



# Seawater expenditure review

**PRUDENCY AND EFFICIENCY ASSESSMENT**

**Updated Report for the  
Queensland Competition Authority**

March 2018

## **Important Notice**

If you are a party other than the Queensland Competition Authority, KPMG:

- owes you no duty (whether in contract or in tort or under statute or otherwise) with respect to or in connection with the attached report or any part thereof; and
- will have no liability to you for any loss or damage suffered or costs incurred by you or any other person arising out of or in connection with the provision to you of the attached report or any part thereof, however the loss or damage is caused, including, but not limited to, as a result of negligence.

If you are a party other than the Queensland Competition Authority and you choose to rely upon the attached report or any part thereof, you do so entirely at your own risk.

## **Limitations**

The responsibility for determining the adequacy or otherwise of our terms of reference is that of the Queensland Competition Authority.

The services provided under our engagement ('Services') have not been undertaken in accordance with any auditing, review or assurance standards. Any reference to 'audit' and 'review', throughout this report, is not intended to convey that the Services have been conducted in accordance with any auditing, review or assurance standards. Further, as our scope of work does not constitute an audit or review in accordance with any auditing, review or assurance standards, our work will not necessarily disclose all matters that may be of interest to the Queensland Competition Authority or reveal errors and irregularities, if any, in the underlying information.

In preparing this report, we have had access to information provided by Seqwater, as well as publicly available information. We have relied upon the truth, accuracy and completeness of any information provided or made available to us in connection with the Services without independently verifying it. The publicly available information used in this report is current as of March 2018. We do not take any responsibility for updating this information if it becomes out of date.

This report provides a summary of KPMG's findings during the course of the work undertaken for the Queensland Competition Authority under the terms of the engagement contract. The findings in this report are subject to change as our analysis progresses during the course of this engagement

Any findings or recommendations contained within this report are based upon our assessment and our reasonable professional judgement based on the information that is available from the sources indicated. Should the project elements, external factors and assumptions change then the findings and recommendations contained in this report may no longer be appropriate. Accordingly, we do not confirm, underwrite or guarantee that the outcomes referred to in this report will be achieved.

We do not make any statement as to whether any forecasts or projections will be achieved, or whether the assumptions and data underlying any such prospective financial information are accurate, complete or reasonable. We will not warrant or guarantee the achievement of any such forecasts or projections. There will usually be differences between forecast or projected and actual results, because events and circumstances frequently do not occur as expected or predicted, and those differences may be material.

# Executive summary

Seqwater as it is known today was officially formed on 1 January 2013, in accordance with the *South East Queensland Water (Restructuring) Act 2007* as amended by the *South East Queensland Water (Restructuring) and Other Legislation Amendment Regulation (No.1) 2012*. This resulted in the merger of Seqwater and Linkwater, as well as transfer of responsibility for certain functions of the then Water Grid Manager to Seqwater. This followed the earlier merger of Seqwater and Watersecure in July 2011.

As a result, Seqwater now owns and operates 26 dams, 37 water treatment plants (WTPs), 51 weirs and two bores and aquifers that supply up to 90 per cent of Southeast Queensland's (SEQ) drinking water. It also owns and operates a 600-kilometre network of pipelines, as well as the Western Corridor Recycled Water Scheme (WCRWS) and Gold Coast Desalination Plant (GCDP).

Seqwater's bulk water prices are set by the Queensland Government and subject to review by the Queensland Competition Authority (QCA or Authority) at the government's request. In May 2017, the Authority was tasked with conducting an investigation into Seqwater's proposed bulk water prices for the period 1 July 2018 to 30 June 2021.<sup>1</sup> This represents the second investigation by the Authority following the establishment of Seqwater on 1 January 2013.<sup>2</sup>

To support its investigation, the Authority has engaged KPMG to independently assess the prudence and efficiency of Seqwater's forecast operating and capital expenditure (opex and capex respectively) associated with its bulk water supply activities. Specifically, in accordance with our terms of reference and at the request of the Authority, KPMG evaluated:

- Seqwater's forecast opex and capex over the period 1 July 2018 to 30 June 2028 (consistent with the current 10-year price path);
- Seqwater's actual capex (to the extent available) over the period 1 July 2014 to 30 June 2018, where this exceeds capex recommended by the QCA in the previous price investigation;<sup>3</sup> and
- Costs arising from any review events over the period 1 July 2015 to 30 June 2018.

An assessment of the historical and forecast opex and capex represents a critical component in any investigation of (regulated) bulk water prices.

To do this, and consistent with the Authority's Terms of Reference, we have assessed the prudence and efficiency of Seqwater's expenditure forecasts. To do this, we have adopted the following definitions:

- Prudent, if it can be justified by reference to an identified need or cost driver; and
- Efficient, if it is the least cost to deliver on an appropriately defined scope and standard of works and minimises Seqwater's long-run costs of providing bulk water supply services.

Where KPMG has assessed expenditure as not prudent or inefficient, we have either identified appropriate adjustments to the proposed expenditure profile provided by Seqwater to better align with

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<sup>1</sup> Queensland Government. Treasurer and Minister for Trade and Investment. Referral Notice for the Review of South East Queensland Bulk Water Prices. 25 May 2017.

<sup>2</sup> The first pricing investigation was completed for the period 1 January 2015 to 30 June 2018.

<sup>3</sup> KPMG note actual capex over this period was less than that allowed by the QCA and therefore this second evaluation was not required.

that of a prudent or efficient service provider, or we have excluded the expenditure from the forecast altogether.

A detailed review of Seqwater's demand forecast was considered out of scope for the purposes of KPMG's assessment provided the forecasts within the regulatory submission are within the range published by Seqwater as part of its Water Security Program (WSP). As part of this review, KPMG has confirmed that the demand forecasts included in the regulatory submission are consistent with those presented under the WSP. Specifically, Seqwater has provided for a hybrid demand scenario encompassing a combined low and medium growth scenario in its submission to the Authority.

KPMG provided its initial assessment to the QCA on 14 November 2017. This assessment was based on information provided by Seqwater over the period 11 August 2017 to 22 September 2017, as well as meetings held with Seqwater staff during 21, 22 and 24 August 2017.<sup>4</sup>

On 31 January 2017, Seqwater submitted its response to the QCA's Draft Report. QCA sought for KPMG to reconsider its findings in lieu of this submission, and further information, provided by Seqwater to the date 26 February 2018. This report has been updated to now include KPMG revised recommendations arising from the evaluation of Seqwater's response.

KPMG has not sought to update all areas of its report and instead focused solely on those key areas where Seqwater has provided sufficiently robust information warranting further consideration. These key areas include:

- Sampled capex projects (see Sections 7.8, 7.13, and 7.15);
- Assessment of systematic issues (see Section 7.21);
- Opex step changes (see Section 8.10);
- Productivity targets (see Section 8.11); and
- Review events (see Section 9).

Further, to maintain the integrity of our original findings, we have not sought to adjust the language in the original assessment sections.

Finally, KPMG has also assessed additional allowances sought by Seqwater (see Section 10), specifically:

- More flexible arrangements in relation to large projects providing for the capitalisation of opex; and
- Additional expenditure (capex and opex) associated with remobilisation of one train at the Luggage Point Advanced Water Treatment Plant (AWTP) as part of the Western Corridor Recycled Water Scheme (WCRWS).

## Our approach

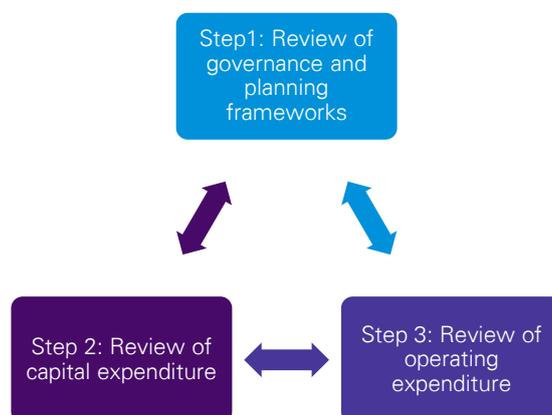
To support the Authority with its investigation, KPMG has approached this task by focusing on three separate, though interrelated, steps as shown in Figure 1. KPMG assessment approach, below. As Step 1, KPMG reviewed Seqwater's governance arrangements and planning frameworks for consistency with good industry practices, providing for appropriate controls (e.g. approval) and the

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<sup>4</sup> A full list of the meetings held is provided in Appendix A.

mitigation of potential risks. This provided the context for KPMG to review the prudence and efficiency of Seqwater's historical and forecast capital expenditure (Step 2) and operating expenditure (Step 3).

Figure 1. KPMG assessment approach



In completing each step, KPMG has:

- 1 Reviewed governance and planning frameworks:** Completed a desktop review of Seqwater's supporting policies and procedures detailing its overarching governance and planning frameworks. KPMG then sought to test the application of Seqwater's supporting governance and planning frameworks in the development of its capex and opex proposals to the Authority.
- 2 Reviewed capital expenditure:** Completed its review of Seqwater's historical and forecast capex in four stages, first at a portfolio level, second at a project level, third to consider opportunities for capital and operating expenditure trade-offs, and finally the fourth stage was to identify systemic issues, based on the project reviews.

At a project level, KPMG has completed detailed reviews of 12 major projects ranging in size from \$9m to \$150m. These projects are driven by growth, compliance, renewals and service improvements or a combination of these factors.

- 3 Reviewed operating expenditure:** Evaluated the prudence and efficiency of Seqwater's forecast operating expenditure in accordance with a base, trend and step approach. This approach establishes an efficient base year, rolls forward the efficient base operating expenditure to take account of scale growth, input price growth and efficiency improvements plus any adjustments for material step changes to costs.

This approach differs from previous reviews of Seqwater's forecast opex which have typically adopted a bottom up assessment focusing on a sample of cost categories.

Importantly, in completing our review of Seqwater's capex and opex forecast, we have been mindful of the difference in assessment period (1 July 2018 to 30 June 2028, 10 years) as required in the referral notice to the Authority relative to the overall objective of the Authority's investigation of recommending bulk water prices for Seqwater for the three year period of 1 July 2018 to 30 June 2021.

In meeting the requirements of the referral notice, KPMG understand the QCA are effectively setting prices for the three year period and beyond that:

- a) to remain constant (in real terms) after 30 June 2021 (i.e. grow at the rate of CPI between 1 July 2021 and 30 June 2028);

- b) reflect prudent and efficient capex that is capitalised and rolled into the RAB between 1 July 2018 and 30 June 2028; and
- c) ensure repayment of price-path debt by 30 June 2028.

It is important to note that only once a project expenditure has been capitalised does it form part the regulated asset base and therefore have an impact on prices.

It is reasonable to expect that Seqwater would have robust documentation to establish the prudence and efficiency of expenditure for those projects commencing in the early years of the forecast period, such as those to begin before 30 June 2021. In contrast, it would be unreasonable to expect the same level of documentation for those projects commencing outside of the three year period ending 30 June 2021 given that an inherent level of uncertainty exists with planning the network beyond a period of three years. We have therefore not proposed adjustments for those projects in this profile category, unless these form part of our sampled review. This is discussed in more detail in Section 7.21.

KPMG notes that for projects which incur expenditure in the first three years but are not capitalised within this same period, there are potential further opportunities to assess their prudence and efficiency in subsequent pricing reviews. This is of particular importance for those projects due to commence in year three of the forecast period and may therefore be at an early stage in the capital planning process. For these projects, we recognise that alternative assessment approaches exist that may be suitable subject to the expectations of the reviewer (and Authority), for example in relation to the level of documentation deemed appropriate in justifying both prudence and efficiency. We note that these alternative approaches may include:

- 1 Placing greater focus and scrutiny only on those projects impacting prices in the short term, specifically those projects which commence and are capitalised in the next three years, i.e. before 30 June 2021. Projects which commence within (or outside of) and are capitalised beyond the initial three years are not assessed.
- 2 Applying a conservative discount (e.g. 25 per cent) to those capital projects where efficiency cannot be suitably assessed, such as those projects at an early stage in the capital planning process or commencing in the later years of the forecast period as recognition of the increasing uncertainty of individual projects.
- 3 Placing a consistent level of scrutiny for all projects commencing within the first three years of the forecast regardless of when they are capitalised.

## Our recommendations

### Governance, planning and asset management frameworks

Corporate governance of capital and operational delivery are core business functions. Seqwater is considered as primarily an asset management organisation which means its objectives will include coordinating activities to realise customer value from its asset base.

To properly assess the corporate governance and procurement processes of this type of organisation, we have utilised the International Standard, ISO55001 which requires a management system approach to asset management. Where business functions are not sufficiently covered by the Seqwater management system, associated and referenced documents have been used such as the Asset Management Landscape that covers the globally agreed 39 subjects of asset management and the risk management standard, ISO31000.

Similarly, we have reviewed the application of Seqwater’s investment decision making process, and risk management and procurement governance arrangements supporting Seqwater’s operations.

While our review of Seqwater’s governance, planning and asset management frameworks has not directly impacted our assessment of the proposed capex and opex, we have utilised these frameworks by linking our recommended adjustments to the frameworks – specifically the investment governance framework.

### **Governance framework**

Overall, we found the corporate governance and procurement framework of Seqwater, as supported by various policies and processes such as the Enterprise Risk Management Framework, Investment Decision Making or gateway process, to provide for an effective approach to the management of key asset and investment risks and compliance obligations. These policies and processes are considered in large part to be fit for purpose and are aligned with key standards such as AS/NSZ ISO 31000:2009: Risk management – principles and guidelines.

Discussions with Seqwater have indicated that, in certain areas, the business is still implementing key processes across all business functions. KPMG recognise Seqwater are still in the process of operationalising the gateway process across all business functions. As a result, there are still sub-processes that are undertaken that appear to map between the gates. The procurement process currently monitors all spend down to \$5,000. Whilst this provides a detailed amount of governance, the time it takes to monitor appears to be detracting time away from larger projects with significantly more spend. Possible automation of low value spend could be investigated to continue to enable audit verification whilst releasing time for limited resources to spend on larger capital works.

### **Capital planning framework**

The International Standard for asset management enables clear assessment guidelines and allows for targeted improvements on specific areas of the management system. ISO55002, Guidance to the Asset Management System, states that Seqwater must “demonstrate responsibility for delivering performance against one or more asset management objectives, and the effective control and governance of asset management related function(s) and activities it is carrying out, in order to generate the value from the assets defined in the scope of its asset management system”.

KPMG’s tests included:

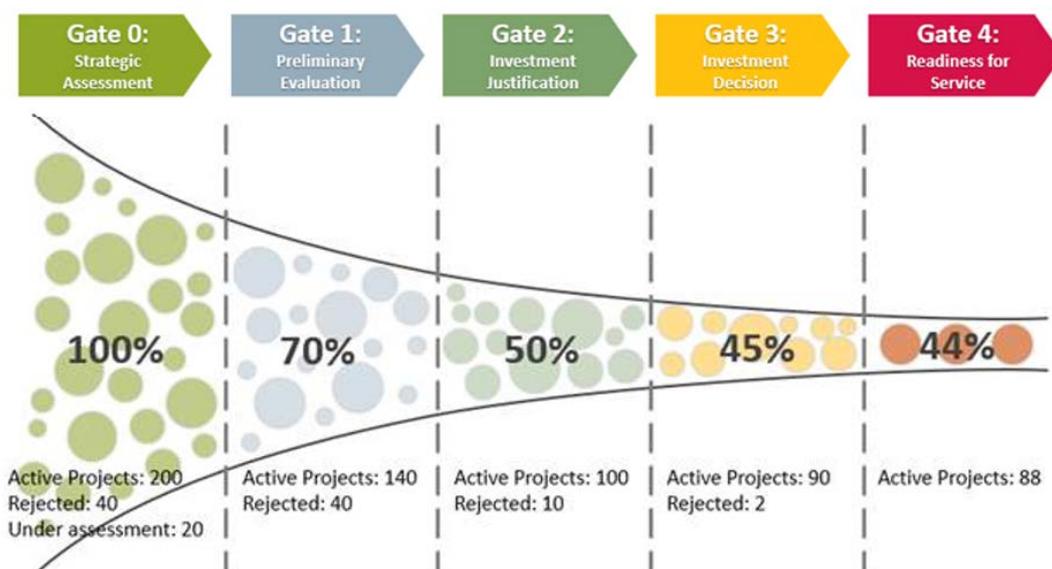
- Determining whether Seqwater has a consistent Asset Management Policy and Asset Management Strategy that provide a stable framework to allow joined up Asset Management Decision-Making.
- Validating that the Asset Management Policy provided the overarching principles to enable the Strategic Asset Management Plan (SAMP), to be produced and implemented. The SAMP would then typically contain the value criteria to be used to optimise Asset Management Decision-Making.
- Testing the Capital Investment Decision-Making process to understand asset degradation and trading-off capital costs, maintenance costs, risks and their probabilities in order to optimise a capital investment decision, both in terms of timing and asset intervention options.
- Delivery of individual projects were tested to validate whether they were managed through a lifecycle divided into different phases, separated by governance decision gateways where financial sanction for the next phase is approved.

Overall, KPMG considers the capital planning framework to be commendable and consistent with Seqwater’s legislative requirements and industry practice. We note, in addition to the Water Security Program, Seqwater are building on its planning processes through development or further

enhancement of an Integrated Master Plan, Asset Portfolio Master Plans and Asset Class Plans. These plans are supported by Seqwater’s strategy assessment management framework (systems, policies and procedures).

A key aspect of the capital planning framework is the capital investment decision making process. This process is based on a gateway review system whereby a project is required to pass through strategic gateways prior to approval as shown in Figure 2. This process forms the basis for all capital planning and delivery across Seqwater and is a similar process to that adopted by the Queensland Government and which is aligned with the internationally-recognised OGC Gateway™ Process.

Figure 2. Capital project refinement through gateway



As projects progress through gates, they are refined and the scope of works and associated cost become clearer. This results in a reduction in contingency required in the budget. This continues to the point that a project is commissioned and a target cost is agreed. For the purposes of KPMG’s assessment, we note that Seqwater would seek to establish the prudence of a proposed capital project through Gate 1 and the efficiency of the project through Gate 2.

We have relied on Seqwater’s gateway process as part of our assessment of the forecast capital program. Specifically, this process has helped identify sample projects, and establish an understanding or expectation of what stage a project may be at and subsequently what level of documentation may suitably be expected in order to assess a project’s prudence and efficiency.

In addition in relation to the capital planning framework, KPMG made the following observations:

- Seqwater continues to face key asset risks. For example, Seqwater may have limited history regarding the operation of an asset and, under specific circumstances, limited knowledge of the actual assets “in the ground”. This is not a reflection of Seqwater itself, but rather the asset management practices (processes/systems) of its predecessors, and therefore the historical knowledge which it has been required to inherit.
- The key criteria that have been agreed between Seqwater and its customers (distributor-retailers), (economic, resilience, environment and people and place) should be used as criteria for selecting and prioritising work in the asset portfolio master plan (APMP), subject to any regulatory obligations.

- Improvements to strategic asset management practices in a business, leadership and organisational sense have been shown to result in a material improvement in customer value and the bottom line.
- The asset class plans could be developed in a more agile manner with layers of detail to gain a broad understanding of each asset class and build on this understanding using analytics and other technology. This will enable earlier realisation of insights for better decision making and more tangible benefits.
- Seqwater could increase the priority of testing and implementing a renewals support tool to increase robust analysis and increase productivity of staff from data manipulation to data interpretation.

## Capital expenditure

Seqwater has proposed a total capital expenditure of \$1,282 million (real December 2016) for the 10 year period ending 30 June 2028. Over the three year period 1 July 2018 to 30 June 2021, Seqwater is forecasting to spend \$624.1 million, a 100 per cent increase on the actual capitalised expenditure of \$311.7 million that is expected to be delivered in the period (2015-2018) and 41 per cent higher than the QCA allowance for the current period.

The deferral of significant project expenditure from one pricing period to another raises an issue for the Authority, being that Seqwater's bulk water prices for the 2015-18 period were set based on the delivery of certain capital projects (where these projects were forecast to be commissioned). We note that this deferred capex has been included in Seqwater's proposed capital program and therefore assessed as part of our broader review of capital projects.

Seqwater's submission to the Authority is based on the 2017 APMP which was finalised in September 2016 and is updated annually. As a result, we have identified and/or been made aware of capex projects where the cost estimates have significantly changed from the 2017 APMP.

Through project sampling, KPMG has tested Seqwater's implementation of its capital planning and asset management framework. In certain cases, significant changes to cost estimates or significant uncertainty over the costs have inhibited our ability to assess, with any level of certainty, the efficiency of specific projects. These changes most commonly occur in projects which are still at the early stages of the capital planning process, usually Gateway 0, 1 or 2.

Table 1 highlights Seqwater's total capex program by investment gateway. Those projects that remain at an early stage within the capital planning process (i.e. Gateway 0, 1 or 2) account for, on average, 79 per cent of all projects across the 10 year period and 69 per cent over the first three years.<sup>5</sup>

Where we have been unable to assess the efficiency of a sampled project, we have sought to make an adjustment to the remaining program of works. Similarly, where we have identified common variations across project categories or gateways, such as those at an early stage in the capital planning process, we have sought to make an adjustment to the remaining program of works.

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<sup>5</sup> Includes sampled capex projects and renewals.

Table 1. Seqwater total capital program by investment gateway - including renewals and sampled projects (real December 2016 \$ million)<sup>6</sup>

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
0 - Strategic Assessment	\$53.1	\$74.9	\$69.4	\$50.1	\$82.5	\$76.8	\$78.5	\$48.7	\$51.0	\$36.9
1 - Preliminary Evaluation	\$28.6	\$56.7	\$82.1	\$68.3	\$9.3	\$27.4	\$29.8	\$5.8	\$9.8	\$5.1
2 - Investment Justification	\$23.1	\$34.4	\$10.0	\$3.3	\$0.5	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
3 - Investment Decision	\$44.3	\$56.3	\$43.6	\$7.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
4 - Readiness for Service	\$17.2	\$5.9	\$2.7	\$2.3	\$2.3	\$2.3	\$2.3	\$2.3	\$2.3	\$2.3
Unclassified	\$7.2	\$7.3	\$7.2	\$7.2	\$5.9	\$4.7	\$5.8	\$7.9	\$8.8	\$9.9
<b>Total Capex</b>	<b>\$173.5</b>	<b>\$235.5</b>	<b>\$215.1</b>	<b>\$138.5</b>	<b>\$100.6</b>	<b>\$111.4</b>	<b>\$116.5</b>	<b>\$64.8</b>	<b>\$72.1</b>	<b>\$54.4</b>
<b>Total Capex (less renewals and sample)</b>	<b>\$118.5</b>	<b>\$97.9</b>	<b>\$75.8</b>	<b>\$64.8</b>	<b>\$12.6</b>	<b>\$17.7</b>	<b>\$19.5</b>	<b>\$23.6</b>	<b>\$26.2</b>	<b>\$17.8</b>

The following details our original assessment of Seqwater's 2017 APMP, and subsequent assessment of Seqwater's 31 January submission in response to the QCA's Draft Report.

### Original assessment

KPMG's original assessment as per our final report dated 14 November 2017 provided for the following observations (as is detailed in Section 7):

- With regards to actual capex over the period 1 July 2014 to 30 June 2018:
  - Seqwater underspent its allowance by 31 per cent, or \$131 million, predominantly due to the deferral of major projects (section 7.4); and
  - As the expenditure was less than the total allowance set, therefore avoiding the need for an ex-post review.
- With regards to the 12 sample capital projects reviewed:
  - We support the inclusion of \$207 million in these projects across the 10 year period as both prudent and efficient, including \$148.1 million in 2018-21 and \$58.9 million in 2021-28;
  - We recommend adjustments of -\$281.4 million across the 10 year period for those projects that have not progressed to Gateway 3, including:
    - -\$92.2 million in expenditure from the program for the 2018-21 period; and
    - -\$189.2 million in expenditure from the program for the 2021-28 period.

Table 2 below summarise KPMG's recommended adjustments and expenditure profiles for each major project sampled respectively.

<sup>6</sup> Totals may differ due to rounding differences. This is a common occurrence for the majority of tables throughout KPMG's report.

- With regards to the total capital program (excluding renewals and sampled projects):

We recommend the removal of expenditure during the 10 year price path period related to projects which commence prior to 30 June 2021 that have not progressed to Gateway 3 of the capital planning process, and are neither part of our sample projects, nor renewal programs. This equates to \$366.8 million comprising \$235.3 million in the first three years and \$131.5 million in the remaining seven years.

Table 3 summarises our proposed adjustments to the total capital program (excluding sampled projects and renewals) focusing on those projects that remain at an early stage within the capital planning process (i.e. Gateway 0, 1 or 2) only. These projects are due to commence prior to 30 June 2021.

Table 2. KPMG recommended adjustments to sample projects (real December 2016 \$ million)

Project No.	Period	2018-21	2021-28
<b>Adjustments to major project expenditure</b>			
1	Beaudesert WSZ Upgrade	(\$41.5)	(\$38.3)
2	Mt Crosby Filters Upgrade	-	-
3	Mt Crosby Sedimentation	(\$33.3)	-
4	North Pine WTP Filters	-	(\$37.5)
5	ICT ERP Upgrade	(\$6.6)	(\$8.7)
6	Holts Hill pH Upgrade	(\$9.1)	-
7	Somerset Dam Upgrade	(\$1.6)	(\$104.7)
8	Lake MacDonald Dam Upgrade	-	-
9	Leslie Harrison Dam Upgrade	-	-
10	Fleet and Mobile Plant Renewals	-	-
11	Mudgeeraba WTP Renewals	-	-
12	Mt Crosby WPS Renewals	-	-
<b>Total Project Adjustments</b>		<b>(\$92.2)</b>	<b>(\$189.2)</b>

Table 3. KPMG recommended adjustments to total capital program – excluding renewals and sampled projects (real December 2016 \$ million)

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Capex prior to Gateway 3 commencing 2018-2021*</b>	\$74.5	\$90.1	\$70.7	\$60.6	\$10.6	\$16.3	\$16.1	\$9.6	\$9.2	\$9.1
<b>Recommended Adjustment to Capex prior to Gateway 3*</b>	(\$74.5)	(\$90.1)	(\$70.7)	(\$60.6)	(\$10.6)	(\$16.3)	(\$16.1)	(\$9.6)	(\$9.2)	(\$9.1)

\* Excluding renewals and sampled projects

We note that it is likely that many of these projects will be required in the future and do not dispute the general prudence of these projects. As a result, and in particular for those projects with significant expenditure in the first three years, it is possible for Seqwater to proceed with a project regardless of an allowance granted by the Authority. If this were to occur, we note that the Authority may be required to complete an ex-post review of such expenditure as part of future pricing review.

Further, subject to the Authority's discretion in responding to its referral notice, its own considerations of the prudence and efficiency of Seqwater's capital program and the potential impacts on prices, it may choose to adopt one of the alternative approaches previously discussed. For example:

- Placing greater focus and scrutiny on only those projects impacting prices in the short term, specifically those projects which commence and are capitalised in the next three years. This approach would amount to an adjustment of \$146.6m over the three years with no adjustments in the remaining years of the forecast as shown in Table 4; or
- Applying discounts for expenditure not at gateway 3 or above thereby reflecting the inherent uncertainty that exists with regards to the cost estimates for these projects. For example, a 25 per cent discount would result in a total adjustment of \$103.0m over the full 10 year as shown in Table 4.

Table 4. Alternative assessments of total capital program – excluding renewals and sampled projects (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Capex Commencing &amp; Capitalised in 3 years</b>	(\$61.1)	(\$65.6)	(\$19.9)							
<b>Notional Discount (25%)</b>	(\$18.6)	(\$22.5)	(\$17.7)	(\$15.6)	(\$3.4)	(\$5.7)	(\$6.5)	(\$5.5)	(\$4.9)	(\$2.6)

Table 5 and Table 6 summarise KPMG's recommended aggregate adjustments and recommended capital expenditure profile for Seqwater across the entire 10 year period.

Table 5. KPMG recommended adjustments to incurred expenditure (real December 2016 \$ million)

Period	2018-21	2021-28
Seqwater proposed capex	\$624.1	\$658.3
Adjustments to sample projects	(\$92.2)	(\$189.2)
Recommended Adjustment to non-sampled capex prior to Gateway 3*	(\$235.3)	(\$131.4)
<b>KPMG Recommended Adjustments</b>	<b>(\$327.5)</b>	<b>(\$320.6)</b>
<b>KPMG Recommended Capex Allowance</b>	<b>\$296.6</b>	<b>\$337.7</b>

\* Excluding renewals and sampled projects

Table 6. Recommended capex allowance (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Sample projects	\$22.6	\$76.2	\$49.3	\$13.0	\$7.8	\$10.7	\$13.3	\$7.4	\$3.1	\$3.5
Balance of capital program*	\$70.0	\$36.7	\$41.8	\$26.3	\$33.9	\$26.2	\$32.1	\$33.0	\$42.8	\$39.0
<b>Total capital program</b>	<b>\$92.6</b>	<b>\$112.9</b>	<b>\$91.1</b>	<b>\$39.3</b>	<b>\$41.8</b>	<b>\$36.9</b>	<b>\$45.4</b>	<b>\$40.4</b>	<b>\$45.9</b>	<b>\$42.5</b>

\* Including renewals

## Seqwater response to the QCA's Draft Report

Within its 31 January 2018 submission to the QCA's Draft Report, Seqwater disagreed with KPMG's recommendations regarding the exclusion of expenditure for a number of sampled capex projects where there was not a rigorous level of project justification. In response to KPMG's findings, Seqwater

provided additional evidence to support its cost estimates. Specifically, Seqwater provided further evidence for the following projects:

- Project 1: PAA Beaudesert WSV Upgrade, where Seqwater have updated its planning and identified a preferred solution;
- Project 5: Ipswich Office – Enterprise Resource Planning (ERP) Program, where Seqwater have further advanced its proposal to demonstrate both prudence and efficiency; and
- Project 7: Somerset Dam – DSO: Dam safety upgrade, where Seqwater have since established a preferred option.

KPMG’s updated review of these projects can be found in Section 7.8, 7.13, and 7.15.

Further, Seqwater contended that other sampled projects where no expenditure was approved, should allow for a portion of the proposed expenditure, which would be consistent with regulatory precedent.<sup>7</sup> Seqwater propose the allowance of 70 per cent of the original proposed forecast. This included the following projects:

- Project 3: Mt Crosby Eastbank WTP –TEB: Eastbank WTC Sedimentation Upgrade (Resilience);
- Project 4: North Pine WTP: TNP: Filtration Capacity Upgrade; and
- Project 6: Holts Hill Reservoir – RRH: pH Correction Upgrade.

KPMG’s assessment of this request is detailed in Section 7.8.

In response to KPMG’s assessment of non-sampled capex, Seqwater’s submission contended that an “efficient option” is usually determined within Gateway 2, before it has formally passed Gateway 2, therefore that it was inappropriate to exclude all costs for projects that are at Gateway 2. The Somerset Dam (Project 1) and Beaudesert (Project 7) upgrades are examples of projects at Gateway 2 with a preferred option.

Finally, Seqwater noted that KPMG’s approach is both inconsistent with the terms of the Referral Notice (by not allowing recovery of the costs related to sampled and non-sampled projects), and that rolling actual expenditure into the RAB at the next review will lead to a further one per cent increase in price. KPMG’s response to these issues are detailed in Section 7.8.

### **Revised assessment**

KPMG has reviewed the additional information provided by Seqwater as per its submission to the QCA Draft Report. Further, where required, KPMG has sought additional information and clarification directly from Seqwater. This information was provided by the business over the period 31 January 2018 to 26 February 2018.

Based on this additional information, KPMG has made the following amendments to its original assessment:

- Recommend capex of \$100 million be approved in relation to Project 1: PAA Beaudesert WSV Upgrade. This includes an adjustment of -\$31.0 million to Seqwater’s proposed costs driven largely by Seqwater’s inappropriate application of contingency (see Section 7.15 for a discussion on contingency allowance) and owners’ costs, plus some minor adjustments to the assumptions.

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<sup>7</sup> Seqwater made specific reference to guidance provided by the Victorian Essential Services Commission.

- Recommend capex of \$21.7 million be approved in relation to Project 5: Ipswich Office – Enterprise Resource Planning (ERP) Program. This includes an adjustment of - \$9.90 million from the forecast expenditure driven largely by overstated renewals costs and the inclusion of nominal dollars, instead of real dollars.
- Recommend capex of \$186.2 million be approved in relation to Project 7: Somerset Dam – DSO: Dam safety upgrade. This includes an adjustment of -\$53.2 million from the forecast expenditure driven largely Seqwater’s application of contingency, and some minor adjustments to the assumptions.

Further to the above amendments, KPMG has revised its assessment of non-sampled projects. In reviewing the supporting project justification, options analysis and project cost estimates for sampled Project 1 (Beaudesert WSZ Upgrade) and Project 7 (Somerset Dam – Dam Safety Upgrade), KPMG accepts that Seqwater has completed a robust level of analysis that supports an expenditure allowance of greater than zero for those projects at Gateway 2 with a preferred option. The implication of this is that a systemic adjustment is only appropriate for projects that do not have a preferred option. A preferred option is determined during Gateway 2.

Whilst recognising a robust level of analysis and cost estimation supporting projects that are at Gateway 2 and have a preferred option, further analysis has recognised that assumptions regarding contingency and indirect costs are materially overstated. In KPMG’s experience, a robust cost estimation that supports prudence and efficiency would include an allowance for contingency of 15 per cent of direct costs and for indirect costs 12.5 per cent of direct costs. In aggregate, this is 27.5 per cent of direct costs, or 21.6 per cent of ‘total project costs’ (i.e. direct costs plus contingency plus indirect costs).

In response to KPMG’s queries, Seqwater provided assumptions for contingency and indirect costs for six non-sampled projects. The average allowance for contingency across these projects was 29 per cent of direct costs, and for indirect costs of 37 per cent of direct costs, or in aggregate, 66 per cent of direct costs, or 40 per cent of total project costs. What this means is that Seqwater has overstated, when compared against good practice, allowances for contingency and indirect costs by 18.1 per cent of total project costs.

Based on our revised assessment:

- KPMG maintain our original recommendation regarding exclusion of costs for non-sampled projects at Gateways 0 or 1 that commence during the period 2018-21, on the basis that there is both insufficient project justification and robust cost estimation.
- KPMG recommends excluding costs related to non-sampled projects within Gateway 2, where these projects do not have a preferred option, for the same reasons as above. These projects constitute \$8 million of the \$39 million of projects at Gateway 2.<sup>8</sup>
- KPMG recommends allowing the recovery of all expenditure forecasts related to non-sampled projects - where these projects are within Gateway 2, have a preferred option and will commence by 2021 - adjusted to account for inappropriate allowances for contingency and indirect cost estimates. On this basis, KPMG recommends removing 18.1 per cent of these project costs, based on the percentage of a material sample of projects at Gateway 2 without a preferred option.<sup>9</sup>

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<sup>8</sup> Seqwater, Submission to Draft QCA Report, pg. 32

<sup>9</sup> Seqwater, Submission to Draft QCA Report, pg. 32

KPMG proposes that this adjustment be made to the forecasts originally submitted by Seqwater, and not account for any subsequent progressions through the gateway process. This treatment is addressed in Section 7.23.

Noting KPMG's original review that determined no adjustments were required for renewals projects, further information has been provided by Seqwater that demonstrates that programs of works related to natural assets and monitoring and control systems (MCS) reflect that of renewals, and should therefore be excluded from any systemic adjustment.

Seqwater also raised the following issues, inclusive of KPMG's overarching response.

- **Seqwater contention:** KPMG's recommendations are inconsistent with regulatory precedent to set capital expenditure for a prudent project to zero, and that KPMG should consider an aggregate adjustment to the expenditure proposed (i.e. 30 per cent).

**KPMG response:** Each price review is tailored according to the entity being reviewed, their individual circumstances, and the quality of information provided by the business being reviewed. Where a robust cost estimation is provided that enables the reviewer to test the underlying assumptions and/or forecasting methods then it has the ability to adjust these estimates where it feels there is stronger alternative evidence, therefore determining an adjusted forecast. Where the entity does not provide such evidence then it is inappropriate for the reviewer to attempt to develop an efficient cost estimate, nor apply an arbitrary adjustment to forecast expenditure, as it would not allow for the efficient expenditure to be accurately identified. Details on these findings can be found in Section 7.8.

- **Seqwater contention:** The QCA's recommendations are inconsistent with terms of the Referral Notice.

**KPMG response:** The terms of the Referral Notice explicitly state that prices are to recover bulk water costs that include prudent and efficient capital expenditure. As a result, unless Seqwater provides adequate supporting information that allows KPMG to recommend adjustments to the forecasting assumptions and methodology in order to determine an efficient amount, excluding expenditure related to a project that does not demonstrate efficiency is reasonable. Details on these findings can be found in Section 7.8.

- **Seqwater contention:** The outcomes of the Draft Report will result in mild price shocks.

**KPMG response:** It is in consumers' interests to ensure only efficient costs are passed through in prices, and to defer any price increases for as long as possible. We recognise the need to avoid future 'price shock', however it is also important to ensure that prices from 2018 minimise any price increases. As such, there needs to be a balanced approach. KPMG's approach does this, by reviewing and adjusting projects to set an efficient expenditure for projects commencing in the 2018-21 period, and maintaining within the forecast (without adjustment), non-sampled capex that commences beyond 2021. Details on these findings can be found in Section 7.8.

Consumers would rather defer any necessary price increase for as long as possible, and KPMG's approach ensures that only efficient costs are passed on to customers, at the right time, therefore avoiding customers bearing the risk of cost estimation inaccuracy.

Section 8.10.2 of our report also identifies the reclassification of capex as opex of \$5.38 million over the 10 year period, or approximately \$0.54 million per annum.

## Summary findings

Table 7 below summarises KPMG's revised recommendations for each major project sampled. Further, Table 8 summarises our revised adjustments to the total capital program (excluding sampled projects

and renewals) focusing on those projects that remain at an early stage within the capital planning process (i.e. Gateway 0, 1 or 2) only. These projects are due to commence prior to 30 June 2021.

Table 7. KPMG revised recommended adjustments to sample projects (real December 2016 \$ million)

Project No.	Period	2018-21	2021-28
<b>Adjustments to major project expenditure</b>			
1	Beaudesert WSZ Upgrade	(\$18.4)	(\$12.6)
2	Mt Crosby Filters Upgrade	-	-
3	Mt Crosby Sedimentation	(\$33.3)	-
4	North Pine WTP Filters	-	(\$37.5)
5	ICT ERP Upgrade	(\$1.3)	(\$8.6)
6	Holts Hill pH Upgrade	(\$9.1)	-
7	Somerset Dam Upgrade	(\$0.6)	(\$52.6)
8	Lake MacDonald Dam Upgrade	-	-
9	Leslie Harrison Dam Upgrade	-	-
10	Fleet and Mobile Plant Renewals	-	-
11	Mudgeeraba WTP Renewals	-	-
12	Mt Crosby WPS Renewals	-	-
<b>Total Project Adjustments</b>		<b>(\$62.7)</b>	<b>(\$111.3)</b>

Table 8. KPMG revised adjustments to total capital program – excluding renewals and sampled projects (real December 2016 \$ million)

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Sampled capex	(\$4.0)	(\$32.2)	(\$26.5)	(\$2.8)	(\$26.2)	(\$39.3)	(\$34.6)	(\$5.5)	(\$1.4)	(\$1.4)
Non-sampled capex	(\$56.1)	(\$45.2)	(\$73.9)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Reclassification (capex to opex)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.6)
<b>Total adjustment</b>	<b>(\$60.6)</b>	<b>(\$78.0)</b>	<b>(\$100.9)</b>	<b>(\$3.3)</b>	<b>(\$26.8)</b>	<b>(\$39.8)</b>	<b>(\$35.1)</b>	<b>(\$6.1)</b>	<b>(\$2.0)</b>	<b>(\$2.0)</b>

Table 9 and Table 10 summarise KPMG's recommended aggregate adjustments and recommended capital expenditure profile for Seqwater across the entire 10 year period.

Table 9. KPMG revised recommended adjustments to incurred expenditure (real December 2016 \$ million)

Period	2018-21	2021-28
Seqwater proposed capex	\$624.1	\$658.3
Adjustments to sample projects	(\$62.7)	(\$111.3)
Adjustments to non-sampled projects	(\$175.2)	\$0.0
Reclassification from capex to opex	(\$1.6)	(\$3.8)
<b>KPMG Recommended Adjustments</b>	<b>(\$239.5)</b>	<b>(\$115.1)</b>
<b>KPMG Recommended Capex Allowance</b>	<b>\$384.6</b>	<b>\$543.2</b>

\* Excluding renewals and sampled projects

Table 10. Revised recommended capex allowance (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Sample projects	\$35.8	\$116.2	\$71.5	\$25.1	\$77.4	\$81.8	\$70.3	\$21.3	\$2.6	\$3.0
Balance of capital program	\$62.07	\$18.86	\$36.09	\$21.26	\$31.29	\$23.52	\$29.47	\$30.37	\$40.18	\$36.36
<b>Total capital program</b>	<b>\$97.8</b>	<b>\$135.0</b>	<b>\$107.6</b>	<b>\$46.4</b>	<b>\$108.7</b>	<b>\$105.3</b>	<b>\$99.7</b>	<b>\$51.7</b>	<b>\$42.8</b>	<b>\$39.4</b>

\* Excluding renewals and sampled projects

## Operating expenditure

Seqwater has developed its operating and maintenance expenditure forecasts for the regulatory period 1 July 2018 to 30 June 2028 based on the adoption of a base, trend and step approach. In addition, Seqwater has made a clear distinction between forecasts of fixed and variable operating expenditure.

Our analytical approach for reviewing Seqwater’s opex forecasts includes four main components:

- 1 A review of the preceding pricing determination** – KPMG commenced its assessment by first reviewing the Authority’s past bulk water price investigations with particular reference to the previous operating expenditure review undertaken by CH2M Hill in 2015.
- 2 A review of the robustness of the base year (2018-19) for both fixed and variable opex** – KPMG sought to verify that the baseline operating expenditure reflects efficient controllable costs and has appropriate adjustments for non-recurring expenditure and efficiency savings. In doing so, KPMG has assessed the proposed base year against historical opex, reviewing the proposed inclusions and exclusions and assessing the underlying expenditure for potential non-recurrent expenditure.
- 3 A review of the robustness of the proposed trends** – KPMG’s review then provided an assessment of the basis for the operating expenditure roll-forward calculations and how key assumptions have been used to determine future operating expenditure requirements.
- 4 A review of the proposed step changes** – finally, KPMG considered the proposed expenditure associated with any major new initiatives or variations that change the operating expenditure trend.

Our original and revised assessment of each component under this approach is provided below.

### Original assessment

#### Base

Seqwater’s proposed base year (2018-19) is based on two years of bottom-up budget forecasts (2017-18 and 2018-19). The budget forecasts utilised a zero based budgeting process that required all budgeted expenditure to be justified and supported by evidence such as contractual arrangements, efficiency programs, baseline operating scenarios and trends in actual expenditure for the preceding two years.

In practice, we have found that the adoption of a base year developed over two budgeted years of forecasts makes it difficult to verify that the appropriate base year adjustments have occurred. The budget process is an internal process, not one that has been developed with transparency to third parties as a primary objective. Identifying non-recurring and recurring costs has therefore been problematic and could only be achieved in an indirect manner. While Seqwater has not proposed any inclusions for the base year, it has proposed the exclusion of 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. These costs are equal to approximately \$4.5 million.

Our review identified:

- 86 expenditure streams constituting \$23 million that potentially related to other exclusions. Through consultation with Seqwater on each of these expenditure streams, we were able to identify that the majority of these expenditures were related to valid exclusions and that a small number of the expenditures related to changes in budgeting.
- 33 expenditure streams constituting \$41 million that potentially related to inclusions. Through consultation with Seqwater on each of these expenditure streams, we were able to identify that the majority of these expenditures were related to valid inclusions or changes in budgeting accounting.

KPMG has identified a small number of expenditures that were considered not justified for inclusion. These expenditures relate to training and profession development and “other allowances” and total \$0.57 million.

Our assessment of Seqwater’s proposed steps has also led us to identify a number of steps that should instead be treated as inclusions in the base year. These are discussed in Section 8.10. Steps differ from inclusions in the base year in a number of ways. Inclusions are recurrent expenditures (large or small) that form part of the base year which is extrapolated over the regulatory period. Steps are typically large expenditures relating to new obligations or material changes in Seqwater’s operating environment. Step expenditures typically commence during the regulatory period and are added to the extrapolated opex base when they occur.

### **Trends**

In terms of expenditure growth over the period, Seqwater have proposed to extrapolate the base year via a bottom-up approach that considered demand at the individual asset level. KPMG has compared the results against those of alternative approaches and found it provided for broadly similar outcomes. On this basis, KPMG recommends QCA accept the growth assumptions underlying Seqwater’s forecasts.

Seqwater have developed separate input cost escalation factors for seven different opex cost categories. KPMG assessed each of these escalators and has provided recommendations to the Authority. Our recommendations include:

- **Employee expenses and contract labour:** Based on regulatory precedent and the appropriate use of WPI based indexes, KPMG recommends that Seqwater’s cost escalator for employee expenses and contractors be accepted.
- **Other materials and services:** Based on the appropriate maintenance of the real values of costs over the period, KPMG recommends that Seqwater’s cost escalator for other materials and services be accepted.
- **Insurance:** Unlike the other escalation factors, this factor is not discussed in the accompanying *PWC Cost Escalation Factors Final Report* or in *Seqwater Submission Part A and Part B*. This escalator is presented solely in the regulatory financial pricing model.

Given the lack of explanatory documentation provided by Seqwater and our concerns regarding consumers’ ability to manage the associated risks, KPMG cannot recommend the Authority accept this escalator. Instead, KPMG recommends the Authority apply the *Other material and services* escalator to Seqwater’s insurance costs for pricing purposes.

- **Contractors:** We note that the Authority accepted Seqwater’s proposed contractor escalator in the previous 2015-16 to 2017-18 price investigation. Seqwater’s previous index resulted in higher estimations. KPMG believes the proposed approach for this regulatory period represents an improvement on that previously adopted. The proposed escalator is relatively simpler, logically valid and is cost reflective. We also note that the proposed escalator appears to generate lower rates than the previous approach. KPMG therefore recommends QCA accept Seqwater’s proposed escalation factor for this cost category.
- **Chemicals:** Seqwater has proposed escalation factors based on CPI. In doing this, Seqwater has proposed to maintain the value of these expenditures in real terms at a constant level over the course of the regulatory period. KPMG recommends that Seqwater’s cost escalator for chemicals be accepted on the basis that it is consistent with reasonable expectations given recent market activity in chemicals.
- **Electricity:** KPMG acknowledges that it is extremely difficult to estimate credible, long-term trends in electricity prices given current uncertainty and investment environment. Overall, the Australian Energy Market Operator (AEMO) escalation factor is reasonable as an independent metric in the absence of undertaking separate market modelling. The AEMO retail price forecasts are well respected within the broader utility sector and have been utilised in regulatory decisions across a number of jurisdictions.

While KPMG accepts AEMO as a reliable basis for an escalation factor, it has amended Seqwater’s proposed rates to reflect the latest available AEMO forecasts and to make the first three years of the regulatory period consistent with these forecasts.

## Steps

Step changes should relate to discrete output changes that are not captured by the escalation factors discussed above. They should not relate to discretionary changes in inputs nor relate to changes in volume. Steps are typically:

- New or changed government obligations that come into effect over the course of the regulatory period or, alternatively, came into being prior to the regulatory period but are not expected to come into effect until the commencement of regulatory period and are not reflected in the base year;
- New or changed customer service demands where there is a clear willingness to pay; and
- Changes in opex associated with the commissioning of new capacity.

Seqwater has proposed 14 separate steps across a broad range of activities. The steps range in magnitude of cost from approximately \$50,000 per annum to \$1 million per annum. KPMG’s assessment of each step is provided in the table below. We note that a number of the steps are considered immaterial, while others should be considered as inclusions/exclusions from the base year.

Table 11. KPMG’s assessment of the proposed steps \$ million

Step	NPV (@ 6%)	% Total Opex	KPMG Recommendation
<b>Assessment of major contracts prior to expiry</b>	\$0.9	0.043%	<ul style="list-style-type: none"> <li>• Recommend step not be included on the basis of inappropriate driver, immateriality and concerns regarding efficiency.</li> <li>• Do not recommend the step be treated as an inclusion in the base year as it only relates to two years of the total regulatory period.</li> </ul>
<b>Water quality reporting</b>	\$1.5	0.074%	<ul style="list-style-type: none"> <li>• Recommend step not be included on the basis of inappropriate driver and immateriality.</li> </ul>

Step	NPV (@ 6%)	% Total Opex	KPMG Recommendation
<b>Gold Coast Desal and WCRWS contracts</b>	\$2.4	0.118%	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion to the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>ICT projects</b>	-\$0.2	-0.010%	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> </ul>
<b>Provision of additional drafting services</b>	\$0.4	0.019%	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion to the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>QCA reviews</b>	-\$2.2	-0.108%	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion to the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>Future water security program updates</b>	\$0.4	0.022%	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of immateriality.</li> <li>Recommend proposed step be treated as an inclusion to the base year.</li> </ul>
<b>Integrated master plan update</b>	\$0.2	0.011%	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion in the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>Communication and education for recycled water</b>	\$8.1	0.405%	<ul style="list-style-type: none"> <li>Recommend step be included at an amended rate. Given that the step relates to the implementation of a three year program, we suggest the expenditure be capped at three years. If Seqwater elects to continue the program into the next regulatory period, it can propose an extension of the program.</li> <li>The driver for the step is not a new obligation or new capital program. The driver appears operational in nature.</li> <li>In the absence of drought and high level restrictions, we believe it would not be prudent to include 10 years of ongoing recycled water education programming.</li> </ul>
<b>EBA advice</b>	\$0.3	0.015%	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion in the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>Additional training spend leadership</b>	\$0.4	0.018%	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> </ul>
<b>Budget Assumptions</b>	\$7.5	0.374%	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver, insufficient information and an inability to establish efficiency.</li> </ul>
<b>Wyaralong WTP</b>	\$5.6	0.280%	<ul style="list-style-type: none"> <li>Recommend step be excluded on the basis that the associated capex was excluded.</li> </ul>
<b>Ewan Maddock</b>	\$4.2	0.210%	<ul style="list-style-type: none"> <li>Recommend step be included on the basis of it being associated with capex aimed at increasing capacity and securing higher levels of security of supply.</li> </ul>

### **Productivity assumptions**

In the 2015 Review, the Authority chose not to recommend an ongoing efficiency target on the basis of cost savings already identified by Seqwater in its proposal. For this period, Seqwater have now proposed a cumulative, ongoing efficiency target of 0.2 per cent per annum of controllable costs.

We note that most interstate water utilities propose ongoing efficiency rates higher than Seqwater and that the most regulators impose a higher efficiency target or productivity hurdle on controllable opex. In most cases, these efficiency rates and targets range from 1 to 2 per cent per annum.

There is a strong case for setting a more challenging efficiency target over the course of the regulatory period given regulatory precedent and industry standards. We acknowledge that we have not undertaken a Total Factor Productivity (TFP) study or any frontier based statistical analysis (such analysis is outside the scope of this review). For this reason, we have taken a conservative approach and included an efficiency target of one per cent per annum, which is at the lower end of targets currently being adopted by businesses in other jurisdictions.

KPMG also reviewed the base of controllable costs identified by Seqwater to which the productivity factor is applied and made the following recommendations:

- That the efficiency factor be extended to include both variable chemical costs and variable electricity costs.
- That the controllable fixed opex cost base be extended to include a number of proposed non-controllable costs that should be treated as controllable. We have included contract based costs in the controllable base on the basis that the 10 year length of the regulatory period provides Seqwater with opportunity to influence or exert control over contracts as they are negotiated or renegotiated. Similarly, we believe the EBA represents a controllable cost as Seqwater has multiple opportunities within the 10 year period to negotiate for more efficient outcomes.

### **KPMG’s recommended opex profile**

Based on our assessment of Seqwater’s forecast opex, the following table and figure summarise our original recommendations to the Authority of a prudent and efficient expenditure profile for the business moving forward.

Table 12. KPMG recommended opex \$million

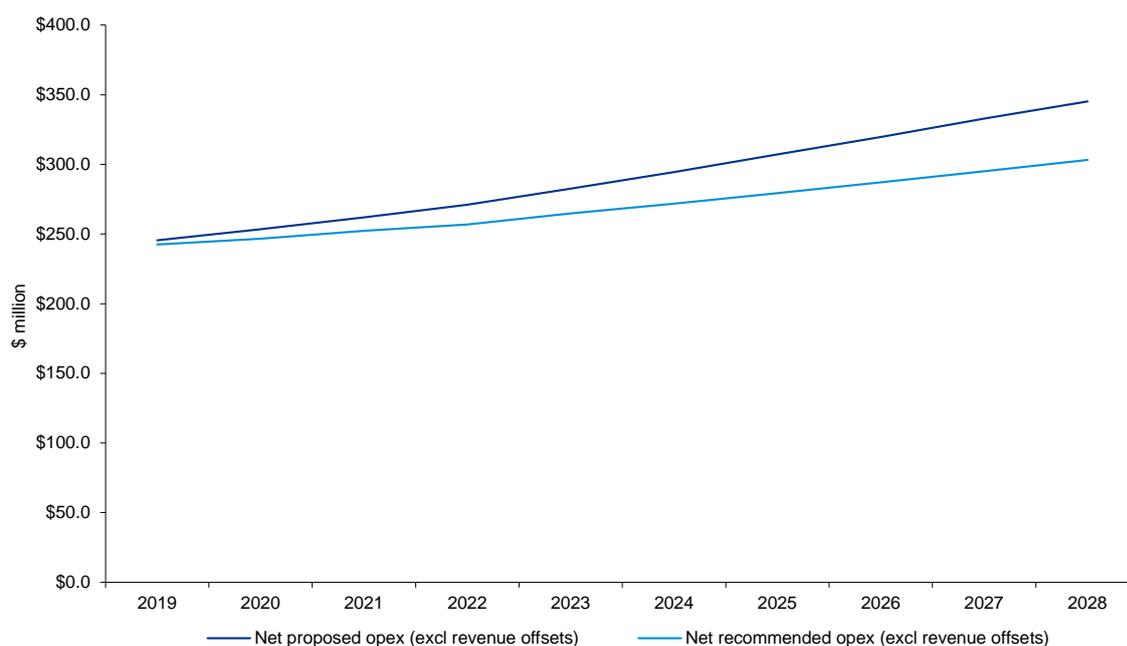
\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Base year (fixed) plus escalation	\$207.4	\$212.9	\$218.8	\$225.6	\$232.5	\$239.5	\$246.7	\$254.3	\$262.2	\$270.4
Step changes	\$1.1	\$1.1	\$1.9	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8
Efficiency	\$0.0	(\$2.2)	(\$4.5)	(\$6.9)	(\$9.5)	(\$12.3)	(\$15.1)	(\$18.2)	(\$21.5)	(\$24.9)
Total fixed opex costs	\$208.5	\$211.8	\$216.2	\$219.4	\$223.8	\$228.0	\$232.3	\$236.9	\$241.5	\$246.2
Total variable opex costs	\$37.5	\$38.4	\$39.9	\$41.4	\$45.0	\$47.9	\$51.2	\$54.7	\$58.2	\$61.6
Total opex costs	\$246.0	\$250.2	\$256.0	\$260.8	\$268.8	\$275.9	\$283.6	\$291.6	\$299.6	\$307.8
Offset costs	(\$3.6)	(\$3.7)	(\$3.8)	(\$3.9)	(\$4.0)	(\$4.1)	(\$4.2)	(\$4.4)	(\$4.5)	(\$4.7)
<b>KPMG recommended opex (excl. revenue offsets)</b>	\$242.5	\$246.6	\$252.3	\$256.9	\$264.8	\$271.8	\$279.3	\$287.2	\$295.1	\$303.2

Table 13. Difference between proposed expenditure and KPMG recommendations

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Annual difference	\$3.1	\$6.8	\$9.8	\$14.1	\$17.8	\$22.8	\$27.8	\$32.6	\$37.8	\$42.1
<b>NPV of difference</b>	<b>\$142.5</b>									

Note: NPV calculations based on a 6% discount rate

Figure 3. Difference between Seqwater proposed net opex and KPMG recommended net Opex



### Seqwater response to the QCA's Draft Report

In its response, Seqwater raised concerns on KPMG opex assessment, notably how KPMG applied the efficiency adjustment. In particular, Seqwater provided further analysis in the following areas:

- Further information relating to the base year calculation and its budget amendments. Seqwater provided information both in its response to the QCA draft decision and in response to requests from KPMG regarding:
  - The treatment of a number of proposed step increases in opex that KPMG had recommended be treated as inclusions in the base year and that QCA had decided to disallow in its draft decision. Seqwater responded that it supported KPMG's recommendation.
  - The inclusion in opex of expenditure relating to the Wyaralong WTP. KPMG had recommended that this expenditure be excluded on the basis that the associated capital expenditure was not efficient.
  - The inclusion in the base year of a budget adjustment relating to expenditure that was mistakenly and incorrectly categorised as capex. This adjustment necessitated a corresponding adjustment to forecast capital expenditure.
  - The inclusion in the base year of a budget adjustment relating to expenditure that was inadvertently omitted from the budget. Seqwater provided copies of internal correspondence and historical data that supported its response.
  - The inclusion in the base year of a budget adjustment relating to expenditure that was inadvertently omitted from the budget due to error associated with the transfer of activities between different parts of the organisation during a period of structural transformation
- Detailed analysis on the appropriate application of efficiency adjustments drawing on precedent by other regulators. Seqwater provided comparative analysis that normalised businesses based on its regulatory treatment of growth escalation.

## Revised assessment

KPMG made a number of revisions in light of the information provided by Seqwater in response to the QCA's Draft Report. These revisions which are discussed in Section 8 include:

- The reinstatement of operating expenditure associated with the Wyaralong WTP. This expenditure was originally excluded on the basis that the associated capex was deemed to be inefficient. Seqwater provided further information that led KPMG to now recommend its inclusion in the capital program (noting adjustments to the expenditure forecast (see Section 8.10.4.2 for a detailed discussion).
- KPMG corrected an error in its derivation of nominal escalation rates for energy costs.
- On the basis of further information, the inclusion in the base year of two budget amendments that in total amount to \$1.3 million. These were:
  - The reclassification of capital expenditure as opex (in line with Australian accounting standards); and
  - The correction of recurrent operating expenditures that had been accidentally omitted from the budgeted base year. One of these corrections results in an offsetting annual reduction in capital expenditure of approximately \$0.54 million per annum.
- In its response, Seqwater provided additional information regarding efficiency targets. After reviewing this information, KPMG has amended its proposed one per cent per annum target that was based on industry standard. KPMG remains of the opinion that the target is relatively low. However, we acknowledge that direct comparisons between efficiency forecasts need to be undertaken with care.

In the absence of a more sophisticated examination of efficiency such as total factor productivity, data envelopment analysis or stochastic frontier analysis, KPMG does not recommend an alternative efficiency rate to that proposed but does recommends QCA consider undertaking a separate efficiency study prior to its next price review of Seqwater. Such a study would allow the QCA to further examine the differences between Seqwater and other comparable businesses and would present the regulator with an opportunity to pursue more robust forms of statistical analysis.

The following tables show the combined impact of these revisions on Seqwater's proposed opex.

Table 14: KPMG revised recommended opex \$million

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Base year (fixed) plus escalation	208.57	214.28	220.17	227.00	234.01	240.98	248.23	255.87	263.74	272.00
Step changes	1.10	1.10	1.86	0.76	0.76	1.57	1.60	1.62	1.65	1.68
Efficiency (fixed)	0.00	-0.37	-0.75	-1.16	-1.60	-2.06	-2.54	-3.06	-3.60	-4.18
Total fixed opex costs	209.67	215.01	221.28	226.60	233.18	240.50	247.29	254.43	261.79	269.50
Variable (escalated)	37.46	38.41	39.85	41.34	44.94	47.88	51.14	54.61	58.05	61.51
Efficiency (variable)	-0.27	-0.55	-0.84	-1.15	-1.48	-1.82	-2.18	-2.56	-2.96	-3.38
Total variable opex costs	37.19	37.86	39.01	40.18	43.46	46.06	48.96	52.04	55.09	58.13
Total opex costs	246.87	252.87	260.29	266.79	276.64	286.55	296.25	306.48	316.88	327.63

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Offset costs	-3.56	-3.65	-3.76	-3.87	-3.99	-4.11	-4.24	-4.37	-4.50	-4.65
<b>KPMG recommended opex (excl. revenue offsets)</b>	243.31	249.22	256.53	262.91	272.64	282.44	292.01	302.11	312.37	322.98

Figure 4. Difference between Seqwater proposed revised net opex and KPMG recommended net Opex

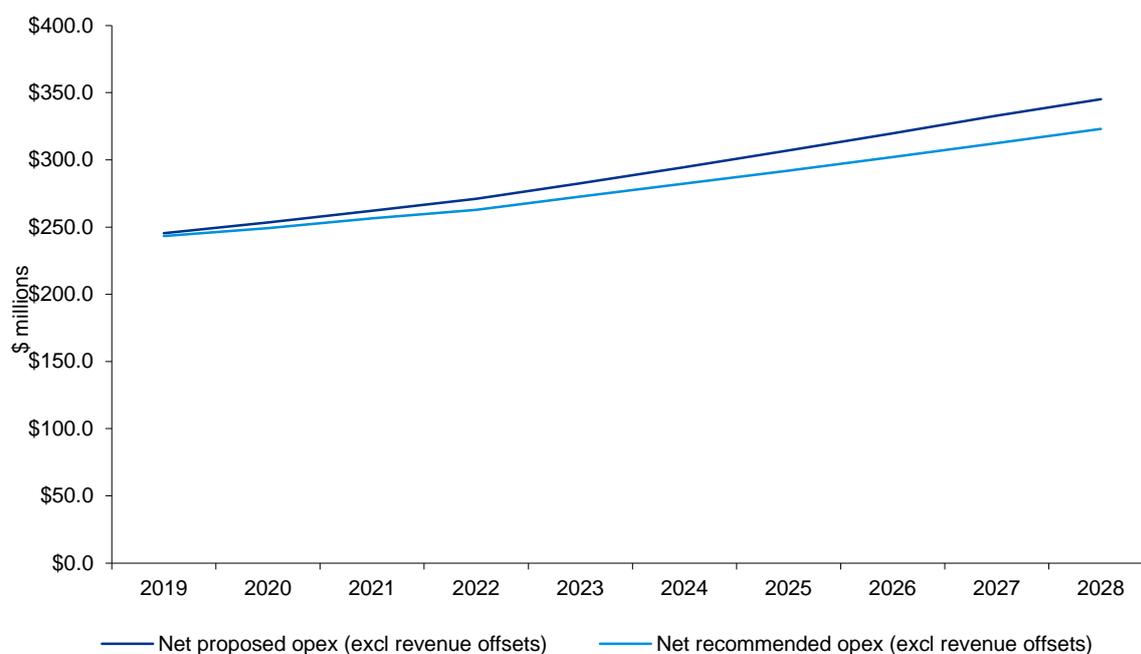


Table 15. Difference between proposed expenditure and KPMG recommendations

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Original KMG recommendation</b>										
Annual difference	\$3.1	\$6.8	\$9.8	\$14.1	\$17.8	\$22.8	\$27.8	\$32.6	\$37.8	\$42.1
<b>NPV of difference</b>	<b>\$142.5</b>									
<b>Revised KMG recommendation</b>										
Annual difference	\$2.20	\$4.18	\$5.50	\$8.12	\$9.97	\$12.13	\$15.11	\$17.63	\$20.54	\$22.28
<b>NPV of difference</b>	<b>\$78.55</b>									

Note: NPV calculations based on a 6% discount rate

## Review events

### Original assessment

In handing down its 2015 final recommendation, the Authority recognised “end-of-period reviews are suitable for managing demand and cost risks which do not adversely affect an entity's financial viability

or its customers in a material manner during the regulatory period.”<sup>10</sup> The Authority defined three types of review events to be considered as part of a future price review, including:

- Emergency events;
- Law or government policy events; and
- Feedwater quality events.

