
# 2018 Bulk Water Price Review

# Seqwater Submission PART B

31 July 2017

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# Introduction

Bulk water prices for south east Queensland (SEQ) have been set until 30 June, 2018 (the 2015 Regulatory Period). The Treasurer has directed the Queensland Competition Authority (the QCA) to review and recommend bulk water prices to apply from 1 July, 2018 to 30 June, 2021 (the 2018 Regulatory Period), and to prepare a draft report by 30 November, 2017 and a final report by 31 March, 2018. The terms for the review are set out in a Referral Notice.[1]

## About Seqwater

Seqwater was established in 2013 as part of a suite of institutional reforms in SEQ including the amalgamation of the SEQ Water Grid Manager, Linkwater and the former Seqwater and parts of the Queensland Water Commission. We are now the single custodian of the region's bulk water and distribution assets, delivering treated water to our five council-owned businesses who distribute the water to the community and consumers across SEQ.

As SEQ's bulk water supply authority, we are committed to delivering the most secure and affordable drinking water supply possible. The focus of our business since the amalgamation in 2013 has been reducing costs, risk reduction, compliance, consolidating operational efficiencies and effectiveness and integrating planning. These activities have all produced value for money for the community of SEQ.

Our main bulk water customers are Queensland Urban Utilities, Unitywater, and the councils of Logan, Gold Coast and Redland. These are collectively referred to as SEQ Service Providers, but we refer to them as our customers in this submission.

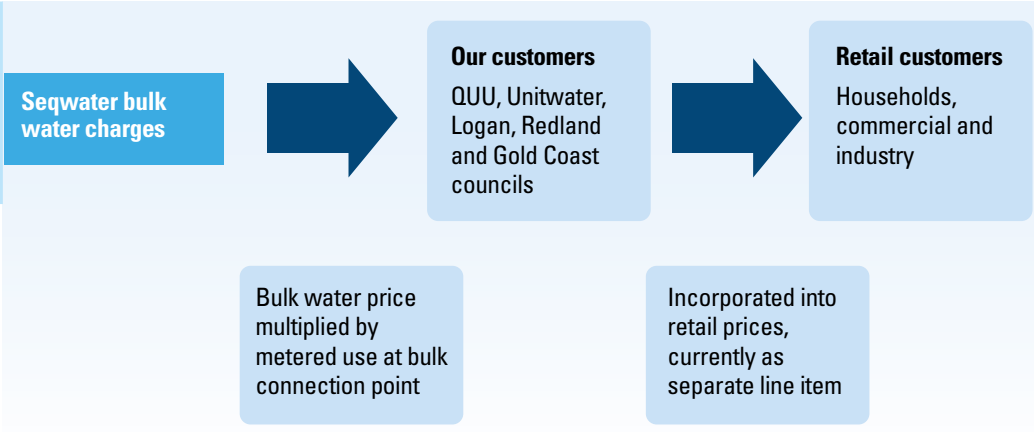
We are one of Australia's largest water businesses, with a geographical spread and a diverse asset base. We provide bulk water services from Noosa in the north to Tugun in the south, and from Gatton in the west to North Stradbroke Island in the East.

Like most businesses, we need to recover the costs of providing our services from the customers who use them. We do this through bulk water prices.

Our customers pay bulk water prices for the water they take at their respective bulk connection points. These bulk water costs, as well as other costs involved in supplying retail customers, are then incorporated into retail water prices. The bulk water price typically makes up just over half of the retail water bill for households.

The current practice is for retailers to charge the same volumetric charge to their customers, and show this price as a separate line item on the retail bill (refer below).

**Figure 1: Seqwater's bulk water prices and the retail water bill**




We also supply bulk water services to Stanwell Corporation for power generation, and to Toowoomba Regional Council. The prices for these services are set in bulk water supply agreements.

We play a key role in providing water security to SEQ. To do this, we must actively plan for the future by considering the region's potential water needs and future water supply options, as well as designing, operating and maintaining our assets to manage fluctuations in weather conditions and water demand.

1 This notice was made under section 23 of the *Queensland Competition Authority Act 1997*, and provided to the QCA on 25 May, 2017. A copy of the notice can be found on the QCA's website at http://www.qca.org.au/getattachment/f2e72530-7f72-424c-9c29-4bd1dffa7932/Treasurer-s-Referral-Notice.aspx

Last decade's Millennium Drought led the State Government to create a major infrastructure investment program to build the SEQ Water Grid. When there is plenty of water we use the Grid to minimise the costs of supply across the region by optimising the operation of the Grid and dispatch of various sources. In times of drought, we change the way water is sourced to provide water security. We also supply water to 16 stand-alone communities who are not connected to the Water Grid.

We plan for future water supplies and drought response and this plan, the South East Queensland Water Security Program, was most recently updated in March 2017. We develop this plan to meet the water security Levels of Service (LOS) objectives set for us by Government. A single LOS applies for the whole SEQ region, and we manage our assets and design drought responses accordingly.

Some of our dams – Wivenhoe, Somerset and North Pine – enable us to store and control the release of flood water to reduce the impacts on people and property downstream. We also provide public access to our dams for recreation, which is highly valued by the SEQ community. Providing this access requires us to maintain public facilities such as car parks, picnic grounds and tables, barbecues, lavatories and boat ramps.

### Our submission

Our submission is in two parts, and this document is Part B.

Part A sets out our revenue and regulatory proposals and provides an overview of our past and forecast expenditure. Part A also explains our services and regulatory obligations, discusses past performance and future challenges, sets out our proposed total costs or Annual Revenue Requirement (ARR)[2] to be recovered in prices, and provides our demand forecast from 2018-19 to 2020-21.

Part A also sets out proposals for the regulatory framework from 2018-19.

This Part B of our submission contains:

- how we have calculated the Price Path Debt balance at 1 July 2018, incorporating end-of-period adjustments (Section 2)
- our proposed operating expenditure (Section 3)
- our proposed capital expenditure (Section 4)
- our proposed weighted average cost of capital (Section 5).

We have also provided accompanying appendices providing supporting detail being:

- Appendix 1: advice from PricewaterhouseCoopers (PWC) on cost escalation rates to be applied to our forecasts
- Appendix 2: our detailed concerns about the QCA's approach for determining the cost of equity, as set out by Frontier Economics
- Appendix 3: Queensland Treasury Corporation's (QTC) estimated debt costs.

2 Equivalent to the Maximum Allowable Revenue, or MAR, in the Referral Notice.

# Seqwater major assets

## Legend

- Northern Pipeline Interconnector
- Western Corridor Recycled Water Scheme
- Southern Regional Water Pipeline
- Eastern Pipeline Interconnector
- Network Integration Pipeline
- Other bulk water pipelines connecting the SEQ water grid
- Local government boundary
- Reservoirs
- Water Treatment Plants (WTP) – connected to grid
- Water Treatment Plants (WTP) – off-grid
- Water Treatment Plants (WTP) – other
- Western Corridor Recycled Water Scheme
- Desalination plant

**Water Treatment Plants (WTP)**

1 Amity Point WTP
2 Atkinson Dam WTP
3 Banksia Beach WTP
4 Beaudesert WTP
5 Boonah Kalbar WTP
6 Borumba Dam WTP
7 Canungra WTP
8 Capalaba WTP
9 Dayboro WTP
10 Dunwich WTP
11 East Bank (Mt Crosby) WTP
12 Enoggera WTP
13 Esk WTP
14 Ewen Maddock WTP
15 Hinze Dam WTP
16 Image Flat WTP
17 Jimna WTP
18 Kenilworth WTP
19 Kilcoy WTP
20 Kirkleagh WTP
21 Kooralbyn WTP
22 Landers Shute WTP
23 Linville WTP
24 Lowood WTP
25 Maroon Dam WTP
26 Molendinar WTP
27 Moogerah Dam WTP
28 Mudgeeraba WTP
29 Noosa WTP
30 North Pine WTP
31 North Stradbroke Island WTP
32 Petrie WTP
33 Point Lookout WTP
34 Rathdowney WTP
35 Somerset Dam (Township) WTP
36 West Bank (Mt Crosby) WTP
37 Wivenhoe Dam WTP

**Western Corridor Recycled Water Scheme**

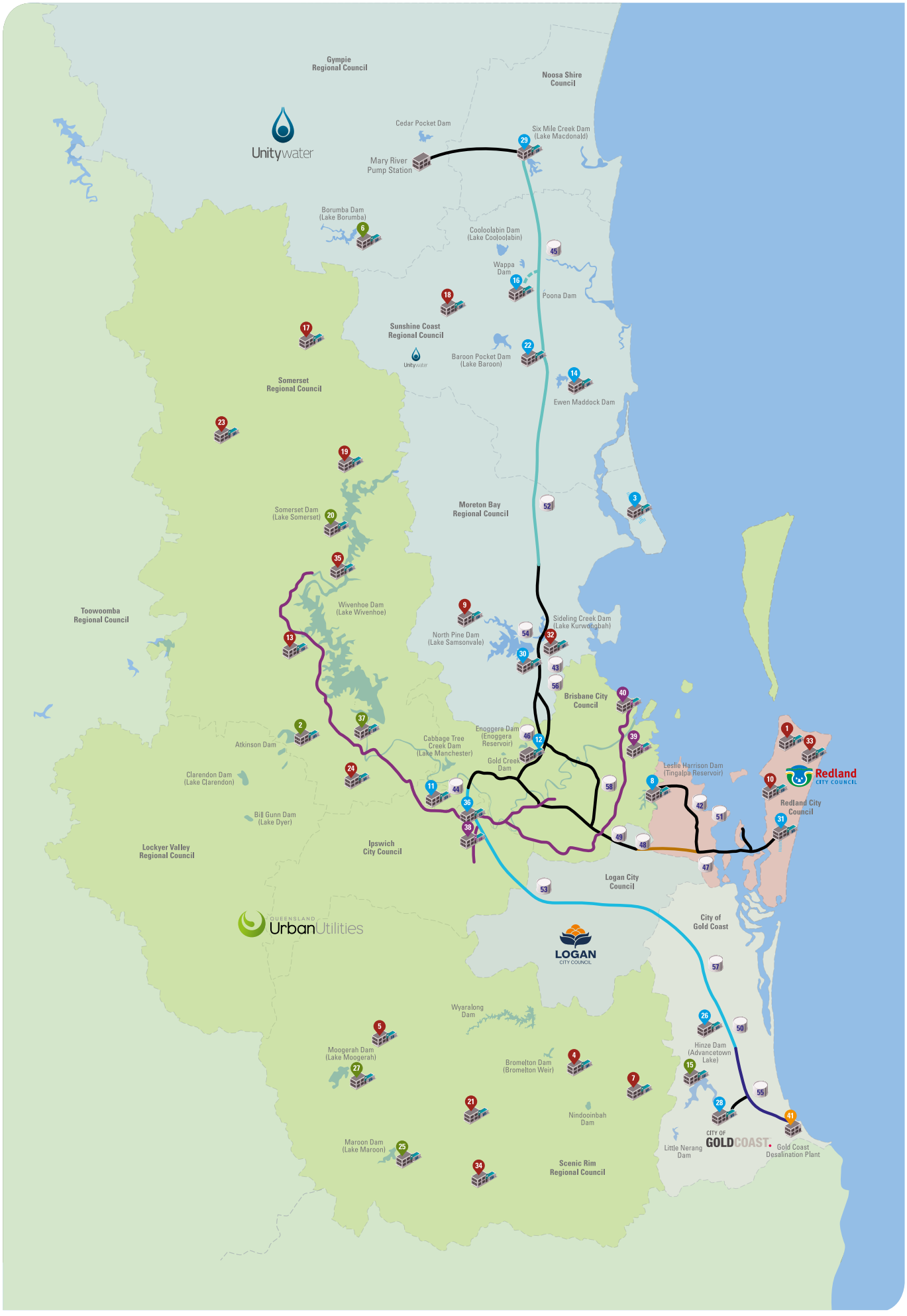
38 Bundamba Advanced Water Treatment Plant (AWTP)
39 Gibson Island AWTP
40 Luggage Point AWTP

**Desalination Plant**

41 Gold Coast Desalination Plant

**Reservoirs**

42 Alexandra Hills Reservoirs
43 Aspley Reservoir
44 Camerons Hill Reservoir
45 Ferntree Reservoir
46 Green Hill Reservoirs
47 Heinemann Road Reservoirs
48 Kimberley Park Reservoirs
49 Kuraby Reservoir
50 Molendinar Reservoir
51 Mt Cotton Reservoir
52 Narangba Reservoirs
53 North Beaudesert Reservoirs
54 North Pine Reservoirs
55 Robina Reservoir
56 Sparkes Hill Reservoirs
57 Stapylton Reservoir
58 Wellers Hill Reservoirs


Gympie Regional Council
Noosa Shire Council
Unitywater
Cedar Pocket Dam
Six Mile Creek Dam (Lake Macdonald)
Mary River Pump Station
Borumba Dam (Lake Borumba)
Cooloolabin Dam (Lake Cooloolabin)
Wappa Dam
Poona Dam
Sunshine Coast Regional Council
Baroon Pocket Dam (Lake Baroon)
Ewen Maddock Dam
Somerset Regional Council
Somerset Dam (Lake Somerset)
Moreton Bay Regional Council
Toowoomba Regional Council
Wivenhoe Dam (Lake Wivenhoe)
North Pine Dam (Lake Samsonvale)
Sideling Creek Dam (Lake Kurwongbah)
Brisbane City Council
Enoggera Dam (Enoggera Reservoir)
Cabbage Tree Creek Dam (Lake Manchester)
Gold Creek Dam
Atkinson Dam
Clarendon Dam (Lake Clarendon)
Bill Gunn Dam (Lake Dyer)
Leslie Harrison Dam (Tingalpa Reservoir)
Redland City Council
Lockyer Valley Regional Council
Ipswich City Council
Logan City Council
City of Gold Coast
Queensland Urban Utilities
LOGAN CITY COUNCIL
Wyaralong Dam
Moogerah Dam (Lake Moogerah)
Bromelton Dam (Bromelton Weir)
Hinze Dam (Advancetown Lake)
Nindooinbah Dam
Little Nerang Dam
CITY OF GOLD COAST
Gold Coast Desalination Plant
Maroon Dam (Lake Maroon)
Scenic Rim Regional Council

# 1. Price Path Debt balance and end-of-period adjustments

## Key Points

- The Price Path Debt balance at 30 June, 2018 is expected to be $2.49B, or around $331M higher than expected at the 2015 Review of bulk water prices.
- The growth in the RAB (reflecting lower inflation), capital expenditure, and interest rate on price path debt has been lower than provided for in the 2015 Review putting downward pressure on the Price Path Debt.
- However adjustments for asset indexation and lower than expected demand have put upward pressure on the Price Path Debt and have more than offset these items, resulting in a net increase in Price Path Debt.
- We are finalising our proposed end-of-period adjustments for Review Events, which are related to emergency event costs (ex Tropical Cyclone Debbie) and drought response (changing our mode of operations to respond to low storage conditions in the northern sub-region).

Price Path Debt is the difference between our costs or ARR and the revenue we receive from bulk water sales. In broad terms, this debt accumulates over the first 10 years of the price path and is then paid down over the next 10 years so it reaches a zero balance by the end of 2027-28. The Price Path Debt balance is a regulatory accounting instrument to keep track of the cost recovery position and the Referral Notice states that this Price Path Debt is an input to setting future prices including over the 2018 regulatory period.

The Referral Notice requires that the Price Path Debt balance be established at 1 July 2018 from rolling forward the opening balance at 1 July 2014 and adjusting for:

- an updated assessment of the ARR[3] from 1 July 2014 to 30 June 2018, adjusted for updated capital costs and the regulatory asset base and applying asset indexation and inflationary gain consistent with the approach used by the QCA in its 2015 Review.
- updating interest rates for actual costs as advised by QTC.
- any prudent and efficient costs arising from Review Events.
- Seqwater's actual revenue for 2015-16 and forecast revenue for 2016-17 and 2017-18.

We have calculated the updated Price Path Debt in accordance with these requirements. More detail is provided below.

## Updated assessment of ARR

Updates to the ARR are required to re-establish the cost recovery benchmark against which actual revenues are measured. The difference manifests in Price Path Debt. In accordance with the Referral Notice we have updated the ARR to account for actual capital expenditure and inflation.

### Re-setting the Regulatory Asset Base

The level of actual capital expenditure determines the Regulatory Asset Base or RAB for the period. In setting the RAB, the Referral Notice requires that:

- the opening RAB at 1 July 2014 is not to be optimised and the QCA is to accept the remaining asset lives as used by the QCA in the 2015-18 review.

3 The Referral Notice uses the term Maximum Allowable Revenue or MAR. The concept of Annual Revenue Requirement (ARR) is equivalent.

- to establish the opening RAB at 1 July 2018, the QCA is to:
  - » review historical capital expenditure and accept that expenditure into the RAB if it is less than the allowance in the 2015 Review.
  - » roll forward the RAB from 1 July 2014 to 30 June 2018 for capital expenditure, depreciation and asset appreciation based on actual inflation over the period.
- Depreciation is to be calculated using the straight-line method, reflecting the remaining useful life of the assets.

Our (capitalised) capital expenditure over the 2015 Regulatory Period has been less than the forecast allowance set by the QCA. The actual (capitalised) capital expenditure in 2014-15 is also just less than that assumed for pricing in that period. We consider this to be a positive result given the need to establish a new framework for capital planning and delivery following the merger. Moreover, we have taken additional time to plan for major projects to ensure the best solution is adopted at the right time (refer to Section 3).

**Table 1: Capitalised expenditure comparison ($M)**

| | 2014-15 | 2015-16 | 2016-17 (estimate) | 2017-18 (estimate) |
|---|---|---|---|---|
| 2015 Review | 107.4 | 122.7 | 124.3 | 195.9 |
| Actual / estimate | 106.6 | 88.4 | 93.9 | 129.4 |
| Difference | -0.8 | -34.2 | -30.4 | -66.5 |

We have also adjusted the indexation of the RAB to reflect actual inflation over the period, which has been less than the forecast. We have used CPI Brisbane All Groups for the July – June year, consistent with the QCA's approach in 2015.[4] We have applied actual inflation since 2014-15 and an updated forecast of inflation for 2015-16 and 2017-18, based on Reserve Bank of Australia (RBA) forecasts . The comparison rates are set out below.

The combined effect of lower actual capital expenditure and lower inflation means that the RAB is less than that forecast at the 2015 Review. Table 2 provides a summary of the values and roll-forward to establish the opening RAB at 1 July, 2018.

**Table 2: RAB roll-forward to 1 July 2018 ($M)**

| | 2014-15 | 2015-16 | 2016-17 (estimate) | 2017-18 (estimate) |
|---|---|---|---|---|
| Opening RAB | 8,439.1 | 8,456.1 | 8,447.4 | 8,479.8 |
| Actual capitalised expenditure | 106.6 | 88.4 | 93.9 | 129.4 |
| Asset indexation | 128.4 | 126.6 | 169.9 | 170.9 |
| Closing Balance | 8,456.1 | 8,447.4 | 8,479.8 | 8,542.4 |

It is important to note that the values included for 2016-17 and 2017-18 are estimates only. The 2016-17 financial year accounts had not closed at the time of making this submission, and we will update this value and submit this to the QCA once this has occurred. Actual capital expenditure for 2017-18 will not be known at the time of the QCA's final report in March 2018. Therefore, we suggest that the final values are applied at the next review in 2021, as has occurred for 2014-15 in this review and consistent with other regulatory precedent such as IPART's approach.

### Inflationary gain adjustment

The Referral Notice requires an adjustment to the inflationary gain component to the ARR, consistent with the approach used by the QCA in its 2015 Review. This adjustment is consistent with conventional regulatory practice under a nominal building blocks pricing approach, and is required to avoid double-counting the inflationary gain in the RAB into prices.

The adjustment is to reduce the ARR by the amount of indexation applied to the RAB. We have applied actual inflation since 2014-15 and an updated forecast of inflation for 2016-17 and 2017-18, based on Reserve Bank of Australia (RBA) forecasts[5]. The comparison rates are set out below.

4 This indexation of the RAB is deducted from the MAR, in accordance with conventional regulatory practice. The corresponding adjustment has been made to re-calculate Price Path Debt balances at 30 June, 2018 as per the Notice.

5 As described in PWC's advice on indexation, which is provided as Appendix 1.

**Table 3: Inflation rates, actual versus forecast (%)**

| | 2014-15 | 2015-16 | 2016-17 (estimate) | 2017-18 (estimate) |
|---|---|---|---|---|
| 2015 Review (forecast) | 1.25% | 2.75% | 2.50% | 2.50% |
| Actual, updated | 1.51% | 1.49% | 2.00% | 2.00% |

**Table 4: Inflationary gain adjustment, actual versus forecast ($M)**

| | 2014-15 | 2015-16 | 2016-17 (estimate) | 2017-18 (estimate) |
|---|---|---|---|---|
| 2015 Review (forecast) | 106.2 | 233.7 | 215.8 | 219.4 |
| Actual, updated | 128.4 | 126.6 | 169.9 | 170.9 |

### Updated ARR

After updating the RAB and inflationary gain adjustment, the ARR over the 2015 Regulatory Period (including 2014-15) is $149.9M, which is more than expected at the 2015 Review.

**Table 5: Updated ARR ($M)**

| | 2014-15 | 2015-16 | 2016-17 (estimate) | 2017-18 (estimate) |
|---|---|---|---|---|
| 2015 Review | 823.5 | 731.9 | 771.4 | 784.2 |
| Updated ARR | 802.5 | 835.6 | 808.0 | 814.9 |
| Difference | - 20.9 | 103.6 | 36.6 | 30.7 |

## Interest rate on Price Path Debt

The Referral Notice requires Price Path Debt be updated to reflect the actual cost of debt as advised by QTC.

The 2015 Review set the interest rate for Price Path Debt balances from 1 July, 2015 at 6.25%, as per QTC estimates at the time. The interest rate for 2014-15 was based on a slightly lower forecast of 5.9%.

QTC have since advised us that actual rates have been lower, as set out below. QTC's advice is set out in Appendix 3

**Table 6: Updated Price Path Debt interest rates (%)**

| | 2014-15 | 2015-16 | 2016-17 | 2017-18 (estimate) |
|---|---|---|---|---|
| 2015 Review | 5.90% | 6.25% | 6.25% | 6.25% |
| Updated (QTC) | 5.71% | 5.61% | 5.44% | 5.11% |

## Review events

Review Events are defined in the Referral Notice with reference to the QCA's 2015 report and include additional drought response costs.

Review Events provide a mechanism for an end of period adjustment if events occur that are outside Seqwater's control and impose a material cost increase[6]. The Review Events framework effectively determines how cost risks are allocated between Seqwater and its customers.

The QCA noted in the Final Report of its 2015 review of our bulk water price path that we have "limited opportunity to respond operationally to volume and cost risks and limited capacity to carry revenue shortfalls or cost overruns"[7]. The QCA, therefore, made recommendations about matters which, at the Government's discretion, could be subject to price reviews either within or at the end of the 2015 Regulatory Period. The events include:

- changes to feedwater quality which causes a change in our revenue, or in our prudent or efficient costs;
- changes in law or government policy on bulk water prices that cause changes to our revenue, or our prudent or efficient costs, or
- emergency events for which we are not at fault and which cause a change in our revenue, or in our prudent or efficient costs.

The Referral Notice also includes provision for additional costs for drought response.

6 The QCA also recommended a mid-period adjustment could be sought under certain circumstances.

7 Queensland Competition Authority, March 2015, *Final Report: SEQ Bulk Water Price Path 2015-18*, p.94.

We consider each of these Review Events in the following sections.

### Feedwater quality events

It is common for us to experience frequent, yet relatively low level, feedwater quality events. However we have found that it is difficult to measure, and claim for, minor feedwater quality events as an end-of-period adjustment and we have not sought to do so for this regulatory period.

Instead, we propose to include an allowance into our variable operating costs for these events, and then bear the risk of these events occurring. This in turn would remove minor or seasonal feedwater quality variation as a Review Event, however we are seeking to retain an end-of-period adjustment for major feedwater quality events, such as those that occurred in 2011.

Our proposal is discussed in more detail in Part A of our submission.

### Changes in law or government policy

We are not seeking any end-of-period adjustment for costs arising from changes in law or government policy over the 2015 Regulatory Period.

