, legislation or regulation) to customers and recommended a pass-through mechanism for these costs, depending on materiality.

3.3.2 Stakeholders' submissions

Electricity cost pass through mechanism

In its November 2018 submission, Sunwater submitted that the QCA should investigate mechanisms that recognise the expected volatility in electricity costs over the price path period to ensure customers pay no more (or less) than what Sunwater actually incurs. In particular, Sunwater proposed an electricity true-up mechanism whereby electricity costs would be recovered through the variable tariff and yearly 'unders or overs' would be accounted for through an annual adjustment to the variable tariff.[85]

Sunwater said that it had consulted with the Queensland Farmers Federation (QFF) on this proposal and that while the QFF expressed a willingness to further explore options, it was concerned that applying the true-up to the volumetric tariff could mean that irrigators who use more of their allocations would bear a greater proportion of the true-up adjustment.

The QFF submitted that the QCA should establish a transparent approach for passing through electricity costs.[86]

The Bundaberg Regional irrigators Group (BRIG) did not support the true-up mechanism that was proposed in Sunwater's November 2018 submission, saying it seemed unnecessarily complex and appeared to have significant intergenerational transfer/equity issues.[87] BRIG proposed a quarterly Part E volumetric charge that would recover Sunwater's actual electricity usage and demand costs, with an annual electricity review that reviews the tariff of each pump station.[88]

Some stakeholders did not support any form of cost pass-through mechanism for electricity prices, as this would reduce the incentive for Sunwater to manage its electricity costs efficiently.[89] Fairbairn Irrigation Network disagreed with an electricity cost pass-through mechanism but said that if a pass-through mechanism were to be adopted, the process would need to ensure that

[85] Sunwater, sub. 11, p. 73.
[86] QFF, sub. 132, p. 5.
[87] BRIG, sub. 88, p. 17.
[88] BRIG, sub. 88, pp. 19–22.
[89] WBBROC, sub. 149, p. 10; WBBROC, sub. 234, p.1; Isis Canegrowers, sub. 91, p. 2; BRIA, sub. 85, p. 39, Fairbairn Irrigation Network, sub. 104, p. 6.

electricity costs are projected with the best available data to avoid price shocks during the price path period.[90]

Sunwater made a supplementary submission on the electricity cost pass-through mechanism in August 2019.[91] Sunwater said the mechanism would involve:

- determining fixed and variable electricity charges
- including any fixed electricity charge in Part A/C water charges but treating the variable electricity charge as a standalone charge independent of Part B/D water charges
- applying a discount/surcharge to the variable electricity charge at the end of each financial year to reflect differences between revenue received and actual electricity costs in that year
- publishing information on energy usage and targets in NSPs and, where targets are not met, empowering customers to request a prudency and efficiency review of electricity costs passed through to them.

Sunwater proposed three options for the structure of electricity charges:

(a) fully volumetric (based on 5 years of historical data on electricity and water use and Sunwater's assessment of the best available electricity tariffs)

(b) two-part tariff with the fixed component calculated to reflect the extent to which total electricity costs have varied with water use over the last five years

(c) two-part tariff with the fixed component calculated such that, when applied to the last five years of actual data, the revenue Sunwater receives is at least equal to the actual cost of electricity.

In its November 2019 response to our draft report, Sunwater said it considered its electricity cost pass-through mechanism would benefit customers in several service contracts as it would allow customers to benefit from reductions in electricity prices, improved efficiency and energy policy reform in the pricing period in which those events occur. Sunwater said that adopting its proposed approach would also minimise large price movements at the end of the period due to an over or under recovery of electricity costs.[92] Sunwater proposed to modify the approach to any QCA review of costs by sharing the costs of such a review with customers rather than passing on the full cost to customers.

Sunwater considered that its electricity cost pass-through mechanism was preferable to a within-period or end-of-period review mechanism as it would:

- create a direct link from Sunwater's decisions surrounding electricity usage to customers' bills
- improve customers' understanding of how why and when Sunwater makes decisions around electricity usage and tariffs
- minimise the regulatory cost burden borne by irrigation customers
- introduce greater intergenerational equity into cost-reflective pricing

[90] Fairbairn Irrigation Network, sub. 104, p. 6.
[91] Sunwater sub. 156.
[92] Sunwater sub. 229, p. 18.

- ensure greater transparency and more cost-reflective charges.[93]

A number of stakeholders provided in-principle support for Sunwater's August 2019 supplementary submission.[94]

QFF said that the proposal sets out a method that includes the allocation of true fixed and variable costs and an annual balancing.[95] QFF said it recognised that further consultation and dialogue is required to ensure that stakeholders are sufficiently informed and engaged but argued that the tight timeframes of the review should not override the opportunity to provide greater good for all stakeholders.[96]

The Burdekin River Irrigators Association (BRIA) said that its support was subject to key performance indicators of efficiency being established with full transparency.[97]

Cotton Australia said that it supported continued discussion between us, QFF and Sunwater, of Sunwater's proposal.[98]

Canegrowers and Canegrowers Isis submitted that any electricity cost pass-through mechanism should be asymmetrical with irrigators sharing the benefit of price/cost reductions and Sunwater bearing the risk of price/cost increases with Canegrowers Isis stating that this would give Sunwater incentives to achieve greater efficiencies.[99] They did not support customers bearing the costs of any QCA review under Sunwater's proposal that a review could be triggered where Sunwater breaches defined performance targets.[100] They requested further consultation on the electricity cost pass-through mechanism prior to the QCA's final report.[101]

The Mareeba Dimbulah Irrigation Area Council (MDIAC) submitted that they did not support an electricity cost pass-through mechanism as re-lift irrigators would be unable to budget water costs for the price path, electricity cost estimates would be based on scheme-wide electricity costs and there would be no incentive for Sunwater to implement electricity cost saving measures.[102]

WBBROC requested that we defer electricity price pass-through until more effective consultation occurs.[103]

One stakeholder submitted that they agreed with Sunwater's August 2019 supplementary submission as it was founded on the principle of passing on charges to customers that are as near as possible to actual costs incurred rather than an estimated use that is built in to prices for the life of the price path. However, they considered that implementation could be unwieldy and inefficient and could only be supported if there was complete transparency by Sunwater in terms of its electricity usage. They were also against customers bearing the cost of QCA reviews under Sunwater's proposal.[104]

[93] Sunwater sub. 229, pp. 18-19.
[94] QFF, sub. 233; BRIA, sub. 161; Lower Mary Customer Advisory Board, sub. 202.
[95] QFF, sub. 223, p.2.
[96] QFF, sub. 223, p.5.
[97] BRIA, sub. 161, p. 4.
[98] Cotton Australia, sub. 190, p. 4.
[99] Canegrowers, sub. 179, pp. 12-13; Canegrowers Isis, sub. 185, p. 2.
[100] Canegrowers, sub. 179, pp. 12-13; Canegrowers Isis, sub. 185, p. 2.
[101] Canegrowers, sub. 179, p. 13; Canegrowers Isis, sub. 185, p. 4.
[102] Mareeba Dimbulah Irrigation Area Council, sub. 203, p. 1.
[103] WBBROC, sub. 234, p. 3.
[104] Francis, P., sub. 194, p.1.

Other mechanisms

In its November 2018 submission, Sunwater proposed that for cost risks arising from cost inputs (other than electricity costs) or regulatory imposts, any material increases in costs in the next price path period be subject to an adjustment mechanism (similar to the approach adopted by the QCA in the 2012 review).[105]

In its November 2019 response to our draft report, Sunwater submitted that it supports opportunities to minimise the impact of large-scale cost adjustments between periods but had concerns with the within-period review mechanism proposed in our draft report.[106] Specifically, Sunwater considered that a within-period review mechanism should:

- specify a review threshold
- specify how the costs of a review would be allocated
- define the review process.[107]

Sunwater said that it anticipates that the within-period and end-of-period adjustment mechanisms proposed in our draft report would primarily be used for changes between forecast and actual operating expenditure (opex) such as electricity and insurance.[108] Seqwater also submitted, in its November 2019 response to our draft report, that the unexpected magnitude of the recent rise in its insurance premiums warrants attention in the context of within-period and end-of-period review mechanisms.[109]

QFF said it did not see the need for any within-period or end-of-period adjustments outside of renewals and electricity costs.[110] QFF and Pioneer Valley Water Co-operative (PV Water) provided one exception being the recalculation of the headworks utilisation factor for the Pioneer River WSS resulting from review of the Integrated Quantity Quality Model (IQQM) for this scheme.[111]

Some stakeholders did not support a within period price review mechanism. BRIA considered that such reviews would be costly and that there are sufficient existing mechanisms to manage cost risks to Sunwater.[112] MDIAC submitted that there should be no need for within period reviews as it expects the QCA to undertake a thorough assessment of costs for the price path period. They requested the QCA to provide more information on what we consider to be material risk areas which would trigger a within period review.[113] Cotton Australia said that, with the exception of electricity costs, it does not support an in period cost review system as this would appear to negate the purpose of an effective and rigorous price setting process.[114]

3.3.3 Approach in other jurisdictions

We have considered approaches to cost risk in selected jurisdictions including those with rural irrigation businesses.

[105] Sunwater, sub. 14, pp. 21–22.
[106] Sunwater sub. 229, p. 17.
[107] Sunwater, sub. 229, pp. 17-18.
[108] Sunwater, sub. 229, p. 17.
[109] Seqwater, sub. 226, p. 2.
[110] QFF, sub. 223, p.5.
[111] QFF, sub. 223, p.6; PV Water, sub. 221.
[112] BRIA, sub. 161, p. 5.
[113] MDIAC, sub. 203, p. 4.
[114] Cotton Australia, sub. 190, p. 4.

New South Wales

IPART employs an efficiency carryover mechanism for controllable opex, whereby WaterNSW retains any cost savings it makes during the regulatory period, for the duration of the regulatory period. IPART allows WaterNSW to recover Murray-Darling Basin Authority charges through a cost pass-through mechanism.[115]

Victoria

The ESC allows for price adjustment mechanisms within the regulatory period to account for:

- uncertain and unforeseen events
- a pass through of changes in some costs (such as taxes). [116]

The businesses may also nominate events in their regulatory submissions to the ESC and propose a price adjustment mechanism to implement the pass through. [117]

The ESC assesses any such proposals by considering:

- the extent to which the event is outside the businesses' control and poses significant risk of cost changes during the period
- the extent to which the nominated event is uncertain in its impacts and timing
- whether it is reasonable that customers should bear risk associated with the nominated event
- the impact of the nominated event on efficiency incentives for the water business
- the ability of the business to otherwise manage the risk posed by the event. [118]

National electricity market

The National Electricity Rules governing the economic regulation of electricity transmission and distribution businesses in the national energy market pre-define specific cost pass through events including:

- a regulatory change event (i.e. a change in a regulatory obligation or requirement that occurs within the regulatory period, substantially affects the manner of service provision and materially increases or decreases the costs of service provision)
- a service standard event (i.e. a legislative or administrative act or decision that has the effect, within the regulatory period, of substantially varying the manner in which services are required to be provided; imposes, varies or removes minimum service standards or alters the nature or scope of services provided and materially increases or decreases the costs of service provision)
- a tax change event (i.e. a change in, removal or imposition of a relevant tax with the consequence of materially increasing or decreasing the cost of service provision)

[115] IPART, *Review of prices for WaterNSW from 1 July 2016 to 30 June 2020,* final report, June 2017, pp. 86, 91–94.
[116] ESC, *2018 Water Price Review*, guidance paper, November 2016, pp. 59–60.
[117] ESC, *2018 Water Price Review*, guidance paper, November 2016, pp. 60–61.
[118] ESC, *2018 Water Price Review*, guidance paper, November 2016, pp. 60–61.

- an insurance event (essentially covering material changes in the cost of premiums or deductibles, loss of insurance during the regulatory period or the take up of insurance on terms materially different to those at the time of the regulatory determination).[119]

These events could be positive change events (resulting in an increase in costs) or negative change events (resulting in a decrease in costs).

The regulated businesses can seek approval of a positive change event by making an application to the Australian Energy Regulator (AER) specifying the details of the event, the pass through amount, evidence of the actual increase in costs and evidence that the costs occurred solely as a consequence of the event.

For a negative pass through event, the businesses are required to inform the AER when such an event occurs and set out the details of the event or, if the AER otherwise becomes aware of such an event, the AER can seek information from the relevant business about the event.

The AER assesses the relevant information and determines the amount to be passed through if any.

3.3.4 QCA assessment

The out–turn cost of the water businesses will depend on a range of factors including the level of effort they exert at achieving efficiencies, the amount of water they deliver to customers (in the case of variable costs), significant changes in the price of critical inputs, any significant regulatory impost during the price path period and other unforeseen events with a substantial impact on costs.

As a general matter, we consider that the water businesses should bear cost risk as this will provide them with the incentive to pursue efficiencies during the price path period. Any step changes in costs (as well as efficiencies achieved) during the price path period would typically be taken into account when setting the base year costs in subsequent price path periods.

There may be limited circumstances in which the water businesses may be unable to manage changes in cost arising from circumstances beyond their control. In other instances, there could be a substantial reduction in costs during the price path period that could be passed on to customers. In the context of this review, specific cost risks identified by stakeholders for the upcoming price path period include changes in electricity prices and off-stream pumping requirements, changes in insurance premiums and potential changes in regulatory imposts.

We have assessed Sunwater's proposed electricity cost pass through mechanism and considered mechanisms for dealing with changes in market conditions beyond the control of the water businesses (such as changes in insurance premiums) and regulatory imposts on the businesses. We have also set out the circumstances under which a within-period review of costs may be appropriate.

Electricity cost pass through mechanisms

As we noted in our 2012 review, a cost pass-through may be appropriate when the nature of costs can be reasonably foreseen (but not quantified in advance) and the cause of the subsequent change and its magnitude (once it has occurred) are unambiguous.

[119] National Electricity Rules, Version 127, Clause 6A.7.3, p. 880.

We generally do not consider a cost pass-through mechanism to be appropriate for dealing with unpredictable and potentially significant changes in costs, as this could increase price volatility, and would not provide an opportunity to assess the prudency and efficiency of such cost changes.

We note that Sunwater and BRIG have both proposed an electricity cost pass-through mechanism given the significant change in electricity tariffs during the last price path period.

Under Sunwater's November 2018 proposal, electricity costs would be fully allocated to the volumetric component of irrigation tariffs with an annual electricity cost per megalitre determined by the QCA. There would then be an annual adjustment to the electricity cost per megalitre, to take account of changes in actual electricity costs.

The electricity cost per megalitre determined in this way, however, would not necessarily reflect the underlying electricity tariff rates and could lead to perverse outcomes, where changes in electricity costs are the result of changes in volumes as opposed to changes in tariff rates.

BRIG's proposal of a Part E electricity tariff attempted to address the concern with Sunwater's November 2018 proposal by avoiding the need to estimate electricity costs. Such a tariff would pass through the change in actual variable electricity costs over a defined period (say a quarter), divided by the change in the actual volume of water delivered over that period.

However, similar to the Sunwater proposal, this proposal would require assumptions to be made about variable electricity costs. For example, it assumed that Sunwater's electricity demand charge was a variable charge, although it is a monthly charge that does not vary up to Sunwater's authorised demand for the month.

We also consider that this automatic cost pass-through mechanism could have potentially large bill impacts in a given quarter and also would not give clear pricing signals to customers on the cost of their water use.

Under Sunwater's August 2019 proposal, a standalone variable electricity charge (a $ per megalitre charge separate from volumetric Part B and Part D prices) would be created and, at the end of each financial year, a discount or surcharge would be applied to the variable electricity charge for the next financial year depending on any over recovery or under recovery of actual electricity costs in the current financial year. Sunwater would also publish information on energy use and targets in its NSPs and, where targets were breached, customers could request a prudency and efficiency review of electricity pass through costs.

Other than the late timing of engagement on this pricing issue, we consider Sunwater's engagement with QFF and the Irrigation Customer Reference Group (ICRG) has generally been appropriate. While Sunwater has sought to address the concerns raised by QFF and ICRG, we note QFF's comments in its letter of support that the methodology and the data demonstrating the modelling of electricity price is not sufficiently developed to be conclusive nor sufficiently transparent to satisfy QFF stakeholders that the approach appropriately models and allocates prudent and efficient costs.[120] Sunwater also acknowledged that customers in some service contracts have indicated that they do not intend to support the introduction of the electricity cost pass through in the next price path period.[121]

Typically issues such as cost pass through mechanisms are treated as internal business decisions. We consider that consultation in regard to these issues should focus on the outcomes that customer's value and how the proposed instruments impact on these outcomes. We note that

[120] QFF, sub. 158.
[121] Sunwater sub. 229, p. 20.

Sunwater's customers have indicated that key outcomes include price variability, prudency and efficiency of actual electricity costs and transparency around electricity costs. We consider that Sunwater should accordingly be able to justify to us how its proposal meets these outcomes. While Sunwater has proposed publishing annual information on usage and efficiency to improve transparency, we do not consider that Sunwater has fully addressed stakeholders' concerns with regard to prudency and efficiency issues or price variability[122].

In the absence of broad based customer agreement, we continue to harbour concerns with Sunwater's proposed electricity pass through mechanism including:

- an automatic pass-through of electricity cost increases could have potentially large bill impacts, with no proposed constraints in the pass through mechanism or flexibility to smooth pricing impacts
- it may reduce the incentive for Sunwater to incur only prudent and efficient costs, as an assessment of the prudency and efficiency of the pass through amount would only occur under limited circumstances (i.e. if Sunwater breaches performance targets)
- it does not allow for an assessment of the materiality of the cost increase and Sunwater's ability to manage or absorb the increase within the price path period.

We note that while we have used our best endeavours to forecast escalation rates for electricity prices during the price path period (see Chapter 2 in the Part B and Part C reports), the nature of forecasting implies that uncertainty remains around the magnitude of future price changes. Further, any future change in electricity costs may be due to inefficient use of electricity rather than the result of a change in electricity prices or other factor beyond the control of the water business.

Given these uncertainties, we consider that whether it is appropriate to pass on future changes in electricity costs would depend on:

- whether the impact of the change in costs on the businesses or their customers is material
- whether the change in costs could have been anticipated and thus managed or avoided by the businesses
- the extent to which allowing recovery of unanticipated costs would reduce incentives to pursue efficiency.

These considerations make it unsuitable to apply an automatic cost pass-through mechanism in the absence of broad based customer support for such an approach.

For these reasons, we consider that further work would need to be done on the proposal and clear customer support demonstrated before this could be implemented. Should broad based customer agreement be achieved subsequent to our final report, the Government may want to consider implementing such a mechanism at that time.

However, we recognise that there may be material changes in some costs that may be beyond the control of the water businesses. We consider specific events that could potentially trigger a review of costs below.

[122] For instance, Sunwater has not provided sufficient detail of potential pricing impacts, or proposed any constraints in the pass through mechanism to limit price variability.

Review events resulting from a change in market conditions for inputs

Where there is a material change in costs arising from changes in input markets that are beyond the control of the water businesses, we consider that the costs should be eligible for review. At the time of finalising this document in early January 2020 we are particularly minded of the uncertain impacts that the bushfires from Queensland to Tasmania may have on insurance markets over the pricing period.

This approach supports the principles of revenue adequacy and economic efficiency by ensuring that material changes in prudent and efficient costs, beyond the ability of the water businesses to manage are passed through to customers thereby providing customers with a signal about the cost of providing the service. It also mitigates the risk to customers that prices may reflect costs that are higher than the prudent and efficient level and will provide relief to customers should there be a reduction in prudent and efficient costs.

The following events could potentially trigger a review of costs:

- a material change in electricity prices during the price path period
- a material change in insurance premiums during the price path period.

Review events resulting from a regulatory impost

Where there is a material change in costs arising from a change in government policy or a regulatory impost that materially changes the cost of service provision during the price path period, we consider that the costs should be eligible for review as such changes are beyond the control of the water businesses.

The following events could potentially trigger a review of costs:

- a change in policy that materially changes the share of costs allocated to medium priority entitlement holders during the price path period
- a material change in off-stream pumping costs triggered by requirements under water management protocols.