As part of the referral notice from the Queensland Government, the Authority is required to review and assess the prudence and efficiency of additional costs incurred by Seqwater as a result of each of these events, as well as costs incurred for drought response measures taken in accordance with the WSP over the period 1 July 2015 to 30 July 2018, where the costs associated with those measures are efficient and material.

Consistent with KPMG’s approach to reviewing Seqwater’s proposed step changes, KPMG has applied a similar criteria aligned with regulatory best practice and our experience of how review events are typically treated within existing regulatory frameworks.

Specifically, the expenditure (capex or opex) associated with a review event needs to be:

1. Reflective of an external event outside of the control of Seqwater which is not reasonably foreseeable or which cannot be responded to under normal operation;
2. Both prudent and efficient; and
3. For drought response events only, material and in accordance with the WSP.

The expenditure associated with a review event is not intended to form part of the forecast base revenue requirement moving forward. Instead, as an end of period adjustment, the recovery of these costs occur over a defined period.

At the time of submitting its initial proposal to the QCA, Seqwater had not finalised its assessment of the additional costs incurred by the business resulting from prevailing drought conditions. KPMG could therefore not complete our assessment for our final report of the prudence and efficiency of the proposed costs of review events.

### **Seqwater response to the QCA’s Draft Report**

Subsequent to the initial proposal and in its response to the QCA’s Draft Report, Seqwater are now seeking for the recovery of costs related to:

- Tropical Cyclone Debbie (‘Debbie’) – an emergency event as defined in the QCA’s 2015 Bulk Water Review<sup>11</sup> (cost incurred - \$1.507 million);
- Grid operating costs to supplement bulk water supply to the Northern region of South East Queensland (‘Drought Response’) – a drought response event as defined in the Referral Notice (cost incurred - \$0.83 million; and
- A feedwater event, which required additional chemical costs at Mt Crosby Water Treatment Plants (WTP) (‘Feedwater Quality’) – a feedwater quality event as defined the QCA’s 2015 Bulk Water Review<sup>12</sup> (cost incurred - \$0.44 million).

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<sup>10</sup> Queensland Competition Authority. Final Report. SEQ Bulk Water Price Path 2015-18. March 2015

<sup>11</sup> Queensland Competition Authority, *SEQ Bulk Water Price Path 2015-18*, March 2015, pg. 92

<sup>12</sup> Queensland Competition Authority, *SEQ Bulk Water Price Path 2015-18*, March 2015, pg. 94

## Revised assessment

Table 16 summarises KPMG’s assessment of each review event and Seqwater’s proposed recovery of review events costs. The analysis is discussed in Section 9 of this updated final report.

Table 16. Seqwater proposed review event end of period adjustments

Review event	End of period adjustment
<b>Emergency event</b>	<p>Debbie was an event that was outside of the control of Seqwater, which was not be reasonably foreseeable earlier than a week in advance of the event. Further, the magnitude of the event was such that it could not be responded to under normal network operations, and required the incurrence of additional costs to ensure the continued operation of the water grid.</p> <p>The event therefore meets the QCA definition of a review event and the assessed costs are prudent and efficient.</p> <p>KPMG recommends Seqwater be allowed to recover costs of \$1.4 million associated with this weather event. This represents an adjustment of \$0.07 million reflecting unjustified costs related to another weather event.</p>
<b>Feedwater quality event</b>	<p>Water quality criterion was breached at Mt Crosby WTPs, where bromide levels of 0.4 mg/L breached the trigger point of 0.18 mg/L. These levels meant that water quality criterion exceeded the trigger points in Seqwater’s procedure for responding to extraordinary water events (bromide <math>\geq</math> 0.18 mg/L).</p> <p>Seqwater implemented operational procedures that were consistent with its procedure for tracking and claiming additional costs for extraordinary water events. Further, Seqwater provided daily chemical dosages at the Mt Crosby WTPs by chemical, and applied unit rates that reflected average daily costs as documented in the CIS Inventory System.</p> <p>The event therefore meets the QCA definition of a review event and the assessed costs are prudent and efficient.</p> <p>On this basis, KPMG recommends Seqwater be allowed to recover total costs of \$443,000.</p>
<b>Drought response</b>	<p>The driver for the incurrence of additional costs is storage levels in Baroon Pocket Dam (BPD) dropping below agreed trigger levels, as identified in the Water Security Program (WSP). As this event is caused by drought, it is outside of Seqwater’s control and required changes to normal operating procedures. Seqwater implemented operational procedures that were consistent with actions detailed for the relevant trigger levels contained in the WSP. This included operating the NPI in a northerly flow direction and importing water to Landers Shute supply area from the Northern Pipeline Interconnector (NPI). Furthermore, operating NPI until 100 per cent capacity is reached is consistent with the Annual Operating Statement.</p> <p>The event therefore meets the QCA definition of a review event and the assessed costs are prudent and efficient.</p> <p>On this basis, KPMG recommends Seqwater be allowed to recover total costs of \$826,136.</p>

## Other issues

In response to the QCA Draft Report, Seqwater also sought additional allowances, specifically:

- More flexible arrangements in relation to large projects providing for the capitalisation of opex ('capitalisation'); and
- Additional expenditure allowance (capex and opex) associated with remobilisation of the Luggage Point Advanced Water Treatment Plant in the Western Corridor Recycled Water Scheme ('WCRWS').

At the request of the QCA, the following details KPMG's recommendations regarding each issue:

- **Capitalisation:** Seqwater has not adequately demonstrated the basis for seeking to capitalise operating costs associated with operating plants in hot standby mode, and for large payments for assets to third parties. Such treatment would be inconsistent with Australian accounting standards, and departures from these standards are typically by exception and driven by the regulator seeking to address issues that may be significantly distorting outcomes.
- **WCRWS:** Seqwater has not adequately demonstrated the basis for seeking to remobilise the Luggage Point AWTP, therefore KPMG does not recommend recovery of these proposed costs through bulk water prices. Current storage levels (75.2 per cent) are materially in excess of the trigger point (60 per cent) for remobilising WCRWS. Further, Seqwater is currently funded \$1 million per annum for the next three years for community and stakeholder engagement, which provides adequate funding to engage both the community and stakeholders on purified recycled water. KPMG recommends that, if the trigger point is breached, and Seqwater incurs costs related to remobilising Luggage Point ATP, it seeks to review these costs ex-post through the drought response review events mechanism.

# Contents

Executive summary	i
1 Introduction	29
1.1 Seqwater	30
1.2 Bulk water prices in SEQ	32
1.3 Our objectives and scope	33
1.4 Our approach	34
1.5 Structure of the report	37
2 Regulatory requirements	38
3 Review methodology and assumptions	40
3.1 Governance and planning frameworks	40
3.2 Capital Expenditure	41
3.3 Operating Expenditure	41
3.4 Meetings with Seqwater	42
4 Corporate governance and procurement	43
4.1 Risk management framework	43
4.2 Compliance policy	45
4.3 Investment governance	46
4.4 Delegation of authority	48
4.5 Procurement	49
4.6 Summary findings	50
5 Capital planning and asset management framework	52
5.1 Long term planning	52
5.2 Strategic asset management	56
5.3 Asset management plans	59
5.4 Renewals program	60
5.5 Capital planning and delivery	62
5.6 Summary findings	65
6 Demand	68
6.1 Water Security Program	68

6.2	Seqwater Regulatory Submission	71
7	Capital expenditure	72
7.1	Summary Findings	73
7.2	Price path vs Forecast capex horizon	80
7.3	Changes to cost estimates	81
7.4	Outcomes following the 2015-18 Seqwater Bulk Water Price Investigation	81
7.5	Forecast capital expenditure 2018 – 2028	84
7.6	Assessment of forecast capital expenditure	89
7.7	Sample projects reviewed	93
7.8	Seqwater response to the QCA Draft Report and KPMG assessment	95
7.9	Project 1: All Pipes – PAA Beaudesert WSZ Upgrade	100
7.10	Project 2: Mt Crosby Eastbank WTP - PID01566 - TEB: Filtration Upgrade and Improvement	110
7.11	Project 3: Mt Crosby Eastbank WTP - TEB: Eastbank WTP Sedimentation Upgrade (Resilience)	115
7.12	Project 4: North Pine WTP - TNP: Filtration Capacity Upgrade	120
7.13	Project 5: Ipswich Office - Enterprise Resource Planning Program	124
7.14	Project 6: Holts Hill Reservoir - RHH: pH Correction Upgrade	134
7.15	Project 7: Somerset Dam - DSO: Dam safety upgrade	138
7.16	Project 8: Lake MacDonald Dam - PID01688 - DLM: Dam Upgrade Stage 2	151
7.17	Project 9: Leslie Harrison Dam - PID01430 - DLH: Leslie Harrison Dam Upgrade Stage 1	157
7.18	Project 10: Administration Indirect Costs - Mobile Plant and Fleet Renewals	163
7.19	Project 11: Mudgeeraba WTP Renewals	166
7.20	Project 12: Mt Crosby Eastbank Raw WPS Renewals	170
7.21	Assessment of Systemic Issues	174
7.22	Original Assessment - Capital Planning Issues	175
7.23	Revised Assessment - Capital Planning Issues	179
8	Operating expenditure	185
8.1	Summary findings	186
8.2	KPMG's analytical approach	188
8.3	Seqwater Bulk Water Price Investigation 2015-18	189
8.4	Seqwater's forecasting approach	189
8.5	Base year	190
8.6	Fixed opex adjustments for offsetting costs	208
8.7	Variable Opex: assessing the validity of the base year	208

8.8	Variable opex: Inclusions and exclusions in the base year	212
8.9	Trend analysis	214
8.10	Step changes	225
8.11	Efficiency targets	234
8.12	Adjustments for offsetting revenue	242
9	Review events	243
9.1	Approach to assessing review events	243
9.2	Emergency events	244
9.3	Law or government policy events	250
9.4	Feedwater quality events	250
9.5	Drought response	252
10	Other key issues raised by Seqwater in its response to the QCA Draft Report	257
10.1	Capitalisation of opex	257
10.2	Remobilising the Luggage Point Advanced Water Treatment Plant	259
	Appendix A – Initial Seqwater Meetings	261
	Appendix B – KPMG Original Assessment Sampled Capex	262

# 1 Introduction

As the bulk water supplier for South East Queensland (SEQ), Seqwater is responsible for the safe, secure and reliable supply of bulk water to 11 council areas in a region spanning from the New South Wales boarder to the base of the Toowoomba ranges and north to Gympie.<sup>13</sup> Seqwater's bulk water prices are set by the Queensland Government and are subject to review by the Queensland Competition Authority (QCA or Authority) at the request of the Government.

In May 2017, the Authority was directed by the Treasurer and Minister for Trade and Investment to conduct an investigation into the bulk water prices of Seqwater for the period 1 July 2018 to 30 June 2021.<sup>14</sup> In support of its investigation, the Authority has engaged KPMG to provide expert advice and guidance on the prudence and efficiency of Seqwater's forecast operating and capital expenditure (opex and capex) associated with bulk water supply activities. Specifically, KPMG was asked to assess the forecast expenditure over the period 1 July 2018 to 30 June 2028. This period corresponds to the 10-year price path set by the Queensland Government and is discussed in further detail below.

KPMG provided its initial assessment to the QCA on 14 November 2017. This assessment was based on information provided by Seqwater over the period 11 August 2017 to 22 September 2017, as well as meetings held with Seqwater staff during 21, 22 and 24 August 2017.<sup>15</sup>

On 31 January 2017, Seqwater submitted its response to the QCA's Draft Report. QCA sought for KPMG to reconsider its findings in lieu of this submission, and further information, provided by Seqwater to the date 26 February 2018.

KPMG has not sought to update all areas of its report and instead focused solely on those key areas where Seqwater has provided sufficiently robust information warranting further consideration. These key areas include:

- Sampled capex projects (see Sections 7.8, 7.13, and 7.15);
- Assessment of systematic issues (see Section 7.21);
- Opex step changes (see Section 8.10);
- Productivity targets (see Section 8.11); and
- Review events (see Section 9).

Further, we have not sought to adjust the language in the original assessment sections, to maintain the integrity of our original findings.

Finally, KPMG has also assessed additional allowances sought by Seqwater (see Section 10), specifically:

- More flexible arrangements in relation to large projects providing for the capitalisation of opex; and
- Additional expenditure (capex and opex) associated with remobilisation of one train at the Luggage Point Advanced Water Treatment Plant (AWTP) as part of the Western Corridor Recycled Water Scheme (WCRWS).

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<sup>13</sup> These eleven (11) council areas across SEQ include: Gold Coast City, Scenic Rim, Logan City, Redland City, Ipswich City, Lockyer Valley, Brisbane City, Moreton Bay, Somerset, Sunshine Coast and Noosa Shire.

<sup>14</sup> Queensland Government. Treasurer and Minister for Trade and Investment. Referral Notice for the Review of South East Queensland Bulk Water Prices. 25 May 2017.

<sup>15</sup> A full list of the meetings held is provided in Appendix A.

## 1.1 Seqwater

For the south east Queensland water sector, the period 2007 to 2013 represented one of continuous institutional reform and disruption. Prompted in part by the prevailing outcomes associated with the Millennium Drought (2001 to 2009), this period would result in the amalgamation and formation (and in certain instances reversion) of new water service providers, at both the distributor-retailer and bulk water supplier level.

Prior to 2008, bulk water supply functions sat within individual local councils. In July 2008, these functions were moved into three newly formed, state-owned statutory authorities, Seqwater, Linkwater and Watersecure. At the same time, a Water Grid Manager was established tasked with strategic operation of the SEQ water grid.

Seqwater as it is known today was officially formed on 1 January 2013, in accordance with the *South East Queensland Water (Restructuring) Act 2007* as amended by the *South East Queensland Water (Restructuring) and Other Legislation Amendment Regulation (No.1) 2012*. This resulted in the merger of Seqwater and Linkwater, as well as transfer of responsibility for certain functions of the then Water Grid Manager to Seqwater. This followed the earlier merger of Seqwater and Watersecure in July 2011.

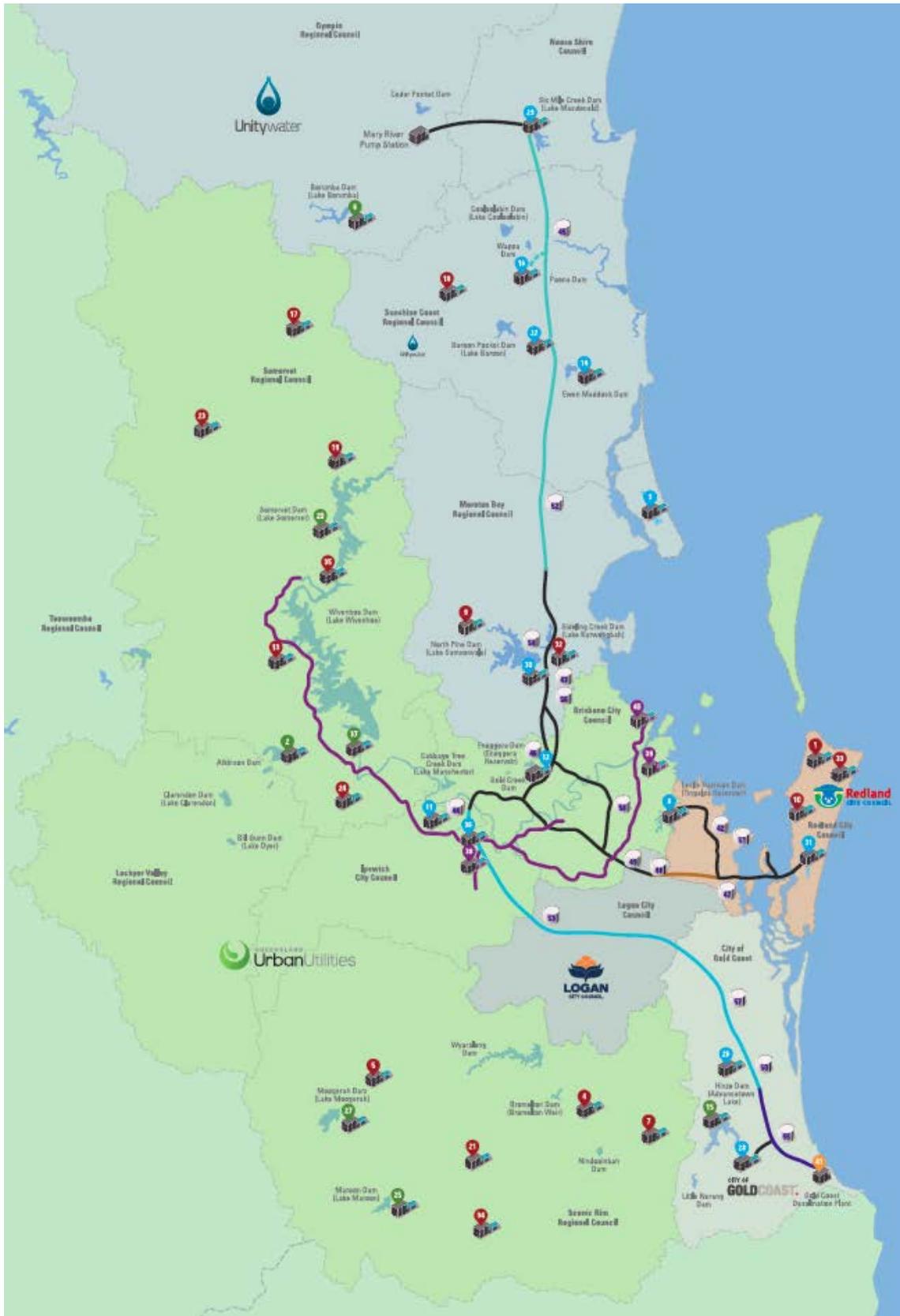
As a result, Seqwater now owns and operates 26 dams, 37 water treatment plants (WTPs), 51 weirs and two bores and aquifers that supply up to 90 per cent of SEQ's drinking water. It also owns and operates a 600-kilometre network of pipelines, as well as the Western Corridor Recycled Water Scheme (WCRWS) and Gold Coast Desalination Plant (GCDP).

Figure 5 highlights Seqwater's major assets. In addition to the provision of bulk water supply, Seqwater also provides essential flood mitigation and irrigation services to rural customers in seven water supply schemes, in addition to managing multiple recreational facilities.<sup>16</sup>

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<sup>16</sup> The costs associated with irrigation services are excluded from KPMG's assessment of the prudence and efficiency of Seqwater's forecast capital and operating expenditure.

Figure 5. Seqwater major assets

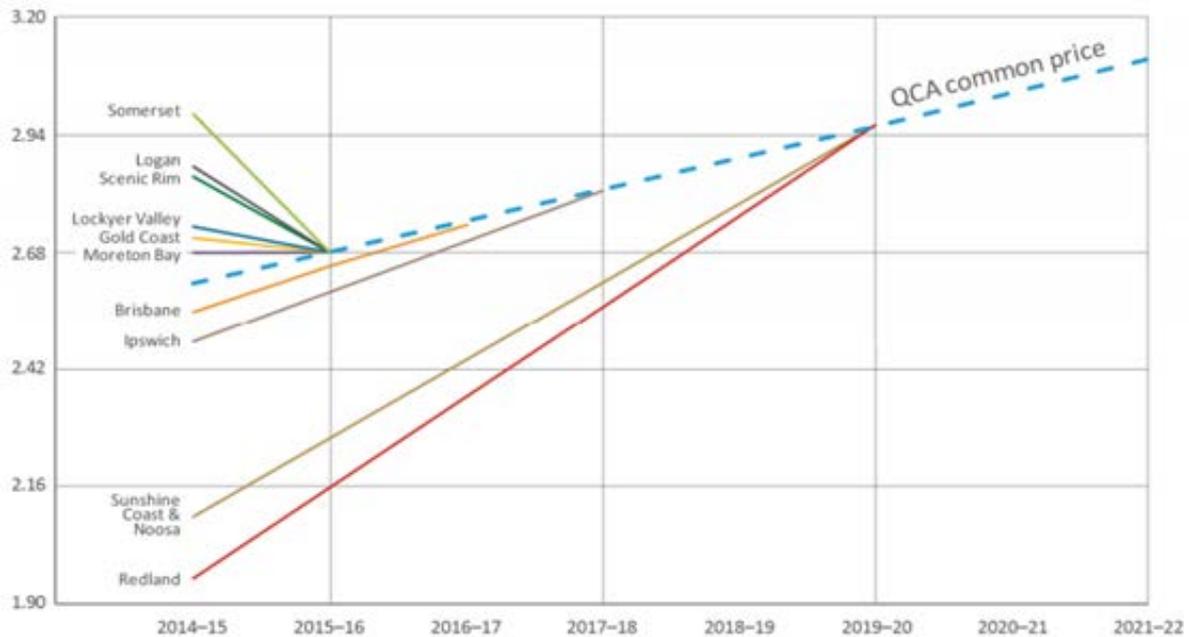


Source: Seqwater

## 1.2 Bulk water prices in SEQ

Until 2008, bulk water supply in SEQ was the responsibility of local councils, with each council area responsible for setting its own prices. When the Queensland Government took over responsibility for bulk water supply in 2008, it established a 10-year 'price path' of annual price increases to achieve a common bulk water price across all 11 SEQ councils. Due to variances in starting prices, each of the 11 councils has a different price path prior to reaching an indicative common price in financial year 2019-20 subject to determination by the government as shown in Figure 6.

Figure 6. Queensland Government – Bulk Water Price Path (Note prices from 2018-19 are indicative only)



Source: QCA

The structure of the price path results in Seqwater under-recovering its costs in the early years despite gradual increases from the outset. As a result, the price path set by the government is to provide Seqwater with the opportunity to recover not only its prudent and efficient costs of operation but also the interest on and repayments of price path debt incurred in servicing this under-recovery.

While a price path has been established, the Queensland Government periodically investigates the pricing practices of Seqwater. The Authority conducted its first review of Seqwater's bulk water prices for the period 2015-18.<sup>17</sup>

In providing a referral notice to the Authority requesting a review of Seqwater's bulk water prices for the period 1 July 2018 to 30 June 2021, the Treasurer and Minister for Trade and Investment recognised the price path had been, and will continue to be, an effective and important policy instrument for transitioning to a cost reflective common price, and ultimately, repaying the investment in the water grid over a sustainable period of time.<sup>18</sup>

<sup>17</sup> Queensland competition Authority. Seqwater Bulk Water Prices 2015-18. <<http://www.qca.org.au/Water/Urban-bulk-water/SEQ-bulk-water/Archive/Seqwater-Bulk-Water-Prices-2015-18>>.

<sup>18</sup> Queensland Government. Treasurer and Minister for Trade and Investment. Referral Notice for the Review of South East Queensland Bulk Water Prices. 25 May 2017.

In accordance with the referral notice, the Authority is required to recommend prices that would provide Seqwater with sufficient revenue to recover prudent and efficient costs incurred in providing bulk water services, as well as repay 'Price Path Debt' by 2027-28.

This investigation represents a key juncture with the convergence of all 11 council areas under a common price to have occurred by the end of the review period. KPMG note in recommending a price path structure:

- The prices for Redland, Sunshine Coast and Noosa councils are to be transitioned to the common price in 2019-20 unless this would result in a transitional price that is above the common price 2018-19, in which case prices should be set to the common price from 1 July 2018;
- The price for Noosa council is to be the same as the price for Sunshine Coast council for consistency following the de-amalgamation; and
- The common price for other council areas is to be reset from 1 July 2018, and prices are to remain constant in real terms once the common price has been reached until 2027-28.

Finally, the Authority has also been tasked with presenting an alternative price option which would result in smoothed price increases for all council areas (including Redland, Sunshine Coast and Noosa) over the three year regulatory period.

## 1.3 Our objectives and scope

Seqwater's forecast operating and capital expenditure, which contribute to the total costs recovered via bulk water prices, represents a key component in the Authority's price investigation.

The objective of KPMG's assessment is to assist the Authority determine if Seqwater's forecasts for capital and operating expenditure are consistent with those that would be incurred by a prudent service provider acting efficiently to achieve the lowest cost of delivering on service outcomes over the regulatory period, taking into account a long-term planning horizon for the business.

In accordance with the terms of reference, the scope for KPMG's assessment includes:

- Seqwater's forecast opex and capex over the period 1 July 2018 to 30 June 2028;
- Seqwater's actual capex (to the extent available) over the period 1 July 2014 to 30 June 2018, where this exceeds capex recommended by the QCA in the 2015 review; and
- Costs arising from any review events over the period 1 July 2015 to 30 June 2018.

Importantly, in completing our review of Seqwater's capex and opex forecast, we have been mindful of the difference in assessment period (1 July 2018 to 30 June 2028, 10 years) as required in the referral notice to the Authority relative to the overall objective of the Authority's investigation of recommending bulk water prices for Seqwater for the three year period of 1 July 2018 to 30 June 2021.

In meeting the requirements of the referral notice, KPMG understands the QCA are effectively setting prices for the three year period and beyond that:

- a) To remain constant (in real terms) after 30 June 2021 (i.e. grow at the rate of CPI between 1 July 2021 and 30 June 2028);
- b) Reflect prudent and efficient capex that is capitalised and rolled into the regulated asset base (RAB) between 1 July 2018 and 30 June 2028; and
- c) Ensure repayment of price-path debt by 30 June 2028.

It is important to note that only once a project expenditure has been capitalised does it form part the regulated asset base and therefore have an impact on prices.

It is reasonable to expect Seqwater have robust documentation to establish the prudence and efficiency of expenditure for those projects commencing in the early years of the forecast period such as those to begin before 30 June 2021. In contrast, it would be unreasonable to expect the same level of documentation for those projects commencing outside of the three year period ending 30 June 2021 given that an inherent level of uncertainty exists with planning the network beyond a period of three years. We have therefore not proposed adjustments for those projects in this profile category, unless these form part of our sampled review.<sup>19</sup>

KPMG notes that for projects which incur expenditure in the first three years, but are not capitalised within this same period, there are potential further opportunities to assess their prudence and efficiency in subsequent pricing reviews. This is of particular importance for those projects due to commence in year three of the forecast period and may therefore be at an early stage in the capital planning process. For these projects, we recognise that alternative assessment approaches exist that may be suitable subject to the expectations of the reviewer (and Authority), for example in relation to the level of documentation deemed appropriate in justifying both prudence and efficiency. We note these alternative approaches may include:

- 1 Placing greater focus and scrutiny only on those projects impacting prices in the short term, specifically those projects which commence and are capitalised in the next three years, i.e. before 30 June 2021. Projects which commence within (or outside of) and are capitalised beyond the initial three years are not assessed.
- 2 Applying a notional discount (e.g. 25 per cent) to those capital projects where efficiency cannot be suitably assessed, such as those projects at an early stage in the capital planning process or commencing in the later years of the forecast period as recognition of the increasing uncertainty of individual projects.
- 3 Placing a consistent level of scrutiny for all projects commencing within the first three years of the forecast regardless of when they are capitalised.

## 1.4 Our approach

To support the Authority with its investigation, KPMG has approached this task through the steps identified below. Where relevant, KPMG has drawn on regulatory precedent (set by the Authority and other jurisdictional regulators across Australia) in relation to key aspects of Seqwater's forecast.

The steps completed by KPMG include:

- 1 Review of governance and planning frameworks:** KPMG completed a desktop review of Seqwater's supporting policies and procedures detailing its overarching governance and planning frameworks. KPMG then sought to test the application of Seqwater's supporting governance and planning frameworks in development of its capex and opex proposals to the Authority.

The strategic direction underpinning the development of opex and capex forecast are best captured in the governance and planning frameworks adopted by the business. These frameworks should provide detail on how an organisation aims to achieve its strategic objectives and manage its key risks.

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<sup>19</sup> Excluding those 12 major projects sampled.

**2 Review of capital expenditure:** KPMG completed its review of Seqwater’s historical and forecast capex in four stages, the first at a portfolio level, the second at a project level, the third to consider opportunities for capital and operating expenditure trade-offs, and finally the fourth to identify systemic issues, based on the project reviews.

At a project level, KPMG has completed detailed reviews of 12 major projects ranging in size from \$9 million to \$150 million. These projects are categorised as driven by growth, compliance, renewals and service improvements or a combination of these factors.

**3 Review of operating expenditure:** KPMG evaluated the prudence and efficiency of Seqwater’s forecast operating expenditure in accordance with a base, trend and step approach. This approach establishes an efficient base year, rolls forward the efficient base operating expenditure to take account of scale growth, input price growth and efficiency improvements plus any adjustments for material step changes to costs.

In applying this methodology, KPMG has reviewed Seqwater’s total operating expenditure explicitly considering major service and cost categories.

In performing each of the above steps, KPMG has:

- Completed a desktop assessment of capex and opex supporting documentation as provided by Seqwater. This documentation has included, but not been limited to, asset management plans, corporate strategic and operational plans, risk management and compliance policies, long term planning reports, individual capex project business cases, asset portfolio master plan (APMP), regulatory pricing model, asset lifecycle approach and independent third party reports (e.g. PWC’s cost escalation factors).
- Held face to face meetings with key staff responsible for the formation of Seqwater’s forecast capex and opex. These meetings were held over the period 21, 22 and 24 August 2017 and included staff from the following business areas (not exhaustive): finance, long term planning, strategic asset management, ICT, procurement, community engagement, and regulation.

Additional meetings were held with key areas of Seqwater’s business on 21 December 2017 following release of the QCA’s Draft Report. These meetings included further discussions with staff responsible for capital planning, ICT, storage planning, and regulation and pricing.

- Sought clarifications either in the form of a secondary information request or via further discussions with key areas of the business. An example of these discussions includes a meeting with key staff of the finance department to discuss the budgeting process and forecast opex in greater detail.

Additional requests for information were submitted to Seqwater following its submission to the QCA on 31 January 2018. KPMG received responses to these requests up to 23 February 2018.

Further details of KPMG’s approach to completing each are provided in Section 3.

Importantly, in completing our review of Seqwater’s capex and opex forecast, we have been mindful of the difference in assessment period (1 July 2018 to 30 June 2028, 10 years) as required in the referral notice to the Authority relative to the overall objective of the Authority’s investigation of recommending bulk water prices for Seqwater for the three year period of 1 July 2018 to 30 June 2021. This has ramifications for how the prudence and efficiency of Seqwater’s capex and opex are assessed.

For example Seqwater’s capital expenditure may be categorised into three types of expenditure profiles:

- 1 Expenditure commencing and capitalised in the period 1 July 2018 to 30 June 2021 (consistent with the three-year pricing period);

- 2 Expenditure commencing in the period 1 July 2018 to 30 June 2021 and capitalised between 1 July 2021 to 30 June 2028; and
- 3 Expenditure commencing in the period after 1 July 2021 and capitalised in the period up to 30 June 2028.

It is important to note that only once a project's expenditure has been capitalised does it form part of the regulated asset base. It is therefore reasonable to expect that Seqwater have sufficiently robust documentation to establish the prudence and efficiency of expenditure for projects under profile 1 above, i.e. capitalised before 30 June 2021.

In contrast, it would be unreasonable to expect the same level of documentation for those projects commencing outside of the three year period ending 30 June 2021 (i.e. profile 3 above) given an inherent level of uncertainty exists with planning the network beyond a period of three years. We have therefore not proposed adjustments for those projects of this profile category, excluding those 12 major projects sampled.

KPMG notes that for projects which incur expenditure in the first three years but are not capitalised within this same period (i.e. profile 2 above), there are potential further opportunities to assess their prudence and efficiency in subsequent pricing reviews. This is of particular importance for those projects due to commence in year three of the forecast period and may therefore be at an early stage in the capital planning process. For these projects, we recognise alternative assessment approaches exist that may be suitable subject to the expectations of the reviewer (and Authority), for example in relation to the level of documentation deemed appropriate in justifying both prudence and efficiency. We note these alternative approaches may include:

- 1 Placing greater focus and scrutiny only on those projects impacting prices in the short term, specifically those projects which commence and are capitalised in the next three years, i.e. before 30 June 2021. Projects which commence within (or outside of) and are capitalised beyond the initial three years are not assessed.
- 2 Applying a notional discount (e.g. 25 per cent) to those capital projects where efficiency cannot be suitably assessed, such as those projects at an early stage in the capital planning process or commencing in the later years of the forecast period as recognition of the increasing uncertainty of individual projects.
- 3 Placing a consistent level of scrutiny for all projects commencing within the first three years of the forecast only, regardless of when they are capitalised.

We note that the third approach identified above provides for a more robust assessment and is consistent with our agreed scope of work with the Authority. Further, this approach is consistent with our assessment of sampled major projects as described in Section 7.

### 1.4.1 Defining prudence and efficiency

We have adopted the following definitions of prudence and efficiency of expenditure in accordance with those set out by the Authority in the terms of reference.

Operating expenditure is considered:

- Prudent if it can be justified by reference to an identified need or cost driver, e.g. to meet legal or regulatory obligations or contracts with external agencies; and
- Efficient if it minimises Seqwater's long-run costs of providing bulk water supply services.

While capital expenditure is considered:

- Prudent if it can be justified by reference to an identified need or cost driver, e.g. to meet legal or regulatory obligations, new growth, renewal of existing infrastructure or an increase in the reliability or quality of supply explicitly endorsed or desired by customers, external agencies or participating councils; and
- Efficient if it is the least cost to deliver on an appropriately defined scope and standard of works. Efficient capex would typically encompass the scope (i.e. whether the general characteristics of the project provide the best means of achieving the desired outcomes), standard (e.g. whether the works conform to technical, design and construction requirements in legislation, industry and other standards, codes and manuals) and cost of the works.

## 1.5 Structure of the report

The remainder of this report is structured as follows:

- Section 2: Regulatory requirements
- Section 3: Review methodology and assumptions
- Section 4: Corporate governance and procurement
- Section 5: Capital planning and asset management framework
- Section 6: Demand
- Section 7: Forecast capital expenditure
- Section 8: Forecast operating expenditure
- Section 9: Review events
- Section 10: Other key issues raised by Seqwater in its response to the QCA Draft Report
- Appendix A: Seqwater meetings.

## 2 Regulatory requirements

How Seqwater both plan and operate its portfolio of assets ensuring for the security, reliability and quality of bulk water supply to customers throughout SEQ is governed by a range of legislative and regulatory instruments. These instruments include, but are not limited to:

- South East Queensland Water (Restructuring) Act 2007 (Qld);
- Water Act 2000;
- Water Supply (Safety and Reliability) Act 2008 (WSSR Act);
- Financial Accountability Act 2009;
- Environmental Protection Act (1994);
- Aboriginal Cultural Heritage Act 2003;
- Work Health and Safety Act 2011;
- Financial and Performance Management Standard 2009;
- Bulk Water Supply Code; and
- Australian Drinking Water Guidelines.

Critical to Seqwater's capital and operating expenditure activities is its ability to meet its obligations in terms of water quality in accordance with the WSSR Act, Australian Drinking Water Guidelines and supply agreements with its customers. Similarly, how Seqwater meets its Level of Service (LOS) and obligations in accordance with the Water Regulation 2016 (under the Water Act 2000) and dam safety obligations in accordance with the Water Supply (Safety and Reliability) Act 2008, Water Legislation (Dam Safety) Amendment Act 2017 and Dam Safety Management Guidelines (ANCOLD Guideline 2003) will dictate the capital program options assessed by the business as well as operating expenditure and maintenance performed by the business.

For example, the LOS obligations are broken into three key areas and provide a measure for the performance of the bulk supply network. Each of these three areas are summarised in Table 17 below. Seqwater is required to develop and publish its Water Security Program under the Water Act 2000 every five years. The WSP sets out the basis for meeting the LOS obligations over a 30-year horizon and provides for, among other matters, Seqwater's:

- Proposed operation of its designated bulk water supply assets;
- Future infrastructure needs, including building new infrastructure or augmenting existing infrastructure;
- Management of infrastructure relevant to the designated water security entity's operations;
- Management of demand for water; and
- Response to drought conditions.

The WSP therefore provides the basis upon which Seqwater's proposed capital and operating expenditure forecasts included within the regulatory submission are developed.

Table 17. LOS Obligations

Projected regional average urban demand for SEQ region	Bulk water drought supply	Minimum operating levels and essential minimum supply volume
<p>1) The bulk water supply system is to be able to supply enough water to meet the projected regional average urban demand.</p> <p>2) The bulk water supply authority must:</p> <p>a) work out the projected regional average urban demand in collaboration with the SEQ service providers, and publicly publish the projection in the way stated in the SEQ water security program; and</p> <p>b) assess annually whether the projected regional average urban demand or latest projected regional average urban demand is still current, and publicly publish the outcome of the assessment in the way stated in the SEQ water security program.</p>	<p>1) The bulk water supply system is to be able to supply enough water so that medium level water restrictions on residential water use:</p> <p>a) will not happen more than once every 10 years on average; and</p> <p>b) will not restrict the average water use for the SEQ region to less than 140L for each person for each day.</p> <p>2) The bulk water supply system is to be able to supply enough water so that medium level water restrictions on non-residential water use that is incidental to the purpose of a business will not happen more than once every 10 years on average.</p> <p>3) Medium level water restrictions on residential and non-residential water use are expected to last no longer than one year on average.</p>	<p>1) Each of the following dams will not reach its minimum operating level more than once in every 10,000 years on average:</p> <p>a) Baroon Pocket Dam;</p> <p>b) Hinze Dam; and</p> <p>c) Wivenhoe Dam.</p> <p>2) The bulk water supply system:</p> <p>a) will be able to supply the essential minimum supply volume; and</p> <p>b) will not be reduced to being able to supply only the essential minimum supply volume more than once in every 10,000 years on average.</p>

# 3 Review methodology and assumptions

In this section, KPMG provide further detail in relation to the methodology applied in completing each of the three steps to our assessment as well as the key assumptions made when reviewing material provided by Seqwater.

## 3.1 Governance and planning frameworks

The strategic direction underpinning the development of opex and capex forecast are captured in the governance and planning frameworks adopted by the business. These frameworks should provide detail on how an organisation aims to achieve its strategic objectives and manage its key risks.

The planning framework will define the process, principles and accountabilities for developing capital and operating plans, and it will provide transparent and robust principles to ensure alignment between strategic objectives and investment priorities, incorporating stakeholder and regulatory requirements.

To assess Seqwater's governance and planning frameworks, KPMG firstly completed a desktop review of Seqwater's supporting policies and procedures detailing its overarching governance and planning frameworks. In completing a desktop review, we pursued evidence of:

- Consistency with relevant standards and guidelines, including, AS/NZS ISO 31000:2009 Risk Management, AS/ISO 19600:2015 Compliance Management Systems, ISO 55001:2014 Asset Management;
- Delegated financial authority and capital approval processes;
- Mandatory documentation requirements such as phase record documents;
- Planning and design processes;
- Procurement policy and relevant commercial principles;
- Cost estimation processes (component estimation, cost element estimation, benchmarking);
- Delivery strategies;
- Project/program management;
- Change control processes and policies; and
- Performance monitoring and benefits realisation.

Following completion of this desktop review, KPMG sought to test the application of Seqwater's supporting governance and planning frameworks in development of its forecast expenditure proposals to the Authority. To do so, we have sampled the supporting information provided by Seqwater in relation to individual capital projects to be completed over the upcoming regulatory period and looked for evidence associated with the investment governance / capital planning and delivery framework (described further in Section 4.3 and Section 5.5). Example documentation includes needs and options assessments, business cases and investment justification or independent (third party) reports.

## 3.2 Capital Expenditure

In order to effectively assess Seqwater's proposed capital expenditure over the period 1 July 2018 to 30 June 2028, KPMG has completed its review in four stages, the first at a portfolio level, second at a project level, the third to consider opportunities for capital and operating expenditure trade-offs, and finally the fourth to identify systemic issues in Seqwater's approach to capital expenditure forecasting, based on the project reviews, as explained below:

**1 High level review and prioritisation:** At a portfolio level, KPMG has reviewed the robustness of planning policies and strategies and assessed portfolio-wide issues identifying priority areas across the major capital expenditure categories.

This work builds on our assessment of Seqwater's governance, capital planning and assessment management frameworks.

**2 Detailed project reviews:** KPMG has critically evaluated 12 major capital projects ranging in size from \$9 million to \$150 million.

**3 Capital / operating expenditure trade-offs:** KPMG considered the opportunities, which may exist for substitution (trade-off) of capital for operating expenditure or vice versa thereby ensuring for efficient service delivery and least efficient cost outcomes for customers.

**4 Identification of systemic issues:** Adopting a risk-based approach, KPMG has tested for systemic issues built into Seqwater's such as significant contingency allowances across multiple projects and the use of any inappropriate price indexes.

## 3.3 Operating Expenditure

For our assessment, KPMG has adopted a base, trend and step approach. The base-step-trend approach is well established for assessing operating expenditure forecasts in determinations across a range of utility sectors (including the energy sector in Australia) and has been adopted by other jurisdictional regulators including for example the Essential Services Commission of Victoria and Australian Energy Regulator.

This approach establishes an efficient base year, rolls forward the efficient base operating expenditure to take account of scale growth (in this case growth in the volume of water delivered), input price growth and efficiency improvements and includes adjustments for step changes to costs.

Our analytical approach adopted in assessing Seqwater's proposed opex provided for five main components:

**1 A review of the Authority's past determination:** KPMG first reviewed the QCA's past determination with particular reference to the last operating expenditure review undertaken by CH2M Hill. The purpose of this review was to identify any issues or actions recommended by CH2M Hill, which Seqwater have subsequently sought to address over the course of the current regulatory period.

**2 Assessment of Seqwater's forecasting method:** KPMG assessed the appropriateness of the forecasting approach adopted by Seqwater relative to that applied in other jurisdictions and industries (e.g. Victoria and electricity).

- 3 Assessment of base year opex:** KPMG sought to verify that the baseline operating expenditure reflects efficient controllable costs and has appropriate adjustments for non-recurring expenditure and efficiency savings. In doing so, KPMG has assessed the proposed base year against historical opex, reviewing the proposed inclusions and exclusions and assessing the underlying expenditure for potential non recurrent expenditure.
- 4 Assessment of proposed trends in opex:** KPMG has assessed the basis for the operating expenditure roll-forward calculations and how assumptions have been used to determine future operating expenditure requirements. This element of the review considered the:
  - o Operating expenditure input price inflation forecasts;
  - o Forecast growth in consumption;
  - o Assumed efficiency improvements; and
  - o Internal consistency of proposed operating expenditure with the capital program.
- 5 Assessment of proposed step changes in opex:** Finally, KPMG considered the proposed expenditure associated with major new initiatives or variations that change the operating expenditure trend.

## 3.4 Meetings with Seqwater

KPMG completed initial interviews with Seqwater staff held over three days – 21, 22 and 24 August 2017. During this time, KPMG met with key areas of Seqwater business responsible for development of the capital and operating expenditure forecasts.

KPMG completed additional interviews with key areas of Seqwater’s business in the lead up to its submission to the QCA on 31 January 2018. These interviews were held on 21 December 2017 with staff responsible for capital planning, ICT, storage planning, regulation and pricing.

In addition to these meetings, KPMG has had numerous teleconference discussions with members of Seqwater’s regulatory and pricing team. These discussions sought to further clarify information provided by Seqwater and identify potential information gaps.

A full list of the meetings is provided in Appendix A.

# 4 Corporate governance and procurement

Corporate governance of capital and operational delivery and expenditure is a core business function and should therefore be assessed in terms of Seqwater's business model and operating model. Seqwater is seen as an asset management organisation which means its objectives include coordinating activities to realise customer value from its asset base. To properly assess the corporate governance and procurement processes of this type of organisation, we have utilised the International Standard, ISO55001 which requires a management system approach to asset management. Where business functions are not sufficiently covered by the Seqwater management system, associated and referenced documents have been used such as the Asset Management Landscape that covers the globally agreed 39 subjects of asset management and the risk management standard, ISO31000.

These standards state that the responsibilities and authorities of key functions should be defined. These definitions should include both internal and outsourced roles and responsibilities. The interfaces between organisational functions should be clearly established. This becomes more important in an outsourced environment.

Risk Management must occur within a disciplined management framework and governance process. Often, organisations will develop risk registers or logs and develop processes to support the opening, updating and closure of business risks. The management of risks should include both a system of review and escalation of the risk, with assessment taking place at the appropriate level within an organisation. The testing process requires Seqwater to have in place a Risk Management System that enables the identification of risks, the assessment of risk exposure, the classification of business risk appetite and controls to reduce or manage risks in a suitable manner.

Procurement governance is largely focussed on the procurement of goods and services. Goods can be considered physical assets and services may consist of outsourced activities to deliver Seqwater functions. Outsourcing is a method for an organisation to have certain asset management activities performed by a service provider. These outsourced activities (which can influence the achievement of the asset management objectives) should be defined, maintained, controlled and documented as a part of the asset management system. Tests include:

- The extent of outsourcing that requires aligning processes of the services provider(s);
- Outsourcing risks and impacts on assets, asset management and asset management system;
- What potential risks cannot be transferred, even if the related asset management activities are transferred;
- Performance reporting on transparency and performance of outsourced activities; and
- The exertion of leadership to formalise the outsourcing relationship.

In this section, KPMG has provided an overview of the corporate and procurement governance processes adopted by Seqwater including: risk management; compliance; investment governance; delegation of authority; and procurement.

## 4.1 Risk management framework

Risk Management is an essential component that enables an organisation to benefit from optimised Asset Management decision making. It is part of the process that enables a disciplined approach for an organisation to maximise value and deliver its Organisational Strategic Plan.

Seqwater has an Enterprise Risk Management Framework aligned with the risk management process defined in AS/NSZ ISO 31000:2009: Risk management – principles and guidelines. The Framework provides an overview of the risk management principles that define the key activities for effective risk management within Seqwater and is documented in PRO-00801 Corporate – Risk Management Procedure.

This Framework provides guidance on Seqwater’s enterprise risk management system and has been designed to outline the minimum requirements for risk management within Seqwater. The Seqwater Strategic Asset Management Plan (SAMP), and particularly the asset management objectives, have been developed with consideration of the Seqwater Enterprise Risks as described in the Enterprise Risk Register.

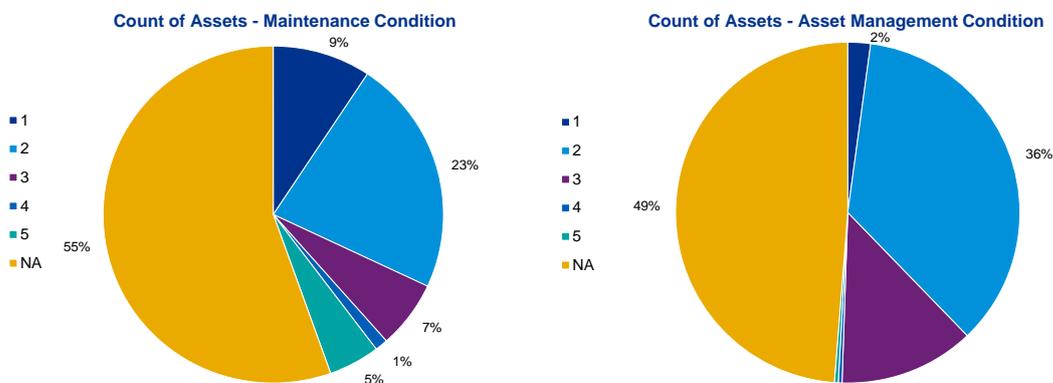
For investment decision making, Seqwater has considered many enterprise risk, activity risk and asset risk factors in developing its expenditure forecasts. The Framework provides for ratings/scores of both the likelihood and consequence of a specific risk. For the most part, the likelihood and consequence scores have definitions with quantified examples to help prioritise investments, however the application of the scores are subjective based on the user. The consequence score can be confidently validated using network models and analysis, however the likelihood score is more time based and dynamic.

KPMG’s assessment has identified one main issue with this Framework and Seqwater’s approach. To improve confidence in the likelihood score, Seqwater should consider using data driven metrics from condition and performance assessments to predict the likelihood of failure at multiple points in time. This will help forecast when more detailed surveys should be undertaken before any project is committed. The analysis should be supported by an improvement loop to capture where condition degradation curves, used to forecast likelihood, should be updated with more robust results.

Improving the likelihood score should lead to better forecast needs identification and result in a lower number of projects being deferred having already passed a preliminary evaluation as outlined in Section 4.3.

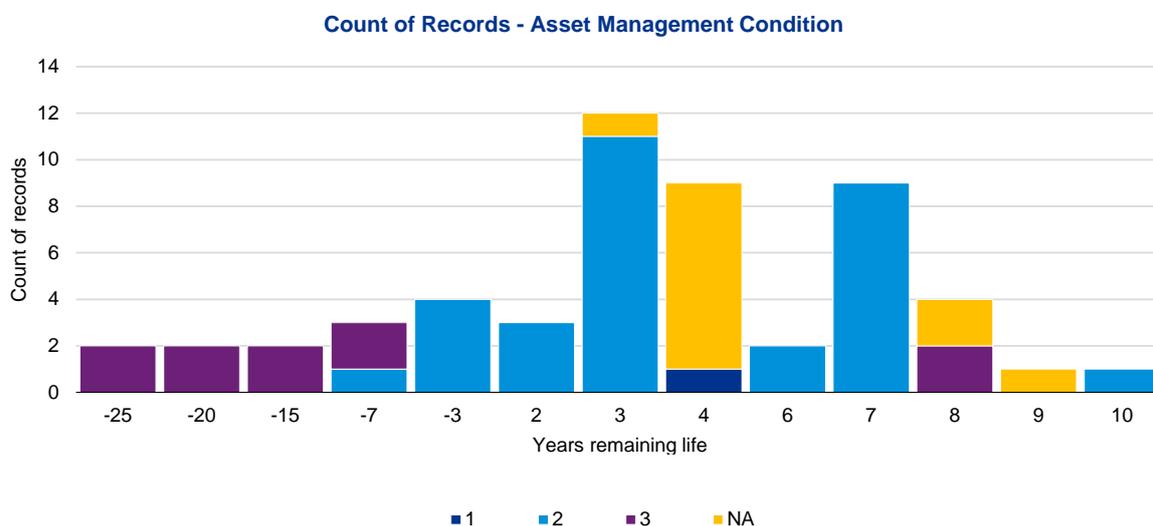
For example, KPMG was provided with sample data for the 283 assets that together constitute the Kooralbyn WTP, approximately half of the assets do not have a condition score which is a critical input to calculating likelihood. Within this sample, there appears to be two different condition scores captured, ‘maintenance condition’ and ‘asset management condition’. These scores are not consistently captured with many assets only having one or the other score. For those assets that have both scores, some are not consistent with each other. Figure 7 compares the two different score profiles (1 is good, 5 is poor).

Figure 7. Comparison of condition score breakdown



The sample data also provided figures calculated from install dates and economic lives to provide a 'remaining life'. Figure 8 below also shows that for the 54 assets at Kooralbyn WTP that are within 10 years or less remaining life, none of the assets have a condition score worse than 3 out of 5. This indicates that the assets do not require replacement and may be an indicator that either there is an issue with condition analysis or the economic lives need further analysis.

Figure 8. Lack of correlation between condition scores and remaining life



## 4.2 Compliance policy

The Compliance Policy confirms Seqwater’s commitment to compliance with: all relevant legislation; government policies and directives; licences; approvals; permits; contract terms and conditions; and certification standards. It also states that Seqwater will employ the Australian / New Zealand Standard Compliance Framework AS/NZS 3806:2006 to monitor compliance.

Internal compliance controls used by Seqwater include policies, procedures, systems and processes, which are internally / externally audited and continually improved. Staff compliance is managed through a documented Code of Conduct, which raises staff awareness of compliance issues and improves staff compliance accountability. The details of the Corporate Compliance Framework are documented in the Corporate Manual MAN-00255 Compliance.

The Corporate Compliance Framework covers compliance registers, a compliance software solution, an assurance checking and corrective action procedure, a notification procedure, a legislative change procedure and a compliance reporting regime.

Below is a list of potential policies that should be covered by the compliance framework:

- Drinking Water Quality Policy;
- Occupational Health and Safety Policy;
- Environment Policy;
- Land Management Policy;
- Security Policy;
- Information Security Policy;

- SCADA Security Policy;
- Security Fencing Policy;
- Tapping into Water Mains Policy;
- Privacy Policy;
- Purchasing Policy;
- Intellectual Property Policy;
- Copyright Policy; and
- Fleet Policy.

The vast number of compliance requirements that Seqwater needs to track and monitor drives a culture of focusing on individual key performance indicators (KPIs) which makes it challenging to “see the big picture”. Seqwater utilises a software solution in order to track these at an individual requirement level, however it was not evident that it is used to improve decision making outcomes.

## 4.3 Investment governance

Seqwater’s investment decision-making is based on the gateway review process as shown in Figure 9. This process forms the basis for all capital planning and delivery across Seqwater. KPMG notes this is a similar process to that adopted by the Queensland Government and which is aligned with the internationally-recognised OGC Gateway™ Process. Further details regarding the implementation of the gateway review process are provided in Section 5.5.

Figure 9. Seqwater investment gateway process

	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

Source: Seqwater

Discussions with Seqwater have indicated that the business is progressing with formalising this process across all business functions. This work includes revising existing processes and templates and rolling out necessary training to staff. Further, procedural documentation has been drafted and submitted for internal review across the business and multiple work instructions remain in various stages of development (see Figure 10 below).

KPMG recognises that Seqwater are still in the process of operationalising the gateway process across all business functions. As a result, there are still sub-processes that are undertaken that appear to map between the gates. These sub-process can create the possibility that formal review at major milestones can be missed. Figure 11 provides an example of such sub-processes from the Asset Capability team. While these sub-processes would typically cover Gates 0 and 1 under the new framework, there is no clear requirement within the process to gain approval before moving on to Gate 1.

While communication of processes have taken place and there was evidence of awareness of the gated process, KPMG notes that it is possible that the 'investment program development steps' outlined above bypass Gate 1. This is further evidenced by the data provided in the 2017 Asset Portfolio Master Plan (APMP) which is a database of all projects identified for potential capital investment.

Figure 10. Capital Investment Lifecycle Framework

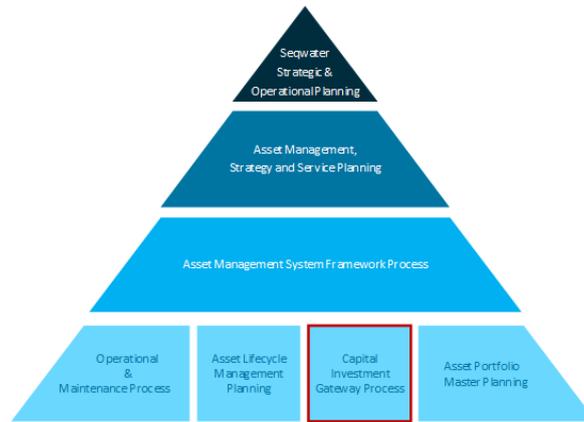


Figure.1. Organisational Context diagram

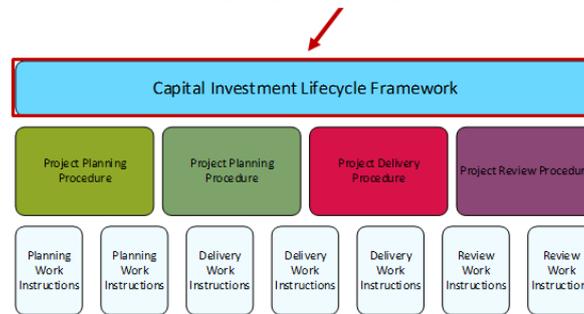
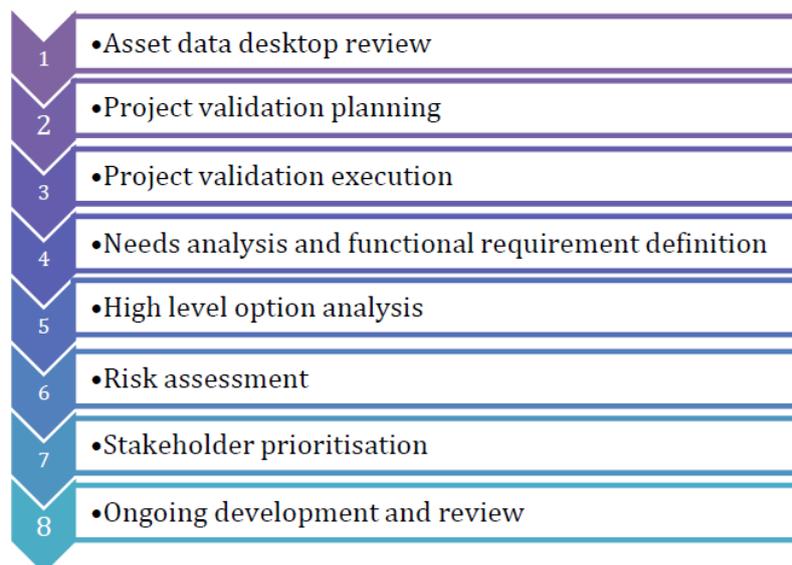


Figure.2. Gateway framework & Subordinate documentation

Source: Seqwater

Figure 11. The asset renewals, refurbishment and replacement investment program development steps



Source: Seqwater

Table 18 provides a breakdown of all 1,289 projects within the APMP where each project is allocated a status by stage gate. As can be seen, there is a significant lack of documentation captured for Gateway 1 indicating a packaging of documentation to pass multiple gateways at once. For example, of the 117 projects that are currently at Project Status 3, Investment Decision, only 17 have documented evidence required to pass Gateway 1.

If projects are passing gates either without appropriate documentation, review or the completion of necessary approvals are based on incomplete data then Seqwater should consider including additional procedures.

Table 18. Current Status of Projects Breakdown by Stage Gate

Project Status	Gateway 0 Documentation	Gateway 1 Documentation	Gateway 2 Documentation	Gateway 3 Documentation
0 - Strategic Assessment	661	8	21	3
1 - Preliminary Evaluation	162	40	22	1
2 - Investment Justification	26	10	25	
<b>3 - Investment Decision</b>	<b>112</b>	<b>17</b>	<b>117</b>	
4 - Readiness for Service	29	1	24	5
(blank)	5			
<b>Total</b>	<b>995</b>	<b>76</b>	<b>209</b>	<b>9</b>

## 4.4 Delegation of authority

At each stage of the gated project management phase, there are identified Approving Officers with the delegations and authorisations arrangements described in the Delegations and Authorisations Manual (MAN-00076), with additional consideration of risk implications. For investment decisions that exceed General Manager financial delegations or are assessed as high risk, matters must be considered and endorsed by the Investment Review Group (IRG) before consideration by the CEO. For investment decisions that exceed the CEO's financial delegation, projects are passed to the Investment and Procurement Committee (IPC) – a sub-committee of the Board. The IPC consider proposals and provide endorsement before business cases can be presented to the Board.

Other key governance bodies and processes include:

- Key input parameters approved by Audit and Risk Committee and the Board;
- Group plans developed and signed off by the area General Manager;
- Monthly progress tracking / reporting completed – budget vs actual; and
- Investment Review Group that oversees the gated process.

In addition to the Delegations and Authorisations Manual, Seqwater has a Management of Change (MOC) procedure (X-PRO-STD-00X) in place to capture and control the impacts of changes to the configuration of the network and the operating model to manage customer services.

For changes that require a MOC, the delegation procedure is used to assign authorisation responsibilities (e.g. higher duties) to a suitably qualified substitute. For changes that do not require a MOC, it is possible to gain approval to deviate from the delegation procedure to allocate authorities to another individual.

## 4.5 Procurement

Seqwater has developed a procurement business framework. Fundamentally, the responsibility of the Procurement function is to ensure the delivery of best value contract models and manage the framework that delivers:

- Value for money;
- Open and effective competition;
- Sustainability;
- Probity and ethical behaviour;
- Risk management; and
- Responsible spend management.

Seqwater's Procurement and Commercial Services structure are made up of: category management (capex), category management (opex) and business excellence. There are documented procedures that provide a guide to procurement sourcing options based on the project risk rating and capital cost (including contingency). These policies are:

- Queensland Government Procurement Policy 2013 (note new Policy commences 1 September 2017 with six months to transition);
- Seqwater Procurement Policy 2014 (Document No. POL-0045); and
- Seqwater Procurement Procedure 2016 (Document No. PRO-01514).

In addition, the IPC considers proposals and provide endorsement before business cases can be presented to the Board. The IPC are bound by the charter, Investment and Procurement Committee Charter, POL-00046.

Further, Seqwater Program Controls, who have the largest proportion of outsourced staff, have a procedure in place requiring all spend over \$5,000 to be tracked and signed off at appropriate levels. In accordance with this procedure:

- Category Management – Capex. Charged with managing Capital Projects greater than \$500k. Overseeing Standing Offer Arrangement for Projects between \$100,000 and \$500,000 (Minor Works) and Planning and Design for Consultancy arrangements up to \$2 million.
- Category Management – Opex. Charged with managing addressable spend on Energy, Chemicals, Sludge, Facilities, Materials, Maintenance and Professional Services. Utilising various Whole of Government and Seqwater arrangements and contractual arrangements.
- Business Excellence – focused on governance, systems, training, quality assurance, supply chain and logistics, commercial administration, document management, analytics and reporting.