### Emergency Events

To date we have only experienced a single emergency event, being damage to our assets following ex-Tropical Cyclone Debbie in March 2017.

We are still assessing the costs from this event and will provide a detailed claim for an end-of-period adjustment to the QCA as soon as possible. We expect the adjustment will result in a relatively minor increase to the Price Path Debt balance at 30 June 2018.

### Drought response

The Referral Notice requires the QCA to review any additional costs for drought response for efficiency where these occur in accordance with the Water Security Program and the costs are material. These costs would be included as a Review Event and, if approved, subject to an end-of-period adjustment.

The Water Security Program sets out the regional plan for responding to drought. Chapter 5 of the Program describes the operational strategies and rules for operating the Grid assets under various scenarios. Our Annual Operating Strategy (AOS) sets out the specific plans for operating the Grid for the circumstances at the time.

We have assigned four different operating modes to the assets:

- Mode 1: Operational – assets are used day-to-day to supply demand.
- Mode 2: Hot standby – assets can be available at short notice (e.g. Gold Coast Desalination Plant).
- Mode 3: Care and maintenance: the asset is able to have a longer notice period before being required (e.g. Western Corridor Recycled Water Scheme, and some high-cost water treatment plants).
- Mode 4: Decommission / retire (e.g. Petrie Water Treatment Plant).

Assets in Mode 3 are typically called upon at pre-defined drought triggers, either at a regional or sub-regional level. Assets in Mode 2 can be called upon for operational reasons outside of drought, such as to support a shutdown at another plant or augment supply during supply interruptions. However, Mode 2 assets can also be deployed for drought response.

Assets in Mode 1 may be operating in and outside of drought conditions. However, the way they are operated can change depending on the supply situation.

We have developed a 'least cost[8]' mode of operation that optimises the Grid assets to supply water at lowest cost. This least cost mode is the basis for our operating cost projections in the current and next price path.

We have also developed drought response modes of operation that look to optimise the Grid assets for water security outcomes. This may involve using assets in Mode 2 or Mode 3, or changing how we use assets already operational in Mode 1 (e.g. changing the direction of flows).

Following drought conditions and lower storage levels in northern SEQ (and the Sunshine Coast in particular in early 2017), we triggered a change to operations into this 'drought mode'. We have also changed our 'least cost' mode to provide more support to the northern region under normal seasonal conditions, including re-commissioning Ewen Maddock to bring it into hot standby mode.

These changes have occurred recently, and we are still finalising our cost estimates for operating under the drought mode compared to least cost. We have prepared indicative estimates for the QCA, based on additional electricity costs for pumping water north using the Northern Pipeline Interconnector.

8 Also referred to as Cost Effectiveness

Furthermore, we supply water to communities from 26 water treatment plants that are unconnected to the Grid. The drought response at these off-Grid communities is set out in the Water Security Program. When drought occurs, we augment the supply to these plants through carting water from elsewhere in the region. The triggers for carting water are set in Water Supply Disruption Plans which are developed in conjunction with SEQ Service Providers. Water carting has occurred over the 2015 Regulatory Period and we are seeking to recover these costs as a Review Event.

We are also implementing a number of measures to prepare for future drought in accordance with the Water Security Program.

We have therefore considered drought response costs as follows:

- drought response preparation: where we will bear the operating costs as business-as-usual.
- operating the Grid under drought-response mode (DRM): where we are seeking to be reimbursed for the additional operating costs compared to the least-cost operating mode assumed at the 2015 Review.
- responding to drought at stand-alone supply schemes (Carting): where we are seeking to recover the additional costs of carting water to maintain supply.
- responding to regional drought triggers under the Water Security Program (RDT): We have not reached these triggers so far in the 2015 Regulatory Period, but if they do occur we will seek to recover these costs as a Review Event.

Most of these costs are still occurring or have not yet been finalised at the time of making this submission, and so we have presented interim amounts. These amounts have not been incorporated into the Price Path Debt balance as yet, but we propose they are included once more information is available and costs can be finalised. We therefore proposed to provide an update to the QCA prior to its draft report.

**Table 7: Review events – preliminary drought response costs ($M)**

| | Expected Adjustment $M | Comment |
|---|---|---|
| Drought response mode of operations (DRM) | 0.4 | Mostly relates to changing the flow of water to the northern sub-region, which is not the least cost mode but required given the supply situation in that sub-region. This does not include costs of deploying higher cost water treatment plants. |
| Carting | 0.1 | Carting occurred at the Dayboro Plant and came to an end in April 2017. The Water Supply Disruption Plan provided the basis for the timing and extent of carting and other measures. |
| Regional drought triggers (RDT) | Nil to date | The first trigger at 70% has not been reached in the 2015 Period. If this occurs we will seek an end-of-period adjustment either through this current review or the next review. |

While the costs so far are relatively minor compared to our overall operating costs, a failure to include these costs would mean Seqwater bears the risk of these events in the future, and consequently would justify including an allowance for this risk into our forecasts. This would move away from the principle of forecasting operating costs based on the 'least cost' mode of operation, which we are very hesitant to do.

In contrast, the cost of implementing the responses to regional drought can be very high, and these costs are uncertain because of the unpredictable nature of droughts. We therefore consider that it is not appropriate for us to seek or receive a drought response allowance unless there is a high level of certainty that drought response costs will be triggered.

## Price path revenue

The Referral Notice requires that Price Path Debt be updated for actual revenue from 1 July 2014 to 30 June 2017 and forecast revenue for 1 July 2017 to 30 June 2018.

The demand and revenue from bulk water sales to our customers has been less than forecast, and is summarised below. Lower demand has also meant that our variable operating costs are slightly lower than allowed in 2015 and we have incorporated this saving into the adjustment. We have calculated these costs and savings using a simple weighted average variable cost per ML across SEQ, rather than reconciling actual demand at an individual plant and pump station level.

**Table 8: Price path revenue and variable cost savings ($M)**

| | 2014-15 | 2015-16 | 2016-17 (estimate) | 2017-18 (estimate) |
|---|---|---|---|---|
| 2015 Review | 783.7 | 803.1 | 866.5 | 933.1 |
| Actual Revenue | 736.3 | 766.8 | 829.5 | 843.2 |
| Difference | **- 47.4** | **- 36.3** | **- 37.0** | **- 89.9** |
| Less variable opex savings | **0.8** | **1.6** | **1.5** | **3.7** |
| Total adjustment / shortfall | **- 46.6** | **- 34.7** | **- 35.4** | **- 86.2** |

It is important to note that the values in 2016-17 and 2017-18 are estimates only.

Actual demand and revenue in 2016-17 is still being finalised for the financial statements at the time of making this submission. Demand in this year was higher than past years, largely due to very dry conditions over summer. Even with these unusual climatic conditions, regional residential demand averaged around 173 L/p/d for that year, which is only around 2.5% above the average consumption observed in the Water Security Program (169 L/p/d).

Revenue for 2017-18 is based on our budget but actual demand and revenue will not be known at the time of the QCA's final report in March 2018. Therefore, we suggest that Price Path Debt is updated with the final values for 2017-18 at the next review in 2021, as has occurred for 2014-15 in this review.

## Price Path Debt balance at 1 July, 2018

We have adjusted the Price Path Debt balance in accordance with the Referral Notice and using the values above, which results in a balance of $2.49B, which is $331M higher than the 2015 forecast. The roll-forward of the balance is set out below.

**Table 9: Price Path Debt balance ($M)**

| | 2014-15 | 2015-16 | 2016-17 (estimate) | 2017-18 (estimate) |
|---|---|---|---|---|
| Opening balance | 1,927.7 | 2,105.1 | 2,292.4 | 2,394.3 |
| Updated ARR | 802.6 | 835.5 | 808.0 | 814.9 |
| Actual revenue | 736.3 | 766.8 | 829.5 | 843.2 |
| Avoided variable opex | - 0.8 | - 1.6 | - 1.5 | 3.7 |
| End of period adjustment (Review Events) | Updated estimates to be provided to the QCA | | | |
| Interest (at actual rates) | 110.1 | 118.1 | 124.7 | 122.4 |
| **Closing Balance** | **2,105.1** | **2,292.3** | **2,394.6** | **2,487.9** |

We will update our proposed closing balance following finalisation of our claim for Review Events, and other updated information such as for water revenue and capital expenditure through the course of the QCA's review.

# 2. Operating expenditure

## Key Points

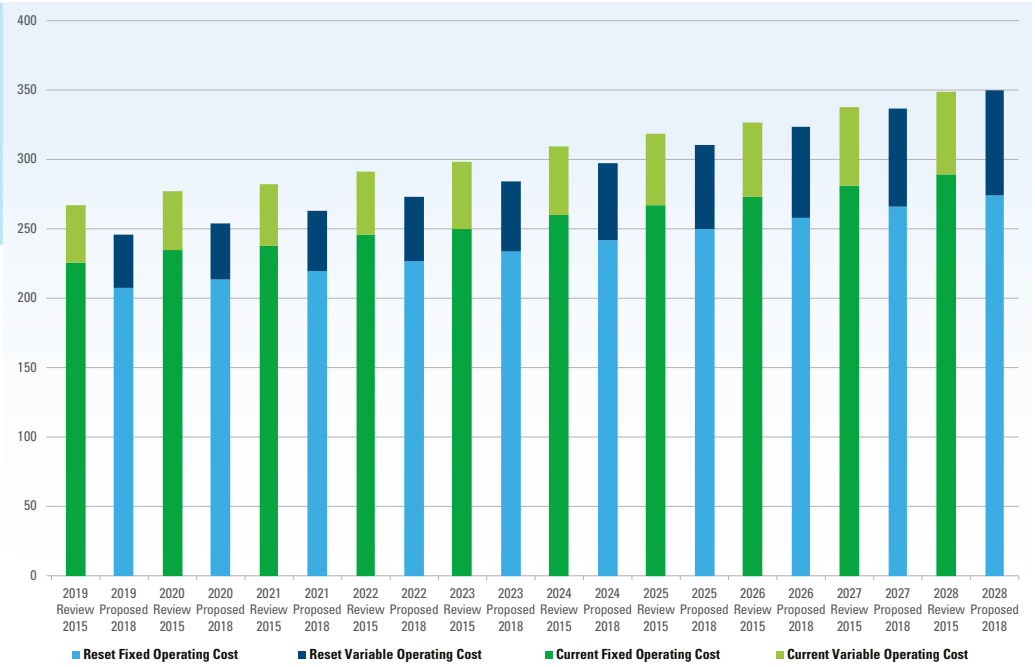
- Our expenditure forecasts have been developed to ensure we continue to deliver services to our customers at least cost.
- We have implemented cost saving measures which have exceeded the efficiency targets set by the QCA in the 2015 Review, and the cost saving opportunities have now been fully captured.
- We have not only achieved but managed to exceed the operating 'catch up' efficiency target set for us at the 2015 Review by around $67M over three years. These catch-up efficiencies are embedded into our expenditure forecasts.
- We have escalated the inputs to our operating expenditure and incorporated adjustments for one-off or step changes.
- While we consider that our base year operating expenditure is efficient, our proposal includes an ongoing cumulative efficiency target of 0.2% (ie. increasing by 0.2% each year) of controllable operating expenditure each year across the remainder of the price path from 2019-20 (being 0.4% in 2020-21, 0.6% in 2021-22 and so on to 2027-28).
- Our proposed fixed operating expenditure is $2,386M for the 10 years to 2027-28, which is 7% less than the corresponding 2015 estimates over the same period.
- Total variable operating expenditure is 11% higher over 10 years, due to higher forecast electricity prices.
- The net impact is that total operating costs (fixed and variable) over the 10 years to 2027-28 are 4% less than the 2015 Review allowance.
- We have developed our operating expenditure forecasts on the basis of running the SEQ system under the 'least cost' mode of operations, where we optimise treatment plants and pumping to minimise costs. However, from time to time, we will need to operate in 'water security' mode, in order to preserve supplies in accordance with the Water Security Program. Rather than trying to predict these events and costs in our expenditure forecasts, we will continue to seek recovery of additional costs through an end of period adjustment.

## Our operating expenditure proposal for the balance of the price path

Over the life of the current bulk water price path we have delivered consistent year on year operating savings. We have exceeded the $50M cost saving target set by the QCA in the 2015 Review by a further $67M over three years, and we now believe that cost saving opportunities have been fully captured.

We have produced an efficient operating expenditure forecast for the next three year regulatory period and for the remainder of the price path to 2027-28. As shown in Figure 2, our forecast operating expenditure from 2018-19 to 2027-28 is less than was expected at the 2015 Review, which carries forward our savings over recent years.

**Figure 2: Operating expenditure over the price path period, 2015 Review compared to Seqwater's 2018 proposal ($M nominal)**



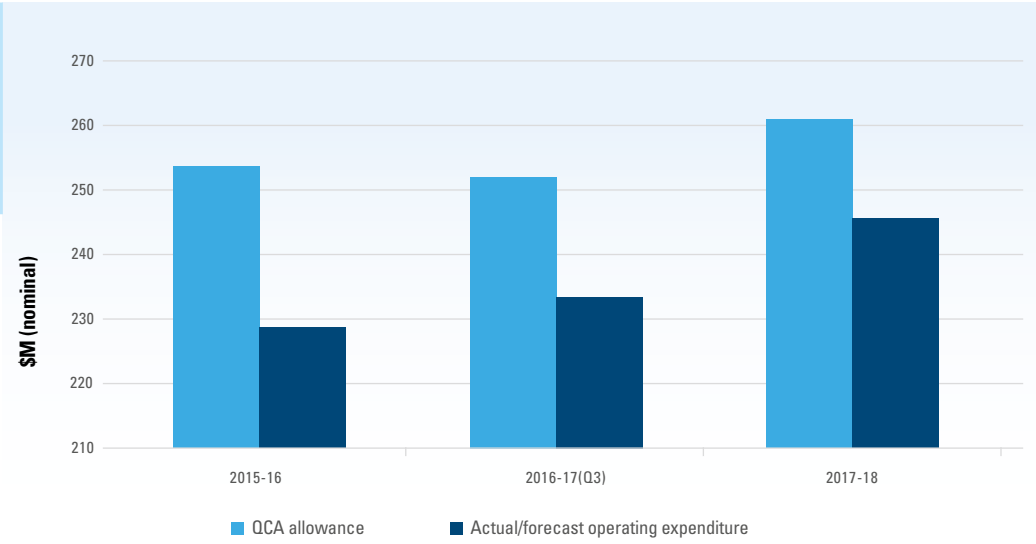

## Our performance in the 2015 Regulatory Period

At the 2015 Review, prices were set based on achieving a $50M or a 7.9% saving in operating expenditure, which we expected to achieve following the merger of the former Seqwater, the SEQ Water Grid Manager, LinkWater and parts of the Queensland Water Commission.

Over the 2015 Regulatory Period we have outperformed these saving commitments and the QCA's operating cost allowance by a further $67M. This is shown in Figure 3.

This demonstrates that we have achieved more than the target 'catch up' efficiencies following the merger.

**Figure 3: Actual and forecast operating expenditure against QCA allowance in the 2015 Review**




The breakdown of our operating expenditure for the 2015 Regulatory Period into the categories that were used in the 2015 Review is provided in Figure 4. A more detailed breakdown into the categories in each year in the 2015 Regulatory Period is provided in Figure 5.

**Figure 4: Operating expenditure against allowances from the 2015 Review**

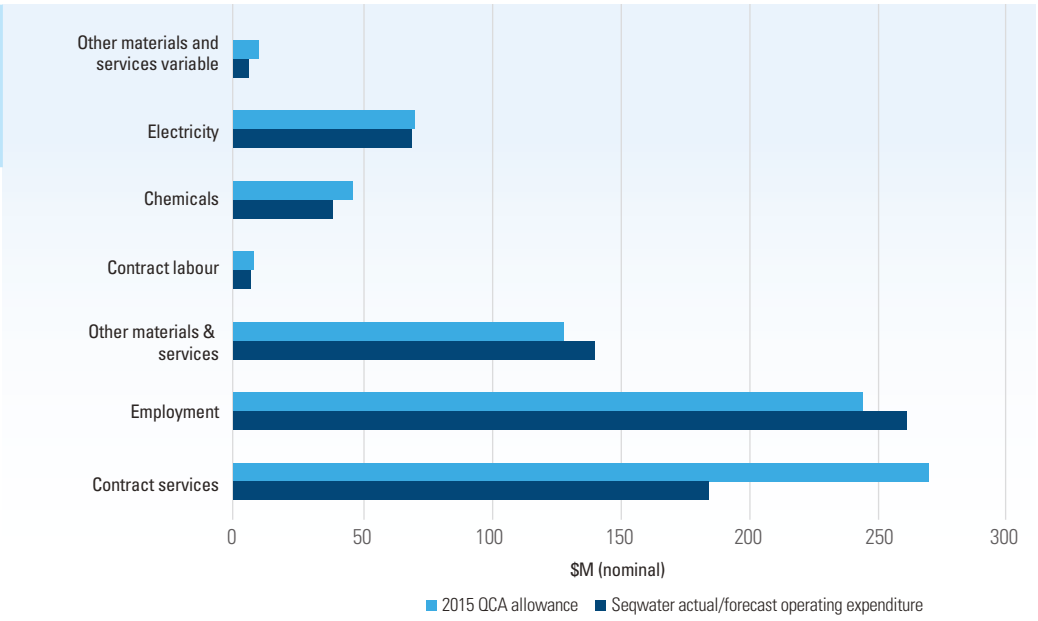
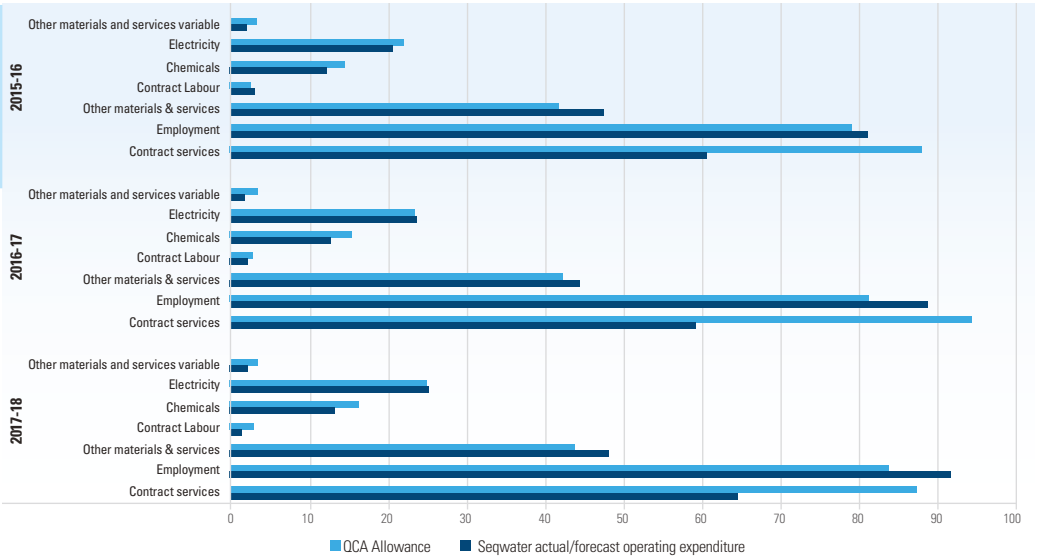



**Figure 5: Annual operating expenditure against allowances from 2015 Review**




This breakdown of our operating expenditure in the 2015 Regulatory Period shows that the most significant savings have been in contract services, where we are forecasting that our spend will be approximately 30% below the QCA allowance over the three year pricing period. This saving is partly due to more insourcing, reflected in higher employee costs.

Details of how we have achieved saving against our operating expenditure during the 2015 Regulatory Period are provided in the following section.

### Achieving operating expenditure efficiency improvements during the 2015 Regulatory Period

We provide an essential service and are determined to lead the way in driving value for our customers. We strive to operate at optimal efficiency by improving our business processes and eliminating waste, while also managing and mitigating business risks. As such, driving efficiencies across our business continues to be priority.

Over the first two years of the 2015 Regulatory Period, we have outperformed against the efficiency targets we set for ourselves and reduced costs below those determined in the 2015 Review. We have forecast to continue to achieve our efficiency targets in the final year of the 2015 Regulatory Period. These cost savings have continued to put downward pressure on the cost of bulk drinking water for households and businesses across SEQ.

## Planning our workforce requirements

We have sought to reduce our expenditure on contractors and consultants and this is evidenced by the considerable gap between the QCA allowance and our forecast expenditure over the 2015 Regulatory Period.

Over the three year period, there has been a transfer of some of our consulting/contract costs into employee costs, meaning that as our employee costs have risen, expenditure on consultants and contractor has decreased. For example, actual employee expenses are around $20M higher than the 2015 Review allowance, however this is more than offset by a $90M saving in contract services over the 2015 Regulatory Period.

We implemented detailed workforce planning across our business during 2015–16 to allow us to plan ahead to ensure we have the right people, with the right skills, working in the right place at the right time. To streamline recruitment, we launched an online recruitment management system to help attract, source and select talent. We also refined our recruitment process and corporate reporting to improve the way we use data to make informed hiring decisions.

In preparing our workforce projections for the future, we have taken consideration of whether we have the optimal split of permanent versus temporary staff resources across the business, as well as the mix of insourcing and outsourcing.

For example, the field collection and transportation components of our water quality testing has been insourced since early 2016 leading to lower overall costs, with seven new positions created. The higher employment costs that have incurred by bringing these activities back in-house have been more than offset by the lower contract costs that we previously paid.

### Delivering maintenance improvements

An efficient and effective maintenance strategy underpins our ability to deliver water to our customers. We identified inherent inefficiencies and limitations in the maintenance approach we were using.

After conducting an assessment of maintenance delivery options, we moved to an Insourced Collaborative Contract model in 2016. After an extensive selection process, Wood Group PSN was chosen as our collaborative maintenance partner until at least 2021. This partnership, operating as an integrated workforce under a single management structure, is driving value and improvements to our safety systems, maintenance planning, processes, logistics and critical spares support.

The collaboration is also opening up opportunities for our employees to develop their skills and capability and create career development pathways.

### Completing efficient maintenance

We achieved our target of more than 95% of maintenance tasks completed on time during 2015-16 and are on schedule to meet this target in 2016-17 to ensure that we are able to provide a reliable water supply. Ensuring that maintenance tasks are completed effectively and on schedule means that we minimise costs associated with repeat or additional maintenance tasks.

### Improving business processes

During the 2015 Regulatory Period we have implemented a number of technology solutions to make our workforce more efficient.

We have developed a standardised procurement process across the business that to date has resulted in more efficient ordering of critical spares from our suppliers as well as automated inventory replenishment. Expansion of this process is continuing for wider use in the business.

To prepare for the introduction of the Seqwater Collaborative Maintenance Contract, we have completed an improvement project to standardise and mature our maintenance delivery processes and systems. This has included the introduction of a mobile solution system which has increased the maintenance information collected and improved the integrity of the data.

Our technology changes also supported our workforce in the field through the development of a series of applications to improve the data collection processes for weed spraying activities, inspections of our leased land and irrigation meter readings.

We have continued to develop our business intelligence capability, aggregating and merging data from internal and external systems and presenting the information in a dashboard interface. The dashboards allow our employees to access a concise view of the information we hold and make decisions accordingly.

We established and implemented a central control domain that allows us to set up users and manage our security efficiently from one central location, rather than having to visit individual sites. With a business supporting as many diverse locations as ours, this has provided substantial efficiencies. We also decommissioned several legacy hardware and software components that no longer served the business and consolidated our data.

### Achieving operational excellence

We assessed our resource usage during the 2015 Regulatory Period and have implemented operational changes to reduce the cost of producing water. We have achieved cost savings related to our chemical usage and other resources we use through employee identified productivity savings, new equipment to support efficient chemical dosing, changing to more cost-effective chemical products, consolidating multiple service contracts, and savings in contracted landfill and transport fees.

### Optimising the Gold Coast Desalination Plant

Given our current water security, we operate the Gold Coast Desalination Plant in a hot standby mode, meaning the plant is able to respond as a contingent supply and provide 33% capacity within 24 hours and 100% capacity within 72 hours. To maintain this state of readiness, the plant must be operated and maintained appropriately, including undertaking regular plant runs. Since August 2013, we have run the plant twice a week. With our partner Veolia, we challenged ourselves to make efficiencies while maintaining performance.