Other unforeseen events

The water businesses face the risk of unforeseen events (e.g. flooding that leads to substantial damage to assets) that may lead to a material increase in costs.

In some instances, the change in cost could be significant and the water business may be unable to absorb the cost during the regulatory period. Nevertheless, we do not consider it appropriate for the water businesses to pass on significant changes in costs to customers without the prudency and efficiency of these costs having been reviewed.

In particular, we note that it can be difficult under some circumstances to determine whether a material change in costs is due to an uncontrollable event, or whether the water business could have better controlled the cost. Therefore, we recommend that the water businesses should be able to apply for a review of prices within the price path period where they consider there has been a material change in costs, triggered by an unforeseen event, which they have been unable to manage.

This approach supports the principles of revenue adequacy and economic efficiency by ensuring that only changes in prudent and efficient costs that are beyond the ability of the water businesses to manage are reflected in prices within the regulatory period.

Process for initiating and assessing a review event

We consider that, in the event the water businesses become aware of a review event that materially decreases their costs, they should be required to provide the Government with details of the event. However, in the event that other stakeholders become aware of such an event, we consider that they should be able to initiate a review. In that case, the Government may seek further information from the business about the event. In the case of a review event that materially increases costs, the businesses may initiate a review.

In assessing a claim for costs associated with a review event, we would seek details of the event and evidence:

- of the change in cost
- that the change in cost is a consequence of the event
- that the event is outside the business' control
- that the change in cost is prudent and efficient
- that the change in cost is material.

Within-period review mechanism

We consider that a within-period review is appropriate where there is a material reduction in costs or where a water business is unable to manage a material increase in costs associated with a review event.

Where there is a material reduction in costs during the price path period arising from a review event, we consider that this should be passed on to customers within the price path period as this would provide customers with immediate relief.

Where a water business can demonstrate that it is unable to manage a cost increase associated with a review event, it could apply for a within-period review. In order to be eligible for a within period review, the water business would have to provide evidence that it was unable to manage the cost increase including evidence of significant cash flow problems as a result of the cost increase.

We note Sunwater's submission that we should specify a materiality threshold for within period reviews.

However, as in the 2012 and 2013 reviews, we have not predefined a threshold for a review trigger. We consider that whether a change in cost is material will depend on the particular circumstances prevailing at a given time. In particular, the water businesses would need to demonstrate that they are unable to manage or absorb the change in cost within the regulatory period.

We also note that the Government is ultimately responsible for determining prices and we can only make recommendations on referral from the Government. In these circumstances, we do not consider it appropriate to propose predefined review triggers.

We also note Sunwater's request that we clarify the party that bears the cost of a within period review. We note that standard regulatory practice is that customers bear the costs of such reviews. However, given that the Government is ultimately responsible for determining prices and given our recommendation that the Government should be responsible for determining a within period review trigger, we consider that the Government should be responsible for determining who bears the costs of such a review.

Recommendation 2

We recommend:

- the following events be eligible for the review of associated costs to determine prudency and efficiency:
  - a material change in electricity prices
  - a material change in insurance premiums
  - a material change in off-stream pumping costs
  - a material change in costs arising from a policy change or regulatory impost
- the use of a within-period price review mechanism where:
  - there is a material reduction in costs associated with a review event
  - there is a material increase in costs associated with a review event that the water businesses can demonstrate they are unable to manage during the price path period.

4 APPORTIONING DAM SAFETY UPGRADE CAPITAL EXPENDITURE

As part of this review, we have been asked to develop and apply an appropriate approach to apportioning dam safety upgrade capital expenditure (dam safety upgrade capex), and explain this approach and its application as part of our recommendations. This chapter addresses that requirement.

Consistent with the requirements of the referral, we have recommended two sets of irrigation prices: one set that excludes all dam safety upgrade capex and one set that includes an appropriate allowance for prudent and efficient dam safety upgrade capex forecast to be incurred from 1 July 2020 onwards.

Consistent with the referral, our prices and approach to apportioning dam safety upgrade capex will, if adopted by the Government, only apply to irrigation customers in the specified WSSs and distribution systems

4.1 Overview

If a dam fails, it can have serious consequences for downstream communities. Consequently, dam owners and operators have a regulatory obligation to manage the risk of dam failure. In order to comply with that obligation, it may be necessary to upgrade a dam to reduce the potential for dam failure to tolerable levels[123]. Dam safety upgrades can include dam spillway upgrades, the installation of spillway gates, structural modifications and modifications to dam embankments.

As part of this review, we have been asked to develop and apply an appropriate approach to apportioning dam safety upgrade capex, and explain this approach and its application as part of our recommendations.[124] This chapter addresses that requirement.

In developing our approach, we have considered the extent, if any, to which the proportion of dam safety upgrade capex allocated to irrigators should reflect the possibility that both irrigators (as direct water customers) and the broader community may contribute to the need for, or may derive benefits from, dam safety upgrades. We have also considered all of the matters raised in submissions and had regard to all of the matters we are required, including the matters in section 26(1) and 26(2) of the QCA Act and the stated matters in the referral (consistent with section 24 of the QCA Act).

Consistent with the requirements of the referral[125], we have recommended two sets of irrigation prices in relation to dam safety upgrade capex:

- prices that exclude all dam safety upgrade capex
- prices that include an appropriate allowance for prudent and efficient dam safety upgrade capex forecast to be incurred from 1 July 2020 onwards.

[123] As determined by the relevant dam safety regulators—see section 4.2 for more information.
[124] Paragraph B(1.3) of the referral.
[125] Paragraph B(1.2).

Consistent with the referral, our prices and approach to apportioning dam safety upgrade capex will, if adopted by the Government, only apply to irrigation customers in the specified water supply schemes and distribution systems. [126]

4.1.1 Stakeholders' submissions

Irrigation stakeholders generally expressed concern about the requirements in the referral relating to dam safety upgrade capex.[127] Some of them, including Central Highlands Cotton Growers and Irrigators Association and the Mareeba Dimbulah Irrigation Area Council (MDIAC), considered that the Government should remove this requirement from the referral.

The Queensland Farmers' Federation (QFF) and a number of other irrigation stakeholders considered that it was not acceptable for the QCA to develop an approach to apportioning dam safety upgrade capex that only applied to irrigation customers. QFF also considered that it would not be appropriate for the QCA 'to respond to this brief [developing an approach to apportioning dam safety upgrade capex] unless it can engage all parties likely to be affected including irrigation customers, local government customers and the stakeholders in the wider community in a process which provides comprehensive information about the dam safety requirements and the individual scheme projects and costs.'[128]

Cotton Australia indicated that it did not believe it was appropriate for the QCA to investigate any method of apportionment between users and the Government.[129]

Some stakeholders, including the Local Government Association of Queensland (LGAQ), Wide Bay Burnett Regional Organisation of Councils (WBBROC) and Bundaberg Regional Council, raised concerns about dam safety upgrade capex on dams that are not within the WSSs and distribution systems specified in the referral, or which have been specifically excluded from the scope of the review by the referral (Paradise Dam)[130].

4.1.2 QCA assessment

While we acknowledge stakeholder comments about the requirements in the referral, we note that irrigation pricing policy and the terms of the referral are matters for the Government. Under section 24 of the QCA Act, the Minister may direct us to consider stated matters or make a recommendation about a stated matter and we are required to comply with that direction. For this review, the Minister has directed us to make certain recommendations relating to dam safety upgrade capex.[131]

Under the terms of the referral, the approach we have developed to apportioning dam safety upgrade capex and the prices we have recommended will, if adopted by the Government, only apply to irrigation customers in the specified WSSs and distribution systems. The allocation of dam safety upgrade capex across non-irrigation customers in those schemes (for example, industrial customers and local government), and the prices paid by those customers, are not within the scope of this review.

---

[126] See sections 1.3 and 2.2 of this report for an explanation of why our recommendations apply only to irrigation customers in certain WSSs/distribution systems and not to other customers in those WSSs/systems or to customers in other WSSs/distribution systems outside of those specified in schedule 1 of the referral.

[127] See for example, QFF, sub. 133; Canegrowers Mackay, sub. 96; and MDIAC, sub. 123.

[128] QFF, sub. 133, p. 4.

[129] Cotton Australia, sub. 103.

[130] Paragraph A(1.2) of the referral specifically excludes water services provided by Burnett Water Pty Ltd in relation to Paradise Dam and Kirar Weir from the scope of our review.

[131] Paragraph B(1.2) of the referral.

Consistent with terms of the referral, our analysis and recommendations also do not apply to dams and related dam safety upgrade capex that are outside the scope of this review. The allocation and recovery of dam safety upgrade capex on dams that fall outside the scope of this review are matters for affected dam owners/operators and their customers.

4.2 Dam safety compliance obligations

The Water Supply (Safety and Reliability) Act 2008 (the WSSR Act) establishes the regulatory framework for maintaining the safety of water dams in Queensland. It empowers the Department of Natural Resources, Mines and Energy (DNRME) to make guidelines on, among other things, managing a referable dam[132] and the flood capacity of dams. These guidelines constitute the regulatory basis for dam safety standards for referable dams throughout Queensland.

The Queensland Dam Safety Management Guidelines have been established under the WSSR Act and require dam owners and operators to have an effective dam safety management program to minimise the risk of dams failing and to protect life and property.[133] The dam safety regulator in DNRME has also issued acceptable flood capacity (AFC) guidelines that specify the minimum flood capacity that a referable dam must be able to safely pass.[134] The general principle incorporated in the AFC and Australian National Committee on Large Dams (ANCOLD) guidelines[135] is that a dam whose failure would cause excessive damage or the loss of many lives should be designed to a proportionally higher standard than a dam whose failure would result in less damage or fewer lives lost.[136] It follows that if a new development occurs downstream of a referable dam, higher dam safety standards may be required for that dam.

The AFC guidelines provide a formalised approach for dam owners to identify and prioritise dams requiring upgrade, and outline maximum timeframes for undertaking the required spillway upgrades. The AFC guidelines state that the owner of a large referable dam should use a risk-based approach to determine whether the AFC requirement is met. Among other things, this involves the dam owner conducting a comprehensive, quantitative risk assessment of the dam for all load conditions and failure scenarios in accordance with the ANCOLD guidelines.

All dams assessed under the risk assessment procedure must meet minimum criteria based on 'limits of tolerability' with respect to life safety risks for individuals and society. The minimum criteria reflect society's tolerance of risk relative to our average background risks. A less stringent tolerability limit applies for existing dams than for new dams. Once the limits of tolerability are met, risks need to be further reduced to be as low as reasonably practicable (ALARP).[137] The AFC

[132] A dam is a referable dam if it has been assessed as posing a risk to the safety of two or more people if it were to fail. By definition, referable dams do not include dams containing hazardous waste or weirs that do not have variable flow control structures on the crest of the weir.

[133] DNRM, *Queensland Dam Safety Management Guidelines,* Queensland Government, February 2002.

[134] DEWS, *Guidelines on Acceptable Flood Capacity for Water Dams*, Queensland Government, July 2017. This version replaces versions published in August 2016, January 2013 and February 2007 (the 2007 guidelines were the initial version issued under s. 491(4A) of the *Water Act 2000*). However, updated versions did not contain changes that increased standards or requirements.

[135] The ANCOLD guidelines relate to risk assessment (ANCOLD, *Guidelines on Risk Assessment*, October 2003), selection of AFC for dams (ANCOLD, *Guidelines on Selection of Acceptable Flood Capacity for Dams*, March 2000) and assessment of the consequences of dam failure (ANCOLD, *Guidelines on the Assessment of the Consequences of Dam Failure*, May 2000).

[136] DEWS*, Guidelines on Acceptable Flood Capacity for Water Dams*, July 2017.

[137] ALARP is defined as the principle that risks should be reduced below the limit of tolerability until further risk reduction is impractical or involves costs that are grossly disproportionate to the amount of risk reduction achieved.

guidelines interpret ALARP as being satisfied where the incremental cost of undertaking a spillway upgrade project to reduce the risk further below the specified limits of tolerability exceeds the benefits.[138]

4.2.1 Stakeholders' submissions

Some stakeholders, including LGAQ and Canegrowers Isis, raised concerns about the appropriateness of the regulatory requirements regarding dam safety and/or the level of community consultation that had been undertaken prior to the implementation of the regulatory requirements.[139] QFF considered that it was 'not acceptable at this stage for QCA to investigate a cost allocation brief without a full and extensive investigation of dam safety regulation in terms of the benefits and costs which takes into account all aspects of flood in this state.'[140] Pioneer Valley Co-operative (PV Water) expressed similar views.[141] QFF also considered that the QCA should look at overlapping compliance requirements (in particular, dam safety obligations and population development approvals).[142]

4.2.2 QCA assessment

We consider that the assessment of the relative merits of legislation and other regulatory instruments is a matter for the Government, the Office of Best Practice Regulation and the Queensland Parliament.

4.3 Recent developments and drivers of dam safety upgrades

Water businesses have reassessed their dam safety requirements in response to an improved understanding of extreme rainfall events and resultant floods, advances in knowledge about failure risks for dams, and increases in the consequences of failure at particular dams. In particular, the Bureau of Meteorology updated its method for estimating probable maximum precipitation in 2003, with new predictions suggesting that a much larger extreme rainfall event may be possible. This, as well as the update to the Australian Rainfall and Runoff guideline for flood estimation in 2016[143], have impacted the assessment of AFC for dams in Queensland.

In addition, many dams in Queensland are aging and have had a long and often extended period of service life. Engineering standards associated with site survey, design and construction, as well as the technical abilities to detect problems, have improved over time. Also, collective knowledge of dam safety risks has improved based on experience and learnings from dam incidents around the world. These developments have driven the need for many dam safety upgrades in Queensland.

Sunwater's dam safety upgrade program commenced in 2005 in response to the Bureau of Meteorology's new extreme rainfall projections. In 2012–13, Seqwater commissioned an independent review of its referable dams, which found a number of dams needed improvement to meet the requirements under the regulatory framework.

---

[138] DEWS, *Guidelines on Acceptable Flood Capacity for Water Dams*, July 2017.
[139] LGAQ, sub. 115; Canegrowers Isis, sub. 93; 2PH Farms, sub. 159.
[140] QFF, sub. 133, p. 4; QFF, in its submission on our draft report (QFF, sub. 223, p. 4) considered that 'it would not be appropriate for the QCA or the Queensland Government to expect water users to incur major cost items like DIP without full and transparent scrutiny or justification of the cost and requirement for DIP'. Other stakeholders, including 2PH Farms (sub. 159), Central Highlands Regional Council (sub. 187) expressed similar views.
[141] PV Water, sub. 130.
[142] QFF, sub. 133.
[143] Ball, J et al. (eds), *Australian Rainfall and Runoff: a Guide to Flood Estimation*, Commonwealth of Australia, 2016.

4.4 Dam safety upgrades to be undertaken in the price path period

In its regulatory submission[144], Sunwater has indicated that the following dams will be upgraded over the price path period:

- Bjelke-Peterson Dam (Barker Barambah WSS)
- Fred Haigh Dam (Bundaberg WSS)
- Burdekin Falls Dam (Burdekin-Haughton WSS)
- Coolmunda Dam (Macintyre Brook WSS)
- Fairbairn Dam (Nogoa-Mackenzie WSS)
- Teemburra Dam (Pioneer River WSS)
- Wuruma Dam (Upper Burnett WSS)
- Leslie Dam (Upper Condamine WSS).

Sunwater has also identified a number of smaller upgrades that may occur beyond the price path period including Callide Dam (Callide Valley WSS); Moura Off-stream Storage (Dawson Valley WSS); Isis Balancing Storage and Woongarra Balancing Storage (Bundaberg distribution system); Kinchant Dam (Eton WSS); Peter Faust Dam (Proserpine River WSS); and Cania Dam (Three Moon Creek WSS).

Seqwater has indicated that it does not expect to commission any dam safety upgrade projects in the price path period. However, it does have some planned dam safety upgrades that it anticipates will be completed beyond the price path period including Somerset Dam and Wivenhoe Dam (Central Brisbane River WSS); Maroon Dam (Logan River WSS); Atkinson Dam (Lower Lockyer Valley WSS); Borumba Dam (Mary Valley WSS); and Moogerah Dam (Warrill Valley WSS).[145]

4.5 Stakeholders' submissions

Based on the submissions and stakeholder comments at workshops, dam safety is a material issue for many stakeholders.

Irrigation stakeholders generally do not support the inclusion of any dam safety upgrade capex in recommended prices, citing a variety of reasons, including:

- Upgrades benefit the broader community (in particular, through flood moderation and management) rather than irrigators and therefore the Government or the community should pay the costs.
- Irrigators do not have the capacity to pay the costs.
- The costs of the upgrades are so large that irrigators would not have invested in the schemes had they known that they would have to pay those costs.
- The dams were built to benefit the region, state and/or nation and therefore the upgrade costs should be paid by the Government.
- Some schemes have had equivalent upgrades previously paid for by the Government.

[144] Sunwater, sub. 11, p. 53
[145] Seqwater, sub. 1.

- The cost of dam safety upgrades are a community costs, driven by government requirements.

Local government stakeholders also raised concerns about dam safety upgrade capex, including:

- the cost and/or water supply implications of safety upgrades at dams that are outside the scope of this review[146]
- the treatment of dams built prior to 2000—some local government stakeholders considered that dam safety upgrades costs associated with these dams should be treated as legacy costs and paid for by the Government[147]
- the allocation of dam safety upgrade capex to water users, given historic subsidies/contributions and the benefits that the broader community gains from the upgrades (for example, improved flood moderation and management)—local government stakeholders generally considered that the broader community and/or the Government should pay some or all of the costs in recognition of these subsidies/contributions and benefits[148]
- the possibility that local governments may be required to recover the costs of dam safety upgrades from the broader community[149]
- the potential for cost shifting to non-irrigation water users in the event that irrigation water users are not allocated their share of dam safety upgrade costs.[150]

4.6 Approach in previous reviews and other jurisdictions

We have previously considered how to recover dam safety upgrade capex in other regulatory decisions and policy papers. Other Australian regulators have also considered how to allocate dam safety upgrade costs for rural bulk water customers.

4.6.1 The QCA's pricing principles for the water sector

We have developed pricing principles to provide guidance about how to recover the costs of water services from users.[151] These principles address cost allocation for dams that provide services that benefit the broader community—in particular, environmental requirements, flood mitigation services[152] and recreational amenity. Environmental requirements could include fish ladders, while examples of recreational assets are picnic facilities, boat ramps and public safety infrastructure.

We considered that costs related to environmental requirements were a normal cost of operation. For flood mitigation and recreational services, given that there may be differences

[146] LGAQ, sub. 115; Bundaberg Regional Council, sub. 87.
[147] LGAQ, sub. 115; Lockyer Valley Regional Council, sub. 117.
[148] Central Highlands Regional Council, sub. 10 and sub. 187; LGAQ, sub. 115; North Burnett Regional Council, sub. 128; Lockyer Valley Regional Council, sub. 117. Toowoomba Regional Council (sub. 143) and WBBROC (sub. 149 and 150) supported the LGAQ submission.
[149] Lockyer Valley Regional Council, sub. 117.
[150] LGAQ, sub. 115.
[151] QCA, *Statement of Regulatory Pricing Principles for the Water Sector*, December 2000.
[152] Formal flood mitigation services seek to minimise or manage the effects associated with flooding (excluding extreme flood events). This can be achieved through a range of measures, including a temporary or permanent lower full supply level of the dam (e.g. to incorporate a flood storage compartment), or through the management of dam operations. Dams that deliver flood mitigation services are typically designed and built with this objective in mind.

between the beneficiaries of these services and the direct users of water, our preferred approach was for beneficiaries to meet the cost of these services. In the absence of any specific funding arrangements for these services, we proposed including the prudent and efficient expenditure in the regulatory asset base for pricing purposes.