Reporting on these tender outcomes is imperative to demonstrate value for money. Reporting includes financial analysis on contractor viability, ASIC checking, compliance reporting (internal audit, Q-leave), analytics on category spend and sourcing review activities.

Seqwater's procurement procedures appear robust and a strong panel of local resources have been established. However, driving through and tracking all spend down to \$5,000 increments takes considerable effort which can allow for other 'big picture' work to be overlooked. Seqwater may wish

to consider automating approval levels for certain purchasing within remote areas such as treatment plants.

Seqwater should also closely monitor the value they obtain from its outsourced staff in Program Controls which equates to approximately 15 Fixed Term staff and 30 Project Based outsourced staff. Whilst it is advantageous to be able to flex the size of the team to suit the workload, there should be a clear Competency Framework that outlines which capabilities are best to outsource and therefore what KPIs and shared information should be monitored.

## 4.6 Summary findings

Overall, we found the corporate governance and procurement framework of Seqwater, as supported by various policies and processes such as the Enterprise Risk Management Framework, Investment Decision Making or gateway process, to provide for an effective approach to management of key asset and investment risks and compliance obligations. These policies and processes are considered in large part to be fit for purpose and have been aligned with key standards such as AS/NSZ ISO 31000:2009: Risk management – principles and guidelines.

Discussions with Seqwater have indicated that, in certain areas, the business is progressing with formalising key process across all business functions, in particular in relation to recently implemented gateway investment processes (described further below). This is one example of a notable area where processes have not become effective or embedded, however it appears that progress has been made and improvements are programmed.

It appears that Seqwater should improve the way the likelihood component of the risk equation as part of the Enterprise Risk Management Framework and that the approach is formed. This either requires an improved process or increased data quality. Based on the data analysed, there were material gaps (50 per cent incomplete) in condition information that is used to form the likelihood of failure. Further, there are instances where the same asset is graded as good and poor condition using different database fields.

For Seqwater to manage the compliance framework, Seqwater should consider a compliance driver tree hierarchy that links team and individual KPIs so that management can monitor the impact of performance on overarching compliance issues. An example of this is provided in the figure below and could be annotated with the appropriate compliance requirements.

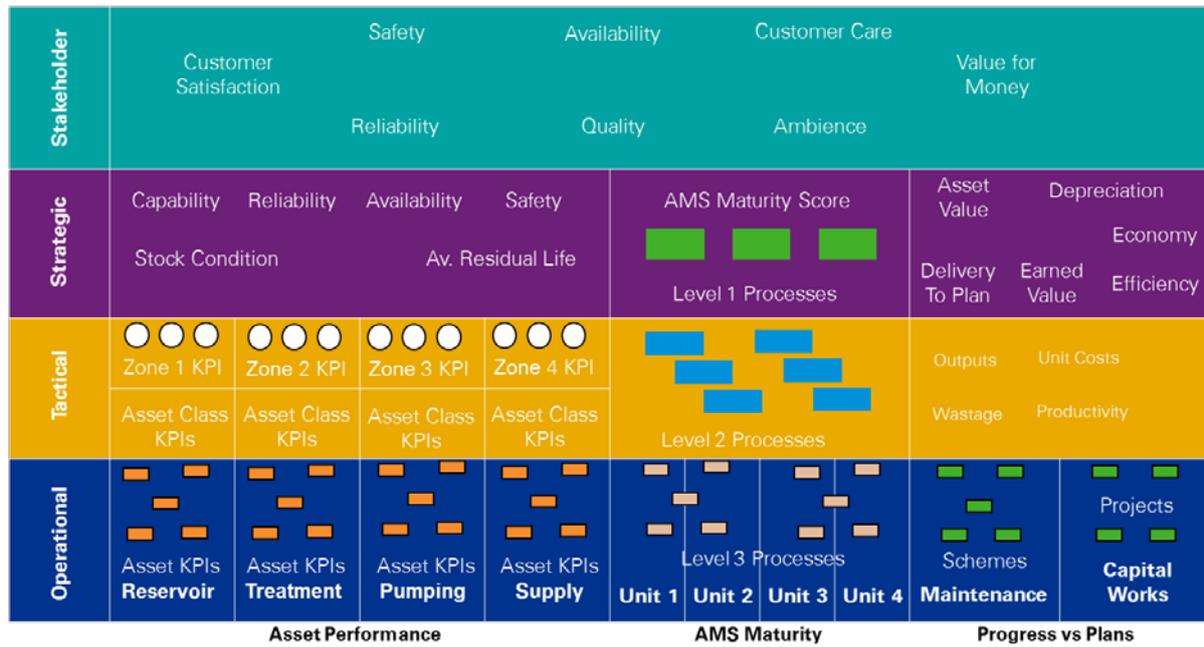
The investment governance process should be improved to capture gateway approval supporting documentation at each stage gate, not just nominated gateways. This may be due to an alignment issue between the new OGC Gateway™ Process and the traditional asset renewals, refurbishment and replacement investment program development steps.

We recognise that Seqwater are still in the process of operationalising the gateway process across all business functions. As a result, there are still sub-processes that are undertaken that appear to map between the gates. These sub-processes can create the possibility that formal review at major milestones can be missed. It is possible that the 'investment program development steps' outlined above bypass Gate 1. Evidence from the 2017 APMP showed that of all 1,289 projects, there is a significant lack of documentation captured for Gateway 1 indicating a packaging of documentation to pass multiple gateways at once.

The procurement process currently monitors all spend down to \$5,000. Whilst this provides a detailed amount of governance, the time it takes to monitor appears to be detracting time away from larger projects with significantly more spend. Possible automation of low value spend could be investigated

to continue to enable audit verification whilst releasing time for limited resources to spend on larger capital works.

Figure 12. Example - Hierarchy of Performance Measures



# 5 Capital planning and asset management framework

As with Section 4, the International Standard for asset management enables clear assessment guidelines and allows for targeted improvements on specific areas of the management system. ISO55002, Guidance to the Asset Management System, states that Seqwater must “demonstrate responsibility for delivering performance against one or more asset management objectives, and the effective control and governance of asset management related function(s) and activities it is carrying out, in order to generate the value from the assets defined in the scope of its asset management system”.

KPMG’s tests include determining whether Seqwater has a consistent Asset Management Policy and Asset Management Strategy that provide a stable framework to allow joined up Asset Management Decision-Making. Furthermore, our test involved validating that the Asset Management Policy provided the overarching principles to enable the Strategic Asset Management Plan (SAMP), to be produced and implemented. The SAMP would then typically contain the value criteria to be used to optimise Asset Management Decision-Making.

The process of Capital Investment Decision-Making was tested to understand asset degradation and trading-off capital costs, maintenance costs, risks and their probabilities in order to optimise a capital investment decision, both in terms of timing and asset intervention options.

To further test the trade-off between maintenance and capital investment and likewise, individual Operations & Maintenance Decisions, Lifecycle Cost & Value Optimisation processes were tested to assess if the right decisions are being made to maximise the return on asset value. Lifecycle Cost & Value Optimisation requires the calculation of costs, risks and revenues over the life of the assets or asset systems and can be split into the four areas of the asset lifecycle itself being plan, acquire, operate and maintain and dispose.

Delivery of individual projects were tested to validate whether they were managed through a lifecycle divided into different phases, separated by governance decision gateways where financial sanction for the next phase is approved. This delivery cycle was tested to check that projects were appropriately triaged and prioritised based on value to the customer.

This chapter provides an overview of Seqwater’s approach to planning and asset management across its network and portfolio of bulk water supply assets. This includes content relating to long term planning, strategic asset management, asset management plans, the renewals program and capital planning and delivery.

## 5.1 Long term planning

For Seqwater, structural reform of the Queensland water sector has resulted in significant disruption in relation to how the business establishes its long term capital and assessment management plans for its portfolio of assets. For example, following its formation in January 2013, Seqwater assumed responsibility for the long term water security planning for all of SEQ.

Similarly, Seqwater has had to inherit many of the asset management practices, legacy systems and processes associated with its predecessor companies. Prior to 2007, 18 different asset management practices were in place reflecting previous asset ownership/service delivery models in the sector.

The following sections provide a summary of the programs/plans adopted throughout Seqwater and its role within the organisation.

### 5.1.1 Water Security Program

Under the Water Act 2000 and the Bulk Water Supply Code, Seqwater is required to develop a Water Security Program (WSP) to meet level of service objectives for water security in SEQ for the next 30 years. The WSP is to detail how Seqwater plans to, among other factors:

- Operate and manage its assets;
- Address future infrastructure needs across its bulk supply network (including off-grid communities);
- Manage demand for water; and
- Respond to drought conditions.

Water security Level of Service (LOS) objectives are Seqwater's targets for long term water supply security for a community. The LOS objectives include statements about:

- How much water the water supply system will typically be able to supply;
- How often and for how long water restrictions might occur; and
- The possibility of needing an emergency water supply due to a prolonged drought.

The LOS approach helps ensure that the available water for treatment and distribution is sufficient to supply the community's (both grid and non-grid connected customers) water needs into the future. LOS objectives provide a basis for water supply security planning, helping to balance the need for water with the cost of supplying it.

Seqwater is required to review and publish its WSP every five years, or if there is a significant change in any matter affecting, or likely to affect, the achievement of the desired level of service objectives for water security.

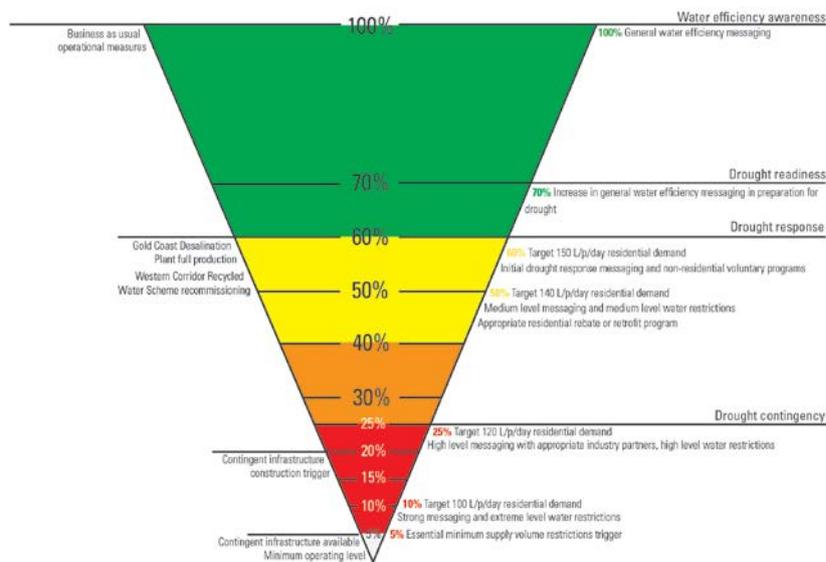
The current WSP (now in its second version), "Water for Life", was released by Seqwater in March 2017 and provides an outlook for the period 2016 to 2046. In development of the WSP, Seqwater undertook stakeholder consultation through various workshops with customers (such as distributor-retailers) and consumers.

A key component of the WSP is Seqwater's demand outlook over the 30-year period. Seqwater adopt a medium demand outlook of 185L/p/d residential and 100L/p/d non-residential, as the basis for its capital planning activities. This outlook is reported in the WSP, along with additional scenario analysis capturing specifically low and high demand growth forecasts, as well as specific climate change scenarios. These additional scenarios are used in testing of proposed capital plans. Section 4 provides further details of Seqwater's demand forecasting methodology.

Finally, the WSP sets out Seqwater's response to changes in climatic conditions and in particular key drought triggers tracked by the business and its proposed response initiatives (as shown in Figure 13).

Seqwater utilise the WSP (now in its second version) as the basis for its long term planning activities. The outcomes, or plans, developed in the WSP feed into the development of Seqwater's Integrated Master Plan, as well as its annual APMP. These additional plans are described in further detail below.

Figure 13. Seqwater drought response initiatives



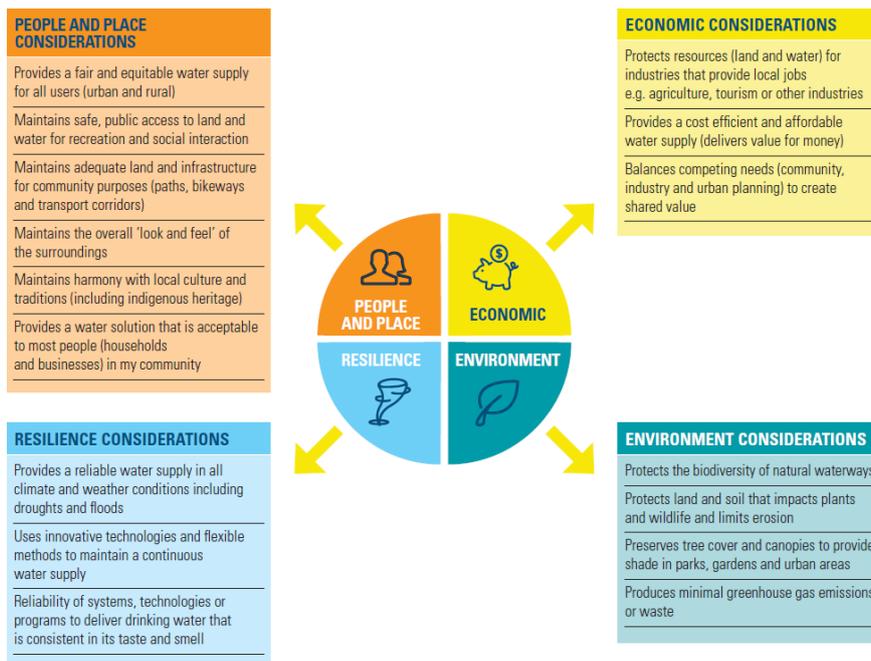
**Notes:**  
 1. Percentages are based on the volumes of the SEQ key bulk water storages  
 2. Targets are SEQ regional averages.

Source: Seqwater

## 5.1.2 Integrated Master Plan

Seqwater’s Integrated Master Plan sets out a strategy for how all bulk water supply assets need to be able to work together to achieve water supply LOS objectives. It is an umbrella document that builds upon the WSP, and pulls together strategy for all water supply assets to provide a common direction. It also sets out what operational functions the assets need to be capable of doing and what actions Seqwater needs to take to make those assets capable of performing the desired functions.

Figure 14. Considerations for planning: economic, resilience, environment and people and place



Source: Seqwater

Planning criteria, as set out in the WSP, are a set of assessment parameters, which enable a balance between the requirement for a safe, secure, reliable, quality water supply and the desire for this service to be provided at minimal cost. These parameters are shown in Figure 14.

The planning criteria have been agreed through two rounds of community engagement and are not intended to preclude the consideration of innovative options or to diminish the goal of least-cost planning in promoting efficiency. Actual infrastructure delivery is still to be underpinned by appropriate planning investigations and developing effective investment triggers so all decisions meet the underlying service objectives in a demonstrably prudent and efficient manner.

KPMG understand the Integrated Master Plan is to be updated in conjunction with updates to the WSP, i.e. every five years moving forward.

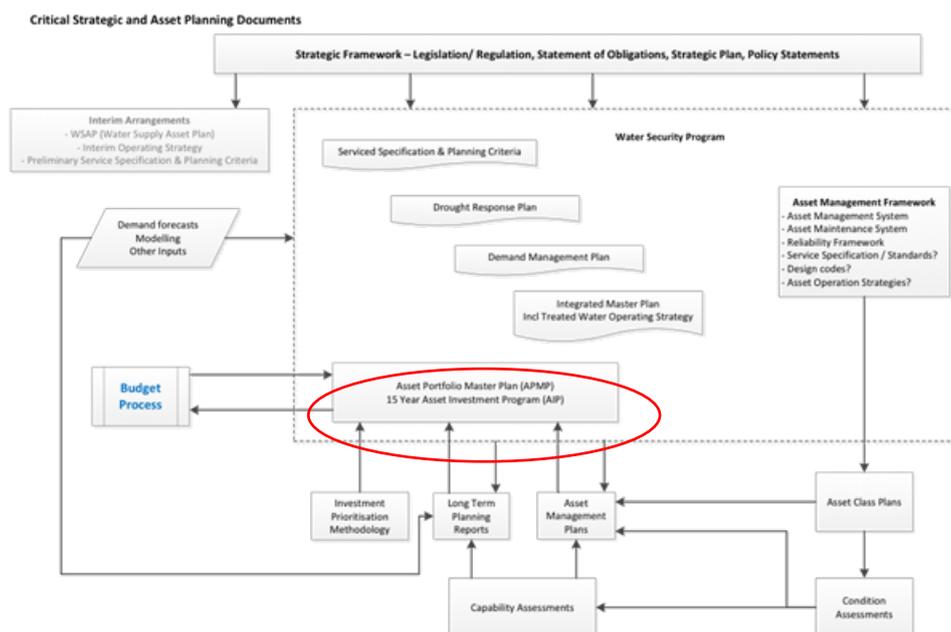
### 5.1.3 Asset Portfolio Master Plan

In addition to the Integrated Master Plan, Seqwater has taken steps to implement planning as a business as usual (BAU) process throughout the organisation. It does so through the development of the Asset Portfolio Master Plan (APMP). This has resulted in the business switching its focus from short term to longer term objectives and, as such, changed the way the business prioritises and schedules its capital program for any given year.

The APMP provides a single source of truth for Seqwater’s capital investment plans over a forecast period of 20 years and forms the basis for all annual capital budgets. Seqwater endeavour to update the APMP annually. Subsequently, as a BAU process, the regulatory submission to the Authority represents an extension of this process with the 2017 APMP forming the basis for Seqwater’s submission to the Authority.

The APMP captures capital projects (only) across all investment gateways (discussed in Sections 4.3 and 5.5) and strategies including for example WSP, asset class plans, projects in delivery and fleet and ICT strategies.

Figure 15. Asset planning manual



Source: Seqwater

Each project is scored on a multi-criteria basis to assess its strategic value. It was noted that these criteria were limited and did not necessarily address the full range of 'value' that customers and stakeholders have been engaged on. Importantly, while the APMP is updated annually, its key inputs (expenditure) are not. For example, having completed an options assessment and identified a preferred capital program, it is possible for the capital program to be captured in the APMP at the time of finalising the assessment. Were the capital program to be delayed for a couple of years, the expenditure reported against the program may not have changed unless further analysis was completed throughout the preceding year warranting an update to the APMP. Therefore, caution must be taken when reviewing forecast expenditure in the APMP as these amounts may be recorded at different points in time (e.g. 2013, as oppose to 2017). Figure 15 highlights where in Seqwater's asset planning manual, the APMP fits.

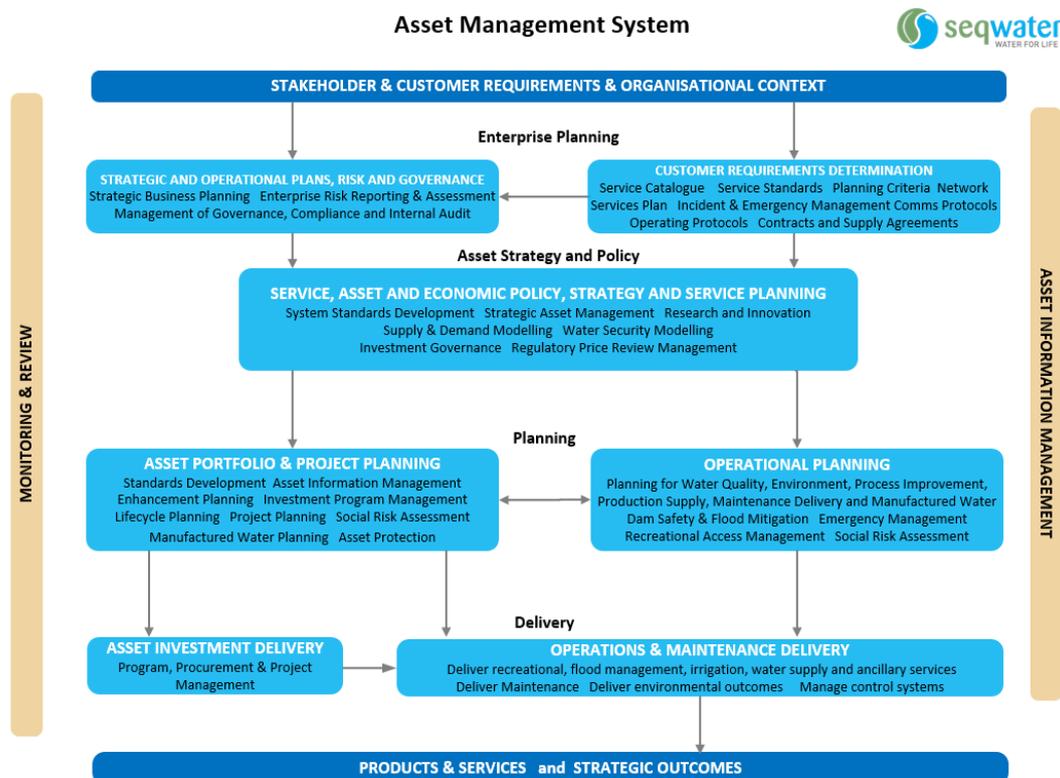
## 5.2 Strategic asset management

This section briefly describes Seqwater's approach to asset management and the policies, processes and systems in place detailing the generation requirements of the business, as well as links to broader corporate objectives/plans.

### 5.2.1 Asset Management System

Seqwater's approach to asset management is governed by its Asset Management System (AMS). This provides a structured management system methodology to align business activities and demonstrate line of sight between customer and stakeholder needs and how those needs are translated into objectives, planned for and delivered through operations.

Figure 16. Seqwater Asset Management System Level 1 Diagram



Source: Seqwater

The AMS has been presented in a manner that allows for ease of alignment and review against the ISO55000 standard, which describes the asset management system requirements in terms of organisational context, leadership, planning, support, operation, performance evaluation and improvement.

## 5.2.2 Asset Management Policy

The purpose of the Asset Management Policy is to outline principles and mandated requirements, derived from and consistent with the Seqwater Strategic Plan, providing a basis for the development and implementation of the Asset Management System and the setting of the asset management objectives.

The Asset Management Policy defines the overall mandated requirements and guiding principles that must be adhered to in undertaking all asset management activities involved in the lifecycle management of physical assets. It provides consistency and transparency in decision making and action. It should:

- Align with the Seqwater strategic plan and other policies;
- State the principles that must be adhered to by all concerned;
- State how the policy will be implemented, roles and responsibilities;
- Be communicated to all employees, service providers and stakeholders; and
- Be endorsed by the top management within Seqwater.

The coverage of the policy and strategy detailed in Seqwater's Strategic Asset Management Plan (SAMP, discussed in further detail below) does not indicate that the Asset Management Policy has been endorsed by senior leadership or that it has been widely communicated.

It does mention Asset Management Policies which are lower level technical documents describing how different asset classes behave and the individual strategies that should be applied across their whole of life.

## 5.2.3 Asset Management Objectives

Seqwater have referred to the 'line of sight' between organisational objectives and product delivery. A critical requirement to satisfying 'line of sight' to customer objectives is the Statement of Alignment. Seqwater have addressed this through translating its business objectives into asset management objectives. For each objective listed below, Seqwater have mapped the process flow from overarching legislation (i.e. the Water Act 2000) through its Statement of Obligations, Enterprise Risk, Seqwater Policy, Strategic Objectives, and Asset Management Objectives. Seqwater's asset management objectives state:

- Assets will be managed to meet regulatory requirements and satisfy the corporate risk appetite.
- Assets will be managed using an agreed and articulated asset management system that drives quality asset decision making across all of our business.
- Asset management processes and performance targets are linked to and support delivery of services to the agreed standards.
- Assets will be capable of meeting future service requirements and challenges.
- Asset investment will be optimised across the value chain, from catchment to tap.

- Assets will achieve service standards at minimum economic, environmental and social cost across the asset lifecycle.
- Assets will be planned for, managed and operated to achieve general environmental duty, our duty of care to the public and our cultural heritage responsibilities, and continuous improvement in our performance of each.
- Assets will be managed to achieve consistent workplace health and safety standards.

Currently, Seqwater does not have an automated system to track the achievement of these objectives. Instead, Seqwater is monitoring its performance against each objective annually using a maturity scale and scoring against defined criteria of:

- Completeness of documentation;
- Approval status;
- Communication throughout the business;
- Implementation progress; and
- Monitoring, review and update status.

## 5.2.4 Strategic Asset Management Plan

The development of Seqwater's SAMP has been guided by alignment to ISO55001. The Seqwater Board have made the decision to not seek certification to the ISO55001 standard, however will continue to seek alignment and are in the process of developing an integrated management system to enable further alignment with quality, safety, environment and water quality standards and customer requirements.

The SAMP should fulfil a number of purposes:

- To document the role of the assets, asset management and the asset management system in supporting achievement of the organisational objectives and to provide clarity and direction for everyone in the organisation from top management to delivery teams.
- To translate organisational objectives into strategic asset management objectives and reconcile with other strategic objectives which can have an impact on the assets and asset management.
- To guide the approach for developing the asset management plans and the asset management system and applying the asset management policy to ensure alignment.
- To establish the decision criteria that enable describe the derivation of value for the organisation and its stakeholders and the coordinated approach for performance evaluation.
- To present a consolidated plan at the asset portfolio-level for achieving the strategic asset management objectives and linking these to organisation's financial plans.
- To present the plan for creating or improving the asset management system to ensure the required capabilities and resources are available to achieve the asset management objectives.

KPMG notes that while the SAMP references the Asset Management System Improvement Program (AMSIP) as the process to drive improvements, it does not offer a roadmap of what improvements will be undertaken, when and why. This is where a SAMP should excel and be offered as a business strategy for how asset management will deliver customer value. The improvement, resource and capabilities and management reporting sections appear to be incomplete with section titles added as a placeholder for future development.

## 5.3 Asset management plans

The asset management plans (AMP) should contain a rationale for asset management activities, operational and maintenance plans, capital investment (overhaul, renewal, replacement, enhancement and disposal) plans, financial and resource plans. The purpose of the AMPs is to enable the capital management plan and disposal plan to be generated as a list of assets that are to be planned for construction, renewal, refurbishment or decommissioning.

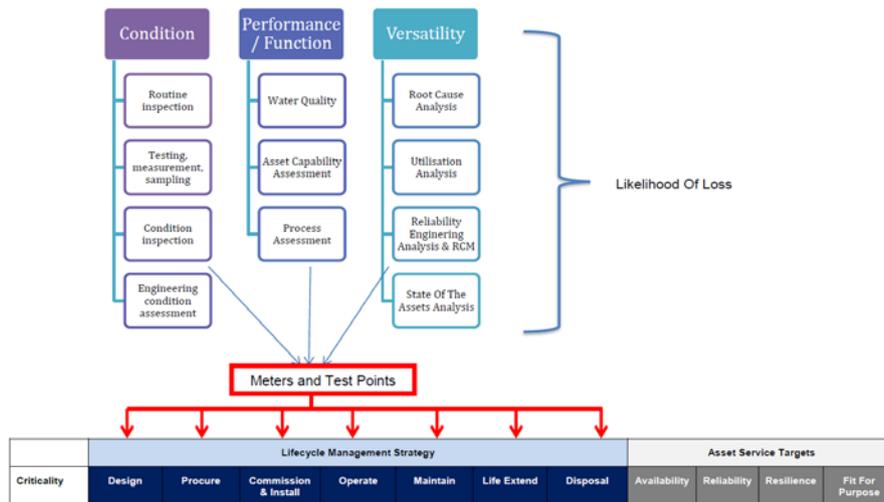
When developing an asset management plan, Seqwater would be required to consider:

- The scope of the asset management plan;
- The performance of the assets and the intended outcomes expected from implementation, i.e. are the assets capable of delivering the forecast demand for products or services;
- The whole life cost structure to enable trade-off between capital and operational expenditures, including non-asset solutions;
- Who should be responsible for developing and implementing the asset management plan and their continual improvement and communicating it to stakeholders;
- The asset intervention options, their processes and methods, which will typically also involve operational planning activities and implementation; and
- The environments in which the assets are operating or are intended to operate and the activities that are being performed either on individual assets, on various components, where interdependencies exist or combinations of activities occur on the same asset, or on multiple assets.

### 5.3.1 Asset Lifecycle Management Plan

Seqwater have developed an Asset Lifecycle Management Plan (ALMP) as a generic overarching approach for each asset class plan. Its purpose is to provide a decision guideline to manage operational built infrastructure assets to deliver upon agreed levels of service and optimise utilisation of resources and investment. It details the processes that govern investment and management decisions for operational built infrastructure assets based on a rigorous, documented, risk and opportunity-based approach. The approach outlined in the diagram below illustrates how various components of likelihood of loss are to be used at each point in the asset lifecycle.

Figure 17. Generic Asset Lifecycle Management Plan



Source: Seqwater

### 5.3.2 Asset Class Plans

Currently, the ALMP provides a light touch on each section, describing the content that should be in the individual Asset Class Plans (ACP). These ACPs are under development and therefore the process above is not yet fully operationalised.

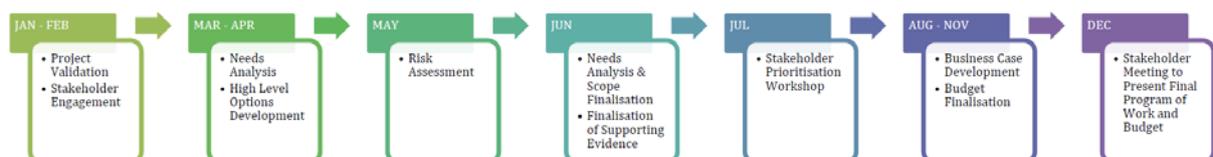
Seqwater also has an improvement plan captured as a recommendations table for an Asset Lifecycle Approach (ALA). This table outlines the forecasted capability improvement projects that are required to gain further insight into the optimum timing for different lifecycle intervention types.

The ACPs are listed in the table to be developed between 2018 and 2020. Currently, the ALA does not have individual leads for each initiative, only teams. Also, the timing of completion, i.e. 2018-2020, is too broad and it will be near impossible to monitor progress.

## 5.4 Renewals program

Seqwater’s renewals program is the key output from the asset portfolio and the application of the ACP. This program provides mostly like-for-like renewals and provides the function of maintaining the network and agreed levels of service. Renewals are assessed to determine if the old asset has the capacity to meet current demand, or has degraded to the point that replacement is the most economically viable option. If an upgrade is required, the project may progress as an individual enhancement project outside of the renewals program. The annual process for updating the program is outlined below in Figure 18. The renewals program represents a significant portion of the annual capital works program to be completed by Seqwater.

Figure 18. Timeframe elements for the minor works program

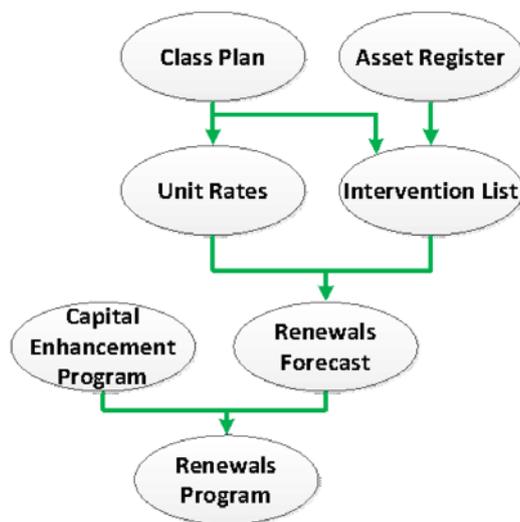


Source: Seqwater

There are two types of asset renewals, bulk water infrastructure assets and capital renewal interventions. Bulk water infrastructure assets include recreation assets only and not irrigation, fleet, plant, ICT, land, GCDP or WCRWS and AWTP. Capital renewals interventions include life extensions and investments that may be capitalised only and not operations and maintenance, enhancements or consumable equipment.

Key to the formation of Seqwater’s renewals program is having access to accurate data in relation to the operation of the asset, its technical envelop (including useful life), unit rate costs, and broader ACPs. Seqwater seek to compile this data from a range of sources as shown in Figure 19. In compiling this data, Seqwater is better able to establish a long term renewals forecast for individual assets or types of assets. KPMG note this process is manually completed in a Microsoft Excel spreadsheet.

Figure 19. Modelling Logic Approach



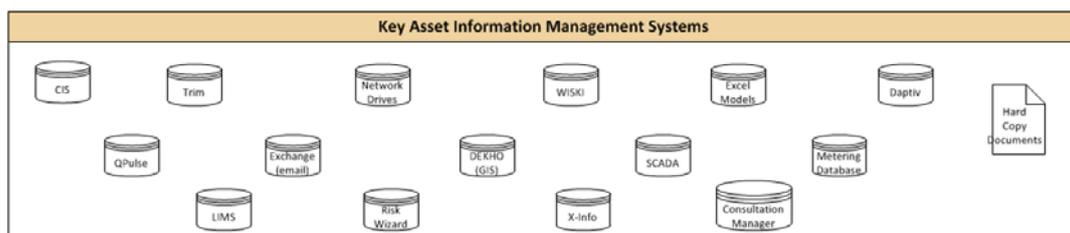
Source: Seqwater

The profile of the forecast established by Seqwater is initially based on economic lives from the valuation and fixed asset register and then modified to consider different intervention types and to smooth peaks of work that fall on the same year. This renewals forecast is merged and further optimised with proposed capital enhancements to form the renewals program. The plan is updated annually in consultation with distributor-retailers.

There is a recognition within Seqwater that there is room for improvement from the manual spreadsheet based process described above to a more automated, off-the-shelf tool which would also allow for additional multi-criteria assessment.

The addition of a tool enabling such assessment was to be completed in 2017, however has been delayed a year within the budget process. Figure 20 highlights the suite of tools that are currently used by Seqwater in the preparation of its renewals program.

Figure 20. Seqwater’s Asset Information Management Systems



Source: Seqwater

# 5.5 Capital planning and delivery

As discussed in Section 4.3, Seqwater’s investment decision-making is based on the gateway review process. The detailed process is illustrated below in Figure 21 and highlights the inputs, processes and requirements for approval when operationalised as part of the capital planning and delivery process.

As projects progress through gates, they are refined and the scope of works and associated cost become clearer, as shown in the following figure. This results in a reduction in contingency required in the budget. This continues to the point that a project is commissioned and a target cost is agreed. For the purposes of KPMG’s assessment, we note that Seqwater would seek to establish the prudence of a proposed capital project through Gate 1 and the efficiency of the project through Gate 2.

Importantly, the process is iterative when required. For example, it is common to step back through a gate when consideration of a project moves from a single asset to an entire facility or portfolio of assets or if there is variance in approved expenditure.

Figure 21. Capital planning and project delivery gateways

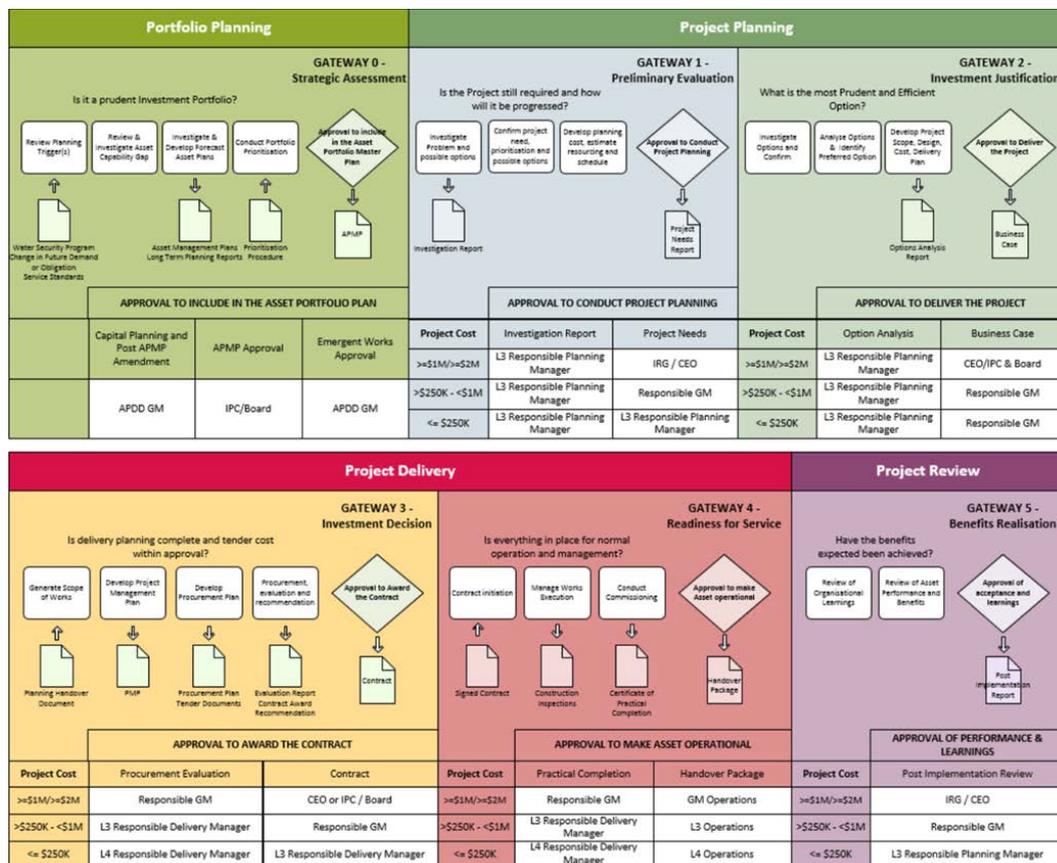
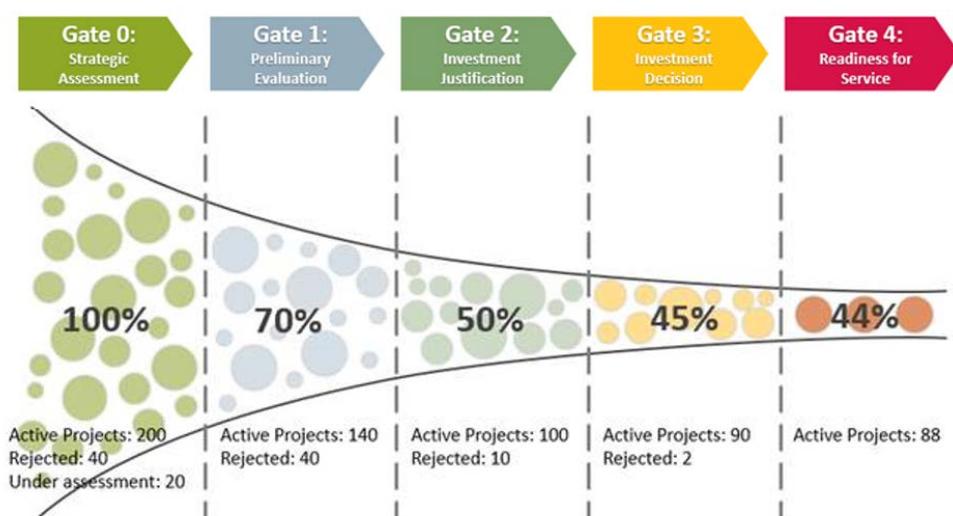


Figure 22. Capital project refinement through gateway



### 5.5.1 Portfolio planning – Gateway 0

The first step provides for identification of the possible future risks and opportunities across the business’s portfolio of assets and a first means to best managing them. Capital projects identified at this stage are incorporated into the APMP annually. For a project to be included, it must first be approved either by the General Manger of the APDD or IPC/Board.

Through consolidation of projects into the APMP, Seqwater is able to draw upon a single planning document which in turn provides details of the total capital investment program for the forthcoming 20-year period. This document forms the basis for all budgeting and reporting across the business.

### 5.5.2 Project planning – Gateway 1 and 2

Under the project planning phase, Seqwater first completes a preliminary evaluation of a project. The intention of this step is to review a specific risk or opportunity as captured under the portfolio planning phase (Gateway 0) and confirm prudence and the need to manage it. For each project, this requires Seqwater to complete a needs assessment report, providing for an understanding of a project plan and resource requirements.

Subject to the initial estimates of the capital project costs, Seqwater have established various levels of approval required in order to conduct the project planning phase ranging from L3 responsible planning managers (<=\$250k) up to IRG/CEO (>=\$1m/>=\$2m).

At this stage, a decision is made by the business to progress, recycle or cancel the proposed project.

Having established a need for the project to progress, Seqwater sets about completing an options analysis and developing a business case for each individual project. The business case is required to provide sufficient justification of the proposed investment prior to moving to the project delivery phase. As part of the business case development, Seqwater seek to review, analyse and recommend the most efficient option to managing the risk or opportunity identified by the business.

Importantly, the business case provides the basis for the scope of work and plans to progress through the project delivery phase. Further, it establishes the process for approval of funding in relation to the proposed project.

Having developed a business case, a decision is made by the business to progress, recycle or cancel the proposed project. Delegation of approval of a business case, and therefore ability to deliver a project, is dependent on the project costs and is typically the responsibility of the General Manager or CEO/IPC or Board for major projects (above \$1 million).

### 5.5.3 Project delivery – Gateway 3 and 4

Having received approval of the business case, Seqwater moves into the project delivery phase. The intent of this phase is to:

- a) Prepare for the request, receipt and management of competitive market offers from service providers for delivery of the project identified and scoped in the project planning phase; and
- b) Review offers and recommend the best value for money approach.

A key component of this phase is the development of a project handover document. This provides the project delivery team with a comprehensive understanding of the scope and requirements of the project as well as an estimate of the forecast expenditure associated with delivery.

Seqwater's project delivery team consists of approximately 60 staff, the majority of whom are outsourced by the business. The project delivery phase is supported by a range of internal service providers including legal, contract management and commercial.

Following receipt of commercial offers from suppliers, Seqwater is required to make an investment decision to progress, recycle or cancel the project. Where a decision to progress the project is made, Seqwater enter into a contract for the delivery of an asset or service with its preferred supplier.

Through discussions with Seqwater, KPMG understands Seqwater target a primary six-month delivery window corresponding to the winter/dry season for the majority of projects delivered. For the later part of 2017 and first half of 2018, this window is likely to be further impacted by the Commonwealth Games on the Gold Coast. As a result, certain projects have been accelerated or deferred in order to best manage resources throughout this time.

The last step in the project delivery phase is the need for Seqwater to test the asset or service's "Readiness for Service". During this step, Seqwater confirm that the asset or service is ready for normal operation and management. Where an asset or service is deemed ready, Seqwater take responsibility for the asset or service at which time the asset/service is included in the ongoing asset management or service plan in place. Importantly, a handover package is provided from the project delivery team to the asset operations team.

Consistent with prior steps, delegated authority to make an asset or service operational is dependent on the project's cost. Typically, this authority falls to a general manager or L3 or L4 operations.

Finally, Seqwater use this step to identify key project delivery learnings and improvement opportunities for the project planning and delivery process.

### 5.5.4 Benefits realisation – Gateway 5

The final step in the capital planning and delivery process requires the business to complete a post implementation report. This report seeks to measure the risk reduction or opportunity realised from the delivered asset or service relative to the expectations established through the project planning phase.

The post implementation report aims to ensure the benefits identified in the initial business case are realised. This process is currently under development and is used opportunistically on projects. Currently, this is viewed as a post implementation review, however it should be tied into the front end

of the business requirements management which will help identify benefits and track them as they are realised. There is potential to use business case success criteria and performance measures. Seqwater is currently updating business case templates to capture information on expected benefits

Seqwater will sample five projects through the benefits review process in the next 12 months. These projects range in size from \$800k to \$6m. The outputs of this will inform the next stage of development of this phase.

The end to end process for securing funding for a project, delivering it and realising the value from it is a fundamental component of improving control in capital delivery. The process that Seqwater has rolled out has received support to raise the awareness of, and communicate, the process, as evidenced from staff who were able to confidently talk to the process.

Currently, the processes that support the gateways are not added to corporate system workflows. Therefore, it is difficult to track the progress of a project in certain instances (e.g. where someone is on leave and is yet to approve a step). By applying the stage gates as part of the corporate system, additional KPI reporting can be achieved and identify areas that need streamlining or additional support/training.

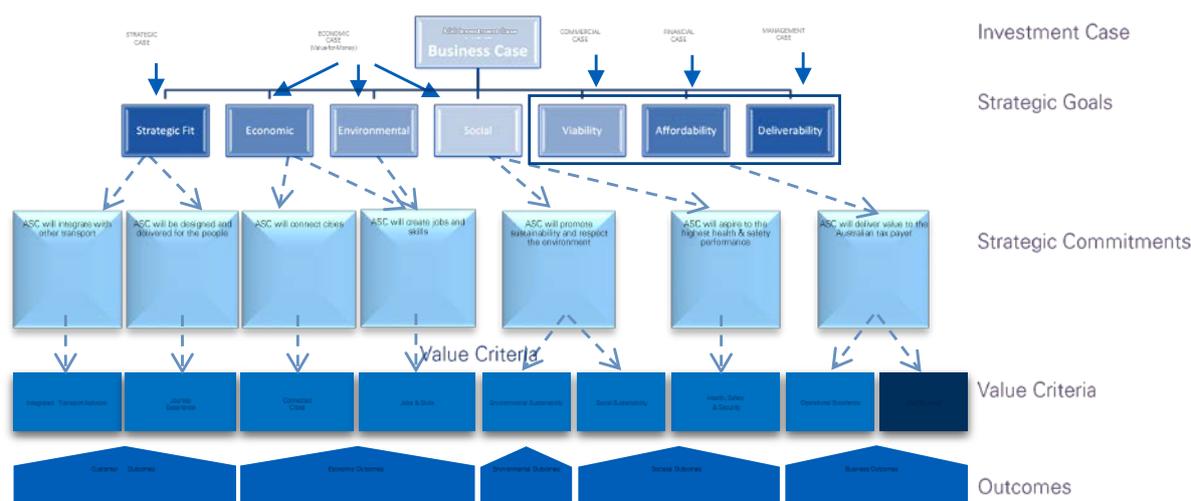
## 5.6 Summary findings

Overall, KPMG considers the capital planning framework to be commendable and consistent with Seqwater's legislative requirements and good industry practice. We note, in addition to the Water Security Program, Seqwater are building on its planning the processes through development or further enhancement of an Integrated Master Plan, Asset Portfolio Master Plans and Asset Class Plans. These plans are supported by Seqwater's strategy assessment management framework (systems, policies and procedures).

Seqwater has successfully sought to strip out a lot of the duplication in the number of processes and systems associated with the investment in and operation of its assets, however the business continues to face key asset risks. For example, Seqwater may have limited history regarding the operation of an asset and, under specific circumstances, limited knowledge of the actual assets "in the ground". This is not a reflection of Seqwater itself, but rather the asset management practices (processes/systems) of its predecessor firms, and therefore the historical knowledge which it has been required to inherit. Due to the changing shape of Seqwater over time, and the existence of key risks such as those discussed above, it is understandable that some of the business processes and data are not very mature which may therefore make it difficult to present a strong history of condition data for decision making as discussed in Section 4.

The key criteria that have been agreed with the customers (economic, resilience, environment and people and place) should be used as criteria for selecting and prioritising work in the APMP, subject to any regulatory obligations. These can be broken into the detailed areas covered by individual asset class plans, however, until these are developed, Seqwater should at a minimum align the strategic criteria in the APMP spreadsheet to the four strategic pillars agreed with customers. An example of a cascading framework from overarching goals through to assessment 'value criteria' and customer outcomes is illustrated below.

Figure 23. Alignment of Investment Value Criteria



Further, as a core discipline within an asset intensive organisation such as Seqwater, asset management has become a cornerstone of good business management. Improvements to strategic asset management practices in a business, leadership and organisational sense have been shown to result in a material improvement in customer value and the bottom line. There are several areas where Seqwater could improve, including:

- The AMS should include people and resources as an enabler to better asset management. In this context, the competency framework can be applied and accountabilities can be linked to the capabilities of a team and competencies of individuals.
- The asset management policy should be formalised, endorsed by leadership and widely communicated as a Tier 1 policy alongside health and safety, risk and human resources etc.
- The asset management objectives should be collated into a structured performance and KPI hierarchy so that delivering the tangible metrics can roll up to a demonstrable delivery of higher level (and sometimes intangible) KPIs.
- The SAMP should evolve to focus on direction setting for asset management within Seqwater and highlight the roadmap of future improvements, who is accountable and when they should be achieved. Again, improving the communication of this would help raise the profile and gain further buy-in of aspirations from across Seqwater.

Moreover, in order to propose the right work at the right time, a clear view of lifecycle activities is required for each asset type. In addition, when packaging works, Seqwater must know how far it can bring forward or defer works before it becomes uneconomical.

The asset class plans are designed to enable this thinking, however with a long timeline before completion, they will still be low maturity before the next regulatory submission. These plans should be developed in a more agile manner with layers of detail to gain a broad understanding of each asset class and build on this understanding using analytics and other technology. This will enable earlier realisation of insights for better decision making and tangible benefits. Also, by the time of the next regulatory submission, the process will be more mature and robust when making dynamic changes of scenarios with customers and stakeholders.

Finally, the impact of renewals forecasting on the regulatory submission due to models and systems that are spreadsheet based can be significant. While spreadsheets are generally capable of providing

an answer and even validation checks, there are several potential risks associated with its use including, but not limited to, the ability for the spreadsheet to be incorrectly configured / updated, general human error with its use, as well as an inability to appropriately notify the user of an issue or change in an asset. Seqwater should increase the priority of testing and implementing a renewals support tool to increase robust analysis and increase productivity of staff from data manipulation to data interpretation.

# 6 Demand

A detailed review of Seqwater’s demand forecast was considered out of scope for the purposes of KPMG’s assessment, provided the forecasts are within the range published by Seqwater as part of its Water Security Program (WSP).

KPMG has subsequently reviewed the demand forecasts reported by Seqwater within the WSP and compared these to those reported within Seqwater’s regulatory submission (including regulatory model) to the Authority.

## 6.1 Water Security Program

Demand represents one of three independent levers utilised by Seqwater to optimise system performance, and in turn drive water security across the network.<sup>20</sup> Figure 24 sets out Seqwater’s demand forecasting methodology as detailed in the WSP. For the purposes of the WSP, demand has been forecast for the period 2016 to 2046.

Figure 24. Independent levers of system performance

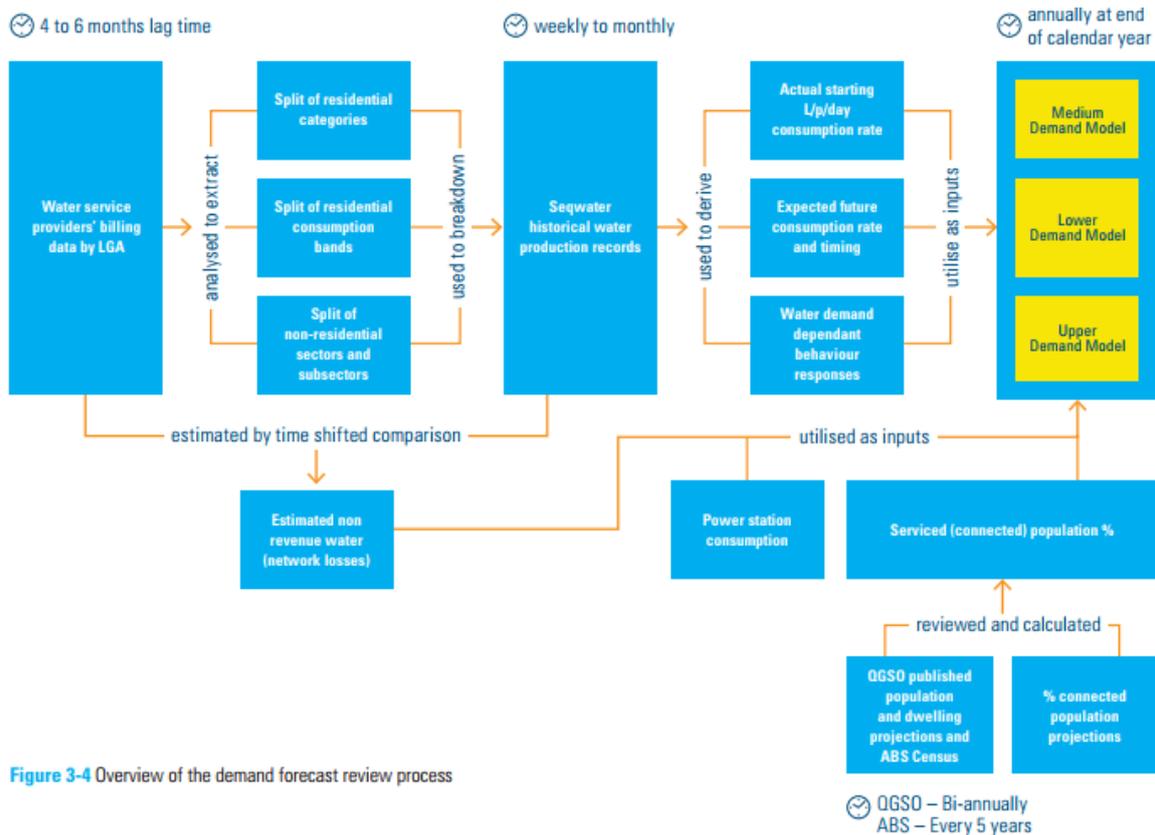


Figure 3-4 Overview of the demand forecast review process

Source: Seqwater WSP

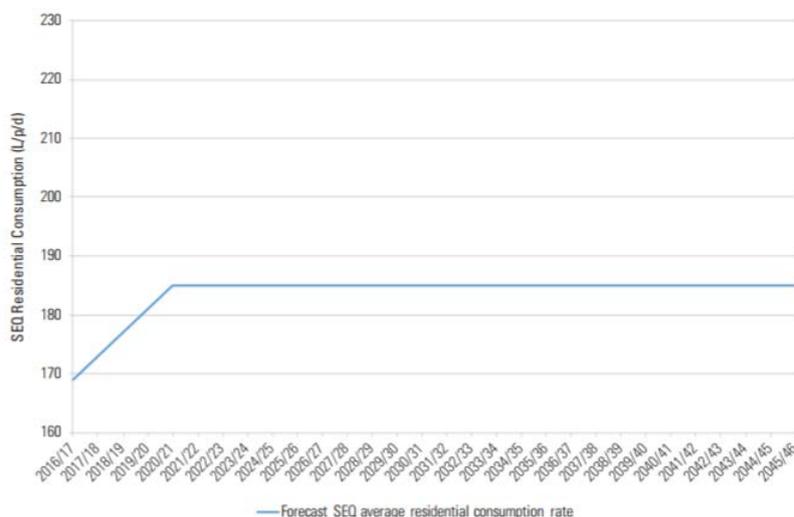
<sup>20</sup> The remaining levers include System operation and Supply.

Seqwater 's demand forecasting methodology seeks to provide for three urban water demand forecasts – low, medium and high – across 10 local government areas which combine per-capita consumption with projected population growth.<sup>21</sup> These forecast are completed for both residential and non-residential sectors. The medium demand forecast is utilised by the business for all planning purposes, while the low and high demand forecast are used for scenario analysis. In developing each forecast, Seqwater note demand may be influenced by a variety of factors, including<sup>22</sup>:

- Population size, location and demographic;
- Changes in housing density and type;
- Changes to how people use and value water;
- Climatic conditions;
- Energy consumption – amount of energy and the type of energy;
- Economic growth;
- Liveability outcomes;
- Changes in regulation to water efficiency device requirements;
- New water efficient technology which may reduce demand;
- Technological advances in how we monitor water use and manage use of appliances; and
- New devices that may use more water.

The WSP medium scenario forecasts average per capita usage to increase over the medium term from 169 L/p/day to 185 L/p/day for the residential sector, stabilising in year 2019-20 as shown in Figure 25.<sup>23</sup> Similarly, consumption by the non-residential sector is forecast to stabilise at approximately 100 L/p/day in 2019-20. These forecasts account for predicted usage patterns post Millennium Drought of users across the system.<sup>24</sup>

Figure 25. Per capital forecast consumption



<sup>21</sup> Seqwater. Water for life. South East Queensland Water Security Program. 2016-2046. Version 2. March 2017

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> Ibid.

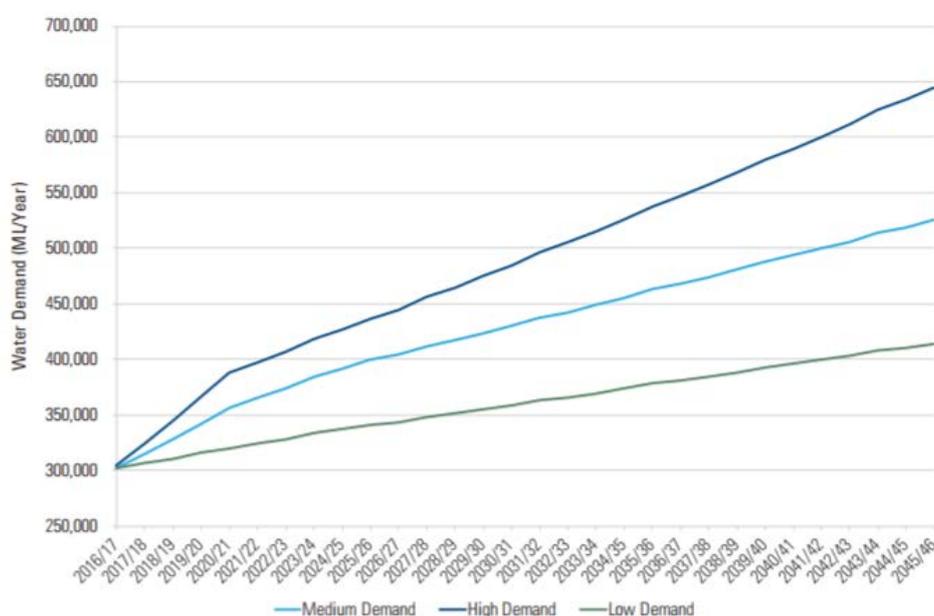
Drawing upon those assumptions shown in Figure 26, including the forecast per capital usage and population growth, Figure 27 highlights Seqwater’s low, medium and high demand forecasts reported under the WSP. Under the medium projection, bulk water demand is forecast to increase from 299,242 ML in 2017 to 410,436 ML by 2028 (the end of the 10-year price path). This forecast forms the basis for Seqwater’s planning activities and how it meets its LOS objectives.

Figure 26. Forecast demand assumptions, uses and output

Scenarios	1. Low demand	2. Medium demand	3. High demand
<b>FACTORS</b>			
<b>Population</b>	QGSO low growth forecast <sup>1</sup>	QGSO medium growth forecast <sup>2</sup>	QGSO high growth forecast <sup>3</sup>
<b>Consumption residential</b>	<b>Observed current use</b> +/- adjustment for climatic conditions - impact of structurally efficient new accounts + failure of water-efficient structural devices +/- impact of price increases and demand management initiatives	<b>Most likely use</b> +/- adjustment for climatic conditions + impact of likely change in water use behaviour <sup>4</sup> - impact of structurally efficient new accounts + failure of water-efficient structural devices +/- impact of price increases and demand management initiatives	<b>Most likely use</b> + impact of possible higher change in water demand for liveability outcomes
<b>Consumption non-residential</b>	<b>Observed current use</b> + Forecast for customers under contract (having regard for current and future conditions)	<b>Most likely use</b> + Impact of likely change in water use behavior + Forecast for customers under contract (having regard for current and future conditions)	<b>Most likely use</b> + Impact of possible higher change in water non-residential customer growth <sup>5</sup> + Forecast for customers under contract (having regard for current and future conditions)
<b>Contract demand</b>			
<b>Network loss</b>	Total bulk and distributor-retailer network loss	Total bulk and distributor-retailer network loss	Total bulk and distributor-retailer network loss
<b>Used for</b>	<ul style="list-style-type: none"> <li>Water supply balance assessments</li> <li>Determining when infrastructure is needed to meet minimum demand</li> <li>Drought response planning (before restriction trigger point)</li> <li>Considered for pricing purposes</li> </ul>	<ul style="list-style-type: none"> <li>Water supply balance assessments</li> <li>Determining when infrastructure is needed to meet minimum demand</li> <li>Drought response planning (before restriction trigger point)</li> <li>Considered for pricing purposes</li> </ul>	<ul style="list-style-type: none"> <li>Water supply balance assessments</li> <li>Determining when infrastructure could be needed to meet upper demand</li> <li>Long-term security</li> <li>Ensuring long-term planning preparedness</li> </ul>
<b>Outputs Consumption (L/person/day)</b>	<b>Residential/Non-residential</b> 169/89	<b>Residential/Non-residential</b> 185/100 <sup>6,7</sup>	<b>Residential/Non-residential</b> 200 <sup>8</sup> /100

Source: Seqwater WSP

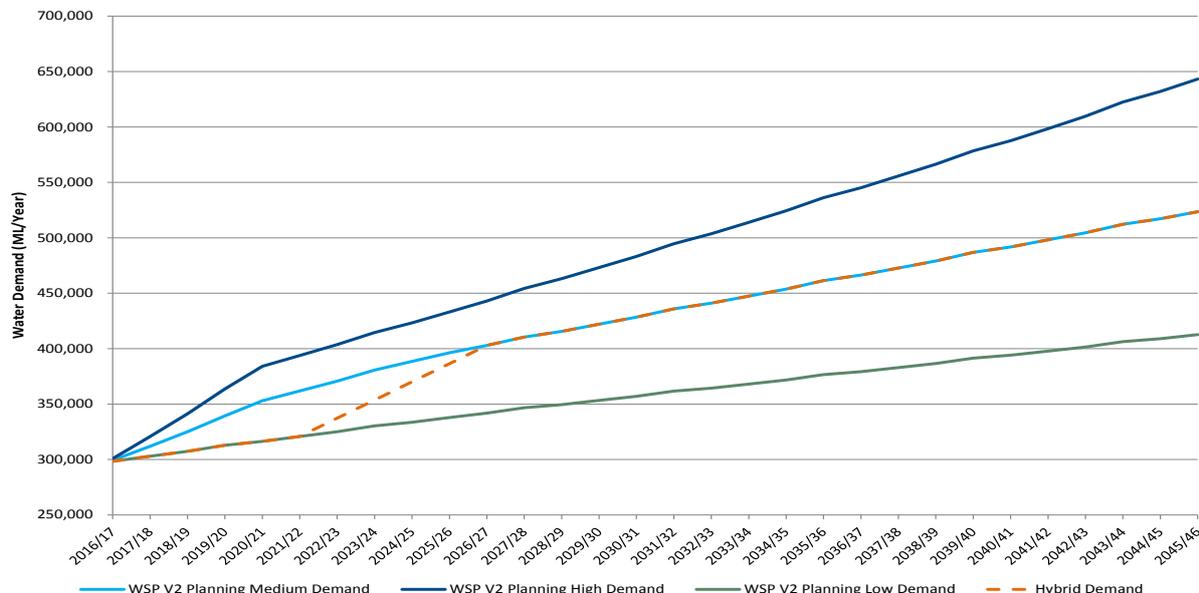
Figure 27. Low, medium and high demand forecasts



## 6.2 Seqwater Regulatory Submission

KPMG has reviewed Seqwater’s regulatory submission and regulatory pricing model, as well as supplementary information provided by the business in response to an information request from the Authority.