We developed and successfully trialled an alternative operating strategy that maintained process integrity with minimised production volumes and plant operation times. The Reduced Frequency Run Time (RFRT) mode of operation has delivered $340,000 in savings while maintaining the plant's required state of readiness.

During the year the plant operated twice outside the RFRT mode. In September 2015, the plant was called upon to supplement the southern Gold Coast water supply, producing 930 ML of drinking water over 20 days during the temporary closure of the Mudgeeraba WTP for an upgrade. We also used the plant for five days in February 2016 during a planned upgrade at the Molendinar Water Treatment Plant.

## Development of our operating expenditure proposal

### Operating Cost Forecast Methodology

Our expenditure forecasting process represents a clear set of expenditure data that can be readily justified, and clearly explained in terms of process/framework/system, with reference to authoritative and credible data sources, and which reconciles with previously incurred expenditure to reflect trends and changes over time.

Our operating expenditure proposal for 1 July 2018 to 30 June 2028 uses a base-step-trend approach for forecasting fixed operating expenditure, which has involved:

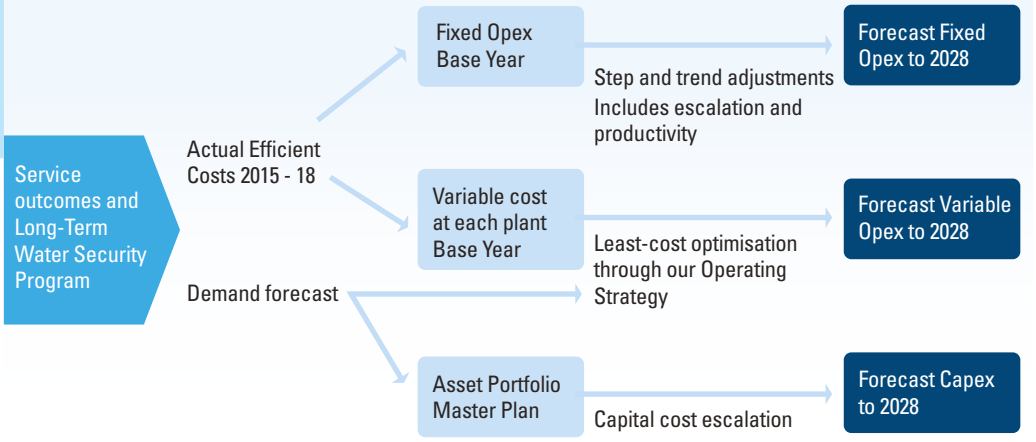
- setting a base year to reflect our efficient fixed operating costs, which we have set at 2018-19.
- making annual adjustments to the 2018-19 year by adding or subtracting one-off or new and additional ongoing costs from 2019-20.
- escalating our input costs using a set of cost indices.
- applying an ongoing efficiency saving target.

Based on recommendations we received at the last regulatory review in 2015, we have refined the processes involved with the development of the base year to ensure that only business as usual expenditure is extrapolated forward, with any 'one-off' or Initiatives expenditure occurring in the base year excluded from the forward forecasting.

As a result of these and other improvements our approach is more integrated and our proposal is more transparent and consistent than in 2015.

Our operating expenditure forecast methodology is illustrated in Figure 6.

**Figure 6: Seqwater's operating expenditure forecast methodology**



The extrapolation of the 2018-19 base year is supported by integration with our demand forecasts so that the costs of meeting the predicted water demand in the remainder of the price path period are taken into consideration. Adjustments have also been made to include additional cost items not present in the base costs, as well as excluding the one-off costs and initiatives that are not to be extrapolated forwards.

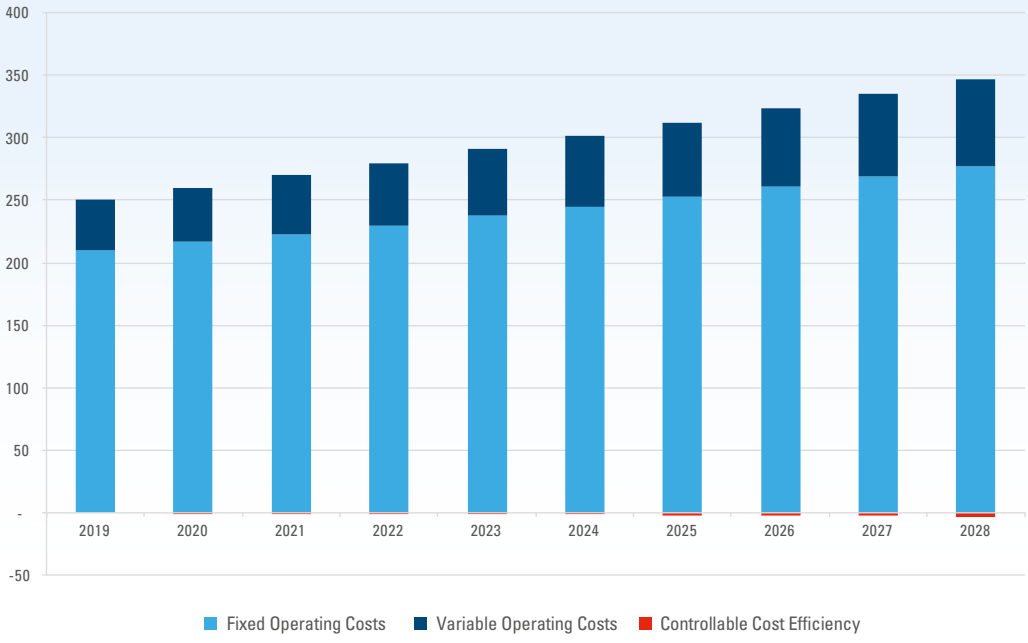
## Our operating expenditure proposal

Our proposed operating costs for the remainder of the price path are provided in Table 10 and Figure 7. The overall operating expenditure forecast consists of fixed cost and variable cost elements plus an annual efficiency adjustment we have made to the fixed cost component.

**Table 10: Operating Expenditure Proposal 2018-19 to 2027-18 ($M nominal)**

| | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|
| Base year fixed costs plus escalation | 207.8 | 213.9 | 220.2 | 227.4 | 234.7 | 242.2 | 250.0 | 258.0 | 266.3 | 274.7 |
| Step changes and one-off costs | 2.6 | 3.7 | 5.4 | 4.1 | 5.2 | 5.6 | 5.0 | 4.2 | 5.5 | 5.3 |
| Controllable efficiency | 0.0 | -0.3 | -0.6 | -0.9 | -1.2 | -1.6 | -1.9 | -2.3 | -2.8 | -3.2 |
| **Fixed Costs** | 210.4 | 217.3 | 225.1 | 230.6 | 238.7 | 246.3 | 253.0 | 259.9 | 269.1 | 276.9 |
| **Variable Costs** | 38.6 | 40.8 | 43.5 | 45.8 | 50.5 | 55.4 | 60.8 | 65.9 | 71.3 | 75.7 |
| **Total operating expenditure** | **249.1** | **258.1** | **268.5** | **276.4** | **289.2** | **301.7** | **313.8** | **325.7** | **340.4** | **352.6** |
| Non-SEQ Bulk Water Cost Allocations | -3.5 | -3.6 | -3.7 | -3.9 | -4.0 | -4.1 | -4.3 | -4.4 | -4.5 | -4.7 |
| **Total operating expenditure (Non-SEQ Bulk Water Cost Allocations)** | **245.5** | **254.4** | **264.8** | **272.5** | **285.2** | **297.6** | **309.5** | **321.3** | **335.8** | **347.9** |

**Figure 7: Operating Expenditure Proposal 2018-19 to 2027-28 ($M nominal)**



### Fixed operating expenditure forecasts

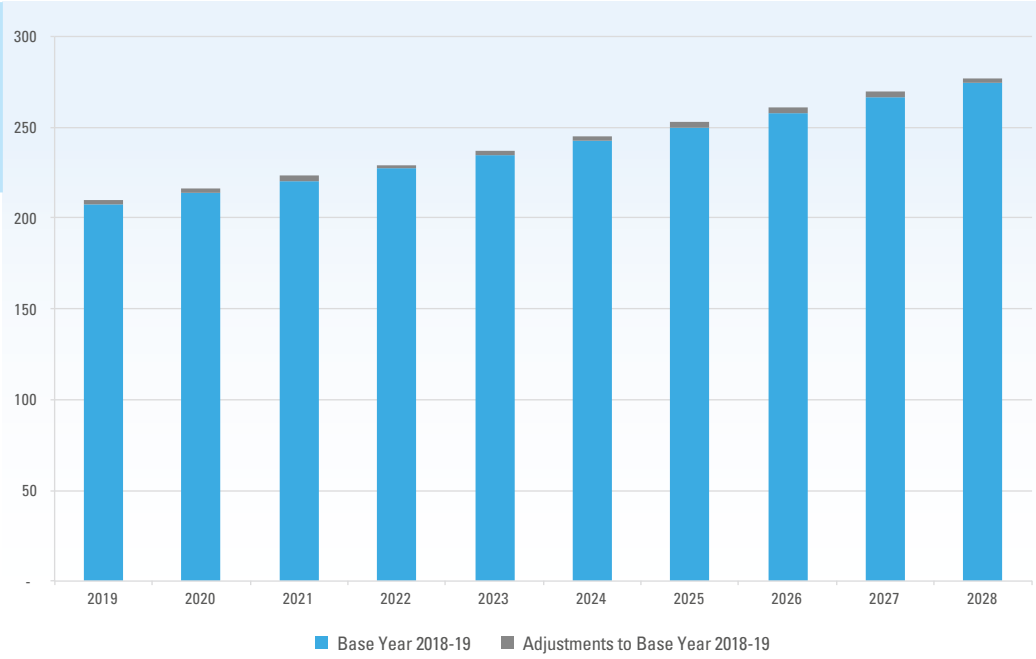
Our fixed expenditure forms the largest part of our overall operating expenditure each year and includes:

- operations and maintenance activities
- the fixed portion of the chemicals we need to use to provide a safe drinking water supply
- minor equipment purchases
- the costs associated with engaging specialist consultants and contractors
- implementing our strategic initiatives, including grant subsidies and partnerships with other stakeholders
- corporate costs associated with running the business, including the licences and permits we are required to have to operate, insurance, bank charges and audit fees
- the fixed contract fees we pay for the operation and maintenance of the Gold Coast Desalination Plant and the Western Corridor Water Recycling Scheme

The savings and efficiency gains we have achieved in our fixed operating expenditure are reflected in our expenditure forecasts.

Our proposed fixed operating expenditure for the remainder of the price path is show in Figure 8.

**Figure 8: Forecast fixed operating expenditure for 2018-19 to 2027-28 ($M nominal)**




#### Development of the 2018-19 base year

The base year for our operating expenditure is our April 2017 forecast for the 2018-19 financial year. A two year budget was developed for 2017-18, the last year of the 2015 Regulatory Period, and 2018-19, the first year of the next Regulatory Period. We have adopted a future, budget amount as our base year as it reflects our contemporary view of our costs.

We have excluded potential costs associated with operating the Western Corridor Recycled Water Scheme in 2018-19 for local industrial use, which is currently under consideration and subject to a business case. If the business case does support this supply, then we will seek to include this amount into the base year and adjust the forward years accordingly. We will advise the QCA prior to their draft report in November, 2017.

This base year is consistent with the most recent years of actual operating expenditure fixed costs we have incurred in 2015-16 and 2016-17.

Table 11 presents an overview of the fixed costs in each year, after adjusting for non-bulk water costs such as irrigation from each year.

**Table 11: Year-on-year tracking of fixed operating expenditure ($M nominal)**

| Year | Actuals / Budget | Non-bulk water costs | Net fixed costs | Year on year change |
|---|---|---|---|---|
| 2015-16 | $198.5 | $3.4 | $195.1 | |
| 2016-17 | $200.3 | $3.3 | $197.0 | 1.0% |
| 2017-18 | $211.7 | $3.3 | $208.4 | 5.8% |
| 2018-19 | $210.4 | $3.4 | $207.0 | -0.7% |

This table shows that our proposed base year fixed operating expenditure is only 6% higher than the actual costs in 2015-16 in nominal terms. We therefore submit that the 2018-19 base year aligns with our historic costs and is an efficient starting point for cost escalation.

### Operating cost escalators

The development of cost escalation factors is a key component that underpins our operating expenditure forecast estimates into the long-term future. Our cost estimates can be sensitive to changes in input prices, and, therefore, robust cost escalation factor estimates are required to ensure that these changes are accurately captured and reflected.

Escalation factors for our operating expenditure forecasts were investigated by PWC for the following expenditure items:

- Employee and contract labour costs
- Contractors (service delivery) costs
- Electricity
- Chemicals
- Other Materials and Services

In preparing their forecasts, PWC examined a range of indices and regulatory precedent, and relied heavily on independent forecasts.

This has provided a clear basis for the application of each of the cost escalators we have adopted and a detailed justification of how the measure aligns with anticipated changes in input prices over time.

We have adopted the recommended operating expenditure escalators for our operating expenditure forecasts as per PWC's advice. These are as follows.

**Table 12: Cost escalation factors used in our operating expenditure forecasts**

| Cost Category | Escalation Factor |
|---|---|
| Employee and contract labour expenses | Seqwater Enterprise Agreement to 2018/19<br>Queensland Treasury WPI forecast for 2019/20 and 2020/21<br>Long-term (15 year) historical growth in the Queensland WPI for the remainder of the forecast period |
| Contactors (service delivery) | Weighted index of the Queensland WPI (forecasts and long run average growth) and CPI (forecasts and mid-point of RBA inflation target).<br>Escalation factor = 0.56(WPI) + 0.44(CPI) |
| Electricity | Average annual growth rate in AEMO Queensland commercial electricity price forecasts between 2020 and 2030 over the regulatory period.<br>Annual growth in AEMO Queensland commercial electricity price forecasts for the remainder of the forecast period. |
| Chemicals | RBA inflation forecasts (to 2018/19), mid-point of RBA inflation target range for the reminder of the forecast period |
| Other material and services | RBA inflation forecasts (to 2018/19), mid-point of RBA inflation target range for the reminder of the forecast period |

The PWC report is provided as Appendix 1.

### One-off adjustments and step changes to the base year

We have made adjustments to our fixed operating expenditure base year forecast to include additional one-off items and step changes.

The adjustments that we have made to our 2018-19 base year are shown in Table 13, and are discussed in detail below. Negative adjustments apply when there is already a cost allowance in the 2018-19 base year.

**Table 13: Long-term adjustments to the 2018-19 fixed costs base year forecast ($M nominal)**

| Adjustment | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|
| Assessment of Major Contracts prior to expiry | - | 0.51 | 0.53 | - | - | - | - | - | - | - |
| Water Quality Reporting | 0.35 | 0.36 | 0.37 | 0.38 | 0.40 | - | - | - | - | - |
| Gold Coast Desalination Plant and Western Corridor Recycled Water Scheme | - | 0.17 | 0.06 | 0.13 | 1.23 | 0.19 | 0.34 | 0.56 | 0.64 | 0.90 |
| ICT Projects | - | 0.15 | - 0.26 | - 0.27 | - | 0.58 | 0.60 | - 0.62 | - 0.64 | - |
| Provision of Additional Drafting Services | - | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 |
| QCA Reviews | - | - 0.72 | 0.32 | - 0.66 | - 0.79 | 0.35 | - 0.72 | - 0.87 | 0.39 | - 0.79 |
| Future water security program updates | - | - | 0.21 | 0.11 | - | - | - | 0.25 | 0.13 | - |
| Integrated Master Plan Update | - | - | 0.11 | 0.05 | - | - | - | 0.12 | 0.06 | - |
| Communication and education for recycled water | 1.10 | 1.13 | 1.17 | 1.20 | 1.24 | 1.28 | 1.32 | 1.37 | 1.41 | 1.46 |
| EBA Advice | 0.10 | - | - | 0.11 | - | - | 0.12 | - | - | 0.13 |
| Additional training spend – leadership | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.07 |
| Budget Adjustments | 0.28 | 1.16 | 1.19 | 1.23 | 1.27 | 1.31 | 1.35 | 1.40 | 1.44 | 1.49 |
| Wyaralong WTP Fixed Costs | - | - | 0.81 | 0.83 | 0.86 | 0.89 | 0.92 | 0.94 | 0.98 | 1.01 |
| Ewan Maddock Fixed Costs | 0.76 | 0.78 | 0.81 | 0.83 | 0.86 | 0.89 | 0.92 | 0.94 | 0.98 | 1.01 |
| **Total Adjustments** | **2.64** | **3.67** | **5.41** | **4.08** | **5.18** | **5.62** | **4.98** | **4.23** | **5.52** | **5.34** |

* Note: Budget adjustments include small one-off projects as well as minor accounting adjustments to the 2018-19 year, such as reversion of costs from capex to opex.

### QCA fees and review costs

The QCA undertake periodic investigations of bulk water prices in south east Queensland, when requested by the Queensland Government. This has occurred on a three year cycle.

The total of the fees that we paid to the QCA in relation to the 2015 Regulatory Period was $1.1M, although we have been advised that the fees for the 2018 Review could be around $0.95M for 2017-18. However the total fees for this review may be higher.

In addition, we incur additional costs for consultant fees to assist with the development of our regulatory submission and to provide expert analysis and support for our expenditure proposals.

For our operating expenditure proposal for the remainder of the price path, we have included $0.95M for the QCA fees (as per QCA estimates) and an additional $0.15M ($2018) for consultants in the years when we expect the QCA regulatory reviews will take place. We intend to revise this allowance if there is more information about the fees and costs for this bulk water price review, as a reference for future review costs.

### Water Security Program

Under the *Water Act 2000*, we have a legal requirement to develop a Water Security Program to facilitate the achievement of the Level of Service (LOS) objectives for the region's water security for the next 30 years.

The Program remains in force until such time as it is updated through a review and a review must occur at least every five years. We developed the first version of the Program in 12 months and released it in July 2015. Version 2 was released in March 2017.

The five yearly review cycle for the Water Security Program means that there will be two further revisions during the remainder of the price path. The majority of the development work associated with the Water Security Program is considered as business as usual. However, an additional allowance of $0.3M has been made for each of the submission years (2021/2022 and 2026/2027) for additional specialist / consultant input at each update.

### Integrated Master Plan

The Integrated Master Plan (IMP) forms Seqwater's strategy setting out how all of our bulk water supply assets need to be able to work together to achieve our water supply objectives. It sets out what operational functions the assets need to be capable of performing and what actions Seqwater needs to take to achieve that. The IMP is an internal facing document which provides strategic planning direction to a sufficient level of detail to allow the subsequent activities in the planning cycle to progress in alignment with a consistent strategic direction.

We are currently preparing the first version of the IMP. This version is closely related to the Water Security Program, effectively translating the high level strategic direction into a level of detail necessary for internal stakeholders to interpret for their needs. The scope covers a similar range of topics as for the Water Security Program, although additional specific areas have also been investigated in further detail including:

- Infrastructure planning for the bulk water supply network (the Grid) through the Network Assessment Project including some account for water quality and resilience needs.
- Planning to set out the range of functions required of the Grid-connected water treatment plants.
- Local area plans for specific regions of the Grid which have known issues
- Additional detail relating to the Off-Grid schemes including consideration of resilience to WTP failures.
- Provision of additional information relating to the role of catchments and surface water storages in the overall water supply strategy.

There is currently no fixed review cycle for the IMP. This will be defined as part of the development of the first version, and will be related to the cycle of the Water Security Program. Although this version of the IMP has followed the Water Security Program, it is likely in the future that the IMP will be brought forward to become the main body of work informing the work published as the Water Security Program.

For the remainder of the price path we have included an adjustment of $0.15M across 2020-21 to 2021-22 and 2025-26 to 2026-27 to cover the two updates of the IMP that we expect to complete out to 2027-28. This additional allowance will be used for the specialist consultant support and advice that we will require for the updates of the Plan.

### Water quality reporting for recycled water

Based on the triggers for restart of Western Corridor Recycled Water Scheme in the Water Security Program and recycled water regulatory requirements for validation, the source water monitoring program has recommenced.

This is to ensure that there is sufficient understanding of the source water characteristics to enable the Validation Program for the Scheme to be developed within the time-frames outlined in the Remobilisation and Restart Program. The cost estimate is based on previous source water monitoring programs prior to the scheduled closure of the Scheme.

### Assessment of major contracts and EBA at end of term

While re-letting and negotiating major contracts and our Enterprise Bargaining Agreement (EBA) occur infrequently, they can involve significant expenditure.

Our current EBA was negotiated in 2016 and covers the period 2016-17 to 2018-19. We have included a $0.1M adjustment every three years starting in 2019 to cover the additional legal and other one-off costs associated with this process.

We currently have major contracts with Veolia for operating and maintaining the Gold Coast Desalination Plant and the Western Corridor Recycled Water Scheme. These contracts are due to expire in 2020 and 2021. We have allowed for a total of $1M split over 2019-20 and 2020-21 related to these contracts.

### Communication and education

Increasing the awareness and understanding of how water is managed in SEQ is fundamental to Seqwater's engagement and education approach in coming years, and provides the basis for Seqwater to engage the community about future water supply options as part of the Water Security Program. Knowledge of the urban water cycle is a key part of this goal to increase water literacy amongst south east Queenslanders, including climate resilient assets such as desalinated water and purified recycled water and the costs associated with future water supply options.

As part of our approach to increasing water literacy amongst SEQ communities and continuing to engage them on future water supply options including purified recycled water, we will initiate an outreach program in the 2017-18 financial year that will be expanded and continued over the longer term.

Our outreach program has been modelled on successful engagement and education programs implemented by the Orange County Water District's Groundwater Replenishment Program[9], which has been operational since 2001, San Diego Water Authority's Pure Water education program commenced in 2015[10] and Water Corporation's Groundwater Replenishment Scheme's communication strategy which was first implemented in 2009. The expenditure on these programs has ranged up to $US900,000 per annum.

As outlined above, the outreach program will provide substantial benefits for building knowledge about water supply options, one of which is purified recycled water, to support Seqwater's water security program as well as how these options are used as part of our adaptive drought response plan.

We have included $1.1M per year in our operating expenditure forecast for the remainder of the price path to cover the costs we expect to incur for preparing and delivering this regional outreach program and the resourcing, materials and engagement required to implement a successful program. This cost is commensurate with costs for programs elsewhere.

### ICT Projects

The focus of our ICT in the period to 2021 is to refine and implement changes in technology, ERP capability, ICT organisational and ICT processes to transition to Cloud, managed services and digital business systems to meet the Horizon 3 goal of Seqwater being "technology driven" by 2020. An indicative ICT investment program has been developed for the period between 2021 and 2028, although this will be directed by future corporate and ICT strategies.

Consistent with the proposed ICT capital program, the corresponding operating expenditure over the remainder of the price path includes increases in services and license costs to ensure ICT Services are best able to support the current and future requirements of the business and to continue to deliver value to the organisation. Allowances have also been included for the specialist consultant support and advice we will need to develop and implement our ICT program, as well as for services from external firms that we are proposing to buy in.

For our fixed operating expenditure forecasts for the remainder of the price path, we have included a series of increment and decrement adjustment across the ten year period to reflect the schedule of our proposed ICT projects. These adjustments vary between $0.25M and $0.5M in any year across the remainder of the price path.

### Provision of additional drafting services

We have provided for around $60k for additional drafting resources to support an increase to our capital works program and implementation of improvements to our Management of Change (MoC) processes.

### Additional training spend - leadership

The VisionConnect strategic initiative supports the skilled and committed workforce strategic outcome area and is in direct response to opportunities identified in the employee Connect survey, including employee understanding and alignment with Seqwater's vision, values and strategy, and improvements in organisational culture and leadership.

The first two of the three programs of delivery for the initiative are due to be completed during the 2015 Regulatory

9 Ground Water Replenishment System – Strategic plan update US$593500 Us

10 Millan M and Metz D *San Diego Public Attitudes Toward Potable use of Recycled water*, San Diego County Water Authority San Diego 2015

Period. The final program is to develop our organisational strategy and associated elements (strategy map, balanced scorecard, decision rights), and embed these throughout Seqwater. We anticipate that this phase of the project will commence in 2018-19.

We have included a recurring $0.05M per year for the remainder of the price path to continue the leadership training we provide to our staff.