4.6.2 Approach in other QCA reviews

Our standard approach is to allow regulated businesses to recover the prudent and efficient costs they need to incur to provide the required service(s), and meet their legislative and regulatory obligations. Consistent with other legislative and regulatory compliance costs, our approach has generally been that safety-related costs constitute a normal cost of operation for businesses. That is, compliance costs are passed on to direct users of a service. For dams designed to deliver services other than bulk water supply to the broader community (e.g. flood mitigation services), we have recognised that some costs should be apportioned to beneficiaries of these other services.

Dam safety upgrade capex

The Seqwater 2018–21 bulk water price review (the 2018 bulk review) included a number of capex items for dam safety upgrades to Somerset, Lake MacDonald and Leslie Harrison dams.[153] In our assessment of efficiency and prudency we noted that the primary driver for the dam safety upgrades was legislative and regulatory compliance obligations. We considered dam safety upgrades were a compliance cost and therefore a normal cost of operation in supplying water services to customers. Our recommended south east Queensland (SEQ) bulk water prices recovered the prudent and efficient costs of dam safety upgrades, with the exception of costs associated with Seqwater's declared irrigation services. The proportion of dam safety upgrade costs recovered from SEQ bulk water prices (i.e. non-irrigation customers) was determined using the headworks utilisation factor.

In the Gladstone Area Water Board (GAWB) price monitoring 2015–2020 review, we added capex associated with dam safety upgrades to the regulated asset base and recovered this expenditure through prices.[154] Prices fully recovered capex for spillway upgrades to meet acceptable flood capacity requirements, as well as various other capital works to ensure dam safety compliance.

Flood mitigation works

We have previously recognised that some dams are designed to deliver services to the broader community, such as providing formal flood mitigation services to local communities. In the previous Seqwater irrigation review, we considered that expenditure incurred for formal flood mitigation services in the Central Brisbane River water supply scheme should not be apportioned to irrigators for the following reasons:

- Flood mitigation costs should be shared among all beneficiaries in the community, which was more appropriately achieved through a property-based charge to all members of the community (i.e. through council rates) or through charges applied on consumers in an affected area.
- The benefits to irrigators of flood mitigation services were marginal during normal times and most flood events.

[153] QCA, *SEQ Bulk Water Price Path 2018–21*, final report, March 2018.
[154] QCA, *Gladstone Area Water Board Price Monitoring 2015–20*, final report, May 2015.

- An appropriate allocation of costs could be achieved through retail water charges.[155]

We calculated the portion of the dam that related to flood mitigation on the basis of the flood storage compartment capacity as a proportion of total capacity including the flood compartment. We determined that the flood mitigation storage accounted for 56 per cent of the total, and on this basis reduced the allocation of renewals costs to irrigators by this proportion.

In the Proserpine River WSS, where Peter Faust Dam provides a flood mitigation service, the flood mitigation proportion of costs is allocated to the council as a separate charge and effectively passed through to all council ratepayers, including irrigators, through rate charges. These charges were treated as a revenue offset and deducted from the scheme's total costs.[156]

Approaches in other jurisdictions

Other Australian regulators have recognised that in the case of rural bulk water customers there may be circumstances where other individuals or parties contribute to the need for, or derive benefits from, dam safety upgrades. In some instances, dam safety upgrade capex for rural bulk water supplies is not entirely allocated to direct water users.

Independent Pricing and Regulatory Tribunal (IPART) (NSW)

Since 2001, IPART has allocated WaterNSW's dam safety compliance costs between customers and the government (on behalf of the broader community) using a cost sharing framework based on the 'impactor pays' principle and excluding legacy costs.[157] IPART's rural water cost allocation framework also applies to a range of other activities, including environmental management and planning, as well as work, health and safety compliance costs.

IPART recently completed a review of its cost sharing framework for rural water and decided to:

- continue to allocate rural bulk water costs between water customers and the NSW Government on the basis of the impactor pays principle
- continue to treat the costs of bringing pre-1997 assets up to 1997 dam safety standards as legacy costs, and therefore not reflecting these costs in prices
- increase the general customer share of dam safety compliance costs (excluding legacy costs) from 50 per cent to 80 per cent. IPART said while water customers are the major impactor for dam safety compliance costs, the broader community is a minor impactor to the extent that some costs are associated with flood management activities to manage the risk posed through naturally occurring floods. For valleys with dams that were constructed to provide specific flood mitigation services, the customer share of costs is 50 per cent, reflecting the downstream community being the impactor for the costs associated with this service
- support valley-specific customer cost shares in principle and consider valley-specific customer cost shares in upcoming price reviews (where sufficient information was available to indicate a material difference between a specific valley's cost share ratio and the state-wide cost share ratio).[158]

[155] QCA, *Seqwater Irrigation Price Review 2013–17*, Volume 2, Central Brisbane River Water Supply Scheme, final report, April 2013.
[156] QCA, *SunWater Irrigation Price Review 2012–17*, Volume 1, final report, April 2012.
[157] Under the 'impactor pays' principle of cost recovery, costs are allocated to individuals or parties whose activities generate the costs, or a justifiable need to incur the costs. Costs required to bring pre-1997 assets up to 1997 dam safety requirements are treated as a legacy costs and are entirely allocated to the government.
[158] IPART, *Rural Water Cost Shares—WaterNSW and Water Administration Ministerial Corporation*, final report, February 2019.

Economic Regulation Authority (ERA) (Western Australia)

The Water Corporation provides bulk water services to the Harvey Water irrigation area, which provides distribution irrigation services. The agreement between Water Corporation and Harvey Water allows for charges to irrigators to be increased as a result of future dam safety upgrades.

In 2013, the ERA reviewed the prudent and efficient dam safety costs that could be passed through to irrigators. It found that not all dam safety expenditure was efficient, particularly those projects for which the mitigated risk was significantly higher than generally applied for public safety expenditure. On this basis, the ERA determined that $61 million of Water Corporation's total planned dam safety capex of $106 million over the period 1997– 98 to 2019–20 was efficient and should be passed through to irrigators.

The ERA recognised that irrigators were not the only user of the dams, and considered that it was appropriate to allocate efficient water storage costs (including dam safety upgrade costs) across all parties that benefit from the dams. ERA identified two beneficiaries that benefit from dams:

- private beneficiaries—these beneficiaries make a payment to Water Corporation for their private use of water; they were identified as Harvey Water irrigators and other purchasers of water including a small number of mine sites and households in the region
- public beneficiaries—these beneficiaries included recreational users of dams. The ERA estimated that recreational benefits accounted for approximately 20 per cent of the total benefits created by the dam.[159]

Essential Services Commission (ESC) (Victoria)

Victoria has four water corporations that specifically provide rural water services for irrigation and domestic and stock purposes (Lower Murray, GWM, Goulburn Murray and Southern Rural). The prudent and efficient costs associated with dam safety upgrades are passed through to customers, as dam safety costs are treated as any other form of capex and a normal cost of operation. In some instances, the government has partially funded dam safety capex. Where the government provides grants to contribute to the dam safety upgrade costs, this component of costs is not included in the asset base and therefore not recovered in prices.

4.7 Key issues for consideration

Based on issues raised in submissions and workshops, and our own analysis, we have identified the following key considerations for developing and applying an appropriate approach to apportioning dam safety upgrade capex for irrigation pricing purposes:

- What capex should be included in the dam safety upgrade cost category?
- Who should be allocated irrigation's share of dam safety costs and on what basis?
- Are dam safety costs a compliance obligation that would generally be considered a normal cost of operation in supplying water services to users?
- Where a dam provides a formal flood mitigation service (e.g. Peter Faust Dam in Proserpine WSS provides water supply and flood mitigation services), should irrigation's share of the costs of dam safety upgrades be shared with beneficiaries in the broader community?

[159] ERA, *Inquiry into the Efficient Costs and Tariffs of the Water Corporation, Aqwest and the Busselton Water Board*, final report, January 2013.

- If a dam has incidental flood moderation benefits for downstream communities, should irrigation's share of the costs of dam safety upgrades be shared between irrigation water users and beneficiaries in the broader community?
- If costs are allocated to non-water users, should the allocation be done on a dam-specific basis or on a more general basis, perhaps with dam-specific allocations where there is a material difference between the allocation for a particular dam and the general allocation?
- Are there any other reasons for allocating irrigation's share of the costs to the broader community or other stakeholders?
- How should the allocated costs (if any) be recovered from irrigators?
- What are the impacts on the interests of irrigators of dam safety upgrade costs potentially being included in prices?

4.8 Expenditure to be included in the dam safety upgrade cost category

Under the terms of the referral relating to dam safety upgrade expenditure, we are required to recommend two sets of prudent and efficient prices—one of which includes an appropriate allowance for dam safety upgrade capex forecast to be incurred during the pricing period. We have also been asked to develop and apply an appropriate approach to apportioning dam safety upgrade capex, and explain this approach and its application as part of our recommendations. In order to undertake these tasks, we need to determine the prudent and efficient capex that should be included in the dam safety cost category.

4.8.1 Sunwater's submission

Sunwater included its proposed Dam Improvement Program (DIP) expenditure in the dam safety upgrade cost category. According to Sunwater, the purpose of the DIP is 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 and new information arising following routine surveillance activities, inspections, comprehensive risk assessments and dam safety reviews
- 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 the acceptable flood capacity for dams.

The following table sets out Sunwater's proposed DIP expenditure from 1 July 2020 to 30 June 2024. More information on how these costs have been forecast is provided in Chapter 3 (Part B report) and in Sunwater's submission.

Table 2 Sunwater's proposed Dam Improvement Program expenditure forecasts for irrigation pricing purposes ($'000, nominal, as-incurred basis)

WSS	*2020–21*	*2021–22*	*2022–23*	*2023–24*
Barker Barambah	105	403	1,101	3,386
Bowen Broken Rivers	—	107	275	677
Bundaberg	786	1,397	28	—
Burdekin-Haughton	31,642	143,423	155,216	14,028
Macintyre Brook	734	1,708	413	—
Nogoa Mackenzie	9,600	—	—	—
Pioneer River	3,862	403	—	—
Upper Burnett	105	403	1,101	2,822
Upper Condamine	11,203	806	—	—

Source: Sunwater sub. 11, p. 53.

4.8.2 Seqwater's submission

Seqwater advised that it did not expect to commission any relevant dam safety upgrade projects during the 2020–24 irrigation pricing period. Consequently, it did not propose any dam safety upgrade capex in its submission.

4.8.3 Other stakeholders' submissions

Some irrigation stakeholders, including QFF, questioned how we would be able to assess the prudency and efficiency of dam safety upgrade capex, particularly for projects that have only been estimated and may be subject to substantial variation. These stakeholders generally considered that we could not proceed with cost allocation in the absence of detailed specification of works and costs.[160] Fairbairn Irrigation Network and QFF considered that the pricing review had not provided sufficient investigation or justification of the dam safety upgrade costs to allow for the inclusion of the costs in irrigation prices.[161]

Some irrigation and local government stakeholders also considered that legacy costs should be excluded from the dam safety upgrade capex cost category. However, there were differing views as to the type of costs that should be considered legacy costs.

The LGAQ indicated that for assets built before 2000, the QCA should consider adopting a similar approach to that adopted by IPART. IPART has excluded unavoidable legacy costs from the cost base used to determine rural water prices. It has defined legacy costs as 'costs resulting from past users or previous uncommercial investment and management decisions, which are unrelated to the efficient forward-looking cost of providing services to customers'.[162] Under the IPART approach, costs for dam safety upgrades to bring pre–1997 assets to up to 1997 standards are treated as legacy costs and allocated entirely to the government. The LGAQ proposal was supported by a number of local government stakeholders, including WBBROC and Toowoomba Regional Council.

[160] See for example, BRIA, sub. 53 and 85, QFF, sub. 133; MDIAC, sub. 123; Lower Burdekin Water, sub. 69 and sub. 201.
[161] Fairbairn Irrigation Network, sub. 236; QFF, sub. 223; Central Highlands Regional Council, sub. 187.
[162] IPART, *Rural Water Cost Shares—WaterNSW and Water Administration Ministerial Corporation*, final report, February 2019, p. 13.

Cotton Australia considered that dam safety upgrade capex on existing dams should be treated as legacy costs and not included in the cost base.[163] A similar view was expressed by A. Wessel and Burdekin River Irrigation Area Irrigators (BRIA).[164]

Canegrowers proposed that the Government should put in place a distinct and separate review process prior to any dam safety upgrade capex being included in irrigation prices. It also proposed that we should adjust Recommendation 3 as follows:

> Following a separate review and consultation with industry, were the Government to deem that prices should incorporate dam safety upgrade capex, only prudent and efficient dam safety upgrade capex that is required to meet dam safety obligations should be included in any dam safety upgrade cost category.[165]

4.8.4 QCA assessment

Consistent with the referral, we consider that the dam safety cost upgrade category should only include prudent and efficient capex on dam upgrades that are required to meet the dam safety compliance obligations (see section 4.2).

We also consider that capex required primarily for other reasons should be allocated to other more appropriate cost categories, rather than the dam safety upgrade cost category. This is important for the following reasons:

- It is consistent with terms of the referral.
- It recognises that while other dam safety-related capex is an allowable cost, the Government has not yet decided whether any dam safety upgrade capex will be included in the prices to apply from 1 July 2020.
- We have treated dam safety upgrade capex differently to other capex (including other dam-safety-related capex).

As noted above, some stakeholders have proposed that we should take a similar approach to IPART on dam safety upgrade costs and treat dam safety upgrade capex on dams built prior to 2000 (or alternatively, as suggested by Cotton Australia, dam safety upgrade capex on all existing dams) as legacy costs, and consequently allocate all of those costs to the Government.

It is our understanding that IPART's approach to legacy costs reflects a need to bring pre-1997 assets up to 1997 standards, and its previous decision to write infrastructure asset values down to zero as at 1 July 1997.[166] We consider that the circumstances in Queensland are different to those in New South Wales, as the Queensland water businesses' proposed dam safety upgrades are primarily required to maintain compliance with *current* dam safety obligations, rather than address historical issues of non-compliance, and have been driven by a better understanding of potential rainfall events and dam safety risks (see section 4.3). The Queensland Government also took a different approach to determining the opening infrastructure asset values, which did not involve writing down those values to zero.

Additionally, while some elements of our approach are similar to IPART's approach (for example, we have recognised that the broader community may benefit from safety upgrades at dams that do not provide a formal flood mitigation service and made a cost allocation that is similar to that

[163] Cotton Australia, sub. 103.
[164] Wessel, A, sub. 147; BRIA, sub. 161.
[165] Canegrowers, sub. 179, p. 5.
[166] IPART, *Department of Land and Water Conservation, Bulk Water Prices from 1 October 2001*, final report, December 2001.

made by IPART), our cost allocation is based on our own analysis and judgment, rather than a reliance on IPART's analysis and approach (see section 4.9.4).

Given the above, and that we consider the costs of maintaining compliance with existing regulatory obligations and meeting new regulatory obligations are normal costs of doing business (see section 4.9.1), we have not classified all dam safety upgrade capex on dams built prior to 2000 or, alternatively, prior to 2019 as legacy costs.

However, we do consider that there may be limited circumstances in which some dam safety upgrade capex should be treated as a legacy cost. In particular, we consider that direct water users should only be required to pay the prudent and efficient costs of providing the relevant service, not additional costs arising primarily as a result of previous substandard management and/or investment decisions. Such additional costs are more appropriately the responsibility of the dam owner and/or operator.

We consider capex to be prudent if the expenditure can be justified by reference to an identified need or cost driver, such as a legal or regulatory obligation. We consider capex to be efficient if it is the least cost option to deliver on an appropriately defined scope and standard of works. We have assessed the prudency and efficiency of Sunwater's proposed dam safety upgrade capex for the 2020–24 period consistent with our positions on the prudent and efficient cost base and legacy costs. We engaged AECOM to provide advice to assist with our assessment. A detailed discussion of the approach to, and outcomes of, our assessment is provided in Chapter 3 (in each of Part B and Part C).

In relation to Canegrowers' proposal that we should adjust the wording of Recommendation 3 to incorporate a reference to a separate review process, we would note that:

- the Government will decide which set of prices (dam safety upgrade–exclusive or dam safety upgrade–inclusive) will apply when it determines the relevant irrigation prices;
- the Government will take into account a range of matters when it makes that decision, including our recommendations, the issues raised by stakeholders during our review, and the potential impacts on irrigation water users of including an allowance for dam safety upgrade capex in the relevant irrigation prices;
- it is for the Government to decide whether it requires any further consultation with stakeholders in order to consider those matters and make its decision.

As such, we do not consider it is appropriate to make the proposed amendments to Recommendation 3.

Recommendation 3

We recommend that only prudent and efficient dam safety upgrade capex that is required to meet dam safety obligations should be included in the dam safety upgrade cost category.

4.9 Approach to allocating a share of dam safety upgrade capex to irrigation customers

In order to develop an approach to apportioning dam safety upgrade capex, we need to consider the nature of the costs and to whom those costs should be allocated.

4.9.1 Are dam safety costs a compliance obligation that would generally be considered a normal cost of operation in supplying water services to users?

As noted above, our approach in other reviews has been to allow regulated businesses to recover the prudent and efficient costs they need to incur to provide the required service, and meet their legislative and regulatory obligations. Consistent with other legislative and regulatory compliance costs, our approach has been that safety-related costs constitute a normal cost of operation for businesses. That is, compliance costs are passed on to direct users of a service. This approach is consistent with an impactor pays approach whereby costs are allocated to individuals or parties whose activities generate the costs, or a justifiable need to incur the costs.

Stakeholders' submissions

Irrigation stakeholders generally indicated that dam safety upgrade capex should not be considered a normal cost of operation in supplying water to customers for the following reasons:

- Under their contract with Sunwater, water users are only paying for a water release service, not a flood mitigation or dam safety service.[167]
- Water users will not gain any benefit or operational improvement from the dam safety upgrades.[168]
- Dam safety compliance costs are only relevant to efficient consumption and investment decisions when a scheme is being augmented or built.[169]
- The dam safety upgrades are designed to provide a public benefit to downstream communities, not water users.[170]
- Dams have multiple public purposes and were not built solely for supplying water to users.[171]
- The primary driver for dam safety upgrades is legislative and compliance obligations.[172]
- The upgrades are intended to meet a government objective and the costs should therefore be met by a government community service obligation (CSO) payment.[173]
- Dam safety upgrade requirements are outside the control of irrigators and can also be triggered by downstream developments.[174]

Consequently, irrigation stakeholders generally did not support irrigation's share of dam safety upgrade capex being allocated to irrigation water users. Instead, they generally considered that those costs should be allocated to the broader community and/or the Government.

---

[167] QFF, sub. 133; BRIA, sub. 85.
[168] Central Highlands Cotton Growers and Irrigators Association, sub. 100; Central Highlands Regional Council, sub. 101; Fairbairn Irrigation Network, sub. 104; Kalamia Cane Growers, sub. 111; PV Water, sub. 130.
[169] Canegrowers, sub. 179, p. 7.
[170] Canegrowers, sub. 91; Central Downs Irrigators, sub. 98; Lower Burdekin Water, sub. 118 and sub. 201; MDIAC, sub. 123; 2PH Farms, sub. 138; QFF, sub. 223; Fairbairn Irrigation Network, sub. 236; Lower Burdekin Water, sub. 201; PV Water, sub. 221; BRIA, sub. 161; Central Highlands Regional Council, sub. 187.
[171] Canegrowers, sub. 179; QFF, sub. 223; Fairbairn Irrigation Network, sub. 236; Lower Burdekin Water, sub. 201; 2PH Farms, sub. 159; Theodore Water, sub. 232.
[172] QFF, sub. 133 and sub. 223; Central Highlands Regional Council, sub. 187; BDCG, sub. 162.
[173] See for example, Canegrowers, sub. 91; Lower Burdekin Water, sub. 201; QFF, sub. 223.
[174] Cotton Australia, sub. 190.

QCA assessment

We consider that our general approach in previous reviews is an appropriate foundation for developing an approach to apportioning dam safety upgrade capex in the irrigation water pricing context. The primary service provided by most dams that are within the scope of our review is the supply of water to users.[175] In order to provide that service, the water businesses must comply with a range of regulatory obligations, including dam safety requirements. It is our understanding that those dam safety requirements are the primary driver for the planned dam safety upgrades.