Figure 28. Seqwater demand forecast – regulatory submission



Seqwater has proposed a hybrid demand forecast providing for aspects of both the low and medium demand forecasts reported within the WSP as shown in Figure 28. Specifically:

- Between the years 2017-18 and 2021-22, demand is to grow in line with the low demand forecast;
- Between the years 2022-23 and 2026-27, demand is to grow in a linear fashion from the low demand forecast to the medium demand forecast; and
- From 2027-28 onwards, demand is forecast to grow in line with the medium scenario.

Under the hybrid scenario, demand is forecast to increase from 302,913 ML to 410,436 ML over the period 2017-18 to 2027-28.

While the medium demand scenario under the WSP provides for a level of bulk water demand from power stations, the low demand scenario does not. Seqwater has chosen not to include bulk water demand from power stations in its hybrid forecast due to variability associated with the volume of bulk water supply required. Seqwater in recent years has not been required to provide any bulk water to power stations.

Having reviewed the above material, KPMG has therefore confirmed that the demand forecast included within its regulatory submission to the Authority is consistent with the range published by Seqwater as part of its WSP.

# 7 Capital expenditure

An assessment of the prudence and efficiency of historical and forecast capital expenditure represents a critical component in any investigation of (regulated) bulk water prices. For the Authority, its assessment of Seqwater's historical and forecast capital expenditure will have ramifications for the total return earned by the business for the forthcoming regulatory period (and years following).

We note that the Authority consider capital expenditure to be:

- Prudent, if the capital expenditure can be justified by reference to an identified need or cost driver, which might include a legislative obligation, a need to meet new customer growth, the need to maintain or renew existing infrastructure, or to improve the quality or reliability of services provided (if these improvements are explicitly desired and endorsed by customers or shareholders). Prudence is supported by:
  - Documenting key drivers for expenditure (e.g. legislative, regulatory, or customer/ shareholder/ stakeholder directions or obligations);
  - Demonstrating that there is a problem that needs to be addressed and how it will be addressed;
  - Demonstrating the appropriateness of the proposed timing for project commencement and completion; and
  - The provision of appropriate supporting documentation.
- Efficient, if:
  - The *scope of works* (as relevant to the specific asset or facility) reflects the most appropriate means of resolving the need identified, having due consideration for the possible options, ensuring that regional or non-standard solutions are assessed, and ensuring that the option of a non-capital solution has been robustly assessed (that is, operational solutions or demand management);
  - The *standard of works* proposed comply with the relevant legislative, regulatory and industry obligations, standards and codes for design and construction; the works are compatible with existing infrastructure; and the works take account of modern engineering options and technology; and
  - The *cost* of the proposed solution represents the least overall cost to deliver the works consistent with the market conditions (labour, materials and construction).

An assessment of prudence relates to how a decision to invest is made, whereas an assessment of efficiency refers to whether the forecasted expenditure is reasonable given time and resource constraints and, in some cases, whether the forecast expenditure represents the least cost option for providing the associated service. We have used the above framework to guide our assessment of each project documented in Section 7.7.

Further, we have also sought to assess, at a program wide level, whether there are any systemic issues with regards to how Seqwater has completed its capital forecasting. These systemic issues are determined by assessing whether Seqwater has appropriately implemented its capital planning and asset management framework for the selection of projects reviewed, and whether there are any consistent shortfalls in meeting the expectations for prudence and efficiency. Where we have identified a shortfall, we have sought to make an adjustment to the remaining program of works. This assessment is detailed in Section 7.21.

Finally, where appropriate, KPMG has revised its assessment of sampled and non-sampled capex based on Seqwater's response to the QCA's Draft Report, submitted on 31 January 2018, and supporting information collected by KPMG to 26 February 2018.

For transparency, KPMG has included its original assessment and provided additional subsections throughout detailing our revised assessment.

## 7.1 Summary Findings

Seqwater has proposed a total capital expenditure of \$1,282 million (real December 2016) for the 10 year period ending 30 June 2028. Over the three year period 1 July 2018 to 30 June 2028, Seqwater is forecasting to spend \$624.1 million, a 100 per cent increase on the actual capitalised expenditure of \$311.7 million that is expected to be delivered in the current 2015-18 regulatory period and 41 per cent higher than the QCA allowance for the current regulatory period.

The deferral of significant project expenditure from one pricing period to another raises an issue for the Authority, being that Seqwater's bulk water prices for the 2015-18 period were set based on the delivery of certain capital projects (where these projects were forecast to be commissioned). It is reasonable to expect some projects to be deferred as circumstances change, or for that funding to be re-directed to other projects that were not funded, or for Seqwater to find better ways to deliver the project, hence making savings. Excluding these circumstances, where a project is deferred, it is potentially due to either Seqwater over-estimating capital requirements, or having insufficient internal capacity to deliver. We note this deferred capex has been included in Seqwater's proposed capital program and therefore assessed as part of our broader review of capital projects.

Further, we have identified and/or been made aware of a number of capex projects where the cost estimates have significantly changed from what has been referenced in Seqwater's submission to the Authority or what had previously been proposed by Seqwater under the last price investigation. These changes primarily reflect Seqwater's decision to use the 2017 APMP as the basis for its forecast capital expenditure. Through discussions with Seqwater staff, we understand the APMP represents the primary source of information for all capex projects across the business. The 2017 APMP was finalised in September 2016 and is updated annually.

Through project sampling, KPMG has tested the implementation of Seqwater's capital planning and asset management framework. In certain cases, significant changes to cost estimates or significant uncertainty over the costs have inhibited our ability to assess, with any level of certainty, the efficiency of specific projects. These changes most commonly occur in projects which are still at early stages of the capital planning process, usually Gateway 0, 1 or 2 (where a preferred option has not been selected) and may be representative of a broader issue associated with our ability to assess the prudence and efficiency of projects at a program wide level.

Table 19 highlights Seqwater's total capex program by investment gateway. Those projects that remain at an early stage within the capital planning process (i.e. Gateway 0, 1 or 2) account for on average 79 per cent of all projects across the 10 year period and 69 per cent over the first three years.<sup>25</sup>

Where we have been unable to assess the efficiency of a sampled project, we have sought to make an adjustment to the remaining program of works. Similarly, where we have identified common variations across project categories or gateways, such as those at an early stage in the capital planning process, we have sought to make an adjustment to the remaining program of works.

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<sup>25</sup> Includes sampled capex projects and renewals.

Table 19. Seqwater total capital program by investment gateway - including renewals and sampled projects (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
0 - Strategic Assessment	\$53.1	\$74.9	\$69.4	\$50.1	\$82.5	\$76.8	\$78.5	\$48.7	\$51.0	\$36.9
1 - Preliminary Evaluation	\$28.6	\$56.7	\$82.1	\$68.3	\$9.3	\$27.4	\$29.8	\$5.8	\$9.8	\$5.1
2 - Investment Justification	\$23.1	\$34.4	\$10.0	\$3.3	\$0.5	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
3 - Investment Decision	\$44.3	\$56.3	\$43.6	\$7.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
4 - Readiness for Service	\$17.2	\$5.9	\$2.7	\$2.3	\$2.3	\$2.3	\$2.3	\$2.3	\$2.3	\$2.3
Unclassified	\$7.2	\$7.3	\$7.2	\$7.2	\$5.9	\$4.7	\$5.8	\$7.9	\$8.8	\$9.9
<b>Total Capex</b>	<b>\$173.5</b>	<b>\$235.5</b>	<b>\$215.1</b>	<b>\$138.5</b>	<b>\$100.6</b>	<b>\$111.4</b>	<b>\$116.5</b>	<b>\$64.8</b>	<b>\$72.1</b>	<b>\$54.4</b>
<b>Total Capex (less renewals and sample)</b>	<b>\$118.5</b>	<b>\$97.9</b>	<b>\$75.8</b>	<b>\$64.8</b>	<b>\$12.6</b>	<b>\$17.7</b>	<b>\$19.5</b>	<b>\$23.6</b>	<b>\$26.2</b>	<b>\$17.8</b>

## 7.1.1 Original assessment

KPMG's original assessment as per our final report dated 14 November 2017 provided for the following observations:

- With regards to actual capex over the period 1 July 2014 to 30 June 2018:
  - Seqwater underspent its allowance by 31 per cent, or \$131 million, predominantly due to the deferral of major projects (refer section 7.4); and
  - As the expenditure was less than the allowance set, therefore avoiding the need for an ex-post review.
- With regards to the 12 sample capital projects reviewed:
  - We support the inclusion of \$207 million in these projects across the 10 year period as both prudent and efficient, including \$148.1 million in 2018-21 and \$58.9 million in 2021-28;
  - We recommend adjustments of -\$281.4 million across the 10 year period for those projects that have not progressed to Gateway 3, including:
    - -\$92.2 million in expenditure from the program for the 2018-21 period; and
    - -\$189.2 million in expenditure from the program for the 2021-28 period.

Table 20 below summarises KPMG's recommended aggregate adjustments for each major project sampled respectively. Table 146 and Table 147 summarise the annual adjustments and recommended expenditure profiles for each major project.

Table 20. KPMG recommended adjustments to sample projects (real December 2016 \$ million)

Period	2018-21	2021-28
<b>Adjustments to major project expenditure</b>		
<b>Beaudesert WSZ Upgrade</b>	(\$41.5)	(\$38.3)
<b>Mt Crosby Filters Upgrade</b>	-	-
<b>Mt Crosby Sedimentation</b>	(\$33.3)	-

Period	2018-21	2021-28
North Pine WTP Filters	-	(\$37.5)
ICT ERP Upgrade	(\$6.6)	(\$8.7)
Holts Hill pH Upgrade	(\$9.1)	-
Somerset Dam Upgrade	(\$1.6)	(\$104.7)
Lake MacDonald Dam Upgrade	-	-
Leslie Harrison Dam Upgrade	-	-
Fleet and Mobile Plant Renewals	-	-
Mudgeeraba WTP Renewals	-	-
Mt Crosby WPS Renewals	-	-
<b>Total Project Adjustments</b>	<b>(\$92.2)</b>	<b>(\$189.2)</b>

- With regards to the total capital program (excluding renewals and sampled projects), we recommend the removal of expenditure during the 10 year price path period related to projects which commence prior to 30 June 2021 that have not progressed to Gateway 3 of the capital planning process, and are neither part of our sample projects, nor renewal programs. This equates to \$366.7 million comprising \$235.3 million in the first three years and \$131.4 million in the remaining seven years.

Table 21 summarises our proposed adjustments to the total capital program (excluding sampled projects and renewals) focusing on those projects that remain at an early stage within the capital planning process (i.e. Gateway 0, 1 or 2) only. These projects are due to commence prior to 30 June 2021.

Table 21. KPMG recommended adjustments to total capital program – excluding renewals and sampled projects (real December 2016 \$ million)

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Capex prior to Gateway 3 commencing 2018-2021*</b>	\$74.5	\$90.1	\$70.7	\$60.6	\$10.6	\$16.3	\$16.1	\$9.6	\$9.2	\$9.1
<b>Recommended Adjustment to Capex prior to Gateway 3*</b>	(\$74.5)	(\$90.1)	(\$70.7)	(\$60.6)	(\$10.6)	(\$16.3)	(\$16.1)	(\$9.6)	(\$9.2)	(\$9.1)

\* Excluding renewals and sampled projects

We note that it is likely that many of these projects will be required in the future and do not dispute the general prudence of these projects. As a result, and in particular for those projects with significant expenditure in the first three years, it is possible for Seqwater to proceed with a project regardless of an allowance granted by the Authority. If this were to occur, we note that the Authority may be required to complete an ex-post review of such expenditure as part of future pricing review.

Further, subject to the Authority's discretion in responding to its referral notice, its own considerations of the prudence and efficiency of Seqwater's capital program and the potential impacts on prices, it may choose to adopt one of the alternative approaches previously discussed in its assessment. For example:

- Placing greater focus and scrutiny on only those projects impacting prices in the short term, specifically those projects which commence and are capitalised in the next three years. This

approach would amount to an adjustment of \$146.7 million over the three years with no adjustments in the remaining years of the forecast as shown in Table 22; or

- Applying discounts for expenditure not at Gateway 3 or above thereby reflecting the inherent uncertainty that exists with regards to the cost estimates for these projects. For example a 25 per cent discount would result in a total adjustment of \$103.0 million over the full 10 year period as shown in Table 22.

Table 22. Alternative assessments of total capital program – excluding renewals and sampled projects (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Capex Commencing &amp; Capitalised in 3 years</b>	(\$61.1)	(\$65.6)	(\$19.9)							
<b>Notional Discount (25%)</b>	(\$18.6)	(\$22.5)	(\$17.7)	(\$15.6)	(\$3.4)	(\$5.7)	(\$6.5)	(\$5.5)	(\$4.9)	(\$2.6)

Table 23 and Table 24 summarise KPMG’s recommended aggregate adjustments and recommended expenditure profile across the entire 10 year period.

Table 23. KPMG recommended adjustments to incurred expenditure (real December 2016 \$ million)

Period	2018-21	2021-28
<b>Seqwater proposed capex</b>	\$624.1	\$658.3
<b>Adjustments to sample projects</b>	(\$92.2)	(\$189.2)
<b>Recommended Adjustment to Capex prior to Gateway 3*</b>	(\$235.3)	(\$131.4)
<b>KPMG Recommended Adjustments</b>	<b>(\$327.5)</b>	<b>(\$320.6)</b>
<b>KPMG Recommended Capex Allowance</b>	<b>\$296.6</b>	<b>\$337.7</b>

\* Excluding renewals and sampled projects

Table 24. Recommended capex allowance (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Sample projects</b>	\$22.6	\$76.2	\$49.3	\$13.0	\$7.8	\$10.7	\$13.3	\$7.4	\$3.1	\$3.5
<b>Balance of capital program*</b>	\$70.0	\$36.7	\$41.8	\$26.3	\$33.9	\$26.2	\$32.1	\$33.0	\$42.8	\$39.0
<b>Total capital program</b>	<b>\$92.6</b>	<b>\$112.9</b>	<b>\$91.1</b>	<b>\$39.3</b>	<b>\$41.8</b>	<b>\$36.9</b>	<b>\$45.4</b>	<b>\$40.4</b>	<b>\$46.0</b>	<b>\$42.6</b>

\* Including renewals

## 7.1.2 Revised assessment

KPMG has reviewed the additional information provided by Seqwater as per its submission to the QCA Draft Report. Further, where required, KPMG has sought additional information and clarification directly from Seqwater. This information was provided by the business over the period 31 January 2018 to 26 February 2018.

Based on this additional information, KPMG has made the following amendments to its original assessment:

- Recommend capex of \$100 million be approved in relation to Project 1: PAA Beaudesert WSV Upgrade. This includes an adjustment of -\$31.1 million to Seqwater’s proposed costs driven largely by Seqwater’s inappropriate application of contingency (see Section 7.15 for a discussion on contingency allowance) and owners’ costs, and some minor adjustments to the assumptions.
- Recommend capex of \$21.7 million be approved in relation to Project 5: Ipswich Office – Enterprise Resource Planning (ERP) Program. This includes an adjustment of - \$9.90 million from the forecast expenditure driven largely by overstated renewals costs and the inclusion of nominal dollars, instead of real dollars.
- Recommend capex of \$186.2 million be approved in relation to Project 7: Somerset Dam – DSO: Dam safety upgrade. This includes an adjustment of - \$53.2 million from the forecast expenditure driven largely Seqwater’s application of contingency, and some minor adjustments to the assumptions.

Further to the above amendments, KPMG has revised its assessment of non-sampled projects. In reviewing the supporting project justification, options analysis and project cost estimates for sampled Project 1 (Beaudesert WSZ Upgrade) and Project 7 (Somerset Dam – Dam Safety Upgrade), KPMG accepts that Seqwater has completed a robust level of analysis that supports an expenditure allowance of greater than zero for those projects at Gateway 2 with a preferred option. The implication of this is that a systemic adjustment is only appropriate for projects that do not have a preferred option. A preferred option is determined during Gateway 2.

Whilst recognising a robust level of analysis and cost estimation supporting projects that are at Gateway 2 and have a preferred option, further analysis has recognised that assumptions regarding contingency and indirect costs are materially overstated. In KPMG’s experience, a robust cost estimation that supports prudence and efficiency would include an allowance for contingency of 15 per cent of direct costs and for indirect costs 12.5 per cent of direct costs. In aggregate, this is 27.5 per cent of direct costs, or 21.6 per cent of ‘total project costs’ (i.e. direct costs plus contingency plus indirect costs).

In response to KPMG’s queries, Seqwater provided assumptions for contingency and indirect costs for six non-sampled projects. The average allowance for contingency across these projects was 29 per cent of direct costs, and for indirect costs of 37 per cent of direct costs. Or in aggregate, 66 per cent of direct costs, or equivalent to 40 per cent of total project costs. What this means, is that Seqwater has overstated, when compared against good practice, allowances for contingency and indirect costs by 18.1 per cent of total project costs.

Based on our revised assessment:

- KPMG maintains our original recommendation regarding exclusion of costs for non-sampled projects at Gateways 0 or 1 that commence during the period 2018-21, on the basis that there is both insufficient project justification and robust cost estimation;
- KPMG recommends excluding costs related to non-sampled projects within Gateway 2, where these projects do not have a preferred option, for the same reasons as above. These projects constitute \$13.7 million.
- KPMG recommends allowing the recovery of all expenditure forecasts related to non-sampled projects - where these projects are within Gateway 2, have a preferred option and will commence by 2021 - adjusted to account for inappropriate allowances for contingency and indirect cost estimates. On this basis, KPMG recommends removing 18.1 per cent of these project costs, or \$13.7 million.

KPMG proposes that this adjustment be made to the forecasts originally submitted by Seqwater, and not account for any subsequent progressions through the gateway process. This treatment is addressed in Section 7.21.

Noting KPMG's original review that determined no adjustments were required for renewals projects, further information has been provided by Seqwater that demonstrates that programs of works related to natural assets and monitoring and control systems (MCS) reflect that of renewals, and should therefore be excluded from any systemic adjustment. We have accepted Seqwater's contention regarding these programs.

Seqwater also raised the following issues, inclusive of KPMG's overarching response:

- **Seqwater contention:** KPMG's recommendations to set capital expenditure for a prudent project to zero is inconsistent with regulatory precedent, and that KPMG should consider an aggregate adjustment to the expenditure proposed (i.e. 30 per cent).

**KPMG response:** Each price review is tailored according to the entity being reviewed, their individual circumstances, and the quality of information provided by the business being reviewed. Where a robust cost estimation is provided that enables the reviewer to test the underlying assumptions and/or forecasting methods, then it has the ability to adjust these estimates where it feels there is stronger alternative evidence, therefore determining an adjusted forecast. Where the entity does not provide such evidence, then it is inappropriate for the reviewer to develop an efficient cost, nor apply an arbitrary adjustment to forecast expenditure, as it would not allow for the efficient expenditure to be accurately identified. Details on these findings can be found in Section 7.8.

- **Seqwater contention:** The QCA's recommendations are inconsistent with the terms of the Referral Notice.

**KPMG response:** The terms of the Referral Notice explicitly state that prices are to recover bulk water costs that include prudent and efficient capital expenditure. As a result, unless Seqwater provides adequate supporting information that allows KPMG to recommend adjustments to the forecasting assumptions and methodology in order to determine an efficient amount, excluding expenditure related to a project that does not demonstrate efficiency is reasonable. Details on these findings can be found in section 7.8; and

- **Seqwater contention:** The outcomes of the Draft Report will result in mild price shocks

**KPMG response:** It is in consumers' interests to ensure that only efficient costs are passed through in prices, and to defer any price increases for as long as possible. We recognise the need to avoid future 'price shock', however it is also important to ensure prices from 2018 minimise any price increases. As such, there needs to be a balanced approach. KPMG's approach does this, by reviewing and adjusting projects to set an efficient expenditure for projects commencing in the 2018-21 period, and maintaining within the forecast (without adjustment), non-sampled capex that commences beyond 2021. Details on these findings can be found in Section 7.8.

Section 8.10.2 of our report also identifies the reclassification of capex as opex of \$5.38 million over the 10 year period, of approximately \$0.54 million per annum.

### **Summary findings**

Table 25 below summarises KPMG's revised recommendations for each major project sampled. Further, Table 26 summarises our revised adjustments to the total capital program (excluding sampled projects and renewals) focusing on those projects that remain at an early stage within the capital

planning process (i.e. Gateway 0, 1 or 2) only. These projects are due to commence prior to 30 June 2021.

Table 25. KPMG revised recommended adjustments to sample projects (real December 2016 \$ million)

Project No.	Period	2018-21	2021-28
<b>Adjustments to major project expenditure</b>			
1	Beaudesert WSZ Upgrade	(\$18.4)	(\$12.6)
2	Mt Crosby Filters Upgrade	-	-
3	Mt Crosby Sedimentation	(\$33.3)	-
4	North Pine WTP Filters	-	(\$37.5)
5	ICT ERP Upgrade	(\$1.3)	(\$8.6)
6	Holts Hill pH Upgrade	(\$9.1)	-
7	Somerset Dam Upgrade	(\$0.6)	(\$52.6)
8	Lake MacDonald Dam Upgrade	-	-
9	Leslie Harrison Dam Upgrade	-	-
10	Fleet and Mobile Plant Renewals	-	-
11	Mudgeeraba WTP Renewals	-	-
12	Mt Crosby WPS Renewals	-	-
<b>Total Project Adjustments</b>		<b>(\$62.7)</b>	<b>(\$111.3)</b>

Table 26. KPMG revised adjustments to total capital program – excluding renewals and sampled projects (real December 2016 \$ million)

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Sampled capex	(\$4.0)	(\$32.2)	(\$26.5)	(\$2.8)	(\$26.2)	(\$39.3)	(\$34.6)	(\$5.5)	(\$1.4)	(\$1.4)
Non-sampled capex	(\$56.1)	(\$45.2)	(\$73.9)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Reclassification (capex to opex)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.5)	(\$0.6)
<b>Total adjustment</b>	<b>(\$60.6)</b>	<b>(\$78.0)</b>	<b>(\$100.9)</b>	<b>(\$3.3)</b>	<b>(\$26.8)</b>	<b>(\$39.8)</b>	<b>(\$35.1)</b>	<b>(\$6.1)</b>	<b>(\$2.0)</b>	<b>(\$2.0)</b>

Table 27 and Table 28 summarise KPMG's recommended aggregate adjustments and recommended capital expenditure profile for Seqwater across the entire 10 year period.

Table 27. KPMG revised recommended adjustments to incurred expenditure (real December 2016 \$ million)

Period	2018-21	2021-28
Seqwater proposed capex	\$624.1	\$658.3
Adjustments to sample projects	(\$62.7)	(\$111.3)
Adjustments to non-sampled projects	(\$175.2)	\$0.0
Reclassification from capex to opex	(\$1.6)	(\$3.8)
<b>KPMG Recommended Adjustments</b>	<b>(\$239.5)</b>	<b>(\$115.1)</b>
<b>KPMG Recommended Capex Allowance</b>	<b>\$384.6</b>	<b>\$543.2</b>

\* Excluding renewals and sampled projects

Table 28. Revised recommended capex allowance (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Sample projects	\$35.8	\$116.2	\$71.5	\$25.1	\$77.4	\$81.8	\$70.3	\$21.3	\$2.6	\$3.0
Balance of capital program*	\$62.07	\$18.86	\$36.09	\$21.26	\$31.29	\$23.52	\$29.47	\$30.37	\$40.18	\$36.36
<b>Total capital program</b>	\$97.8	\$135.0	\$107.6	\$46.4	\$108.7	\$105.3	\$99.7	\$51.7	\$42.8	\$39.4

## 7.2 Price path vs Forecast capex horizon

In accordance with the referral notice from the Treasurer and Minister for Trade and Investment, the Authority has been tasked with:

- Recommending bulk water prices for Seqwater for the period from 1 July 2018 to 30 June 2021; and
- Assessing the prudence and efficiency of Seqwater’s proposed capital (and operating) expenditure for the period from 1 July 2018 to 30 June 2028. This period is part of a longer term price path which initially commenced in 2008 and was set, at the time, for a fixed period of 20 years.

This distinction in periods is important for the purposes of KPMG’s review and in particular our assessment of individual major projects. A number of the projects proposed by Seqwater have significant capital expenditure in the period (1 July 2018 to 30 June 2021), while other projects have no, or very little, expenditure in this period, but have significant expenditure in the remaining years to 2028. In addition, some of the projects (particularly those with forecast expenditure in the later years of the 10 year period) are at a very early stage in the investment governance process and have not yet developed robust business cases outlining detailed options assessments or cost estimates. Assessing the prudence and efficiency of these projects is difficult at these early stages of project development with the limited supporting information available.

Between now and when the Authority is likely to receive the next Terms of Reference for a price review, and therefore when Seqwater is required to submit its next regulatory submission to the Authority, we would expect that these individual projects, at an early stage in the Gateway process, would have progressed further through the investment governance process. For example, moving from Gateway 0 to Gateway 2 during this time is likely to result in a completed options assessment and detailed cost estimate for individual projects, making the assessment of the projects significantly more robust.

When assessing the prudence and efficiency of individual projects, we have applied the following review process to those projects with significant forecast expenditure in the next regulatory period:

- If a project is not demonstrated to be prudent, then it should not be included in the next regulatory period or the 10 year forecast of capex to 2028.
- Where a project is at an early stage in the investment governance process (that is, within Gateways 0-2) and, while considered to be prudent, there is insufficient supporting information to clearly demonstrate a robust options analysis and cost estimate, we cannot support the efficiency of the project and have removed the proposed project costs from the capital program. For those projects at Gateway two, this only applies to those without a preferred option;

- Where a project has a detailed cost estimate, we have reviewed the underlying assumptions and forecasting methods underpinning that forecast, and either accepted or adjusted those assumptions/forecasting methods to reflect good practice and/or regulatory precedent; and
- Where a project is determined to be both prudent and efficient (i.e. the supporting documentation demonstrates the scope, standard and cost of works), it is appropriate that this expenditure be considered in determining pricing for the 10 year period.

## 7.3 Changes to cost estimates

Throughout the course of KPMG’s assessment, we have identified and/or been made aware of a number of capex projects where the cost estimates have significantly changed from what has been referenced in Seqwater’s submission to the Authority or what had previously been proposed by Seqwater under the last price investigation. These changes have been identified through:

- KPMG’s interviews with key Seqwater staff;
- A comparison with the 2017 APMP and Seqwater regulatory submission and regulatory model provided to the Authority;
- The provision of supporting documents; and
- Follow up queries and responses received.

These changes primarily reflect Seqwater’s decision to use the 2017 APMP as the basis for its forecast capital expenditure. Through discussions with Seqwater staff, we understand the APMP represents the primary source of information for all capex projects across the business. The 2017 APMP was finalised in September 2016 and is updated annually.

Since this time, Seqwater has continued with its planning and assessment of individual projects in accordance with its asset management and investment governance frameworks. For example, projects previously recorded in the submission as being at Gateway 0 were stated by Seqwater as having progressed to Gateway 1 or 2. This therefore has implications for the preferred options to be considered as part of the assessment, and importantly, the total expenditure to be reported against those projects. In certain instances, capital expenditure has more than doubled relative to what has been recorded in the APMP and therefore included in the submission. While we have been consistent in our reporting of proposed capex (as per the 2017 APMP and regulatory submission), where such changes have occurred, KPMG has highlighted this in its discussion.

Significant changes to cost estimates or significant uncertainty over the costs inhibit our ability to assess, with any level of certainty, the efficiency of proposed projects. These changes most commonly occur in projects which are still at early stages of the capital planning process, usually Gateway 0, 1 or 2. We have identified and assessed specific issues in relation to this matter in section 7.21.

## 7.4 Outcomes following the 2015-18 Seqwater Bulk Water Price Investigation

As actual expenditure incurred during the 2015-18 regulatory period is estimated to be lower than that allowed, an ex-post review of actual capital expenditure is not required.

Seqwater expect to capitalise \$311.7 million of projects over the current regulatory period, \$131 million less than that which was approved by the Queensland Government (as shown in Figure 29). The majority of underspend is the result of the deferral of capital expenditure into the forthcoming regulatory period. The total underspend represents approximately 42 per cent of the delivered expenditure and 30 per cent of the original QCA allowance for the current regulatory period.

Figure 29. QCA Recommended Capex Allowance vs Seqwater Actual Capex 2015-16 to 2017-18

	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

Source: Seqwater

KPMG notes that this represents a significant level of expenditure deferral. Moreover, half of this deferred expenditure, \$66.5 million, occurs in 2017-18. KPMG notes the significantly higher allowance in 2017-18, which is likely to have contributed to the large underspend, and the increasing delivery of actual expenditure achieved by Seqwater. The level of underspend could suggest that Seqwater has overestimated the works required to be completed in the period or that Seqwater does not have the capacity to deliver a program of this size.

Figure 30 demonstrates Seqwater's reported underspend for its nine highest valued projects. The biggest contributors to the total deferred capital expenditure, as reported in Seqwater's submission, are:

- Lake MacDonald Dam Safety Upgrade (approximately \$60 million deferred), Ewan Maddock Dam filter trench (approximately \$6.5 million deferred), Sideling Creek Dam (\$16 million deferred), and the Atkinson Dam filter trench (as reported to the QCA) deferred.

Overall, the dam safety program of work contributed around \$88 million to the net deferral amount. Seqwater has indicated that the reasons for the deferral were the completion of revised risk assessments on each dam reducing uncertainties and adjusted scope of works to reflect the lower risks along with revised project commencement dates.

The actual expenditure incurred in the current regulatory period for the three projects is broadly reflective of the detailed design allowances originally proposed in Seqwater's 2015 regulatory submission, while the level of expenditure deferred broadly reflects the project delivery estimates for the three projects.

This implies that detailed design work was done for the projects but delivery was not progressed.

- Mt Crosby East bank WTP Filter Upgrade (\$32.5 million deferred).  
This project is assessed as one of the major projects (refer section 7.7). No specific reason for deferral of this expenditure was supplied by Seqwater.
- Various renewals projects (\$11 million deferred).

Seqwater has deferred expenditure across a number of projects due to better asset condition and asset life data leading to fewer renewals required, consolidation of separately forecast project expenditure into existing programs, and more detailed performance testing of assets. Together this has led to lower preventative maintenance requirements.

- Beaudesert Water Supply Zone Upgrade (\$10.7 million deferred).

Seqwater has deferred this expenditure having completed a re-scoping exercise for the project in response to updated demand projections (lower than expected), more detailed technical evaluations and consideration of a regional perspective (at the level of the Water Grid) which opened up new potential options. KPMG has reviewed this project in detail in Section 7.7.

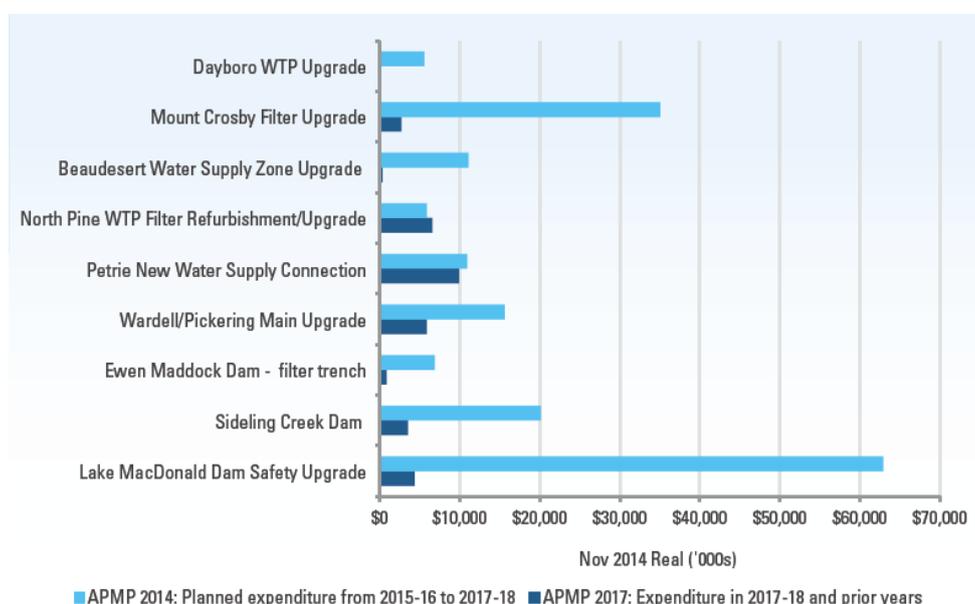
- Savings made in project delivery (\$10.6 million saved).

Seqwater has made savings through delivery of projects at lower than allowed prices (mostly due to construction market conditions lowering delivery costs) and through developing partnerships with customers (distribution / retailers) to deliver projects and therefore sharing costs.

- New projects identified (\$11.6 million added)

Three new, previously unforeseen projects were identified and included in the current regulatory period as a result of new compliance requirements and improved information gathering (including physical asset condition data) leading to new asset requirements.

Figure 30. Forecast underspend in capital expenditure for nine highest value projects of 2015-16 to 2017-18 Regulatory Period



Source: Seqwater

Overall, the impacts of the underspend on capital expenditure in the current regulatory period that will be realised within the next regulatory period are predominantly related to the delivery of the deferred projects in addition to the originally proposed expenditure for the next regulatory period.

The deferral of significant project expenditure from one pricing period to another raises an issue for the Authority, being that Seqwater's bulk water prices for the 2015-18 period were set based on the delivery of some of the aforementioned capital projects (where these projects were forecast to be commissioned).

It is reasonable to expect some projects to be deferred as circumstances change, or for that funding to be re-directed to other projects that were not funded, or for Seqwater to find better ways to deliver the project, hence making savings. Excluding these circumstances, where a project is deferred, it is due to either Seqwater over-estimating capital requirements, or it does not have the internal capacity to deliver.

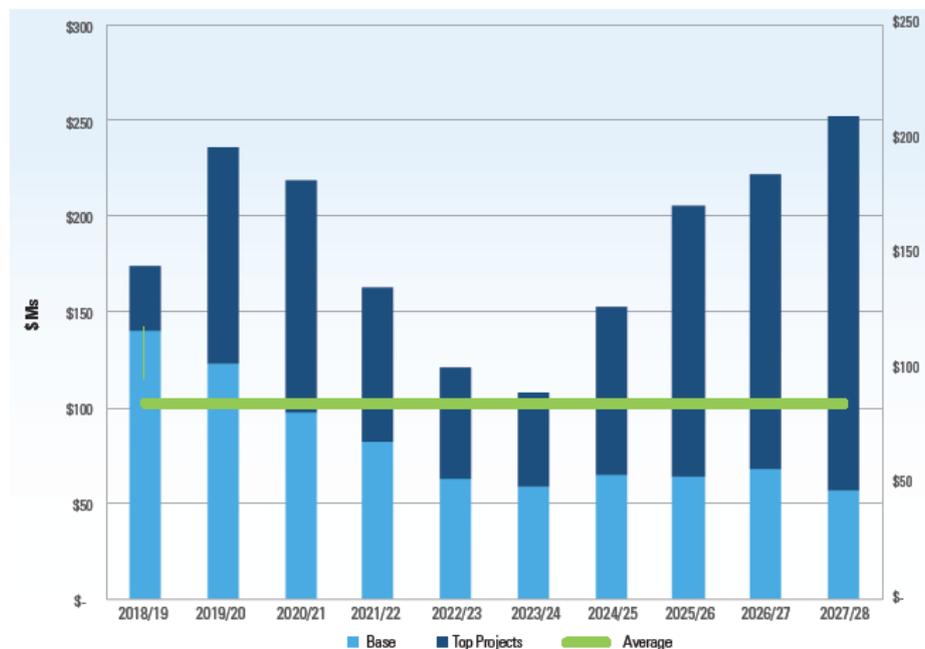
## 7.5 Forecast capital expenditure 2018 - 2028

Seqwater is proposing a total capital expenditure of \$1,282 million (real December 2016) for the 10 year period ending 30 June 2028. Over the next regulatory period (2018-21), Seqwater is forecasting to spend \$624.1 million, a 100 per cent increase on the actual capitalised expenditure of \$311.7 million that is expected to be delivered in the current regulatory period and 41 per cent higher than the QCA allowance for the current regulatory period.

Seqwater's total capital expenditure over the 10 year price path is presented in Figure 31 below. The figure also shows the proportion of expenditure Seqwater considers base (normal level of ongoing expenditure plus smaller projects) and major projects (larger well defined projects) along with what Seqwater is reporting as average expenditure over the price path.

Figure 31, as reported by Seqwater in its submission, highlights that there is quite a significant reduction in the "base" level of capital expenditure across the years of the forecast horizon to 2022-23 from which point it seems to stabilise to the end of the period. There is also a spike of expenditure in the last two years of the next regulatory period and the last two years of the 10 year price path period.

Figure 31. Seqwater's 10-year Forecast Capital Expenditure (\$m nominal)



Source: Seqwater

### 7.5.1 Drivers of expenditure

Seqwater has four key drivers under which its expenditure is classified:

- Compliance with regulatory and service obligations - Capital expenditure related to compliance is usually associated with the replacement and/or enhancement of an asset to prevent non-compliance with one of the contractual or legislative requirements on Seqwater. This could include:
  - Conditions within Bulk Water Agreements;

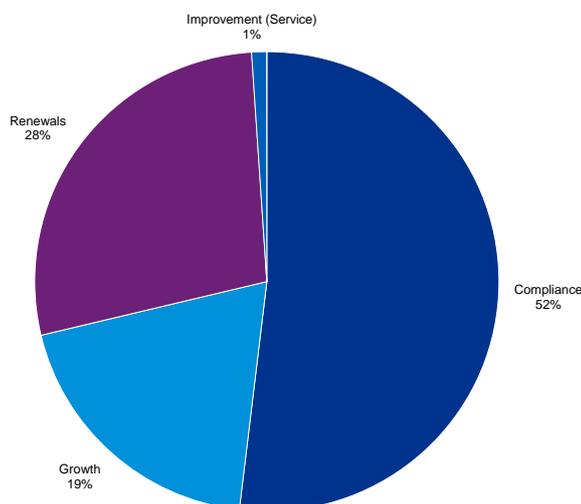
- o Legislative obligations related to water supply or quality, licences approved, or dam safety related requirements; or
- o Specific technical regulation requirements or occupational health and safety requirements.

Expenditure under the compliance driver must be supported by a clearly defined obligation on Seqwater that is not already being met.

- Meeting additional customer demand or growth - Capital expenditure related to growth is intended to provide an increase in the capacity or capability of an asset, or to construct new assets, in response to increased demand, growth or variations required by a customer. Capital expenditure which provides increased security of supply is also included under the growth driver.
- Maintaining the service capacity of assets - Capital expenditure related to renewals is usually associated with the replacement and/or enhancement of an asset that currently meets service performance standards and legislative requirements, but where there is an unacceptable risk of non-compliance with these standards or requirements at some time in the short to medium term future. Renewals expenditure is intended to maintain the performance of the asset at the existing levels of service over the life cycle of the asset.
- Service improvement - Capital expenditure related to service improvements is associated with upgrading service outcomes to improve the efficiency of assets, their reliability, or to increase the anticipated life of an asset to prevent future non-compliance with service performance or a capacity shortfall. The proposed expenditure must achieve an increase in the reliability of the quality of supply that is explicitly endorsed or desired by customers, external agencies or shareholders since the expenditure relates to improving services rather than meeting obligations.

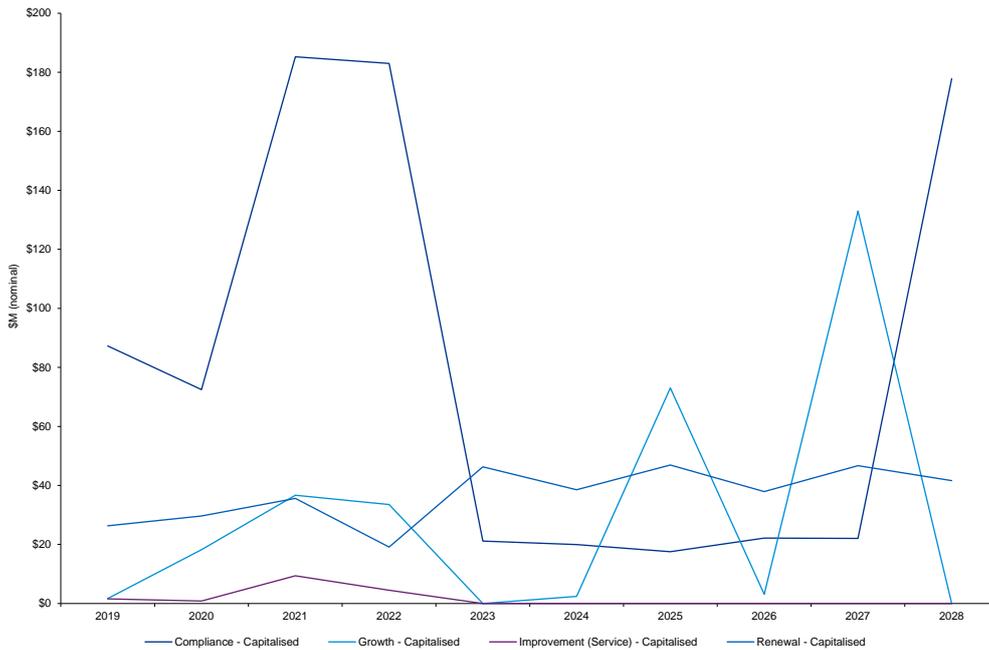
Total capital expenditure for the next regulatory period broken down by investment driver, is presented in Figure 32 below and discussed in the following sections. The profile of expenditure across the 10 year price path by each driver is presented in Figure 33.

Figure 32. Forecast Capital Expenditure 2018-19 to 2027-28 by Driver (\$'000 nominal (capitalised))



Source: Seqwater

Figure 33. Forecast Capitalised Expenditure 2018-19 to 2027-28 by Driver

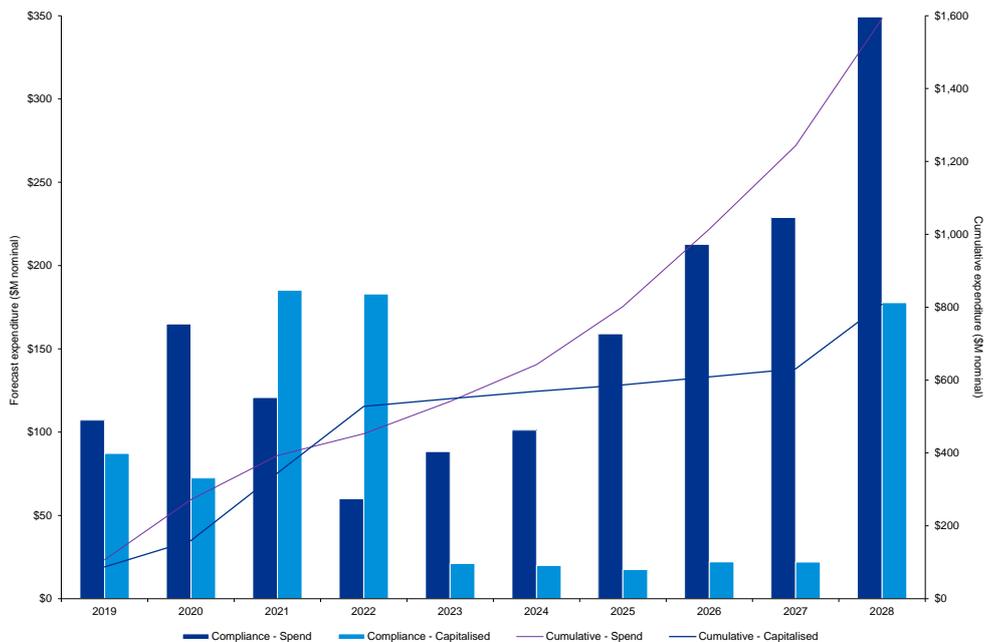


Source: Adapted from Seqwater

### Compliance

The compliance driver accounts for around 52 per cent of total capital expenditure over the 10 year forecast period. By comparison, in the 2015-18 price investigation the compliance driver accounted for about 56 per cent of a larger capital program. As in the current regulatory period, the majority of expenditure in compliance is related to dam safety with works in the next regulatory period representing over \$257 million.

Figure 34. Forecast Capital Expenditure Profile for Compliance 2018-19 to 2027-28



Source: Seqwater

Two large projects Mt Crosby East Bank WPS (\$320 million) and the Wivenhoe Dam Upgrade (\$299 million) are due to commence towards the end of the forecast horizon, however Seqwater is not expecting them to be capitalised until beyond 2028. As such, the expenditure for these projects is not included in the capitalised costs total for the 10 year forecast period and we have not reviewed them.

The proposed expenditure on compliance over the 10 year price path is shown in Figure 34.

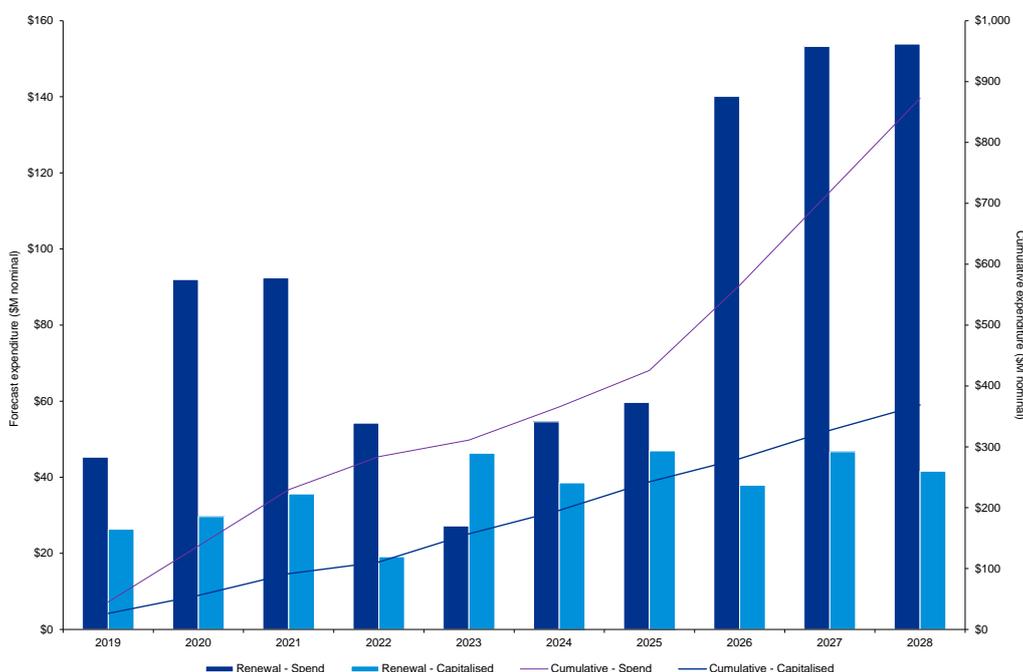
## Renewals

Renewals expenditure is forecast to be around \$43 million per year representing about 28 per cent of total capital expenditure across the 10 year forecast period. By comparison, the proportion of renewals expenditure in the 2015-18 price investigation was 35 per cent.

Seqwater has stated that long term renewals of treatment assets, ICT, and Mobile Plant and Fleet are three of the largest renewals projects over the remainder of the forecast period to 2027-28. No major pipeline renewals are expected during this time. ICT renewals is the largest single item of renewals expenditure with a total forecast expenditure of around \$28 million. This relates to the proposed ERP program to be rolled out over the upcoming 10 year period.

Seqwater conducted a sensitivity analysis on the level of renewals expenditure included in its submission to the Authority and concluded that forecasts are conservative and likely to underestimate actual required expenditure by up to 30 per cent. Seqwater expect to recover this likely shortfall through improved modelling and investigation of actual renewals projects to try and defer works and through optimised investment whereby alternatives to renewals are assessed and implemented. Seqwater have stated that there is no bow wave of investment or increased risk associated with the underestimate of required renewals expenditure.

Figure 35. Forecast Capital Expenditure profile for Renewals 2018-19 to 2027-28



Source: Seqwater

## Growth

Seqwater's growth expenditure represents 19 per cent of the total capital expenditure over the 10 year forecast period or around \$300 million. There are a limited number of growth projects forecast for the

next regulatory period with only 18 projects in total included under this driver. These projects primarily relate to towns not yet connected to the Water Grid, including Beaudesert, which is the largest single project at a forecast capitalised expenditure of over \$109 million. The proportion of expenditure under the growth driver is slightly larger than what was set in the current regulatory period.

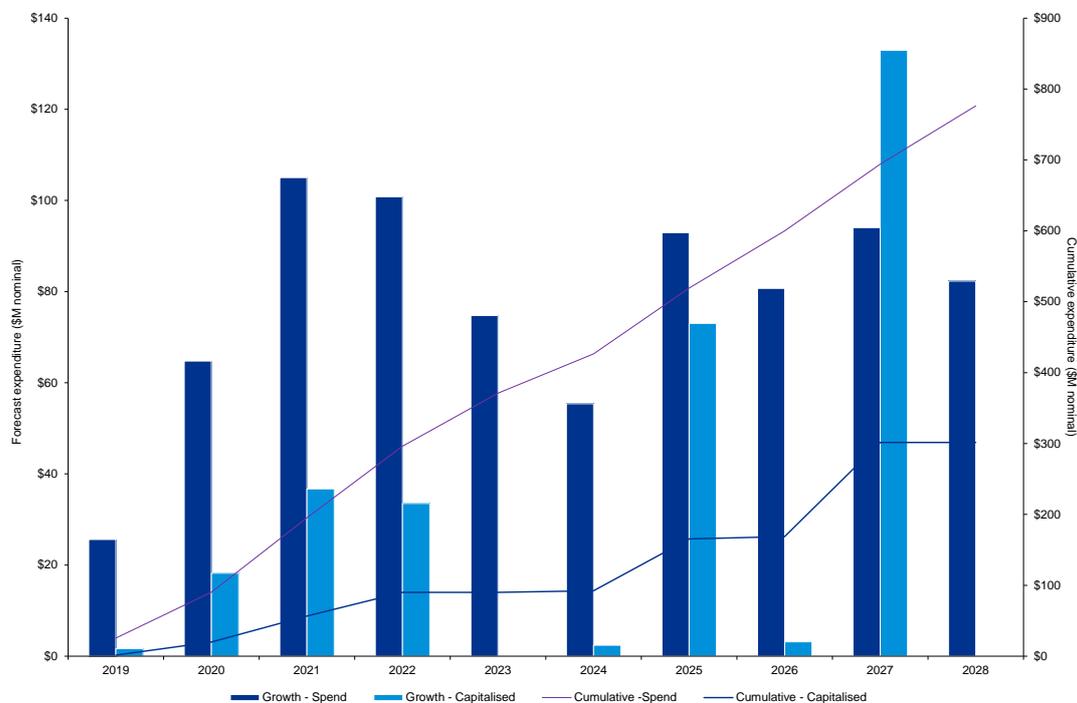
The breakdown of growth expenditure over the 10 year price path is outlined in Figure 36 below.

The figure shows significant growth related expenditure in the next regulatory period compared to what was originally recommended in the 2015-18 price investigation. Seqwater forecast an average annual expenditure on growth of between \$15 to 20 million for the period 2015-16 to 2017-18. Proposed expenditure for the next investigation period is approximately \$25 million in 2018-19, \$65 million in 2019-20 and \$105 million in 2020-21.

Seqwater outlined in its regulatory submission to the QCA that its standard capital planning processes use the medium demand forecast to determine the timing of growth projects. KPMG understands that Seqwater, through use of a hybrid demand assumption, has enabled some growth related projects to be deferred by up to two years. Seqwater engaged a consultant to review the use of a hybrid demand growth assumption which resulted in lower demand forecasts in some years. The consultant identified five projects with a value of approximately \$100 million that could potentially be deferred by up to three years. Three projects were subsequently confirmed as candidates for deferral of project implementation:

- North Pine WTP Filtration Upgrade – deferred for two years from 2022-23 to 2024-25;
- Mt Crosby Westbank WTP Sedimentation Upgrade – deferred for two years from 2022-23 to 2024-25; and
- Narangba Pump Station – deferred one year from 2023-24 to 2024-25.

Figure 36. Forecast Capital Expenditure for Growth 2018-19 to 2027-28



Source: Seqwater

## Service Improvements

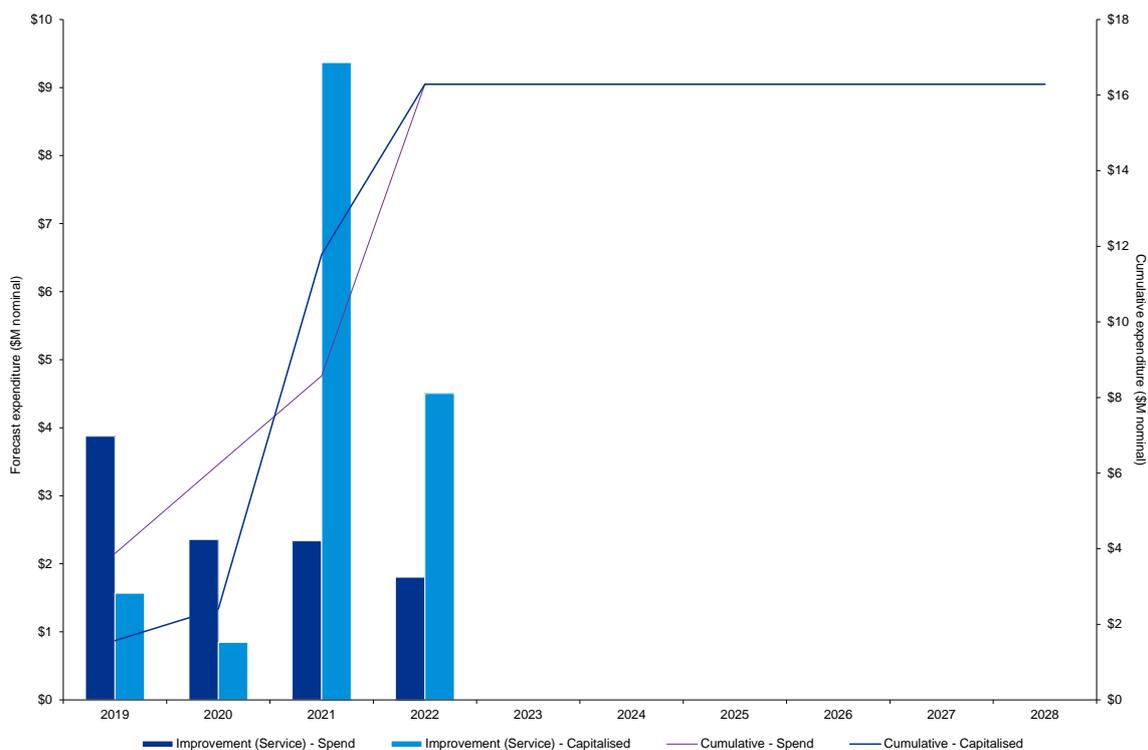
Expenditure related to service improvements represents a very small proportion of Seqwater’s total capital expenditure with the proportion in the 10 year forecast period representing around one per cent of the total program or around \$16 million total. At this stage, projects have only been identified in the APMP out to 2021-22 with other potential projects not yet at the level of documentation or concept development sufficient to be considered for inclusion in the APMP.

The largest projects under this driver are the Holts Hill Reservoir pH Correction Upgrade, which is one of the major projects reviewed by KPMG (refer to Section 7.7) and the Mt Cotton Reservoir to Alexandra Hill Reservoir pipeline duplication project, which improves the reliability of supply for customers.

Projects under this driver are undertaken for a variety of strategic outcomes including service reliability, improving water quality and public safety, particularly around assets and facilities providing recreational opportunities at Seqwater water supply lakes. The public safety projects are undertaken to balance recreational access for customers with public safety and the health of the catchments and source water quality.

Seqwater’s forecast expenditure on service improvements is presented in Figure 37 below.

Figure 37. Forecast Capital Expenditure Profile for Service Improvements



Source: Seqwater

## 7.6 Assessment of forecast capital expenditure

### 7.6.1 Comparison with Current Regulatory Period

Proposed expenditure over the next regulatory period, at \$624.1 million, is significantly higher (a 100 per cent increase) than the actual capitalised expenditure of \$311.7 million that is estimated to be

delivered in the current regulatory period. This includes approximately \$100 million in deferred expenditure from the current regulatory period. The proposed expenditure for the next regulatory period is also 41 per cent higher than the QCA allowance for the current regulatory period.

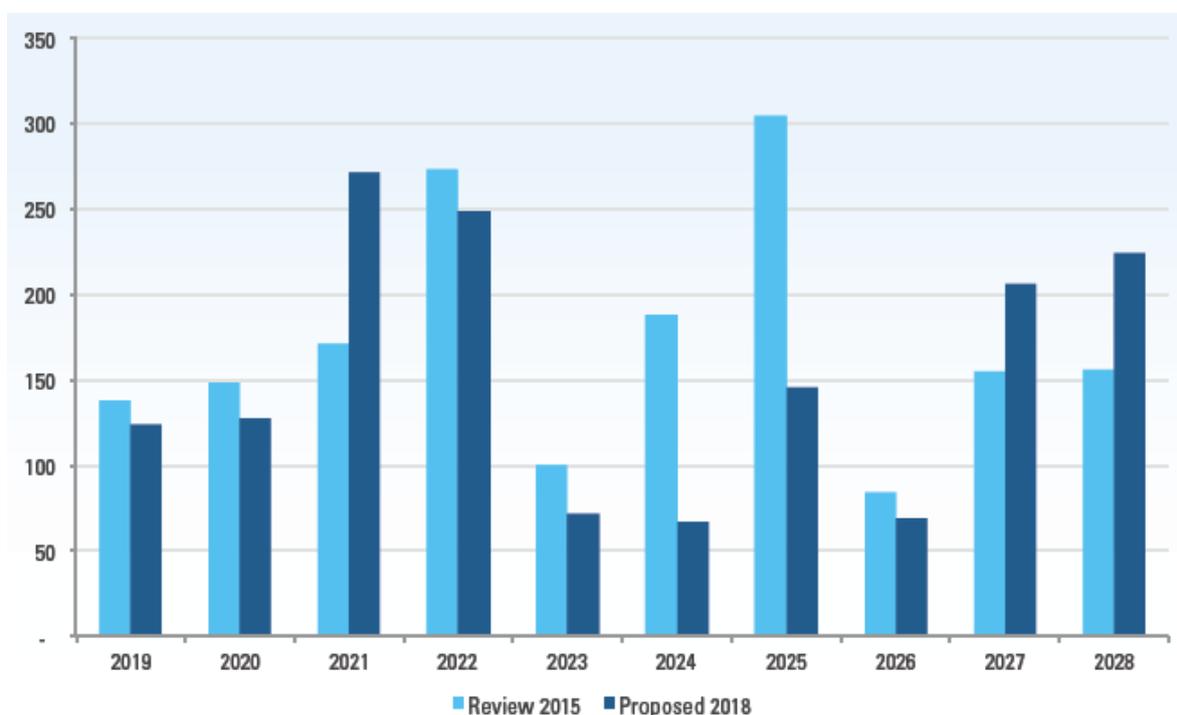
The total capitalised expenditure in the current period compared to the next period is presented in Figure 38 below. Specifically, Figure 38 shows significant shifts in the timing of capitalised expenditure between 2015-18 review and what is now proposed. The quantum of expenditure to be capitalised in 2020-21 (the final year of the next regulatory period) is dominated by compliance related expenditure capitalisation which represents around \$185 million of the total \$272 million (68 per cent).

The relative proportions of expenditure allocated to the four drivers of expenditure have shifted slightly in the next regulatory period from the current regulatory period:

- The proportion of compliance expenditure has decreased from 56 per cent of total expenditure in the current regulatory period to 52 per cent of forecast expenditure in the next regulatory period;
- The proportion of renewals expenditure has decreased from an estimated 30-33 per cent in the current period to 28 per cent in the next period;
- The proportion of growth related expenditure has increased from an estimated 10-13 per cent in the current regulatory period to around 19 per cent in the next regulatory period; and
- The proportion of service improvements related expenditure has remained relatively stable at around one per cent.

Overall, there has been a decrease in the proportions of expenditure on compliance and renewals and an increase in the proportion of expenditure on growth between the current regulatory period and the next regulatory period.

Figure 38. Total Capitalised Expenditure 2018-19 to 2027-28, 2018 Forecasts Vs 2015 Forecasts (nominal)



Source: Seqwater

## 7.6.2 Original Assessment of Deliverability

Seqwater has proposed a capital expenditure budget of approximately \$1,282 million for the 10-year forecast period from 2018-19 to 2027-28 compared to the Authority's recommended allowance set in the 2015-18 price investigation of \$1,723 million, an approximately 25 per cent reduction.

However, Seqwater's actual performance across the current regulatory period resulted in a 30 per cent underspend relative to the recommended allowance. Comparing the requested expenditure for the next regulatory period of \$624.1 million against the expenditure Seqwater is forecast to deliver in the current regulatory period, being \$311.7 million, the requested expenditure for the next regulatory period represents a significant increase of 100 per cent on actual delivery.

There are also significant deferrals from the current regulatory period of \$131.1 million. This deferral places significant pressure on Seqwater in the next regulatory period to catch up and deliver this expenditure.

An analysis of the average annual expenditure requested over the next regulatory period identifies that there is a significantly higher average annual expenditure of \$208 million (real December 2016, as incurred) in first three years than the average of the remaining seven years (\$94 million) of the 10 year forecast period. This could imply that expenditure has been "front loaded" into the next regulatory period or that there is a higher degree of confidence in the next regulatory period, whereas expenditure outside this period has been spread more widely. In either case, the higher level of average annual spend is significantly more than the actual annual expenditure delivered or forecast to be delivered by Seqwater in the current regulatory period. The average annual expenditure in the current period was only \$68.9 million.

We have also disaggregated capex for the next regulatory period by where the projects currently sit within Seqwater's gateway process, refer Figure 39 and Figure 40.