### Gold Coast Desalination Plant – year on year changes in fixed operating expenditure

We have prepared long-term operating expenditure forecasts for the Gold Coast Desalination Plant, which captures large periodic maintenance and other one-off operating expenditure items over the period. These are included in our forecast.

### Western Corridor Recycled Water Scheme – year on year changes in fixed operating expenditure

We have prepared long-term operating expenditure forecasts for the the Western Corridor Recycled Water Scheme, which captures large periodic maintenance and other one-off operating expenditure items even while the plant is in care and maintenance mode. These are included in our 10-year forecast.

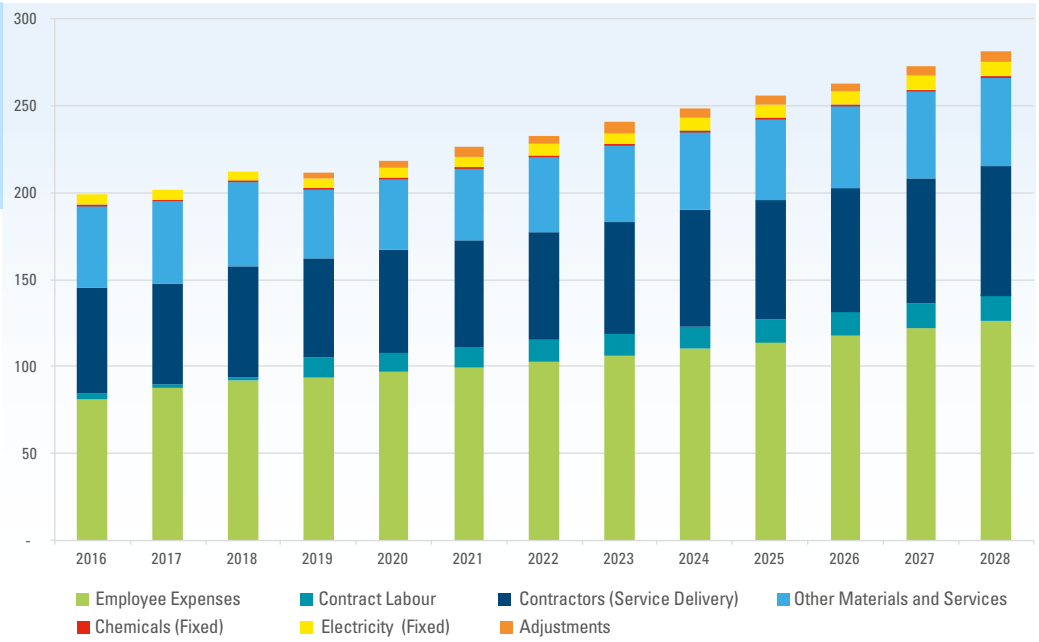
### Ewen Maddock and Wyaralong water treatment fixed costs

We have included provision for fixed costs associated with re-commissioning the Ewen Maddock Water Treatment Plant, which is now required to support water security in the northern sub-region as a hot-standby asset. A further provision for additional fixed costs for a new water treatment plant required for Beaudesert has also been made, consistent with our capital investment proposal to augment supply. We have used the Noosa Water Treatment Plant, which is of similar type and capacity, as a proxy plant to estimate costs.

#### Characterisation of our fixed expenditure forecasts

The breakdown of our base year fixed operating expenditure forecasts by category for the remainder of the price path period is shown in Figure 9. Adjustments and one-off costs are shown separately.

**Figure 9: Breakdown of fixed operating expenditure for 2015-16 to 2027-28 by category ($M nominal)**




The expenditure on employee expenses represents the largest component of our fixed operating expenditure in each year for the remainder of the price path, at more than 45% of the total fixed costs each year. The second largest component of our fixed operating costs is spent on contractors. This forms more than 27% of our costs in each year across the period.

The expenditure we have forecast to incur on other materials and services averages more than 16% of our annual fixed costs in each year across the period. This covers our expenditure on items including:

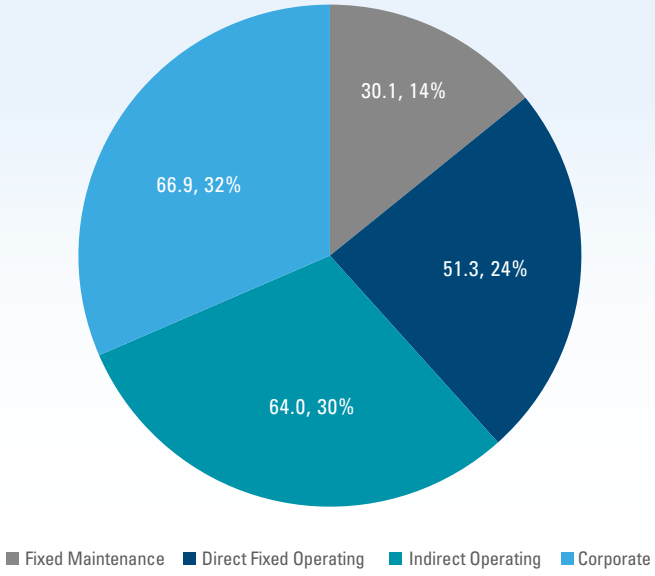
- Operations and Maintenance
- Property Expenses
- Administrative Expenses

- Chemicals - Fixed
- Portable Equipment
- Grants Subsidies and Partnerships
- Licences and Permits
- Audit Fees
- Bank Charges
- Bulk Water Purchases, which mostly comprises the Moreton Bay Outcome Contribution (around $4M per annum) regarding recycled water from the Murrumba Downs AWTP. We have assumed this charge will apply beyond the current contract term (2020) to the end of the price path period.

The three largest of these components (employee expenses, other materials and services and contract services) make up approximately 90% of our annual fixed operating expenditure in each year for the remainder of the price path. The remainder of our forecast costs are made up of expenditure for insurance, contract labour and a small fixed cost component for chemicals and electricity.

Figure 10 below presents a break-up of our fixed operating costs by high-level activity.

**Figure 10: Breakdown of fixed operating expenditure in 2018-19 by activity ($M nominal)**




Corporate functions include finance, HR, legal, CEO and Board and economic regulation and comprise around 32% of our total fixed operating expenditure. The scope of corporate functions aligns with the scope set for the 2013 QCA review of irrigation prices.

Indirect functions include water supply planning, research, asset management, asset planning, technical and engineering support. These costs are around 30% of total fixed operating expenditure.

Direct fixed operating functions relate to resources and inputs required to operate dams, pipelines, water treatment plants and the Gold Coast Desalination Plant and Western Corridor Recycled Water Scheme, and comprise 24% of fixed costs.

Maintenance costs for these assets make up a further 14%.

### Efficiency / Productivity Factor

In the 2015 Review, the QCA chose not to apply an ongoing efficiency target, on the basis of cost savings already identified.

Given we have demonstrably achieved and exceeded the catch-up efficiency targets set for us, we submit that an aggressive ongoing efficiency target is not warranted as our base costs now reflect that of an efficient business.

While we consider our base year of fixed operating costs to be efficient, we propose to incorporate a self-imposed ongoing efficiency saving across the 10 year balance of the price path to reflect our continued efforts to provide services to customers at least cost.

We have, therefore, incorporated a cumulative ongoing efficiency target of 0.2% per annum of our controllable costs. This target provides us with a meaningful incentive to improve productivity. This target is similar to the 0.25% continuing efficiency saving applied to Hunter Water by IPART in its 2016 decision. This target was set to reflect what a frontier company competing in an open market with strong commercial pressures would be implementing. We have adopted a slightly lower target which is in addition to our EBA savings identified and carried forward into our long-term forecasts.

We have defined controllable costs similar to IPART's decision for Hunter Water. These controllable costs include labour and contractors, but exclude items for which we are largely bearing market prices such as insurance, chemicals and electricity. Overall, these controllable items are around 65% of our total fixed operating expenditure.

### Variable operating cost forecasts

Our variable costs are predominantly those related to energy, chemicals and the disposal of water products from our treatment plants (sludge). Variable costs are a function of the unit cost of production and the amount of water produced. As such, the variable cost component of our overall operating costs varies from year-to-year as the volume of water we treat and supply varies.

#### Variable costs over the 2015 Regulatory Period

Despite significant increases in electricity costs, we have achieved offsetting savings in chemicals and sludge costs and also have developed strategies to optimise variable costs across the Water Grid. This means that the average cost per ML of water produced has been 5% lower than the allowance set in the 2015 Review. However we expect electricity price increases will erode this saving into the next period, and push our costs higher.

Lower than expected demand, combined with the cost savings, has meant total variable costs are expected to be around 11% less than the allowance set in the 2015 Review. The tables below provide a summary. It is important to note that costs for 2017-18 are based on our budget estimates, and we now expect that electricity prices will be far higher than was budgeted for given recent market data.

**Table 14: Variable operating expenditure 2015 Regulatory Period ($M)**

| | 2015-16 | 2016-17 | 2017-18 | Total |
|---|---|---|---|---|
| 2015 QCA Target | 34 | 36 | 38 | 109 |
| Actual costs | 29 | 33 | 35 | 97 |
| **Difference (%)** | **-16%** | **-9%** | **-8%** | **-11%** |

**Table 15: Variable operating expenditure – volume weighted, ($/ML) comparison**

| | 2015-16 | 2016-17 | 2017-18 | Total |
|---|---|---|---|---|
| 2015 QCA Target | 111 | 113 | 115 | 338 |
| Actual / Expected | 98 | 107 | 116 | 321 |
| **Difference** | **-12%** | **-5%** | **2%** | **-5%** |

**Table 16: Variable operating expenditure by input % saving against 2015 Review ($/ML)**

| | 2015-16 | 2016-17 | 2017-18 | TOTAL |
|---|---|---|---|---|
| Electricity | -8% | 11% | 16% | 6% |
| Chemicals | -9% | -10% | -9% | -10% |
| Sludge | -37% | -39% | -24% | -33% |

#### Forecast variable costs

The unit cost of production we have used to derive our variable cost forecasts is based on our 2018-19 costs, which are an extension of these historic variable costs at each of our water treatment plants. However we expect our electricity costs to be far higher due to recent, large increases in electricity prices, and these higher costs have been reflected in our forecasts from 2018-19 onwards.

We have also included a small contingency in our forecasts to account for variations in the feedwater quality. We have set this contingency at a level equivalent to $1.2M in 2018-19, equivalent to 8% of the variable chemical costs. The contingency has been included in each year of our forecasts on the basis of additional costs that we may incur for seasonal events. In doing so we accept the risk of such events, and have proposed corresponding adjustments to the Review Event framework (refer Part A of our submission).

This contingency has been included to cover the impacts of dirty water events (turbidity, colour and salinity) and algal blooms (toxicity) that occur and are dependent on seasonal and climatic variations. The extra costs cover additional aluminium sulphate, sodium hydroxide and PAC (Powdered Activated Carbon) used to deal with these different events.

The contingency does not include the impacts of major events, such as cyclones, as these are not accounted for in our general budgets. We will seek to recover any additional operating costs associated with major events through either a mid-period or end-of-period adjustment.

We have escalated the variable cost inputs included in our forecasts in accordance with the recommendations provided to us by PWC (refer to Appendix 1). The productivity saving of 0.2% applies to sludge disposal, consistent with our use of the IPART decision for Hunter Water as precedent.

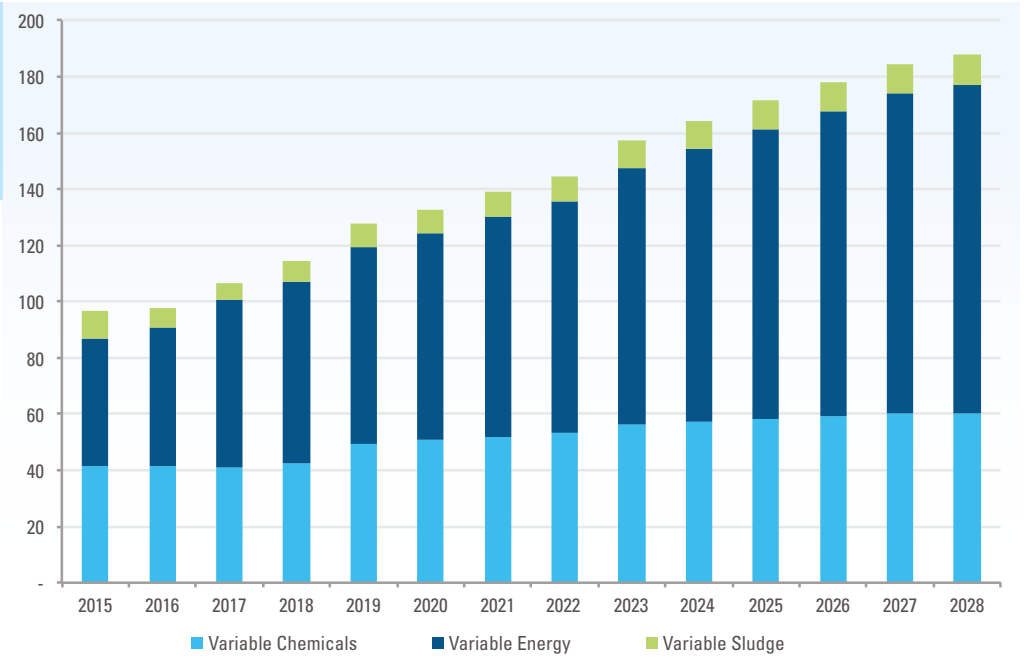
We have based our production estimates on our long-term demand forecast (refer Part A of our submission). We have assumed production occurs under the 'least cost' mode of operations, where we optimise the Water Grid to minimise the overall cost of supply.

Our proposed variable operating expenditure for the remainder of the price path is shown in Figure 11.

**Figure 11: Forecast variable operating expenditure for 2018-19 to 2027-28 ($M nominal)**


The weighted average cost of production per ML increases across the period in accordance with cost escalation, with the vast majority of the increase due to increasing electricity costs.

**Figure 12: Variable operating expenditure ($/ML nominal)**



While we have managed to keep our unit cost of production within the 2015 Review allowance during the current Regulatory Period, we expect that total variable costs will be higher into the future even though demand and production is lower. This is mostly due to differences in the escalation in electricity prices between the 2015 Review (QCA allowance of 2.7%) and updated actual prices and escalation rates advised by PWC, which are referenced from AEMO forecasts, and range from 3.87% to 6.29% over the same period (refer Appendix 1). This is reflected in the significant growth in electricity cost per ML, as outlined above.

The weighted average variable cost per ML in the base year, 2018-19, is $125/ML compared with 2017-18 of $117/ML. This 2017-18 cost is based on our budget estimates for that year. We now expect electricity prices in this 2017-18 year to be far higher, and are revising our estimates at the time of making this submission. Updated information will be provided to the QCA prior to the draft report. The table below therefore is likely to understate the change in electricity costs between years.

**Table 17: Variable Operating Costs (by input) - weighted ($/ML)**

| | 2017-18 | 2018-19 | Change $ | Change % |
|---|---|---|---|---|
| Electricity | 66 | 70 | 4 | 6% |
| Chemicals | 43 | 48 | 5 | 12% |
| Sludge | 8 | 7 | -1 | -12% |

*Note: electricity costs for 2017-18 are based on the budget estimates for that year.*

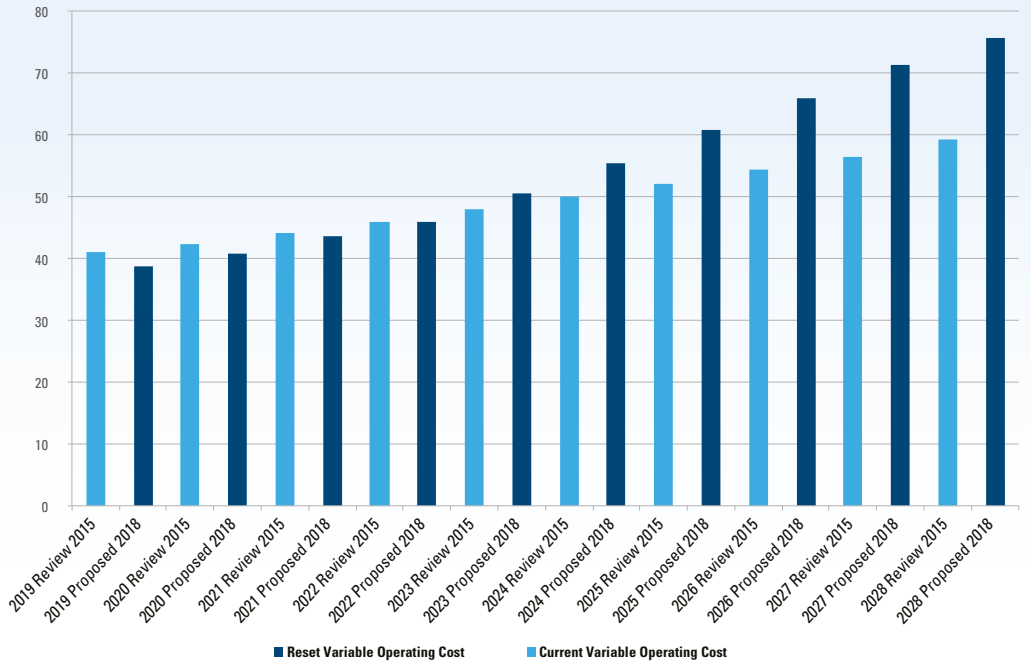
The chemical costs increase between these two years is largely due to the contingency discussed above, as well as price movements.

We expect to exhaust our current sites for sludge disposal within the net 10 years, and have commenced planning to find new options. The impact on our costs is uncertain, and will depend on a range of technical and regulatory factors. While the impacts could be significant, we have not included any allowance into our expenditure forecasts for this submission given we are at the early stages of planning and the cost impacts are uncertain. We do not expect these costs to emerge in the 2018 Regulatory Period, but will put forward our updated assessment into the next price review in 2021.

### Comparison of our variable operating expenditure proposal with our spend over the 2015 Regulatory Period

As shown in Figure 13, our current forecast for variable operating expenditure from 2018-19 to 2027-28 is expected to be higher than was expected at the 2015 Review during most years of the remainder of the price path. As set out above, the increase is mostly attributable to higher forecasts in electricity prices.

**Figure 13: Variable operating expenditure over the price path period, 2015 Review compared to Seqwater's 2018 proposal ($M nominal)**



# 3. Capital expenditure

## Key Points

- Since the 2013 merger and the 2015 Review, we have undertaken significant improvements to the way we manage and invest in our assets. We implemented the improvements suggested by the QCA in 2015 and consolidated our asset management, capital planning and delivery processes. We are now on a path of continuous improvement.
- Our (capitalised) capital expenditure over the 2015 Regulatory Period has been around $131M less than the forecast allowance set by the QCA. We consider this to be a positive result given the need to establish a new framework for capital planning and delivery following the merger. Moreover, we have taken additional time to plan for major projects to ensure the best solution is adopted at the right time.
- We propose a capital program of $1,558 in the period between 2018-19 and 2027-28, which is 10% less than the expenditure forecast for the 2015 Review.
- Within the ten year timeframe out to 2027-28, we expect to deliver the Lake MacDonald Dam Safety Upgrade ($96M), the Somerset Dam Safety Upgrade ($154M), the Beaudesert Water Supply Zone Upgrade ($109M) and the North Pine Filtration Capacity Upgrade ($42M).
- Our investment proposal is aligned with our corporate outcome areas and priorities, as well as our legislative and service delivery obligations. Our proposed expenditure has also benefited from review by our customers.
- Our capital investment proposal for the 2018-19 to 2027-28 period does not include any projects to respond to drought triggers set out in the Water Security Program. If these triggers are reached, additional capital investment will be required.
- Through our Asset Management System Improvement Program (AMSIP) we will continue to drive general improvements to our system and to progressively align our asset management system to the requirements of ISO55001.

## Our Proposal

We need to invest in our assets to ensure we can continue to meet the needs of our customers into the long-term. We have developed a program aimed to achieve this at least cost over the price path period and beyond.

We propose a capital investment of $1,558M for the balance of the price path period between 2018-19 and 2027-28, which is 10% less than the allowance set in 2015. Our proposed investment by investment driver is shown in Table 18.

**Table 18: Capital expenditure by investment driver proposed for the period**

| Investment driver | Capitalised investment 2018-19 to 2027-28 (%) |
|---|---|
| Compliance | 52% |
| Growth | 19% |
| Renewals | 28% |
| Improvement (Service) | 1% |

Our capital expenditure proposal forecast includes a small number of major projects which will required require significant investment. These include dam safety upgrades of Somerset Dam ($153.8M) and Lake MacDonald Dam ($95.7M) and augmentations required to meet growth in the Beaudesert Water Supply Zone ($109.2M).

Although our forecast total capital expenditure trends higher into the future 3-5 years, than is currently being delivered, we are confident in our ability to achieve this capital program investment, utilising a range of planning and delivery strategies, including continuing to engage specialist delivery contractors and partners across the project lifecycle. Details of the projects and programs included in our infrastructure investment proposal are provided later in this section.

The capital investment forecasts we submit to the QCA and the allowance that it determines are based on capitalised costs, that is to say the final total project cost at the time it is formalised for inclusion in our RAB. Some of our capital projects, and especially our large, major projects, run over multiple financial years. This means that we incur project expenses over the life of the project, which can be significant for our major projects, but the costs are not capitalised until the end of the project. The information we have provided for our capital investment expenditure in the 2015 Regulatory Period and for our forecasts for the balance of the price path include both project delivery costs and capitalised costs.

## Key features

The capital expenditure program in our proposal has a number of important features and themes, in particular:

- Value for customers: we undertake rigorous investment planning analysis and apply a high level of governance to our capital forecasts and project delivery. We analyse options over their life-cycle to determine the least cost options for customers, and consider operational solutions alongside capex options. We also look for opportunities to create efficiencies through capital investments
- Responding to climate variability: high streamflows and flooding creates risks to the continuity of our water supplies, as flood water can threaten critical assets and reduce the quality of feed water to critical levels. Our capital program includes projects to reduce these risks through investments in our pump stations and treatment plants. We also have a long-term program of targeted improvements to catchments to reduce sediment load and other water quality risks
- Safety of our assets and water supply: we need to make sure our dams are safe to protect the communities downstream. A large part of our program is aimed at meeting this objective. We also need to make sure the water we supply is safe, through managing water quality risks using a multi-barrier approach. This leads to ongoing investments in catchments and water treatment plants
- Value for our communities: our dams provide a valuable recreation resource for the community. A small part of our capital program is aimed at maintaining and enhancing the recreation amenities at dams, in accordance with a regional strategy.
- Collaboration: we work collaboratively with our customers where this will improve outcomes and reduce costs. We also work in partnership with customers on growth projects and consulted with Water Service Providers about our capital expenditure forecast for this submission.

Many of these projects are features in our proposed capital expenditure from 2018-19, as well as the projects we have undertaken in the 2015 Regulatory Period.

## Capital delivery over the 2015 Regulatory Period

We expect to capitalise over $311.7M of projects over the three years to 30 June, 2018, which is less than the allowance set in the 2015 Review.

We consider this to be a positive result given the need to establish a new framework for capital planning and delivery following the merger. We are also now better at budgeting and delivering the annual capital program. For example, we met the budgeted capital expenditure for 2016-17. While this is less than the QCA allowance in that year, performance in this year demonstrates improvement in forecasting and delivery.

The lower than expected capital expenditure over the period also reflects major projects taking longer to plan and procure than was envisaged at the time of the 2015 Review. We have taken this additional time to ensure the best solution is adopted and implemented at the right time. While we do not defer or delay urgent works meeting an immediate risk or need, other projects have benefited from additional planning work to identify the best option and its timing.

This has meant a number of key (but not-urgent) projects that were originally included in our capital program for the 2015 Regulatory Period are being completed over a slightly longer timeframe or are being started at a later date than was originally planned. The end-result is lower life-cycle costs and more effective solutions

Table 19 summarises the top 10 highest value projects we are forecasting to capitalise during the 2015 Regulatory Period and the key outcomes they deliver.