A number of irrigation stakeholders, including QFF and BRIA, proposed an alternative view, which is that dam safety upgrades should be characterised as a separate dam safety and/or informal flood mitigation service provided by Sunwater, in addition to its other water services. We consider that dam safety requirements are a regulatory obligation that Sunwater must comply with in order to provide water services to its customers. Consistent with our characterisation of dam safety upgrades as a regulatory obligation, we consider that it is not necessary for water users to obtain a direct benefit or operational improvement from dam safety upgrades in order for them to be allocated a share of the costs.

We consider that costs arising primarily as a result of legislative and regulatory obligations—even where triggered by the actions of other parties or government (for example, downstream developments or the introduction of new regulatory obligations)—are a cost of doing business, as they are in any other industry.

As dam safety upgrades are a compliance cost, we are of the view that treating the dam safety upgrade capex as a normal cost of operation in supplying water services to customers is transparent and will help to signal the efficient cost of providing water supply services to irrigation customers (noting that any price signal may be tempered by the Government's pricing principles). This in turn may help to encourage efficient consumption and investment decisions.

We do not agree with the view put forward by Canegrowers that dam safety compliance costs are only relevant to efficient consumption and investment decisions when a scheme is being augmented or built.[176] Excluding those costs from the normal costs of operation effectively shifts the costs of maintaining compliance with an existing regulatory requirement from water users to the broader community. This cost shifting is likely to lead to an under recovery of costs from water users. This in turn will potentially provide incentives for inefficient use and/or investments.

We also note that the relevant dam safety regulatory requirements are in place to address the community safety and flooding risks that would arise in the event of dam failure (that is, the negative externalities associated with the existence of the dam) and that the relevant dam safety upgrades are being undertaken to maintain compliance with those requirements. The dam safety regulatory requirements are not in place to address more general flooding or community safety risks.

While there may potentially be some other public benefits arising from the dams that are within the scope of our review, we consider that it is appropriate to include dam safety capex in the normal cost of operations as:

- The primary service provided by most of the relevant dams is water supply to users.

[175] ANCOLD, Register of Large Dams in Australia, 2010 (https://www.ancold.org.au/?page_id=24).
[176] Canegrowers, sub. 179, p. 7.

- In order to provide that service, the water businesses must comply with a range of regulatory obligations, including those related to dam safety.
- The public benefits that may be associated with dams are generally incidental to the provision of that primary service.
- We have accounted for formal flood mitigation and incidental flood moderation benefits for downstream communities in our cost allocation approach (see below).
- The Government has indicated that its water pricing policy has taken into account considerations such as the historic regional development driver for many of the schemes and the benefits of industry to the Queensland economy (see sections 2.6.4 and 2.6.5).[177]

For the reasons outlined above, we consider that dam safety upgrade capex should be treated as a normal cost of operation in supplying water services to users and consequently allocated to water users unless there is a clear and justifiable basis for allocating some of the costs to other parties (including the Government and/or the broader community). We note that this approach is generally consistent with IPART's approach in its review of rural water cost shares (February 2019).[178]

Recommendation 4

We recommend that dam safety upgrade capex:

- be treated as a normal cost of operation in supplying water services to users
- be allocated to water users unless there is a clear and justifiable basis for allocating some of the costs to other parties.

4.9.2 Where a dam provides a formal flood mitigation service, should dam safety upgrade costs be shared with beneficiaries in the broader community?

All dams provide some degree of flood moderation, as they store water and attenuate water flows. However, some dams also provide a formal flood mitigation service that seeks to minimise or manage the effects associated with flooding (excluding extreme flood events). This mitigation can be achieved through different measures, including the adoption of a temporary[179] or permanent[180] lower full supply level and/or the management of dam operations. Dams that

[177] Queensland Treasury and Department of Energy and Water Supply, submission to the ACCC, *Review of the Water Charge Rules*, draft advice, March 2016, pp. 5–7; Queensland Government, submission to the Productivity Commission, *National Water Reform*, issues paper, March 2017, p. 7; Queensland Government, Seqwater and Sunwater irrigation pricing, https://www.business.qld.gov.au/industries/mining-energy-water/water/industry-infrastructure/pricing/irrigation.

[178] In that review, IPART considered that water users were the major impactor for dam safety and compliance activities and should therefore be allocated the bulk (80 per cent) of the efficient costs associated with these activities.

[179] Under section 390 of the Water Supply (Safety and Reliability) Act 2008, the Minister can declare a temporary full supply level for a dam that has an approved flood mitigation manual if the Minister considers 'the impacts of a potential flood or drought may be mitigated by having a full supply level for a dam that is different from the full supply level stated in the resource operations licence'. At the time this report was finalised, there were only three dams that were required to have an approved flood mitigation manual: North Pine Dam, Somerset Dam and Wivenhoe Dam.

[180] For example, Wivenhoe Dam has a total storage capacity of 3.132 million megalitres but the water supply compartment only accounts for 1.165 million megalitres. The remaining 1.967 million megalitres is the dam's flood storage compartment. For more information, see Seqwater, *How dams work fact sheet*, December 2015.

provide a formal flood mitigation service (flood mitigation dams) are typically designed and built with this objective in mind. There are only three flood mitigation dams within the scope of our review: Wivenhoe Dam (Central Brisbane River WSS), Somerset Dam (Central Brisbane River WSS) and Peter Faust Dam (Proserpine River WSS).

As noted in section 4.6 above, the QCA and other Australian regulators have previously recognised that some dams are designed to provide services to the broader community, such as providing flood mitigation services to local communities.

Stakeholders' submissions

Stakeholder comments on this issue were limited, but this is not surprising given that there are only three flood mitigation dams within the scope of this review and none of these dams have planned dam safety upgrades during the irrigation pricing period.

However, a number of stakeholders indicated it was not appropriate to separate dams that provide a formal flood mitigation service from dams that had large informal flood mitigation benefits.[181]

QCA assessment

For dams that are within the scope of our review, we consider it is important to distinguish between flood mitigation dams and dams that only have incidental flood moderation benefits (non-flood mitigation dams). This is because flood mitigation dams are managed to provide flood mitigation services and the provision of those services results in costs that are not related to water supply. Those costs need to be accounted for in the cost allocation process, as not doing so may introduce a cross-subsidy from water users to the beneficiaries of the flood mitigation service.

In contrast, non-flood mitigation dams within the scope of our review are not operated to minimise or manage the impacts of flooding. Instead, they are managed and operated to provide water services and to maintain the structural integrity and safety of the dam. Consequently, any flood moderation benefits are incidental to the provision of those services and as such, do not generate costs for the water business.

These benefits are also generally less reliable than the flood mitigation benefits provided by flood mitigation dams, as the water levels in a non-flood mitigation dam are not managed to reduce flooding downstream. This means any incidental flood moderation benefits will be dependent on the water level of a dam at the time the flooding occurs. A non-flood mitigation dam that is at, or close to, full capacity will provide limited incidental flood moderation benefits, whereas one that is at a low capacity will provide more material incidental flood moderation benefits.

Consistent with our approach in previous reviews, we consider that where a dam provides a formal flood mitigation service, it should be recognised in allocating costs. Therefore, we are of the view that where a dam provides a formal flood mitigation service, the costs of dam safety upgrades should be shared with beneficiaries in the broader community. We note that our approach on this issue is consistent with our approach in previous reviews and with IPART's approach in its review of rural water cost shares.

[181] See for example, Central Highlands Regional Council, sub. 101; 2PH Farms, sub. 138 and sub. 159.

Recommendation 5

We recommend that where a dam provides a formal flood mitigation service:

- that service should be recognised in the allocation of costs, including dam safety upgrade costs
- the costs associated with that service should not be apportioned to irrigators and should instead be allocated to the beneficiaries of that service (where possible) or the broader community.

4.9.3 If a dam has incidental flood moderation benefits for downstream communities, should irrigation's share of the costs of dam safety upgrades be shared between irrigation water users and the other beneficiaries?

Some non-flood mitigation dams that are within the scope of this review (see 4.9.2 for an explanation of the difference between flood mitigation dams and non-flood mitigation dams) may still provide incidental flood moderation benefits for downstream communities. This is because a non-flood mitigation dam may, to some extent, absorb and/or regulate floodwaters that would otherwise flow downstream.[182] However, as we noted in section 4.9.2, those benefits are generally less reliable than the flood mitigation benefits provided by flood mitigation dams.

In previous reviews, where a non-flood mitigation dam had an incidental flood moderation benefits, we did not share the costs of dam safety upgrades with beneficiaries in the broader community. However, other Australian regulators have recognised incidental flood moderation benefits in allocating dam safety costs. In its review of rural cost shares[183], IPART considered that:

(a) Dam safety and compliance activities included informal flood management activities to some extent.

(b) The broader community could be considered an impactor for informal flood management activities to the extent that a dam's informal flood management function reduced the probability of flood occurrence.

(c) Consequently, there was a case to allocate some of the costs associated with dam safety and compliance activities (20 per cent) to the NSW Government on behalf of the broader community.

Stakeholders' submissions

Many irrigation and local government stakeholders proposed that the broader community should be allocated some or all of the relevant dam safety upgrade costs on the basis that non-flood mitigation dams still provided flood moderation benefits for downstream communities.[184] By providing this benefit, stakeholders considered that the dams reduced the probability and/or severity of naturally occurring floods, thereby benefitting downstream communities. Some irrigation stakeholders were also of the view that the dam safety upgrades were likely to provide

[182] Noting that a non-flood mitigation dam's ability to do so will be dependent on the storage level at the time the flooding occurs. A non-flood mitigation dam that is close to capacity will have limited ability to moderate flooding.
[183] IPART, *Rural Water Cost Shares—WaterNSW and Water Administration Ministerial Corporation*, final report, February 2019.
[184] See for example, QFF, sub 133 and 223; BRIA, sub. 85; Canegrowers, sub. 91; Cotton Australia, sub. 103.

additional flood protection for downstream communities and infrastructure (for example, roads and bridges).[185]

QCA assessment

We note that the flood moderation benefits associated with dam safety upgrades in Queensland are generally incidental to the primary service provided by non-flood mitigation dams (water supply) and the primary purpose of the upgrades (mitigating dam failure risks). That is, flood moderation, while potentially providing a benefit to the broader community, is neither a formal service provided by dam managers at non-flood mitigation dams, nor the primary rationale for dam safety upgrades.

That said, we acknowledge that downstream communities may benefit from the planned dam safety upgrades at non-flood mitigation dams. In particular, the upgrades may reduce the probability and/or severity of flooding and consequent property and infrastructure damage in downstream communities. It is also possible that these communities may avoid some flood mitigation and insurance costs as a result of the upgrades.

In light of those benefits, we consider that there is a case for sharing some of irrigation's share of the costs of dam safety upgrades at non-flood mitigation dams with the beneficiaries in the broader community where the upgrades will result in improved flood moderation or management.

> **Recommendation 6**
>
> We recommend that while the primary purpose of dam safety upgrades is to reduce the risks of dam failure to tolerable levels (as determined by the relevant dam safety regulators), the incidental flood moderation benefits for communities downstream of non-flood mitigation dams should be acknowledged in the allocation of dam safety upgrade capex for irrigation pricing purposes.

4.9.4 If some irrigation's share of the costs are allocated to non-water users in recognition of incidental flood moderation benefits, should the allocation be done on dam-specific basis or on a more general basis?

If a dam has incidental flood moderation benefits for downstream communities and those benefits are to be recognised in the allocation of dam safety upgrade capex, we need to consider how to allocate the relevant irrigation-related costs between irrigation water users and the broader community.

As noted above, where a dam had incidental flood moderation benefits, we have not previously shared the costs of dam safety upgrades with beneficiaries in the broader community. IPART, in its review of rural water cost shares, adopted a general allocation (an allocation 80 per cent to water users and 20 per cent to the broader community / the NSW Government) and indicated it would only use dam-specific allocations where there was a material difference between that general allocation and the allocation for a particular dam.

[185] See, for example, Canegrowers Isis, sub. 93; Central Downs Irrigators, sub. 98; Cotton Australia, sub. 103; Theodore Water, sub. 141; Three Moon Creek IAC, sub. 142; QFF, sub. 223; Lower Burdekin Water, sub. 201.

QCA assessment

Undertaking a more granular, dam-specific assessment of the incidental flood moderation benefits for each dam safety upgrade project may potentially result in an allocation that better reflects the benefits. However, we note that this approach would add an additional layer of complexity and cost to irrigation water pricing. It would also provide less certainty to stakeholders, as they would not have clarity on the potential allocation of the costs of a given dam safety upgrade project until the detailed, dam-specific assessment had been completed.

In contrast, a more general allocation approach would be simpler and less costly. It would also provide stakeholders with greater certainty as the proposed allocation would generally not be dependent on the completion of a dam-specific assessment. However, it may result in an allocation that does not reflect the benefits of a given dam safety upgrade project as well as a dam-specific assessment.

On balance, we consider that the benefits of a dam-specific approach would not outweigh the additional cost and complexity involved. We have adopted an approach consistent with that taken by IPART in its review of rural water cost shares—that is, to adopt a general allocation ratio and to use dam-specific allocation ratios only where there is sufficient evidence of a material difference between the general allocation and the appropriate allocation for a particular non-flood mitigation dam.

We note that determining the extent to which dam safety upgrade costs should be allocated to the broader community involves a degree of judgment on our part and as such may be controversial.[186] We also note that it is likely that there will be a range of different views on the appropriate cost share for the broader community. For example, Lower Burdekin Water indicated that it considered that our cost share ignored the extent of other beneficiaries of the Burdekin Falls Dam, including other users, the flood protection afforded to downstream infrastructure, the public benefits associated with dams more generally.[187] Lockyer Water Users Forum also considered that our cost share was not justified in the context of Atkinson Dam.[188] Central Downs Irrigators was of the view our cost share should be a minimum of 50 per cent to the broader community.[189]

In developing our approach, we have sought to recommend a general allocation that we consider represents a reasonable apportionment of dam safety upgrade capex between water users and the broader community.

We consider that irrigation water users should be allocated the majority of irrigation's share of dam safety upgrade capex given that:

- The primary service provided by non-flood mitigation dams that are within the scope of our review is the supply of water to users, including irrigation water users
- To provide that service, the water businesses are required to comply with the relevant dam safety obligations

[186] For a detailed discussion of the allocation of costs to government, see Biggar, D, *The allocation of costs between government and users in regulation of wholesale water service providers in New South Wales*, ACCC/AER working paper series, no. 7, September 2012.
[187] Lower Burdekin Water, sub. 201.
[188] Lockyer Water Users Forum, sub. 200, p. 6.
[189] Central Downs Irrigators, sub. 186, p. 2.

- The key objective of the dam safety upgrades is to reduce the risk of dam failure to an acceptable level (as determined by the relevant dam safety regulators).
- Any flood moderation benefits are incidental and do not generate costs for the water business.

However, as noted above, we consider that the incidental flood moderation benefits for communities downstream of non-flood mitigation dams should be acknowledged in the allocation of dam safety upgrade capex. As the external positive benefits that may potentially accrue to the broader community cannot be quantified easily, we have exercised our judgment in determining the reduction to apply to the irrigation water users' allocation and consider that they should only be allocated 80 per cent of their share of dam safety upgrade capex. We have recommended that the remaining 20 per cent of the irrigation water users' share of dam safety upgrade capex be allocated to the Government, as it is not feasible to allocate this share of costs to individual beneficiaries in the broader community.

We consider that this allocation is appropriate, as it recognises that the primary service provided by non-flood mitigation dams that are within the scope of this pricing review is the supply of water to users, whilst acknowledging that those dams may provide some incidental flood moderation benefits to the broader community.

We also note our review is only concerned with irrigation's share of dam safety capex. Other water users, including urban water users, have been allocated a share of dam safety capex and this has not been included in irrigation's share.

We note that IPART considered a similar issue in its report on rural water shares and concluded that 80 per cent of the costs associated with dam safety obligations should be allocated to water users, as the relevant dams were primarily constructed to meet their water needs. [190]

We also note that the references to 'irrigator water users' allocation, rather than all water users' WAE is deliberate as, consistent with terms of the referral, our reduced cost allocation of 80 per cent only applies to irrigation water users' share of dam safety capex. The allocation of dam safety upgrade capex across non-irrigation water users in the relevant WSSs is not within the scope of our review.

[190] IPART, *Rural Water Cost Shares—WaterNSW and Water Administration Ministerial Corporation*, final report, February 2019; Aither, *Rural water cost sharing review*, final report, prepared for IPART, 2019.

Recommendation 7

We recommend that, for dams that do not provide a formal flood mitigation service and are within the scope of this pricing review, dam safety upgrade capex should be:

- allocated using a general allocation ratio, with dam-specific allocation ratios only used where there is sufficient evidence of a material difference between the general allocation and the appropriate allocation for a particular dam
- the general allocation ratio for dam safety upgrade capex should allocate 80 per cent of the irrigation share of these costs to irrigation water users. The remaining 20 per cent should not be included in the allowable cost base for irrigation pricing purposes.

4.9.5 Are there any other reasons for allocating costs to the broader community or other stakeholders?

In developing an approach to apportioning dam safety upgrade capex, we also need to consider whether there are any reasons other than those identified above for allocating some or all of irrigation's share of costs to the broader community or other stakeholders.

Stakeholders' submissions

Irrigation and local government stakeholders have indicated that there are a number of reasons for allocating some or all of the relevant dam safety upgrade costs to the Government and/or the broader community. These reasons include:

- The provision of water for irrigation purposes generates benefits beyond those that accrue to irrigators. It contributes to the social and economic fabric of regional communities and there are significant public benefits that flow from vibrant regional communities.[191]
- The schemes were originally built (and priced) to encourage regional development and investment.[192]
- The contributions and expected outcomes that were defined in the creation of the dam should reasonably apply to its continued operation that requires dam safety upgrades (that is, historical contributions and subsidies provided by the Government should be taken into account when allocating the costs of dam safety upgrades).[193]
- Dam safety upgrade costs have previously been excluded from the allowable cost base for irrigation pricing and this led irrigators to assume that the Government would continue to subsidise these costs and they have made investment decisions based on this assumption.[194]
- The Government has paid for dam safety upgrades at some dams in the past and therefore should, on fairness grounds, be allocated the costs for future projects.[195]

[191] See for example, Canegrowers, sub. 91; Kalamia Cane Growers Organisation, sub. 111; BRIA, sub. 85 and sub. 161, Lower Burdekin Water, sub. 201.
[192] BRIA, sub. 85. p. 20, 23; Theodore Water, sub. 232, p. 1.
[193] LGAQ, sub. 115, p. 13.
[194] See for example, Canegrowers Isis, sub. 93, p. 5; Central Highlands Cotton Growers and Irrigators Association, sub. 100, p. 4; QFF, sub. 133, p. 7.
[195] See for example, LGAQ, sub. 115, p. 8; BRIA, sub. 85, p. 16; Lower Burdekin Water, sub. 118, p. 12; QFF, sub. 133, p. 7, Cotton Australia, sub 190, p. 2.

- The decision to invest in water entitlements was made on the basis of the conditions that existed at the time of investment—including dam safety requirements and population at risk—and the payment of a one-off upfront capital contribution.[196]
- The costs associated with dam safety upgrades are so large that irrigators may never have invested in the relevant water entitlements.[197]
- Irrigation customers cannot afford to pay prices that include an allowance for dam safety upgrade capex.[198]
- Higher water prices will have an adverse impact on local communities.[199]
- The change in fixed charges may impact on capital value of allocations and cause a major equity shift away from irrigation customers.[200]
- Dams were built to stimulate growth and community resilience.[201]

QCA assessment

In deciding whether there are any reasons (other than formal flood mitigation and incidental flood moderation) for allocating some or all of irrigation water users' costs to the broader community or other stakeholders, we have considered all of the matters raised in submissions and had regard to all of the matters we are required to, including the matters in section 26(1) and 26(2) of the QCA Act and the stated matters in the referral (consistent with section 24 of the QCA Act).