Figure 39. Total Capital Expenditure 2018-19 to 2027-28 by Gateway Status

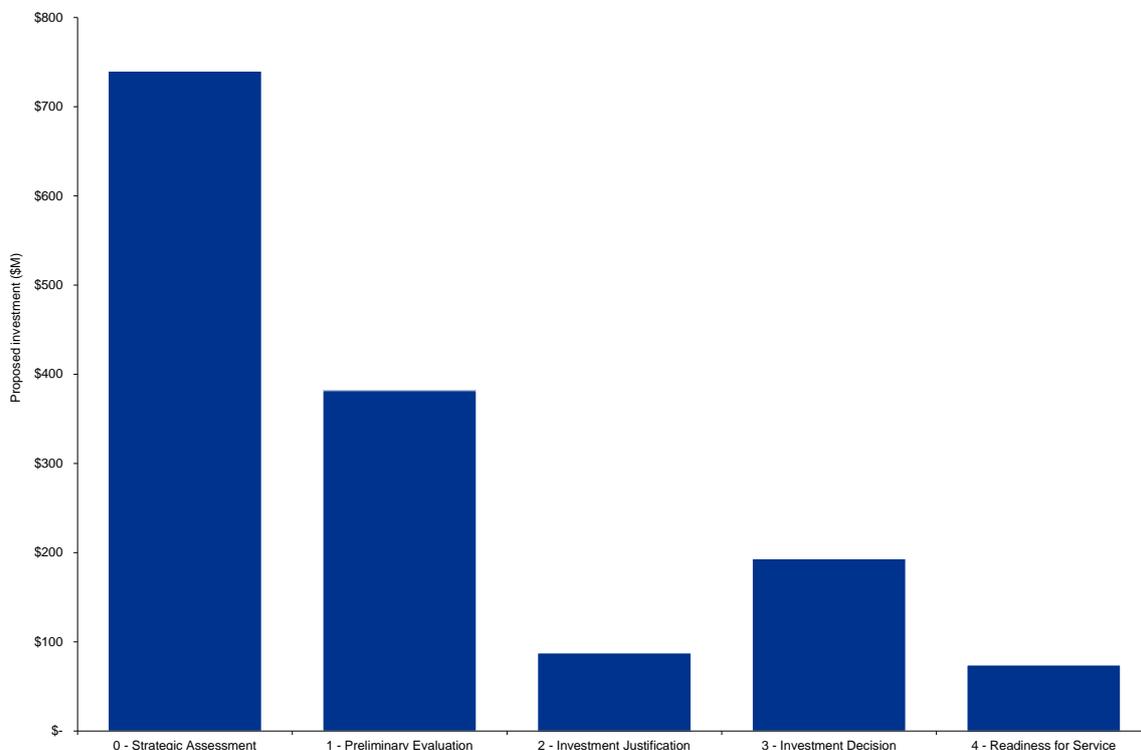
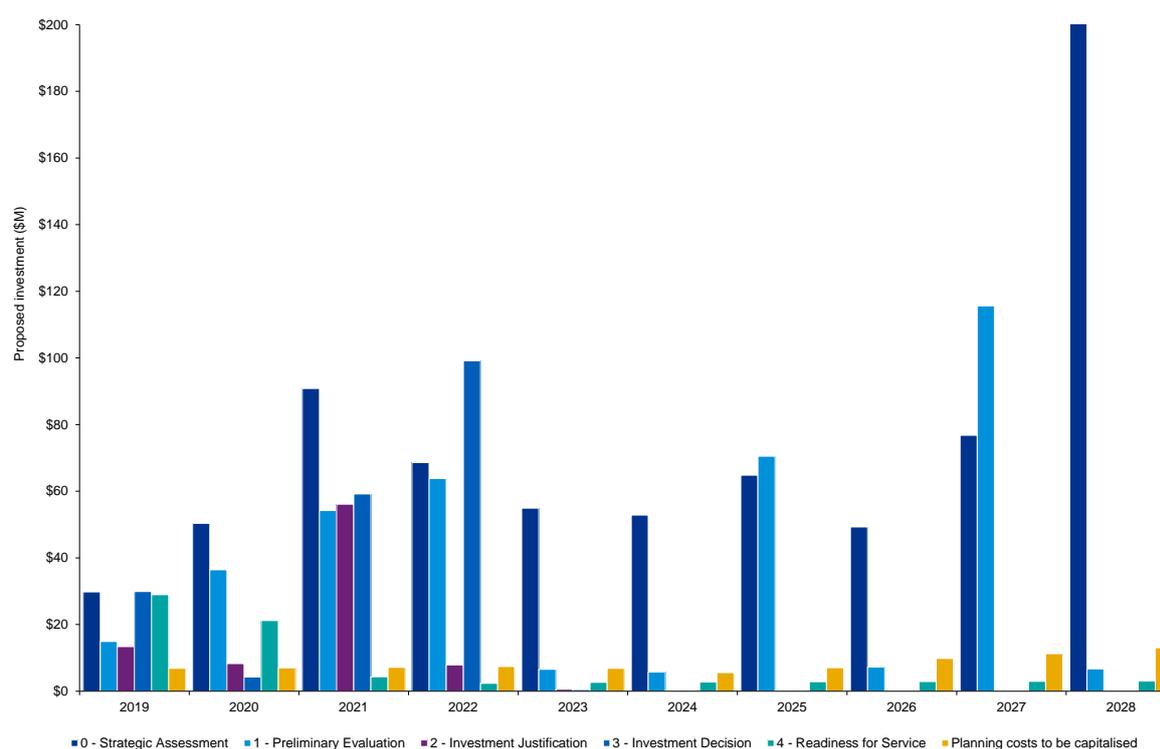


Figure 40. Capital Expenditure over 2018-19 to 2027-28 by Year and Gateway Status (nominal, capitalised)



Approximately 47 per cent of total forecast expenditure remains in Gateway 0. While around 30 per cent of forecast expenditure is sitting in Gateways 1 and 2 and approximately 17 per cent within Gateways 3 and 4 (the remainder relates to planning costs to be capitalised for each year). The table above provides a breakdown of the expenditure profile across the 10 year price path by each gateway.

The figure above shows that in the first three years, approximately 68 per cent (\$354 million) of the total expenditure over those three years is within Gateways 0, 1 and 2. It is also noted that the expenditure in Gateway 0 is the largest category across six of the 10 years of the price path. More importantly in the consideration of delivery of expenditure, only 28 per cent of expenditure in the first three years is at Gateways 3 or 4, that is, getting ready for, or under construction. This implies that significant works is required in the next years to progress projects through the gateway review process. This creates a substantial level of uncertainty on the accuracy of the proposed forecasts and the deliverability of the expenditure, hence leading to a higher level of risk for customers who would be the beneficiaries of these projects.

Overall, KPMG has concerns over the deliverability of Seqwater’s capital program for the next regulatory period. This reflects a combination of the following factors:

- Forecast expenditure in the next regulatory period being 68 per cent higher than delivered in current regulatory period;
- Thirty per cent of the allowed expenditure in the current regulatory period being deferred to the next regulatory period; and
- A higher proportion of expenditure in the next regulatory period sitting within Gateways 0 to 2 relative to expenditure sitting within Gateways 3 and 4 (getting ready for or under construction).

### 7.6.3 Additional Comments on Seqwater's Deliverability

Within its submission to the QCA, Seqwater sought to address concerns regarding the deliverability of its forward work program. Within its Draft Report, the QCA questioned Seqwater's historical underspend, and correlated that with overstating the need for the capex sought and the internal capacity to deliver a program of this magnitude.

In response, Seqwater noted a number of measures that have been implemented since the amalgamation, which has demonstrated year-on-year improvement, including asset class planning, gateway processes, procurement panels and standing offer arrangements, program planning and scheduling, and program workforce planning.

Consistent with our review of project governance and asset management practices, we agree that Seqwater has processes, procedures and systems in place that provide for an effective approach to the management of key asset and investment risks and compliance obligations. Further, that Seqwater's capital planning framework is consistent with legislative requirements and industry practice. What this means is a greater ongoing ability to deliver its extensive program of works. Seqwater also stated that

*"the key reason for deferral of major projects were that as further information became available during the assessment process, including geotechnical data, the specific response was re-evaluated to achieve the best whole-of-life outcome".*

Seqwater provided Lake McDonald as an example, where the results of geotechnical information led to a better solution. Further, the Mt Crosby East Bank Filter upgrade similarly had been delayed due to issues discovered during further investigations and also to provide for an overall lower cost outcome across a number of projects, by bundling them together.

KPMG accepts that, as projects progress through the project lifecycle gateway process, new information comes to light that will impact on the final solution and related costs. Without undertaking such investigations, there is a significant risk of forecasting inaccuracy, or that the preferred solution will change. This has been demonstrated recently in relation to the WSZ Upgrade at Beaudesert, where further more detailed investigations determined that the preferred solution was not workable.

It is these risks that KPMG is seeking to minimise, and the basis for excluding costs that are early stage in the project lifecycle process and hence do not have completed options analysis and/or detailed costs estimates. It is not appropriate that consumers carry the burden of this risk through significant allowances built into forecasts (i.e. contingency of 50 per cent of direct costs), especially when historical expenditure supports that many of these costs are not realised.

## 7.7 Sample projects reviewed

KPMG's broad approach, as outlined in Section 3, 4 and 5 provided for an initial strategic review of the robustness of the governance and planning frameworks relative to good/best practice and the prioritisation of forecast capital expenditure across key drivers.

Following the strategic review, KPMG has sampled a range of capital projects in order to test the application of Seqwater's frameworks across the business as shown in. Applying the definitions and criteria outlined in the beginning of this chapter, we can test each project against the identified requirements.

Table 29. Sampled capital expenditure projects

No.	Sampled project
1	All Pipes – PAA Beaudesert WSV Upgrade
2	Mt Crosby Eastbank WTP – PID01566 – TEB: Filtration Upgrade and Improvement
3	Mt Crosby Eastbank WTP –TEB: Eastbank WTC Sedimentation Upgrade (Resilience)
4	North Pine WTP: TNP: Filtration Capacity Upgrade
5	Ipswich Office – Enterprise Resource Planning (ERP) Program
6	Holts Hill Reservoir – RRH: pH Correction Upgrade
7	Somerset Dam – DSO: Dam safety upgrade
8	Lake MacDonald Dam – PID01688 – DLM: Dam Upgrade Stage 2
9	Leslie Harrison Dam – PID01430 – DLH: Leslie Harrison Dam Upgrade Stage 1
10	Administration Indirect Costs – Mobile Plant and Fleet Renewals
11	Mudgeeraba WTP Renewals
12	Mt Crosby Eastbank Raw WPS Renewals

The choice of the representative sample of projects can be made on the basis of different criteria including:

- Value (the largest projects in the capital program);
- Risk (projects representing the highest risk to the business); or
- A randomised sample (for example, our approach as outlined below).

The choice of approach has been guided by the need to ensure that the final sample is representative of the overall capital program. KPMG’s preferred approach is to select major projects which reflect:

- Capital value (size of the project) – KPMG’s selected projects ranging from \$9 million to over \$150 million. While we expect the most effort to go into the largest projects, it is prudent that we check a number of the smaller projects to ensure the same systems and processes are applied.
- Drivers (Compliance, Growth, Renewals, Service Improvements). Each driver has a different set of factors that contribute to establishing prudency and efficiency. Further, the proportion of projects and associated expenditure associated with each driver in the sample should reflect a similar proportion by driver for the entire capital program.
- Asset classes. KPMG has sought to avoid picking too many projects of the same class, e.g. dams, reservoirs, or WTP.
- Site locations - not picking projects which are based at the same site. For example, there are eight projects located at or around the Mt Crosby site. Once a project is selected within a site, it is often interrelated to others and some basic information on the other projects at the site can also be assessed, thus widening the scope of the 12 sample projects under review.

KPMG has also selected projects which have proposed completion dates ranging across the 10-year forecast period to 2028. To complete our assessment, we have (for each project), provided:

- An overview of the scope of the project;
- Key assumptions and status of support project justification;
- A summary of the options analysis completed;

- The proposed annual capex over the 10 year period; and
- Our assessment of the project against the guiding questions, including recommended variations to the proposed expenditure.

## 7.8 Seqwater response to the QCA Draft Report and KPMG assessment

### 7.8.1 Seqwater summary response

Within its 31 January 2018 submission to the QCA, Seqwater disagreed with KPMG's recommendations regarding the exclusion of expenditure for a number of sampled capex projects where there was not a rigorous level of project justification. In response to KPMG's findings, Seqwater provided additional evidence to support its cost estimates. Specifically, Seqwater provided further evidence for the following projects:

- Project 1: PAA Beaudesert WSV Upgrade, where Seqwater have updated its planning and identified a preferred solution;
- Project 5: Ipswich Office – Enterprise Resource Planning (ERP) Program, where Seqwater have further advanced its proposal to demonstrate both prudence and efficiency; and
- Project 7: Somerset Dam – DSO: Dam safety upgrade, where Seqwater have since established a preferred option.

Further, Seqwater contended that other sampled projects, where no expenditure was approved, should allow for a portion of the proposed expenditure, which would be consistent with regulatory precedent.<sup>26</sup> Seqwater propose the allowance of 70 per cent of the original proposed forecast. This included for the following projects:

- Project 3: Mt Crosby Eastbank WTP –TEB: Eastbank WTC Sedimentation Upgrade (Resilience);
- Project 4: North Pine WTP: TNP: Filtration Capacity Upgrade; and
- Project 6: Holts Hill Reservoir – RRRH: pH Correction Upgrade.

Finally, Seqwater noted that KPMG's approach is inconsistent with the terms of the Referral Notice, in particular Section (C)(2) which stipulated the following requirements:

*To assess operating expenditure and capital expenditure from 1 July 2018 to 30 June 2028, the Authority must adopt the following approach:*

*(a) form a view on the prudence and efficiency of capital expenditure and operational expenditure, with the focus on cost areas which are material to price changes rather than matters which are likely to have a minor and inconsequential impact;*

*(b) have regard to the strategic and operational plans approved by the responsible Ministers under the South East Queensland Water (Restructuring) Act 2007;*

*(c) capital expenditure must be reviewed giving consideration to demand forecasts; and*

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<sup>26</sup> Seqwater made specific reference to guidance provided by the Essential Services Commission of Victoria - <https://www.esc.vic.gov.au/wp-content/uploads/2016/12/2018-Water-Price-Review-Guidance-Paper.pdf>

*(d) accept the prudence of any augmentations expected to be required under the Water Security Program, including augmentations to increase LOS yield or augmentations required to address system peak demand requirements.*

Specifically, Seqwater note that KPMG's approach is both inconsistent with the terms of the Referral Notice (by not allowing recovery of the costs related to sampled and non-sampled projects), and that rolling actual expenditure into the RAB at the next review will lead to a further one per cent increase in price.

## 7.8.2 KPMG summary response

KPMG has addressed Seqwater's specific comments made in relation Projects 1, 5 and 7 in the relevant sub-sections below.

### 7.8.2.1 Regulatory Precedent

Seqwater references guidance provided by the Essential Services Commission (ESC) during the current 2018 Water Price Review, which states:

*Where capital projects are not fully scoped, costed or internally approved (via an approved business case for example) at the time of preparing the price submission, a business should consider the following options so that customers are not asked to bear the full cost should the project scope or timing change:*

- 1. Include sufficient expenditure to cover only the development costs of the project...*
- 2. Include development costs and a notional allowance for construction, with the balance of efficient construction costs (plus associated interest) to be rolled into the RAB at the end of the period. This allows a reasonable portion of the project, based on the various options and cost estimates at the time of preparing the price submission, to be included in prices.*
- 3. Identify the project as a possible 'uncertain and unforeseen event' ....*

The intention of the Guidance provided by the ESC was to incentivise the Victorian water businesses to avoid submitting forecasts that included highly uncertain projects, or ones that did not have well developed project justification. In other words, if there was a high degree of uncertainty, that a business should either exclude that expenditure from the forecast, and either seek a notional amount to cover further planning and development costs, or to identify that project (where material) as an uncertain project, such that it has some certainty regarding cost recovery should certain circumstances arise where investment is required.

A major difference between the Victorian and Queensland arrangements is the treatment of capex, and its inclusion in the RAB. Capex is rolled into the RAB on an as-incurred basis in Victoria, as opposed to on an as-commissioned basis in Queensland. What this means is that Victorian water businesses can seek funding from the Commission for early development and works and have that expenditure rolled into the RAB. This is not the case in Queensland.

On this basis, KPMG did not allow a notional amount for early development and planning works.

Secondly, the ESC requires every business to have a full business case developed for each of its top 10 projects for the five year forecasts. All businesses provided this to the ESC in the current price review. Seqwater did not provide full business cases in many cases, and/or well developed project justification or detailed cost estimates for these projects.

Thirdly, Seqwater has not sought any innovative treatment of uncertain costs, other than to seek the recovery of large contingency allowances (30 to 50 per cent) within each project. By doing this, it is

effectively passing on project cost risks to consumers through bulk water prices. A rigorous cost estimate would not require such large contingencies, as Seqwater would be able to demonstrate adoption of independent estimates, correlation with current/recent unit rates, assumptions that reflect recently completed projects, good practice options analysis, robust procurement and delivery methods, robust asset management and risk management practices etc.

Where Seqwater has provided KPMG with supporting documentation, in some cases it has not been possible for KPMG to unpack the assumptions that provide the cost build-up to the forecast. Were it able to do this, then it could adjust assumptions that are inappropriate or inefficient, and determine an adjusted forecast. Without it, KPMG cannot determine whether the forecast should be discounted by 10, 20, 50 or 90 per cent. KPMG cannot simply apply an adjustment to the forecast, as it cannot be sure that the new number would be 'efficient'. The challenge is determining the relative efficiency of the starting point, which cannot be determined.

Even if there was evidence to support a common reduction to forecasts within regulatory precedent, these adjustments were made based on the information provided, and are fit-for-purpose for that review. What this means is that regulatory precedent has no impact on what form of assessment or arbitrary adjustments to forecasts should or should not be applied in this case.

In summary, each price review is tailored according to the entity being reviewed, their individual circumstances, and the quality of information provided by the business being reviewed. Where a robust cost estimation is provided that enables the reviewer to test the underlying assumptions and/or forecasting methods, then it has the ability to adjust these estimates where it feels there is stronger alternative evidence, therefore determining an adjusted forecast. Where the entity does not provide such evidence, then it is inappropriate for the reviewer to develop an efficient cost, nor apply an arbitrary adjustment to forecast expenditure, as it would not allow for the efficient expenditure to be accurately identified.

### **7.8.2.2 Consistency with Referral Notice**

Seqwater notes within its submission that:

*...setting prudent capex projects at a \$0 expenditure allowance is inconsistent with the Referral Notice requirements. In this Notice, prices are to recover bulk water costs that include prudent and efficient capital expenditure. Section (C)(2) of the Referral Notice clearly contemplates the expenditure assessment to be ex-ante, considering 'capital expenditure from 1 July 2018 to 30 June, 2028'. The QCA's proposed approach instead only provides for cost recovery on an ex-post basis, which means bulk water prices from 1 July, 2018 will not provide for recovery of any expenditure on these projects.*

KPMG contends that its approach is consistent with the requirements of the Referral Notice, as it clearly states that prices are to recover bulk water costs that include prudent and efficient capital expenditure. This places an onus on Seqwater to demonstrate to the QCA that its forecasts meet the three criteria on which it defines efficiency, being:

- The *scope of works* (as relevant to the specific asset or facility) reflects the most appropriate means of resolving the need identified, having due consideration for the possible options, ensuring that regional or non-standard solutions are assessed, and ensuring that the option of a non-capital solution has been robustly assessed (that is, operational solutions or demand management);
- The *standard of works* proposed comply with the relevant legislative, regulatory and industry obligations, standards and codes for design and construction; the works are compatible with existing infrastructure; and the works take account of modern engineering options and technology; and

- The cost of the proposed solution represents the least overall cost to deliver the works consistent with the market conditions (labour, materials and construction).

KPMG would recommend recovery of ex-ante costs that meet these criteria. Where KPMG has determined that these criteria have not been met, it has sought to interrogate the assumptions that underpin its forecasts, to form a view on a more efficient forecast. In the case of its original findings, this information was not readily available to allow such an adjustment.

As a result, KPMG removed these costs, as it could not independently determine the efficient cost with the information provided. This is consistent with ensuring that bulk water prices only reflect both prudent and efficient costs.

### **7.8.2.3 Future price impact**

Seqwater notes within its submission that:

*The QCA noted that by setting sampled and non-sampled projects to \$0, did not preclude the inclusion of those projects into the RAB. We estimate the inclusion of these projects into the RAB at the next review (sampled and non-sampled) will lead to an increase in prices by around 1% higher than would be needed if the project costs were included now. We submit this is an unnecessary and undesirable consequence, and this impact is material in the context of price increases generally, which are generally around 2.5% for the common price.*

Whilst KPMG agrees that the price increase at the end of the regulatory period (all else being equal) will be higher due to rolling actual “non-funded” capital into the RAB, equivalently, the starting point will be lower, returning a short term benefit to consumers (through a lower price than would otherwise have been charged).

It is in consumers’ interests to ensure that only efficient costs are passed through in prices, and to defer any price increases for as long as possible. We recognise the need to avoid future ‘price shock’, however it is also important to ensure prices from 2018 minimise any price increases. As such, there needs to be a balanced approach. KPMG’s approach does this, by reviewing and adjusting projects to set an efficient expenditure for projects commencing in the 2018-21 period, and maintaining within the forecast (without adjustment), non-sampled capex that commences beyond 2021. We have applied this approach to avoid future price shock, whilst ensuring short term prices only reflect efficient costs (noting the opportunity to review projects that commence beyond 2021 will arise prior to the 2021-24 period).

### **7.8.2.4 Differing treatment of sampled and non-sampled capex**

Following on from this, KPMG has applied a different approach to how it has assessed projects that commence within the first three years, against projects that commence beyond the first three years.

Where a project commences within the first three years, it is consistent with good practice to expect a rigorous level of supporting project justification, including robust options analysis, detailed cost estimations, independent cost estimates, risk analysis, detailed design works etc. As such, this detailed supporting analysis allows KPMG to interrogate the assumptions and forecasting methods adopted for developing the standard, scope and cost of works. Where KPMG disagrees with any of the assumptions, it can leverage publicly available information, benchmarking data or regulatory precedent to determine a more appropriate estimate.

On this basis, KPMG can determine adjustments tailored for sampled projects, or a systemic adjustment to non-sampled projects, where the review of sampled projects uncovers a consistent inappropriate assumption or forecasting method.

Where a project is proposed to commence in the first three years, and does not have a robust level of options analysis and a detailed cost estimate, then it would be appropriate to exclude the proposed expenditure, as Seqwater would not be able to demonstrate efficiency.

This is not the case for projects that commence beyond the three year regulatory period. It is inappropriate for KPMG to apply this same approach for a number of reasons:

- It would not be consistent with good practice capital planning and asset management to develop such robust project justification, so far in advance of commencing a project. This is due to the fact that this analysis would likely need to be performed again to account for changes in unit rates, changes in technology, changes in the operating environment, changes to regulatory obligations;
- The QCA are tasked with setting a 10 year price path. This price path will set the bulk price path required for the next three years to allow for a CPI only price path from 2021-28. Noting that only a very small percentage of projects beyond 2021 are at an advanced gateway process (therefore containing robust supporting justification), our approach to sampled projects would remove almost all expenditure proposed during the period 2022-28 (88 per cent of expenditure in these years is at Gateways 1 or 2). Removing this expenditure would not provide a realistic expectation of the bulk water price path required over the 10 year period; and
- Further, as these costs will not be rolled into the RAB until they are commissioned, inclusion or exclusion of this expenditure will not materially impact the three year price path (any short term impact will be driven by smoothing), and there will be an opportunity for the expenditure related to these projects to be reviewed in 2020-21, analogous to this process.

As a result, KPMG has not sought to apply a systemic adjustment to non-sampled capital projects that commence beyond 2021.

The only unique project outside of this approach is Project 4: North Pine WTP: TNP: Filtration Capacity Upgrade (Project 4), which was identified as a sample project, is at Gateway 2, and commences in 2022-23. This project was initially intended to commence in 2017, and in 2014 Seqwater engaged Hunter Water Australia to complete a Strategy and Cost Review of the North Pine WTP, which included risk based (P80 and P50) costs based on market benchmarked rates and appropriate contingency allowances. Noting that this project was initially intended to commence within three years, and Seqwater has utilised the costings from this report as the basis for its estimate, KPMG felt that it was reasonable to assess the prudence and efficiency of this project, despite it being deferred to 2022-23. An assessment of this project is included within Section 7.12.

### 7.8.3 Our revised findings

Based on this approach:

- Where there is insufficient information to allow for a review of the assumptions and methods underpinning a cost forecast, regulatory precedent does not support an arbitrary adjustment to forecast expenditure, as it would not allow for the efficient expenditure to be accurately identified;
- The Referral Notice explicitly states that prices are to recover bulk water costs that include prudent and efficient capital expenditure. As a result, unless Seqwater provides adequate supporting information that allows KPMG to recommend adjustments to the forecasting assumptions and methodology in order to determine an efficient amount, excluding all expenditure related to a project that does not demonstrate efficiency is reasonable;
- The impact of KPMG's recommendations on prices is in end consumers' best interests, as it ensures that prices only reflect efficient costs, and minimises risk born by consumers; and

- It is appropriate to provide different assessment approaches to projects that commence before and after 2021, due to reasonable expectations regarding robust supporting project justification and cost estimations. The following sections contain our review of the sampled projects.

## 7.9 Project 1: All Pipes – PAA Beaudesert WSZ Upgrade

### 7.9.1 Overview

The Beaudesert Water Supply Zone (WSZ) is located with the Scenic Rim Council area, south of Brisbane. Beaudesert operates as a regional hub serving the surrounding communities of Rathdowney, Kooralbyn, Canungra, Tamborine Mountain and Jimboomba. The township is supplied by bulk water via the Beaudesert WTP (Helen Street WTP), an independent system, not connected to the grid, Mount Crosby WTP or Southern Regional Water Pipeline (SRWP). The current WTP has a hydraulic capacity of 4 ML/day.

Long term planning and needs analysis have identified a requirement to augment the bulk water supply capacity to the Beaudesert and Logan areas to support projected growth in demand in these areas. As of August 2016, it had been forecast that the Beaudesert WTP would have insufficient capacity to meet future demand in the area within a period of two to five years (that is, between 2018 to 2021). Further, the current raw water source for this area is considered unreliable and variable in quality so access to alternative water sources is an important outcome of the augmentation.

This project was first identified in early 2011 with preliminary needs analysis and business cases completed in August 2012. The project was included in the 2015 Submission based on further work completed in early 2014. Subsequent to its inclusion in the 2015 Submission, Seqwater undertook an additional assessment in order to develop updated demand projections; to develop more detailed technical evaluations; and to give greater consideration to the grid-wide impacts of the project. As a result, the preferred strategic option and delivery phasing for the project has changed significantly from that which was presented in the 2015 Submission. The change in scope means that Beaudesert will no longer be separate to the Water Grid which connects most of the towns in South East Queensland.

In late 2016, stakeholder engagement processes identified specific issues that led to the preferred option (Option 2) no longer being considered feasible, and further planning was undertaken to revise options. Options considered at this stage involved bringing forward the Wyaralong WTP.

The project (Option 2) as included in the APMP was comprised of two stages broadly following. Stage 1 involved construction of pipelines connecting Beaudesert to the Water Grid. Stage 1 was due to be completed by 2019-20 but had been delayed to 2021-22. Stage 2 involved the construction of a booster pumping station to ensure supplies are maintained. Stage 2 was to be completed by 2026-27.

#### 7.9.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>• RFI 51 Beaudesert capitalisation.xlsx</li> <li>• RFI 42 D15 157236 Beaudesert WSZ Needs Analysis - confidential.pdf</li> <li>• RFI 42 D15 159782 Beaudesert WSZ Long Term Water Supply Options Analysis - confidential.pdf</li> <li>• RFI 42 Beaudesert WSZ Investigation December 2016 infrastructure pipeline - proposal information request requirements.DOCX</li> <li>• RF1 42 D17 59203 Beaudesert WSZ Investigation - Key Documents Register.xlsx</li> </ul>
Investment Driver	<ul style="list-style-type: none"> <li>• Contractual compliance – contractual requirements for the supply of bulk water at specified locations to Beaudesert.</li> </ul>

	<ul style="list-style-type: none"> <li>• Growth – Growth in demand within Beaudesert, Bromelton Industrial Area (Queensland Urban Utilities) and the Yarrabilba growth area (Logan City Council). This is the key driver. Capacity required 2018-2021.</li> <li>• Service improvements – Improvements to water quality supplied and reliability.</li> </ul>
Intended Outcome	<p>The project would address the long term water supply security and capacity issues within the Beaudesert area by providing for reliable water supply for the next 30 years.</p> <p>In the short term the project will address demand growth with the QUU and LCC areas, whilst maintaining a suitable water quality to each service provider.</p>
Current Project Status	Gateway 2 - Business case development with preliminary design work being undertaken on a new preferred option.
Procurement and project delivery Process	N/A – This is to be developed as part of the business case for the project.

### 7.9.1.2 Options analysis

A needs analysis was completed for this project in August/September 2015 which recommended more detailed options analysis and planning/design work immediately to progress the project. The proposed timeframe for completion of these assessments included preliminary design by September 2016, a business case by October 2016 and service connection by September 2018.

A long term planning report detailing the water supply options analysis performed by the business was completed over the period from December 2014 to November 2015. This report details four options (plus sub-options) with most options having previously been considered as part of Seqwater’s initial investigations.

Stakeholder consultation and more detailed options analysis of the preferred pipeline option around September 2016, identified significant issues with the pipeline route, particularly around its location in a rail line corridor and a major highway corridor. Proposed or likely future upgrades identified by external stakeholders to the rail line and the highway resulted in significant uncertainty associated with the timing of works and the potentially significant increases in cost and easement restrictions.

Seqwater has subsequently revisited the original options analysis and is giving greater consideration to the inclusion of Wyaralong WTP. The final list of options considered as part of the re-investigation process include:

- Option 1 – New 16 ML/day Beaudesert WTP (Business As Usual) staged for growth:
  - Offtake from Chambers Flat and associated pipeline.
  - South Maclean PS upgrade.
  - Additional QUU pipework around Gleneagle Reservoir.
- Option 2 - Beaudesert Pipeline:
  - DN450 pipeline from Woodhill Reservoir (LCC) to Birnam Range Reservoir (QUU). Two route alignment sub-options were investigated:
  - Sub option 2a – Central pipeline from SRWP to follow route as identified by LCC in their Logan South Water Supply Servicing Strategy, January 2014 with offtake connection located at Chambers Flat PS.
  - Sub-option 2b – Eastern pipeline from SRWP to follow route as proposed by the developer for the Yarrabilba area (as advised in December 2014) with offtake connection to SRWP located several kilometres east of Chambers Flat PS.

- Option 3 – Replace Beaudesert WTP with a new 16 ML/day Wyaralong WTP, and Wyaralong WTP staged to match growth to supply whole of Beaudesert WSZ only initially, plus pipeline connection between Woodhill reservoirs to Birnam Range Reservoirs to feed Beaudesert WSZ.
  - Sub option 3a – Wyaralong WTP located at previously identified Cedar Grove Weir plot of land, and the feed pipeline to Beaudesert to be DN450 as sized in previous studies.
  - Sub option 3b – Wyaralong WTP located near the Wyaralong Dam spillway, closer to the Beaudesert area, and the feed pipeline to Beaudesert to be DN450 as sized in previous studies.
  - Sub option 3c – Wyaralong WTP located at previously identified Cedar Grove Weir plot of land, and the feed pipeline to Beaudesert WSZ to be built for ultimate demands and additional bulk water supply to the water grid (i.e. DN1085).
- Option 4 – Replace Beaudesert WTP with a new 32ML/day Wyaralong WTP:
  - Staged to match growth plus pipeline from Woodhill Reservoir to Birnam Range Reservoir to feed south Beaudesert WSZ. The treatment plant would be able to supply both Beaudesert WSZ and South Logan WSZ, thus reducing the amount of additional distribution pipeline upgrades required in Logan area.
- Option 5 – Hybrid Option:
  - This is a hybrid of Options 1 and 2 wherein the Beaudesert WTP is retained at its current 4 ML/day capacity and the pipes required for Option 2 are also installed, thus, providing Beaudesert with dual bulk water supply sources, giving flexibility in drought conditions.

At the time, the preferred option involved the replacement of Beaudesert WTP with Wyaralong WTP and the construction of a pipeline from Woodhill Reservoir to Birnam Range Reservoir (Option 3 above). The option to utilise the Wyaralong WTP required significant expenditure to be brought forward given that, in November 2015, the requirement to construct the Wyaralong WTP would not have otherwise been triggered until 2040. Subsequent to the November 2015 long term planning report being completed, a submission was made to Building Queensland in August 2016 which was based on the same options and cost estimates from the November 2015 report.

Seqwater presented a further variation of the options considered during interviews with KPMG. The new option proposed by Seqwater includes storage at the Beaudesert WTP, pipeline connections from the Beaudesert WTP to Beaudesert Water Supply Zone and WTP to northern grid connection point within Logan City Council infrastructure, new Wyaralong WTP, and the Travis Road / Yarrabilba supply connection pipeline (Logan City Council to complete this independent section of pipeline).

No specific documentation was provided by Seqwater to support this most recent option apart from Seqwater’s presentation during its interviews with KPMG staff. A preliminary design for this preferred option will be included within the business case which Seqwater stated is currently being prepared. In addition, no details of the reassessment of options which led to the current preferred option being selected have been provided. Given that the current preferred option was consistently excluded from further analysis due to its significantly higher costs, it is not clear how this option was selected.

### **7.9.1.3 Proposed Capital Expenditure**

The original cost estimate for this project, as included in the current regulatory period, was \$18 million, however only \$0.3 million of this estimate has been spent by Seqwater. It is understood that this option represented an upgrade at the Beaudesert WTP only to supply the local area.

Part way through the early development of this original option, a new strategic option was identified for a proposed capital cost of \$109.2 million, covering a much larger scope of work, as shown in Table 30. This cost estimate was included in the 2017 APMP. This new strategic option was identified through the Water Security Program process and involved the connection of the Beaudesert region

into the water grid. The connection would be facilitated by trunk pipelines, with additional storage at the Beaudesert WTP site, and the construction of a small pumping station in 2026-27 to ensure that demand increases due to growth were able to be met in the future.

Table 30. Forecast Capital Expenditure – Beaudesert WSZ Upgrade Project (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$1.0	\$10.0	\$30.4	\$33.4	\$0	\$0	\$0	\$0	\$4.9	\$0	\$79.8
Capitalised*	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$109.2	\$0	\$109.2

\* includes actual expenditure and interest during construction

This cost estimate comprises approximately \$79.8 million of capital delivery expenditure and approximately \$29.4 million of expected capitalisation related costs (to 2028). The primary component of the capitalisation costs reported by Seqwater is Interest During Construction (IDC), given the long time frames between the completion of Stage 1 in 2021-22 (approximately \$75 million) and the commencement and proposed commissioning of Stage 2 (approximately \$5 million) in 2026-27. It is possible that the current preferred option will not require this pump station and, as such, the expenditure profile, and commissioning date may change significantly.

Seqwater has advised during interviews with KPMG that since the time of preparing the 2017 APMP the cost estimates for this project have significantly changed. The proposed new total capital costs are estimated to be \$136 million, a 25 per cent increase relative to the estimated reported in the 2017 APMP, with some of this expenditure to be incurred beyond 2028 and therefore outside the remaining 10 year forecast period.

The revised capital expenditure estimates for the project are as follows:

- New 20 ML/day Wyaralong WTP and Transfer PS (\$53 million);
- 25.5km of DN450/DN500 pipeline from new Wyaralong WTP to Helen Street Storage (at old Beaudesert WTP) (\$80 million) and to northern grid connection point within Logan City Council infrastructure network; and
- Storages at Helen Street (old Beaudesert WTP) totalling 5.1ML (\$3 million).

Details of the annual expenditure estimates for this option have not been provided by Seqwater and the option appears significantly different to options considered in the previous assessment

The cost estimates for this project are changing regularly and it is not possible to evaluate the efficiency of the estimates at this stage. Further work is still being undertaken on the current \$136 million estimate (for which no details have been provided) as part of the project's transition through the business case development process. No profile for the updated costs has yet been provided so the timing of the works is unclear as is the need and timing for Stage 2 of the works – the booster pump station, and therefore the likely commissioning date of the project.

Once the business case is completed, we would expect a more robust estimate to emerge.

## 7.9.2 Original Assessment

### 7.9.2.1 Prudency

Seqwater identified the key driver for this project as growth, with the existing Beaudesert WTP unable to meet projected demands during the period 2018-2021 according to modelling conducted for the Water Security Program. In particular, the Mean Day Maximum Month (MDMM) demand from the surrounding areas would exceed the capacity of the Beaudesert WTP by mid-2018. In 2016, the

MDDM of 3 ML/day was just below the rated capacity of the WTP (3.5 ML/day over 24 hours) and close to the maximum hydraulic capacity of the WTP (4 ML/day if raw water conditions permit treatment at this rate). The Water Security Program recommended a supply augmentation be completed by 2019 with a connection to the grid the preferred option.

The project has been delayed with the change in preferred option, but no details have been provided as to whether the projected demands can be met by the updated works or whether the timeframe for meeting the project demand has been adjusted with any updated growth forecasts.

Seqwater has demonstrated the prudence of the project identifying a clear need to respond to the future demand growth driver through the Water Security Program.

### **7.9.2.2 Efficiency**

#### ***Scope of Works***

The scope of works for the current updated preferred option cannot be assessed as no information has been provided apart from some revised estimates and basic asset descriptions.

A business case is being prepared which includes a preliminary design for the current preferred option, however this has not yet been completed or made available. Previous preferred options appeared to have better defined scopes of work and while the current preferred option is somewhat similar to some of the previously identified options, this has not been confirmed and the final scope of works has not been adequately defined at this stage.

#### ***Standard of Works***

This project did not progress beyond a concept or preliminary design for the two previous options, while the current preferred option is also still at preliminary design stage and business case approval.

This project is very large and is therefore expected to be delivered in accordance with Building Queensland requirements. Along with internal requirements, systems and processes for major projects, it is expected that this project will follow the required standard of works.

Seqwater has not provided documentation to demonstrate that the standard of works proposed is appropriate.

#### ***Cost of Works***

The cost estimates for this project have changed significantly, from \$18 million for the original scope of work, to the latest estimate of \$136 million, which is based on a completely different scope of works.

The process for developing cost estimates for previous options was described in the November 2015 Long Term Water Supply Options Analysis report. This report stated that costs were developed using a standard Seqwater Net Present Cost template incorporating a whole of life approach to the assets costed. Costs were developed from a range of sources including previous preliminary design reports (completed in 2012 but using 2011 estimates escalated to 2014 dollars), preliminary consultant's advice, and cost estimates and approaches used to develop costs for the Water Security Program. Various levels of accuracy for cost estimates ranged from 30-50 per cent with contingencies of between 21-30 per cent applied.

While these are fairly standard processes with generally appropriate contingencies and levels of accuracy, these are all related to previously considered options. No information has been made available yet, for the current preferred option. We can assume that the appropriate processes will be followed, however this cannot be confirmed until documentation has been provided.

The expenditure profile included in the APMP is not reflective of the current preferred option. The commissioning / capitalisation date is based on the previous preferred option, which required a

component of works to be completed in 2026-27. No details of an updated cost profile have been provided.

Overall, Seqwater has not justified the cost estimate for this project.

### 7.9.2.3 Summary findings

Based on the preceding analysis:

- Seqwater has demonstrated the need to address existing capacity constraints, as documented in the various options investigations and needs analysis reports which support the outcomes of the Water Security Program, however the business case and preliminary design for the current preferred will not be completed in time to meet the original project completion of mid-2018;
- Seqwater has not justified the proposed project timing, as the current expenditure profile included in the APMP is based on previous options which are no longer viable;
- Seqwater does not have appropriate supporting justification to support the recent change of preferred option and still has significant work to be completed with the project now in the preliminary design phase, including assessment of options;
- Seqwater has not justified the final capital cost estimate for the works required, as demonstrated by recent material increases in the proposed capex with none of the previous cost estimates considered justified;
- Seqwater has not supported the proposed scope of works, as it has not provided an updated program of works reflecting the new preferred option.

The most efficient means of achieving the objectives of the project have therefore not been demonstrated and, as such, the project, as it currently stands, is considered inefficient. We therefore propose to remove the associated expenditure from the capital program. This is detailed in Table 31.

Table 31. Recommended Re-profiling of Capital Expenditure for Beaudesert WSZ Upgrade Project (\$ million Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$1.0	\$10.0	\$30.4	\$33.4	\$0	\$0	\$0	\$0	\$4.9	\$0	\$79.8
KPMG Proposed	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
KPMG Proposed Adjustment	(\$1.0)	(\$10.0)	(\$30.4)	(\$33.4)	\$0	\$0	\$0	\$0	(\$4.9)	\$0	(\$79.8)

## 7.9.3 Revised Assessment

This section details KPMG's revised assessment based on the additional information provided by Seqwater in response to the QCA's Draft Report.

In support of the rigour of its options analysis, Seqwater provided KPMG with additional financial analysis in relation to its Net present Cost (NPC) analysis, Net Present Value (NPV) analysis, capex calculations, and preliminary design.

As shown in Table 32 below, Seqwater's NPC analysis demonstrated that Route K – B2 – Sub Option 3 Helen Street was the preferred solution. The analysis provided by Seqwater assessed both the capital and operating expenditure impacts of each option, including additional grid wide costs and benefits relating to each option. The grid wide costs and benefits were derived from a project commissioned

as part of the long term planning for the Southern and Western Network area - D16/179156 - Long Term Planning Report for the Southern and Western Network Area - Options Analysis – Beaudesert Supply). This was completed independently by Advisian (Worley Parsons Group) in December 2016. The greatest impact was the higher production requirement from the GCDP triggered by the Base Case (connect to grid option). KPMG accepts the findings of this investigation.

Table 32. Seqwater options analysis – All Pipes PAA Beaudesert WSV Upgrade

Option	Present Value of Total Costs			Rank
	Low (- % sensitivity)	Most Likely	High (+% Sensitivity)	
<b>Base Case – Chambers Flat to Beaudesert</b>	\$144,876,373	\$181,622,247	\$218,368,120	5
<b>Route K – B2 – Sub Option 1 Target Birnam</b>	\$123,277,867	\$162,281,925	\$201,285,983	4
<b>Route K – B2 – Sub Option 2 Target Helen Street</b>	\$121,614,209	\$160,202,352	\$198,790,496	3
<b>Route K(i)F</b>	\$114,372,374	\$151,150,059	\$187,927,743	2
<b>Route K – B2 – Sub Option 3 Target Helen Street</b>	\$111,546,222	\$147,617,369	\$183,688,515	1

Seqwater’s options analysis detailed the assumptions underpinning each option, including the preferred Option (Route K - B2 - Sub Option 3 Target Helen Street). Cost estimates are based on:

- Pipelines, which includes distance, selected pipe size, unit rates based on 2014 actuals escalated to be in 2017 dollars, adjustments to account for soil type (i.e. good soil vs soft rock);
- Pump stations, which includes pump size, head, installed kW and unit rates based on 2014 actuals escalated to be in 2017 dollars; and
- Water treatment plants, including unit rates that account for every additional 10ML/day capacity, differentiated between a conventional plant vs ozone/BAC.

Seqwater have proposed four discrete projects to complete Beaudesert:

- Project A – New Beaudesert WTP Storage (\$7.166 million);
- Project B – Pipeline Beaudesert to Logan City Council (LCC) network (\$72.162 million);
- Project C – Wyaralong WTP Stage 1 (\$53,101 million); and
- Project D - Wyaralong WTP Stage 2 (\$119.437 million).

Projects A to C fall within the 10 year analysis period. Subsequently, we have reviewed the cost estimates for these three projects, as detailed in the following table. It is important to note that there was an error in the Seqwater submission made to the QCA. The total cost for Project B is proposed to be \$72.162 million, as opposed to \$70.8 million.

Table 33. KPMG Assessment – Projects A – C for Beaudesert WSZ Upgrade Project

Project Cost	Cost	Basis	Assessment	KPMG Recommendation
<b>Project A Preliminaries</b>	\$1,003,539	This is calculated based on a fixed percentage of the total direct cost estimate – 22 per cent.	22 per cent is significantly different to that proposed for Somerset, other comparable projects completed by Seqwater and our experience from what is incurred in other jurisdictions. We propose the same rate as that determined for Somerset (13 per cent of total direct costs)	\$593,000
<b>Project A - Civil and earthwork costs</b>	\$729,103	This includes detailed cost estimates for excavation, Fill, roadworks, footpath, fencing and gates Each of the items are determined on the basis of unit rates established by Rawlinsons and Bromelton Quarry.	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$729,103
<b>Project A Structural Costs</b>	\$2,056,527	This includes detailed cost estimates for tanks, tank roof, fixtures and valve pit structure. Each of the items are determined on the basis of unit rates established by Rawlinsons or quotes from suppliers.	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$2,056,527
<b>Project A Mechanical and Piping Costs</b>	\$1,239,552	This includes detailed cost estimates for pipework, fittings, valves and mixers. Each of the items are determined on the basis of unit rates established by Rawlinsons or quotes from KSB, Steel Mains, Viadux, Vinidex, Rotork and Challenger	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$1,239,552
<b>Project A Electrical instrumentation and control costs</b>	\$536,357	This includes detailed cost estimates for pipework, fittings, valves and mixers. Each of the items are determined on the basis of unit rates established by Rawlinsons.	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$536,357
<b>Project A – Indirect Costs</b>	\$1,003,539	This provides an allowance for project management, design management, commissioning and handover costs. Seqwater has allowed for 22 per cent of total direct costs	For Somerset, Seqwater allowed 12.5 per cent on total direct costs, which was consistent with other comparable projects and Seqwater’s recent experience. We recommend applying a similar percentage to Beaudesert. Refer below for further discussion.	\$570,192
<b>Project A Contingency</b>	\$597,102	Contingency was determined by completing a P80 assessment of key project risks. This determined a contingency allowance of 13.1% of total direct costs	The contingency allowance for this project is consistent with our estimate of 15% for efficient cost estimates.	\$597,102
<b>Project B Connection from Cedar Grove to LCC network</b>	\$8,608,487	This cost estimate is based on a smaller waterway crossing and minor road crossings.  Unit rates are based on 2014 rates, escalated to be 2017 dollars, and allows for an adjustment for soil type. Seqwater	We accept the use of recent rates, escalated into dollars of the day as a reasonable basis for cost estimation.	\$6,456,365

Project Cost	Cost	Basis	Assessment	KPMG Recommendation
		<p>note that there is 60 per cent good soil and 40 per cent soft rock. The adjustment for good soil is 1.76 and for soft rock 1.99.</p> <p>Seqwater then applies a contingency of 50 per cent to total construction cost, and a further 20 per cent to account for owners costs (i.e. indirect costs)</p>	<p>Soil adjustment factors are taken from a Cardno report, <i>Cost estimations for Bulk Supply Options, Part 3 Report</i>, Table 4-2. We accept these independently determined factors.</p> <p>Consistent with earlier recommendations, we propose a contingency allowance of 15 per cent, and an allowance for indirect costs of 12.5 per cent</p>	
<b>Project B - Cedar Grove to Beaudesert (Helen Street) (Route K)</b>	\$63,553,632	<p>This cost estimate is based on 3 Logan River Crossings and 3 Creek crossings and smaller waterways and minor road crossings. Estimates also include an allowance for traffic management costs. These costs were estimated by GHD in the document <i>4129358 - Woodhill to Beaudesert CAPEX &amp; NPC Estimates Rev E</i>.</p> <p>Unit rates are based on 2014 rates, escalated to be 2017 dollars, and allows for an adjustment for soil type. Seqwater note that there is 60 per cent good soil and 40 per cent soft rock. The adjustment for good soil is 0.81 and for soft rock 1.01.</p> <p>Seqwater then applies a contingency of 50 per cent to total construction cost, and a further 20 per cent to account for owners costs (i.e. indirect costs)</p>	<p>We accept the use of recent rates, escalated into dollars of the day as a reasonable basis for cost estimation.</p> <p>Further, we accept the use of cost estimates provided by GHD.</p> <p>Soil adjustment factors are taken from a Cardno report, <i>Cost estimations for Bulk Supply Options, Part 3 Report</i>, Table 4-2. We accept these independently determined factors.</p> <p>Consistent with earlier recommendations, we propose a contingency allowance of 15 per cent, and an allowance for indirect costs of 12.5 per cent.</p>	\$47,665,224
<b>Project C - Wyaralong at Cedar Grove Weir WTP (20ML/d)</b>	\$53,101,200	<p>Seqwater engaged HunterH2O to complete a concept design for the Wyaralong WTP in December 2016.</p> <p>This report identified direct costs of \$29,136,000 plus \$2,100,000 for pellet softening.</p> <p>Seqwater then applies a contingency of 50 per cent to total construction cost, and a further 20 per cent to account for owner's costs (i.e. indirect costs).</p>	<p>We accept the independent estimates used to complete HunterH2O's Concept Design.</p> <p>Consistent with earlier recommendations, we propose a contingency allowance of 15 per cent, and an allowance for indirect costs of 12.5 per cent.</p>	\$39,825,900
<b>Total Costs</b>	<b>\$132,429,038</b>			<b>\$100,269,322</b>

### 7.9.3.1 Owners and indirect costs

Seqwater’s detailed cost estimates for Beaudesert include allowances for the various indirect costs based on a set percentage of the direct cost. The allowances set are as expected for this type of project and we have assessed them in comparison to detailed estimates for similar projects recently completed and underway by Seqwater, and against similar projects underway and recently completed by other water businesses around Australia.<sup>27</sup> For Project 7: Somerset Dam Safety Upgrade, Seqwater provided for an allowance of 12.5 per cent for owner’s costs. This is broadly consistent with industry standard, and evidence provided by Seqwater of recently completed comparable projects.

However, Seqwater’s allowance for the same costs for the Beaudesert WSV Upgrade is much higher at 20 per cent. Given that both projects were stated to be at a similar stage of development - providing robust and efficient cost estimates - it would be expected that the owner’s costs should be comparable. We would therefore recommend that the owner’s cost allowance for Beaudesert be reduced to 12.5 per cent, consistent with Seqwater’s estimate for Somerset and for other similar projects.

### 7.9.3.2 Revised findings

Based on KPMG’s assessment of the cost estimates, we recommending removing \$31.1 million in proposed costs. This is largely driven by Seqwater’s application of contingency (see Section 7.15 for a discussion on contingency allowance) and owners’ costs, and some minor adjustments to the assumptions. Our revised findings:

- Has demonstrated the need to address existing capacity constraints, as documented in the various options investigations and needs analysis reports which support the outcomes of the Water Security Program;
- Has justified the proposed project timing, which is consistent with independent advice provided by a number of different engineering firms;
- Has appropriate supporting justification to support the preferred option, including a business case for Project A, a Concept Design for Project C, and detailed costs estimates for Project B, including the use of valid unit rates;
- Has supported the proposed scope of works, as it has provided an updated program of works reflecting the preferred option; and
- Has generally demonstrated robust cost estimates, except for assumptions regarding contingency allowances and indirect costs

The following details KPMG’s recommended annual capex allowances for Beaudesert WSZ Upgrade Project.

Table 34. Revised Recommended Re-profiling of Capital Expenditure for Beaudesert WSZ Upgrade Project (\$ million Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$9.4	\$48.4	\$22.7	\$7.6	\$25.3	\$17.7	\$0	\$0	\$0	\$0	\$131.1
KPMG Proposed	\$8.6	\$36.5	\$17.0	\$5.7	\$19.0	\$13.3	\$0	\$0	\$0	\$0	\$100.0

<sup>27</sup> Our review of similar large infrastructure project estimates undertaken by other water businesses highlights that typical owner’s cost allowances range from 10-15%.

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
KPMG Proposed Adjustment	-\$0.8	-\$11.9	-\$5.7	-\$1.9	-\$6.3	-\$4.4	\$0	\$0	\$0	\$0	-\$31.1

## 7.10 Project 2: Mt Crosby Eastbank WTP - PID01566 - TEB: Filtration Upgrade and Improvement

### 7.10.1 Overview

The two Mt Crosby WTPs currently provide water for the greater part of Brisbane, supplying approximately 40 per cent of the water produced by Seqwater for South East Queensland. The WTPs will become increasingly important over the next 5-10 years as other WTPs are required to more routinely operate at allocation or capacity limits. As a result, the two WTPs at Mt Crosby will be required to supply water beyond Brisbane, especially in peak demand periods and when other assets are unavailable due to drought, emergencies or scheduled works.

The long term planning report for the Mt Crosby WTPs acts as a single source of reference on the current status of the WTPs and future asset investment needs to ensure that Seqwater is able to meet customer requirements of a safe and reliable water supply. This report covers a period of up to 15 years. The outcomes of the long term planning reports are used as inputs in the development of the capital enhancement investment forecast and asset investment plans.

The need for future improvements and upgrades of the Mt Crosby WTPs identified within the long term planning reports include:

- Addressing current deficiencies and constraints;
- Opportunities for plant optimisation and/or cost reduction;
- Meeting future demand growth; and
- Improving reliability of supply.

Due to its history, the current filter design is inconsistent with contemporary standard practice, which limits the ability to maximise public health protection and also restricts operating capability and resilience. Additional issues identified by Seqwater include:

- Filters have reduced operability and water quality limitations compared to modern open gravity filter designs to the extent that, unlike other Seqwater treatment plants, polymer chemical addition is required to meet filtered water quality at all times;
- The lack of air scour infrastructure for effective backwashing leading to sludge accumulation in the sand media and flow on effect of less effective filtration (increased risk) and requiring more frequent backwashing (less efficient and potentially limiting capacity); and
- Due to inefficient washing process of using surface wash and water only backwashing, the sludge handling system is overloaded under poor raw water quality conditions.

The proposed Filtration Upgrade and Improvement project to be completed at the Mt Crosby Eastbank WTP is one of a much larger program of capital projects scheduled at the Mt Crosby WTP facilities over the 10-year forecast horizon. Seqwater have noted the importance of undertaking the filtration upgrade within the next five years, as it will become increasingly more difficult to take filters offline as demand

increases. Options to accelerate the works are to be considered as part of the detailed design and procurement.

As part of its 2018 Submission, Seqwater has stated that *“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.”* The consolidation of several projects into this project should provide good benefits in regards to the timing of overall works and the cost allowed for the works.

A business case for the proposed filtration upgrade and improvement project was initially finalised in October 2014 and approved by the Seqwater Board in November 2014. Since this time, Seqwater has appointed an independent expert panel to oversee this project from the preparation of the long term planning reports to the business case decision to invest. The expert panel endorsed the choice of filtration approaches to resolve the capacity constraint and to ensure that water quality issues are adequately resolved.

Seqwater are also applying the learnings gained from development of the North Pine WTP filter refurbishment project to assist in delivering the project with minimal procurement and delivery risk.

### 7.10.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>RFI 43 - D14 62997 Mt Crosby East bank TEB and West bank TWB Long Term Planning Report ( LTPR )(2).pdf</li> <li>RFI 34 - D14 98154 Mt Crosby East Bank TEB and West Bank TWB LTPR Long Term Planning Report 2014 - Executive Summary to D14 62997.pdf</li> <li>RFI 34 - D14 88166 TEB Mt Crosby Eastbank Filter refurbishment Business Case (Major Project).pdf</li> <li>RFI 34 - D14 62997 Mt Crosby East bank TEB and West bank TWB Long Term Planning Report ( LTPR )(2).pdf</li> <li>RFI 55 D14 113184 QE99091_Preliminary Design Report_DP2_Rev0 MtCrosby Project SKM.pdf]</li> </ul>
Investment Driver	<ul style="list-style-type: none"> <li>Compliance – requirement to meet specific legislative / regulatory obligations including Water Supply (Safety &amp; Reliability) Act 2008 and the Australian Drinking Water Guidelines.</li> <li>Renewals – current infrastructure ranges between 30 and 65 years old and is reaching the end of its typical service life.</li> <li>Growth – It is likely that an additional 50-100 ML/day will also be required by 2027 in order to meet future growth in demand.</li> </ul>
Intended Outcome	<ul style="list-style-type: none"> <li>Deliver a reliable production of 500 ML/day at Eastbank (at &lt;20 NTU) with a reduction in process risk from medium to low requiring a capacity or process augmentation for the filtration system.</li> </ul>
Current Project Status	Gateway 3 – The project is currently in the investment decision phase.
Procurement and project delivery Process	<p>Procurement method to be further developed by procurement, legal and project delivery teams. It is proposed in the business case that three separate contracts be obtained for: detailed design; underdrain supply; and construction, media supply installation and commissioning.</p> <p>Project delivery to first develop detailed design and construction specifications to provide for new and raised launders, air scour delivery manifold. For the filter refurbishment project, it is noted a highly experienced project manager, designer and contractor need to be selected to secure the project and reduce the procurement and delivery risk.</p>

The recommended delivery approach is to refurbish four filters at one time; essentially due to the current control arrangement of having four filters per control unit. Refurbishing four filters at once will also enable project efficiencies to be gained by delivering the filters at a faster pace, enabling the project to be completed sooner and more cost effectively than would otherwise be the case.

This approach was originally forecast to provide completion of the filter refurbishment towards the end of 2018 (based on Board approval in November 2014). The project has been deferred through the 2015 Regulatory Period and is now expected to be completed in 2020.

### 7.10.1.2 Options analysis

The 2014 business case details five options considered as part of Seqwater's assessment of filtration upgrades. These options included:

- Do nothing;
- Option 1 – Filter refurbishment: with underdrain sub-options including:
  - Sub-option 2A – Filter refurbishment to current design
  - Sub-option 2B – Filter refurbishment with piped, encased, laterals and nozzles with PVC air scour grid
  - Sub-option 2C – Filter refurbishment with piped, encased, laterals and nozzles with steel air scour grid
  - Sub-option 2D – Filter refurbishment with manufactured underdrains.
- Option 2 – Provide additional filtration capacity (4 or 8 new gravity filters):

The existing filters currently operate at hydraulic rates in excess of acceptable standards. Additional filter capacity would reduce the hydraulic rates to be in line with design standards. However, this would not address the existing filter renewal requirement. Involves a conventional treatment based upgrade as well as an additional filter area to increase the capacity and in the later years, a UV disinfection system to improve the level of protozoa treatment.
- Option 3 – Install UV disinfection system:

Involves a conventional treatment based upgrade as well as an additional filter area to increase the capacity and in the later years, a UV disinfection system to improve the level of protozoa treatment.
- Option 4 – Install new membrane filters in series or in parallel to the existing filters.

Installing a membrane facility after the existing infrastructure in order to improve treatment reliability, protozoa treatment and achieve the required production. The membranes provide an augmentation to the existing filtration process without having to upgrade the existing filtration system. The facility would be built at Holts Hill to treat flows from both sites.

This option was not pursued due to the large investment required (\$80m to reach 500ML/day).

Under the business case, Sub-option 2C was ranked highest providing for filtration refurbishment with steel air scour grid and manufactured underdrain. Seqwater's proposed program of filtration upgrades and improvements is to be completed over the period to 2021.

Seqwater notes its preferred option will improve the level of process reliability and resilience and ease of maintenance in the future. Further this sub-option is considered the lowest cost option. Specifically, a steel grid is considered to require less maintenance due to the increased level of durability, while a manufactured underdrain is seen to provide for easier installation and maintenance in the future.

Further, it is expected that the washing efficiency will be far greater and there will be less risk of wash distribution errors associated with this option. In addition to reducing the volume of washwater being processed in the sludge handling facility, improved washing efficiency is expected to improve the throughput capacity of the filter, the media lifecycle and have a positive impact on water quality.

A significant risk identified during options assessment process was the existence of only one supplier with a proven track record of refurbishment of the underdrain system used at the Eastbank WTP. This reflects the under-drain used at the facility not being common around the world. Seqwater have clearly identified this and are identifying options to implement during procurement to ensure that the recommended solution is the optimal cost.

### 7.10.1.3 Proposed capital expenditure

Table 35 provides a year on year breakdown of costs as reported by Seqwater in the 2017 APMP and its submission to the QCA associated with the proposed filtration upgrades and improvements to be completed at the Mt Crosby Eastbank WTP.

Table 35. Forecast capital expenditure – Mt Crosby Eastbank WTP Filtration Upgrade and Improvement (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$12.5	\$11.7	\$7.2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$31.4
Capitalised*	\$0	\$0	\$35.7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$35.7

\* includes actual expenditure and interest during construction

This project was previously included in the current regulatory period with an estimated cost of around \$35m, however Seqwater has indicated in its regulatory submission that they will spend only \$2.6 million during this period.

During KPMG’s interviews with Seqwater, Seqwater confirmed the total estimated cost of the project to be \$34 million, including actual expenditure of \$2.6 million to date. However, these estimates of the preferred option are similar to those presented in the 2014 business case, that is, \$33.8 million ± 30 per cent (NPV \$37.4 million ± 30 per cent). KPMG note that costs in the business case are based on the P80 construction cost for each option assessed with a 30 year NPV assessment used as the basis for cost assessment. Maintenance costs have been estimated at one per cent of the capital costs which is relatively consistent with good practice for estimates at this stage. The contingency allowance used at this stage was 30 per cent which is also consistent with projects where a preliminary design has been undertaken.

Each of the cost items have been assessed as to their level of accuracy, with the levels varying between 70 per cent and 140 per cent of the calculated estimate. This allows a range of costs to be developed and incorporated into a risk based cost model to determine present value costs based on low, likely and high value scenarios. This process facilitates the development of risk based P80 cost estimates.

## 7.10.2 Assessment

### 7.10.2.1 Prudency

The key drivers for this project are compliance, renewals and growth and they are well established in the supporting documentation for this project, in particular the long term planning report.

The works are required to ensure that the treatment process continues to achieve compliance with treated water quality guidelines, while the existing treatment / filtration assets are coming up to 30-70

years old and some assets are therefore reaching the end of their service life. In addition, demand growth in the area as assessed within the Water Security Program, indicates that the two Mt Crosby WTPs will require additional capacity to supply the demands.

The Eastbank WTP requires an additional 50-100 ML/day by 2027 to achieve the required capacity. The main capacity restriction at present is the filtration system which cannot filter the required flow rate of water whilst also maintaining an acceptable level of risk of not meeting water quality standards. The current maximum throughput of the plant is 420 ML/day with the likely short term capacity required being 505 ML/day by 2019.

The current filters (x20) are required to meet a four log reduction in protozoa, with each individual filter required to meet the specific criteria. All the filters were built around the same time and therefore have components at the same age, nearing end of service life.