**Table 19: Top 10 capital investment projects forecast to be capitalised during the 2015 Regulatory Period ($,000)**

| Project | Forecast capitalised expenditure 2016-2018* | Key outcomes |
|---|---|---|
| Capalaba WTP Upgrade | $8,875 | Upgrade to 19 ML/d to increase the capacity of the treatment plant and ensure that the water supplied meets the required water quality standards. |
| Mt Crosby East Bank WTP Chemical Storage Capacity Upgrade | $7,012 | To improve the reliability, performance and capacity of Mt Crosby East Bank WTP by maintaining a sufficient supply of chemicals, particularly when the chemical demand is high and access to the site could be restricted (e.g. during extreme weather events). |
| North Pine WTP Filter Refurbishment/Upgrade | $6,381 | To achieve water quality targets and improve the production capacity of the North Pine WTP in accordance with the SEQ Water Security Program. |
| North Pine WTP Sludge Handling Upgrade | $6,000 | To increase the sludge handling capacity of the plant to meet present and future requirements. |
| Landers Shute WTP Lime Dosing System Upgrade | $5,894 | To achieve water quality targets impacted by dirty water associated with flood events that have been experienced in recent times. |
| Wardell/Pickering Main Upgrade | $5,311 | Upgrade of a pipe constructed in 1940s and nearing the end of its design life. |
| Land Compensation Payments | $4,500 | Finalisation of legacy compensation payments to landowners pipeline projects. |
| Molendinar WTP Backwash System Upgrade | $4,500 | To ensure that the backwash system is improved so that the filters are capable of meeting the future production requirements under the Water Security Program, while reducing the risk of pathogen breakthrough of the filters due to inadequate backwashing. |
| Boonah Kalbar WTP Upgrade | $4,140 | To upgrade the raw water intake, which is in poor condition and restricts the ability to operate the WTP at capacity. This will also improve the reliability of supply which can be unreliable during periods of extreme drought. |
| Petrie WTP New Water Supply Connection | $3,945 | The Petrie WTP is being decommissioned as it requires substantial refurbishment, capacity increase and an alternative water source to meet demand beyond 2020. Instead the area will be supplied from the North Pine Dam WTP. |

* Actual expenditure where project completed and forecast expenditure where project is underway or yet to commence

The major projects across the 2015 Regulatory Period include Petrie WTP New Water Supply Connection and upgrade and improvement work at the North Pine, Mt Crosby East Bank and Landers Shute water treatment plants. We forecast to spend (as opposed to capitalise) $66.5M on the 10 highest value major projects over the period. This forecast represents 36% of the total capital expenditure that we expect to spend over this period.

### Efficient delivery

We aim to deliver capital investment solutions effectively and efficiently through our capital delivery activities. The need for proposed investment is always subject to continual review and scrutiny along with the best method to deliver a specific project or program to minimise the investment required.

We also look for innovative delivery models that will reduce costs and increase effectiveness.

This includes partnerships with landholders and community groups to deliver catchment improvements, using a shared-funding model (refer Box 1 below). The benefits of this collaboration are reflected in our expenditure forecasts for this work.

**Box 1. Baroon Pocket Catchment Management**

Research and regular surveys we have undertaken have identified numerous catchment-based risks to the quality of raw water supplied from Baroon Pocket Dam to the Landers Shute WTP. The primary raw water quality hazards are potentially pathogenic microorganisms arising from intensive agriculture and peri-urban/rural residential areas, and turbidity generated from landslides with connectivity to waterways.

In order to address these catchment-based risks to raw water quality, we maintain a partnership agreement with the Lake Baroon Catchment Care Group (LBCCG). Under a Partnership Agreement, we identified and prioritised the water quality risks and provided funding for LBCCG to deliver on-ground projects, as well as community education and engagement to mitigate them.

The Partnership Agreement provides key benefits to Seqwater. The low-cost, efficient and high quality project outputs delivered by LBCCG are clearly linked to key corporate goals, objectives and KPIs. Importantly, these outputs are being monitored and documented in collaboration with Seqwater scientists. Projects delivered by LBCCG under this agreement provide Seqwater with a gateway to key landholders, properties and the broader community that would not otherwise exist. Perhaps of most significance, is the leverage that the investment by Seqwater enables, with the LBCCG able to draw in funds from other sources to value-add to water quality improvement projects.

Due to its successes and achievements, the relationship has become a model framework for implementation of other community-based catchment programs, with the water quality improvement program delivered via this partnership agreement winning the Community Rural and Agriculture Award in the annual Healthy Waterways Awards in 2015.

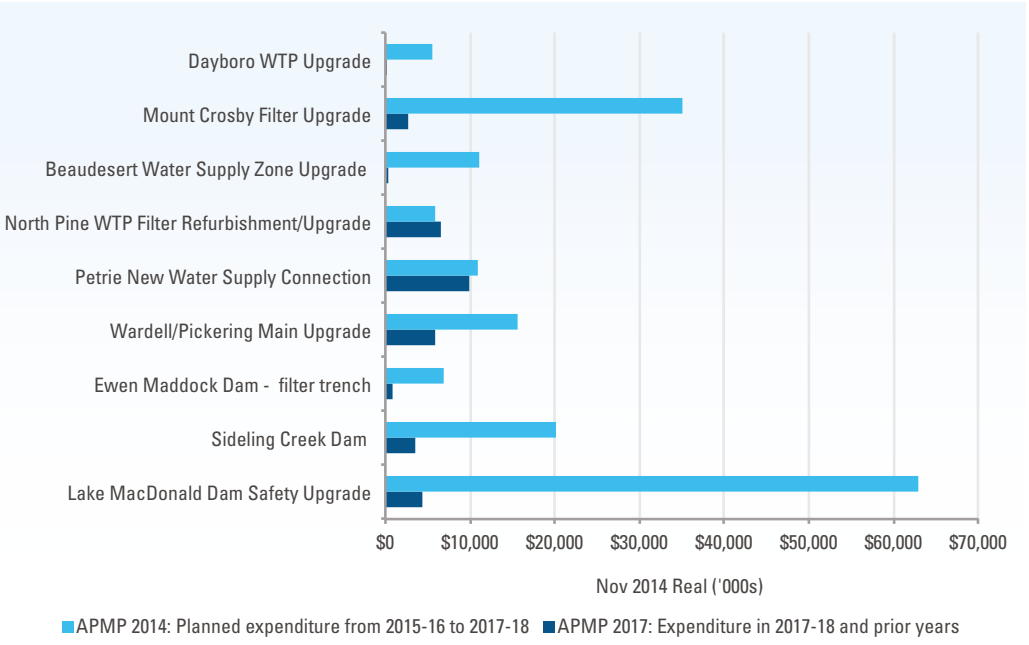
The comparisons of our capitalised expenditure forecasts against the QCA's capital allowance for the current period are provided below.

**Table 20: Capitalised expenditure forecast for the 2015 Regulatory Period ($M)**

| | 2015-16 | 2016-17 | 2017-18 | Total |
|---|---|---|---|---|
| QCA allowance | 122.7 | 124.3 | 195.9 | **442.8** |
| Seqwater capitalised expenditure | 88.4 | 93.9 | 129.4 | **311.7** |
| Variance between QCA allowance and Seqwater capitalised expenditure | -34.2 | -30.4 | -66.5 | **-131.1** |

Figure 15 shows the highest value projects that were included in our QCA allowance and how they have contributed to our forecast underspend during the 2015-16 to 2017-18 period.

**Figure 15: Forecast underspend in capital expenditure between 2015-16 and 2017-18 for the 9 highest value projects**



Explanations for changes to the capital investment program included in the QCA's allowance that have eventuated over the course of the 2015 Regulatory Period are summarised in the following paragraphs. In short, we have critically examined all capital expenditure over the period to make sure the best solution is applied, at the right time. This has led to some re-prioritisation of and deferral of projects, or re-scheduling to deliver several projects at the same time to reduce cost and operational disruption. At the same time we have brought forward higher-risk and higher-need projects into the program.

Our new capital planning and delivery processes means we are confident in our forecasts, which are discussed later in this section.

### Reprioritisation of major projects

We have reprioritised a number of our major dam upgrades and improvement projects that were included in the capital program we submitted to the QCA in 2014, including works at Lake MacDonald, Sideling Creek and Ewen Maddock Dam.

As part of the project planning for the dam improvement program, we review the assessed risk of each project throughout the planning phases. As more detailed information about these projects has become available, the uncertainties in the assessed risk have been reduced and the scope of work to address these risks has been revised. This has resulted in the priorities across the dam improvement program changing as the project planning has proceeded and has caused some changes to the start year of a project, often to reflect changes in the project scope. We now have a better program in place and have spent around $88M less on dam safety during the 2015 Regulatory Period.

We are forecasting to spend around $2.6M during the 2015 Regulatory Period compared to the $35.1M on the Mt Crosby East Bank WTP Filter Upgrade project. The project allows us to jointly deliver several asset maintenance and renewals projects as one "program" with one design and construction contract. This will provide an overall cost reduction and reduced interruption in the water supply capacity. The cost of these asset maintenance and renewals projects has been separately forecasted in our capital investment proposal.

### Deferral of renewals projects

As we have become a more mature organisation and become more familiar with the assets we own, operate and maintain, we have improved our knowledge of the assets. This has allowed us to make informed decisions with regard to our asset renewals, including deferring renewals projects and extending asset lives without any compromise to risk or implementing appropriate mitigation strategies where required.

We subject our renewals and refurbishment work to rigorous scrutiny to ensure that renewals are only carried out when required and completed at the time that they are required. We use our Asset Lifecycle Management Plan to confirm whether assets need to be renewed or refurbished and this can lead to renewals being deferred until a later date. Inspections of our assets can also identify that the extent of the originally planned renewals work is less than had been planned for, providing savings in expenditure against our budget. Renewals can also be brought forward to optimise our investment and to better align with our project portfolio.

We have deferred the renewals of pumps at a number of our water treatment plants, including North Stradbroke WTP, Amity Point WTP, Landers Shute WTP and Image Flat WTP. As a result of asset inspections and condition assessment work we have completed, we have been able to extend the lives of these assets and defer the renewals until a later date. We estimate that this has resulted in more than $1M of deferred capital investment.

We have been able to defer the topping-up of filter media at the Noosa WTP and Landers Shute WTP. This renewal work normally takes place on a rolling five year cycle but by undertaking tests of the media prior to it being added into the annual renewals program we have been able to extend the life of the media to 7-8 years before it needs to be topped up. We are currently into the third year of not needing to spend the money for this work, with the testing showing that media is still performing well. This change in approach has allowed us to defer more than $1.75M of renewals from our original budget.

We originally had included $0.5M in our renewals budget to replace the settling tubes in the clarifier at the Noosa WTP. However, after removing the tubes and conducting an operating trial lasting two seasons we identified that there was no impact on the water quality being produced and no impact on the throughput through the treatment plant. Therefore, we were able to save money we had budgeted for replacing the assets by showing that they were not required.

We have been able to defer around $1.5M - $2M for cathodic protection of our pipes during 2016-17, with this planned work deferred to 2017-18. This has been based on a condition assessment report that we co missioned prior to including the project in our budget for the year. A total of less than $1M has been included in the 2017-18 budget for this deferred work based on this report.

Based on asset condition and performance information, we have extended the asset life for a number of steel panel balance tanks that we inherited from Linkwater from five years to ten years. The doubling of the asset life has allowed us to significantly defer the replacement of these assets.

In addition to being able to defer some renewal projects due to asset inspections showing that the asset life can be extended, some projects are deferred as they cannot be delivered in the originally-proposed timeframe. An example of this is the Esk WTP clarifier upgrade project where the WTP needs to be taken offline to carry out the work but additional infrastructure is needed before it will be possible to deliver the capital investment.

We are concerned about the potential flood risk at Mt Crosby East Bank, and propose to move the transformers and main switchboard to higher ground. By aligning the renewals with the flood resilience aspect, the work replacing the switchboard and cables that had been budgeted at $3M has now been included in the larger flood resilience package of work we are proposing for the pump station.

In taking an optimised and balanced approach to our asset renewals, we sometimes need to implement interim strategies to manage the increased risk of deferring the work. This can involve investing in operational expenditure to be able to defer the capital investment and manage the risk within the tolerances we are willing to accept.

We have deferred a $1M upgrade of the switchboard at the Esk WTP that is required for compliance reasons. We have mitigated the renewal work by restricting access to the asset in order to include the work in an upgrade project that is proposed to take place a couple of years later than renewal had originally been planned.

We have also been able to achieve savings against our original renewals budgets by aligning the scheduled work with larger projects and including the asset replacement and upgrades in a larger package of work. We have deferred a number of asset renewal projects we had planned at our dam facilities in order to absorb this work into the major dam capital investment projects we are proposing. These renewals included the replacement of lifting equipment and crane recertification. Rolling these renewals into the dam program allows us to deliver the replacement assets more efficiently as we can use one contractor to carry out the work rather than appointing different contractors to carry out each different renewal project.

We have deferred the renewal of some control system assets to align the required asset replacements work with our Monitoring and Control Systems (MCS) upgrade planning. This has deferred around $2M of budgeted renewal expenditure into future upgrade projects although there has possibly been an increase in the maintenance requirements to extend the life of the assets.

#### Deferral of growth projects

The 2015 Review provided $11M for the Beaudesert Water Supply Zone Upgrade project over the 2015 Regulatory Period. However, we are now forecasting to invest only $0.3M over this timeframe. As a result of updated demand projections, more detailed technical evaluations and consideration of Grid-wide impacts, we have changed the preferred strategic option and delivery phasing that is required for the project. These changes mean that the original total project cost of $18M that we proposed in 2014 has now increased to $109M. Further details of the Beaudesert Water Supply Zone Upgrade project are provided later in this chapter.

#### Project delivery approaches and market movements

The capital investment projects included in the 2015 Regulatory Period were at different stages of planning. As projects progress through the different stages of planning and the final project scope becomes more defined, the accuracy of the project cost estimate improves. Although we have a robust project cost estimation process, one that has been further enhanced since 2014, there will always be some uncertainties regarding the cost of a project until the project is delivered.

Market rates at the time of tendering, contractual negotiation and decisions regarding partnerships and delivery approaches impact on the cost for which a project can be delivered. This may result in variations from the cost estimates that were originally proposed.

We have achieved a saving during the 2015 Regulatory Period of more than $9.6M against the cost estimate we submitted to the QCA in 2014 for the Wardell/Pickering Main Upgrade. We have been able to deliver under budget due to the market delivering a lower price that the business case we had developed.

We have achieved a saving of around $1M for the Petrie New Water Supply Connection project. The project has been delivered as a partnership project with Unitywater, with the project delivered under budget due to working out a commercial arrangement with Unitywater.

**Decommissioning Petrie WTP**

A condition assessment of the Petrie WTP indicated that significant refurbishment costs were required to keep the plant operating and to continue safely servicing the Petrie Water Supply Scheme. Additionally, internal planning studies conducted by Unitywater identified that the an additional bulk water supply to the Petrie Water Supply Scheme would be required beyond 2020 to meet growing demands in the Northern Growth Corridor.

We worked with Unitywater to identify the least-cost solution across the supply chain. This resulted in a decision to decommission the Petrie WTP, eliminating the need for the required future upgrade. The least-cost option was for us to make a contribution to Unitywater to bring forward their planned connection instead.

By the end of 2017, about 100,000 additional residents in Moreton Bay will be connected to the Water Grid for the first time. A new pipeline will connect into the Grid, saving water customers about $20 million by negating the need for the Petrie plant to be upgraded and by servicing customers from the more efficient North Pine WTP.

### Reprioritisation of capital projects to meet new challenges

Providing water services to our customers and managing our extensive network of infrastructure presents challenges that are not always foreseeable when we submit our pricing and expenditure proposals to the QCA.

Over the course of the 2018 Regulatory Period we have reprioritised capital investments we were proposing when we made at the time of the 2015 QCA review to allow us to respond to these challenges.

We apply a robust prioritisation process to ensure that we only invest when it is prudent to do so and only at an efficient level. We ensure that our decisions and changes to our original project plans and programs do not adversely impact customer outcomes in other areas.

The projects that we are reprioritising funds to during the 2015 Regulatory Period that were not included in our 2014 submission to the QCA include:

- New Aspley WQM Facility

  A new WQM Facility at Aspley Reservoir to allow for chloramine dosing has been forecast to incur around $3.61M of investment during the current three year Price period. Under the North Pine WTP security mode, water produced at the Mt Crosby WTP is required to travel further and will require re-dosing to ensure compliance with drinking water obligations.

- Mt Crosby East Bank WTP Centrifuge Installation

  The installation of a centrifuge at Mt Crosby East Bank WTP has been forecast to incur over $5.2M of investment during the 2015 Regulatory Period.

- Mt Crosby East Bank WTP Centrifuge Installation

  The replacement of the existing centrifuge at the West Bank WTP with two new centrifuges has been forecast to incur a total investment of almost $2.8M over the 2015 Regulatory Period.

We consider that these investments are prudent. They have been driven by new compliance requirements, improved information gathered from physically inspecting our assets and by improving our asset management and capital planning processes over the last few years in order to be able to deliver the required business and customer outcomes. As with all the capital investment projects we propose, we will deliver these investments efficiently.

## Development of our capital expenditure proposal from 2018-19

We have implemented significant improvements to our capital planning and delivery processes which mean we are confident about the prudence, efficiency and deliverability of our forecasts.

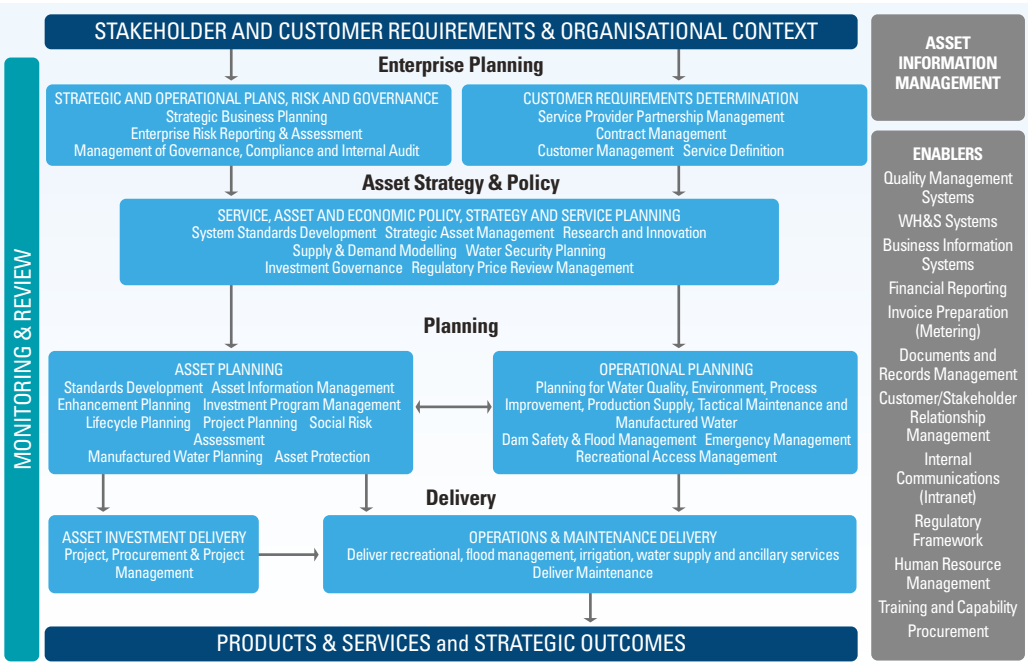
### Our Asset Management System

We have developed our asset management principles to guide the business's asset planning and asset-related decision making, drive consistency and efficiency and to reduce risk. The principles also support the development of the asset standards and asset information systems used to manage our assets. Our asset management principles support all of our asset decision processes and procedures and are applied consistently across the business.

Our Asset Management System (AMS) framework, illustrated in Figure 16, provides an overview of the key activities, relationships, roles and responsibilities, artefacts and outputs of our asset management approach. It shows the

relationships between our external context, stakeholder and customer requirements, our strategic objectives and the services we deliver. In particular, the AMS focuses on how we achieve our asset management objectives through different layers of planning and delivery.

**Figure 16: Seqwater Asset Management System**




The purpose of our asset management objectives is to ensure that our assets are managed to provide a safe, secure and resilient water supply at the best value and the least cost, while maximising benefits to the SEQ community. Achieving our asset management objectives drives our organisational effectiveness and efficiency, including providing guidance for our investment decision-making. Strategic guidance on how we manage our assets to achieve our asset management objectives is set out in our Strategic Asset Management Plan.

The relationships and alignment between the different elements of our Asset Management System means that we understand how our investment decisions achieve our strategic objectives and provide the services and benefits to our customers and the community. This is essential in ensuring that we can show that the projects we have included in the price path period are justified and the proposed capital expenditure is both prudent and efficient.

### Performance monitoring and reporting

We evaluate the condition and performance of our assets and the effectiveness of our asset management system and processes on an ongoing basis. These elements must maintain consistency and relevance in relation to our legislative context, strategic objectives and the asset management policy. Performance monitoring is conducted to assess delivery of services, achievement of asset management objectives and the effectiveness of our asset management system.

We also conduct regular audits and reviews, as well as investigating incidents and emergency events associated with our assets to identify potential asset management improvements.

### Asset management benchmarking

We regularly benchmark our asset management and system performance against other water utilities and use this process to identify ongoing improvements to our systems and processes.

We participated in the Asset Management Customer Value (AMCV) benchmarking project run by the Water Services Association Australia (WSAA) in 2016. The process was aligned to incorporate principles of ISO 55001:2014 and benchmarked our processes and activities against a holistic, total lifecycle view of asset management including organisational leadership, customer focus and value optimisation as well as more traditional asset management areas across seven functions.

The benchmarking found that improvements had been observed since the study had last been undertaken in 2012. The project also found that our performance had improved relative to the other participants taking place in the benchmarking and that in 2016 we were at or above the median for most functions. Observations during verification process found that there appeared to be a strong understanding of the benefits to the organisation for good asset management and that this was being driven at various levels.

Our Asset Management System Improvement Program (AMSIP) allows us to progressively align our asset management system to the requirements of ISO55001, as well as drive general improvements to the system, including those identified from external benchmarking studies such as the AMCV project .The AMSIP is updated annually to reflect

improvements identified through performance monitoring, benchmarking, management system review and incident/emergency investigation.

### Improvements/enhancements to our asset management framework

Over the course of the current period, we have completed recommendations that were included in the QCA's SEQ Bulk Water Price Path 2015-18 Final Report (March 2015) and the CH2MHill Seqwater Operating and Capital Expenditure Review – Assessment of Prudency and Efficiency Final Report (March 2015).

The improved approach to our asset management has enhanced the requirement that a capital expenditure project or program must be justified to ensure prudency and efficiency, and also to ensure compliance with our gateway governance process. The project documentation must demonstrate an aligned project need, options analysis, supporting technical assessment and confirmation of a preferred option with an appropriately detailed and justified cost estimate.

We have enhanced our capital planning and delivery policies and procedures by further progressing from a short-term to a longer-term delivery focus, improved awareness and consistency in the application of the procedures and also incorporated maintenance and non-capital options in asset management planning.

Governance, corporate planning and procurement activities have continued to improve as a result of better awareness of their requirements and by strengthening the linkages between the established key performance indicators and corporate priorities.

The asset management improvements we have made since the last price review have allowed us to use a more consistent approach to develop our capital and operating expenditure forecasts and to prepare a robust pricing submission. We are able to demonstrate that our capital and operating expenditure proposals are both prudent and efficient.

### Development of our capital program

#### Long-Term Planning Reports

We develop Long Term Planning Reports (LTPRs) in order to establish a 30 year asset investment plan for each of our facilities. Depending on the type of facility, aspects such as legislative and regulatory compliance requirements, population growth (future demands), water quality requirements, hydraulic capacity, the asset renewal schedule, and infrastructure criticality are considered in establishing the investment plan.

Our LTPRs are intended to be a single source summary reference for each of the key assets known status and the proposed future asset investment. The aim of each LTPR is to assess the asset and describe its ability to its meet current and future requirements.

The outcomes of the long term planning are required to develop the capital enhancement investment forecast. The output of each LTPR is a recommended series of capital projects and enhancements for the next 30 years.

The development of our LTPRs is a continuous process and reports have not yet been established for all of our facilities. However, we have other mechanisms for identifying and including projects for inclusion in our capital program. These include the preparation of memos to endorse projects included in draft LTPRs and specific options analysis requirements when there is a known problem that requires a capital project solution.