As we discussed in Chapter 2, the nature of the pricing framework means that in some instances we are not the party best placed to address an issue raised by stakeholders. This is particularly so in relation to the inclusion of dam safety upgrade capex, as we are not required to recommend which set of prices (dam safety-exclusive or dam safety-inclusive) should apply.

We consider many of the reasons put forward by stakeholders for allocating costs to the Government and the broader community (see above), including regional development considerations, historical pricing approaches and previous government subsidies, and the fairness of subsidising dam safety upgrades at some dams and not others, relate more to whether an allowance for dam safety upgrade capex should be included in prices at all rather than how allowable costs should, on clear and justifiable basis, be allocated across relevant parties.

Given the above, and that we are not making a recommendation on which set of prices should apply, we consider that the Government is better placed to take these issues into account when it decides which set of prices will apply.

A number of stakeholders have also raised concerns about their capacity to pay dam safety-inclusive prices. We note that if the Government adopts our recommended dam safety-inclusive prices, it is effectively making a decision to alter its lower bound cost recovery target to include dam safety upgrade capex. Consequently, as we are not making a recommendation on which set of prices should apply, we consider that the capacity to pay issues raised by stakeholders in

[196] BRIA, sub. 85, p. 22.
[197] Cotton Australia, sub. 103 and sub.190.
[198] BRIA, sub. 85, pp. 15, 18, 19, 22; BRIA, sub. 161; BDCG, sub. 162, p. 35.
[199] See for example, Central Highlands Regional Council, sub. 101, p. 5; BRIA, sub. 85, pp. 15, 19, 22; Lockyer Water Users Forum, sub. 200, p. 6.
[200] QFF, sub. 133, p. 7.
[201] Canegrowers, sub. 179; QFF, sub. 223.

relation to the inclusion of an allowance for dam safety upgrade capex in irrigation prices are best addressed by the Government when it decides which set of prices will apply.

We also note that, should the Government decide to adopt our recommended dam-safety inclusive prices, capacity to pay concerns have also been taken into account in the design of the pricing framework and through our application of the pricing principles in the referral (see Chapter 2). Adopting the dam safety-inclusive prices will increase the longer term, lower bound cost recovery target for some schemes and the application of the fixed cost transition path outlined in the referral means that these schemes will, holding all else constant, be given a longer period of time to transition to that the revised cost target.

Given the above and that:

- the primary purpose of dam safety upgrades is to reduce the risks of dam failure to tolerable levels (as determined by the relevant dam safety regulators—see section 4.2 for more information)
- we have recognised the formal flood mitigation and incidental flood moderation benefits for downstream communities
- the Government will take into account a range of matters when it makes that decision, including our recommendations, the issues raised by stakeholders during our review, and the potential impacts on water users of including an allowance for dam safety upgrade capex in the relevant irrigation prices

we do not consider that there are other reasons that warrant allocating some or all of irrigation's share of dam safety upgrade capex costs to the broader community or other stakeholders.

4.10 Approach to recovering allocated dam safety upgrade capex from irrigation customers

This issue is dealt with in detail in Chapter 4 (section 4.3) in each of Part B and Part C reports.

4.11 Inclusion of dam safety upgrade capex in prices—potential impacts on irrigation customers

The inclusion of dam safety upgrade capex in prices may have a range of potential impacts on irrigation customers.

4.11.1 Stakeholders' submissions

Many irrigation stakeholders expressed concern about the adverse impact that higher water prices might have on individual irrigation customers, the overall viability of some irrigation schemes and local communities (as a result of reduced agricultural activity and employment).[202] For example, BRIA was of the view that dam-safety-inclusive prices would result in a substantial reduction in agriculture in the region, as those prices would be too high for many customers to afford. BRIA also noted that sugarcane had relatively low returns but is well suited to the Burdekin

[202] See for example, Canegrowers, sub. 91; Invicta Cane Growers Organisation, sub. 109; Kalamia Cane Growers, sub. 111; BRIA, sub. 85 and sub. 161; Lower Burdekin Water, sub. 69; QFF, sub. 133; 2PH Farms, sub. 138; BDCG, sub. 162; Lockyer Water Users Forum, sub. 200.

area and considered that it was not possible for affected irrigators to transition to an alternative crop.[203]

4.11.2 QCA assessment

The inclusion of dam safety upgrade capex would increase prices for customers in the affected schemes. However, the impact in the next pricing period (if the dam safety upgrade capex inclusive prices are adopted) is limited due to the timing of the projects and our approach to calculating prices. Table 3 below provides an overview of the potential longer-term price impacts.

Table 3 Price impacts associated with inclusion of dam safety upgrade capex allowance ($2020–21)

Scheme	*Year of commissioning*	*Impact on 2020–21 cost-reflective price ($/ML WAE)*	*Impact on 2020–21 recommended price ($/ML WAE)[a]*	*Impact on cost-reflective price in year after commissioning ($/ML WAE)[b]*
Barker Barambah WSS	2028	–	–	20.33
Bowen Broken Rivers WSS	2027	–	–	–
Bundaberg WSS	2027	–	–	0.23
Bundaberg distribution system	2027	–	–	0.34
Burdekin-Haughton WSS	2025	–	–	9.36
Burdekin-Haughton distribution system	2025	–	–	2.21
Central Brisbane River WSS[c]	2026	–	–	4.47
Macintyre Brook WSS	2023	1.24	–	3.37
Nogoa-Mackenzie WSS (MP)[d]	2021	0.97	0.97	1.12
Nogoa-Mackenzie WSS (HP)[d]	2021	10.02	–	11.56
Pioneer River WSS	2023	0.42	–	1.15
Upper Burnett WSS	2026	–	–	8.56
Upper Condamine WSS	2022	0.94	–	1.52

a *While there are five schemes in the above table where the inclusion of a dam safety upgrade capex allowance will impact on the 2020–21 cost-reflective price, the inclusion of the allowance will not result in higher recommended prices over the price path period for most of those schemes. This is because the relevant tariff groups for those schemes remain above or below the lower bound cost target over the price path period. The inclusion of the allowance will result in a higher recommended price for two schemes: Nogoa-Mackenzie (medium priority local management supply) (from 2020–21) and Pioneer River (from 2021–22).* ***b*** *Impact in year following commissioning reflects the return on and of capital in the first full year after commissioning. This impact is derived based on Sunwater's adjusted forecast capex for pricing purposes, which adjusted forecast capex by 50 per cent for projects at a preliminary business case stage.* ***c*** *This relates to the Somerset Dam safety upgrade project that we assessed as part of the 2018 bulk review.* ***d*** *Nogoa-Mackenzie WSS has irrigation tariff groups for medium priority (MP) and high priority (HP) irrigation customers.*

Source: Sunwater response to QCA RFI 58; QCA 2018, Seqwater Bulk Water Price Review 2018–21, final report, March 2018; QCA analysis.

We note that most stakeholders are concerned about the potential impacts of any dam safety upgrade capex being included in prices. However, the decision regarding which set of prices is to

[203] BRIA, sub. 85, p. 22.

apply is a matter for the Government when it determines prices for the pricing period. Given that the potential impacts and equity concerns raised by stakeholders primarily relate to whether dam safety upgrade capex is included at all in prices and that we are not making any recommendation on which set of prices should apply, we consider that the Government is best placed to take those matters into account when it makes that decision (see section 4.9 for more information).

4.12 Other issues

A number of stakeholders raised issues that are relevant to developing an approach to apportioning dam safety upgrade capex, but which are not addressed elsewhere in this chapter. These issues are discussed in more detail below.

4.12.1 Transitional arrangements

Kinchant Dam Water Users Association considered that if dam safety upgrade costs were included in prices it would be a significant variation to the parameters that most irrigators would have considered when they entered the scheme. It was of the view that there should be corresponding changes to the 'locked in' nature of the entitlements that irrigation customers hold to allow those customers to surrender part or all of their entitlements.[204]

We acknowledge this concern and address it in Chapter 2.

4.12.2 Cost shifting

The LGAQ considered that the QCA should be careful that the costs were not shifted to other parties in the event that the allocation of costs to irrigation customers was reduced. It was also of the view that the inability of irrigation customers to meet all dam safety costs should not absolve them of any responsibility for dam safety costs.[205]

We note these concerns, but the terms of the referral limit the application of our proposed approach to apportioning dam safety upgrade capex and the accompanying recommended prices to irrigation customers in the specified water supply schemes and distribution systems. The allocation of dam safety upgrade capex across non-irrigation customers in those schemes (for example, industrial customers and local government), and the prices paid by those customers, are not within the scope of this review.

[204] Kinchant Dam Water Users Association, sub. 112, p. 9.
[205] LGAQ, sub. 115, p. 14.

GLOSSARY

2012 review	the QCA's review of irrigation prices charged by Sunwater for the period 1 July 2012 to 30 June 2017, which was completed in May 2012
2013 review	the QCA's review of irrigation prices charged by Seqwater for the period 1 July 2013 to 30 June 2017, which was completed in April 2013
2018 bulk review	the QCA's review of south east Queensland bulk water prices for the period 1 July 2018 to 30 June 2021, which was completed in March 2018
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
AER	Australian Energy Regulator
AFC	acceptable flood capacity
ALARP	as low as reasonably practicable
ANCOLD	Australian National Committee on Large Dams
ARR	asset restoration reserve
BRC	Bundaberg Regional Council
BRIA Irrigators	Burdekin River Irrigation Area Irrigators Ltd
BRIG	Bundaberg Regional Irrigators Group
capex	capital expenditure
CPI	consumer price index
CSO	community service obligation
DEWS	Queensland Department of Energy and Water Supply (now the Queensland Department of Natural Resources, Mines and Energy)
DNRM	Queensland Department of Natural Resources and Mines (now the Queensland Department of Natural Resources, Mines and Energy)
DNRME	Department of Natural Resources, Mines and Energy, Queensland Government
EFO	environmental flow objective
ERA	Economic Regulation Authority, Western Australia
ESC	Essential Services Commission of South Australia
ESCOSA	Essential Services Commission of South Australia
GAWB	Gladstone Area Water Board
HUF	headworks utilisation factor
IAC	Irrigator Advisory Committee
IPART	Independent Pricing and Regulatory Tribunal, New South Wales
LGAQ	Local Government Association of Queensland
LMA	local management arrangements
MDIAC	Mareeba Dimbulah Irrigation Area Council
ML	megalitre

NSP	network service plan
NSW	New South Wales
NWI	National Water Initiative
opex	operating expenditure
Part A price	a fixed price per megalitre of annual WAE, intended to recover the fixed costs associated with operating, maintaining, administering and renewing the bulk WSS
Part B price	a price per megalitre of annual usage, intended to recover the bulk variable costs associated with the actual delivery (usage) of water
Part C price	a fixed price per megalitre of annual WAE, intended to recover all distribution system fixed costs
Part D price	a price per megalitre of annual usage, intended to recover the distribution system variable costs associated with the actual delivery (usage) of water
QCA	Queensland Competition Authority
QCA Act	Queensland Competition Authority Act 1997
QFF	Queensland Farmers' Federation
RAB	regulatory asset base
RBA	Reserve Bank of Australia
RFI	request for information
ROL	resource operations licence
ROP	resource operations plan
SEQ	south east Queensland
the Government	the Queensland Government
the referral	the referral for the review issued by the Government to the QCA under section 23 of the QCA Act
WAE	water access entitlement
WBBROC	Wide Bay Burnett Regional Organisation of Councils
WASO	water allocation security objective
WMP	water management protocol
WP	water plan
WPI	wage price index
WSS	water supply scheme
WSSR Act	Water Supply (Safety and Reliability) Act 2008

APPENDIX A: REFERRAL

Queensland Government

Deputy Premier
Treasurer
Minister for Aboriginal and Torres Strait Islander Partnerships

1 William Street
GPO Box 611 Brisbane
Queensland 4001 Australia
Telephone +61 7 3719 7100
Email deputy.premier@ministerial.qld.gov.au

ABN 90 856 020 239

Our Ref: 01852-2018

29 OCT 2018

Professor Flavio Menezes
Chair
Queensland Competition Authority
GPO Box 2257
BRISBANE QLD 4001

Dear Professor Menezes Flavio,

Please find enclosed a referral notice issued under section 23 of the *Queensland Competition Authority Act 1997*, referring the relevant monopoly business activities of SunWater and Seqwater to the Queensland Competition Authority (the Authority) for an investigation about pricing practices in relation to rural irrigation prices to apply from 1 July 2020 to 30 June 2024.

I appreciate the Authority's continued involvement in ensuring rural irrigation prices have effective regulatory oversight.

I am advised that officers from Queensland Treasury have consulted with the Authority in the preparation of this referral notice. SunWater and Seqwater have also been advised of this investigation and have been encouraged to work closely with the Authority to ensure the reporting timeframes for the review are met.

Should you have any queries regarding this matter, please contact Mr Dennis Molloy, Assistant Under Treasurer, Shareholder and Structural Policy Division on (07) 3035 1988.

Yours sincerely

JACKIE TRAD MP
DEPUTY PREMIER
Treasurer
Minister for Aboriginal and Torres Strait Islander Partnerships

Encl.

Cc: The Honourable Dr Anthony Lynham MP,
Minister for Natural Resources, Mines and Energy

QUEENSLAND COMPETITION AUTHORITY ACT 1997
Section 23 and Section 24

REFERRAL AND DIRECTION NOTICE

A Section 23 – Referral

(1.1) As the Treasurer of Queensland, under section 23 of the Queensland Competition Authority Act 1997 (the Act), I refer the monopoly business activities of SunWater and the Queensland Bulk Water Supply Authority (trading as Seqwater) (the businesses) described in paragraph A(1.2) to the Queensland Competition Authority (the Authority) for an investigation about pricing practices relating to those activities.

(1.2) The monopoly business activities are:

- the bulk water storage and water distribution undertaken by SunWater; and
- the bulk water supply undertaken by Seqwater,

to the extent those activities are:

- undertaken for an irrigation service as defined in the *Water Act 2000*[1]; and
- in the water supply schemes and distribution systems (WSS) set out in Schedule 1 excluding water services provided by Burnett Water Pty Ltd in relation to Paradise Dam and Kirar Weir, consistent with the Authority's Final Report SunWater Irrigation Price Review: 2012-17 Volume 1.

B Section 24 – Directions

(1.1) Under section 24 of the Act, I direct the Authority to make recommendations about the following matters:

(a) appropriate prices (including drainage prices, water harvesting prices and termination fees for relevant WSS) to be charged by the businesses for the period of 1 July 2020 to 30 June 2024 (the price path period) in relation to the monopoly business activities specified in paragraph A(1.2), subject to paragraph C(1.7); and
(b) appropriate price review triggers and other mechanisms, to manage the risks associated with material changes in the allowable costs identified in paragraph C(1.2) outside the control of the businesses.

[1] For clarity, an irrigation service is defined in Schedule 4 of the *Water Act 2000* as the supply of water or drainage services for irrigation of crops or pastures for commercial gain.

(1.2) The recommendations made by the Authority under B(1.1) should include two sets of appropriate prices in relation to prudent and efficient capital expenditure associated with dam safety upgrades, one set where all dam safety upgrade capital expenditure is excluded and one set where an appropriate allowance for capital expenditure forecast to be incurred from 1 July 2020 onwards is included. The recommendations made by the Authority are not required to specify which set of prices are to apply.

(1.3) In making its recommendations under B(1.2), the Authority is to develop and apply an appropriate approach for apportioning dam safety upgrade capital expenditure and explain this approach and its application as part of its recommendations.

(1.4) The recommendations made by the Authority under B(1.1) should adopt the current tariff groups for all WSS, other than where the Authority develops alternative tariff groups for the categories of prices listed in Schedule 3 as required under paragraph B(1.5).

(1.5) The Authority is to review the tariff groups for the categories of prices listed in Schedule 3 and develop alternative tariff groups. The recommendations made by the Authority should include two sets of appropriate prices, one set which maintains the current tariff groups and one set based on the alternative tariff groups. The recommendations made by the Authority are not required to specify which set of prices are to apply.

(1.6) Under section 24 of the Act, I direct the Authority to consider the stated matters listed as "Matters for consideration in making recommendations" in paragraph C when conducting the investigation and making the recommendations under paragraph B.

C Matters for consideration in making recommendations

(1.1) The Authority is to apply the Principles in Schedule 2 in recommending appropriate prices under this Notice. However, where the Authority is recommending appropriate prices that include dam safety upgrade capital expenditure under paragraph B(1.2) or for alternative tariff groups under paragraph B(1.5), the Authority may apply the Principles in Schedule 2 as it considers appropriate.

(1.2) The Authority is to consider the following matters in relation to costs and in recommending appropriate prices under this Notice:

(a) Subject to paragraphs C(1.1), C(1.3) and C(1.7) the following costs are to be recovered over the price path period,:

i. prudent and efficient operational, maintenance and administrative costs[2] (for clarity, this may include an end-of-period adjustment relating to historical costs that were unforeseen and unable to be managed, on the basis of changing market conditions for inputs or the result of regulatory imposts, and in accordance with the Authority's recommendations from its May 2012[3] and April 2013[4] reports); and

ii. an appropriate allowance for prudent and efficient expenditure on renewing existing assets[5] (for clarity, this allowance should also account for prudent and efficient renewals expenditure incurred in the previous price path periods).

(b) For the avoidance of doubt, costs recovered under paragraph C(1.2)(a) are to include the following:

i. costs incurred by the businesses to implement the 2015 recommendations made by the Inspector-General Emergency Management;

ii. costs that are required to meet regulatory obligations or deliver agreed service levels, where costs to deliver agreed service levels are not materially higher than the costs of like-for-like replacement or modern equivalent replacement; and

iii. regulatory fees charged by the Authority to the businesses to make the recommendations under this Notice up to $2.5 million. For clarity, the Authority should detail the total cost incurred by the Authority in making the recommendations under this Notice.

(c) for clarity, the value of the asset base for existing assets (as at 1 July 2000) should not be considered.

(1.3) Costs associated with the provision of recreation facilities that are incurred by the businesses from 1 July 2020 onwards that would not otherwise be incurred to supply water, are not to be included, unless the Authority is satisfied that there is customer support for these costs to remain included.

(1.4) Subject to paragraphs C(1.1) and C(1.2) (above), the Authority should have regard to:

(a) balancing the legitimate commercial interests of the businesses with the interests of their customers, including considering less than cost reflective volumetric prices which are necessary to moderate bill impacts for customers, and

(b) ensuring, where possible, that revenue and pricing outcomes are both simple and transparent for customers.

---

[2] Including an allowance for tax (where applicable).
[3] Final Report, SunWater Irrigation Price Review 2012-17, Volume 1.
[4] Final Report, Seqwater Irrigation Price Review 2013-17, Volume 1.
[5] Existing assets are assets commissioned prior to 1 July 2000. Expenditure on renewing assets should not include costs associated with augmentation of existing assets or new assets, subject to paragraph C(1.7).

(1.5) Where the Authority considers that it has been demonstrated that customers have agreed to the costs and/or prices proposed by the businesses and the Authority considers that the proposed prices are in line with the requirements of this Notice, the Authority must have regard to these agreements in recommending appropriate prices.

(1.6) Where relevant, the findings of the Authority's investigation of Seqwater's bulk water prices for the 2018-21 period should be taken into account in recommending appropriate prices.

(1.7) For the purposes of this Notice, the recommended appropriate prices should not recover costs associated with augmentation of existing assets, new assets[6] or any capital expenditure which is not like-for-like or modern equivalent replacement or does not reflect a regulatory requirement unless the Authority is satisfied that the costs will generate net positive benefits for existing customers and customers have been consulted. Where the Authority is not so satisfied, prices to recover these costs are a commercial matter for the businesses to negotiate with customers.

(1.8) The Authority should consider and analyse how its recommended appropriate prices might be reflected in customer bills for each tariff group in all WSS (excluding drainage prices, water harvesting prices and termination fees) and provide this analysis and estimated customer bills as part of its recommendations.