Seqwater has demonstrated the prudence of the project, to ensure compliance with treated water quality guidelines and appropriate capacity to meet future demand.

### **7.10.2.2 Efficiency**

#### ***Scope of Works***

The scope of works for this project is well defined in the supporting documentation, including the 2014 Major Project Business Case. The scope of the preferred option involves rebuilding the existing filters in situ by raising the filter walls to allow for a deeper filter bed and to provide an air scour based washing process.

The scope of works outlined is reasonable and covers the required areas with civil/structural issues and design, under-drain design, pipework considerations including air scour system, valves, media options (dual media gravel and sand), mechanical components including air blowers, and automation and control components including SCADA, controls, and switchboards.

#### ***Standard of Works***

The project is currently in the investment decision phase Gateway 3 with more detailed design works being undertaken to support the business case. No design documents have yet been developed / provided to allow us to assess the standards to which the work is undertaken.

It is noted that Seqwater have sought to outsource the detailed design of the works and as such, we expect that the full range of Seqwater standards, policies and procedures for design work will be referenced in the contract for this work.

As detailed design documents have not been provided, Seqwater has not justified the standard of works.

#### ***Cost of Works***

The costs associated with this project were developed predominantly in the 2014 business case with the three key options assessed being:

- Option 2.2 Filter refurbishment with piped, encased, laterals and nozzles with PVC air scour grid;
- Option 2.3 Filter refurbishment with piped, encased, laterals and nozzles with steel air scour grid; and
- Option 2.4 Filter refurbishment with manufactured underdrains.

Options costs for each of these three key filter refurbishment options were developed using Seqwater's standard NPV template. NPVs were calculated over a 30 year life cycle with operations and maintenance costs and standard asset lives. Operations and maintenance costs are incremental annual

costs arising from the power requirements of the air scour system and backwash pumping system. Annual maintenance costs have been determined to be around one per cent of the total capital improvements value which is relatively standard. Other businesses around Australia have used figures around 1.13 to 1.15 per cent of total capital expenditure. Replacement costs for assets with asset lives less than the 30 NPV period were also included in the cost analysis.

Seqwater has followed an appropriate process to develop the costs estimates demonstrating their efficiency.

### 7.10.2.3 Summary findings

Based on the preceding analysis, Seqwater:

- Has demonstrated the need to address existing compliance obligations and the project’s timing to avoid the potential impact of future demand scenarios;
- Has provided robust supporting project justification;
- Has sought to ‘consolidate’ several related projects into a single program of works, with a common contract, improving the overall construction timeframe, reduce the length of interruption at the plant and improve the overall cost;
- Has included appropriate allowances for contingency and risks; and
- Has demonstrated that it has chosen the least cost servicing solution.

Table 36. Recommended Capital Expenditure for Mt Crosby Eastbank WTP Filtration Upgrade and Improvement (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$12.5	\$11.7	\$7.2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$31.4
KPMG Proposed	\$12.5	\$11.7	\$7.2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$31.4
KPMG Proposed Adjustment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Seqwater has justified the basis of its cost estimates, through robust options NPV analysis, applying appropriate consideration of contingencies. This project is well established and, while some additional procurement and project delivery details need to be determined, the cost estimates are established to a degree to provide some certainty. KPMG’s review of the costs identifies that they are most likely to be efficient and therefore we do not propose any adjustments to the expenditure profile to this project as shown in Table 36.

## 7.11 Project 3: Mt Crosby Eastbank WTP - TEB: Eastbank WTP Sedimentation Upgrade (Resilience)

### 7.11.1 Overview

As noted in section 7.9.3, the long term planning report for the two Mt Crosby WTPs acts as a single source of reference on the current status of the WTPs and future asset investment needs to ensure that Seqwater is able to meet customer requirements of a safe and reliable water supply.

The Mt Crosby WTPs supply the majority of bulk water throughout SEQ and growth in demand in the greater Brisbane region represents a key driver of capital expenditure for these assets over the forecast planning horizon. Given the anticipated growth in demand, Seqwater has forecast a need for additional output from the Mt Crosby plants in the near future. Consequently, it is forecast that the two Mt Crosby WTPs will be required to reliably produce 750 ML/day from 2020 to 2027 and therefore it is likely that an additional 100 ML/day will be required, on top of existing capacity, by 2027.

The long term planning report sets out known deficiencies at the Mt Crosby Eastbank WTP in relation to sedimentation basins which may prevent these assets from achieving the operational capacity requirements moving forward. These deficiencies include:

- Flocculation Basin 1 is in poor condition, is a poor performance design and the water enters the sedimentation basin in such a way that half of the basin is not utilised (that is the flow is short-circuiting through the basin). The raw water flow meter is the pitot tube variety which reduces the reliability of that basin. These issues suggest that the basin has capacity limited to half its rated design (impact of the short-circuiting).

Further, flocculation Basin 1 is nearing the end of its useful life (having been constructed in the early 1900s using mass concrete), with significant aggregate exposure and a number of cracks, where external leakage of water is evident. The internal timber baffles are significantly degraded and the inlet penstocks are corroded. The design of the duct that connects to the sedimentation basin results in the flow short-circuiting down one side. These issues essentially reduce the capacity of the sedimentation basin 1 by approximately 50 per cent.

- Sedimentation Basins 2, 3 and 4 have general (but not yet severe) aggregate exposure, some degradation of joints, and minor cracking.
- Sedimentation basins have high surface loading rates (>2.5 m/h) when flows exceed 500 ML/day for Eastbank. Performance is often above 2 NTU which is outside of the relevant operating parameters. The settled water turbidity directly impacts on the filtration performance as well as to treat water, and similarly, the raw water turbidity directly impacts on the performance and capacity of the basins.
- All sludge treatment supernatant recycle water to the head of Sedimentation Basins 3 and 4, making it difficult to take either of these basins out of service without stopping the entire Eastbank WTP. To remedy these issues, Seqwater has proposed capacity upgrades to its basins at both the Mt Crosby Eastbank and Westbank WTP sites. In considering the options (described below), Seqwater has assessed the timing and configuration of basins to be upgraded across both sites.

The proposed project assessed by KPMG relates to the Eastbank WTP only. This project seeks to address overloading of the sedimentation basins at the Eastbank WTP by installing lamella plates in Basin 1. The plates (or settling tubes) increase the available surface area for solids to settle and thus enables a higher hydraulic capacity to be obtained without compromising water quality.

These works are required to be completed along with the filtration system upgrades and improvements (discussed in Section 7.9.3) however the works cannot be done together. Seqwater has also advised that the Westbank WTP sedimentation upgrade project may proceed first with filter upgrades to follow and works on the Eastbank WTP to commence once other works are completed. In this case, this project would likely be deferred for at least two years depending on the actual completion dates.

### 7.11.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>• RFI 43 - D14 62997 Mt Crosby East bank TEB and West bank TWB Long Term Planning Report ( LTPR )(2).pdf</li> <li>• RFI 40 - D16 161985 Mt Crosby TEB TWB WTP revised memo capital APMP 2017 for sedimentation capacity augmentations(2).pdf</li> <li>• RFI 40 - D14 90278 QE99091_Options Analysis Report_WP 1 and 2_Rev0 flocculation.pdf</li> </ul>
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	<ul style="list-style-type: none"> <li>RFI 40 - D14 62997 Mt Crosby East bank TEB and West bank TWB Long Term Planning Report ( LTPR ).pdf</li> <li>RFI 40 - D1626850 APPENDIX B - QE99091 Cost Estimation - WP1 2 TEB East Bank Mt Crosby Flocculation Option 1.XLSX</li> <li>RFI 55 D14 113184 QE99091_Preliminary Design Report_DP2_Rev0 MtCrosby Project SKM.pdf</li> </ul>
Investment Driver	Growth – Growth in greater Brisbane region will require additional output from Mt Crosby, specifically, it is forecast that these plants will be required to reliably produce 750 ML/day from 2020 to 2027 requiring an extra 50-100 ML/day over existing capacity from the Eastbank WTP by this time.
Intended Outcome	Increased hydraulic capacity through the sedimentation basins and increased ability to treat higher raw water turbidity. Reduce process risk of 500 ML/day to low up to 5 m/h (medium to low).
Current Project Status	At the time of making its regulatory submission to the Authority, Seqwater noted this project to be at Gateway 1 and in the preliminary evaluation phase.  During KPMG’s interviews with Seqwater, it was indicated that the project is at Gateway 2 – investment justification phase with a needs analysis completed.
Procurement and project delivery Process	Procurement – This is to be developed as part of the business case for the project.  Project delivery – This is to be developed as part of the business case for the project.

### 7.11.1.2 Options analysis

Seqwater has assessed four options in considering potential responses to sedimentation issues at the Mt Crosby Eastbank WTP. These options include:

- Option 1: Install tube settlers;
- Option 2: Install lamella plates fibre glass;
- Option 3: Install lamella plates stainless steel (current preferred option); and
- Option 4: Install pre-sedimentation to take out peak sediment loads.

Seqwater note that lamella plates are a key component as they improve the reliability and performance of the basins, enabling a higher throughput over a wider range of raw water conditions.

Tube settlers and fibre glass options were deemed difficult to maintain by Seqwater and do not have the same life expectancy as stainless steel. The stainless steel option is considered less likely to block and therefore, for costs, the stainless steel option has been incorporated.

This project is at a relatively early stage of development through business case development and options analysis and is closely interrelated to other projects both at the Eastbank and Westbank WTP sites. KPMG understand certain options may need to be reassessed as other works are progressed through the capital planning process and the impacts of these other works on the current project are assessed.

### 7.11.1.3 Proposed capital expenditure

This project was included in the allowed expenditure for the current regulatory period at a forecast cost of approximately \$15.9 million. On 19 January 2017, approval was sought for revised cost estimates associated with the project. In seeking approval, it was noted the previous cost estimates (based on reports completed in 2013) were found to be incorrect and required increasing. Specifically, the costs initially included in the current regulatory period were based on an initial budget estimate that did not include design costs or contingency, nor were they based on the final concept designs for the works. The initial estimate of around \$4 million per basin has now been adjusted to around \$7.8 million per

basin, leading to significant increases in the total cost. The current cost estimate for this project, as reflected in the 2017 APMP, is \$33.3 million.

Table 37 below provides a year on year breakdown of costs as reported by Seqwater in the APMP (and subsequently its regulatory submission to the Authority) associated with this project.

Table 37. Forecast Capital Expenditure – Mt Crosby Eastbank WTP Sedimentation Upgrade (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$1.4	\$16.0	\$16.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$33.3
Capitalised*	\$0	\$0	\$33.7	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$33.7

\* includes actual expenditure and interest during construction

This project is at an early stage of development through the capital planning framework and is dependent on, and affected by, other works at the Mt Crosby Eastbank site. Seqwater stated in January 2017 that further work is required to be undertaken to confirm the staging of works and to determine the most efficient investment decision. It is KPMG’s understanding that this work is still ongoing and that the works timing is still to be determined.

## 7.11.2 Assessment

### 7.11.2.1 Prudency

The key drivers of this project are growth and compliance. The long term planning report sets out known deficiencies at the Mt Crosby Eastbank WTP in relation to sedimentation basins which may prevent these assets from achieving the operational capacity requirements moving forward.

The drivers are well established through the Long Term Planning Reports for the Mt Crosby sites and through other supporting documentation.

Seqwater has demonstrated the prudency of the project, to maintain operational capacity requirements moving forward.

### 7.11.2.2 Efficiency

#### **Scope of Works**

The scope of works for this project is still yet to be fully defined. While it is understood that stainless steel lamella plates are to be installed in sedimentation Basin 1, the key assets are still being determined and the full scope of ancillary works is currently unknown. A detailed planning study is required to determine both the scope of works and the timing of the works.

Potential project efficiencies may be realised if project timing can be set to coincide with the refurbishment of filters at the Eastbank site given that parts of the WTP will need to be off-line for a period of time. In addition, the flocculation Basin 1 at the WTP needs replacing in 2019-20 so another timing efficiency potential exists with this example.

Seqwater has not demonstrated that the scope of works is appropriate as the scope and timing of works are still to be finalised.

#### **Standard of Works**

The standard to which these works will be set is still an unknown at this stage of the project. Options assessment and business case approval are required prior to developing the design. Seqwater has

developed unit process design guideline values to identify where treatment process units may have process risk that require rectification.

Whilst we expect the Seqwater will follow its standard works guidelines, we are not yet able to assess and confirm this.

As detailed design documents have not been provided, Seqwater has not justified the standard of works.

### **Cost of Works**

The cost estimates for this project have changed significantly, and doubled since the project was included in the current regulatory period. The primary reason for this was that the original estimates (developed in 2013) were initial budget estimates not final concept design costs and the costs did not include allowances for design or any contingency.

The costs making up the current estimate are based on recent projects which had lamella plates installed and quotes from contractors. The contractor quotes have been used to set up a unit rates database that is referenced in the development of the updated costs. However the costs are based on 2013 figures and therefore likely out of date, even with escalations to bring them to current day dollars.

A full review of cost estimates would not be possible until the options analysis and business case process are completed. As such, Seqwater has not justified the cost of works.

#### **7.11.2.3 Summary findings**

Based on the preceding analysis, Seqwater:

- Has demonstrated the need for the project, which ensures the operational capacity of critical network infrastructure;
- Has not justified the proposed cost estimate, noting recent estimating errors that failed to include design costs of contingency;
- Has not demonstrated that it has adequately considered the impacts of proposed works on the Eastbank and Westbank WTP sites, including project timing and cost;
- Has not provided an appropriate level of supporting project justification for the proposed expenditure; and
- Has not demonstrated that the appropriate options has been selected, to address the need.

Given this, KPMG recommend the Authority remove the capital expenditure associated with this project from the next regulatory period, as show in Table 38.

*Table 38. Recommended re-profiling of capital expenditure for Mt Crosby Eastbank WTP Sedimentation Upgrade (\$ million, Real December 2016)*

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$1.4	\$16.0	\$16.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$33.3
KPMG Proposed	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
KPMG Proposed Adjustment	(\$1.4)	(\$16.0)	(\$16.0)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	(\$33.3)

## 7.12 Project 4: North Pine WTP - TNP: Filtration Capacity Upgrade

### 7.12.1 Overview

#### 7.12.1.1 Project Planning

North Pine WTP is Seqwater's second largest water treatment plant and an important contributor to the bulk water supply network. It was constructed in 1970 and draws raw water directly from Lake Samsonvale (North Pine Dam) from an allocation of 59,000 ML/year (at an average of just over 160ML/d). The overall hydraulic capacity of the original plant is 250 ML/day however the treatment capacity of the filtration process was downgraded to only 160 ML/day due to the risk of exceeding tightened treated water quality guidelines (taste and odour issues and health based targets on turbidity). The plant currently produces an average of 80-100 ML/day with peaks up to 170 ML/day through a conventional treatment process with coagulation, media filtration, disinfection and fluoridation.

Seqwater's WSP has identified the North Pine WTP as requiring production of up to 250 ML/day in approximately the year 2022, at which time it is expected that the WTP will also begin fully utilising the available raw water allocation from Lake Samsonvale.

The required capital works were first identified in a long term planning report prepared for the North Pine WTP in July 2013 and subsequently further assessed and defined in April 2014. This second assessment also developed the initial design boundaries and prepared cost estimates for a range of works to ensure the increase in plant capacity could be achieved.

Seqwater's needs analysis, which commenced in December 2015 and was approved in June 2016, identified a total of six projects were required at the North Pine WTP over the 10 year period to 2028. These projects include:

- Project 1 – Capacity upgrade to achieve 250ML/day across the WTP by 2022 by upgrading the key treatment systems (filtration);
- Project 2 – Destratification improvements to stabilise raw water quality;
- Project 3 – Taste and odour control system upgrade;
- Project 4 – Sedimentation improvements (settling and sludge collection);
- Project 5 – Polymer upgrade (settling); and
- Project 6 – Lime upgrade (correct pH and stabilise treated water).

Project 1 was originally scheduled as the final project given the need for the project to be completed by 2022, with the other five projects scheduled to be undertaken between 2017 and 2021. However, the needs analysis identified that the planning stage for the capacity upgrade be brought forward and combined with the development of an overarching strategy for the six projects to ensure a consistent and holistic approach is followed. Once the planning stage was completed, the filtration capacity augmentation component of this project would then revert to original timing at the completion of the other five projects.

A broad program of works showing the timings expected for each of the six projects at the North Pine WTP was submitted by Seqwater, however the program is out of date. This is especially the case following Seqwater's recent decision to delay the project by a further two years. The original program had the work on this project commencing in October 2017, the APMP has a commencement date in

2020-21 and the final the delay to the project implies works are now to commence sometime in 2022-23.

### 7.12.1.2 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>RFI 41 - D14 85651 - Final Report Combined 230714 (note trim is email not PDF).pdf</li> <li>RFI 41 Pages from D16 107684 Treatment planning program - Amelia Jewell projects.PDF</li> <li>RFI 41 - D16 79327 TNP Capacity Upgrade - Needs Analysis.pdf</li> </ul>
Investment Driver	Growth/Compliance – While the hydraulic capacity of the plant is 250ML/day, the current capacity of the filtration systems is 160ML/day to ensure compliance with tightened treated water quality guidelines (health based targets). To meet future demand growth, the capacity of the filtration system needs to be increased to 250ML/day.
Intended Outcome	Increased hydraulic capacity of the filtration system to 250 ML/day (over 24 hours) by the required date by installing three additional filters.
Current Project Status	<p>An overarching upgrade strategy is being completed (expected late October 2017) prior to options being re-assessed to take account of the overarching strategy.</p> <p>The project was entered into the Submission in the Gate 1 – Preliminary Evaluation phase, however in our interviews with Seqwater it was stated the project is currently in options analysis phase – Gateway 2, with options analysis due to be completed by October 2017.</p> <p>This project commencement has been delayed by two years under Seqwater’s proposed hybrid demand model.</p>
Procurement and project delivery Process	<p>Procurement process – to be confirmed under future Gateway steps.</p> <p>Project delivery – this project was scheduled as the last of the six projects to be delivered at North Pine WTP, however early planning for the project was proposed to occur during 2016-17. Key steps set out in the 2016 Needs Analysis (based on signoff in May 2016) were:</p> <ul style="list-style-type: none"> <li>Options Assessment by February 2016;</li> <li>RFQs for Part A issued May 2016;</li> <li>RFQs for Part B issued July 2017;</li> <li>Business case (for construction) by March 2019; and</li> <li>Construction by 2022.</li> </ul> <p>The 2017 APMP assessed the project with a completion date of 2022-23, however Seqwater identified in its regulatory submission to the Authority that the project has been delayed two years from the original timing in the APMP.</p>

### 7.12.1.3 Options analysis

As noted above, this project is at an early stage of development in the project lifecycle and a full options assessment process has not been completed. A long term planning report identified the capacity constraint and basic options were scoped for achieving this capacity upgrade. These basic options were then reviewed and updated with expenditure estimates and design boundaries in the North Pine WTP – Strategy and Cost Review (April 2014). The options reviewed were:

- Refurbishment of existing filters to achieve the required hydraulic capacity;
- Construct three new filters to achieve the full hydraulic and treatment capacity;
- Install PAC dosing system and contact tank to treat taste and odour issues arising from operating beyond treatment capacity of filters; and

- Lamella plate settlers and sludge removal system including roof.

The 2014 report provided the design basis for the options above, developed risk based (P80 and P50) costs based on market benchmarked rates and appropriate contingency allowances but it did not recommend any specific option over another.

The 2014 report also provided the basis for the development of the 2015 needs analysis, which is required for the project to pass Gateway 1. The needs analysis identified the range of six projects that were required to achieve the capacity upgrade of the WTP and outlined the various options/issues that the capacity upgrade project would need to consider, however no list of options was suggested.

Seqwater has stated that the project is now in Gateway 2, with an options assessment process underway. During KPMG's interviews, Seqwater stated that along with the augmentation of the filters, five additional options (and four sub-options) are being considered as potential solutions to treating taste and odour and turbidity issues at the WTP. These additional options / sub options are:

- Option 1: Do nothing / Business as Usual;
- Option 2a/b: Intermediate ozone/BAC;
- Option 3a/b: Tertiary ozone/BAC;
- Option 4a/b: Tertiary UV/H<sub>2</sub>O<sub>2</sub>; and
- Option 5a/b: PAC and coated media.

As indicated above, these options primarily relate to the risk based treatment of the filtered water rather than options for the filtration system itself. Seqwater has stated that the preferred option at this stage is Option 5, although there are some medium residual risks related to taste and odour and algal toxin issues.

The preferred option will be established once the overarching upgrade strategy is completed in late October 2017 and when a re-assessment of the filter options to take account of the overarching strategy is completed. At this stage, KPMG is unable to assess sufficient information to determine the robustness of the options identified, options assessment and prioritisation process, or the risks reviewed.

#### **7.12.1.4 Proposed capital expenditure**

This project is at an early stage of development with an overarching strategy, options analysis, preparation of a preliminary design, and analysis of the costs associated with the filtration capacity upgrade still to be completed.

Costs for the current estimate included in the 2017 APMP are consistent with the original North Pine WTP Strategy and Cost Review from April 2014. The 2014 review developed costs from first principles using benchmark or market rates from similar projects and selected contractors. The 2014 review cost estimate was \$36.3 million, with a P50 cost estimate of \$37.6 million, while both the 2017 APMP and regulatory model cost estimates are very similar at \$37.5 million, as shown in Table 39.

However, Seqwater's regulatory submission to the Authority includes a capital cost of \$40.6 million (with no specific details as to where this estimate was sourced). During the interviews, Seqwater advised that the total costs of the project may exceed the estimates included in the regulatory submission and 2017 APMP. KPMG has been unable to assess this as the project has been delayed by a further two years.

Table 39. Forecast Capital Expenditure – North Pine WTP Filtration Capacity Upgrade (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$0.0	\$0.0	\$0.0	\$0.0	\$3.9	\$16.8	\$16.7	\$0.0	\$0.0	\$0.0	\$37.5
Capitalised*	\$0	\$0	\$0	\$0	\$0	\$0	\$46.7	\$0	\$0	\$0	\$46.7

\* includes actual expenditure and interest during construction

## 7.12.2 Assessment

### 7.12.2.1 Prudence

Seqwater’s Water Security Program (WSP) has identified that the capacity of the North Pine WTP needs to be 250 ML/day by approximately 2022 to meet the needs of the local and regional demands. The current plant capacity is rated at 250ML/day, however there is a restriction on the flow capacity through the current filters to a maximum of 160 ML/day. This restriction is needed to ensure that the filtered water complies with the relevant drinking water guidelines. An upgrade to the filtration process is required to increase the capacity of the filtration system to match the plant capacity and achieve the required WSP capacity target.

Seqwater has demonstrated the prudence of the project, being to allow adequate flow capacity through the filters.

### 7.12.2.2 Efficiency

#### **Scope of Works**

The scope of works for this project is only defined at a high level as neither the overarching strategy nor full options analysis has been completed for this project. Options development work done to date has identified different potential upgrades to the filtration process including refurbishment of the existing filters, new filters, a powdered activated carbon dosing system, and lamella plate settlers and sludge removal.

The final scope of works will not be determined until the options assessment process is complete and preferred option is chosen. As a result, Seqwater has not justified the scope of works.

#### **Standard of Works**

The works completed to date, North Pine WTP Strategy and Cost Review, identified that the Seqwater Unit Process Design Guideline Values have been adopted. It is expected that the future design work would follow the normal water industry standard design guidelines with appropriate consideration given to any new filtration related technology available at the time of conducting the options assessment and the design process.

Seqwater has not appropriately documented the standard of works, as the design process has not been commenced.

#### **Cost of Works**

The cost estimates for the project reflect the current preferred option, noting that a full options assessment has not been completed, and have been relatively consistent since the initial options and design works were completed in 2014. Given that options are still to be developed, there is a high likelihood that the final cost estimate will be different to the estimates included in the current submission. As such, Seqwater has not justified the cost of the works.

### 7.12.2.3 Summary findings

Based on the preceding analysis, Seqwater:

- Has demonstrated the need for the project, which ensures flow capacity through the filters;
- Has not justified the timing of the works, as the program is out of date and the project is delayed;
- Has provided the design basis for the options listed, including development of risk based costs based on market benchmarked rates and appropriate contingency allowances, however it did not recommend any specific option over another;
- Has not justified its cost estimates, as it has not completed robust supporting options analysis;
- Has not provided appropriate supporting project justification, as this project is at an early stage of development with an overarching strategy, options analysis, preparation of a preliminary design, and analysis of the costs associated with the filtration capacity upgrade still to be completed.

Given that we cannot establish the efficiency of the project, we propose to remove the capital expenditure from the capital program. We also note that the proposed expenditure for the project included in the regulatory model has already been delayed outside the next regulatory period and, as such, our adjusted expenditure will also be consistent with the revised timing of works. We would recommend that this project be assessed as part of a future price investigation, when more developed supporting information should be available to assess the proposed capital expenditure.

Table 40 summarises KPMG’s recommended expenditure profile associated with this project.

Table 40. Recommended Profile of Expenditure – North Pine WTP Filtration Upgrade (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$0.0	\$0.0	\$0.0	\$0.0	\$3.9	\$16.8	\$16.7	\$0.0	\$0.0	\$0.0	\$37.5
KPMG Proposed	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
KPMG Proposed Adjustment	\$0.0	\$0.0	\$0.0	\$0.0	(\$3.9)	(\$16.8)	(\$16.7)	\$0.0	\$0.0	\$0.0	(\$37.5)

## 7.13 Project 5: Ipswich Office - Enterprise Resource Planning Program

### 7.13.1 Overview

Seqwater’s Strategic Plan identifies ICT as having an important role in enabling Seqwater to meet its Statement of Obligations and to be a strategic enabler for a number of key business priorities. Seqwater’s existing ICT Strategic Plan 2015-17 established four portfolios of work to focus on these two roles. In October 2016, the Seqwater Executive Leadership Team approved the approach to develop a new ICT strategy for the period 2018-22, termed the Digital Technology Strategy, which was scheduled for completion in early 2017, although this strategy was not provided by Seqwater. This new strategy provides a focus on Digital Business Transformation for Seqwater.

In preparation for the Digital Business Transformation process, Seqwater began to:

- Move more towards cloud based and managed services;
- Increase investment in Enterprise Resource Planning (ERP) to ensure the ERP is ready for the new ICT approach;
- Continue mobility investments;
- Define an integration platform;
- Produce business models; and
- Prepare for digital service providers.

The increased investment in the ERP platform builds on an existing ERP relationship Seqwater has with Technology One and positions the ERP framework beyond the expiry of the Technology One alliance in 2019 and within the new overall Digital Technology Strategy for 2018-2022.

The ERP system is part of the ERP Program and is core to Seqwater's corporate functions. It includes finance, human resources (HR), payroll and a range of other critical processes that support the day to day operation of the organisation. Seqwater's current ERP system (Technology One) was consolidated as part of the merger of the previous three water management entities in 2009. The consolidation was time driven with limited focus on the functional and technical aspects of the solution itself and the future evolving needs of the new organisation. Only minor modifications have been made to the solution since this time and, as a result, the TechnologyOne ERP solution has not kept up with changing business requirements.

Seqwater's proposed ERP Program as reflected in its regulatory submission to the Authority is in its conceptual design stage with alignment to the new ICT for 2018-22 and current ERP strategies being progressed. As part of the conceptual design stage, the business is to complete a root and branch process review of individual business functions and processes detailing the information requirements, workflows and downstream processes in which the ERP system interacts. This will establish detailed design requirements that will be tested against the current solution, as well as against other market options in alignment with the ERP Strategy.

This process would enable a technical design to evolve that balances organisational risk, functional fit, cost, implementation and change management considerations, amongst others. Further, this will allow for alignment with the ERP Strategy that is currently being developed and would aim to address the identified shortfalls with the current ERP solution.

Seqwater's vision for its ERP system is to be a business enabler and to support efficient and modern processes. A preliminary review of the established solution highlighted functional and system shortfalls that place Seqwater at risk in its ability to achieve this vision. Shortfalls across functional and technical aspects were identified by the business in the following areas:

- Data;
- Reporting;
- Integration;
- Automation;
- Processes;
- Training and system knowledge;
- Technology performance;
- System functionality and usability;

- Governance;
- Vendor; and
- Organisational culture.

Details of the individual shortfalls and their impact on the business are to be captured as part of the ERP Strategy. The business case for the development of an ERP strategy that will underpin the project was approved in the second quarter of 2017 and consultants were engaged in late June 2017 to develop this strategy, with an expected completion date around the end of September 2017.

### 7.13.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>• RFI 38 Copy of D17 104742 Enterprise Resource Planning Capex - ICT - Summary Document.xlsx</li> <li>• RFI 38 D17 104657 HR Corporate Reporting - Business Case - Approval by GM, SPS and Manager, P&amp;C.pdf</li> <li>• RFI 38 D17 104656 ICT Business case - ICT Strategies and digital business intent.pdf</li> <li>• RFI 38 D17 104654 ICT APMP 2017 Updated Briefing note 21042017 SIGNED.pdf</li> <li>• RFI 38 D17 104655 ICT BAU Budget Briefing Note 2017 18 21042017 SIGNED.pdf</li> <li>• RFI 38 D17 104653 IAS QCA - HR System (re platform) - ECB.docx</li> <li>• RFI 38 D17 104652 IAS QCA - Financial System (re platform) - ERP.docx</li> <li>• RFI 38 D17 104649 Capex QCA RFI 38.doc</li> </ul>
Investment Driver	Renewal – this project focuses on the renewal of key ERP business systems including Finance and HR in preparation to take opportunities to re-platform and enable simpler processes and information sharing. The new systems will facilitate collection of better business data that can be integrated with other key ICT systems to improve Seqwater’s operational performance.
Intended Outcome	Improve key business systems to enable the ERP to function effectively with the context of the new ICT strategy for 2018-2022, the Digital Technology Strategy.
Current Project Status	<p>Gateway 0 – Strategic Assessment. This project is at a conceptual stage of development with alignment to the new ICT strategy being progressed. The project is currently in a discovery phase with an ERP Strategy being developed by end September 2017.</p> <p>It is currently expected that the definition of value streams and EOI documentation (for a technology partner) will be completed by the end of 2017-18 to allow progression through Gateway 1 with program delivery commencing at the end of 2018-19.</p>
Procurement and project delivery Process	<p>This is part of an existing program of works and long term contract with Technology One, which ends in 2019.</p> <p>The methods for delivery of works beyond this point are being investigated and include retaining the existing approach, selected system replacement, third party service providers, and hybrids approaches encompassing one or more of the approaches identified.</p>

### 7.13.1.2 Options analysis

Detailed options have not yet been considered for this project given its early stage of development within Gateway 0 and Seqwater is yet to have finalised its ERP Strategy.

Seqwater, through interviews with KPMG, have noted the preferred solution will be based on the outcome of a process that considers all options, such as retaining TechnologyOne and improving and/or replacing selected modules, a hybrid approach with third party providers or a program of replacement

with best of breed solution(s). Options will be driven by market testing for solutions that best reflect the objectives of the ERP Strategy, as well as technical and functional business requirements.

The preferred solution will be informed by, and aligned with the ERP Strategy, while commercial, functional fit and project delivery options will be determined as part of the business case and procurement process.

### 7.13.1.3 Proposed capital expenditure

As the project is still in the strategic assessment phase, a budget allocation of \$29.3 million has been included in the forecast of capital expenditure for the period 2018-28 (see Table 41). This allocation is based on an assumption that some existing TechnologyOne functionality would be retained and business requirement shortfalls would be addressed through solution modification. However, as noted previously, all options will be considered and the cost estimates assumption will be tested against the market.

A specific breakdown of expenditure for the ERP component of works was requested during KPMG's interviews with Seqwater. A number of supporting documents were submitted by Seqwater, however, the majority of these documents related to operating expenditure proposals or specific capital proposals for 2017-18. No breakdown of the capital expenditure associated with the ERP project was provided. We have therefore been unable to review exactly what has been proposed or what this expenditure is to be spent on.

Whilst this is a renewals program, the expenditure proposed is very lumpy indicating a number of one off or short term projects to be completed. However, the information provided by Seqwater does not break down the expenditure into components to facilitate an assessment. The expenditure profile suggests a base level expenditure of around \$1.93 million per year with additional expenditure peaks across the period. There is no expenditure allocated to this particular program for the historical period 2015-16 to 2017-18, which makes it difficult to determine a trend, however the average base level historical ICT expenditure related to systems and information management and governance for the period 2014-15 to 2017-18 is just over \$1 million per year making the new base level of \$1.93 million per year a fairly major increase of around 80-90 per cent. With no breakdown of expenditure available, we are unable to adequately compare the two program allowances and Seqwater has provided no supporting documentation for any expenditure. There is, therefore, insufficient information available for us to adequately assess the costs forecast in the capital program for this project.

Table 41. Forecast capital expenditure – Enterprise Resource Planning program (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$3.5	\$3.5	\$2.6	\$1.9	\$1.9	\$1.9	\$3.5	\$2.6	\$1.9	\$1.9	\$25.3
Capitalised*	\$3.5	\$3.5	\$2.6	\$1.9	\$1.9	\$1.9	\$3.5	\$2.6	\$1.9	\$1.9	\$25.3

\* includes actual expenditure and interest during construction

## 7.13.2 Original Assessment

### 7.13.2.1 Prudency

ICT is an important component of Seqwater's capital expenditure program, as it is critical to ensure that the business can deliver the services expected of it from their customers. However, Seqwater has not provided sufficient justification for project. An overall ICT strategy and business case is yet to be developed and no breakdown of the actual tasks required has been provided. There is no indication of the timing required for tasks, which is important given that the current TechnologyOne services

contract expires in 2019. There has been no details provided of how Seqwater is intending to procure the services required after the contract expiry.

Seqwater has not sufficiently demonstrated the prudence of this project to allow an increase in renewals over the base historical levels.

### **7.13.2.2 Efficiency**

#### ***Scope of Works***

No scope of works has been provided by Seqwater as an overall strategy is yet to be completed. The information provided was of a general nature around the existing system, however no breakdown of tasks required was provided.

The final scope of works will presumably be clear once the overall strategy and initial Gateway 0 business case is completed. At this stage we consider that Seqwater has not justified the scope of works.

#### ***Standard of Works***

Seqwater has not appropriately documented the standard of works, as there is no scope of works or list of tasks to undertake. We recognise that the overall strategy is assessing standards required, compatibility of renewals with existing infrastructure, and new technology options, however this strategy is yet to be completed.

#### ***Cost of Works***

Seqwater has not provided any breakdown of the costs proposed to allow an assessment of this project. An existing renewals allowance was made in the historical period, however it is has not been established why additional expenditure is required over this base.

As such, Seqwater has not justified the cost of the works.

### **7.13.2.3 Summary findings**

Based on the preceding analysis, Seqwater:

- Has yet to establish the prudence of the project, specifically around the increase in renewals over the base levels historically allowed;
- Has not yet documented the proposed scope of works within the program, nor have the tasks been adequately defined;
- Has not justified the basis of the cost estimate, as it is yet to complete detailed options (due to the early stage of development within Gateway 0) and Seqwater is yet to have finalised its ERP Strategy. Further, the expenditure proposed is very lumpy for a renewals program, indicating a number of one off or short term projects to be completed. The information provided by Seqwater does not break down the expenditure into components to facilitate an assessment; and
- Has not provided appropriate supporting project justification, as this project is at an early stage of the gateway process.

In the absence of further information, we recommend adjustments to the level of expenditure associated with the ERP Program in order to reflect the historic base level of annual spend around (\$1 million). This base level should apply to the period 2018-19 to 2019-20 in recognition of the existing contract with TechnologyOne. Beyond 2019, it is likely that renewals expenditure will significantly change with a new ICT service delivery arrangement in place. Despite this uncertainty, we propose to continue the historical base level expenditure consistent across the remaining years of the price path to 2027-28 (see Table 42).

Table 42. Proposed Adjustments to the ERP Renewals Project Expenditure to 2027-28 (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$3.5	\$3.5	\$2.6	\$1.9	\$1.9	\$1.9	\$3.5	\$2.6	\$1.9	\$1.9	\$25.3
KPMG Proposed	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$10.0
KPMG Proposed Adjustment	(\$2.5)	(\$2.5)	(\$1.6)	(\$0.9)	(\$0.9)	(\$0.9)	(\$2.5)	(\$1.6)	(\$0.9)	(\$0.9)	(\$15.3)

### 7.13.3 Revised Assessment

This section details KPMG’s revised assessment based on additional the additional information provided by Seqwater in response to the QCA’s Draft Report. In support of the rigour of its options analysis, Seqwater provided KPMG its completed ERP Business Case (2018) and ERP Strategy finalised in December 2017.

#### 7.13.3.1 ERP Strategy

Seqwater engaged Ernst & Young (EY) to support it in the development of its ERP Strategy. The ERP Strategy recommends moving away from augmenting the existing TechnologyOne platform to a market led process that seeks for solutions to address Seqwater’s business needs. To do this, the ERP Strategy identified that Seqwater would:

- *Test the market* – a procurement process will enable Seqwater to assess the suitability of solutions in the market based on a defined set of business and technical requirements. Evaluation will include consideration of the product roadmaps, vendor support and maintenance and implementation capability within the market.
- *Software solution* – Seqwater will seek for the market to determine the solution, which will be based on opportunities to work with the vendor to leverage their capabilities in ERP technical management, reducing the investment in opex and capex, whilst providing the ability to re-focus internal staff on value-add activities.
- *Outcome focused approach* – provide opportunity for market to propose innovative solutions and to focus on functional requirements. Integration between the solution and services that deliver the outcome will be the responsibility of the vendor. Seqwater resources will focus on integrating the applications and services that reside outside the ERP.

Such a process would allow for the right technical solution, whilst ensuring a competitive price outcome.

#### 7.13.3.2 ERP Business Case

To determine likely funding, Seqwater has developed a business case detailing the forecast costs to delivering the ERP Strategy. Specifically, Seqwater developed both a high and low forecast of costs, the difference between the two being approximately \$9 million. Seqwater has stated that its forecast is consistent with the “low case”. Table 43 summarises the total forecast costs under the ERP Business Case. Each of these components is discussed below.

Table 43. ERP Business Case Forecast Costs

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Maintain TechnologyOne</b>	\$0.79	\$0.70	\$0.35	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Procurement of new ERP</b>	\$2.37	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Implementation – new ERP</b>	\$2.74	\$4.08	\$4.35	\$4.35	\$0	\$0	\$0	\$0	\$0	\$0
<b>Renewals –new ERP</b>	\$0	\$0	\$0	\$0	\$1.93	\$1.93	\$1.93	\$1.93	\$1.93	\$1.93

**Maintain TechnologyOne**

Seqwater states that future investment will be limited to version upgrades, minor enhancements, integration components and big fixes during the transition to the new ERP platform. This is documented in Table 1 of the ERP Business Case and replicated in the table below.

KPMG considered these costs to be reasonable to ensure an appropriate transition from TechnologyOne to the new platform, as they are less than what Seqwater has historically spent on renewals, and demonstrates a reducing cost incurred going forward until the platform is replaced. KPMG accepts the estimates provided.

Table 44 Maintain TechnologyOne

Item	2018-19	2019-20	2020-21
<b>Enhancements</b>	\$650,000	\$500,000	\$200,000
<b>Integration</b>	\$40,000	\$100,000	\$50,000
<b>Bugs &amp; Fixes</b>	\$100,000	\$100,000	\$100,000
<b>Total</b>	<b>\$790,000</b>	<b>\$700,000</b>	<b>\$350,000</b>

**Procurement – new ERP**

In its response to KPMG’s request for information, Seqwater has contended the detailed breakdown of costs related to both the low (\$1.63 million) and high (\$2.374 million) cost forecasts are as per page 30 of the ERP Business Case. It appears that Seqwater has incorrectly referenced the high case. Further, the ERP Business Case states that these are estimates for 2017-18, as opposed to 2018-19, which implies Seqwater has incorrectly included these within its estimates for the period 2018-28.

Having sought clarification, Seqwater contended that the ERP Business Case contained incorrect labelling of procurement expenditure, which is proposed to be incurred in accordance with the figure below. Further, Seqwater noted that the high case was a more appropriate forecasts as it reflected the time taken by Seqwater when it last completed a similar size procurement activity (i.e. the 2016 Combined Communications Project).

Figure 41. ERP Business Case – Expenditure timetable

Activity	Duration	\$000's	July	August	September	October	November	December	January	February	March	April	May	June
Project Initiation - includes process improvement design, business requirements development	12 Weeks	442												
Develop significant procurement plan and seek all endorsements	8 Weeks	160												
Develop expression of interest (EOI)	2 Weeks	80												
Vendors respond to EOI	4 Weeks	80												
Evaluate EOI responses and develop Phase 2 Business Case	8 Weeks	100												
Develop Draft GTC Contract(s)	5 Weeks	50												
Develop invitation to Tender (ITT)	14 Weeks	574												
Vendors respond to ITT	8 Weeks	164												
Evaluate vendors response to ITT	12 Weeks	246												
Shortlisting and Negotiation	12 Weeks	246												
Award	1 Week	21												

From the information provided, it is evident that Seqwater has incorrectly labelled expenditure within its business case, and will therefore incur procurement costs in 2018-19. The sum total of the above figure \$2.173 million – \$201,000 less than the high case.

In representing the above costs, Seqwater has provided evidence that tendering, evaluation, establishing supplier arrangements and investment decision aligns with the High Case proposed for ERP.

Taking this new information into account, Seqwater has demonstrated that it has developed a program of activities in 2018-19 to complete the procurement process, and that the timing regarding the procurement phase is more consistent with the high case. Adopting the expenditure forecasts in the above figure, KPMG recommends allowing Seqwater to recover \$2.173 million in 2018-19.

### **Implementation – new ERP**

Seqwater has detailed that implementation costs (and aforementioned renewals costs) in 2018-19, taken from the 2017 APMP to contain the following:

- Revision of TechnologyONE or selection and implementation of a similar tier two product (\$1.816 million);
- Replatform of the HR system to position for the Digital Business Strategy (\$0.778 million);
- Implement MMSI scheduling and despatch functionality (\$0.519 million); and
- Implement the asset management system to manage accessibility to software, licence costs and upgrades/updates (\$0.415 million).

The total implementation costs forecast by Seqwater are \$2.78 million.

In follow up discussions with Seqwater<sup>28</sup>, KPMG were informed that these are business system and resource costs related to whichever platform is implemented. In other words, these are the implementation costs that Seqwater will incur, independent of the platform selected.

KPMG accepts that these provide the best estimate for the likely business systems and resources cost impacts on Seqwater of implementing the new ERP platform.

As per the ERP Business Case, for the period 2019-22, Seqwater are seeking recovery of \$12.78 million. This includes ICT costs related to establishing a project management office (\$0.73 million), software costs (\$1.5 million), labour costs, including a project team and internal backfill (\$8.48 million), contingency of \$1.1 million and allowances for CPI of \$0.75 million.

As capex forecasts are being set in real dollars December 2016, we propose to remove the allowance for CPI. Secondly, the ERP Business Case details the low case being \$12.56 million, \$0.22 million less than \$12.78 million detailed in the forecast. As such, we propose to remove a further \$0.22 million.

### **Renewals**

Seqwater is seeking for the recovery of \$1.925 million per annum in renewals expenditure from 2022-23 onwards, related to the new platform. This expenditure is related to enhancements to functionality, service pack upgrades and process changes.

In providing evidence to support this estimate, Seqwater stated that it was reflective of the average costs of renewing TechnologyOne for the last two years. Noting that the number quoted does not

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<sup>28</sup> Damian Scholz, 19 February 2018

reflect the average (\$1.6 million), KPMG challenges the basis of this estimate, noting that these costs were related to fixing a failing system, not to maintaining a brand new platform.

As a result, KPMG sought clarification from Seqwater regarding the basis of these costs. Seqwater subsequently detailed the following breakdown of costs as shown in Table 45.

Table 45. ICT Breakdown of Renewals Costs

Type	Details	Cost
Project management	1 * 260 days @\$1,100/day	\$286,000
Specialist ERP services	1 * 260 days @\$2,325/day	\$604,500
Project resource	2 * 260 days @\$1,000/day	\$520,000
Backfilling of resources	2 * 260 days @ \$500/day	\$260,000
Software	Licensing and other costs	\$175,000
Hardware	Additional server capacity	\$80,000
<b>Total</b>		<b>\$1,925,500</b>

The following assumptions were used by Seqwater to reach the estimates in the table above:

- The day rate of specialist ERP and project resources at the time of budgeting;
- Work will be being undertaken on the platform all year (i.e. 260 business days);
- Licencing and hardware considerations; and
- Human resources, payroll, learning, finance, procurement and business intelligence were not included.

Based on the above assumptions, KPMG assumes that the only areas (i.e. modules) considered as part of these estimates are asset and works management and that the number of users (for license estimation) was not defined. For comparative benchmarking, KPMG used the following as a basis for estimation, as outlined in the previous table.

Table 46. Comparative Benchmarking ICT Renewals Cost

Type	Details	Cost
<b>Human Resources</b>		
<b>License</b>	Per annum standard license, per user	\$20 - \$40
<b>License</b>	Per annum standard license, for 600 users	\$12,000 - \$24,000
<b>Support</b>	Included in license fees	-
<b>Payroll</b>		
<b>License</b>	Per annum standard license, per user	\$2 - \$6
<b>License</b>	Per annum standard license, for 600 users	\$1,200 - \$3,600
<b>Support</b>	Included in license fees	-
<b>Procurement</b>		
<b>License</b>	Per annum standard license, per user	\$180 - \$220
<b>License</b>	Per annum standard license, for 50 users	\$9,000 - \$11,000
<b>Support</b>	Included in license fees	-
<b>Asset Management</b>		

Type	Details	Cost
License	Per annum standard license, per user	\$1,200 – \$1,600
License	Per annum standard license, for 300 users	\$360,000 - \$480,000
Support	Included in license fees	-
<b>Finance</b>		
License	Per annum standard license, per user	\$200 - \$400
License	Per annum standard license, for 50 users	\$10,000 - \$20,000
Support	Included in license fees	-
<b>Total</b>	<b>Per user</b>	<b>\$1, 602 - \$2,266</b>
<b>Total</b>	<b>Based on user estimates (per function)</b>	<b>\$392,200 - \$538,600</b>

The following assumptions were made by KPMG to reach the estimates in the table above:

- It is assumed that a full software as a service solution is provided, meaning the supplier manages all the items below, and referenced above:
  - Application authentication, authorisation, user interfaces, enhancements, transactions, reporting (defined during implementation) and dashboards (used as needed by SEQ resources);
  - Platform operating system, programming languages, application servers, middleware, databases and platform monitoring; and
  - Infrastructure operating systems, programming languages, application servers, databases, middleware and monitoring.
- It is assumed all work undertaken on the platform (i.e. maintenance, patching, upgrades etc.) is done by the vendor.
- Seqwater may choose to perform configuration, as needed and required by an existing IT resource.

On this basis, we have estimated annual renewals costs of \$500,000 per annum from 2022-23.

### Escalation

It appears that the forecasts contained with Seqwater’s business case are in nominal dollars. This is evidenced by Table 16 on page 39 of the ERP Business Case. As such, we have adjusted Seqwater’s forecasts (where appropriate) to de-escalate into real dollars December 2016 (see table below).

### 7.13.3.3 Revised findings

We recommend the following allowance for Seqwater’s ERP Strategy as shown in Table 47.

Table 47. Proposed Adjustments to the ERP Renewals Project Expenditure to 2027-28 (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Seqwater proposal</b>	<b>\$5.90</b>	<b>\$5.0</b>	<b>\$4.7</b>	<b>\$4.35</b>	<b>\$1.93</b>	<b>\$1.93</b>	<b>\$1.93</b>	<b>\$1.93</b>	<b>\$1.93</b>	<b>\$1.93</b>
<b>Maintain TechnologyOne</b>	\$0.79	\$0.70	\$0.35							
<b>Procurement of new ERP</b>	\$2.17									
<b>Implementation – new ERP</b>	\$2.78	\$4.00	\$4.28	\$4.28						

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Renewals – new ERP</b>					-	-	-	-	-	-
<b>KPMG Proposed (nominal)</b>	<b>\$5.74</b>	<b>\$4.70</b>	<b>\$4.63</b>	<b>\$4.78</b>	<b>\$0.57</b>	<b>\$0.58</b>	<b>\$0.60</b>	<b>\$0.61</b>	<b>\$0.63</b>	<b>\$0.64</b>
<b>De-escalation factor</b>	1.03	1.05	1.08	1.1	1.13	1.16	1.19	1.22	1.25	1.28
<b>KPMG Proposed (Real)</b>	<b>\$5.57</b>	<b>\$4.48</b>	<b>\$4.29</b>	<b>\$4.35</b>	<b>\$0.50</b>	<b>\$0.50</b>	<b>\$0.50</b>	<b>\$0.50</b>	<b>\$0.50</b>	<b>\$0.50</b>
<b>Adjustment</b>	<b>-\$0.33</b>	<b>-\$0.52</b>	<b>-\$0.41</b>	<b>-\$0.00</b>	<b>-\$1.43</b>	<b>-\$1.43</b>	<b>-\$1.43</b>	<b>-\$1.43</b>	<b>-\$1.43</b>	<b>-\$1.43</b>

Based on KPMG’s assessment of the cost estimates, we recommend removing \$9.90 million from the forecast expenditure. This is largely driven by inappropriate allocation of ongoing maintenance costs to renewals and inclusion of nominal dollars, instead of real dollars. In summary, Seqwater:

- Has established the prudence of the project, most notably regarding the need to replace a failing platform as it reaches contractual expiration. Prudence is demonstrated within the ERP Business Case and ERP Strategy;
- Has demonstrated the rigour of the market led process that will be carried out, therefore resulting in an appropriate technology solution and scope of works;
- Has sought external advice regarding the development of cost estimates, has clearly detailed the basis for cost estimates and adopted appropriate levels of contingency;
- Has made some minor errors in referencing cost estimates from the ERP Business Case;
- Has not appropriately de-escalated its forecasts and has incorrectly categorised opex as capex, therefore over-estimating capital costs required; and
- Has provided appropriate supporting project justification, through the ERP Strategy and Business Case.

## 7.14 Project 6: Holts Hill Reservoir - RHH: pH Correction Upgrade

### 7.14.1 Overview

The Water Supply (Safety and Reliability) Act 2008 and supporting regulations require that Seqwater ensure that the water supplied meets minimum water quality standards. Performance risks and actions required for water treatment assets are outlined in the Drinking Water Quality Improvement Plan, which is regulated. The Plan states that the following actions are required at the Mt Crosby WTPs:

- Review pH correction strategy to maintain <0.5 NTU at the point of supply; and,
- Include impacts on stabilisation, operation and maintenance of Cameron’s Hill reservoirs.

Poor water quality from the Mt Crosby WTPs is caused, in part, by the following:

- Poor lime mixing and residuals in the reservoirs (for pH correction) resulting in turbidity issues in the treated water;
- Cameron’s Hill reservoir capacity (minimum operating level) is under-utilised to reduce turbidity issues;

- Higher pHs for primary disinfection mean less water can be produced to ensure sufficient disinfection occurs; and
- Disinfection efficacy is a function of pH with an optimum at pH >8 and Seqwater have no means to change pH in the network after Cameron’s Hill Reservoir.

Poor water quality is a key performance factor in the bulk supply agreements with the distribution / retailers with specific operating protocols setting targets particularly around turbidity and disinfection levels.

Lime solids by-products from pH correction dosing at the Mt Crosby WTPs are creating a major issue at the Cameron’s Hill Reservoir resulting in sludge build up in the reservoir. This issue also results in potentially inadequate secondary disinfection in water delivered to customers. This is due to sub-optimal pH levels caused by an inability to adjust pH beyond the WTPs. Inadequate disinfection in water supplied to Seqwater’s customers, the distribution / retailers, is a potential breach of the Bulk Water Agreements and requires a solution.

The proposed works were originally identified in a review of flood resilience of the Seqwater network after a major flood event in January 2011. This work identified critical process improvements required at the Mt Crosby WTP sites (and the Holts Hill Reservoir, which is located in the same area) to improve the reliability, performance and capacity of the plants during and following wet weather events.

A needs analysis was subsequently conducted for the Mt Crosby WTPs between July and September 2012 which identified mixing issues at Holts Hill Reservoir leading to inadequate disinfection processes. A preliminary design report prepared in August 2013 for the Mt Crosby WTPs also identified these mixing issues and highlighted the requirement for lime saturators at Holts Hill Reservoir. However, the work package for Holts Hill was not progressed (no reasons were provided in the report). In July 2014, a Feasibility and Preliminary Design Options Analysis report was prepared for the non-progressed work packages identified in the August 2013 report.

Following the options assessment, Seqwater is proposing to install lime saturators at the Holts Hill Reservoir to allow for pH corrections to be made post WTP, thereby allowing an optimal disinfection process.

At the same time, Seqwater is taking this opportunity to negotiate with the distribution / retailers on developing a region wide strategy for secondary disinfection, to ensure consistency of approach and process. This project is currently on hold until these important discussions are completed. Once completed, a Gateway 1 review will be undertaken to take into account the outcomes of the discussions.

#### 7.14.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>• RFI 43 - D14 90279 QE99091_Options Analysis Report_WP 3 and 4_Rev0 chemical storage handling dosing mixing and filter refurb.pdf</li> <li>• RFI 43 - D14 84450 Needs Analysis (Asset) (Major Project) Mt Crosby Critical Process Improvements.doc</li> <li>• RFI 43 - D14 57466 TEB TWB- Mt Crosby WTP- Preliminary Design Report - Rev E - DP2 - Flowmeter, Flash Mixing, Sludge Accumu.pdf</li> </ul>
Investment Driver	Service improvement – Install lime saturators the at the Holts Hill Reservoir for primary disinfection and final pH correction.
Intended Outcome	Optimise pH for secondary disinfection with chloramine through the installation of a lime saturator. Reduce lime solids build up in Cameron’s Hill Reservoir and improve quality of treated water performance with respect to turbidity.
Current Project Status	Project is in Gateway 2, with concept and detailed designs completed for all of the eight options originally identified.

	However, the project is on hold at this gateway while discussions are undertaken with distribution / retail service providers to develop a common secondary disinfection process for adoption either across the Water Grid or at each connection point. Once completed, a Gateway 1 review will be undertaken to take into account the outcomes of the discussions.
Procurement and project delivery Process	Project delivery and procurement approach to be determined at later stage business cases.

### 7.14.1.2 Options analysis

Three options were shortlisted (out of eight total) and assessed in more detail in a July 2014 Feasibility and Preliminary Design Options Analysis report:

- Option 1: Caustic for pH control at Holts Hill Reservoir;
- Option 2: Lime saturators at Holts Hill Reservoir; and
- Option 3: Vacuum sludge removal at Cameron’s Hill Reservoir.

The recommended option (lime saturators) chosen in 2014 remains the current preferred option, however, all eight original options identified have had concept studies and designs completed for further analysis (noting that these designs have not been supplied or reviewed). Once discussions with the distribution / retailers have concluded, a preferred option (which is dependent on the outcomes of those discussions) will be progressed via a Gateway 1 review process. The preferred option will be developed in more detail ready for the Gateway 2 business case with detailed designs following this in Gateway 3.

### 7.14.1.3 Proposed capital expenditure

Cost estimates for this project were first developed in July 2014 in the Mt Crosby WTP Critical Process Improvements – Feasibility and Preliminary Design. The estimated cost for the project was \$8.6 million with a contingency of 50 per cent applied (this is considered reasonable given the preliminary design stage of the project). The costs were prepared using Seqwater’s own Cost Estimation Guidelines, however a detailed breakdown of the costs was not included in the July 2014 report and is therefore unable to be assessed in detail to determine efficiency.

The July 2014 cost estimate is relatively similar to the current estimate of \$8.94 million as presented in Seqwater’s regulatory submission to the Authority, as well as the estimate of \$9.15 million presented in the 2017 APMP as shown in Table 48.

Table 48. Forecast capital expenditure – Holts Hill Reservoir pH Upgrade (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$1.4	\$3.9	\$3.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$9.1
Capitalised*	\$0.0	\$0.0	\$9.3	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$9.3

\* includes actual expenditure and interest during construction

Cost estimates for the final preferred option may be different to the costs presented to date given that discussions with the distribution / retailers is ongoing and that a system wide common approach is the ideal outcome. Detailed costs for the preferred option will be developed and confirmed in later gateway stages.

## 7.14.2 Assessment

### 7.14.2.1 Prudency

The drivers for this work are clearly spelled out in the supporting documentation provided for this project and sufficient evidence has been provided to establish the need for the works. Seqwater has not yet established the final timing for the works as the project is currently on hold for discussions with the distribution/retailers. Once these discussions are completed, a Gateway 1 review is to be undertaken with updated options and timing to be examined to take into account the discussions.

Seqwater has sufficiently demonstrated the prudency of this project despite some uncertainty over the timing of the project.

### 7.14.2.2 Efficiency

#### ***Scope of Works***

Scoping of three options was originally developed for this project in the 2014 Business case and while one is preferred, the development of options is on hold pending discussions with the retailers.

The final scope of works will presumably be clear once the discussions are complete and the Gateway 1 review of options undertaken. At this stage, we consider that Seqwater has not justified the scope of works.

#### ***Standard of Works***

The standard of works cannot be assessed at this time given that design has not progressed beyond preliminary design and a further review of options is still to occur.

As such, Seqwater has not demonstrated an appropriate standard of works for this project.

#### ***Cost of Works***

The proposed expenditure for this project are based on 2014 estimates, which have not yet been updated to current figures as the project is on hold. The costs were developed from high level preliminary designs and while the process followed appears to be reasonable, no breakdown of the costs was provided and it is likely that the costs will change (after negotiations with the retail distributors is completed).

As such, we consider that Seqwater has not justified the cost of the works.

### 7.14.2.3 Summary findings

Based on the preceding analysis, Seqwater:

- Has established the prudency of the project, requiring the installation of lime saturators at the Holts Hill Reservoir to allow for pH corrections, thereby allowing optimal disinfection process. This is a good example of a service improvement project, whereby the works provide an improved level of service across a number of areas;
- Has not justified the basis of the cost estimate, as the project is on hold until discussions are completed with distribution / retail service providers to develop a common secondary disinfection process for adoption either across the Water Grid or at each connection point. Once completed, a Gateway 1 review will be undertaken to take into account the outcomes of the discussions. Further, the final cost estimates are more than three years old;
- Has not established the final scope of works given the project is on hold and a further review of options is still to be undertaken;

- Has not provided up-to-date project justification documentation that supports the basis of the forecast expenditure; and
- Has not established the standard of works as the options assessment phase has not been finalised;

Given this, KPMG recommends the capital expenditure be removed from the capital program. Table 49 highlights KPMG’s recommended adjustments to Seqwater’s proposed capital profile.

Table 49. Recommended re-profiling of capital expenditure for the Holts Hill pH Correction upgrade project (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$1.4	\$3.9	\$3.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$9.1
KPMG Proposed	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
KPMG Proposed Adjustment	(\$1.4)	(\$3.9)	(\$3.8)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	(\$9.1)

## 7.15 Project 7: Somerset Dam - DSO: Dam safety upgrade

### 7.15.1 Overview

In 2013, Seqwater commissioned an independent assessment of its 26 dams in order to identify for each dam critical safety issues and contributing risks. This report, referred to as the Portfolio Risk Assessment<sup>29</sup> (PRA), was commissioned on the grounds that a number of Seqwater’s dams did not comply with current design standards, in particular flood capacity, and would therefore be in need of upgrade in the future. The PRA provided a detailed quantitative risk assessment using the ANCOLD Guidelines (2003) and was supported by expert panel workshops. The findings from the report, together with more targeted investigations completed in 2014, formed the basis for Seqwater’s prioritisation of its risk management strategy and, in turn, its Dam Improvement Program.

Somerset Dam, located on the Stanley River near Kilcoy, has been identified as one of five key dams captured under the Dam Improvement Program. The dam has been classified as an Extreme Consequence under the PRA.

Specifically, the current spillway and outlet works configuration at the dam do not have sufficient capacity to safely pass a Probable Maximum Flood (PMF) in accordance with the Acceptable Flood Capacity (AFC) requirements under the DEWS Guidelines on Acceptable Flood Capacity for Dams. Without sufficient capacity to pass the PMF, the dam is at risk of overtopping. In addition to the known capacity issues, the following additional risks were identified<sup>30</sup>:

- Erosion of the abutments was assessed as a potential risk to the stability of the dam;
- Stability analysis has also shown the dam does not adequately address safety factors under the PMF and Maximum Design Earthquake;
- The dissipater basin slab does not satisfy current design standards for usual, unusual, and extreme flood events; and

<sup>29</sup> URS. Seqwater Dams Portfolio Risk Assessment. Dam Safety Risk Management Strategy. November 2013.

<sup>30</sup> AECOM. Somerset Dam – Upgrade Options Assessment. July 2014.

- The dissipater training walls do not meet current design standards under submerged and rapid drawdown conditions, as well as current design criteria for overturning of the wall.

At the time of making the regulatory submission to the Authority, the proposed Dam Safety Upgrade project was in Gateway 0. Seqwater’s proposed capital expenditure in relation to the project amounted to \$125.680 million, or \$153.793 million including IDC. The bulk of this expenditure was forecast to occur between 2022-23 and 2024-25. However, interviews with key Seqwater staff have indicated Dam Safety Upgrade project is now in Gateway 2 following the completion of a detailed independent options assessment.<sup>31</sup> Having completed the options assessment Seqwater are now forecasting expenditure to range between \$240 million and \$251 million for the various options being considered.

### 7.15.1.1 Key assumptions and Status

Information source	<ul style="list-style-type: none"> <li>• RFI 48 D17 105237 D14 13009 Seqwater Referable Dams Mount Crosby Weir - Dams Portfolio Risk Assessment - URS 2013.pdf</li> <li>• RFI 49 D17 104955 Response to RFI 49.doc</li> <li>• RFI 48 D17 105236 Response to RFI 48.docx</li> <li>• RFI 37 - D15 13793 DSO - Somerset Dam - Flood Upgrade Options Feasibility Study.pdf</li> <li>• RFI 37 - D17 65489 - DSO - Somerset Dam - Geotech Inv_Concept Design - Upgrade Options Assessment Report (Rev 0) - AECOM - 1.pdf</li> <li>• D17 104951 Response to RFI 47(2).doc</li> </ul>
Investment Driver	Compliance – the current spillway and outlet works configuration at the dam do not have sufficient capacity to safely pass a Probable Maximum Flood (PMF) in accordance with the Acceptable Flood Capacity (AFC) requirements under the DEWS Guidelines on Acceptable Flood Capacity for Dams.
Intended Outcome	The primary objectives of the dam safety upgrade are to <ol style="list-style-type: none"> <li>1. Achieve Acceptable Flood Capacity (AFC).</li> <li>2. Satisfy dam stability requirements under design flood loadings.</li> <li>3. Upgrade the dissipater basin.</li> </ol>
Current Project Status	Gateway 0 – reported in Seqwater’s regulatory submission to the Authority Gateway 2 – Options assessment underway (reported during interviews)
Procurement and project delivery Process	To be confirmed as part of future business case development.