#### The Asset Portfolio Master Plan

The Asset Portfolio Master Plan (APMP) is our main capital planning tool. It has been recognised as being a leading practice in the water industry through the Asset Management Customer Value (AMCV) (previously known as Aquamark) benchmarking process.

The APMP consolidates capital projects included in long-term planning reports, asset management plans and other forward planning documents into a 20 year capital investment plan. This allows the APMP to align and prioritise capital investments across the different asset types that we own and manage. Our capital investment program has been developed to align with the demand forecasts and is based on average inflows into the catchments.

The APMP is the basis for two separate reports that we prepare each year for the annual budget process and for an annual review of the APMP that describe and justify the current year's infrastructure and non-infrastructure program in more detail. The future capital investment forecasts are continually updated as new information is developed and projects advance through the gateway process.

The APMP includes the capital expenditure forecasts for infrastructure and non- infrastructure projects, although for the pricing submission, costs associated with forecasts for unregulated assets and activities, irrigation meters, and irrigation-only water supply schemes are excluded.

We shared our draft APMP with our customers and sought their feedback in a series of workshops. We also revised the APMP based on their feedback. Customers also questioned why we hadn't included current joint projects on

regional disinfection and bulk water metering. We consider that these will be important projects in the future, but they have not been included as they have not yet reached the Gateway stage of our investment decision-making process to be initialised as projects.

### Capital Expenditure Investment Decision-Making

The capital projects included our long-term planning reports, asset management plans and other forward planning documents are progressed through our formalised capital planning framework. Different options are assessed during the development of a capital project and project cost estimates are refined over the process.

Our asset investment portfolio prioritisation methodology builds off the existing project planning processes employed within Seqwater. These involve rigorous needs analyses and options assessment to determine the outcomes sought, scope of investment, timing requirements, cost estimates and risks at all stages of the investment cycle.

All business cases have to consider operational and capital options, and this allows us to ensure that the capital projects that progress through our planning process are prudent.

Project prioritisation is refined during three different stages: in the Long-term Planning Reports, implicitly in the APMP and explicitly in the APMP that is prepared annually for the following budget year.

All projects and programs submitted for inclusion in the APMP are required to have substantiated documentation that demonstrate or show the prudence and efficiency.

### Governance

Our asset investment decision-making is based on the gateway review process adopted by the Queensland Government and which is aligned with the internationally-recognised OGC GatewayTM Process. The gateways are a key process to ensure that each project is able to be tracked through a governance process that results in a prudent and efficient capital program.

The investment gates used by Seqwater are summarised in Figure 17.

**Figure 17: Summary of Investment Decision Gates**

| | Gate 0 | Gate 1 | Gate 2 | Gate 3 | Gate 4 | Gate 5 |
|---|---|---|---|---|---|---|
| **Seqwater** | **Strategic Assessment** | **Preliminary Evaluation** | **Investment Justification** | **Investment Decision** | **Readiness for Service** | **Benefits Realisation** |
| **Intent** | Strategic alignment and Portfolio Planning | Project initiation and Planning | Business Case approval | Contract Award | Project Delivery and handover | Project Performance review |

Identification of approving Officers at each gate is aligned with our delegations and authorisation policies and procedures, with the additional consideration of risk implications. Seqwater's governance arrangements reflect the requirements set out in relevant legislation and government guidelines.

Every business case in excess of $1M requires an executive-level review by our Investment Review Group. In addition, we also have a number of specialist committees that provide oversight and scrutiny to specific programs within our overall capital expenditure program.

Any business cases for projects in excess of $50M are required to be reviewed by Building Queensland, an independent statutory body that provides independent expert advice to Queensland Government agencies, government-owned corporations and selected statutory authorities to enable better infrastructure decisions.

### Capital cost estimates

Our capital expenditure forecasts have been developed to reflect the estimated costs of the proposed projects and have been developed in accordance with our cost estimating methodology and guidelines.

Our capital expenditure estimates have been developed to reflect all forecast costs that would be capitalised, and, therefore, only include the relevant asset planning and project delivery costs incurred in realising each proposed project.

The information that forms the basis of our capital investment program and the cost estimates is based on our 2017 APMP. This document was finalised in December 2016 in order to prepare the report to our Board for approval of the program in March 2017 and submission to the QCA for review in July 2017. The QCA's recommendation to the Minister will take place in late 2017, one year after the information included in the APMP was collected and complied.

As a result of the process we use to prepare our long-term capital program, project cost estimates will inevitably change after the finalisation of the year's APMP as more information becomes available prior to the next update of the document. Updated cost assessments for the Somerset Dam Safety Upgrade and the Beaudesert Water Supply Zone

Upgrade since the finalisation of the 2017 APMP have resulted in significant increases to the cost forecasts for these projects.

These and other similar projects will be reviewed and incorporated into the Regulatory Asset Base based on the efficient outturn cost. However, although the outturn cost may be higher that we have included in our proposed current capital expenditure forecasts, the information included in the 2017 APMP represents a consistent point in time for developing our proposal. As such, we have not revised our capital investment forecasts to take account of any changes to the projects and the cost estimates since the time that the annual capital program process was finalised and approved by the Board. We acknowledge that that program will inevitably change and costs may be higher or lower than originally forecast as we progress through the Gateways and once we get into the project delivery stage.

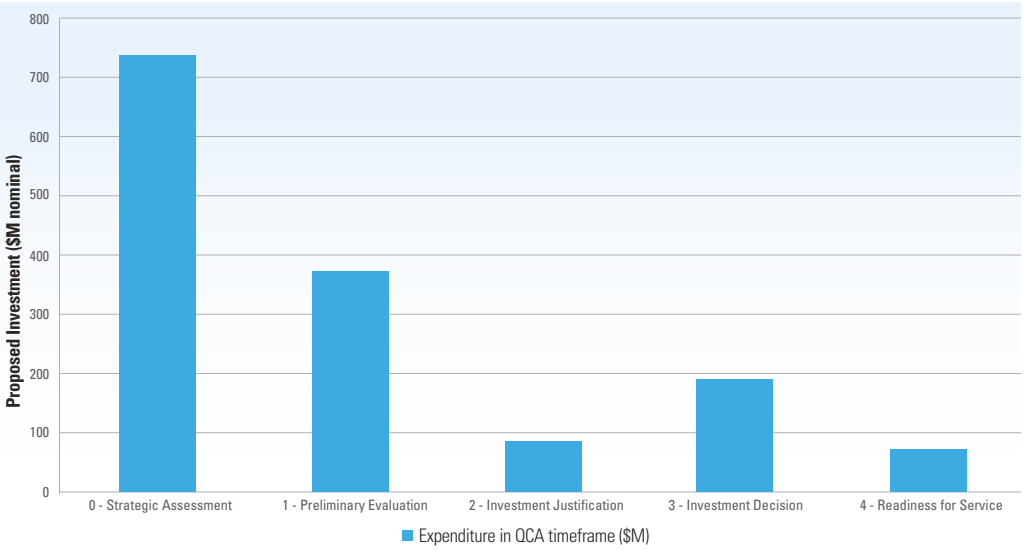
### Accuracy of our capital cost estimates

The level of accuracy of our cost forecasts varies, dependent on the status of each of those projects in our overall capital project delivery process. The costs are refined as project options are refined, design work is completed and project delivery is undertaken. As the accuracy of the cost estimates improves as the project progresses, some projects will be delivered for less than was first proposed, while other will cost more.

All of the projects and programs included in our capital program have been classified according to their status within the Gateways.

The breakdown of our proposed capital investment program for the balance of the price path by gateway status is show in Figure 18.

**Figure 18: Proposed capital program by Gateway status**



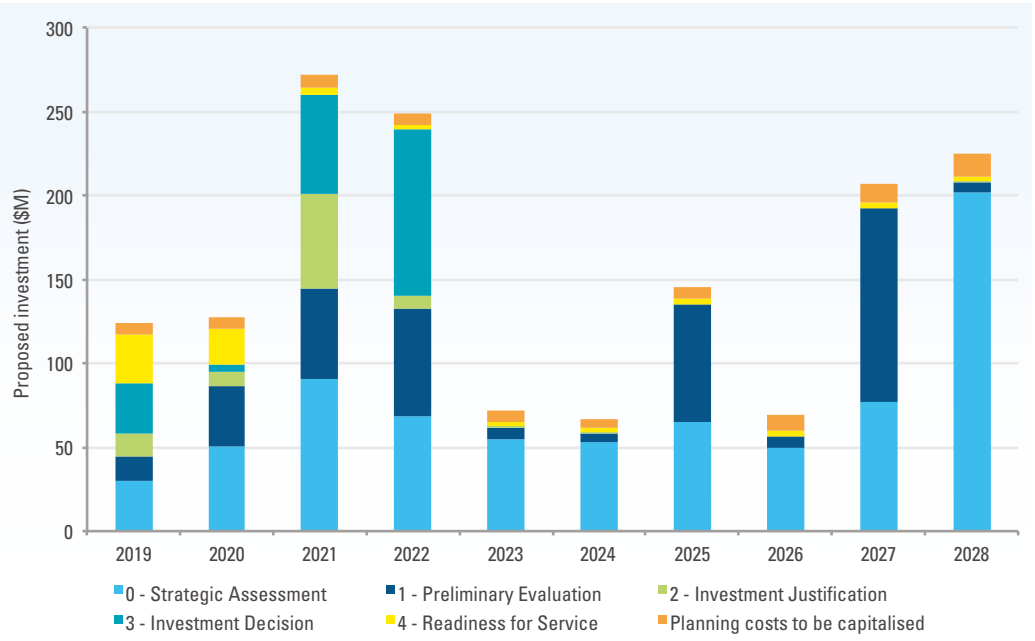

This shows that almost half of our proposed capital investment program for the remainder of the price path, is currently within Gateway 0 (Program Planning). These projects are supported by long term planning reports or end state reports with work progressing to advance them past Gateways 1 and 2 and into the delivery phase when required.

Just under 30% of our proposed capital investment program for the remainder of the price path are currently within Gateways 1 and 2 (Project Planning). Progression past Gateway 2 is based on assumed planning schedules and governance approval dates.

Approximately 17%, is within Gateways 3 and 4 (Project Delivery). Expenditure on projects within Gateways 3 and 4 are based on assumed approval and milestone delivery dates. Approvals according to delegations are required for projects to pass Gateway 3 (Contract Award).

Figure 19 shows breakdown of our proposed expenditure over the balance of the price path by Gateway status. This highlights that the proposed investment within Gateways 3 and 4 and in the Project Delivery phase is currently only in place for the first few years of the period. From 2022/23 onwards, almost all of the projects we have included in our forecast capital program are currently in the early stages of project planning. This is appropriate given the planning horizons.

**Figure 19: Breakdown of proposed capital program by Gateway status**




Within each Gateway there are controllable and uncontrollable risks which can impact on the delivery of our proposed capital program. Controllable risks mainly relate to meeting scheduled timeframes for milestone delivery and approvals across all gateways.

Uncontrolled risks are possible at each gateway. In the project planning Gateways 1 & 2, unknown issues or new information could impact on project costs scope and time frame to deliver. These risks are more likely to occur on larger, more complex projects. Our current risk mitigation strategy is ensuring that time is allocated in the project planning phases to account for issues that may arise

The most likely uncontrolled risk in Gateway 3 is the potential for market responses to be different to expectations in the gateway 2. For example, the market price for a service could be different to the budget assigned in Gateway 2. This will require recycling of the project for re-evaluation, adding potential time delays to the project. The risk mitigation measure is developing for purpose design and cost estimation development in Gateway 2.

Uncontrollable risks within Gateway 4 generally relate to latent conditions such as weather or unknown site conditions, which can impact on time, cost and scope.

Table 21 provides the minimum target levels of cost estimate accuracy at different phases of project development and at each approval gate within our Gateway process.

**Table 21: Expected Cost Estimate Accuracy at Different Approval Gates**

| Strategic Assessment Gate 0 | Preliminary evaluation Gate 1 | Investment justification Gate 2 | Investment Decision Gate 3 | Readiness for service Gate 4 |
|---|---|---|---|---|
| -50%, +100% | -50%, +50% | ±30% | -10% +15% D&C (Concept Design)<br>-5% +10% Detail Design | -5% +10% |

This highlights that with most of our proposed capital program for the remainder of the price path being within Gateways 0, 1 and 2, the accuracy of the cost estimates that have been prepared at this time are likely to change as the projects progress through the approval gates. This is likely to have a significant impact on the quantity of our proposed program as time progresses. However this is to be expected for such a long-term plan.

### Capital costs escalation

A key component of forecasting our future capital investment is determining and applying reasonable and robust cost escalation factors to apply over the remainder of the price path.

The development of cost escalation factors underpins our regulated business' estimated revenue requirements over the balance of the price path. Our required revenue can be sensitive to changes in input prices, and, therefore, robust cost escalation factor estimates are required to ensure that these changes are accurately captured and reflected.

Based on recommendations provided by PWC, who we engaged to determine appropriate cost escalation factors for our expenditure forecasts, we have used the Australian Bureau of Statistics' Queensland Engineering Construction Activity Implicit Price Deflator for historical capital expenditure to 2015/16 and the midpoint of the Reserve Bank of Australia's inflation range from its inflation forecasts (2016/17 to 2018/19) for the remainder of the forecast period. We have used these to escalate our proposed capital expenditure over the forward Regulatory Period and for rebasing capital expenditure estimates that were developed in prior years.

The approach we have taken for our capital investment forecasts for the remainder of the price path is different from the escalation process we used in our previous regulatory submission. For our 2014 submission to the QCA we used the Australian Construction Industry Forum's Engineering Construction Price Index (ACIF) to escalate our proposed capital expenditure over the then forward Regulatory Period.

However, the ACIF has recently adjusted its methodology to develop its construction activity forecasts in real terms, as opposed to the previous approach which modelled changes in nominal terms. As a result, the Engineering Construction Price Index is no longer available as part of the ACIF forecasts.

#### Interest during construction

For multi-year projects we apply interest during construction, at the weighted average cost of capital for the relevant year(s). This is consistent with conventional regulatory practice.

#### Alignment of project timing with demand forecast

Our standard capital planning processes adopt the medium demand forecast for timing growth projects, as reflected in the approved APMP. The use of the hybrid demand assumption for the pricing submission results in lower demand in some years compared with the medium demand assumption. We engaged Jacobs engineering consultants to assess the potential impacts and provide advice.

The outcome of their analysis was that five projects with a total value of approx. $100M could be deferred by between one and three years, mainly in the mid- to latter part of the period out to 2028. Jacobs noted that the projects may be still required in the original timeframe for other reasons such as compliance or for construction mobilisation efficiencies.

For two of the five projects, we believe that there are parallel drivers of Compliance (Mt Crosby East Bank WTP Sedimentation Upgrade) and Renewals (North Pine Sedimentation Upgrade) which require that the projects be completed in the original APMP timeframe.

Therefore, we have modified the APMP listings (for regulatory pricing purposes only) for three projects identified by Jacobs by deferring their implementation.

**Table 22: Deferral of capital expenditure projects**

| Project | Deferral period | Completion date - APMP | Completion date – QCA submission | Project cost ($M December 2016) |
|---|---|---|---|---|
| North Pine WTP Filtration Upgrade for 250 ML/d capacity | 2 years | 2022/22 | 2024/25 | $37.494 |
| Mt Crosby West Bank Sedimentation Upgrade | 2 years | 2022/23 | 2024/25 | $12.868 |
| Narangba Pump Station | 1 year | 2023/24 | 2024/25 | $5.710 |

## Our capital investment proposal

Our capital expenditure investment represents the level of investment that we consider is necessary to meet our service delivery requirements and legislative obligations. It is the level of investment we require in order to continue to provide safe, secure and resilient water supply the least cost.

We propose a total capital expenditure investment program of $1,558M for the remainder of the price path period. This averages as $155.8M per year over the ten year period to 2027-18. Over the next three year Regulatory Period, we are proposing a capital investment of $523.3M, an average of $174.4M per year.

The following sections provide details of our proposed capital expenditure program by the project driver classifications.

### Our proposed investment by project driver classification

Figure 20 shows the breakdown of the total forecast investment by each of four drivers:

- compliance with our regulatory and service obligations
- asset renewal to maintain the service capacity of our assets
- meeting additional demand or growth
- improvements to our service

**Figure 20: Forecast Capital Expenditure Investment (%) breakdown by Investment Driver**

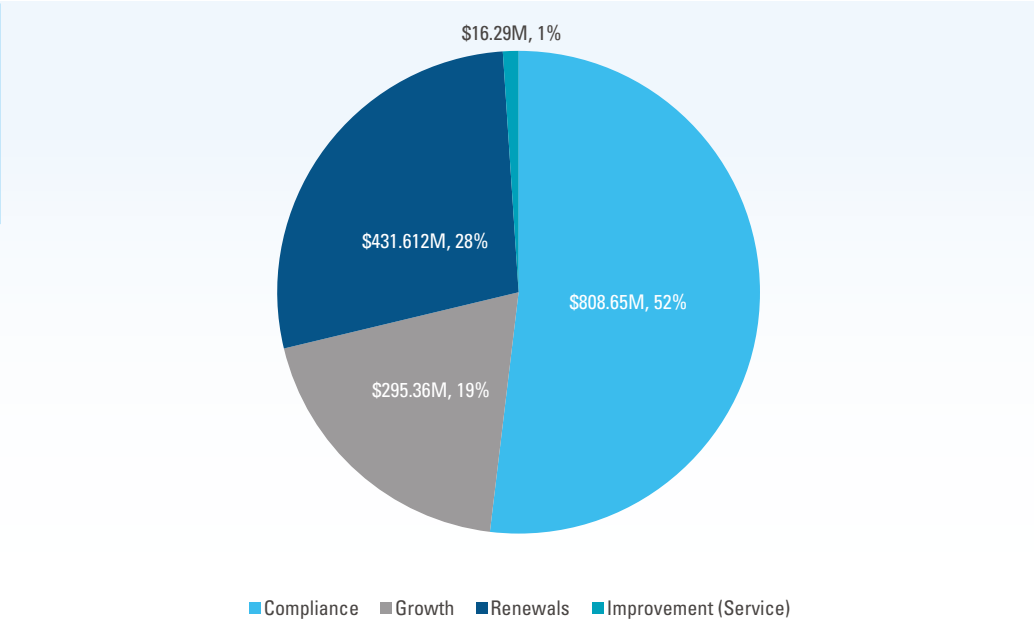
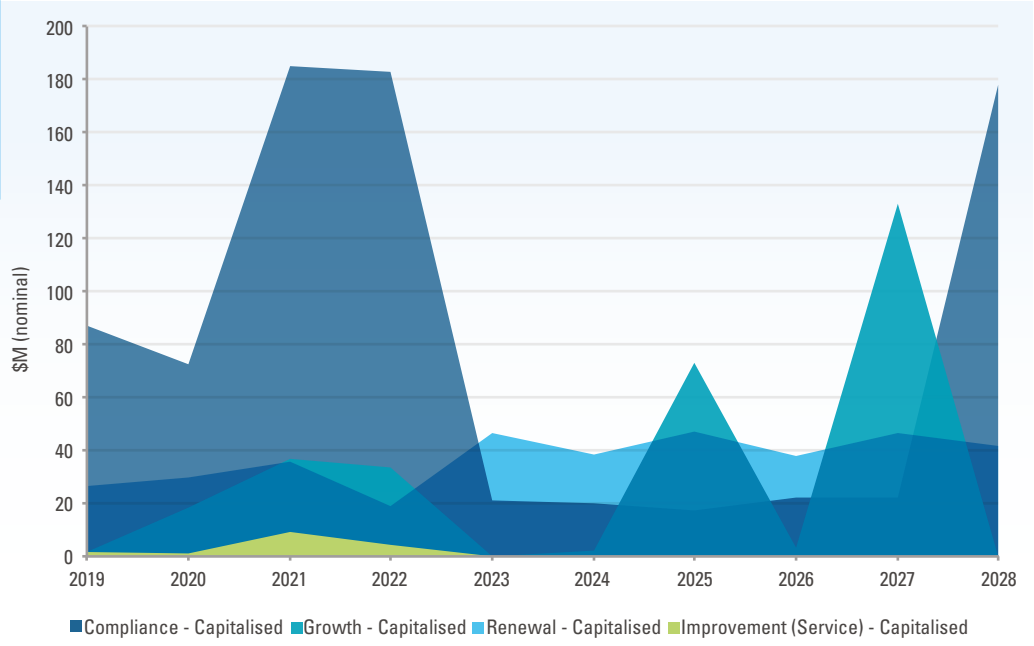



**Figure 21: Forecast Capital Expenditure Profile by Investment Driver**



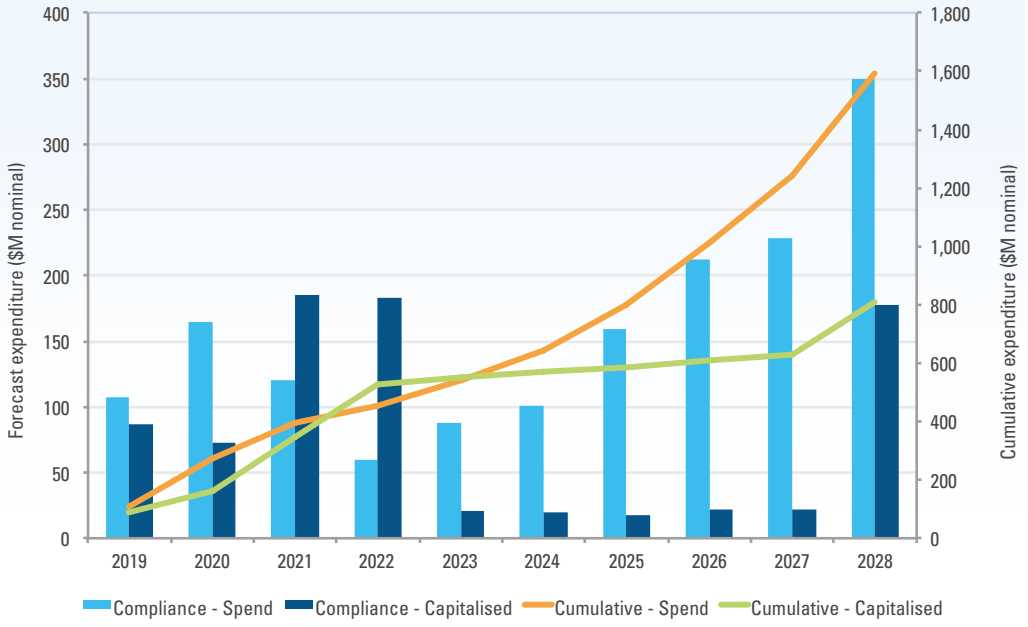

The following sections outline the details of our capital investment program for the remainder of the price path by each investment driver. Each section includes a table of the highest value projects under each investment driver and collectively these projects form almost 62% of the proposed expenditure for our capital program during the remainder of the price path.

#### Proposed investment driven by compliance requirements

Our proposed investment driven by compliance requirements relates to capital expenditure associated with the replacement and/or enhancement of an asset to prevent a non-compliance with our service or legislative requirements

The investment profile for compliance projects is shown in Figure 22.

**Figure 22: Forecast Capital Expenditure Profile driven by compliance requirements**




The key projects that we expect will be capitalised by 2027-28 are provided in Table 23.