D. Consultation

The Authority must undertake an open consultation process with all relevant parties, as required by section 25 of the Act, and consider submissions within the timetable for the delivery of the Final Report to the Treasurer detailed in paragraph E. All reports and submissions must be made publicly available, including on the Authority's website.

E. Timing

(1.1) The notice given and published by the Authority under section 25 of the Act on receipt of this Referral and Direction Notice, must require submissions on proposed costs (and supporting information) to be made to the Authority by the businesses by no later than 30 November 2018.

(1.2) The Authority must provide to the Treasurer and the Minister for Natural Resources, Mines and Energy the:
(a) Draft Report by no later than 31 August 2019; and
(b) Final Report and recommended price paths by no later than 31 January 2020.

(1.3) The Final Report will inform the Treasurer's and Minister for Natural Resources, Mines and Energy's deliberations in determining price paths to apply for the period from 1 July 2020 to 30 June 2024 by direction under section 999 of the *Water Act 2000* in relation to SunWater and under section 1013D of the *Water Act 2000* in relation to Seqwater.

[6] New assets are assets commissioned after 1 July 2000.

F. Other matters

(1.1) For the avoidance of doubt, nothing in this Notice prevents the businesses from negotiating full commercial prices to supply water other than for the monopoly business activities described in paragraph A(1.2).

(1.2) The Authority may exercise all the powers under Part 6 of the *Queensland Competition Authority Act 1997* in undertaking the investigation under this Notice.

HON. JACKIE TRAD MP
DEPUTY PREMIER
Treasurer
Minister for Aboriginal and Torres Strait Islander Partnerships

Schedule 1

Water Supply Schemes operated by SunWater

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

Distribution Systems operated by SunWater
Bundaberg
Burdekin-Haughton
Eton
Emerald
Lower Mary
Mareeba-Dimbulah
Theodore

Water Supply Schemes operated by Seqwater
Cedar Pocket
Central Brisbane River
Central Lockyer Valley
Logan River
Lower Lockyer Valley
Mary Valley
Warrill Valley

Distribution Systems operated by Seqwater
Morton Vale Pipeline
Pie Creek

Note: Where the Authority is advised before publication of its Draft Report that final agreement has been reached on the terms to transfer operation of a distribution system owned by SunWater to a local customer owned company or co-operative, then the Authority is not to provide prices to recover the cost of the infrastructure for this distribution system.

Schedule 2

Principles

A. Prices are to be based on all tariff groups transitioning to cost-reflective prices. Cost-reflective prices reflect the costs in paragraph C(1.2) and increase by the Authority's measure of inflation over the price path period.

B. In considering tariff structures, regard should be had to the fixed and variable nature of the underlying costs.

C. Fixed (Part A and Part C) prices are to be derived independently of Volumetric (Part B and Part D) prices.

D. For water supply schemes where the only fixed price applicable is the Fixed (Part A) price:
   i. if the prevailing[7] Fixed (Part A) price is above the initial[8] cost-reflective Fixed (Part A) price, the prevailing Fixed (Part A) price should be maintained in nominal terms over the price path period until the cost-reflective Fixed (Part A) price is reached, with the exception of Fixed (Part A) prices which apply to customers of a distribution system operated by a local customer owned company or co-operative, in which case the Fixed (Part A) price should be reduced to the cost-reflective Fixed (Part A) price.
   ii. if the prevailing Fixed (Part A) price is less than the initial cost-reflective Fixed (Part A) price, the prevailing Fixed (Part A) price should increase each year by the Authority's measure of inflation plus an additional component of $2.38 per mega litre (from 2020-21, increasing by the Authority's measure of inflation each year) until the cost-reflective Fixed (Part A) price is reached[9].

E. For distribution systems where Fixed (Part A) and Fixed (Part C) prices are applicable:
   i. if the prevailing Fixed (Part A) price is above the initial cost-reflective Fixed (Part A) price, the prevailing Fixed (Part A) price should be reduced to the cost-reflective Fixed (Part A) price.
   ii. if the prevailing Fixed (Part A) price is less than the initial cost-reflective Fixed (Part A) price, the prevailing Fixed (Part A) price should increase each year by the Authority's measure of inflation plus an additional component of $2.38 per mega litre (from 2020-21, increasing by the Authority's measure of inflation each year) until the cost-reflective Fixed (Part A) price is reached[10].
   iii. if the prevailing total Fixed (Part A + Part C) price is above the initial total cost-reflective Fixed (Part A + Part C) price, the prevailing total Fixed (Part A + Part C) price should be maintained in nominal terms over the price path period until the total cost-reflective Fixed (Part A + Part C) price is reached.

[7] The prevailing price for a particular tariff group is the price that relates to the 2019-20 period.
[8] The initial cost-reflective price for a particular tariff group is the price that relates to the 2020-21 period.
[9] The additional component may be less than specified in paragraph Dii in order for the price not to exceed the cost-reflective Fixed (Part A) price.
[10] The additional component may be less than specified in paragraph Eii in order for the price not to exceed the cost-reflective Fixed (Part A) price.

iv. if the prevailing total Fixed (Part A + Part C) price is less than the initial total cost-reflective Fixed (Part A + Part C) price, the prevailing total Fixed (Part A + Part C) price should increase each year by the Authority's measure of inflation plus an additional component of $2.38 per mega litre (from 2020-21, increasing by the Authority's measure of inflation each year) until the total cost-reflective Fixed (Part A + Part C) price is reached[11].

F. Volumetric prices (Part B and Part D) should have regard to moving to cost-reflective Volumetric prices (Part B and Part D) immediately.

G. For the Burdekin-Haughton WSS, the costs of SunWater supplying 185,000 ML to Lower Burdekin Water are not to be recovered from the prices applying to the remaining water entitlements.

H. For the Central Brisbane River WSS, where cost allocations are reapportioned as anticipated in the Final Report, Seqwater Irrigation Price Review 2013-17, Volume 2, Central Brisbane River Water Supply Scheme, or as an outcome of wider cost allocation investigations with customers, the Fixed (Part A) price for the commencement of the price path period may be less than the prevailing Fixed (Part A) price.

Schedule 3 – Categories of prices to be reviewed

Part A and Part B prices for the Dawson Valley WSS
Part A and Part B prices for the Three Moon Creek WSS
Part A and Part B prices for the St George WSS

[11] The additional component may be less than specified in paragraph Eiv in order for the price not to exceed the cost-reflective Fixed (Part A + Part C) price.

APPENDIX B: LIST OF SUBMISSIONS

The submissions that we received during our review of irrigation water prices in rural Queensland (for 1 July 2020 to 30 June 2024) are listed below. The submissions are numbered for reference purposes only—the numbers are used in the footnotes in the report. The submissions are available on our website.

The submissions are separated in three groups:

- Table 4—the cost submissions of the water businesses (Sunwater and Seqwater) (submissions 1–52, 152–154, 156–157)
- Table 5—the submissions we received before the draft report was published (excluding those of Sunwater and Seqwater) (submissions 53–151, 155, 158)
- Table 6—the submissions stakeholders made in response to our draft report (including those of Sunwater and Seqwater) (submissions 159–238).

Table 4 Cost submissions—Seqwater and Sunwater

Stakeholder	*Sub. number*	*Document*
Seqwater's initial submission (November 2018)	1	Seqwater submission
	2	Cedar Pocket Water Supply Scheme
	3	Central Brisbane Water Supply Scheme
	4	Central Lockyer Valley Water Supply Scheme (including Morton Vale Pipeline)
	5	Lower Lockyer Valley Water Supply Scheme
	6	Logan River Water Supply Scheme
	7	Mary Valley Water Supply Scheme (including Pie Creek)
	8	Warrill Valley Water Supply Scheme
	9	Report prepared for Seqwater by Badu Advisory—Headworks Utilisation Factors for the Logan, Mary Valley and Warril Valley Water Supply Schemes, 2018
	10	Modelling report prepared for Seqwater by SLR—Central Brisbane Benefits Study, 2018
Sunwater's initial submission (November 2018)	11	Sunwater submission
	12	Appendix A: Customer engagement
	13	Appendix B: Governance arrangements and key legislative and regulatory obligations
	14	Appendix C: 2012 QCA recommendations and other issues
	15	Appendix D: Cover page—2019 Network Service Plans and addendums:
	16	• Barker Barambah Bulk Water Service Contract
	17	• Bowen Broken Rivers Bulk Water Service Contract
	18	• Boyne River & Tarong Bulk Water Service Contract
	19	• Bundaberg Bulk Water Service Contract
	20	• Bundaberg Distribution Service Contract
	21	• Burdekin-Haughton Bulk Water Service Contract
	22	• Burdekin-Haughton Distribution Service Contract
	23	• Callide Valley Bulk Water Service Contract
	24	• Chinchilla Weir Bulk Water Service Contract
	25	• Cunnamulla Bulk Water Service Contract

Stakeholder	*Sub. number*	*Document*
	26	• Dawson Valley Bulk Water Service Contract
	27	• Eton Bulk Water Service Contract
	28	• Eton Distribution Service Contract
	29	• Lower Fitzroy Bulk Water Service Contract
	30	• Lower Mary River Bulk Water Service Contract
	31	• Lower Mary River Distribution Service Contract
	32	• Macintyre Brook Bulk Water Service Contract
	33	• Mareeba-Dimbulah Bulk Water Service Contract
	34	• Mareeba-Dimbulah Distribution Service Contract
	35	• Nogoa Mackenzie Bulk Water Service Contract
	36	• Nogoa Mackenzie (Emerald) Distribution Service Contract
	37	• Pioneer River Bulk Water Service Contract
	38	• Proserpine River Bulk Water Service Contract
	39	• St George Bulk Water Service Contract
	40	• Three Moon Creek Bulk Water Service Contract
	41	• Upper Burnett Bulk Water Service Contract
	42	• Upper Condamine Bulk Water Service Contract
	43	• Appendix E: Marsh report on insurance market
	44	• Appendix F: Cover page Sunwater regulatory model
	45	• Appendix F: Sunwater regulatory model
	46	• Appendix G: Strategic Asset Management Plan
	47	• Appendix H: Cover page forecast non-routine projects
	48	• Appendix H: Forecast non-routine projects
	49	• Appendix I: Pricing arrangements for irrigation customers
	50	• Appendix J: Headworks utilisation factors technical paper
	51	• Appendix K: OD Hydrology: Giru Benefited Area
	52	• Geoffrey Kavanagh Giru Benefited Area Haughton Zone A review
Sunwater**'s** supplementary submissions	152	• Appendix F: Cover page—Sunwater regulatory model (updated)
	153	• Appendix F: Sunwater regulatory model (updated)
	154	• Supplementary submission: Access charge
	156	• Supplementary submission: Electricity cost pass through mechanism
	157	• Supplementary submission: Electricity cost pass through mechanism (Attachments 2–11 Summary of electricity cost estimates)

Note: Submissions were received in November 2018, except submissions 152 and 153 (June 2019), 154 (July 2019) and 156 and 157 (August 2019).

Table 5 Submissions to the irrigation price review before the draft report—other stakeholders

Stakeholder	*Sub. number*	*Nov 2018*	*March 2019*
2PH Farms (Superior Production Co Pty Ltd)	138		X
Barden Produce Queensland	82		X
Barker Barambah Irrigator Advisory Committee	83		X
BRIA (Burdekin River Irrigation Area) Irrigators (initial submission)	53	X	
BRIA Irrigators – cover letter – submission	 84 85		 X X
Bundaberg Fruit and Vegetable Growers	86		X
Bundaberg Regional Council	87		X
Bundaberg Regional Irrigators Group (BRIG) (initial submission)	54	X	
Bundaberg Regional Irrigators Group (BRIG)	88		X
Burdekin River Water Allocation Holders	89		X
Burnett Inland Economic Development Organisation	90		X
CANEGROWERS	91		X
CANEGROWERS Burdekin (initial submission)	55	X	
CANEGROWERS Burdekin	92		X
CANEGROWERS Isis – submission – attachment 1a (consultant report by Daley Water Service) – attachment 1b (Excel spreadsheet: water price analysis)	 93 94 95		 X X X
CANEGROWERS Mackay	96		X
CANEGROWERS Proserpine	97		X
Central Downs Irrigators	98		X
Central Highlands Cotton Growers and Irrigators Association (initial submission)	56	X	
Central Highlands Cotton Growers and Irrigators Association – general submission – submission on dam safety	 99 100		 X X
Central Highlands Regional Council (initial submission)	57	X	
Central Highlands Regional Council	101		X
Cotton Australia (initial submission)	58	X	
Cotton Australia – submission (general) – submission on the QCA consultation paper	 102 103		 X X
Fairbairn Irrigation Network	59	X	
Fairbairn Irrigation Network	104		X
Fraser Coast Regional Council	105		X
Giru Benefited Area Sub Committee	60	X	
GKM Cooney	106		X
Golden Finch Lawns	61	X	
Grange, S	62	X	

Stakeholder	*Sub. number*	*Nov 2018*	*March 2019*
Hetherington Farming	107		X
Hutchinson Ag	108		X
Jackson, I	63	X	
Invicta Cane Growers Organisation (initial submission)	64	X	
Invicta Cane Growers Organisation	109		X
Isis Central Sugar Mill	110		X
Kalamia Cane Growers	111		X
Kinchant Dam Water Users Association (initial submission)	65	X	
Kinchant Dam Water Users Association – submission (general) – attachment: Suncorp note	 112 113		 X X
Kookaburra Farms	114		X
LGAQ (Local Government Association of Queensland)	115		X
Lockyer Valley Irrigators (initial submission)	66	X	
Lockyer Valley Irrigators	116		X
Lockyer Valley Regional Council (initial submission)	67	X	
Lockyer Valley Regional Council	117		X
Lower Burdekin Water (initial submission) – cover letter – submission	 68 69	 X X	
Lower Burdekin Water	118		X
Mallawa Irrigation	119		X
Mayne, A and C	120		X
Mayor of Lockyer Valley Regional Council	121		X
MBRI (Mid Brisbane Irrigators Inc.)	122		X
MDIAC (Mareeba-Dimbulah Irrigation Area Council) (initial submission)	70	X	
MDIAC	123		X
Member for Lockyer (Central Brisbane River scheme)	124		X
Member for Lockyer(Lockyer Valley schemes)	125		X
Nicholson, S	126		X
Nogoa-Mackenzie Irrigator Advisory Committee (initial submission)	70	X	
Nogoa-Mackenzie Irrigator Advisory Committee	127		X
North Burnett Regional Council	128		X
Philips, A	72	X	
Preema Partnership	129		X
PVWater (Pioneer Valley Water Co-operative Limited) (initial submission)	73	X	
PVWater	130		X
QFF (Queensland Farmers' Federation) (initial submission)	74	X	
QFF (Queensland Farmers' Federation) – submission on Seqwater schemes – submission on Sunwater schemes – submission on dam safety	 131 132 133		 X X X

Stakeholder	*Sub. number*	*Nov 2018*	*March 2019*
QFF letter of support - electricity cost pass through (August 2019)	158		
QFF WEPC - access charge proposal (June 2019)	155		
Ronnfeldt, R	75	X	
S&J Reeves Enterprises	134		X
Scocan Holdings	135		X
Seqwater and MBRI (Mid-Brisbane River Irrigators)	136		X
Silverleaf Farming	137		X
Somerset Regional Council	76	X	
Suttle, D	77	X	
Theodore Water (initial submission)	78	X	
Theodore Water – cover letter – general submission – submission on dam safety	 139 140 141		 X X X
Three Moon Creek Irrigator Advisory Committee (initial submission)	79	X	
Three Moon Creek Irrigator Advisory Committee	142		X
Tinaroo Water Users Association	80	X	
Toowoomba Regional Council	143		X
Voss, A	144		X
Water, Theodore (initial submission)	81	X	
Weier Farming	145		X
Werner, J	146		X
Wessel, A – general submission – submission on dam safety	 147 148		 X X
WBBROC (Wide Bay Burnett Regional Organisation of Councils Inc) – main submission – supplementary submission	 149 150		 X X
WWF Australia	151		X

Table 6 All submissions in response to the draft report

Stakeholder	*Sub. number*	*Document*
2PH Farms (Superior Production Co Pty Ltd)	159	Submission
Bahr, J	160	Submission
BRIA (Burdekin River Irrigation Area) Irrigators	161	Submission
BRIA Irrigators	237	Additional information
BDCG (Burdekin District Cane Growers)	162	Submission
BDCG	238	Additional information
Burnett Valley Vineyards	163	Submission
Byers, P	164	Submission (BDCG submission copy)
CANEGROWERS	179	Submission
CANEGROWERS Burdekin	180	Submission
	181	Attachment—Burdekin Productivity Services annual report and financial statements
	182	Attachment—DNRME Lower Burdekin groundwater management area plots
	183	Attachment—excerpts from Water as a scarce resource, Water Research Foundation of Australia, 1982
	184	Attachment—Report on groundwater investigations, Haughton River, Queensland Irrigation and Water Supply Commission, 1967
CANEGROWERS Isis	185	Submission
Central Downs Irrigators	186	Submission
Central Highlands Regional Council	187	Submission
Cogill, R	188	Submission a
	189	Submission b
	165	Submission c (BDCG submission copy)
Cotton Australia	190	Submission
Cross, RD	166	Submission (BDCG submission copy)
Dawson Valley Cotton Growers Association	191	Submission
Dixon, G	167	Submission (BDCG submission copy)
Drynan, G	192	Submission
Fairbairn Irrigation Network	236	Submission
Fletchett, I	168	Submission (BDCG submission copy)
Francis, P	193	Submission a (access charge)
	194	Submission b (electricity cost pass-through mechanism)
Franettovich, M	169	Submission (BDCG submission copy)
Hasselbach family	195	Submission
Huston, W	196	Submission a
	170	Submission b (BDCG submission copy)
Hutchinson Ag	197	Submission
Kersch, J	198	Submission
Kinchant Dam Water Users Association	199	Submission
Lockyer Water Users Forum	200	Submission

Stakeholder	*Sub. number*	*Document*
Lower Burdekin Water	201	Submission
Lower Mary Customer Advisory Board	202	Submission
Lyons, M	171	Submission (BDCG submission copy)
MDIAC (Mareeba Dimbulah Irrigation Area Council)	203	Submission
MBRI (Mid Brisbane Irrigators Inc)	204	Initial submission
	205	Submission
McLellan, P & McLellan, B	206	Submission
MH Premium Farms	207	Submission
Oxenford, M	208	Submission
Parise, G	209	Submission a
	172	Submission b (BDCG submission copy)
Parison, G	210	Submission a*
	173	Submission b (BDCG submission copy)
Phillips, A	217	Submission
Pierotti, J	218	Submission a
	174	Submission b (BDCG submission copy)
Pilla, M	211	Submission a*
	219	Submission b
	175	Submission c (BDCG submission copy)
Pilla, P	212	Submission*
Pilla, S	213	Submission a*
	220	Submission b
	176	Submission c (BDCG submission copy)
PVWater (Pioneer Valley Water Co-operative Limited)	221	Submission
Pixi Pastoral Company	222	Submission
QFF (Queensland Farmers' Federation)	223	Submission
Rickuss, I	224	Submission
Schmidt, K	225	Submission
Stockham, D	214	Submission a*
	177	Submission b (BDCG submission copy)
Stockham, G	215	Submission*
Stockham, R	178	Submission (BDCG submission copy)
Seqwater	226	Submission
Seqwater and MBRI	227	Joint submission
Sunwater	228	Cover letter
	229	Submission
	230	Appendix A: Electricity cost and pass-through mechanism
Theodore Water	231	Cover letter
	232	Submission
Tyunga Farms	233	Submission
WBBROC (Wide Bay Burnett Regional Organisation of Councils)	234	Submission

Stakeholder	*Sub. number*	*Document*
Wessel, A	235	Submission
Zabala, A	216	Submission*

**Submissions marked with an asterisk (submissions 210 to 216) were all submitted in the same letter template (individualised for each submitter, which includes a statement that the person making the submission is supporting the CANEGROWERS Burdekin submission).*

Note: A submission described as a 'BDCG submission copy' (submissions 164 to 178) is the same as the submission by the Burdekin District Cane Growers Ltd (excluding BDCG's own cover letter).