### 7.15.1.2 Options Analysis

Seqwater completed an initial options assessment in February 2015. As part of this assessment, two options were considered:

- Option 1: The spillway configuration remains unchanged but the dam wall and associated infrastructure are upgraded to allow passage of the PMF, e.g. strengthening and stabilising the dam wall, providing erosion protection on the abutments, strengthening the stilling basin and walls, and upgrading the spillway and outlet works mechanical and operating equipment if required; and
- Option 2: The spillway and dam are upgraded or modified to include a secondary spillway, which would allow safe passage of the PMF at a lower peak lake level with reduced upgrade requirements for the associated infrastructure.

<sup>31</sup> Ibid.

A second options assessment was completed in July 2017. This assessment provides for a more detailed consideration of a wider range of options (and sub-options) in order to achieve AFC, including:

- Option 1: Spillway Upgrades:
  - a) Spillway Crest Lengthening
    - Reduce the number of bridge piers.
    - Convert monoliths H and Q into partial spillway monoliths.
    - Combination of the above.
  - b) Spillway Crest Lowering.
  - c) Modifying the Spillway Type.
- Option 2: Dam Raise – raise the abutment dam crest levels to allow all flow to pass over the spillway.
- Option 3: Allowing the dam crest at the abutments to overtop. If the dam were allowed to overtop, erosion protection along the abutments would be required.
- Option 4: Including an auxiliary spillway to provide additional discharge capacity.

To form different “upgrade scenarios”, AFC upgrade options were considered individually and in combination to assess the resulting design flood level and associated upgrade works.<sup>32</sup> The options may be summarised as follows:

- “Dam Raise” – all flow over the main spillway.
- “Dam Overtopping” – flow over the main spillway and dam crest.
- “Auxiliary Spillway” – including flow over the main spillway, with and without dam overtopping.

Similarly, as part of the same options assessment Seqwater have considered potential solutions in order to satisfy the dam stability requirements in accordance with DEWS requirements and ANCOLD guidelines. These include:

- Post-tensioned anchoring;
- Mass concrete buttressing; and
- Combined Post-tensioned anchoring and mass concrete buttressing.

Further, work completed to prevent the dam crest from overtopping as per the AFC options, will simultaneously prevent potential erosion abutments that would otherwise compromise the monolith stability. Finally, Seqwater has considered a number of dissipater basin types as part of its options assessment. Table 50 summarises those short listed options considered as part of the assessment.

Table 50. Somerset Dam Upgrade - Shortlisted options

Number	Category	Components
1	Dam raise	<ul style="list-style-type: none"> <li>• Dam raise.</li> <li>• Maintain current SCL and FSL.</li> <li>• Monolith buttressing.</li> <li>• Anchoring of upper abutment monoliths (in addition to buttressing).</li> <li>• Saddle dam.</li> </ul>

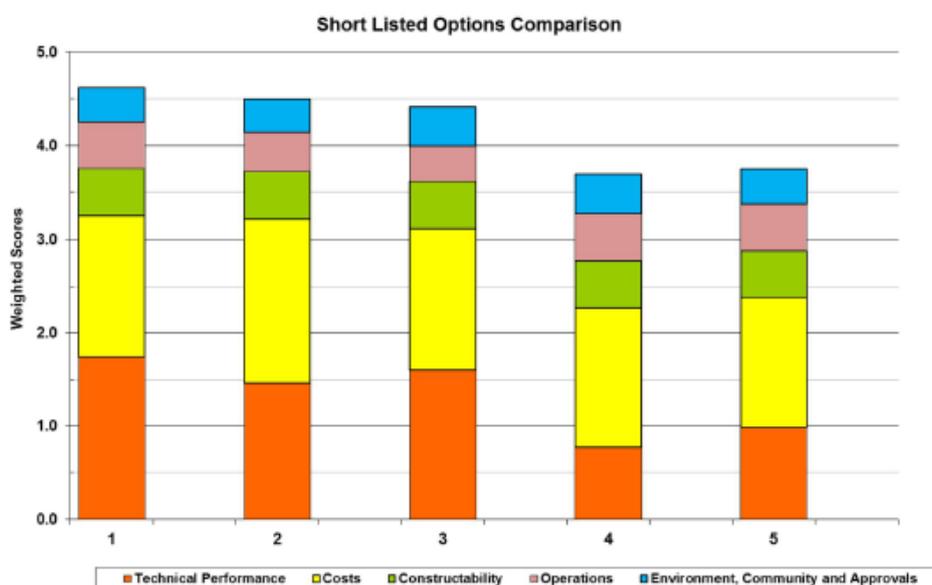
<sup>32</sup> AECOM. Somerset Dam – Upgrade Options Assessment. July 2014.

Number	Category	Components
		<ul style="list-style-type: none"> <li>• Dissipater basin upgrade.</li> <li>• Sluice gate upgrade.</li> <li>• Two spillway bridge piers.</li> </ul>
2	Dam raise and spillway lowering	<ul style="list-style-type: none"> <li>• Dam raise.</li> <li>• Lower SCL to RL 99.0 mAHD</li> <li>• Maintain current FSL.</li> <li>• Monolith buttressing.</li> <li>• Anchoring of abutment monoliths (in addition to buttressing).</li> <li>• Saddle dam.</li> <li>• Dissipator basin upgrade.</li> <li>• Sluice gate upgrade.</li> <li>• Two spillway bridge piers.</li> </ul>
3	Dam raise and spillway lengthening	<ul style="list-style-type: none"> <li>• Dam raise.</li> <li>• Maintain current SCL and FSL.</li> <li>• Convert monoliths H and Q into partial spillway monoliths.</li> <li>• Decommissioning of regulator outlets.</li> <li>• Monolith buttressing.</li> <li>• Anchoring of abutment monoliths (in addition to buttressing).</li> <li>• Saddle dam.</li> <li>• Dissipator basin upgrade.</li> <li>• Sluice gate upgrade.</li> <li>• Two spillway bridge piers.</li> </ul>
4	Dam overtopping	<ul style="list-style-type: none"> <li>• Erosion protection along both abutments.</li> <li>• Maintain current SCL and FSL.</li> <li>• Monolith buttressing.</li> <li>• Anchoring of abutment monoliths (in addition to buttressing).</li> <li>• Dissipator basin upgrade.</li> <li>• Sluice gate upgrade.</li> </ul>
5	Dam raise and auxiliary spillway	<ul style="list-style-type: none"> <li>• Dam raise.</li> <li>• Maintain current SCL and FSL.</li> <li>• Monolith buttressing.</li> <li>• Anchoring of upper abutment monoliths (in addition to buttressing).</li> <li>• Auxiliary spillway (crest RL 107 mAHD and 100m length).</li> <li>• Dissipator basin upgrade.</li> <li>• Sluice gate upgrade.</li> <li>• Two spillway bridge piers.</li> </ul>

The above options were assessed in accordance with five key selection criteria and provided with a weighted score out of 5. The selection criteria used to evaluate each option include: technical performance, cost, and constructability, dam operations, environmental, community and approvals.

Of the shortlisted options assessed, Options 1, 2 and 3 are considered warranting further investigation based on the weighted score.

Figure 42. Shortlisted options evaluation



Source: Seqwater/AECOM

### 7.15.1.3 Proposed capital expenditure

As part of the initial options assessment completed in February 2015, Seqwater consider the cost estimates in two separate, albeit related phases.

The Phase 1 cost estimates were prepared for the purpose of developing an indicative upgrade flood level versus cost curve, i.e. cost estimates were prepared for each dam component requiring upgrade works, across a range of flood levels. These estimates range from \$16.9 million to \$70.5 million with specific sensitivity testing performed on these estimates. The cost estimate for the Phase 2 upgrade option was \$45.3 million (including percentage allowances and contingencies), ranging from \$34.5 million (-30 per cent) to \$67.9 million (+50 per cent).

Given the timing associated with the completion of the second options assessment, KPMG understands these estimates have been included in the APMP and therefore regulatory submission to the Authority. It is, however, unclear which combination of estimates Seqwater has chosen to report. Table 51 below provides a year on year breakdown of costs as reported by Seqwater in the APMP and Submission associated with the Somerset Dam Safety Upgrade project.

Table 51. Forecast capital expenditure – Dam Safety Upgrade project (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$0.0	\$0.0	\$1.6	\$2.6	\$40.5	\$33.9	\$25.8	\$0.6	\$0.7	\$0.5	\$106.3
Capitalised*	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$153.8	\$153.8

\* includes actual expenditure and interest during construction

It is likely the scope of work and associated cost estimates presented as part of the July 2017 options assessment might be a better reflection of the “true” costs associated with the project. Of the preferred shortlisted options (Options 1, 2 and 3) the current best estimate costs range from \$240 million to \$251 million as shown as shown in Figure 43. Further sensitivity analysis has been performed with results ranging from -30 per cent to +50 per cent relative to the best estimate reported. In delivering its budgeted cost estimates, Seqwater’s independent consultant has noted further

detailed assessment is required in order to finalise the costs proposed. Additional project costs to be considered include:

- Seqwater’s requirements for infrastructure and facilities at the site including access roads, offices, workshops, car parking.
- Upgrades to the regional road network that will be impacted by construction activities.
- Works associated with managing construction impacts on the local residents, specifically related to noise associated with construction traffic and activities.
- Costs associated with environmental offsets that may be required, e.g. to address impacts related to the quality of water discharged from the sluices or related to fish passage requirements that may be triggered by the scale of the proposed upgrade works.
- Costs associated with securing environmental and regulatory approvals for the works.

Figure 43. July 2017 options assessment - Cost estimates

Item	Shortlisted Option				
	1 Dam Raise	2 Dam Raise and Spillway Lowering	3 Dam Raise and Spillway Lengthening	4 Dam Overtopping	5 Dam Raise and Auxiliary Spillway
Preliminaries and General	\$16,275,000	\$16,275,000	\$16,275,000	\$16,275,000	\$16,275,000
Spillway Monolith Buttrressing (monoliths I to P)	\$23,064,444	\$21,758,304	\$21,726,993	\$21,080,667	\$21,732,593
Conversion to Spillway Monolith (H & Q)	-	-	\$10,739,454	-	-
Abutment Monolith Buttrressing (G, H, Q, and R)	\$11,966,494	\$10,747,054	\$6,108,394	\$9,501,294	\$10,725,981
Breezeway Monolith Buttrressing (B-F & S-W)	\$32,656,794	\$30,665,139	\$30,567,323	\$31,079,135	\$30,616,231
Dam Overtopping Protection (GHD, 2015)	-	-	-	\$4,679,331	-
Dissipator basin Upgrade	\$18,318,975	\$18,318,975	\$18,318,975	\$18,318,975	\$18,318,975
Foundation Drainage Improvement	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
Sluice Gate Upgrades and Gantry Crane	\$21,908,000	\$21,908,000	\$21,908,000	\$21,908,000	\$21,908,000
Saddle Dam	\$2,451,798	\$2,451,798	\$2,451,798	\$2,451,798	-
Auxiliary Spillway	-	-	-	-	\$9,518,700
Site Rehabilitation, Clean-Up, Facilities	\$4,130,000	\$4,130,000	\$4,130,000	\$4,130,000	\$4,130,000
<b>CONSTRUCTION COSTS</b>					
Total Direct Cost	\$131,271,505	\$126,754,270	\$132,725,937	\$129,924,200	\$133,725,480
Contractor Supervision and Site Overhead 15%	\$19,690,726	\$19,013,141	\$19,908,891	\$19,486,630	\$20,058,822
Contractor Profit 10%	\$13,127,151	\$12,675,427	\$13,272,594	\$12,992,420	\$13,372,548
<b>CONTRACT COST</b>	\$164,089,382	\$158,442,838	\$165,907,421	\$162,405,250	\$167,156,850
Contingency & Risk (construction) 30%	\$49,226,814	\$47,532,851	\$49,772,226	\$48,721,575	\$50,147,055
<b>Total Construction Cost (incl. contingency)</b>	\$213,316,196	\$205,975,689	\$215,679,648	\$211,126,824	\$217,303,905
<b>INDIRECT COSTS</b>					
Engineering Support During Construction 5%	\$10,665,810	\$10,298,784	\$10,783,982	\$10,556,341	\$10,865,195
Seqwater Management and Support During Construction 5%	\$10,665,810	\$10,298,784	\$10,783,982	\$10,556,341	\$10,865,195
Planning, environmental, and heritage approvals 2.5%	\$5,332,905	\$5,149,392	\$5,391,991	\$5,278,171	\$5,432,598
<b>Indirect Costs (excl. contingency)</b>	\$26,664,525	\$25,746,961	\$26,959,956	\$26,390,853	\$27,162,988
Contingency (indirect costs) 30%	\$7,999,357	\$7,724,088	\$8,087,987	\$7,917,256	\$8,148,896
<b>Total Indirect Cost (incl. contingency)</b>	\$34,663,882	\$33,471,049	\$35,047,943	\$34,308,109	\$35,311,884
<b>PROJECT COST</b>					
<b>Project Cost (best estimate)</b>	\$247,980,078	\$239,446,739	\$250,727,590	\$245,434,933	\$252,615,789
Low Range -15%	\$210,783,066	\$203,529,728	\$213,118,452	\$206,619,693	\$214,723,421
High Range 30%	\$322,374,101	\$311,280,760	\$325,945,867	\$319,065,413	\$328,400,526

Source: Seqwater/AECOM

## 7.15.2 Original Assessment

### 7.15.2.1 Prudence

The drivers for this work are clearly spelled out in the supporting documentation provided for this project and sufficient evidence has been provided to establish the need for the works. Seqwater has not yet established the final timing for the works as the project is at an early stage in the Gateway 2 process.

Seqwater has sufficiently demonstrated the prudence of this project despite some uncertainty over the timing of the project.

### 7.15.2.2 Efficiency

#### **Scope of Works**

This project is still at an early stage in the Gateway process (reported in Submission as Gateway 0 but updated to Gateway 2) with options development and assessment for five possible options still ongoing. As such, there is no specific scope of works for the project as defined under a preferred option.

The final scope of works will presumably be clear once the discussions are complete and the Gateway 2 business case is completed and a preferred option is recommended. At this stage, we consider that Seqwater has not adequately justified the final scope of works as a preferred option has not yet been identified.

#### **Standard of Works**

The standard of works cannot be assessed at this time given that design has not progressed beyond preliminary design and a further review of options is still to occur. We note there are specific requirements for dam safety projects, but these have not yet been documented in the still to be commenced design process.

As such, we consider that Seqwater has not yet established the standard of works for this project.

#### **Cost of Works**

The proposed cost estimates for this project have not been developed to a robust stage as options assessment is still underway. We note recent significant changes to costs estimates as evidence that the process of developing robust cost estimates still has a long way to go. The previously identified cost estimates (as included in the APMP) were very early stage estimates and cannot be relied upon.

We consider, at this stage, that Seqwater has not justified the cost of the works.

### 7.15.2.3 Summary findings

Based on the preceding analysis, Seqwater:

- Has established the prudence of the project, as the current spillway and outlet works configuration at the dam do not have sufficient capacity to safely pass a Probable Maximum Flood (PMF) in accordance with the Acceptable Flood Capacity (AFC) requirements under the DEWS Guidelines on Acceptable Flood Capacity for Dams;
- Has not yet established the scope of works required as the options assessment process is still ongoing. Five potential options are still to be investigated with a preferred option still to be identified;
- Has not yet demonstrated that the required standards of work for dam safety projects have been implemented in the design process, given the design process is at a very early stage;
- Has not provided robust supporting project justification, noting that Seqwater stated during interviews that it is still completing the Gateway 2 process (options analysis); and
- Has not yet demonstrated robust cost estimates given recent, significant cost increases for the five options currently being considered, and the current options analysis remains at Gateway 2.

Consistent with our previous approaches to other major projects where we are unable to assess the efficiency of the proposed expenditure, we propose to remove the expenditure from the capital program. The deferment of expenditure should have little effect in the short term as the majority of expenditure is outside the next three years after which it is likely that another regulatory review will occur. KPMG's proposed re-profiled capital expenditure is presented in Table 52 below.

Table 52. Original recommendation re-profiling of capital expenditure for the Somerset Dam Safety Upgrade project (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$0.0	\$0.0	\$1.6	\$2.6	\$40.5	\$33.9	\$25.8	\$0.6	\$0.7	\$0.5	\$106.3
KPMG Proposed	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
KPMG Proposed Adjustment	\$0.0	\$0.0	(\$1.6)	(\$2.6)	(\$40.5)	(\$33.9)	(\$25.8)	(\$0.6)	(\$0.7)	(\$0.5)	(\$106.3)

### 7.15.3 Revised Assessment

This section details KPMG’s revised assessment based on additional the additional information provided by Seqwater in response to the QCA’s Draft Report.

In support of the rigour of its options analysis, Seqwater provided KPMG with additional financial analysis in relation to the five options identified in Table 50 above. In providing this additional analysis, Seqwater detailed:

- Construction cost estimates, provided by independent engineers AECOM and Fulton Hogan, and/or leveraging recent unit rates;
- Contractor costs (i.e. profit; and supervision and site overhead costs) – 25 per cent of total construction cost;
- Contingency of 30 per cent added to total construction and contractor costs (Adjusted total construction and contractor cost);
- Indirect costs (i.e. – engineering support during construction; Seqwater management and support during construction; and planning, environmental, and heritage approvals) – 12.5 per cent of adjusted total construction and contractor cost;
- Contingency of 30 per cent applied to indirect costs (adjusted indirect costs); and
- Sum of adjusted total construction and contractor cost and adjusted indirect costs.

While Seqwater is seeking funding for the current least cost solution – Option B, it contended that it is important that they continue to take each option of the five options through to final design, to avoid future re-work and to ensure the least cost solution is delivered. Work yet to be completed includes hydraulics assessment, finalisation of the geotechnical data to provide foundation strength data and consultation with the community, Building Queensland and the Qld Dam Safety Regulator.

KPMG considered it to be prudent that given the relatively minor difference between the costs of the options for all five options continue to be progressed at this time.

KPMG has subsequently reviewed the cost estimates for Option B, which is detailed in the following table. It is important to note that there was an error in the Seqwater submission made to the QCA. The total cost of the project is proposed to be \$239.4 million, as opposed to \$246 million.

Table 53. KPMG Assessment – Somerset Dam Option B

Project Cost	Cost	Basis	Assessment	KPMG Recommendation
Preliminaries	\$16,275,000	This includes costs related to mobilisation, site establishment, demobilisation, surveying, environmental controls, traffic management, access roads, a quarry, concrete batch plant and cranes. Each of the items are determined on the basis of unit rates established by Fulton Hogan.	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$16,275,000
Spillway Monolith Buttreassing	\$21,758,304	This includes temporary works and demolition, hydro blasting, buttress construction, bridge deck. Each of the items are determined on the basis of unit rates established by Fulton Hogan or AECOM.	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$21,758,304
Abutment Monolith Buttreassing	\$10,747,054	This includes demolition works, preparation costs and buttress construction. Each of the items are determined on the basis of unit rates established by Fulton Hogan.	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$10,747,054
Breezeway Monolith Buttreassing	\$30,665,139	This includes demolition costs, preparation, buttress construction and monolith anchoring. Each of the items are determined on the basis of unit rates established by Fulton Hogan. Anchoring costs were based on those required for the Ridgeway Dam	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$30,665,139
Dissipator basin Upgrade	\$18,318,975	This includes temporary works, slab upgrades, basin extension, baffles and end sill, abutment erosion protection. Each of the items are determined on the basis of unit rates established by Fulton Hogan or AECOM.	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$18,318,975
Foundation Drainage Improvement	\$500,000	The basis of this estimate is not clear.	Seqwater did not provide the basis of this cost estimate, therefore KPMG recommends excluding it.	\$0
Sluice Gate and Gantry Crane Upgrades	\$21,908,000	This includes removal of existing gates and operating equipment, new gates and operating equipment and a new gantry crane. Each of the items are determined on the basis of unit rates established by Fulton Hogan or AECOM, except for \$19.5 million for new sluice gates, which includes a 50% contingency in the item.	KPMG recommends removing the 50% contingency applied to sluice gates, as an overall contingency is applied to the total cost.	\$15,408,000
Saddle Dam	\$2,451,798	This includes preparation, excavations and embankment construction. Each of the items are determined on the basis of unit rates established by Fulton Hogan or AECOM, except	Seqwater has not provide any evidence to demonstrate that the cost of clearing and grubbing is 25 times higher than the independent assessment	\$2,380,248

Project Cost	Cost	Basis	Assessment	KPMG Recommendation
		for a manual adjustment of the unit rate for clearing and grubbing, from \$0.23/sqm as advised by Fulton Hogan, to \$5/sqm.	(-\$71,550)	
Site rehabilitation, clean-up, facilities	\$4,130,000	This includes clean-up, topsoil, fertilisation, erosion control measures, and new site facilities and regional road upgrades.	Due to the granular nature of the forecasts, and the use of independent cost estimates, KPMG considers these estimates efficient.	\$4,130,000
<b>Total Construction Costs</b>	<b>\$126,754,270</b>			<b>\$119,682,720</b>
Contractor supervision and site overhead	\$19,013,141	15% of total construction costs.	Consistent with industry standard and recent Seqwater experience with a comparable project	\$17,952,408
Contractor profit	\$12,675,427	10% of total construction costs.	Consistent with industry standard and recent Seqwater experience with a comparable project	\$11,968,272
Contingency	\$47,532,851	30% applied to total construction and contractor cost	Contingency should be applied to the total direct costs only, otherwise you are applying contingency to numbers that already include contingency.	\$0
<b>Total construction and contractor cost</b>	<b>\$205,975,689</b>			<b>\$149,603,400</b>
Engineering Support During Construction	\$10,298,784	5% on total construction and contractor costs	Indirect costs of 12.5 per cent is consistent with industry standard and recent Seqwater experience with a comparable project.	\$7,480,170
Seqwater Management and Support During Construction	\$10,298,784	5% on total construction and contractor costs		\$7,480,170
Planning, environmental, and heritage approvals	\$5,149,392	2.5% on total construction and contractor costs		\$3,740,085
Contingency	\$7,724,088	30% applied to total indirect costs	Contingency removed and applied to total project cost	\$0
<b>Total cost estimate</b>	<b>\$239,446,739</b>			<b>\$168,303,825</b>

Project Cost	Cost	Basis	Assessment	KPMG Recommendation
Contingency		15% of total direct costs	Seqwater have noted that its cost estimate is efficient. Evidence of the granular nature of its estimate, use of current/recent unit rates and independent estimates supports this. Projects with robust cost estimates normally include contingency of 10-15 per cent. As such, we recommend adoption of a rate of 15 per cent of total direct costs. Refer to more detailed discussion below.	\$17,952,408
<b>Total cost</b>				<b>\$186,256,233</b>

### 7.15.3.1 Contingency allowance

Seqwater has claimed that the costs developed for Project 7: Somerset Dam – DSO: Dam Safety Upgrade (and Project 1: All Pipes – PAA Beadesert WSZ Upgrade) represent efficient costs and they have provided detailed cost estimates to support this. Our review of the cost estimates has identified that the cost breakdowns are:

- Supported by specific quantities of assets;
- Based on unit rates which have been taken from similar projects (completed and underway) or are based on consultant or contractor estimates or quotes;
- Sufficiently scoped to include all the relevant elements of the infrastructure; and
- Include consideration of direct and indirect costs as relevant to the expected procurement method.

The level of detail in the cost estimates is typical of the estimates that would be developed in a detailed design, which should be accompanied by a level of contingency typically around 10-15 per cent. There are a number of recent examples where contingency allowances have been optimised in capital forecasts:

- As part of the 2018 water price review in Victoria, Central Highlands Water proposed 15 per cent contingency for all top 10 projects<sup>33</sup> and Yarra Valley Water did not include any contingency allowances for its top 10 projects<sup>34</sup>.
- State Water Corporation proposed contingency of 10 per cent for dam safety projects within its 2014 regulatory proposal<sup>35</sup>, which was accepted by the ACCC<sup>36</sup>;
- The Economic Regulation Authority (ERA) of Western Australia within its 10 November 2017 final report on the efficient costs and tariffs of the Water Corporation, Aqwest and Busselton Water removed contingency allowances that were built into capital forecasts. It notes:

*"as with any cost estimate, the actual expenditure may be higher or lower than anticipated. If every project incorporated an additional 10 per cent of the base cost estimate for a contingency, then it is likely that the overall capital program would be overestimated. As the ERA determines efficient revenue based on efficient costs, then the ERA would be overestimating the efficient revenue that should be allowed to the Water Corporation..."*

As a result, the ERA has removed 10 per cent from the forecast project to remove the contingency for projects<sup>37</sup>;

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<sup>33</sup> Central Highlands Water, *Essential Services Commission Price Review 2018 CHW Submission*, September 2017, pg. 61 - 66

<sup>34</sup> Yarra Valley Water, *Price Submission 2017*, pg. 73

<sup>35</sup> Deloitte and Aurecon, *Expenditure forecast review State Water Corporation (Report to the ACCC under Part 6 of the Water Charge Infrastructure Rules 2010)*, 20 December 2013, pg. 97

<sup>36</sup> Australian Competition and Consumer Commission, *Attachments to ACCC Final Decision on State Water Pricing Application 2014-15 – 2016-17*, pg. 60

<sup>37</sup> Economic Regulation Authority of Western Australia, *The efficient costs and tariffs of the Water Corporation, Aqwest and Busselton Water*, 10 November 2017, pg. 266-268

- Within Jacobs review of Hunter Water’s expenditure forecasts on behalf of IPART, it noted that Hunter Water’s Capital Project Estimating Guidelines applied a contingency of 10–15 per cent at the pre-tender stage<sup>38</sup>.

To further support these publicly available papers, KPMG compared Seqwater’s assumptions with those of other water businesses in other jurisdictions, and what was allowed under recent price reviews. Comparing against comparable projects, 15 per cent was at the upper end of the contingency allowances approved.

Seqwater has applied a contingency of 30 per cent (and in the case of Project 1, 50 per cent) to the cost estimates submitted. Given this, and Seqwater’s attestation that the estimates represent efficient costs, this level of contingency is not appropriate. As noted by the Essential Services Commission of Victoria in its recent 2018 price review Guidance paper, *including cost contingencies in water revenue allowances transfers risk of project cost overruns to customers*.<sup>39</sup> As a result, we recommend that the contingency level for all detailed cost estimates be reduced to 15 per cent of total direct costs, or 11.8 per cent of total project costs. Further that this rate be applied consistently across all projects within Gateway 2 with a preferred option. This has been taken into account in KPMG’s systemic adjustment of non-sampled projects at Gateway 2 with a preferred option (refer Section 7.21)

### 7.15.3.2 Revised findings

Based on our assessment of Seqwater’s cost estimates, KPMG recommend removing \$53,190,506 in proposed costs. This is largely driven by Seqwater’s application of contingency, and some minor adjustments to the assumptions. Our revised findings:

- Established the prudence of the project, as the current spillway and outlet works configuration at the dam do not have sufficient capacity to safely pass a Probable Maximum Flood (PMF) in accordance with the Acceptable Flood Capacity (AFC) requirements under the DEWS Guidelines on Acceptable Flood Capacity for Dams;
- Established a robust scope of works for each option to support further, more detailed assessment;
- Has demonstrated that the required standards of work for dam safety projects has been implemented in the design process, given the depth of supporting analysis;
- Has provided robust supporting project justification for each option, demonstrating the rigour of the analysis; and
- Has generally demonstrated robust cost estimates, except for assumptions regarding contingency allowances, and some minor variations to unit rates.

The following table details KPMG’s recommended annual capex allowance for the dam safety upgrade of Somerset Dam.

Table 54. Updated recommendation re-profiling of capital expenditure for the Somerset Dam Safety Upgrade project (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$0.0	\$0.0	\$2.50	\$4.00	\$65.60	\$74.90	\$73.90	\$18.50	\$0.0	\$0.0	\$239.40

<sup>38</sup> Jacobs, Hunter Water Expenditure Review, 19 February 2016, pg. 25

<sup>39</sup> Essential Services Commission 2016, 2018 Water Price Review, Guidance paper, November, pg. 75

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
KPMG Proposed	\$0.0	\$0.0	\$1.94	\$3.11	\$51.03	\$58.26	\$57.48	\$14.39	\$0.0	\$0.0	\$186.22
KPMG Proposed Adjustment	\$0.0	\$0.0	-\$0.6	-\$0.9	-\$14.6	-\$16.6	-\$16.4	-\$4.1	\$0.0	\$0.0	-\$53.2

\* Seqwater made an error in its submission to the QCA, identifying a forecast of \$246 million, as opposed to \$239.4 million as detailed within the AEMOC Options Analysis Report. Seqwater recognised this within its response to KPMG's request for information, dated 12 February 2018. In response, we have removed \$6.6 million from 2025-26 as a proxy

\*\* Seqwater did not provide an annual break down of its cost estimates, therefore KPMG has applied a percentage reduction to each year to account for proposed reductions – 22.2%

## 7.16 Project 8: Lake MacDonalD Dam - PID01688 - DLM: Dam Upgrade Stage 2

### 7.16.1 Overview

Six Mile Creek Dam (Lake Macdonald) is one of the primary sources of water to the Noosa Water Treatment Plant (WTP); an important component of the water supply for the Sunshine Coast region due to its high capacity and low operating costs. The need for an augmentation or upgrade of the Six Mile Creek (Lake MacDonalD) Dam was first identified in 2005 in a Dam Safety Review conducted by Seqwater and what followed over the next seven years to 2012 was a series of reports and investigations covering acceptable flood capacity assessments, dam design reviews, initial development of options, preliminary risk assessments, and detailed concept designs.

Figure 44 below shows the timeline of reports and investigations for this project. As noted in Section 7.6.8, Seqwater conducted a Portfolio Risk Assessment of its dams, which subsequently led to further investigations of the Lake MacDonalD Dam. These included spillway anchor investigations and safety upgrade option selection and concept designs along with financial modelling and cost benefit analysis of alternative water supplies. These investigations culminated into a business case for a new dam being completed in May 2014. As a result, the proposed capital program associated with the new dam was included in the current regulatory period with an estimated expenditure of approximately \$63.9m (in 2014 nominal terms). The project was reviewed and considered to be prudent and efficient at that time, with no adjustments recommended.

The 2014 business case was prepared, and the cost estimates developed, based on 30 per cent completed detailed design but on inferred geotechnical information from some of the recent studies in 2011 and 2013. However, no foundation specific geotechnical investigations were undertaken at that time. Seqwater subsequently commissioned a specific geotechnical investigation in 2015. This geotechnical investigation identified that the preferred option from 2014, was significantly more expensive than estimated, and as such, a full review of the options analysis was required. Specific work conducted and documentation prepared following the 2015 geotechnical investigation included:

- An options assessment memorandum was prepared in 2015 by the incumbent consultant;
- Lake MacDonalD Replacement Review was prepared by Seqwater in 2015;

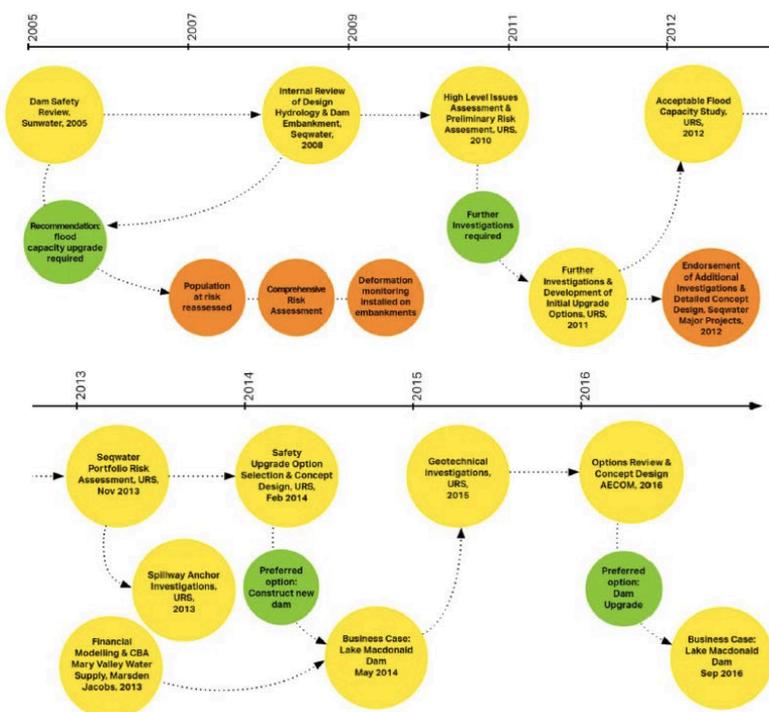
- A memorandum on a smaller reservoir downstream of the dam was prepared by the incumbent consultant in 2016;
- An internal briefing note on the do nothing option was prepared by Seqwater in 2016;
- A revised options assessment report and revised options analysis report were prepared by the incumbent consultant in 2016; and
- A Dam Safety Upgrade Concept Design Report was prepared by the incumbent consultant in 2016.

The 2016 options assessment and concept design report re-assessed three of the five original options from the 2014 business case with the aim of determining whether there was a lowest likely cost option that could achieve the required tolerable risk profile for the dam. One of the previously considered options, upgrading the dam, was assessed to be the preferred option was identified and an updated options assessment and the new preferred option were incorporated into a new Gate 2 business case completed in September 2016 and approved by the Board on 22 December 2016.

The business case sought approval to progress to a detailed design and competitive construction tendering process. Post approval, works to be undertaken included further development of the construction options, value management processes to challenge key assumptions, continuing the gateway approval process, and continuing the independent expert review process.

Seqwater has advised that the detailed design process in relation to the preferred option is well underway and is expected to be completed in October 2017, as per the general project delivery timeframes outlined below.

Figure 44. Timeline of strategic planning, financial, and design documentation for Lake MacDonalD Dam Safety Upgrade – 2005 to 2017



Source Seqwater

### 7.16.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>● RFI36-D16 138666 PID01688 - DLM - Lake Macdonald - Six Mile Creek Dam - Dam Safety Upgrade - Business Case - Asset Planning.pdf</li> <li>● RFI 48 D17 105237 D14 13009 Seqwater Referable Dams Mount Crosby Weir - Dams Portfolio Risk Assessment - URS 2013.pdf</li> <li>● RFI 49 D17 104955 Response to RFI 49.doc</li> <li>● RFI 48 D17 105236 Response to RFI 48.docx</li> <li>● RFI 36 - D16 178714 PID01688 - Lake Macdonald Dam Upgrade - Revised Concept Design Report for Upgrade Option - AECOM - 12 D.pdf</li> <li>● RFI 36 - D16 165696 PID01688 - Lake Macdonald Dam Upgrade - Detailed Design Phase Procurement Strategy - 01 Nov 2016.pdf</li> <li>● RFI 36 - D16 161273 PID01688 - DLM - Lake Macdonald - Six Mile Creek Dam - Dam Safety Upgrade - IPC Paper - Asset Planning.docx</li> <li>● D17 104951 Response to RFI 47(2).doc</li> </ul>
Investment Driver	Compliance – address specific dam safety risks
Intended Outcome	Bring structure into compliance with the current DEWS guidelines and industry guidelines as reflected by ANCOLD to meet Seqwater's obligations under the Water Supply (Safety and Reliability) Act 2008.
Current Project Status	Gateway 2 Major Projects business case was approved in 22 December 2016 with detailed designs progressing to October 2017. The project is currently progressing through to Gateway 3 Investment Decision with a construction business case to be prepared in November 2017.
Procurement and project delivery Process	<p>Preferred delivery method / procurement approach for this project is detailed design then construction. A consultant would be engaged to complete, or substantially complete, the detailed design (single sourced using incumbent preliminary design consultant). A competitive tendering process would be used to preselect tenders based on either a complete design – construction only tender; or a substantially complete design – design and construct tender. An Expression of Interest process would identify likely contractors during the detailed design process so that contractor input to the design can be optimised.</p> <p>The program of works outlined in the 2016 Business Case was:</p> <ul style="list-style-type: none"> <li>● Approval of business case (Gateway 2) by December 2016</li> <li>● Final design completed October 2017</li> <li>● Construction business case approval (Gateway 3) by November 2017</li> <li>● Construction contract awarded December 2017</li> <li>● Site mobilisation January 2018 with works commencement April 2018</li> <li>● Complete construction by July 2019</li> <li>● Commissioning of project by November 2019 (Gateway 4)</li> <li>● Project closure by December 2019 (Gateway 5).</li> </ul>

### 7.16.1.2 Options Analysis

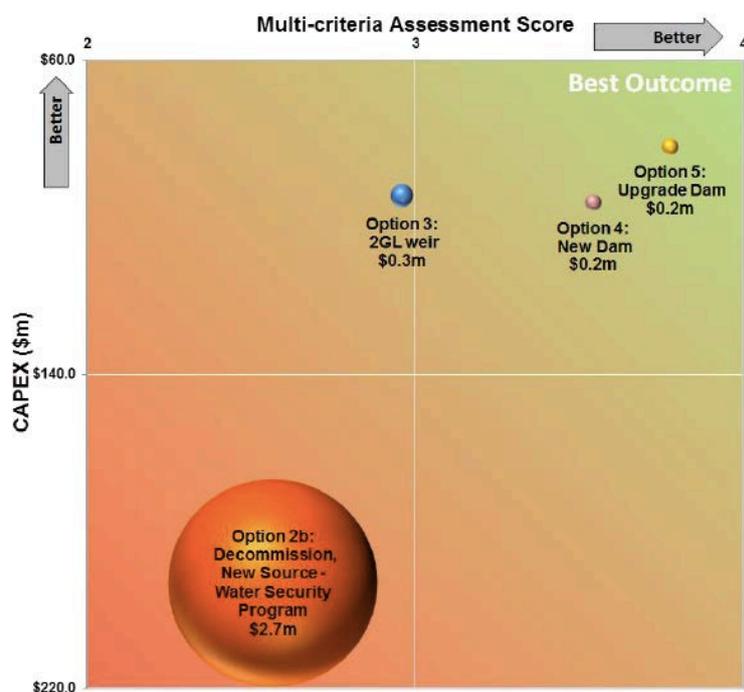
The five key options assessed in relation to the dam upgrade (Options 2, 4 and 5 were identified and assessed in the 2014 business case for this project) include:

- Option 1: Do the minimum (risk reduction strategy) – involving limiting the consequence of dam failure by purchasing downstream properties which were at risk and improving monitoring and early warning systems.
- Option 2: Decommission the dam – removal of embankment, spillway, and intake structure; and rehabilitation of dam footprint. This option would also require a replacement water source to service future population growth.
- Option 3: Smaller reservoir downstream of Lake MacDonald providing 25 per cent replacement supply plus an on-stream weir. This option requires re-location of water supply pipelines, treatment facilities, and access roads.
- Option 4: New dam (previously preferred option) – construct a new dam upstream of the existing dam plus a significant temporary coffer dam and diversion channel on the right abutment of the dam. The key changes to this option from the option reviewed in the 2014 business case were the design of the temporary coffer dam and the foundation levels of the new dam.
- Option 5: Upgrade existing dam (current preferred option) – remediating existing dam by replacing spillway, upgrade wing embankments and support with downstream filter buttress, and constructing a new outlet structure. The works also require construction of a temporary pump station to keep reservoir levels acceptable during construction works (dam level requires lowering by 4.3 meters).

The options identified were assessed using a multi-criteria analysis process which contrasted the options in terms of their technical performance, costs, environmental impacts and benefits, approvals pathway and community impacts, and the impact on Seqwater's operations.

All options assessed were costed to develop both direct capital cost and a net present value cost and all options were assessed to identify the key risks specific to that option. The multi-criteria analysis assessed each project against all these options and assigned a score for the project. The multi-criteria analysis, the annual operating expenditure and the required capital expenditure were then used to rank options as per the approach outlined in Figure 45 below.

Figure 45. Comparison of options based on capital and operating expenditure plus multi-criteria analysis score



Source: Seqwater

### 7.16.1.3 Proposed capital expenditure

Cost estimates for the key options considered for this project were first developed in the 2014 business case, however as outlined above, these cost estimates were not based on a sufficiently robust foundation. The 2016 business case process (leading on from the 2016 review of options and concept designs) examined the five options in detail with the comparative net present cost (NPC) estimates for each option outlined below:

- Option 1: Do the minimum (risk reduction strategy) – NPC = \$25.4 million to \$114.1 million
- Option 2: Decommission the dam – NPC = \$220.3 million to \$381.7 million
- Option 3: Smaller reservoir downstream of Lake MacDonald providing 25 per cent replacement supply plus an on-stream weir – NPC = \$78.2 million
- Option 4: New dam (previously preferred option) – NPC = \$99.8 million
- Option 5: Upgrade existing dam (current preferred option) – NPC = \$85.7 million.

Construction cost estimates for all five options assessed were developed using unit rates from civil contractors which were benchmarked against recent Seqwater projects. Contingency levels were applied based on construction cost estimating guidelines set by the United States Society on Dams. A level of 20-25 per cent contingency was recommended in the guidelines based on the level of design completed to date. Seqwater has adopted a 25 per cent contingency allowance for this project.

The recommended option was developed to a preliminary design stage with a design cost accuracy of 30 per cent assumed. A probabilistic cost estimate was determined to a P90 confidence level as per

Building Queensland guidelines with the contingency calculated using the probability simulation process @Risk.

It is noted that the detailed assessment of this project for the 2015 review identified that the upgrade option for the dam was not considered favourable as it had the highest NNPC (at approximately \$80 million compared to \$62.5 million for the new dam option) of all the options investigated. However as stated previously, the new dam option was based on inferred geotechnical conditions which turned out to be incorrect resulting in a significantly higher cost of the works.

The other options considered, particularly the decommissioning option and the lowered dam option, did not include the significant costs of alternative water supplies to replace the lowered or removed system capacity resulting from these options. In addition, the Do Nothing option considered in the 2015 review did not include the costs associated with reducing the public risk of the dam; that is, the purchase of properties at medium or low risk of flooding.

Table 55. Forecast capital expenditure – Lake MacDonald Dam Upgrade (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$2.4	\$40.0	\$35.0	\$6.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$84.2
Capitalised*	\$0.0	\$0.0	\$0.0	\$95.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$95.6

\* includes actual expenditure and interest during construction

## 7.16.2 Assessment

### 7.16.2.1 Prudency

The drivers for this work are clearly spelled out in the supporting documentation provided for this project and sufficient evidence has been provided to establish the need for the works. The timing of works is set out in the documentation.

As such, we consider that Seqwater has sufficiently demonstrated the prudency of this project.

### 7.16.2.2 Efficiency

#### **Scope of Works**

This project is at the detailed design stage with design expected to be complete in October 2017. We have not viewed the detailed design reports to establish the final scope of works, however we would expect the scope to be well defined.

At this stage, and subject to confirmation from the detailed design reports, on balance we consider that Seqwater has justified the scope of works.

#### **Standard of Works**

As previously identified, we note there are specific requirements for dam safety projects and we would expect these requirements to be clearly outlined in the detailed design documents, but these have not been provided for assessment.

At this stage, and subject to confirmation from the detailed design reports, on balance we consider that Seqwater has established the standard of works for this project.

## Cost of Works

We consider that an appropriate process has been followed to establish the costs estimates developed to date, however we note that the final costs estimates for the preferred option have not been provided. These cost estimates would be included in the detailed design reports which have not been made available.

At this stage, and subject to confirmation from the detailed design reports, on balance we consider that Seqwater has likely justified the cost of the works.

### 7.16.2.3 Summary findings

Based on the preceding analysis, Seqwater:

- Has established the prudence of the project with the need for the project and how the need might be addressed well established in the supporting documentation;
- Has developed robust project justification documentation in the 2014 business case, detailing a robust options analysis and risk assessment approach;
- Has established the scope of works for the preferred option in the detailed design reports;
- Has appropriately set out the standards of work in the detailed design reports; and
- Has justified the final cost estimates in the detailed design reports.

KPMG considers the project to be prudent, and the work completed in developing the proposed cost estimates to be efficient. Based on our assessment KPMG recommend the Authority accept the proposed capital expenditure forecast presented by Seqwater as shown in Table 56.

Table 56. Recommended profile of capital expenditure for the Lake MacDonald Dam Safety Upgrade project (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$2.4	\$40.0	\$35.0	\$6.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$84.2
KPMG Proposed	\$2.4	\$40.0	\$35.0	\$6.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$84.2
KPMG Proposed Adjustment	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0

## 7.17 Project 9: Leslie Harrison Dam - PID01430 - DLH: Leslie Harrison Dam Upgrade Stage 1

### 7.17.1 Overview

Leslie Harrison Dam is the only raw water source for the Capalaba Water Treatment Plant, with the WTP one of three sources supplying the Alexandra Hills Reservoir complex, the main supply for the Capalaba and Cleveland regions, with a population of over 90,000.

The original dam was constructed in 1968 with an uncontrolled spillway and was raised in 1984 by installing four vertical lift gates on the spillway crest. With these works, the capacity of the dam increased from 12,955 ML to 24,800 ML.

The key driver for this project is compliance based on a dam classification as an Extreme Hazard and that the dam does not meet the required limit of tolerability for risk of failure. The Leslie Harrison Dam is considered to present an unacceptable risk of failure given a five per cent probability of failure over a period of 100 years, a population at risk of over 6,500 and a potential loss of life of 120, and an estimated incremental economic damage caused by failure of over \$900 million with a total damages estimate of over \$2.1 billion. Determining the actual extent of exceedance of the dam is dependent on more detailed loss of life estimates and warning time investigations.

The dam is classified as an Extreme Hazards Dam with a risk that exceeds the limit of tolerability, with the extent of exceedance dependent on more detailed loss of life estimates and warning time investigations.

The original need for this project and various recommended options have been established by many reports, including:

- Raising the Leslie Dam Design Report (1980);
- Cost estimate for preliminary design of upgrading the dam (1999);
- Safety Review – Gates test operation (2000);
- Report on Risk Assessment (2002);
- Spillway Investigations – Geotechnical / Geological Report (2003);
- Failure Impact Assessment (2002);
- Probable Maximum Flood Revision (2003);
- Preliminary Analysis of Intake Tower (2008);
- Assessment of Remaining Corrective Actions (2008); and
- Acceptable Flood Capacity Study (2011).

As noted in Section 7.15, Seqwater completed its PRA, which quantified the risks posed by all of the identified dam safety issues across Seqwater's portfolio. The assessment identified that the Leslie Harrison Dam should be a key priority and recommended actions to be undertaken with priorities ranging from one month to two years to manage risks. Expert panels engaged to review the Acceptable Flood Capacity project from 2011, and the PRA outcomes from 2013, recommended that the Leslie Harrison Dam be upgraded as soon as practicable.

In January 2014, Seqwater identified short term risk reduction actions that could be implemented to reduce risk, resulting in the lowering of the storage level and removal of the vertical lift gates. Later in 2014, a Dam Safety Review was commenced to review the outcomes of the PRA and progress the recommendations of the assessment. The Dam Safety Review identified a number of actions including further investigation of geotechnical conditions, analysis and optimisation of the dam design and assets.

In 2015, a geotechnical investigation and Preliminary Design process were commenced to address the recommendations of the Dam Safety Review and to develop preliminary designs suitable for the

preparation of a business case. This preliminary design report forms the basis of the preferred option identified in the business case.

Seqwater provided an update on the project in the form of minutes from a July 2017 Ordinary Board meeting which outlined that the detailed design process was almost complete with final documents under review for inclusion in an October 2017 business case for approval to commence construction in 2018-19.

### 7.17.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>• RFI 48 D17 105237 D14 13009 Seqwater Referable Dams Mount Crosby Weir - Dams Portfolio Risk Assessment - URS 2013.pdf</li> <li>• RFI 49 D17 104955 Response to RFI 49.doc</li> <li>• RFI 48 D17 105236 Response to RFI 48.docx</li> <li>• RFI 35 - PID01430 Leslie Harrison Dam Upgrade Project Info Sheet.pdf</li> <li>• RFI 35 - OM6 - 02.8 - Leslie Harrison Dam Safety Upgrade Project - Board Meeting July 2017.DOCX</li> <li>• RFI 35 - D16 15841 Leslie Harrison Dam Preliminary Design Report - GHD 2015 - Final_Part1.pdf</li> <li>• RFI 35 - D16 15841 Leslie Harrison Dam Preliminary Design Report - GHD 2015 - Final.pdf</li> <li>• RFI 35 - LH DU - Stage 1 Works - Project Overview and Phasing.pdf</li> <li>• RFI 35 - D15 202528 DLH - Leslie Harrison Dam - Dam Safety Upgrade Stage 2 - Asset Planning Implementation Business Case - Manager Review - November 2015.pdf</li> <li>• D17 104951 Response to RFI 47(2).doc</li> <li>• RFI 35 - D16 15841 Leslie Harrison Dam Preliminary Design Report - GHD 2015 - Final_Part4.pdf</li> </ul>
Investment Driver	Compliance – based on dam classification as Extreme Hazard and not meeting required limit of tolerability.
Intended Outcome	To address identified design issues, satisfy requirements of best practice design, substantially reduce risk of failure, future proof dam against further downstream development, and allow case for meeting ALARP principle to potentially remove or delay need for stage 2 upgrade.
Current Project Status	<p>Gateway 2 – Business case approval received to proceed with detailed design works through Gateway 3.</p> <p>Draft detailed designs and drawings were completed in June 2017.</p>
Procurement and project delivery Process	<p>The December 2015 business case outlined the following delivery process:</p> <ul style="list-style-type: none"> <li>• Detailed design completion by December 2016;</li> <li>• Project implementation business case approval by end of December 2016;</li> <li>• Procurement of contractors by March 2017;</li> <li>• Site mobilisation by April 2017;</li> <li>• Construction completed by December 2018;</li> <li>• Commissioning by January 2019; and</li> <li>• Project closure by February 2019.</li> </ul>

Planning and design services were proposed for delivery through Seqwater's Standing Offer Arrangement, while specific procurement and delivery options are yet to be decided.

### 7.17.1.2 Options Analysis

This project involves two overall stages of work, with Stage 1 (this project) covering upgrade of the spillway and upgrade of the embankments and main conduits. Stage 2 (not part of this project) comprises upgrading the spillway chute, raising the spillway crest, and extending downstream filters and filter buttresses to providing protection to the downstream face of the main embankment. Trigger events for Stage 2 works in the future would include growth or a drought response requirement.

The original scope of work for this project was identified in 1980 and since then a series of investigation reports, safety reviews and failure assessments have followed to reach this point. The scope of works has been fully developed by Seqwater's consultant in a detailed design report completed in June 2017 and presented to the Seqwater Board in July 2017.

Seven key options were developed in the preliminary design document including a number of sub-options for each with a total of 36 options assessed in relation to technical performance, project delivery risks, approvals required, environmental impacts, social and community impacts and implications for Seqwater business operations.

The following five options were shortlisted for inclusion in the business case:

- Option 1: Status quo / continue current operation – does not meet dam safety guidelines or good business practice.
- Option 2: decommission the dam – prohibitively high capital costs, introduction of operational and water security risks to the area.
- Option 3: permanent lowering of the storage and strengthening the spillway – making the temporary lowering of the dam storage level permanent, stabilising the spillway, and returning the spillway to a free flow. This option addresses the risk of overtopping and the highest probability of failure at the spillway crest, but does not address the main structural issues with the main embankment.
- Option 4: risk based two stage upgrade of dam – the current preferred option was established during the options selections workshops. This involves two stages of work, with Stage 1 (this project) covering upgrade of the spillway and upgrade of the embankments and main conduits. Stage 2 (not part of this project) comprising upgrading the spillway chute, raising the spillway crest, and extending downstream filters and filter buttresses to providing protection to the downstream face of the main embankment. Trigger events for Stage 2 works would include future growth or a drought response.
- Option 5: Full standards based upgrade of dam – completing both Stage 1 and 2 works (as outlined above) immediately.

Risk assessments have been completed for each of the five shortlisted options along with a financial analysis covering capital costs, operational costs and any capital bring forward costs with estimates assessed with a net present cost over 30 years.

Table 57. Scope of Works for preferred option 4 – Leslie Harrison Dam Safety Upgrade Project

Dam component	Description of the proposed works for Stage 1
Spillway works	<ul style="list-style-type: none"> <li><input type="checkbox"/> Modification of the spillway chute floor transition into the stilling basin</li> <li><input type="checkbox"/> Anchors to the ogee crest, designed so the crest will remain stable under flood and earthquake loading</li> <li><input type="checkbox"/> Provision of a code compliant and more convenient access system into the chute for Seqwater personnel</li> <li><input type="checkbox"/> Waterproofing the approach wall system to prevent the development of uplift pressures beneath the upper block wall.</li> </ul>
Outlet works modifications	<ul style="list-style-type: none"> <li><input type="checkbox"/> Modifications to the intake tower to increase flood immunity to current crest level of RL 22.25 m</li> <li><input type="checkbox"/> Modifications to the existing access shaft</li> <li><input type="checkbox"/> A new access shaft downstream of the existing access shaft</li> <li><input type="checkbox"/> Extension of the conduit required to account for the toe trench and new weighting berm works.</li> </ul>
Embankment upgrades	<ul style="list-style-type: none"> <li><input type="checkbox"/> Construction of a key trench located at the downstream toe of the existing berm through the alluvium and onto the bedrock</li> <li><input type="checkbox"/> Construction of a weighting berm to RL 12.1 m to provide adequate post-earthquake stability</li> <li><input type="checkbox"/> Extension of the filter along the downstream slope of the embankment to the crest of the dam. The crest will be widened to allow for the Stage 2 upgrade.</li> </ul>

The preferred option being sought is Option 4. It is noted that Seqwater are aiming to complete Stage 1 of this project and then undertake an assessment to determine whether Stage 2 can be deferred further or removed from the program of work all together. A detailed design report was completed in June 2017 with the preferred option defined as outlined in Table 57 above, which is an extract from the July 2017 Seqwater Board meeting business papers.

### 7.17.1.3 Proposed capital expenditure

Cost estimates for the key options considered for this project were first developed in the 2015 Preliminary Design report and were refined for inclusion in the 2015 business case.

Construction cost estimates for all five options assessed appear to be predominantly based on estimates rather than unit rates or benchmarking against similar projects. Only three items of the cost estimate breakdown provided were based on quotes from previous work.

The recommended option was developed to a preliminary design stage with a design cost accuracy of 30 per cent assumed. A probabilistic cost estimate was determined to P50 and P80 confidence levels with the contingency calculated using the probability simulation process @Risk.

Table 58. Forecast capital expenditure – Dam Upgrade Stage 1 (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$5.0	\$17.5	\$2.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$24.7
Capitalised*	\$0.0	\$0.0	\$29.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$29.6

*\* includes actual expenditure and interest during construction*

Insufficient information on the cost estimates was provided to adequately assess whether they are efficient. The detailed design reports under review by Seqwater (as at July 2017) would include significantly more detailed information however these reports have not been made available.

## 7.17.2 Assessment

### 7.17.2.1 Prudency

Seqwater has established the key driver for this project, being based on dam classification as Extreme Hazard and not meeting required limit of tolerability. Further, it has completed a series of investigations over a 30 year period that support the need for the proposed works to go ahead.

As a result, Seqwater has demonstrated the prudency of this project.

### 7.17.2.2 Efficiency

#### **Scope of Works**

This project is at detailed design stage with designs completed in July 2017. The scope of works has been fully developed by Seqwater's consultant in a detailed design report completed in June 2017 and presented to the Seqwater Board in July 2017. The scope of work for the preferred option is detailed in Table 57. The preferred option being sought is Option 4.

It is noted that Seqwater are aiming to complete Stage 1 of this project and then undertake an assessment to determine whether Stage 2 can be deferred further or removed from the program of work all together. A design report was completed in June 2017 with the preferred option outlined in Table 57 above, which is an extract from the July 2017 Seqwater Board meeting business papers.

Whilst we have not viewed the detailed design reports used to establish the final scope of works, and subject to confirmation from the detailed design reports, we consider that Seqwater has justified the scope of works.

#### **Standard of Works**

As previously identified, we note there are specific requirements for dam safety projects and we would expect these requirements to be clearly outlined in the detailed design documents but these have not yet been provided for assessment. At this stage, and subject to confirmation from the detailed design reports, on balance we consider that Seqwater has established the standard of works for this project.

#### **Cost of Works**

We consider that an appropriate process has been followed to establish the costs estimates developed to date, however we note that the final costs estimates for the preferred option have not been provided. These cost estimates would be included in the detailed design reports which have not yet been made available.

Seqwater has demonstrated appropriate consideration of uncertainty, with a design cost accuracy of 30 per cent assumed, and probabilistic cost estimates determined to P50 and P80 confidence level with the contingency calculated using the probability simulation process @Risk.

At this stage, and subject to confirmation from the detailed design reports, on balance we consider that Seqwater has likely justified the cost of the works.

### 7.17.2.3 Summary findings

Based on the preceding analysis, Seqwater:

- Has established the prudence of the project, as the key driver for this project is compliance based on a dam classification as an Extreme Hazard and that the dam does not meet the required limit of tolerability for risk of failure. This is supported by the outcomes of 11 different studies between 1980 and 2011;
- Has justified the proposed scope of works, which has been fully developed by Seqwater’s consultant in a detailed design report completed in June 2017 and presented to the Seqwater Board in July 2017;
- Has justified the basis of cost estimates, including robust supporting options analysis, utilisation of quotes from previous work, and appropriate consideration of project risks;
- Has appropriately set out the standards of work in the detailed design reports; and
- Has robust supporting project justification documentation that justifies the project’s cost and timing.

KPMG considers the project to be prudent, and the work completed in developing the proposed cost estimates to be efficient. Based on our assessment, and subject to our condition of seeing the detailed design reports, KPMG recommends the Authority accept the proposed capital expenditure forecast presented by Seqwater as efficient. Table 59 highlights KPMG’s recommended adjustments to Seqwater’s proposed capital profile.

Table 59. Recommended re-profiling of capital expenditure for the Leslie Harrison Dam Safety Upgrade project (\$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$5.0	\$17.5	\$2.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$24.7
KPMG Proposed	\$5.0	\$17.5	\$2.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$24.7
KPMG Proposed Adjustment	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0

## 7.18 Project 10: Administration Indirect Costs - Mobile Plant and Fleet Renewals

### 7.18.1 Overview

Seqwater maintains a fleet of vehicles including passenger, light commercial, and trucks along with mobile plant including boats, mowers, trailers, and forklifts. A renewals program keeps the fleet and mobile plant up to date and in compliance with internal and external guidelines primarily related to the employees’ safe use of these assets.

The Mobile Plant and Fleet Policy statement (POL-00029) commits Seqwater to providing fit for purpose fleet and mobile plant solutions that optimises whole of life outcomes and supports the safe

use of those assets. The Procedure for Fleet, Mobile Plant and Private Use specifies an asset replacement program for commercial vehicles of 120,000 kilometres or five years whichever comes first, while passenger vehicles are replaced at 75,000 kilometres or three years whichever comes first.

Seqwater have an internal specifications guideline covering the expected ANCAP rating of both passenger and light commercial vehicles, which aims to mandate the purchase of vehicles with a minimum 5 star ANCAP rating for passenger vehicles and a minimum 4 star rating for light commercial vehicles purchased up to 2016 and a minimum of 5 star rating for light commercial vehicles purchased after 2016.

A business case is prepared every five years to approve the renewals expenditure, while for the 2017 APMP, the expenditure is forecast out 20 years. The business case for the next five years is currently going through the Gateway process.

Seqwater maintains a fleet of around 313 vehicles, with approximately 279 fit for purpose vehicles, 28 pool vehicles, and six private use vehicles (manager level contracts). At the current total FTE, this leads to a ratio of vehicles to staff of around 1:3, which is relatively consistent with other jurisdictions.

Seqwater is currently installing Vehicle Management Systems into existing and new fleet vehicles which is providing vehicle specific data on driving habits and behaviour leading to vehicle use optimisation reviews and driver training programs.

#### 7.18.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>• RFI 39 - SUMMARY - D17 97996 Medium and Major Complexity Project - Gateway 2 - Investment Justification - Mobile Plant an.docx</li> <li>• RFI 39 - PRO-01864 Property, Fleet &amp; Facilities - Fleet &amp; Mobile Plant Policy and Procedure.docx</li> <li>• RFI 39 - PRO-00867 Corporate Safety - WHS Safe Work with Plant Procedure.docx</li> <li>• RFI 39 - D17 99445 FPM002-Process Mapping Disposal.docx</li> <li>• RFI 39 - D17 99444 FPSC002-MPF Disposal Documents -FINAL Checklists.pdf</li> <li>• RFI 39 - D17 99442 FPM001-Process Mapping Procurement.docx</li> <li>• RFI 39 - D17 99441 FPM001A-Process Mapping Procurement-Delivery (1).docx</li> <li>• RFI 39 - D17 99441 FPM001A-Process Mapping Procurement-Delivery.docx</li> <li>• RFI 39 - D17 99439 FPSC01 - Procurement Documents-FINAL Checklist.pdf</li> <li>• RFI 39 - D17 99437 FRG006-Fleet Procurement Plan &amp; Rates.xlsx</li> <li>• RFI 39 - D17 99154 Whole of Life Costs Isuzu vs Ranger.pdf</li> <li>• RFI 39 - D17 99151 2015 - ANCAP Rating - Vehicle Specification - ELT Memo.docx</li> <li>• RFI 39 - D16 150591 Memorandum - Fleet and Mobile Plant Capital Investment Update for 2017 Asset Portfolio Master Plan APMP.pdf</li> <li>• RFI 39 - D17 100409 Final 5 Year Mobile Plant and Fleet Replacement Plan as at 8 August 2017.xlsx</li> <li>• RFI 39 - D16 115232 FBC023 - Seqwater Collaborative Maintenance Contract (SCMC) Fleet - Approval SIGNED COPY.pdf</li> </ul>
Investment Driver	Compliance / Renewals – fleet and mobile plant are scheduled for replacement to meet internally defined conditions for safe use by employees.
Intended Outcome	The expected outcomes of this renewals program is the continued safe use of fleet and mobile plant by employees while maintaining an optimum whole of life outcome and improving safety.