**Table 23: Major projects during the remainder of the price path driven by compliance requirements**

| Facility | Project gateway | Project name | Year of commissioning | Capital delivery capex to 2028 ($M nominal) | Capitalised costs to 2028 ($M nominal) |
|---|---|---|---|---|---|
| Lowood WTP | 4 - Readiness for Service | PID01770 - TLO: Treated Water Chemical Dosing EIC Sludge Handling Upgrade | 2020 | $12.413 | $17.807 |
| Mt Crosby Weir | 1 - Preliminary Evaluation | WMC: Bridge Structure Upgrade | 2020 | $10.455 | $12.157 |
| Mt Crosby East Bank WTP | 3 - Investment Decision | PID01566 - TEB: Filtration Upgrade/ Improvement | 2021 | $30.380 | $35.646 |
| Mt Crosby East Bank WPS | 0 - Strategic Assessment | SEB: Flood Resilience Works | 2021 | $28.913 | $32.854 |
| Leslie Harrison Dam | 2 - Investment Justification | PID01430 - DLH: Leslie Harrison Dam Upgrade Stage 1 | 2021 | $23.906 | $29.557 |
| Sideling Creek Dam | 3 - Investment Decision | DLK: Safety Upgrade Stage 1 | 2021 | $13.864 | $19.681 |

| Facility | Project gateway | Project name | Year of commissioning | Capital delivery capex to 2028 ($M nominal) | Capitalised costs to 2028 ($M nominal) |
|---|---|---|---|---|---|
| Lake MacDonald Dam | 3 - Investment Decision | PID01688 - DLM: Lake McDonald Dam Upgrade Stage 2 | 2022 | $82.855 | $95.661 |
| PI NPI - Eudlo to Ferntree | 0 - Strategic Assessment | RAA: Eudlo Reservoir / NPI Storage & Landers Shute Storage | 2022 | $23.944 | $25.021 |
| Somerset Dam | 0 - Strategic Assessment | DSO: Dam safety upgrade | 2028 | $125.680 | $153.793 |

Overall, projects for compliance are our most significant investment driver across the remainder of the Price Path, representing almost 52% of our capital program over the ten year period.

Dam safety compliance represents a significant amount of capital expenditure, and is explained below in more detail. We are required to operate our dams safely under the *Water Supply (Safety and Reliability) Act 2008*, which is regulated by the Department of Energy and Water Supply (DEWS).

We understand our obligations to the community, government and the environment as the owner of a portfolio of large dams and we manage risks associated with these dams in a prudent and responsible manner in keeping with recognised industry standards. Fundamental to our approach is the prioritisation of public safety over all other matters.

We propose to deliver a logical, timely and cost effective program of dam safety upgrade works across the remainder of the price path period. This program will deliver against our regulatory obligations in a manner which is consistent with industry good practice and the regulatory guidelines as defined by DEWS and will be fully integrated with all our other ongoing dam safety management practices.

As the upgrades at Wivenhoe, Somerset and North Pine dams are currently at the first project gateway stage in our capital investment process, it is likely that the cost estimates for these projects will change as the projects progress, and indeed the costs could be found to be significantly higher as we gather more information and perform more detailed design work.

**Box 2. Our Dam Improvement Program**

In Queensland, dam owners are responsible for the safety of their dams under the *Water Supply (Safety and Reliability) Act 2008* (the Act) and all 26 of our referable dams are regulated under the Act. The Department of Energy and Water Supply (DEWS) requires Seqwater to comply with the Queensland Dam Safety Management Guidelines which have been established under the Act. As with all dam operators across the country, we also seek to meet the national guidelines set by the Australian National Committee on Large Dams (ANCOLD).

The Seqwater Dam Improvement Program has been developed to complete capital investment upgrades at our dams in order to meet the current Queensland dam safety guidelines and to also reflect the latest engineering standards. All of our dams continue to operate as they should and we are confident that none of our dams are in any immediate danger of failing. The Dam Safety Regulator concurs with this view.

In 2012 and 2013, we commissioned an independent review of our 26 referable dams, which found improvements are needed at a number of dams to meet Queensland dam safety guidelines into the future. As a result, we identified a number of operational measures, including lowering some dam storage levels, to reduce risk and defer the cost of upgrades.

After considering these operational options, we then prioritised the improvements to deliver a staged capital program. We have an extensive dam safety management program, which includes daily visual inspections, routine safety audits and comprehensive assessments. Through this work, dams may be identified for upgrades to meet the safety guidelines and inclusion in the Dam Improvement Program.

Once a dam has been identified for upgrade, investigations and planning are needed to determine the scope, estimated cost and timing of work. Every dam upgrade is different – some may take several months, while others take years to complete – and the timing of dam upgrades may change based on the outcome of ongoing investigations.

Somerset and Wivenhoe dams playing a vital role, supplying about 40% of our drinking water, and both have been identified for upgrade through our Dam Improvement Program and form two of the largest value projects we are proposing in the remainder of the price path. Our current cost estimates for the upgrade of these two dams is currently more than $340M, but could be higher. While both dams continue to operate safely, we are currently in the early stages of planning upgrades to ensure the dams serve us well into the future.

During 2017, we are undertaking further geotechnical investigations at Somerset and preliminary design work to identify the preferred upgrade option. Once the preferred option is determined, we will start preparing the detailed design.

Somerset Dam feeds into Wivenhoe Dam and the two dams are operated as one system. As such, the preferred Somerset Dam upgrade option will impact and influence the final decision on the Wivenhoe Dam upgrade.

Planning for the Wivenhoe Dam upgrade is in the early stages and it will be at least two years before a decision is made on the preferred upgrade option.

Our proposed compliance capital investment also includes key projects to improve reliability and resilience during flood and dirty water events. Under the *Water Supply (Safety and Reliability) Act 2008* and supporting regulations we are required to ensure that the water we supply meets minimum water quality standards and provide a reliable water supply.

Our preliminary planning work has identified that Mt Crosby East Bank WPS, one of our critical treated water supply assets, is at risk from flood events and that some short-term works are required to meet the known risks, in particular those related to electrical equipment at the facility.

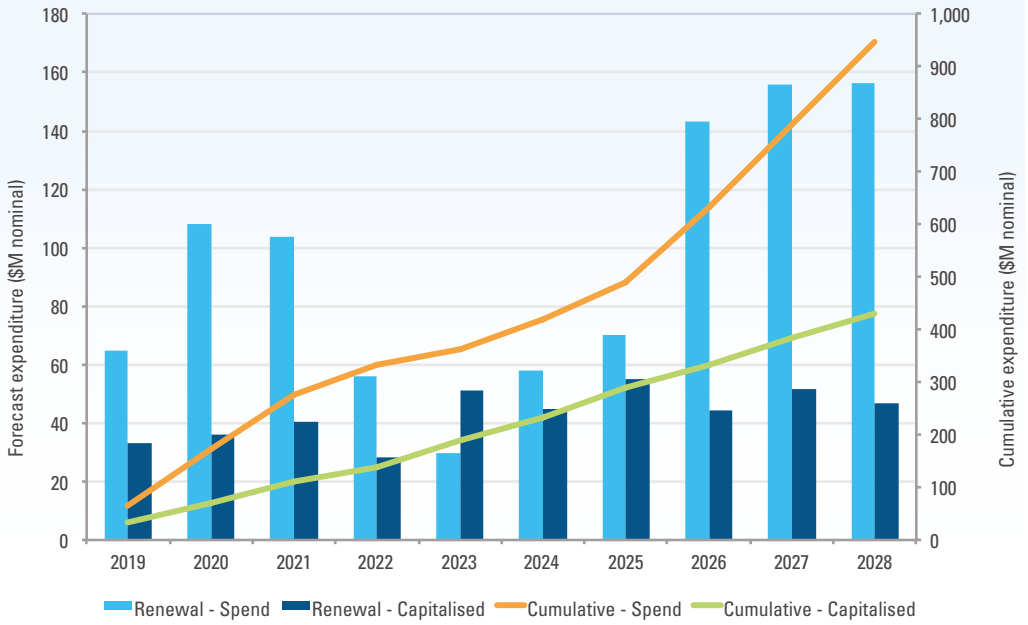
The largest two projects we are proposing during the remainder of the price path are the construction of a new water pump station at Mt Crosby East Bank and the Wivenhoe Dam Upgrade. However, although we are currently forecasting to spend in the around $320M and $299M respectively on these two assets, we are not expecting them to be capitalised until after the end of the price path. As such, this expenditure is not included in the capitalised costs total we have submitted to the QCA in this proposal.

### Proposed investment driven by asset renewals

Our forecast expenditure on capital renewals projects represents the second largest category of investment proposed over the ten year period out to 2027-28. The forecast investment represents over 28% of our total capital program over the period.

The investment profile that we are proposing for capital projects driven by asset renewals across the remainder of the price path period is shown in Figure 23.

**Figure 23: Forecast Capital Expenditure Profile driven by asset renewals**




The key projects driven by asset renewals that we are proposing during the price path period are provided in Table 24.

**Table 24: Major projects during the remainder of the price path driven by asset renewals**

| Facility | Project Gateway | Project Name | Year of commissioning | Capital delivery capex to 2028 ($M nominal) | Capitalised costs to 2028 ($M nominal) |
|---|---|---|---|---|---|
| Pump Station North Pine | 0 - Strategic Assessment | SNT: Pump Station North Pine Renewal | 2023 | $13.250 | $13.811 |
| Ipswich Office | 1 - Preliminary Evaluation | Enterprise Resource Planning Program CAPEX | Ongoing | $28.352 | $28.352 |
| Mt Crosby East Bank WPS | 0 - Strategic Assessment | SEB: Mt Crosby East Bank WPS Long Term Renewals | Ongoing | $24.756 | $24.756 |
| Mudgeeraba WTP | 0 - Strategic Assessment | TMU: Mudgeeraba WTP Long Term Renewals | Ongoing | $21.181 | $21.181 |
| Administration Indirect Costs | 4 - Readiness for Service | Mobile Plant and Fleet Renewals | Ongoing | $19.320 | $19.320 |
| Ipswich Office | 1 - Preliminary Evaluation | Enable Core Business - Capex | Ongoing | $15.844 | $15.844 |
| North Pine Dam | 0 - Strategic Assessment | DNP: North Pine Dam Long Term Renewals | Ongoing | $15.565 | $15.565 |
| North Pine WTP | 0 - Strategic Assessment | TNP: North Pine WTP Long Term Renewals | Ongoing | $13.788 | $13.788 |

| Facility | Project Gateway | Project Name | Year of commissioning | Capital delivery capex to 2028 ($M nominal) | Capitalised costs to 2028 ($M nominal) |
|---|---|---|---|---|---|
| Mt Crosby West Bank WTP | 0 - Strategic Assessment | TWB: Mt Crosby West Bank WTP Long Term Renewals | Ongoing | $13.673 | $13.673 |
| Mt Crosby East Bank WTP | 0 - Strategic Assessment | TEB: Mt Crosby East Bank WTP Long Term Renewals | Ongoing | $13.532 | $13.532 |

Since the 2015 Review, we have improved our asset renewals planning process, with a data-driven asset modelling approach developed to generate the project inputs into the APMP and, subsequently, into this submission.

We use our Asset Lifecycle Management Plan and associated Asset Class Plans to provide a key input to determine frequency, cycle time and trigger conditions for undertaking asset renewal interventions. Asset Class plan data is applied to asset register records to create a list of forecast interventions for each asset. We determine the unit rates for each intervention and apply them to the list to determine the forecast renewals investment for each asset. Our renewals forecasts are aligned with other projects to allow us to identify overlaps between different projects so that our investment in asset renewals can be rationalised.

Over the remainder of the price path, we are forecasting average renewals expenditure of around $43M per year. Our forecast expenditure over this period is reasonably stable, with the majority of our largest renewals projects being for long-term renewals at our treatment assets. Overall renewals planning to date shows that major pipeline renewals are not likely to be required during the remainder of the price path.

As a data-driven model, the accuracy of the cost estimates depends on the accuracy of the input data and assumptions. We have completed sensitivity analysis that has concluded that expenditure forecasts are likely to be conservative for all infrastructure, non-pipeline assets and the forecast costs at the early stages of our renewals projects may have been under-estimated by up to 30%.

We expect that improvements to input data will increase the forecast expenditure based on the current methodology, but this will be offset through improvements to the model and better optimisation through a thorough risk-based approach. In this context, being conservative with our current renewals forecasts does not mean we are creating risk through under-investment or will cause a tidal-wave of investment in the future because as the modelling improves, so will optimisation.

In addition to infrastructure assets, our renewals expenditure also includes forecast spend on non-infrastructure assets. Proposed expenditure on ICT and Mobile Plant and Fleet makes up three of our largest renewals projects over the remainder of the price path.

Whereas our previous ICT program focused on establishing a consistent ICT infrastructure environment, rationalising systems and implementing policies and procedures in the post-merger environment, our current ICT strategies will enhance our choices of infrastructure and technology for our ICT capabilities to be innovative, prudent and efficient. This will focus on Seqwater being services enabled rather than the traditional approach of infrastructure and application.

Although this change in focus is expected to result in a in a downward capital expenditure trend, the need for Seqwater to maintain operations during extreme weather events, including flood mitigation, remains. To this end, our capital investment in ICT infrastructure and service capabilities for this purpose will continue.

The focus of the 2018-21 period is to refine and implement changes in technology, ERP capability, ICT service delivery and ICT processes. The future transition to Cloud, managed services and digital business systems will allow Seqwater to be more 'technology driven, by 2020.

### Proposed capital investment for our manufactured water assets

Seqwater's manufactured water assets include the Gold Coast Desalination Plant (GCDP) and the Western Corridor Recycled Water Scheme (WCRWS). These manufactured water assets are critical in underpinning our ability to respond to drought and meet the regulated Level of Service obligations for providing a safe and secure water supply to SEQ.

The GCDP is currently operating in a 'Hot Standby' operating mode as set out in the Water Security Program. Under this mode, the GCDP must be able to respond as a contingent supply and provide 33% capacity within 24 hours of being requested to do so and 100% capacity within 72 hours. To maintain this state of readiness, the plant must be operated and maintenance appropriately.

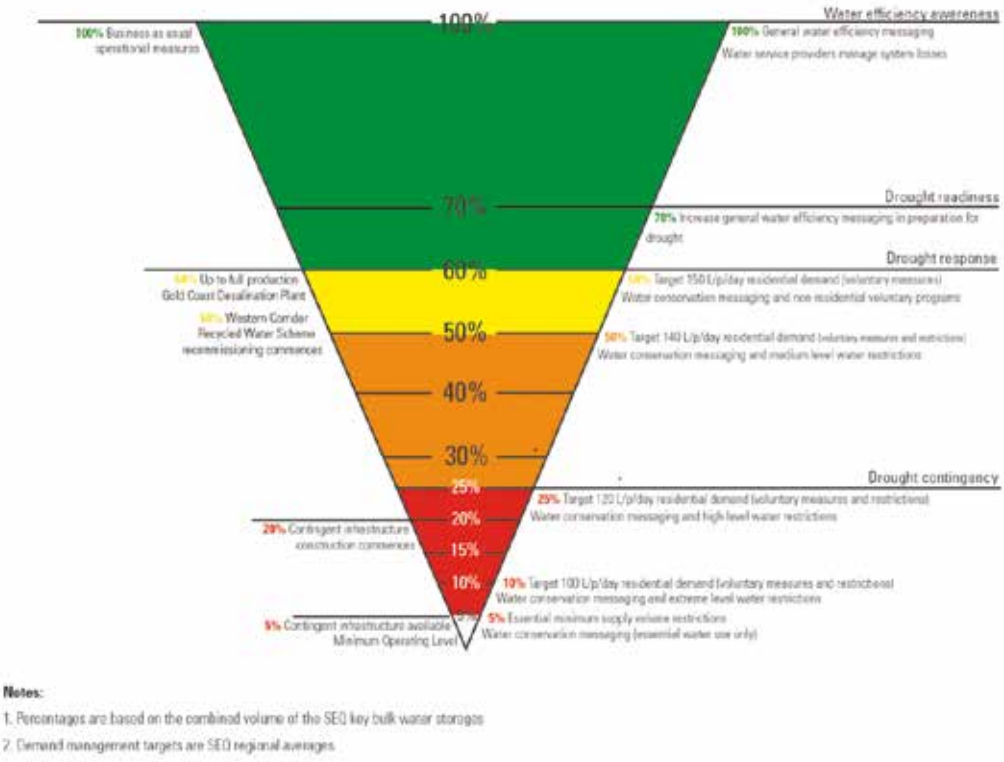
The WCRWS is required to operate in a 'Care and Maintenance' or cold standby mode under the Water Security Program. The Program requires that the WCRWS can be made operational and ready to deliver recycled water in a 24-month notice period. Appropriate care and maintenance is essential to ensure this outcome can be achieved, when required.

Our proposed expenditure on renewals for our manufactured water assets has been forecast as $55M over the remainder of the price path. Of this total investment, $43M has been forecast for capital expenditure at the GCDP and $12.3M on the WCWRS. The total represents 3.54% of our overall capital expenditure proposal over this time.

We periodically obtain external, independent reviews of the expenditure and maintenance plans at these plants. The most recent review was earlier in 2017, by Jacobs, who found the proposals to be prudent and efficient.

Our forecast expenditure for the manufactured water assets does not include any allowances for recommissioning either the GCDP or the WCRWS to be run at a greater capacity than has been outlined above. Our planning is based on the assumption that both of the manufactured water assets will remain in their standby modes while more cost effective water sources are available for us to use. In order to conserve our surface water storages during a drought event, the facilities would be returned to full operational mode when the storage volumes fall to their predetermined trigger levels. Figure 24 outlines our drought response, based on declining levels in the key bulk water storages.

**Figure 24: Drought response triggers for South East Queensland's adaptive drought response approach**




**Notes:**

1. Percentages are based on the combined volume of the SEQ key bulk water storages
2. Demand management targets are SEQ regional averages

We are also considering potential supplies to local industrial users, in partnership with our customer Queensland Urban Utilities. Our capital forecasts may need to be updated for the QCA's review once we have completed a business case assessing the merits of such a proposal. If this occurs, we will advise the QCA accordingly.

### Proposed investment driven by growth forecasts

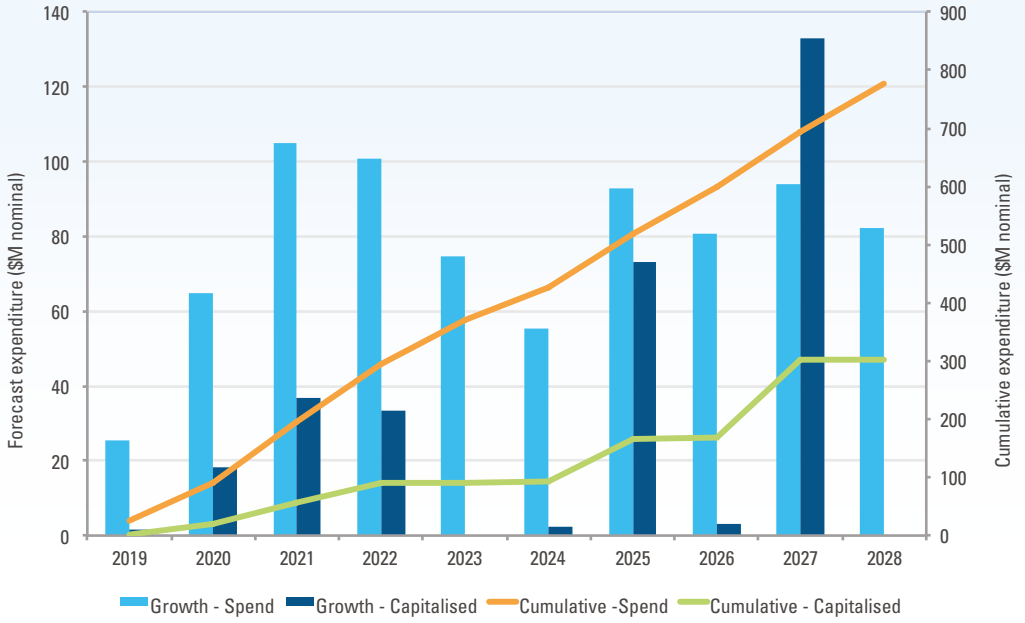
Our proposed investment driven by growth forecasts relates to capital expenditure designed to provide an increase in the capacity or capability of an asset or construction of new assets in response to increased demand, growth or variations required by a customer. This includes capital expenditure to provide an increased security of supply.

There are a limited number of projects being driven by growth requirements, with only 18 projects proposed for the remainder of the price path period. These are predominantly in towns not currently connected to the Water Grid, including Lowood and Beaudesert.

Our growth projects are developed in conjunction with our customers and are aligned with our demand forecasts to ensure that there is consistency between the predicted water consumption and areas of growth that form the basis of these projects. As a result of slightly lower demand forecast used for bulk water prices, we have deferred some growth projects from the dates anticipated in our APMP.

Following these adjustments, our proposed capex for growth across the remainder of the price path period is shown in Figure 25.

**Figure 25: Forecast Capital Expenditure Profile driven by growth forecasts**




The key projects driven by growth forecasts that we are proposing during the price path period are provided in Table 25.

**Table 25: Major projects during the remainder of the price path driven by growth forecasts**

| Facility | Project Gateway | Project Name | Year of commissioning | Capital delivery capex to 2028 ($M nominal) | Capitalised costs to 2028 ($M nominal) |
|---|---|---|---|---|---|
| Pump Station Lloyd Street | 1 - Preliminary Evaluation | SLL: Sparkes Hill to Aspley Pipeline Capacity Upgrade | 2020 | $7.512 | $8.288 |
| Pump Station Byrnes Road | 0 - Strategic Assessment | SBY: Byrnes Road Pump Station Upgrade | 2020 | $6.285 | $6.371 |
| Mt Crosby East Bank WTP | 1 - Preliminary Evaluation | TEB: Eastbank WTP Sedimentation Upgrade (Resilience) | 2021 | $32.664 | $33.726 |
| Lowood WTP | 1 - Preliminary Evaluation | TLO: Capacity Upgrade Stg 2 | 2022 | $19.384 | $20.143 |
| North Pine WTP | 1 - Preliminary Evaluation | TNP: Sedimentation Capacity Upgrade | 2022 | $12.971 | $13.366 |
| North Pine WTP | 1 - Preliminary Evaluation | TNP: Filtration Capacity Upgrade (250 ML/day) | 2023 (Hybrid 2025) | $40.580 | $42.012 |
| Mt Crosby West Bank WTP | 1 - Preliminary Evaluation | TWB: Sedimentation Resilience Upgrade | 2023 (Hybrid 2025) | $13.058 | $13.518 |
| All Pipes | 1 - Preliminary Evaluation | PAA: Beaudesert WSZ Upgrade | 2027 | $81.413 | $109.249 |
| PI NPI - Narangba to Nth Pine WTP | 0 - Strategic Assessment | PNN: NPI Southern Leg Augmentation | 2027 | $23.073 | $23.696 |

The largest project is the Beaudesert Water Supply Zone Upgrade. We have identified that the standalone water supply scheme that currently supplies Beaudesert will not be able to comply with the water security objectives in the long-term and have commenced planning to connect Beaudesert to the Water Grid in order to provide the town with a secure drinking water supply.

Our planning has also identified shortfalls in meeting the mean day maximum demands (MDMM) from our main North Pine and Mt Crosby treatment plants.

Our demand forecasting does not account for any adverse operating conditions or unplanned production failures at our treatment facilities and as demand increases, our plants will increasingly produce treated water closer to their maximum capacity. Our proposed expenditure forecast, including the aforementioned projects at North Pine and the two Mt Crosby treatment plants, will ensure that we are able to meet the forecast growth in the MDMM volumes and provide a reliable and safe supply under adverse operating conditions from these key water treatment facilities.

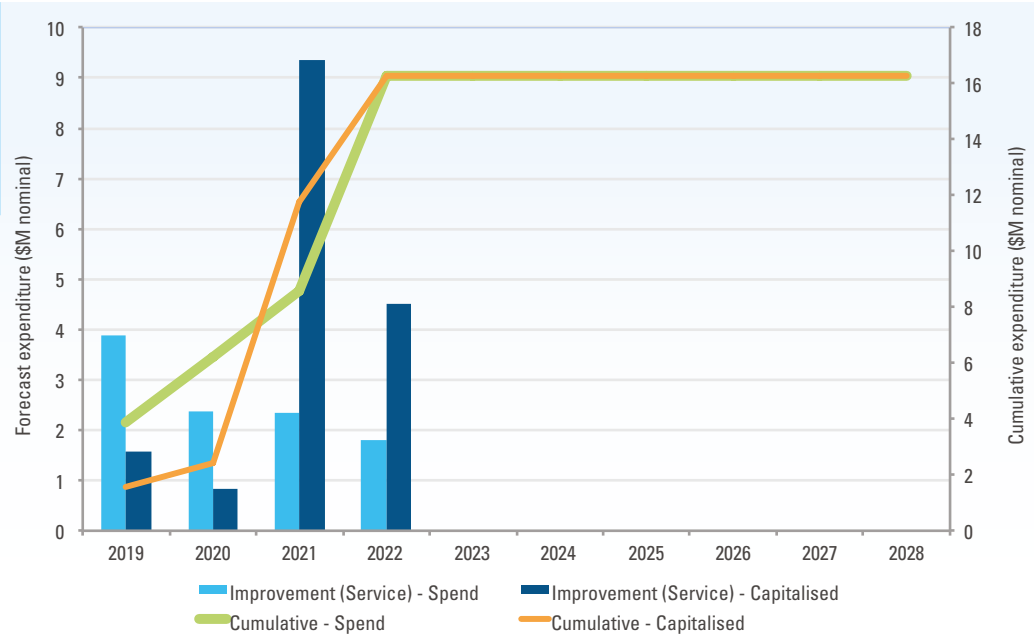
Our transport assets deliver drinking water from our treatment facilities to our customers. They allow us to deliver an efficient and effective bulk water supply system by being able to be used to manage variations in production capacity against water demand, thereby reducing peak capacity required from our treatment facilities, and also to maintain safe and complaint water quality in the system.