APPENDIX C: WEIGHTED AVERAGE COST OF CAPITAL

The weighted average cost of capital (WACC) is the rate of return that is most commonly used in regulatory practice in Australia. The WACC is the weighted average of the cost of equity and cost of debt, with the respective weights representing the shares of equity and debt in the capital structure of the firm.

The WACC is an estimate of the rate of return on investment that is commensurate with the regulatory and commercial risks involved with providing access to the service.

In the context of this investigation, the WACC is used in two different approaches proposed by the businesses for deriving allowances that are components of their total costs:

- a discount rate in deriving an annuity-based allowance for renewals expenditure
- a rate of return in deriving a RAB-based allowance for dam safety upgrade capital expenditure.

Stakeholders' submissions

Sunwater and Seqwater have generally adopted the same approach to WACC parameters that we applied in our 2018–21 review of Seqwater's bulk water prices (2018 bulk review).

Both businesses said that while they did not agree with all aspects of our WACC approach, they have applied the same approach rather than incurring costs to employ their own consultant to determine the appropriateness of this approach.

Table 7 shows the individual parameter values underlying the WACC that each business submitted.

No submissions from irrigation stakeholders were received on the appropriate WACC.

Table 7 WACC submitted by the businesses

Parameter	*Sunwater*	*Seqwater*
20-day averaging period (end date)	27 August 2018	28 September 2018
Risk-free rate	2.26%	2.22%
Market risk premium	7.0%	7.0%
Asset beta	0.41	0.40
Equity beta	0.77	0.77
Cost of equity	7.62%	7.58%
Cost of debt	4.67%	5.20%
Capital structure	60%	60%
Gamma	0.41	0.47
Nominal post-tax WACC	5.85%	6.15%

Source: Sunwater, sub. 11; Sunwater, sub. 45; Seqwater, sub. 1; Seqwater irrigation pricing model 2018.

In response to our draft report, Sunwater, in November 2019 indicated that they were not seeking changes to our proposed WACC. Sunwater noted that we may want to investigate whether our determined market risk premium is representative of the current market. [206]

[206] Sunwater, sub. 229, pp. 75–76.

QCA assessment

While the referral asks us to recommend prices that exclude a return on the existing asset base, it does not direct us to adopt a less than commercial rate of return (discount rate) for other purposes (including the development of appropriate allowances for renewals and dam safety upgrade capital expenditure).

In developing the WACC for the irrigation review, we have applied:

- recent updates in our approach as outlined in the Queensland Rail 2020 draft access undertaking (DAU) draft decision
- findings from the 2018 bulk review
- regulatory precedents for water businesses in other jurisdictions and recent updates on industries that have previously been used to benchmark rural water (e.g. Australian energy businesses)
- an updated assessment as to whether underlying findings from the 2012 (Sunwater) and 2013 (Seqwater) reviews remain appropriate, including that the businesses' irrigation activities:
  - have low systematic risk (risk is more related to weather than economic activity)
  - are shielded from both demand and cost risk through the adoption of the two-part tariff structure.

Cost of equity

The cost of equity is estimated using the Capital Asset Pricing Model (CAPM), which adds an equity risk premium to the risk-free rate, where the equity premium comprises the market risk premium scaled by the firm's equity beta.

Risk-free rate

The risk-free rate is the rate of return required by investors for holding an asset with zero default risk. The risk-free rate is a component of both the cost of equity and the cost of debt.

Sunwater and Seqwater both proposed using the approach in the 2018 bulk review, which used a 20-business-day average of the nominal yields on Commonwealth Government bonds with a term to maturity aligned to the length of the price path period (i.e. 'term-matching').

Sunwater and Seqwater applied a 20-day averaging period, with an indicative end date of 27 August 2018 and 28 September 2018, respectively, with both businesses submitting an indicative risk-free rate based on the yield of a Commonwealth Government bond with a term to maturity of five years.

Conclusion

We recommend using a 10-year risk free rate with a 20-day average ending 29 November 2019.

Market risk premium

Sunwater and Seqwater both proposed using the market risk premium from the 2018 bulk review of 7.0 per cent.

Conclusion

In November 2019, we updated our estimate of the market risk premium. Our latest estimate is a market risk premium of 6.5 per cent.

Beta

The asset beta (or unlevered beta) of an entity is a relative measure of the underlying business risk of the entity relative to the market as a whole. Sunwater and Seqwater have both proposed using the asset beta from the 2018 bulk review.

Incenta's analysis of the asset beta in the 2018 bulk review selected 12 listed regulated water businesses as a sample with similar risk characteristics to Seqwater.[207] Incenta considered that in the absence of Australian-listed, regulated water businesses, the next closest comparator businesses were listed regulated water businesses in countries similar to Australia. Incenta also said that there was a small number of listed regulated Australian energy businesses, and a much larger number of international listed regulated energy businesses, which would also exhibit similar systematic risk characteristics to Seqwater.

Incenta estimated the asset beta for these comparator businesses over 10 years, using both weekly and monthly return observations. The weekly and monthly observations returned average asset beta estimates of 0.49 and 0.33 respectively. Based on these two estimates, Incenta advised that the best empirical estimate of the asset beta was the midpoint of 0.41.

The equity beta (or levered beta) reflects not only this business risk but also the financial risk borne by equity holders from the use of debt to partially fund the business. It is a function of the asset beta and debt beta. Sunwater and Seqwater have both proposed using the equity beta from the 2018 bulk review. Sunwater and Seqwater proposed an equity beta of 0.77.

Other jurisdictions

In recent regulatory reviews, most economic regulators of water businesses in Australia have assumed an equity beta of 0.7.

Table 8 Equity beta—other jurisdictions

Year	*Regulator and review*	*Equity beta*
2017	IPART–WaterNSW (MDB valleys)	0.70
2017	IPART–WaterNSW (Coastal valleys)	0.70
2017	ERA–Water Corporation, Aqwest and Busselton Water Board	0.70
2016	ESCOSA–SA water regulatory determination	0.70
2016	ESC–Melbourne Water	0.65
2016	ESC–Goulburn-Murray Water	0.70

Source: IPART 2017, ERA 2017, ESCOSA 2016, ESC 2016.

The comparator sample of companies used to estimate equity beta has varied in reviews of regulated water entities.

In its 2017 review of prices for WaterNSW's rural bulk water price services, IPART said that an equity beta of 0.7 with a gearing of 60 per cent was representative of the extent of systematic risk of the water industry more broadly (i.e. rural and urban water businesses).[208] In its 2018 WACC review, IPART said it would review the equity beta at the start of each price review process by analysing comparator businesses with a similar risk profile, and update this parameter in WACC calculations if necessary.[209] In April 2019, IPART sought submissions on its proposed new method for estimating the equity beta, estimating a water industry beta of 0.74 using a sample of 35 water businesses.[210]

[207] Incenta, *Estimating Seqwater's firm-specific WACC parameters for the 2018–21 bulk water price investigation*, November 2017.
[208] IPART, *WaterNSW—Review of prices for rural bulk water services from 1 July 2017 to 30 June 2021*, final report, June 2017, p. 71.
[209] IPART, *Review of our WACC method*, final report, February 2018, p. 61.
[210] IPART, *Estimating Equity Beta*, April 2019, p. 7.

In its 2011 pricing principles, the ACCC considered 0.7 to be an appropriate value for the equity beta at a leverage of 60 per cent for price determinations under its water charge (infrastructure) rules.[211] The ACCC considered that rural water businesses were likely to face similar levels of systematic risk to Australian energy businesses and that the most recent empirical data indicated an equity beta of between 0.4 and 0.7. The ACCC chose a value in the higher end of this range, taking a conservative view of the likely equity beta estimate of rural water businesses regulated under its water charges (infrastructure) rules.

In December 2018, the AER updated its equity beta estimate to a point estimate of 0.6 from a range of updated empirical estimates of 0.42–0.88 for Australian regulated energy businesses with an estimated gearing of 60 per cent.[212]

Previous investigations

The 2012 and 2013 reviews concluded that the irrigation businesses:

- have low systematic risk (risk is more related to weather than economic activity)
- were shielded from both demand and cost risk through the adoption of the two-part tariff structure that closely aligned with the underlying cost structure of the businesses.

In the 2012 and 2013 reviews, an equity beta of 0.55 was calculated using our leverage formula, as well as an asset beta of 0.3, an assumed debt beta of 0.11, and a debt to value ratio of 60 per cent.

The asset beta of 0.3 was based on a 2011 advice by Lally based on comparator samples of listed regulated Australia energy businesses (average asset beta of 0.3) and listed regulated UK water businesses (average asset beta of 0.22).[213] We noted that regulated Australian energy businesses had similar regulatory settings as the irrigation businesses, with associated low exposure to both demand and cost risk.

QCA assessment

We consider that the irrigation businesses of Sunwater and Seqwater would exhibit similar risk characteristics as regulated energy and water businesses.

Regulated energy and water businesses generally have strong regulatory regimes that afford a high level of revenue certainty. The irrigation businesses also have lower exposure to demand and cost shocks under our proposed regulatory framework, which includes regulatory cost pass-throughs for unforeseen circumstances and the adoption of a two-part tariff that closely aligns with the underlying cost structures of the businesses.

In addition, the characteristics of regulated energy and water customers will mitigate much of these businesses' exposure to volume risk through economic cycles. We consider that regulated energy and water businesses' revenues are resilient to economic cycles, as a significant component of demand comes from residential consumers with no other service options and with a low income elasticity of demand for the service. The demand for water services by irrigation customers is largely dependent on the availability of water rather than on changes in general domestic economic activity.

We note that all the businesses in the 2018 bulk review sample of listed regulated water businesses are subject to cost-based regulation that helps insulate them from volume risk. We have used this comparative sample of listed regulated water businesses for the irrigation review, updated with the latest asset beta estimates.

---

[211] ACCC, *Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010*, July 2011, p. 38.
[212] AER, *Rate of return instrument*, Explanatory Statement, December 2018, pp. 95–101.
[213] Lally, M, *The Estimated WACC for the SEQ Interim Price Monitoring*, January 2011, pp. 21–26.

Incenta was recently engaged by us to provide advice on the appropriate asset beta in the Queensland Rail 2020 DAU draft decision. Incenta's assessment derived an asset beta for regulated energy and water businesses of 0.38.[214] This analysis included the complete sample of water companies that was used in the 2018 bulk review. Using Incenta's updated analysis from the Queensland Rail 2020 DAU draft decision and applying this to the sample of listed regulated international water businesses from the 2018 bulk review gives an asset beta of 0.40.

The asset beta of 0.4 diverges from the asset beta of 0.3 used in the 2012 and 2013 reviews mainly due to differences in:

- the sample of comparator companies—listed regulated international water businesses as opposed to listed regulated Australian energy businesses
- the method for estimating beta.

Of the sample of listed regulated Australian energy companies used in the 2012 and 2013 reviews, only two companies remain listed. A sample of listed regulated international water companies is readily available, and was used in the 2018 bulk review and GAWB 2015 review. In the absence of a reasonable sample size of listed regulated Australian water companies, we consider that a sample of listed water businesses from countries similar to Australia is appropriate and consistent with recent QCA water reviews.

The proposed method for estimating beta is to derive an average of the weekly and monthly asset betas over a 10-year period, compared with the estimation method in the 2012 and 2013 reviews that used a monthly beta over a six-year period. The average of the monthly and weekly asset betas over a 10-year period is consistent with recent QCA reviews. We consider that a longer sample window provides for a more robust asset beta estimate.

We note that the 2012 review indicated that rural irrigation businesses may have lower systematic risk profiles than water businesses that supply mostly urban customers (e.g. Seqwater) and water businesses that supply mostly industrial customers (e.g. GAWB). We consider that the systematic risk of both rural and urban regulated water businesses would be relatively low, given the regulatory mechanisms in place to reduce exposure to revenue and cost risks. We note that the already limited sample set does not provide for the ability to create a robust empirical approach to assess potential differences in systematic risk between rural and urban water businesses.

This approach is consistent with that of IPART, who has indicated that there is no difference in the systematic risk between urban and rural water businesses.[215]

Conclusion

We have accepted the updated asset beta of 0.40 for listed regulated international water businesses for both Sunwater and Seqwater for the irrigation review. In conjunction with a gearing level of 60 per cent (see below), and a debt beta of 0.12, this translates to an equity beta of 0.755.

Cost of debt

The cost of debt is the sum of the risk-free rate, a debt premium, and allowances for transaction costs associated with issuing debt and managing refinancing risks.

[214] Incenta, *Estimating Queensland Rail's WACC for the 2020 DAU—asset beta, benchmark gearing, and credit rating,* prepared for the QCA, April 2019.

[215] IPART, WaterNSW—*Review of prices for rural bulk water services from 1 July 2017 to 30 June 2021*, final report, June 2017, p. 71.

Credit rating

In the 2012 and 2013 reviews, we applied a BBB+ benchmark credit rating.

Most economic regulators of water utilities in Australia assume a benchmark credit rating of BBB to BBB+.

Table 9 Credit rating—other jurisdictions

Year	*Regulator and review*	*Credit rating*
2018	ESC—Victorian water businesses (excl. Melbourne Water and Goulburn-Murray Water)	BBB
2018	ICRC—Icon Water	BBB
2017	IPART—Sydney Desalination Plant	BBB
2017	IPART—WaterNSW (MDB valleys)[a,b]	BBB
2017	IPART—WaterNSW (coastal valleys)	BBB
2017	ERA–Water Corporation, Aqwest and Busselton Water Board	BBB
2016	ESC—Goulburn-Murray Water[a]	BBB+
2016	ESC—Melbourne Water	BBB
2016	ESCOSA—SA Water	BBB
2015	QCA—Gladstone Area Water Board (GAWB)	BBB
2014	ACCC—State Water (now WaterNSW)[a,b]	BBB

a *These parameters have been set out in the ACCC's 2011 Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010 (WCIR).*

b *The ACCC accepted WaterNSW's proposal to derive a debt risk premium based on corporate bonds with a BBB credit rating. ACCC said that while the WCIR defines a BBB+ benchmark credit rating, due to data inadequacies the DRP can be calculated using BBB rated bonds in practice.*

For this review, the businesses submitted a WACC with the following cost of debt attributes:

- Sunwater submitted a debt risk premium consistent with BBB-rated corporate bonds.
- Seqwater submitted the QTC-advised cost of debt from the 2018–21 review.

In the 2018 bulk review, in accordance with the referral , we applied Seqwater's cost of debt as advised by Queensland Treasury Corporation (QTC). Consequently, we did not consider the appropriate benchmark credit rating of the regulated business.

In the 2012 review, our consultant NERA noted that the benchmark credit rating assigned to Australian regulated energy and water businesses had ranged between BBB and BBB+. NERA's assessment of Sunwater's actual financial profile found that a BBB+ credit rating was appropriate. However, this assessment used Sunwater's actual financial data for Sunwater as a whole, rather than our recent approach of using benchmark financial data for the benchmark entity, which in this case would comprise Sunwater's irrigation business.

In recent regulatory decisions, the use of a BBB+ benchmark credit rating for regulated water businesses has generally been limited to approval processes under the Water Charge (Infrastructure) Rules 2010.[216]

Conclusion

We have accepted the use of a BBB benchmark credit rating for Sunwater and Seqwater. We note that this is consistent with the benchmark credit rating applied by IPART in its most recent WaterNSW price

[216] The BBB+ benchmark credit rating was based on existing regulatory precedent in 2011. ACCC noted that the approach previously used by IPART and the ESC for water businesses, and ACCC/AER for other regulated businesses, was typically a BBB+ benchmark credit rating. See ACCC, *Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010*, July 2011.

determination, and with the benchmark credit rating generally applied in regulatory reviews for other regulated water businesses.

Debt margin (including refinancing)

Sunwater proposed a cost of debt that uses the latest IPART estimate (August 2018) of the BBB-rated debt margin with our allowances for refinancing costs and interest rate and credit default swaps.

Seqwater proposed using a cost of debt as provided by Queensland Treasury Corporation (QTC). This approach was required under the referral in the 2018 bulk review, but not under this review's referral.

Conclusion

We have applied our standard approach to estimating the cost of debt using a benchmark credit rating applicable to the regulated business. We have derived the cost of debt as a simple average of the relevant RBA and Bloomberg series, with a 20-day average ending 29 November 2019.

We have used a debt refinancing transaction cost allowance consistent with the updated estimate for the Aurizon Network 2017 DAU final decision.

Capital structure (or gearing)

Capital structure refers to the relative market-value proportions of debt and equity that together finance the regulated entity's assets. The regulated entity's proportion of debt in the total market value of its assets (equity + debt) is termed its 'gearing' or 'leverage'. The benchmark credit rating is based on the benchmark capital structure. Firms that face less risk in their operating environment are generally able to sustain higher levels of debt for a given credit rating, all else equal.

In the 2012 and 2013 reviews, we applied a capital structure of 60 per cent debt.

Most economic regulators of water utilities in Australia assume a benchmark capital structure of 60 per cent.

Table 10 Capital structure—other jurisdictions

Year	*Regulator and review*	*Capital structure (%)*
2018	ESC—Victorian water businesses (excl. Melbourne Water and Goulburn-Murray Water)	60
2018	ICRC—Icon Water	60
2017	IPART—Sydney Desalination Plant	60
2017	IPART—WaterNSW (MDB valleys)[a]	60
2017	IPART—WaterNSW (coastal valleys)	60
2017	ERA–Water Corporation, Aqwest and Busselton Water Board	55
2016	ESC—Goulburn-Murray Water[a]	60
2016	ESC—Melbourne Water	60
2016	ESCOSA—SA Water	60
2015	QCA—Gladstone Area Water Board (GAWB)	50
2014	ACCC—State Water (now WaterNSW)[a]	60

a *These parameters have been set out in the ACCC's 2011 Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010.*

Sunwater and Seqwater both proposed a capital structure of 60 per cent based on our final recommendations in the 2018 bulk review. This figure is consistent with Australian regulatory precedent for water businesses.

The benchmark capital structure of 60 per cent proposed by both businesses is consistent with Australian regulatory practice. We also do not consider that the circumstances of GAWB (i.e. benchmark capital

structure of 50 per cent) are as relevant to Sunwater and Seqwater, as a large proportion of GAWB's demand is dependent on a few businesses, and it is dependent on one relatively narrow catchment area.

In the 2018 bulk review, our consultant Incenta said that the regulatory precedent for a benchmark capital structure of 60 per cent originated from the regulated Australian energy sector, as there are no listed regulated water businesses in Australia. Incenta showed that the average capital structure of Australian listed regulated energy businesses over 10 years remains close to 60 per cent.

Conclusion

We have accepted the 60 per cent gearing level for both Sunwater and Seqwater for the irrigation review.

Gamma

The Australian tax system allows companies to provide their shareholders with credits (i.e. dividend imputation credits) to reflect company taxes paid on profits that are distributed as dividends. Shareholders then use dividend imputation credits to reduce their own tax liabilities. Therefore, imputation credits effectively reduce a company's cost of capital.

The value of dividend imputation credits is captured by a parameter known as 'gamma', which is the product of:

- the distribution rate—the ratio of distributed imputation credits to company tax paid, and
- the utilisation rate—the value-weighted average over the utilisation rates of imputation credits of all investors in the market.

Sunwater and Seqwater both proposed using the gamma used in the 2018 bulk review. Sunwater proposed a gamma of 0.41 and Seqwater proposed a gamma of 0.47.

Conclusion

We have used a gamma of 0.484, which is our most recent estimate of gamma. This is based off a distribution rate of 0.88 and a utilisation rate of 0.55.

Conclusion on benchmark WACC

The table below summarises our proposed benchmark nominal post-tax WACC for the purposes of recommending prices as part of this investigation.

Table 11 The QCA's recommended WACC

Parameter	*Sunwater*	*Seqwater*	*QCA recommended*
20-day averaging period (end date)	27 August 2018	28 September 2018	29 November 2019
Risk-free rate	2.26%	2.22%	1.16%
Market risk premium	7.0%	7.0%	6.5%
Asset beta	0.41	0.40	0.40
Equity beta	0.765	0.766	0.755
Cost of equity	7.62%	7.6%	6.06%
Credit rating	BBB	n.a.	BBB
Debt margin (incl. refinancing)	2.41%	n.a.	2.09%
Cost of debt	4.67%	5.20%	3.24%
Capital structure	60%	60%	60%
Gamma	0.41	0.47	0.484
Nominal post-tax WACC	5.85%	6.15%	4.37%

Source: Sunwater, sub. 11; Sunwater, sub. 45; Seqwater, sub. 1; Seqwater irrigation pricing model 2018; QCA analysis.

APPENDIX D: RESPONSES TO ADDITIONAL ISSUES RAISED IN STAKEHOLDER SUBMISSIONS

This section outlines responses we have provided to additional issues raised in submissions received, and which have not been otherwise addressed in this report.

Stakeholder comment	***Stakeholder submission***	***QCA response***
Consideration should be given to maintaining affordable water reserves in Paradise Dam that are available to meet future urban and agricultural water requirements for the Bundaberg region.	Bundaberg Regional Council, sub. 86.	Consistent with terms of the referral, our analysis and draft recommendations do not apply to water services provided by Burnett Water Pty Ltd in relation to Paradise Dam that are outside the scope of this review. The pricing of these water services that fall outside the scope of this review are matters Burnett Water Pty Ltd and their customers.
Concerned about DNRME changes to water allocations (via the Fitzroy Basin Resource Operating Plan). These changes have apparently resulted in a reduction in the allocations in the Kroombit Benefited Area and in customers having to pay more to offset the reduction in volume.	Grange, S, sub. 61.	This matter is outside the scope of this report, as it concerns the appropriateness of DNRME's water allocation decisions.
Concerned that riparian users are drawing water from the creek (particularly during dry periods) and some of this water is potentially regulated releases destined for allocation holders. Considered that this unregulated use increased losses and costs for the scheme and its irrigators.	Kookaburra Farms, sub. 114.	This matter is outside the scope of this report, as it relates to water planning which is the responsibility of DNRME.
Nodal pricing should be considered as the operations of Bill Gunn Dam (gravity-fed) and Lake Clarendon (pumped water) are different.	Lockyer Water Users Forum, sub. 65. Lockyer Water Users Forum, sub. 115.	Under the terms of the referral, we have been directed to adopt the current tariff groups for all WSS, other than those tariff groups in schedule 3 of the referral. Consistent with these terms, we are required to adopt the existing tariff group for Central Lockyer Valley WSS, which provides for the same price for all customers.
Concerned about DNRME changes to water allocations (via the Fitzroy Basin Resource Operating Plan). These changes have apparently resulted in a reduction in allocations and water users are concerned that they have to pay more to offset the lower volumes.	Phillips, A, sub. 71.	This matter is outside the scope of this report, as it concerns the appropriateness of DNRME's water allocation decisions.
Concerns with Sunwater's after-hours service.	Suttle, D, sub. 76.	This matter is outside the scope of this report, which concerns irrigation prices for the 2020–24 price path period.

APPENDIX E: OVERVIEW OF KEY OBLIGATIONS OF WATER BUSINESSES

The legislative framework within which Sunwater and Seqwater operate include the Water Act 2000, customer contracts, and various water planning framework documents such as water plans, water management protocols, resource operations licences and operations manuals.

Water planning obligations

The Queensland Water Act 2000 is the legislative instrument that mandates how water is to be managed. The prescribed planning process includes water plans, water management protocols and resource operations licences.

Under the Water Act 2000, the Department of Natural Resources, Mining and Energy (DNRME) is responsible for long term water planning in Queensland. DNRME manages water resources by:

- planning the allocation for water—establishing environmental flow objectives for a catchment, and the consumptive pool available for extractions
- administering entitlements for access to water—determining the volume and reliability of water that can be released under water allocations, referred to in this report as water access entitlements (WAEs).
- administering licences to operate water infrastructure—by issuing resource operations licences and distribution operations licences.

The water businesses must operate their water supply schemes in accordance with the Water Act 2000 and the subordinate regulatory instruments given force to by this Act, including water plans, water management protocols and resource operations licenses. These instruments outline key obligations including conditions on the operation of water infrastructure, releases to satisfy environmental flow objectives, management of water losses and sales or transfers of WAE to customers.

Amendments to the Water Act 2000 in December 2016 introduced a revised water planning framework that sought to achieve a more streamlined and responsive approach to water planning in Queensland. Under this new framework, there are new or revised water planning framework documents such as water plans (in place of water resource plans) and water management protocols (in place of resource operations plans). Some water plan areas have yet to transition to the current framework. For these areas, the existing water planning documents remain in effect.

Water plans

Water plans are developed under the Water Act 2000 to sustainably manage and allocate water resources in Queensland. They set out the management framework for water resources in a particular catchment area, including outcomes, objectives and strategies for achieving a sustainable balance between water for industry, irrigation and urban use and the environment.

Water plans specify environmental flow objectives (EFOs) and water allocation security objectives (WASOs) and associated performance indicators for the catchment area:

- EFOs are the flows specified in the water plan as being necessary to protect the environment
- WASOs set the minimum standard for associated performance indicators that the holder of a water allocation can expect from their allocation.

Water plans are implemented through a range of documents, developed in consultation with water users. These include water management protocols, resource operations licences or distribution operations licences, and operations manuals.

Water management protocols

A water management protocol implements a water plan and may state for a particular plan area:

- water trading rules for supplemented and unsupplemented water
- water sharing rules for unsupplemented water
- any volumes of unallocated water reserved for particular purposes or stated locations.

The rules in the water management protocol that relate to Sunwater and Seqwater are the water trading rules for supplemented water allocations

Resource operations licences

Resource operations licences allow the owner of bulk water infrastructure to interfere with the flow of water in order to operate water infrastructure to which the licence applies. Sunwater and Seqwater hold resource operations licences for each of the water supply schemes they operate.

Resource operations licences include:

- roles and responsibilities of scheme operators to achieve the outcomes of the water plan
- details of the water infrastructure, such as dams and weirs, used to operate the scheme
- environmental management rules
- monitoring and reporting requirements.

Operations manual

The operating requirements of the water businesses are described in the operations manual for each water supply scheme. The manual includes:

- water sharing rules (such as announced allocation or continuous sharing rules)
- operational rules such as minimum storage levels, environmental release rules and constraints on changes in the rates of release.

Water access entitlements

A water access entitlement is an ongoing entitlement to exclusively access a share of water. A WAE is a tradeable property right providing access to water within a catchment.

Within each WSS, there are usually a number of different classes (or products) of WAEs. The most common classes are high priority and medium priority. In general, irrigators hold medium priority WAEs. The water sharing rules under each operations manual determine the relative access to water for each priority.

Supply contracts

The water businesses must act in accordance with the supply contract it has with its customers. Under section 146 of the Water Act 2000, the standard contract is ‘deemed’ to apply, even if a customer has not signed it. Otherwise, a contract may be agreed by the water businesses and customers.

Service targets, among other performance indicators, specify the targeted length and frequency of planned and unplanned shutdowns. The standard contract requires the water businesses to report against these targets and to revise them in consultation with customers.

Dam safety obligations

The water businesses are responsible for the safety of their dams under the Water Supply (Safety and Reliability) Act 2008. Obligations in relation to dam safety include:

- having an effective dam safety management program to minimise the risk of dams failing, and protect life and property, in accordance with the Queensland Dam Safety Management Guidelines[217]
- complying with the national guidelines of the Australian National Committee on Large Dams (ANCOLD)
- having an approved emergency action plan in place for each dam[218]
- meeting requirements relating to acceptable flood capacity in the Guideline on Acceptable Flood Capacity for Water Dams[219].

Sunwater was directed by its shareholding Ministers to improve the emergency action plans and implement an emergency event program following two separate reviews by the Inspector-General Emergency Management in 2015.

Commonwealth legislative and regulatory obligations

Sunwater has responsibilities under the Water Act 2007 and associated water charge rules for the six water supply schemes that it owns and operates in parts of the Murray-Darling Basin:

- Chinchilla Weir WSS
- Cunnamulla Weir WSS
- Macintyre Brook WSS
- Maranoa River WSS
- St George WSS
- Upper Condamine WSS.

The Water Act 2007 was designed to ensure that the Murray-Darling Basin is managed in the national interest. The Act establishes an independent Murray-Darling Basin Authority with the functions and powers, including enforcement powers, needed to ensure that Basin water resources are managed in an integrated and sustainable way.

Water charge rules

Charging arrangements in relation to water infrastructure in the schemes listed above are currently subject to three sets of water charge rules made under section 92 of the Water Act 2007. These rules are the:

- Water Charge (Infrastructure) Rules 2010—these rules require Sunwater to provide a schedule of charges to existing and new customers (including when changes occur) and publish the schedule of charges
- Water Charge (Termination Fees) Rules 2009—these rules set out the circumstances under which a termination fee may be imposed on an irrigation customer in the Murray-Darling Basin, as well as the methodology by which the termination fee is calculated.

[217] DNRM, *Queensland Dam Safety Management Guidelines*, February 2002.
[218] Water Supply (Safety and Reliability) Act 2008, s. 352E.
[219] DEWS, *Guidelines on Acceptable Flood Capacity for Water Dams*, July 2017.

- Water Charge (Planning and Management Information) Rules 2010—these obligations relate to the publication of information on planning and management charges levied by DNRME and apply to DNRME rather than Sunwater.[220]

In December 2014, the Australian Competition and Consumer Commission (ACCC) was requested to provide advice on possible amendments to the water charge rules. The ACCC delivered its final advice (including proposed rules) to the responsible Commonwealth Minister in September 2016.[221]

In January 2017, the Minister made rules to repeal Part 5 of the Water Charge (Infrastructure) Rules 2010, removing the requirement on operators to produce five-yearly network service plans, consultation papers and information statements. The amended rules commenced on 1 July 2017.

In April 2019, the Minister for Agriculture and Water Resources made the Water Charge Amendment Rules 2019 to amend the water charge rules and to combine the three sets of rules into the Water Charge Rules 2010. The start date for the amended rules is 1 July 2020.

Under existing regulatory arrangements in Queensland, the ACCC would determine future irrigation (and non-irrigation) prices for the six WSSs owned and operated by Sunwater that are part of the Murray-Darling Basin from 1 July 2020.

Other obligations

Sunwater and Seqwater must also comply with a number of other obligations, including those relating to reporting requirements for supplemented streams, monitoring blue-green algae, water quality monitoring, operational reporting, water entitlements and resource management, and environmental obligations.

In relation to the bulk water supply services provided in SEQ, Seqwater also has water quality obligations, water security planning obligations and compliance requirements under the Bulk Water Supply Code and bulk water supply agreements with water retailers. However, these obligations do not relate to the monopoly business activities covered in this pricing investigation.

[220] Sunwater, sub. 13.
[221] ACCC, *Review of the Water Charge Rules*, final advice, September 2016.

REFERENCES

AECOM, *Rural Irrigation Operational Expenditure Review—Sunwater*, August 2019.

——*Rural Irrigation Capital Expenditure Review—Seqwater*, August 2019.

——*Rural Irrigation Capital Expenditure Review—Sunwater*, August 2019.

——*Rural Irrigation Operational Expenditure Review—Sunwater*, January 2020.

——*Rural Irrigation Capital Expenditure Review—Sunwater*, January 2020.

AEMO, *2019 Electricity Statement of Opportunities*, August 2019, available at http://forecasting.aemo.com.au/Electricity/AnnualConsumption/Operational

Aither, *Rural water cost sharing review*, final report, prepared for IPART, 2019.

Australian Competition and Consumer Commission (ACCC), *Water Charge (Termination Fees) Rules*, final advice, December 2008.

——*ACCC final advice on an amendment to the Water Charge (Termination Fees) Rules 2009*, June 2010.

——*Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010*, July 2011.

——*Review of the Water Charge Rules*, final advice, September 2016.

Australian Energy Regulator (AER), *Rate of return instrument, Explanatory Statement*, December 2018.

——*Review of regulatory tax approach*, final report, December 2018.

Australian National Committee on Large Dams (ANCOLD), *Guidelines on Selection of Acceptable Flood Capacity for Dams*, March 2000.

——*Guidelines on the Assessment of the Consequences of Dam Failure*, May 2000.

——*Guidelines on Risk Assessment*, October 2003.

Ball J, Babister M, Weeks W, Weinmann E, Retallick M & Testoni I, (eds), *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia, 2016.

Biggar, D, *The allocation of costs between government and users in regulation of wholesale water service providers in New South Wales*, ACCC/AER working paper series, no. 7, September 2012.

Council of Australian Governments (COAG), *Communique*, Hobart, 25 February 1994.

—— *Communique*, Canberra, 25 June 2004.

——*Intergovernmental Agreement on a National Water Initiative*, 2004, available at available at http://www.agriculture.gov.au/water/policy/nwi.

Deloitte, *SunWater Administration Cost Review Phase 2*, prepared for the QCA, August 2011.

Department of Energy and Water Supply (DEWS), *Guidelines on Acceptable Flood Capacity for Water Dams*, Queensland Government, July 2017.

Department of Natural Resources and Mines (DNRM), *Queensland Dam Safety Management Guidelines*, Queensland Government, February 2002.

Department of Natural Resources and Water*, Moreton water resource plan*, consultation report, June 2007.

Department of Natural Resources, Mines and Energy (DNRME), *Central Brisbane River Water Supply Scheme Operations Manual*, Queensland Government, January 2018.

——*Fitzroy Basin: Dawson Valley Water Supply Scheme Resource Operations Licence Operations Manual,* Queensland Government, October 2018.

——*Queensland bulk water opportunities statement*, December 2018 update.

——*Local management arrangements for SunWater irrigation channels*, Queensland Government, 2019, https://dnrme.qld.gov.au/land-water/initiatives/lma-sunwater.

Department of Natural Resources, Mines and Water, *Moreton draft water resource plan*, overview report and draft plan, July 2006.

Economic Regulation Authority, Western Australia (ERA), *Inquiry into the Efficient Costs and Tariffs of the Water Corporation, Aqwest and the Busselton Water Board*, final report, January 2013.

Essential Services Commission (ESC), *2008 Water Price Review Consultation—Framework and Approach*, December 2006.

——*Goulburn-Murray Water Price Review 2016*, final decision, June 2016.

——*2018 Water Price Review*, guidance paper, November 2016.

Incenta Economic Consulting, *Estimating Seqwater's firm-specific WACC parameters for the 2018–21 bulk water price investigation*, November 2017.

Incenta, *Estimating Queensland Rail's WACC for the 2020 DAU—asset beta, benchmark gearing, and credit rating*, prepared for the QCA, April 2019.

Indec, *Qualitative Framework and Assessment of Fixed and Variable Cost Drivers*, final report, prepared for the QCA, December 2011.

——*2016–20 Review of Water Prices for Goulburn-Murray Water: Tariff Structure Proposals*, final report, prepared for ESC, January 2016.

Independent Pricing and Regulatory Tribunal, New South Wales (IPART), *Department of Land and Water Conservation, Bulk Water Prices from 1 October 2001*, final report, December 2001.

——*Bulk Water Prices for State Water Corporation and Water Administration Ministerial Corporation from 1 October 2006 to 30 June 2010*, final report, September 2006.

——*Review of prices for WaterNSW from 1 July 2016 to 30 June 2020*, final report, June 2017.

IPART, *Bulk Water Prices for State Water Corporation and Water Administration Ministerial Corporation from 1 October 2006 to 30 June 2010*, final report, September 2006.

——*Hunter Water Corporation's water, sewerage, stormwater drainage and other services, Review of prices from 1 July 2013 to 30 June 2017*, final report, June 2013.

——*WaterNSW—Review of prices for rural bulk water services from 1 July 2017 to 30 June 2021*, final report, June 2017.

——*Review of our WACC method*, final report, February 2018.

——*Rural Water Cost Shares—WaterNSW and Water Administration Ministerial Corporation*, final report, February 2019.

——*Estimating Equity Beta*, fact sheet, 1 April 2019.

KPMG, *Seqwater expenditure review: prudency and efficiency assessment*, updated report for the QCA, March 2018.

Lally, M, *The Estimated WACC for the SEQ Interim Price Monitoring*, January 2011.

Marsh, *Global Insurance Market Index*, First Quarter 2019.

Natural Resource Management Ministerial Council (NRMMC), *National Water Initiative Pricing Principles*, April 2010.

Nicholls, T & Bleijie, J, *Decision: QCA Final Report on the Review of Sunwater Irrigation Prices 2012–17*, notification, attachment to a letter to the QCA, 30 June 2012.

Ofwat, *Charging principles and guidelines,* 2012, https://webarchive.nationalarchives.gov.uk/20130303114843/http://www.ofwat.gov.uk/regulating/charges/prs_web_chargespg_intro.

Productivity Commission*, National Water Reform*, inquiry report no. 17, December 2017.

Queensland Competition Authority (QCA), *Statement of Regulatory Pricing Principles for the Water Sector*, December 2000.

——*SunWater Irrigation Price Review: 2012–17*, final report, May 2012.

——*Seqwater Irrigation Price Review: 2013–17*, final report, April 2013.

——*Statement of Regulatory Pricing Principles*, August 2013.

——*Issues in the Application of Annuities*, information paper, 2014.

——*Gladstone Area Water Board Price Monitoring 2015–20*, final report, May 2015.

——*Seqwater Bulk Water Price Review 2018–21*, final report, March 2018.

——*Queensland Rail's 2020 Draft Access Undertaking,* draft decision, April 2019.

——*Rural irrigation price review 2020–24*, draft report, August 2019.

Queensland Government, submission to the Productivity Commission, *National Water Reform*, *issues paper*, March 2017.

——*Queensland Budget 2019–20: Budget Strategy and Outlook*, Budget Paper no. 2, June 2019.

——Seqwater and Sunwater irrigation pricing, 2018, viewed 4 July 2019, https://www.business.qld.gov.au/industries/mining-energy-water/water/industry-infrastructure/pricing/irrigation.

Queensland Parliament*, Parliamentary Debates (Hansard)*, 22 June 2000, pp. 1891–95 (Second reading speech for the Water Bill 2000 by the Hon RJ Welford MP).

Queensland Treasury & Department of Energy and Water Supply, submission to the Australian Competition and Consumer Commission, *Review of Water Charge Rules*, *draft advice*, March 2016.

Reserve Bank of Australia, Statement on Monetary Policy, November 2019.

Robertson, S, Department of Environment and Resource Management submission to the QCA, *SunWater Irrigation Price Review 2010–17, draft report*, 13 February 2012.

Seqwater, submission to the QCA, *Seqwater Bulk Water Price Review 2018–21*, 31 July 2017.

Southern Rural Water (SRW), *Water Plan 2013 to 2018*, n.d.

——submission to ESC, *Water price review 2018*, 2017.

Sunwater, *Fees & Charges Schedule 2019–20: Macintyre Brook Water Supply Scheme*, n.d.

——*Fees & Charges Schedule 2019–20: St George Water Supply Scheme*, n.d.

——*Fees & Charges Schedule 2019–20: Upper Condamine Water Supply Scheme*, n.d.

——*Tariff Principles and Structures*, working paper no. 13, August 2005.

——*2017–18 Annual Report*, 2018.

WaterNSW, *Pricing proposal to the Independent Pricing and Regulatory Tribunal: Regulated prices for NSW Rural Bulk Water Services from 1 July 2017 to 30 June 2021*, 30 June 2016.

Water Solutions, *Rural Irrigation Price Review 2020–24: Assessment of Hydrologic Factors*, prepared for the QCA, September 2019.

——*Rural Irrigation Price Review 2020–24: Assessment of Hydrologic Factors, Further Assessment—Central Brisbane*, prepared for the QCA, January 2020.

——*Rural Irrigation Price Review 2020–24: Assessment of Hydrologic Factors, Further Assessment—Giru Benefited Groundwater Area*, prepared for the QCA, January 2020.