The current available capacity and interconnectivity in the bulk water supply system provides us with some operational flexibility to allow for the reconfiguration of the water supply network and treatment operations to respond to drought and other events, providing continuity of supply. However, this flexibility has constraints and as demand increases, the available capacity will be progressively utilised. The majority of water transport projects driven by growth forecasts identified are related to issues in the northern area, including the need for additional network storage to allow us to better manage operational and reliability risks.

### Proposed investment driven by service improvements

The investment profile for capital projects driven by service improvements is shown in Figure 26. The improvement projects we have identified are forecast to be completed during the first four years of the balance of the price path, with no further projects on our planning horizon.

**Figure 26: Forecast Capital Expenditure Profile driven by service improvements**



The key projects are provided in Table 26.

**Table 26: Major projects during the remainder of the price path driven by service improvements**

| Facility | Project Gateway | Project Name | Year of commissioning | Capital delivery capex to 2028 ($M nominal) | Capitalised costs to 2028 ($M nominal) |
|---|---|---|---|---|---|
| PI Sunnybank Hills Main | 0 - Strategic Assessment | PSU: decommissioning of the Boundary Road main | 2019 | $0.81 | $0.81 |
| North Pine Dam | 1 - Preliminary Evaluation | DNP: additional boating access | 2019 | $0.57 | $0.57 |
| Wyaralong Dam | 0 - Strategic Assessment | DWY: Lilybrook (Western trailhead) Camping | 2019 | $0.19 | $0.19 |
| Moogerah Dam | 1 - Preliminary Evaluation | DMO: additional boating access | 2020 | $0.78 | $0.69 |
| Borumba Dam | 0 - Strategic Assessment | DBR: multi-use trails and carpark | 2020 | $0.19 | $0.14 |
| PI Heinemann Rd to Alex Hills | 0 - Strategic Assessment | NSI WTP to Heinemann Road Res Lamb maintenance pipeline (EN1.09) | 2020 | $0.01 | $0.01 |
| Holts Hill Reservoir | 2 - Investment Justification | RHH: pH Correction Upgrade | 2021 | $8.94 | $9.33 |
| Reservoir Alexander Hills 1 | 0 - Strategic Assessment | Alexandra Hill reservoir capacity reconfiguration (EN3.08) | 2021 | $0.04 | $0.04 |
| Reservoir Mt Cotton | 0 - Strategic Assessment | Mt Cotton to Alexandra Hill customer supply reliability (EN3.04) | 2022 | $4.02 | $4.05 |
| Reservoir Heinemann Rd 1 | 0 - Strategic Assessment | Heinemann Road Reservoir Valve actuation (EN1.16) | 2022 | $0.46 | $0.46 |

These projects are for a variety of strategic outcomes, including water quality and water reliability purposes, as well as for public safety.

The two highest value projects are for installing lime saturators at the Holts Hill Reservoir for primary disinfection and final pH correction and the duplication of the existing main between Mount Cotton and Alexandra Hill in order to improve customer supply reliability.

We provide recreation opportunities at our water supply lakes and four of the highest value projects are to enhance public access and safety at our dams through upgrades to boat ramps and improved facilities.

These obligations means that we have to balance the ongoing health of the catchments, protect the source water quality and safety of the region's drinking water supply while providing a range of water-based and on-shore activities and considering the views and recreational needs to local communities and special interest groups.

### Delivery of our capital investment program

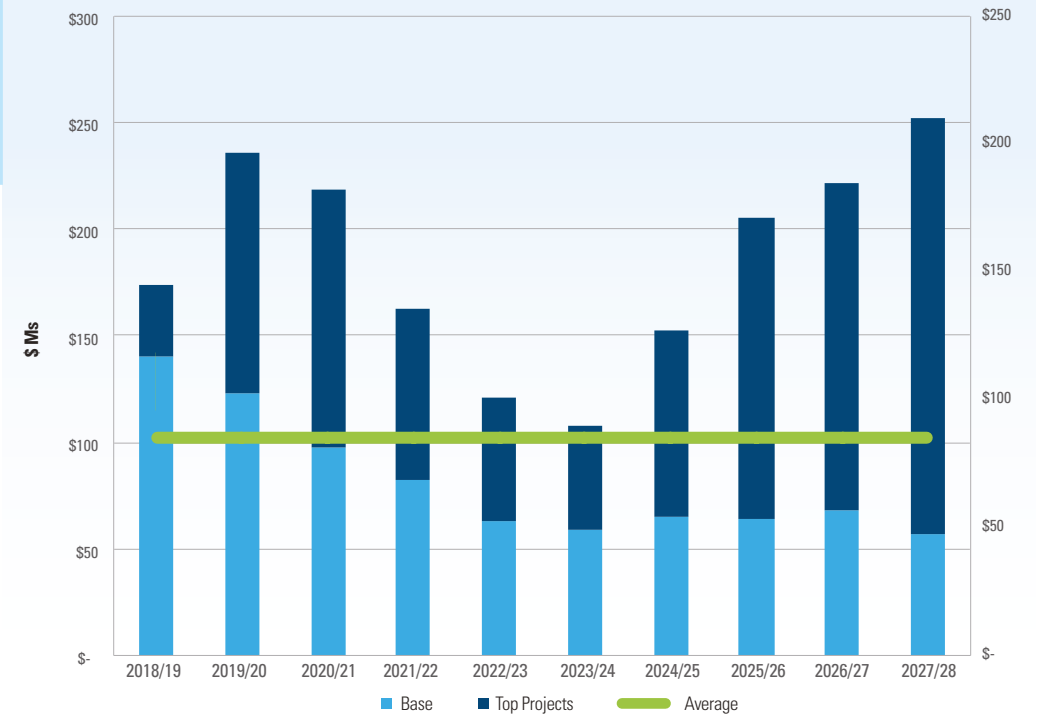
Our proposed 'base' program of spend (rather than capitalisation) averages $85M over the ten year period for the remainder of the price path. The base program refers to the normal process of renewals, minor upgrades, compliance and natural asset projects, and other year-on-year programs of work, such as fleet, facilities and ICT.

There are also a number of major projects that we are planning to deliver over and above the base program. Typically these are the projects that we need to complete for important risk reduction, growth or resilience purposes. The 'Top Projects' refers to specific projects that are not programs of work and which have an estimated cost in excess of $20M.

While the capital program increases in a number of years across the remainder of the price path from the program we have been delivering across the 2015 Regulatory Period, the expected overall number of projects and value of the base load program is relatively consistent.

Our proposed capital program for the remainder of the price path split by the 'base' and 'top' projects we are looking to deliver is shown in Figure 27. These amounts are project spend rather than capitalised.

**Figure 27: Our proposed capital investment program split by 'base' projects and 'top' projects**




With the exception of the first year of the 2018 Regulatory Period, these 'top' projects either form a significant part of the total proposed capital investment in the year or they dominate our expected expenditure across the ten years of the balance of the price path.

Due to their scale and complexity, these projects will usually require specific governance processes and project specific resources. Some of the major projects are already committed and procurement underway, while others, such as the Mt Crosby Raw Water Pump Station flood resilience works (which won't be capitalised until after the price path period) and the Beaudesert Water Supply Zone upgrade, are at preliminary stages of approvals.

Although our forecast total capital expenditure is higher into the future than we are currently delivering, the average annual base program is less than we are forecasting to achieve in the current period.

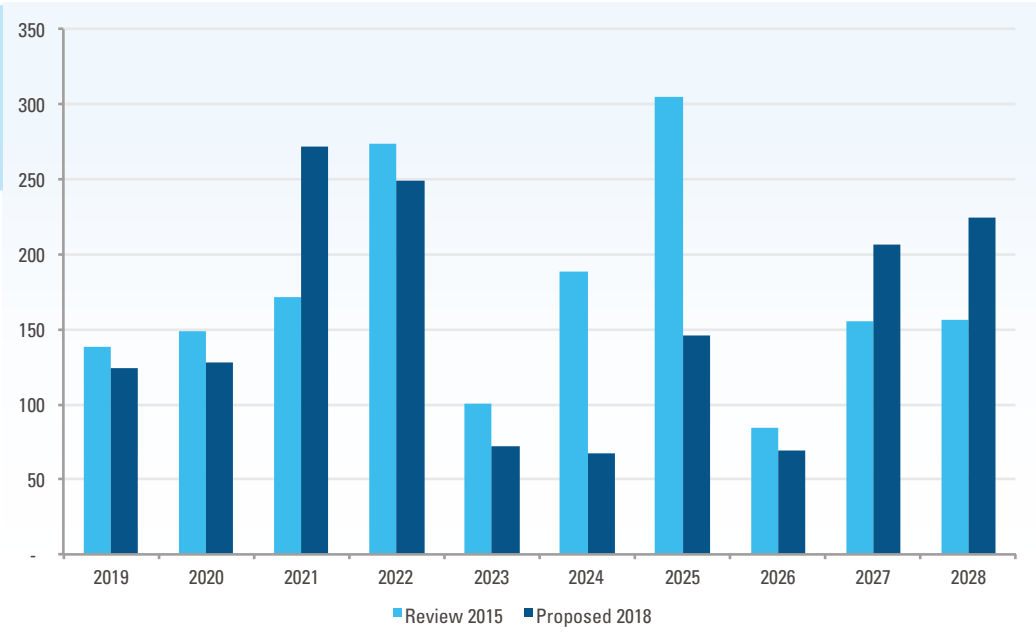
Delivery of the large projects, which are multi-year projects, will need to be carefully planned and may require the establishment of a dedicated team or resources. The resourcing requirements are being determined and accounted for at the Business Case stage. Project teams could be developed for the three main areas of large projects:

- Dams (Wivenhoe Dam, Somerset Dam, Lake MacDonald Dam, North Pine Dam, Leslie Harrison Dam and Sideling Creek Dam)
- Transport (Beaudesert, Eudlo Reservoir)
- Treatment (Mt Crosby and North Pine)

While we expect our forecast capital expenditure program to be challenging, we are confident that by using specialist project delivery approaches small number of large major projects that require significant investment, we will be able to achieve our proposed program.

In closing, our proposed capital expenditure has been developed using contemporary methods, and we are one of the few utilities who prepare comprehensive long-term forecasts. Our APMP, which drives our forecast, has been recognised by industry peers as leading practice. The capital investment program that results is set out below, and shows capitalised expenditure over the 10 years. This program is, in aggregate, 10% lower than the program set in the 2015 Review over the same period.

**Figure 28: Proposed capital expenditure (capitalised), ($M, nominal)**



# 4. Weighted Average Cost of Capital

## Key Points

- The Referral Notice provides for a return on assets based on a benchmark Weighted Average Cost of Capital (WACC), which comprises the cost of debt and cost of equity, weighted according to a benchmark efficient capital structure.
- We have proposed a benchmark capital structure of 60% debt, consistent with Australian regulatory practice for water businesses, and with the QCA's previous decisions for Seqwater.
- The QCA is to adopt a cost of debt component as per the estimated debt costs provided by QTC, which is 5.50% in 2018-19 reducing to 4.55% by the end of the 10 year price path period.
- Seqwater proposes a benchmark cost of equity of 6.82% for the 2018 Review. This figure has been computed using the QCA's current approach for estimating the required return on equity across the industries it regulates and the QCA's current market-wide and firm specific parameter estimates. Specifically we have adopted:
    - A risk-free rate based on the prevailing yield on 3-year Commonwealth Government Securities, consistent with the QCA's current approach of aligning the estimate of the risk-free rate to the length of the regulatory period.
    - A market risk premium of 6.5%, consistent with the estimate set out in the QCA's 2014 Market Parameters Decision, and adopted by the QCA in all subsequent decisions.
    - An asset beta of 0.4, consistent with the QCA's most recent estimate of the asset beta of a generic water business set out in its decision for the Gladstone Area Water Board (GAWB). This results in an equity beta of 0.77 using the QCA's approach to re-levering.
    - A gamma of 0.47, consistent with the estimate set out in the QCA's 2014 Market Parameters Decision, and adopted by the QCA in all subsequent decisions.
- Seqwater considers that the QCA's approach to estimating a number of parameters could be improved and proposes to actively contribute to the ongoing development of the QCA's approach over the coming years. These issues include how the QCA estimates the risk-free rate, market risk premium and gamma. We will reconsider our position in relation to these issues at the next bulk water price path review in 2021.

Our proposed WACC across the 10-year price path period, which incorporates QTC's estimated debt costs, is set out in Table 27 below.

**Table 27: Proposed WACC (% Vanilla)**

| | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | 2026-27, 2027-28 |
|---|---|---|---|---|---|---|---|---|---|
| Cost of debt (QTC) | 5.50% | 5.25% | 5.10% | 4.95% | 4.80% | 4.70% | 4.65% | 4.6% | 4.55% |
| Cost of equity | 6.82% | 6.82% | 6.82% | 6.82% | 6.82% | 6.82% | 6.82% | 6.82% | 6.82% |
| Gearing | 60% | 60% | 60% | 60% | 60% | 60% | 60% | 60% | 60% |
| WACC | 6.03% | 5.88% | 5.79% | 5.70% | 5.61% | 5.55% | 5.52% | 5.49% | 5.46% |

This section draws from advice from QTC, for cost of debt, and our consultants Frontier Economics, for the cost of equity and gearing aspects of the WACC.

## Gearing

We propose a gearing assumption of 60% debt finance, which we consider to be appropriate for a benchmark efficient business providing the services performed by Seqwater.

We note that a 60% gearing estimate has almost uniform support from Australian regulators of water businesses, and that the QCA has adopted 60% gearing for Seqwater in past decisions. Table 28 below sets out the gearing levels recently adopted by Australian regulators of water businesses.

**Table 28: Regulatory precedent for gearing**

| Regulator | Business | Year of decision | Gearing |
|---|---|---|---|
| IPART | Sydney Desalination Plant | 2017 | 60% |
| ESC | Melbourne Water | 2016 | 60% |
| IPART | Sydney Water | 2016 | 60% |
| ESCOSA | SA Water | 2016 | 60% |
| OTTER | TasWater | 2015 | 60% |
| QCA | GAWB | 2015 | 50% |
| QCA | Seqwater | 2013 | 60% |

We note that the QCA departed from the regulatory standard of 60% gearing for the Gladstone Area Water Board ("GAWB") in 2010 due to special circumstances[11]. The QCA accepted its consultant's advice that GAWB, compared to most other water businesses, had particularly concentrated demand and weather risks which meant that it should not be geared more than 50%. This assumption was maintained for the most recent GAWB review in 2015.

We submit that Seqwater does not carry such risks and consider that gearing of 60% is an appropriate capital structure for a benchmark firm in the circumstances of Seqwater. We note that the QCA reached the same conclusion in its 2013 decision for Seqwater – that the special circumstances for GAWB that were identified in the 2010 decision do not apply to Seqwater.

11 QCA, 2010, *Draft Report, Gladstone Area Water Board: Investigation of Pricing Practices, March, p.96*

## Cost of Debt

The rates advised by QTC are set out in Table 29 below.

**Table 29: QTC estimates of cost of debt for the WACC**

| Year | Rate (% p.a.) |
|---|---|
| 2018-19 | 5.50 |
| 2019-20 | 5.25 |
| 2020-21 | 5.10 |
| 2021-22 | 4.95 |
| 2022-23 | 4.80 |
| 2023-24 | 4.70 |
| 2024-25 | 4.65 |
| 2025-26 | 4.60 |
| 2026-27 | 4.55 |
| 2027-28 | 4.55 |

Note: Rates include the QTC administration fee and are expressed on an annual effective basis.

QTC's advice is set out in Appendix 3.

The reduction in rates that occurs over time reflects the change in the composition of the debt portfolio managed by QTC. In broad terms, rates fall as the more expensive debt (which entered the portfolio in the aftermath of the Global Financial Crisis) exits the portfolio and is replaced by new debt issued at the current lower rates.

We note that this is similar to the 'trailing average' approach adopted by many Australian regulators for determining a firm's efficient cost of debt.

Changes in QTC market rates between the making of this submission and the date of the QCA's report in March 2018 will affect QTC's cost of debt estimates. However, the effect of any changes is likely to be relatively small for our next regulatory period given the trailing average nature of the calculation.

If a substantial change in market rates occurs, QTC has recommended updated estimates be provided to the QCA closer to the date of its Final Report. We will inform the QCA of changes in rates during the course of its review, and pass on any updates we receive from QTC for incorporation into recommended prices.

## Cost of Equity

We propose a cost of equity at 6.82%.

This figure has been computed using the QCA's current approach for estimating the required return on equity across the industries it regulates and the QCA's current market-wide and firm specific parameter estimates.

We consider that the QCA's approach to estimating a number of parameters could be improved and proposes to actively contribute to the ongoing development of the QCA's approach over the coming years. These issues include how the QCA estimates the risk-free rate, market risk premium and gamma. We will reconsider our position in relation to these issues at the next bulk water price path review in 2021.

Table 30 below sets out each parameter estimate and the rationale for its adoption. We note that some of the parameters change with the prevailing market conditions and should be revised an updated at the time of the QCA's Final Report.

**Table 30: Summary of cost of equity and parameter values**

| Parameter | Proposed estimate | Rationale and Seqwater's position |
|---|---|---|
| Risk-free rate | 1.84% | Aligns with QCA 2014 Market Parameters Decision with term to maturity set to the length of the regulatory period (3 years in this case).<br>This estimate is based on the yield on 3-year Commonwealth Government Securities using a 20-day averaging period ending on 21 April 2017. This estimate should be updated just prior to the QCA's Final Report.<br>We have adopted, but do not agree with, the QCA's approach of aligning the term to maturity to the length of the regulatory period.<br>For future reviews we will consider submitting that a more conventional term, such as 10 years, should be used. We note that such an approach is more consistent with regulatory and commercial practice |
| Market Risk Premium (MRP) | 6.5% | Aligns with the QCA's 2014 Market Parameters Decision and all subsequent QCA decisions.<br>We have adopted, but do not agree with, the QCA's approach to estimating the MRP. For future reviews we will consider submitting an estimate based on what we consider are superior and more robust methodologies. In doing so, we will seek to obtain an estimate that is properly commensurate with the prevailing market conditions, and which is more consistent with the observed commercial practice. |
| Asset beta | 0.4 | Consistent with the QCA's most recent estimate of the asset beta of a generic water business set out in its decision for the Gladstone Area Water Board. |
| Equity beta | 0.766 | Calculated value from asset beta and 60% gearing using the re-levering approach adopted the QCA in all of its decisions to date. |
| Gamma | 0.47 | Aligns with the QCA's 2014 Market Parameters Decision and all subsequent QCA decisions.<br>We have adopted, but do not agree with, the QCA's estimate of Gamma. For future reviews we will consider submitting an estimate based on other analysis which interprets gamma in a way that is more consistent with its role within the regulatory framework. |

The following sections discuss the key parameters, our approach to selecting estimates for this Review, and our concerns that we may seek to raise in subsequent reviews.

### The QCA's approach to estimating the cost of equity

For this Review, we have adopted the QCA's current approach of setting the allowed return on equity based exclusively on the Sharpe-Lintner Capital Asset Pricing Model (SL-CAPM).

However, we have concerns about the exclusive use of this single model, and especially about the fact that the QCA does not apply any of the corrections or adjustments to parameter estimates that other regulators apply to mitigate the effects of known biases in that model. In particular, there is systematic evidence of a "low-beta bias" in the SL-CAPM – the model systematically understates the returns of low-beta assets (that is, those with a beta estimate of less than 1). This has the effect of systematically undercompensating businesses such as Seqwater.

This concern is set out in more detail in Appendix 2, as articulated by Frontier Economics.

### Estimation of the risk-free rate

The QCA's current approach is to estimate the risk-free rate as the prevailing yield on Commonwealth Government Securities (CGS) with a term equal to the length of the particular regulated entity's regulatory period. The Referral Notice provides that our next regulatory period will be three years from 1 July 2018 to 30 June 2021. We therefore expect that the QCA will set our risk-free rate to the yield of three years CGS and we have adopted that approach in our submission above.

However, we have concerns about the fact that the QCA's approach is based on a theoretical derivation that rests on unrealistic assumptions. The QCA's approach is also out of step with regulatory and commercial practice.

Our concerns are set out in more detail in Appendix 2, as articulated by Frontier Economics.

### Market risk premium

We have adopted the QCA's most recent MRP estimate of 6.5%, consistent with the QCA's 2014 Market Parameters Decision, and with all subsequent decisions.

However, we are concerned that the QCA's approach produces an effectively constant MRP estimate in all market conditions. In our view, the MRP is a parameter that varies over different market conditions – it is unlikely that investors would require the same premium for risk during a prolonged economic expansion as they would during a financial crisis – yet that is what the QCA's approach suggests. The result of the QCA's approach is higher volatility in allowed returns (as they vary one-for-one with changes in government bond yields) and consequently higher volatility in customer prices.

Our concerns are set out in more detail in Appendix 2, as articulated by Frontier Economics.

### Equity beta

The QCA's long-standing approach has been to convert between equity betas (which reflect the extent to which prior-ranking debt increases the risk of equity) and asset betas (which exclude the effect of debt financing) using the so-called Conine formula.

In its 2015 final report on pricing by the Gladstone Area Water Board, the QCA concluded that an asset beta of 0.4 for a generic water business was not controversial. This was the same figure that had been adopted for the previous regulatory period, it was submitted by GAWB itself, and it was consistent with expert advice on water businesses generally that was commissioned by the QCA.[12] Indeed, the QCA's advisor, Incenta, also recommend an asset beta of 0.40 based on the most recently available evidence.[13]

We consider that an asset beta of 0.4 and gearing of 60% are both uncontroversial.[14] The QCA's approach for converting these estimates into an equity beta is then formulaic, and produces an equity beta of 0.77.

Seqwater submits that an equity beta of 0.77 be adopted.

### Gamma

Gamma is the value of dividend imputation tax credits. This value is not required to estimate our WACC, however it is related closely to the return on equity.

Two conceptual interpretations of gamma have been advanced in recent years:

- Regulated businesses and some regulators interpret gamma as the market value, or worth to investors, of imputation credits. They consider that gamma should be estimated with reference to the prices of traded securities, which is the way all other WACC parameters are estimated. The rationale is that the allowed return is reduced according to the estimate of gamma. The deduction must be based on the worth of credits to investors to ensure that their total compensation is equal to the regulator's estimate of the total required return on equity.
- Some regulators interpret gamma in terms of the proportion of credits that are available for investors to redeem, without regard to the value or worth that investors receive from the credits that they redeem. To reiterate, unlike other WACC parameters this interpretation of gamma is estimated without regard to any market prices.

We consider that gamma must be interpreted in terms of the market value of imputation credits as this is the only interpretation consistent with the way gamma is used in the regulatory process. The allowed return on equity must be reduced by the value or worth that investors receive from the credits, not according to the number of them that might be available for redemption.

However, we recognise that the QCA has adopted the alternative interpretation of gamma as the basis for its unique gamma estimate of 0.47. We have adopted the QCA's estimate for this Review.

We have some concerns with the QCA's approach to estimating gamma and we may seek to raise this issue in subsequent reviews. These concerns are set out in Appendix 2, as articulated by Frontier Economics.

12 QCA 2015, *Final Report, Gladstone Area Water Board Price Monitoring 2015-20, May, p. 50.*

13 Incenta, 2015, *WACC parameters for GAWB price monitoring investigation 2015-20, p. 19.*

14 The QCA's 2013 review of Seqwater's irrigation prices set an asset beta of 0.3 for the *irrigation activities.* On this basis it is not a relevant precedent.