Current Project Status	This is an ongoing program of expenditure, however the current five year business case is in Gateway 2 and is under preparation.
Procurement and project delivery Process	This program is governed by the Mobile Plant and Fleet Policy statement (POL-00029) and PRO-01864 Fleet and Mobile Plant Policy and Procedure. Safe working with plant is covered by PRO-00867 Workplace Health and Safety Safe Work with Plant. Procurement approaches are outlined in FPM001 – Procurement Process.

### 7.18.1.2 Options analysis

Options are not applicable to this project.

### 7.18.1.3 Proposed capital expenditure

A set allowance of \$1.7 million has been determined for each year of the forecast period with actual renewals prioritised within this limit as shown in Table 60. Additional expenditure is added in special circumstances, for example, in 2017-18 where the number of vehicles was increased to reflect a new insourcing arrangement around collaborative maintenance.

The allowance of \$1.7 million has remained consistent across the forecast period, and is consistent with that proposed under the current regulatory period. The amount does not get escalated within the 2017 APMP each year into the future implying that Seqwater is seeking to improve the efficiency of delivery within a strict budget level.

The cost estimates are not offset by the revenue received when disposing of vehicles as this is separately accounted for under asset disposals.

Table 60. Forecast capital expenditure – Mobile Plant and Fleet Renewals (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$17.0
Capitalised*	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$19.3	\$19.3

\* includes actual expenditure and interest during construction

## 7.18.2 Assessment

### 7.18.2.1 Prudency

The drivers for this renewals program are clearly spelled out in the supporting documentation provided for this project and sufficient evidence has been provided to establish the need for the works. Seqwater’s procedure for Fleet, Mobile Plant and Private Use specifies an asset replacement program for commercial vehicles of 120,000 kilometres or five years whichever comes first, while passenger vehicles are replaced at 75,000 kilometres or three years whichever comes first.

As such, we consider that Seqwater has sufficiently demonstrated the prudency of this project.

### 7.18.2.2 Efficiency

#### Scope of Works

The process for renewals and the scope of the assets covered by the renewals program are well established in the supporting documentation, and during the previous review. It is well accepted that fleet vehicles are replaced consistent with the aforementioned timing.

As such, we consider that Seqwater has justified the scope of works.

### **Standard of Works**

The renewals program is based on key standards which are well established in the supporting documentation which includes policies and procedures for the specific asset renewals.

As such, we consider that Seqwater has established the appropriate standard of works for this project.

### **Cost of Works**

This program of renewals has been ongoing and we note a general reduction in expenditure allowances implying the delivery of efficiency gains.

The process for renewals is also well established in policies and procedures. As such, we consider that Seqwater has likely justified the cost of the works.

### **7.18.2.3 Summary findings**

Based on the preceding analysis, Seqwater:

- Has established the prudence of the project, being the replacement of fleet vehicles consistent with agreed replacement policies.
- Has sufficiently established the scope of works covered under the renewals program, being the age of the vehicle, or distance travelled;
- Has sufficiently defined the standard of works under the policies and procedures governing the program; and
- Has sufficiently established the cost of the works with an ongoing program lower than historical trends.

KPMG recommends the Authority accept Seqwater’s proposed capital expenditure associated with mobile plant and fleet renewals as prudent and efficient as outlined in Table 61.

*Table 61. Recommended capital expenditure for the Fleet and Mobile Plant Renewals project (\$ million, Real December 2016)*

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$17.0
KPMG Proposed	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$17.0
KPMG Proposed Adjustment	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0

## 7.19 Project 11: Mudgeeraba WTP Renewals

### 7.19.1 Overview

Seqwater has indicated that the single largest renewals program (by expenditure) is the long term Mudgeeraba water treatment plant renewals program. This program is designed to consolidate renewals requirements for different classes of assets at the water treatment plant to provide a focus

area of works, package works to provide some economies of scale, and to reduce shared / common works at the site.

Seqwater undertakes renewals using an asset lifecycle approach to provide an optimised whole of life approach to delivering the asset investment program and to maintaining assets already within the program.

When applied to renewals specific works, the key focus areas include the following aspects of the asset life cycle - operations, monitoring, preventative maintenance, renewal, refurbishment and replacement. The approach facilitates the development of planned intervention activities that assist in maximising asset life, with these including inspections, maintenance, repairs, refurbishments, renewals and replacements. The intervention activities are designed to reduce the risk of asset failure and to maximise asset life to achieve the nominal end of life of the asset and extend beyond this life if it is the optimal solution.

The proposed WTP renewals program covers the asset classes outlined below, with expenditure allocated to each class as defined by the timing and costs of the intervention activities:

- Filter media;
- Electrical;
- Instrumentation;
- Pumps and motors;
- Mechanical; and
- Civil.

#### 7.19.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>• RFI 94 Mudgeeraba Water Treatment Plant &amp; East Bank Raw Water Pump Station Renewals.doc</li> <li>• RFI 94 D15 118833 Filters - ACP clean.docx</li> <li>• RFI 94 D15 136907 Pumps - ACP clean.docx</li> <li>• RFI 94 Intervention Unit Rates - Cost Model Derivation.pdf</li> <li>• RFI 94 Asset Renewals Modelling &amp; Forecast - Presentation to Expert Review Panel.pdf</li> <li>• RFI 94 Asset Lifecycle Management Plan.PDF</li> </ul>
Investment Driver	Renewals – of assets located at the Mudgeeraba WTP to provide an optimised and whole of life approach to operations achieving efficiencies in operating costs.
Intended Outcome	To ensure that assets reach their optimal asset life and deliver the services intended.
Current Project Status	Ongoing program of works
Procurement and project delivery Process	Delivery and procurement process not specified.

#### 7.19.1.2 Options analysis

The proposed expenditure for the next regulatory period focusses on the renewal of the filters at the treatment plant. A filter media renewals project includes the replacement of the media material and supporting layers, and refurbishment of the filter structure, filter nozzles, under drains and backwash launders. Filter media typically has up to a fifteen year useful life. Routine visual inspection and testing of filter media occur annually and a detailed engineering condition assessment every five years.

For renewals there are usually few alternative options to consider as the renewal is related to maintaining an existing asset. There are appropriate processes for investigating when a renewals program might become a replacement program or when a new approach is required. This program is focussed on maintaining an operating expenditure solution for as long as is efficient before a capital solution is required.

For this project, the optimum response is the continued renewal of assets at the Mudgeeraba WTP.

### 7.19.1.3 Proposed capital expenditure

The initial unit rates for interventions across all asset class plans were first developed in 2014 and were reviewed in December 2016 using actual project delivery costs where possible. The allocated expenditure across the various asset classes is outlined below:

- Filter media = \$14,101,250
- Electrical = \$285,450
- Instrumentation = \$1,090,875
- Pumps & Motors = \$886,000
- Mechanical = \$901,226
- Civil = \$146,750

Overall, there are 380 projects which comprise the renewals program of work with a total program estimate of \$17.4 million as shown in Table 62.

Table 62. Forecast capital expenditure – Mudgeeraba WTP Long Term Renewals program (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$0.0	\$0.2	\$0.7	\$0.5	\$0.4	\$0.0	\$10.5	\$3.9	\$0.4	\$0.8	\$17.4
Capitalised*	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$21.2	\$21.2

\* includes actual expenditure and interest during construction

The derivation of cost estimates for this program is outlined in Seqwater’s Intervention Unit Rates – Derivation of Unit Rates for Cost Modelling document which is dated November 2016. The methodology is outlined as to how intervention specific costs are developed for input to the 30 year asset replacement and renewals forecast.

Renewals costs are derived from a combination of unit rates, including Basic Intervention Unit Rates, which allow development of a Basic Intervention Cost with an asset specific Intervention Cost multiplier applied to develop an Intervention Cost. Other factors used to develop the final renewals cost estimates include asset characteristics such as the asset dimension and asset class; specific cost sets including acquisition, installation, design, mobilisation unit rates; and brownfield specific unit rates. Final Intervention Costs are then validated against historical actual costs from a sample of previous projects.

Seqwater undertake a relatively comprehensive process to determine the estimated cost of renewals across the program. The costs are rolled into the ongoing program to provide an allowance of funding. Specific works within the renewals program are individually reviewed and approved as required.

The total allowance for this project across the 10 year price path is \$17.4 million, however this amount includes a significant expenditure of \$10.5 million in 2024-25 and \$3.9 million in 2025-26 for the replacement of filters at the WTP. Typically, the average annual allowance for renewals across the 10 year price path excluding these large expenditures is around \$0.41 million. This is slightly lower than the average annual expenditure forecast proposed for the current regulatory period of \$0.52 million (noting that this figure includes a larger allowance of \$2.2 million in the first year - 2014-15).

## 7.19.2 Assessment

### 7.19.2.1 Prudency

The drivers for this renewals program are clearly spelled out in the supporting documentation provided for this project and sufficient evidence has been provided to establish the need for the works. The project is designed to consolidate renewals requirements for different classes of assets at the water treatment plant to provide a focus area of works, package works to provide some economies of scale, and to reduce shared / common works at the site

As such, we consider that Seqwater has sufficiently demonstrated the prudency of this project.

### 7.19.2.2 Efficiency

#### ***Scope of Works***

The process for renewals and the scope of the assets covered by the renewals program are established in the supporting documentation, being the replacement of the media material and supporting layers, and refurbishment of the filter structure, filter nozzles, under drains and backwash launders. As such, we consider that Seqwater has justified the scope of works.

#### ***Standard of Works***

The renewals program is based on key standards which are established in the supporting documentation which includes policies and procedures for the specific asset renewals.

As such, we consider that Seqwater has established the appropriate standard of works for this project.

#### ***Cost of Works***

This program of renewals has been ongoing and we note a general reduction in base level expenditure allowances (excluding once-off larger expenditure) implying the delivery of efficiency gains. Further, the cost of the program is focussed on maintaining an operating expenditure solution for as long as is efficient before a capital solution is required. This demonstrates a desire to minimise cost.

The unit rates for interventions across all asset class plans were reviewed in December 2016 using actual project delivery costs where possible, supporting the basis of the estimate.

As such, we consider that Seqwater has likely justified the cost of the works.

### 7.19.2.3 Summary findings

Based on the preceding analysis, Seqwater:

- Has established the prudency of the project, being the renewal of assets located at the Mudgeeraba WTP to provide an optimised and whole of life approach to operations achieving efficiencies in operating costs;

- Has demonstrated the rigour of cost estimates, through use of current unit rates, including asset characteristics such as the asset dimension and asset class; specific cost sets including acquisition, installation, design, mobilisation unit rates; and brownfield specific unit rates. Further, the ongoing program costs are lower than historical trends;
- Has sufficiently established the scope of works covered under the renewals program; and
- Has sufficiently defined the standard of works under the policies and procedures governing the program.

Table 63. Recommended capital expenditure for the Mudgeeraba WTP Long Term Renewals (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$0.0	\$0.2	\$0.7	\$0.5	\$0.4	\$0.0	\$10.5	\$3.9	\$0.4	\$0.8	\$17.4
KPMG Proposed	\$0.0	\$0.2	\$0.7	\$0.5	\$0.4	\$0.0	\$10.5	\$3.9	\$0.4	\$0.8	\$17.4
KPMG Proposed Adjustment	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0

KPMG recommends the Authority accept Seqwater’s proposed capital expenditure associated with the Mudgeeraba WTP Long Term Renewals program. Table 63 summarises the recommended capital expenditure over the forecast period.

## 7.20 Project 12: Mt Crosby Eastbank Raw WPS Renewals

### 7.20.1 Overview

As noted in Section 7.19, Seqwater undertakes renewals using an asset lifecycle approach to provide an optimised whole of life approach to delivering the asset investment program and to maintaining assets already within the program. When applied to renewals specific works, the key focus areas include the following aspects of the asset life cycle - operations, monitoring, preventative maintenance, renewal, refurbishment and replacement. The approach facilitates the development of planned intervention activities that assist in maximising asset life with these including inspections, maintenance, repairs, refurbishments, renewals and replacements. The intervention activities are designed to reduce the risk of asset failure and to maximise asset life to achieve the nominal end of life of the asset and extend beyond this life if it is the optimal solution.

The Water Pumping Station (WPS) long term renewals program is a critical program of works to keep key water infrastructure at optimal operational levels. There is a significant program of work at the Mt Crosby Eastbank WPS site including this proposed renewals program. Much of the Eastbank assets were built between late 1800s and mid 1900s and it is expected that this infrastructure will require major renewals potentially commencing from 2031-32 onwards. The objective until this timeframe is reached is to provide ongoing renewals to keep key assets in service and operating efficiently.

The proposed Mt Crosby Eastbank Raw WPS renewals program covers the asset classes outlined below, with expenditure allocated to each class as defined by the timing and costs of the intervention activities:

- Pipework;

- Electrical;
- Instrumentation;
- Pumps and motors;
- Mechanical; and
- Civil.

This program is designed to consolidate renewals requirements for different classes of assets at the WPS to provide a focus area of works, package works to provide some economies of scale, and to reduce shared / common works at the site.

### 7.20.1.1 Key Assumptions and Status

Information source	<ul style="list-style-type: none"> <li>• RFI 43 - D14 62997 Mt Crosby East bank TEB and West bank TWB Long Term Planning Report ( LTPR )(2).pdf</li> <li>• RFI 55 D14 113184 QE99091_Preliminary Design Report_DP2_Rev0 Mt Crosby Project SKM.pdf</li> <li>• RFI 94 Mudgeeraba Water Treatment Plant &amp; East Bank Raw Water Pump Station Renewals.doc</li> </ul>
Investment Driver	Renewals – of assets located within the Mt Crosby Eastbank WPS to provide an optimised and whole of life approach.
Intended Outcome	To ensure that assets reach their optimal asset life and deliver the services intended.
Current Project Status	Ongoing program of works
Procurement and project delivery Process	Delivery and procurement process not specified

### 7.20.1.2 Options analysis

The key projects for this program of work are the replacement of the raw water pumps, pump motors and electrical switchboards located at the pump station. The asset management strategy for pumps is detailed in the Pump Asset Class Plan. Raw water pumps are used to harvest and deliver raw water of varying turbidity from the source to a water treatment plant. These are centrifugal pumps and at this pump station are dry mount.

The dry mount centrifugal pump system includes the shaft, mechanical or gland seals, shaft sleeves, neck rings, impellers, impeller rings, lock nuts, and bearings. Due to the limited industry technical information available for pump effective lives and the variety of applications that raw water pumps are expected to operate within, Seqwater has adopted the Financial Asset Lives for this group of assets. Like all pumps, the higher the solid content of the fluid being pumped, the higher the rate of internal wear and as a result, raw water pumps can vary widely in effective life due to differences in source water turbidity.

The Mount Crosby Raw WPS is located on the banks of the Brisbane River and harvests water from the Mount Crosby Weir pool. This source water is a mix of inflows from the Lockyer industrial and grazing districts and releases from Wivenhoe Dam. As a result, this source water supply can have times of very high turbidity.

The typical effective life of the raw water pumps is 15 years. Preventative actions on raw water pumps are currently time based intervals for inspection and service and engineering condition inspections, which are performed five yearly. These pumps are overhauled upon reaching the trigger condition

rather than a full replacement which is typically between a seven and 10 year interval for this site with an average effective life of up to 45years.

### 7.20.1.3 Proposed capital expenditure

The unit rates for interventions across all Asset Class Plans were initially developed in 2014 and were reviewed in December 2016 using actual project delivery costs where possible. The specific unit rates used for the cost estimates for the switchboard renewals, and the pumps and motors renewals for this program, were derived from initial estimates in 2014 and actual similar renewals projects. The allocated expenditure across the various asset classes is outlined below:

- Pipework = \$0;
- Electrical = \$10,787,000;
- Instrumentation = \$136,000;
- Pumps and motors = \$9,082,000;
- Mechanical = \$2,359,000; and
- Civil = \$20,000.

Overall there are 132 projects which comprise this program of work at the Mt Crosby WPS with a total program estimate of \$22.3 million as shown in Table 64.

Table 64. Forecast capital expenditure – Mt Crosby WPS Long Term Renewals (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$0.0	\$4.1	\$1.5	\$3.0	\$4.7	\$8.0	\$0.1	\$0.8	\$0.0	\$0.0	\$22.3
Capitalised*	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$24.8	\$0.0	\$0.0	\$24.8

\* includes actual expenditure and interest during construction

The derivation of cost estimates for this program is outlined in Seqwater’s Intervention Unit Rates – Derivation of Unit Rates for Cost Modelling document which is dated November 2016. The methodology is outlined as to how intervention specific costs are developed for input to the 30 year asset replacement and renewals forecast.

Renewals costs are derived from a combination of unit rates, including Basic Intervention Unit Rates that allow development of a Basic Intervention Cost, with an asset specific Intervention Cost multiplier applied to develop an Intervention Cost. Other factors used to develop the final renewals cost estimates include asset characteristics, such as the asset dimension and asset class; specific cost sets including acquisition, installation, design, mobilisation unit rates; and brownfield specific unit rates. Final Intervention Costs are then validated against historical actual costs from a sample of previous projects.

Seqwater undertake a relatively comprehensive process to determine the estimated cost of renewals across the program. The costs are rolled into the ongoing program to provide an allowance of funding. Specific works within the renewals program are then individually reviewed and approved as required.

The proposed program of works for the next regulatory period and the remainder of the 10-year forecast horizon totals \$22.3 million, with an average annual expenditure of \$3.2 million. This is significantly higher than the expenditure originally proposed for the same period (2018-19 to 2027-28) under the last pricing investigation, which totalled only \$3.4 million with an average annual expenditure of just over \$0.86 million. In addition, the last price investigation saw significant deferment of renewals for

various reasons, primarily around the availability of better asset condition data indicating assets were in better condition than expected and therefore not in need of renewal.

The majority of the renewals expenditure for this program is on electrical switchboards and pump/motor replacements, which are overhauled or replaced on a regular schedule. Despite this, it appears that no allowance was made in Seqwater's previous regulatory submission for these regular activities, at least not at the expected cost identified in the current submission. This omission makes it difficult to assess the efficiency of the investment by comparing how the current expenditure relates to what was previously requested or actually spent.

We note that approximately one-quarter of the proposed expenditure is scheduled to occur within the next regulatory period. We are willing to accept the efficiency of the renewals for the next regulatory period noting that the actual expenditure incurred in this period will serve as a guide for assessing the requested expenditure for the following years.

## 7.20.2 Assessment

### 7.20.2.1 Prudence

The drivers for this renewals program are clearly spelled out in the supporting documentation provided for this project and sufficient evidence has been provided to establish the need for the works. Seqwater proposes to continue renewing this asset until at least 2031-32, where it is anticipated that it will require replacing. As such, the objective until this timeframe is reached is to provide ongoing renewals to keep key assets in service and operating efficiently.

We therefore consider that Seqwater has sufficiently demonstrated the prudence of this project.

### 7.20.2.2 Efficiency

#### **Scope of Works**

The process for renewals and the scope of the assets covered by the renewals program are established in the supporting documentation. This program is designed to consolidate renewals requirements for different classes of assets at the WPS to provide a focus area of works, package works to provide some economies of scale, and to reduce shared / common works at the site

As such, we consider that Seqwater has justified the scope of works.

#### **Standard of Works**

The renewals program is based on key standards which are established in the supporting documentation which includes policies and procedures for the specific asset renewals. As such, we consider that Seqwater has established the appropriate standard of works for this project.

#### **Cost of Works**

This program of renewals has been ongoing and we note a general reduction in base level expenditure allowances (excluding once-off larger expenditure) implying the delivery of efficiency gains. The process for renewals is also well established in policies and procedures.

The unit rates for interventions across all Asset Class Plans were reviewed in December 2016 using actual project delivery costs where possible. This supports the basis of the cost estimate.

As such, we consider that Seqwater has likely justified the cost of the works.

### 7.20.2.3 Summary findings

Based on the preceding analysis, Seqwater:

- Has established the prudence of the project, being to avoid asset replacements at the Mt Crosby WPS until beyond the 10 year analysis period;
- Has appropriately documented the scope of works required to support renewal of this asset;
- Has sufficiently defined the standard of works under the policies and procedures governing the program; and
- Has sufficiently established the cost of the works, by using recently established unit rates and by forecasting cost estimates that are lower than historical trends.

KPMG recommends the Authority accept Seqwater’s proposed capital expenditure associated with the Mt Crosby Eastbank WPS Long Term Renewals program. Table 65 summarises the recommended capital expenditure over the forecast period.

Table 65. Recommended capital expenditure for the Mt Crosby Eastbank WPS Long Term Renewals project (\$ million, Real December 2016)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Seqwater Forecast	\$0.0	\$4.1	\$1.5	\$3.0	\$4.7	\$8.0	\$0.1	\$0.8	\$0.0	\$0.0	\$22.3
KPMG Proposed	\$0.0	\$4.1	\$1.5	\$3.0	\$4.7	\$8.0	\$0.1	\$0.8	\$0.0	\$0.0	\$22.3
KPMG Proposed Adjustment	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0

## 7.21 Assessment of Systemic Issues

### 7.21.1 Overview

For this section, we undertook an analysis of our major project assessment to determine if any systemic issues could be identified, that is, issues that are likely transferrable from the major project reviewed to the broader capital program. These systemic issues may then give cause to apply a broader expenditure adjustment across the remaining capital program. Our analysis also relied on the results of the corporate governance review and the capital planning and asset management review sections of the report.

Systemic issues are most commonly identified in ongoing programs of work such as renewals and in specific components of the processes used to develop and deliver major projects. Our assessment of renewals expenditure to date has not identified any specific issues that could be deemed systemic. The latter issues around delivery of expenditure might include issues such as the incorrect application of contingency measures or in the use of incorrect or inefficient unit rates. Further issues assessed as systemic would also include poor performance in the delivery of expenditure such as consistent delays or in the underestimation of time required for key project stages (often around planning approvals or specialist works such as environmental studies or community engagement).

For historical context, the 2015 review of expenditure did not identify systemic issues that resulted in a portfolio wide adjustment despite the number of comments made regarding Seqwater’s delivery processes and corporate governance arrangements. In response to comments and recommendations made in the 2015 Review, we note that Seqwater has undertaken to improve its systems and processes in relation to capital planning systems and processes.

KPMG has revised its approach and therefore assessment of systematic issues based on further information provided by Seqwater in relation its capital planning process. This revised or updated assessment is detailed in the subsequent sections below. For transparency in our process, we maintained reference to our original assessment below.

## 7.22 Original Assessment - Capital Planning Issues

In our review, despite the improvements made to capital planning systems, we have identified a systemic issue in this area which affects our ability to undertake a robust prudence and efficiency assessment of Seqwater’s program of capital expenditure.

A large number of the sample projects we reviewed in Sections 7.9 to 7.20 above were assessed as inefficient due to the lack of robust documentation supporting the project, with the lack of documentation predominantly being related to where the project was currently sitting in the Gateway process. For the 12 sample projects, we noted the following about their gateway status, as shown in Table 66.

There is a fairly clear correlation shown in Table 66 between gateway status and whether a project has been assessed as efficient, with all of the projects at Gateways 0, 1 or 2 being assessed as inefficient.

*Table 66. Major Projects correlation between Gateway status and commencement date against prudence and efficiency*

Project	Commencement	Gateway	Prudent	Efficient
Beaudesert WZX Upgrade	2018-19	2	Yes	No
Mt Crosby Filters Upgrade	2017-18	3	Yes	Yes
Mt Crosby Sedimentation Upgrade	2017-18	1/2	Yes	No
North Pine WTP Filters Upgrade	2022-23	1/2	Yes	No
ICT ERP Renewals	2018-19	0	No	No
Holts Hill pH Correction Upgrade	2018-19	2/1	Yes	No
Somerset Dam Upgrade	2020-21	0	Yes	No
Lake MacDonald Dam Upgrade	2015/16	3	Yes	Yes
Leslie Harrison Dam Upgrade	2015/16	3	Yes	Yes
Fleet & Plant Renewals	2018-19	2	Yes	Yes
Mudgeeraba WTP Renewals	2019-20	N/A	Yes	Yes
Mt Crosby WPS Renewals	2019-20	N/A	Yes	Yes

This correlation is unsurprising as the Gateway 3 process – detailed design of one option ready for construction and final cost estimates – results in a robust set of supporting documents for the project. The Gateways 0, 1, and 2 processes involve a wider suite of options with higher level cost estimates and a correspondingly higher degree of uncertainty.

The commencement date of the project will have an impact on the assessment of likely efficiency as well (we are defining commencement as representing the first year that expenditure is included in the capital program). Whilst our scope of works requires an assessment of the prudence and efficiency of all capital projects in the 10 year price path period, we note that this approach is likely to result in a large number of projects failing the efficiency test primarily due to the lack of supporting documentation (outlining the detailed scope of works for the preferred option, the standard of works applied in the detailed design, and the detailed final cost estimate) available for the projects at the time of review.

We would expect that projects commencing within the next three years would have a robust level of supporting documentation, as described above. Whereas for projects commencing beyond the next three years, it would be unreasonable to expect that fully developed documentation is available to support the recommendation of a single preferred option, a robust detailed design, and fully developed cost estimates.

This is a standard function / outcome of the normal capital planning process where documentation is developed in a logical progression over a period of time to meet the required completion date for the project. In our general experience, completing detailed project documentation greater than three years in advance is likely to result in some re-work of the documentation at the time the documents are needed. As a result, we have only applied our assessment of systemic capital planning issues to those projects that are commencing (as defined above) in the first three years of the 10 year price path period, that is, the period from 2018-19 and 2021-22 (inclusive).

The correlation we have identified in Table 66 above does not apply to renewals projects which are ongoing programs of expenditure and are assessed in a manner more analogous to operating expenditure, that is, comparing the proposed expenditure to a base historical level and justifying incremental changes to expenditure. For this reason, we have removed any expenditure related to renewals programs from this assessment of systemic issues.

Taking into account these comments and issues above, leads us to a fuller definition of the systemic issue we have identified; that is, where a project (excluding renewals) is currently going through Gateway 0, 1 or 2 processes, and where the project commencement date is within the next three years (2018-19 to 2020-21), then there is a high likelihood that the level of supporting documentation will be insufficient to adequately demonstrate both prudence and efficiency.

Applying the correlation shown in Table 66 and the definition outlined above to the wider capital program would therefore highlight potentially inefficient expenditure. Our first step is to identify the total capital program broken down by the gateway stage within which the project expenditure is located. Figure 46 below shows the quantum of capital expenditure in the program for each year and for each gateway.

Our analysis of the data supporting Figure 46 shows that:

- There is a total capital expenditure of approximately \$1,282.4 million in the 10 year price path period.
- Of this total expenditure over the 10 year period, 79.3 per cent, or approximately \$1,017.1 million, of the proposed capital expenditure is from projects in Gateways 0, 1 and 2;
- Of the total capital expenditure over the 10 year period, 22.5 per cent, approximately \$288.9 million, of the proposed capital expenditure is related to renewals programs, which, as identified above, are excluded from this analysis of systemic issues.

We have already assessed sample projects (refer Sections 7.9 to 7.20 above) with a total value of \$316.1 million during the 10 year period, that are at Gateway 0 to 2, and we have recommended

separate adjustments to these projects and programs. However, these sample projects and programs are included in the total capital expenditure over the 10 year period identified above and this value, therefore, needs to be removed.

As outlined previously, we are only applying our assessment of systemic issues to those projects which are at Gateway status 0, 1 or 2, are not renewals, are not already assessed sample projects, and finally that are projects which commence (as defined previously) within the three years 2018-19 to 2020-21. Our analysis of the capital program has identified that the value of projects which fulfil these criteria is \$366.7 million.

Drawing on our analysis of projects and our identified correlation in our sample projects, we can therefore conclude that the projects comprising the total identified of \$366.7 million for the 10 year period; are highly likely to be considered inefficient if they were subject to a robust review (as per our sample projects analysis).

On the basis of the systemic issue identified above we recommend the exclusion of the entire \$366.7 million expenditure over 2018-19 to 2027-28. Our process, as outlined in detail above, is summarised in Table 67 below.

Figure 46. Breakdown of Annual Capital Expenditure 2018-19 to 2027-28 by Gateway (nominal, capitalised)

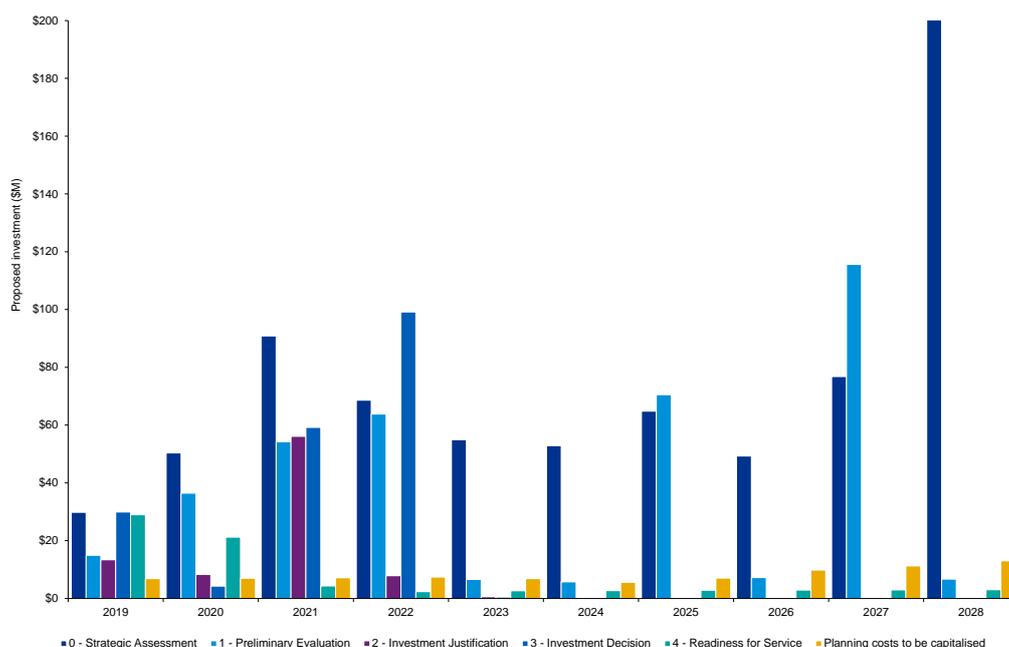


Table 67. KPMG recommended adjustments to total capital program – excluding renewals and sampled projects (real December 2016 \$ million)

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Capex prior to Gateway 3 commencing 2018-2021*</b>	\$74.5	\$90.1	\$70.7	\$60.6	\$10.6	\$16.3	\$16.1	\$9.6	\$9.2	\$9.1
<b>Recommended Adjustment to Capex prior to Gateway 3*</b>	(\$74.5)	(\$90.1)	(\$70.7)	(\$60.6)	(\$10.6)	(\$16.3)	(\$16.1)	(\$9.6)	(\$9.2)	(\$9.1)

\* Excluding renewals and sampled projects

We note that it is likely that many of these projects will be required in the future and do not dispute the general prudence of these projects. As a result, and in particular for those projects with significant expenditure in the first three years, it is possible Seqwater may proceed with a project regardless of an allowance granted by the Authority, should that project pass through all of the investment gateway steps. If this were to occur we note the Authority may be required to complete an ex-post review of such expenditure as part of future pricing review.

Further, subject to the Authority's discretion in responding to its referral notice, its own considerations of the prudence and efficiency of Seqwater's capital program and the potential impacts on prices, it may choose to adopt one of the alternative approaches previously discussed.

Table 68. Alternative assessments of total capital program – excluding renewals and sampled projects (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Capex Commencing &amp; Capitalised in 3 years</b>	(\$61.1)	(\$65.6)	(\$19.9)							
<b>Notional Discount (25%)</b>	(\$18.6)	(\$22.5)	(\$17.7)	(\$15.6)	(\$3.4)	(\$5.7)	(\$6.5)	(\$5.5)	(\$4.9)	(\$2.6)

For example:

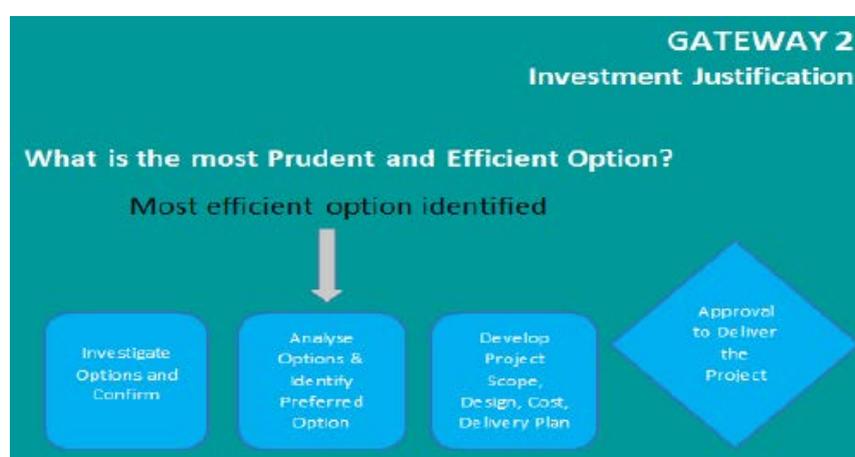
- Placing greater focus and scrutiny on only those projects impacting prices in the short term, specifically those projects which commence and are capitalised in the next three years. This approach would amount to an adjustment of \$146.7 million over the three years with no adjustments in the remaining years of the forecast as shown in Table 68; or
- Applying discounts for expenditure not at Gateway 3 or above thereby reflecting the inherent uncertainty that exists with regards to the cost estimates for these projects. For example a 25 per cent discount would result in a total adjustment of \$103.0 million over the full 10 years as shown in Table 68.

## 7.23 Revised Assessment - Capital Planning Issues

### 7.23.1 Seqwater response to the QCA Draft Report and KPMG assessment

In response to KPMG's recommendations, Seqwater's submission contended that the "efficient option" is usually determined within Gateway 2, before it has formally passed Gateway 2. Consistent with Seqwater's gateway process, the below diagram shows when this "most efficient option" milestone is reached in the gateways of the project lifecycle. This control point includes option definition and a cost estimate of the most efficient option.

Figure 47. Gateway 2 – Investment Justification



Source – Seqwater, Submission to Draft QCA Report, 31 January 2018, pg. 31

Seqwater also noted that of the disallowed non-sampled projects at Gateway 2, \$31 million of \$39 million had a preferred option at the time of submission. We understand that this \$39 million refers to the QCA's adjustment contained within its Draft Report, which is in nominal dollars and includes interest during construction. This forms a reasonable proxy for the percentage of projects at Gateway 2 that have a preferred option (79.5 per cent).

### 7.23.2 Updated assessment

In light of this information, KPMG has reviewed its initial finding. To do this, it has leveraged the learnings from the review of Somerset Dam – Dam Safety Upgrade and Beaudesert WSZ Upgrade, which have determined a preferred option, and are still within Gateway 2 of the project development process. In reviewing the supporting project justification, options analysis and project cost estimates for these projects, KPMG accepts that Seqwater has completed a robust level of analysis that supports an expenditure allowance of greater than zero. This is because:

- It has provided rigorous detail regarding the proposed scope of works, by considering a range of possible options;
- It has demonstrated that the standard of works is consistent with good practice, by ensuring compliance with relevant regulatory obligations and technical standards, and grid wide costs/benefits; and

- The cost generally provides a robust cost estimate, based on recent unit rates, use of independent estimates and asset detailed specifications.

KPMG therefore does not recommend a systemic adjustment to remove all costs for projects within Gateway 2, where they have a preferred option.

In investigating the sampled projects, it has become clear that Seqwater applies different contingency and indirect cost allowances in developing its cost estimates. This is documented in sections 7.9 and 7.15). In response to this finding, KPMG requested additional information from Seqwater on the contingency and indirect cost assumptions (as a percentage of direct costs and total project costs) for non-sampled capex projects that were (at the point of KPMG’s initial review):

- Within Gateway 2; and
- Had a preferred option.

Seqwater provided the cost estimations for six projects as shown in Table 69.

Table 69. Contingency / Indirect Cost Assumptions – Non-sampled Projects

Project	Total Direct Costs	Indirect Costs (% of direct cost)	Contingency (% of direct cost)	Total % of direct costs
Ewen Maddock Dam Upgrade Stage 2	\$5,420,000	\$1,572,000 (29%)	\$2,384,200 (44%)	73%
Cooloolabin Dam Upgrade Stage 2	\$1,562,269	\$921,700 (59%)	\$1,370,891 (88%)	147%
Sludge Lagoons Upgrade	\$2,445,507	\$766,122 (31%)	\$566,899 (23%)	54%
Mt Crosby EB Basin 1 Flocculation Upgrade	\$2,987,655	\$363,208 (14%)	\$317,523 (12%)	26%
Mt Crosby WB Chemical Dosing Upgrades	\$582,669	\$117,070 (24%)	\$290,261 (59%)	83%
Kenilworth WTP Upgrade	\$518,000	\$135,000 (26%)	\$68,000 (13%)	39%
<b>Total</b>	<b>\$13,516,100</b>	<b>\$3,875,100</b>	<b>\$4,997,774</b>	<b>66%</b>

Based on the above sample, allowances for contingency are on average 29 per cent of total direct costs, and allowances for indirect costs are on average 37 per cent of total direct costs. This is a total of 66 per cent of direct construction costs, or 40 per cent of total project costs.

Had Seqwater applied a contingency of 15 per cent of total direct cost and an allowance for indirect costs of 12.5 per cent of total direct cost, this would have equated to \$3,716,928, or 21.6 per cent of total project costs. In other words, Seqwater has overstated the contingency and indirect cost allowance by 18.1 per cent (on average) of total project cost.

This analysis further demonstrates an inconsistent application of these allowances across non-sampled projects within Gateway 2.

We therefore propose a systemic adjustment, such that all non-sampled capex projects with the following characteristics, include only a contingency of 15 per cent of total direct costs, and an allowance for indirect costs of 12.5 per cent of total direct costs:

- Within Gateway 2 of the project lifecycle; and
- Have passed the stage of identifying a preferred option.

This results in a reduction of 18.1 per cent of the requested expenditure for these non-sampled projects.

### 7.23.2.1 What constitutes renewals?

Within its submission to the QCA, Seqwater identified a number of programs that it felt constituted a renewals program. This included:

- Natural assets;
- Monitoring and control systems; and
- Mt Crosby East Bank water pump station flood resilience program of works.

This is important as Seqwater has demonstrated the efficiency of the programs where it identified renewals as the main driver, therefore KPMG has excluded these costs from the non-sampled systemic adjustment. We have considered whether these programs constitute renewals, and therefore, should be excluded from any further adjustments.

A renewal activity is any work on an asset or asset component that is of a capital nature and (attempts) to bring the asset component (or asset) back to as new condition. Renewal activities are appropriate to all assets and can involve the complete replacement of the asset (in situ) with the new asset providing the original (intended) level of service.

By their very nature, renewals are recurrent (reflecting the remaining useful life of the assets), requiring ongoing annual funding. It generally requires a scheduled program of works each year, to allow for optimal replacement of those assets.

Features of a renewals program therefore includes:

- Activities are recurrent in nature;
- Consistent level of expenditure with previous years; and
- Designed to address assets reaching the end of their useful life.

We have assessed each of the programs identified by Seqwater within its submission, against these criteria as detailed below.

#### **Natural asset program**

Table 70. Assessment of natural assets program

Criteria	Assessment
<b>Recurrent in nature</b>	Seqwater's natural asset investment program is delivered through the following two mechanisms - partnership arrangements with catchment groups and local councils; and directly engaging contractors through Seqwater's procurement procedures.  Ongoing partnerships are important as 95 per cent of Seqwater's drinking water catchments are privately owned, requiring permission from a land owner or lessee to undertake works in a timely manner. Seqwater has developed a long term investment plan that describes in broad terms all investment required over 20 years within each catchment. In addition, five year Priority Program Plans

Criteria	Assessment
	are approved or are being developed for each investment program to streamline the preliminary evaluation of projects in Gateway 1. There are now more approved multi-year and multi-catchment projects than at any other time in Seqwater's past. A Decision Support System is under development to further inform priorities. The ongoing nature of the work is demonstrated.
<b>Consistent level of expenditure</b>	Partnership investment has increased over the past three years, with 15 projects in place through partnership arrangements in 2016-17 at a total cost of \$3.6 million, with a number of these projects spanning multiple years. This expenditure will increase in 2018-19 as new partnerships are established and existing partnerships are further leveraged to deliver priority natural assets projects across the catchment. The expenditure related to this program is consistent with historical trends of increasing partnerships to address issues with natural assets.
<b>Addressing failing assets</b>	Investment is made in response to weather events and localised small-scale flooding or other unpredictable reasons. Catchments and waterways are by their very nature complex and dynamic systems, and sensitive to extreme weather events and changes in land use. Other natural asset projects which largely comprised more complex, engineering solutions, such as bank stabilisation works, continue to be delivered by Seqwater through the engagement of specialist contractors through our provider panels. Investment is clearly linked to remediating issues with natural assets.

Investment related to natural assets therefore constitutes a renewals program, and should be excluded from any adjustment to non-sampled projects. Table 71 summarises those costs associated with the natural asset program.

Table 71. Seqwater forecast costs for its natural assets program

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Natural assets program</b>	\$0.28	\$0.18	\$0.23	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03

## Monitoring and control systems

Table 72. Assessment of monitoring and control systems (MCS)

Criteria	Assessment
<b>Recurrent nature</b> in	75 per cent of the program is renewals, with site work and some communications and networks activities focused on updating aging infrastructure and systems. The work is effectively a renewals program for the Control System asset class that will require on-going funding. Table 15 within Seqwater's submission notes that the per cent of MCS expenditure that is renewals based with increase from 58 per cent in 2017-18 to 95 per cent in 2021-22. Based on these forecasts, 75:25 is a reasonable split between renewals and non-renewals. The non-renewals components of the MCS program are associated with improving the reliability and security of communications and establishing a centralised environment to enable system wide visibility and consolidate operational information collection. Seqwater has demonstrated that 75 per cent of this program on average relates to renewals.
<b>Consistent level of expenditure</b>	MCS expenditure is forecast to be significantly higher than recent history. Expenditure on the renewals projects is projected to increase from \$4 million in 2017-18 to between approximately \$9 million to \$12.5 million between 2018-22. To manage the cost of its program, Seqwater adopts: <ul style="list-style-type: none"> <li>• Engineering standards from WSAA;</li> <li>• Utilisation of panel arrangements;</li> </ul>

Criteria	Assessment
	<ul style="list-style-type: none"> <li>Management of control systems as an asset class under Seqwater’s asset management framework; and</li> <li>Detailed financial and schedule management, dedicated steering committee oversight and specialist Change Management resources.</li> </ul> <p>Whilst Seqwater has not demonstrated consistency with historical expenditure, it has exhibited robust processes that ensures an efficient cost.</p>
<b>Addressing failing assets</b>	<p>As asset lives for this operational technology class of assets are relatively short (i.e. 5 to 15 years) and, as the applicable technology evolves quickly, renewals are very seldom like-for-like and the prioritisation of projects within the MCS program can change due to changes to the applicable technology, standards and cyber security environments.</p> <p>Seqwater has demonstrated the need to address asset quality issues, based on the short term life of the asset.</p>

Investment related to MCS which are linked to renewals (i.e. 75 per cent of the program) should be excluded from any adjustment to non-sampled projects. These costs are shown in Table 73 below.

Table 73. Seqwater forecast costs for MCS renewals

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
MCS Renewals	\$3.38	\$5.17	\$1.67	\$0	\$0	\$0	\$0	\$0	\$0	\$0

### Mt Crosby Flood Resilience Program

Table 74. Assessment of Mt Crosby Flood Resilience Program

Criteria	Assessment
<b>Recurrent nature</b> in	<p>The current flood immunity of East Bank Pump Station (the only source of raw water to the East Bank Treatment Plant) and the substation (feed to the Pump station and the treatment plant) are between 1:100 and 1:200 Annual Exceedance Probability. The project involves a number of asset renewals which have been triggered by asset condition or performance and will be delivered in a cascading manner. However, due to the dependency of each project on delivery of the other project and their criticality, it was decided that it is more efficient to deliver these packages of works as a program of works.</p> <p>Twenty-one sub-projects were identified as a part of this program and were categorised into eight main business cases with an overarching strategic business case. To allow the project management team to have a comprehensive overall visibility of the tasks covered under each sub-project, it was decided that the delivery model of the program of works is more suitable than independent business cases.</p> <p>Whilst noting the validity of a program of works, the works are not ongoing in nature, and once delivered, will not require any further ongoing investment.</p>
<b>Consistent level of expenditure</b>	<p>Table 17 in Seqwater’s submission details the cost of the eight main business cases. Seven of these projects range between \$0.1 to \$1 million. The eighth is a critical electrical infrastructure upgrade, with a cost of \$33 million.</p> <p>Seqwater has not demonstrated consistency with historical expenditure. Further, the majority of the cost is related to an upgrade, which does not demonstrate features of a renewals program.</p>
<b>Addressing failing assets</b>	<p>The purpose of the flood resilience package of projects is to define the planning criteria for flood immunity as minimum of 1:1,000 Annual Exceedance Probability (AEP) for existing infrastructure and 1:10,000 Annual Exceedance Probability (AEP) for new infrastructure on this site and apply these criteria to renewals and growth projects.</p> <p>Seqwater has demonstrated that current annual Exceedance probabilities are outside the criteria for flood immunity.</p>

Seqwater has not demonstrated that this program reflects that of an assets renewals program, therefore KPMG recommends inclusion of these costs within the non-sampled projects.

### 7.23.2.2 Revised findings

KPMG maintains its original recommendation regarding exclusion of costs for non-sampled projects at Gateways 0 or 1 that commence during the period 2018-21, on the basis that they have not undertaken

robust options analysis, do not include rigorous cost estimates and therefore cannot demonstrate efficiency. KPMG therefore recommends that QCA provide Seqwater zero capital funding for these projects.

KPMG recommends excluding costs related to non-sampled projects within Gateway 2, where these projects do not have a preferred option, for the same reasons as above. On the basis that the information provided in Seqwater’s submission is a reasonable proxy, we have assumed that 20.5 per cent of projects within Gateway 2 do not have a preferred option<sup>40</sup>.

KPMG recommends allowing the recovery of all expenditure forecasts related to non-sampled projects - where these projects are within Gateway 2, have a preferred option and will commence by 2021 - adjusted by 18.1 per cent of total project costs (accounting for a systemic issue regarding allowances for contingency and indirect costs).

KPMG proposes that this adjustment be made to the forecasts originally submitted by Seqwater, and not account for any subsequent progressions through the gateway process. The basis of this is that KPMG has not been provided information that would allow it to re-assess the supporting project justification for other sampled projects, apart from Somerset, Beaudesert and ERP. KPMG cannot simply adjust its review for these sampled projects, on the basis that they have reached a further gateway stage. To do so would still require it to reassess the supporting project justification documentation, options analysis and supporting cost estimates.

In completing this adjustment of non-sampled projects, KPMG also proposes to exclude renewals costs related to natural assets and MCS. Table 75 documents our recommended cost allowances for those non-sampled capex projects.

Table 75. Non-sampled capex – Systematic adjustment

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Seqwater forecast for non-sampled capex	\$144,560	\$126,824	\$112,472	\$88,620	\$47,400	\$48,961	\$58,134	\$55,207	\$62,436	\$49,420
<b>Gateway 0-2 (no preferred option, commencement pre-2021-22, ex renewals)</b>										
KPMG adjusted (no preferred option)	(\$52,769)	(\$40,328)	(\$72,508)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Gateway 0-2 (preferred option)</b>										
KPMG adjusted (preferred option)	(\$3,300)	(\$4,916)	(\$1,413)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>KPMG total adjusted non-sampled capex</b>	<b>\$88,492</b>	<b>\$81,579</b>	<b>\$38,551</b>	<b>\$88,620</b>	<b>\$47,400</b>	<b>\$48,961</b>	<b>\$58,134</b>	<b>\$55,207</b>	<b>\$62,436</b>	<b>\$49,420</b>

<sup>40</sup> Seqwater, Submission to Draft QCA Report, pg. 32

## 8 Operating expenditure

A detailed review of Seqwater's demand forecast was considered out of scope for the purposes of KPMG's assessment provided the forecasts are within the range published by Seqwater as part of its Water Security Program (WSP).

A major component of the regulatory framework applied to Seqwater is quantification of forecast operating expenditure and a review of the prudence and the efficiency of historical and proposed operating expenditure. This review is an essential input upon which the Authority will form an opinion of Seqwater's revenue requirement (or maximum allowable revenue).

We note the Authority considers operating expenditure to be:

- Prudent if it can be justified by reference to an identified need or cost driver; and
- Efficient if it minimises Seqwater's long-run costs of providing bulk water supply services.

The assessment of prudence requires KPMG to investigate the rationale and drivers behind the levels of expenditure proposed and to determine whether the reasoning underlying Seqwater's forecast operating expenditure is appropriate. This entails assessing whether the expenditure is consistent with and clearly linked to Seqwater's obligations, be these legislative, driven by corporate vision or mission statements, or by customers' willingness to pay. Efficiency refers to whether the forecasted expenditure is reasonable given time and resource constraints and in some cases whether the forecast expenditure represents the least cost option for providing the associated service. Evidence of efficiency can include feasibility and options studies, independent peer review of costs, and market based contracting.

This assessment has been undertaken by reviewing documentation supporting the expenditure under review ranging from statements of corporate intent to planning and strategy studies, asset management plans or more specifically to design investigations. In the case of operating expenditure, supporting documentation may include operating budgets and plans, evidence of regulatory obligations, levels of service requirements or simply evidence of capital assets requiring ongoing operating expenditure.

The types of evidence that KPMG considered in assessment of Seqwater's proposal include:

- Evidence of prudence;
- Correspondence from the relevant Minister outlining legislative requirements;
- Growth and population projections;
- Evidence of an appropriate and robust decision making process;
- Surveys and consultations undertaken with customers;
- Evidence of efficiency;
- Feasibility studies;
- Options analysis;

- Independent peer reviews of costs; and
- Supporting documentation for the determination of contingencies, allowances and escalation factors.

The following tables summarise Seqwater’s proposed operating expenditure and KPMG’s recommended expenditure profile.

Table 76. Seqwater proposed opex \$million

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Base year (fixed) plus escalation	\$207.8	\$213.9	\$220.2	\$227.4	\$234.7	\$242.2	\$250.0	\$258.0	\$266.3	\$274.9
Step changes	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6
Efficiency	\$0.0	(\$0.3)	(\$0.6)	(\$0.9)	(\$1.2)	(\$1.6)	(\$1.9)	(\$2.3)	(\$2.8)	(\$3.2)
Total fixed opex costs	\$210.4	\$216.3	\$222.3	\$229.1	\$236.1	\$243.3	\$250.6	\$258.3	\$266.2	\$274.3
Total variable opex costs	\$38.6	\$40.8	\$43.5	\$45.8	\$50.5	\$55.4	\$60.8	\$65.9	\$71.3	\$75.6
Total opex costs	\$249.1	\$257.1	\$265.8	\$274.9	\$286.6	\$298.7	\$311.4	\$324.2	\$337.5	\$350.0
Offset costs	(\$3.6)	(\$3.7)	(\$3.8)	(\$3.9)	(\$4.0)	(\$4.1)	(\$4.3)	(\$4.4)	(\$4.6)	(\$4.7)
<b>Seqwater proposed opex (excl. offsets)</b>	<b>\$245.5</b>	<b>\$253.4</b>	<b>\$262.0</b>	<b>\$271.0</b>	<b>\$282.6</b>	<b>\$294.6</b>	<b>\$307.1</b>	<b>\$319.7</b>	<b>\$332.9</b>	<b>\$345.3</b>

## 8.1 Summary findings

### 8.1.1 Original assessment

The following table outlines KPMG’s original assessment of Seqwater’s proposal and our original recommendations that KPMG made for QCA to consider in its draft decision.

Table 77. KPMG recommended opex \$million

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Base year (fixed) plus escalation	\$207.4	\$212.9	\$218.8	\$225.6	\$232.5	\$239.5	\$246.7	\$254.3	\$262.2	\$270.4
Step changes	\$1.1	\$1.1	\$1.9	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8
Efficiency	\$0.0	(\$2.2)	(\$4.5)	(\$6.9)	(\$9.5)	(\$12.3)	(\$15.1)	(\$18.2)	(\$21.5)	(\$24.9)
Total fixed opex costs	\$208.5	\$211.8	\$216.2	\$219.4	\$223.8	\$228.0	\$232.3	\$236.9	\$241.5	\$246.2
Total variable opex costs	\$37.5	\$38.4	\$39.9	\$41.4	\$45.0	\$47.9	\$51.2	\$54.7	\$58.2	\$61.6
Total opex costs	\$246.0	\$250.2	\$256.0	\$260.8	\$268.8	\$275.9	\$283.6	\$291.6	\$299.6	\$307.8
Offset costs	(\$3.6)	(\$3.7)	(\$3.8)	(\$3.9)	(\$4.0)	(\$4.1)	(\$4.2)	(\$4.4)	(\$4.5)	(\$4.7)
<b>KPMG recommended opex (excl. revenue offsets)</b>	<b>\$242.5</b>	<b>\$246.6</b>	<b>\$252.3</b>	<b>\$256.9</b>	<b>\$264.8</b>	<b>\$271.8</b>	<b>\$279.3</b>	<b>\$287.2</b>	<b>\$295.1</b>	<b>\$303.2</b>

### 8.1.2 Revised assessment

The following table and graph outline KPMG’s revised assessment of Seqwater’s proposal and our original recommendations after consideration of Seqwater’s response to QCA’s draft decision. KPMG

revised assessment differs slightly from its original in that KPMG has made a distinction between efficiency gains for variable and fixed opex.

Table 78. KPMG revised recommended opex \$million

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Base year (fixed) plus escalation	208.57	214.28	220.17	227.00	234.01	240.98	248.23	255.87	263.74	272.00
Step changes	1.10	1.10	1.86	0.76	0.76	1.57	1.60	1.62	1.65	1.68
Efficiency (fixed)	0.00	-0.37	-0.75	-1.16	-1.60	-2.06	-2.54	-3.06	-3.60	-4.18
Total fixed opex costs	209.67	215.01	221.28	226.60	233.18	240.50	247.29	254.43	261.79	269.50
Variable (escalated)	37.46	38.41	39.85	41.34	44.94	47.88	51.14	54.61	58.05	61.51
<b>Efficiency (variable)</b>	-0.27	-0.55	-0.84	-1.15	-1.48	-1.82	-2.18	-2.56	-2.96	-3.38
Total variable opex costs	37.19	37.86	39.01	40.18	43.46	46.06	48.96	52.04	55.09	58.13
Total opex costs	246.87	252.87	260.29	266.79	276.64	286.55	296.25	306.48	316.88	327.63
Offset costs	-3.56	-3.65	-3.76	-3.87	-3.99	-4.11	-4.24	-4.37	-4.50	-4.65
<b>KPMG recommended opex (excl. revenue offsets)</b>	243.31	249.22	256.53	262.91	272.64	282.44	292.01	302.11	312.37	322.98

Figure 48. Difference between Seqwater proposed revised net opex and KPMG recommended net Opex

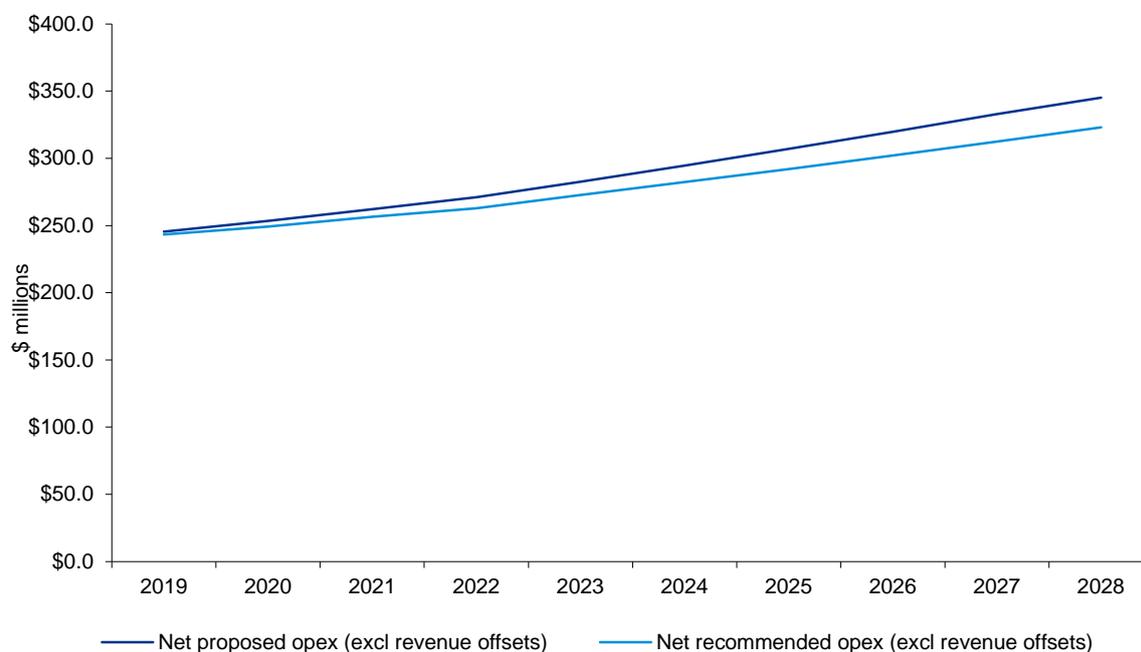


Table 79. Difference between proposed expenditure and KPMG recommendations

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Original KMG recommendation</b>										
Annual difference	\$3.1	\$6.8	\$9.8	\$14.1	\$17.8	\$22.8	\$27.8	\$32.6	\$37.8	\$42.1
<b>NPV of difference</b>	<b>\$142.5</b>									
<b>Revised KMG recommendation</b>										
Annual difference	\$2.20	\$4.18	\$5.50	\$8.12	\$9.97	\$12.13	\$15.11	\$17.63	\$20.54	\$22.28
<b>NPV of difference</b>	<b>\$78.55</b>									

Note: NPV calculations based on a 6% discount rate

## 8.2 KPMG's analytical approach

Seqwater has developed its operating and maintenance expenditure forecasts for the regulatory period 2018-19 to 2027-28 based on the adoption of a base, trend and step approach. The adoption of this approach dictates the structure that we have developed for our analytical approach to the review of these forecasts.

Base, trend and step approaches have three main elements (the base, the trends and the steps). Our analytical approach has four main components accounting for each of these elements, including:

- 1 A review of the preceding pricing determination** –KPMG commenced its assessment by first reviewing the Authority's past bulk water price investigations with particular reference to the last operating expenditure review undertaken by CH2M Hill. The purpose of this review was to identify any issues or actions recommended by CH2M Hill and the Authority, which Seqwater have subsequently sought to address over the course of the current regulatory period.
- 2 A review of the robustness of the base year (2018-19) for both fixed and variable opex** – KPMG sought to verify that the baseline operating expenditure reflects efficient controllable costs and has appropriate adjustments for non-recurring expenditure and efficiency savings. In doing so, KPMG has assessed the proposed base year against historical opex, reviewing the proposed inclusions and exclusions and assessing the underlying expenditure for potential non recurrent expenditure.
- 3 A review of the robustness of the proposed trends** – KPMG's review has sought to provide an independent assessment of the basis for the operating expenditure roll-forward calculations and how key assumptions have been used to determine future operating expenditure requirements. This element of the review addresses the:
  - o operating expenditure input price inflation forecasts;
  - o forecast volume growth;
  - o assumed efficiency improvements; and
  - o internal consistency of proposed operating expenditure with the capital program.
- 4 A review of the proposed step changes** – finally, KPMG considered the proposed expenditure associated with major new initiatives or variations that change the operating expenditure trend.

## 8.3 Seqwater Bulk Water Price Investigation 2015-18

Seqwater's operating expenditure forecasts were last reviewed as part of the Seqwater Bulk Water Price Investigation 2015-18. The Authority engaged CH2M Hill to undertake the independent review of operating expenditure (CH2M Hill 2015). The expenditure review by CH2M Hill adopted a bottom-up approach. This approach identified different streams of activity within Seqwater and then heavily sampled each stream for expenditures and streams of expenditures that are then subject to an assessment based primarily on benchmarking and unit rate analysis.

CH2M HILL identified significant opportunities for efficiency when comparing actual operational expenditure with Seqwater's proposed forecasts. There were three main factors contributing to the inefficiency:

- A lack of substantiation of large cost movements (generally increases) from actual costs to the forecasts, especially when considering the demand data made available;
- A lack of transparency in the cost code transition from actual to forecast figures, with the resulting potential for double-counting of costs; and
- The perpetuation of short-term or one-off expenditures from the 2013-14 year into the annual forecasts.

CH2M Hill found limited justification was provided for cost movements of many of the reviewed operational expenditure items, based on the information provided by Seqwater. To satisfy efficiency review requirements, the proposed investment movements need to be well linked to defined business drivers (both performance and demand) and proven by evidence to be cost effective.

CH2M Hill found that, in many cases, these requirements were not met. Cost code movements that could not be effectively explained (as opposed to justified) were generally the result of forecasted cost codes rolling-up a number of actual cost items. Seqwater clarified which cost codes were rolled-up, but CH2M HILL found that some of these were also carried through in the forecasts. A number of the cost adjustments recommended by CH2M HILL were to eliminate resultant double counting of expenditures.

## 8.4 Seqwater's forecasting approach

As noted above, Seqwater have adopted a base, trend and step approach to the development of its proposed operating expenditure forecast.

Base, trend and step approaches are the most common approach to forecasting operating expenditure for regulatory purposes. Such approaches have been used by businesses and accepted by regulators across most Australian jurisdictions, including NSW water businesses and IPART, Victorian water businesses and the ESC, Taswater and OTTER, along with regulators of other sectors such as energy network businesses and the AER (see Table 80).

Table 80. Regulatory precedent of Base, trend and step approaches

Price Review	Regulator	State
Water price review 2018	Essential Services Commission of Victoria	VIC
ActewAGL 2015	Australian Energy Regulator	ACT
Ergon Energy 2015	Australian Energy Regulator	QLD
Hunter Water 2016	Independent Pricing and Regulatory Tribunal	NSW
TasWater 2019	Office of the Tasmanian Economic Regulator	TAS

This approach establishes an efficient base year, rolls forward the efficient base operating expenditure to take account of a combination of scale growth, input price growth and efficiency improvements and includes adjustments for material step changes to costs. Step changes could, for example, flow from new regulatory obligations.

While Seqwater has adopted a base, trend and step approach, its approach differs from that typically applied in a number of significant aspects:

- Typically, the base year will be either the last year of actual data or a summation of the last couple of years of actual data. Seqwater have chosen to base the base year on two years of detailed bottom-up budgeted data (2017-18 and 2018-19).
- The model accounts for growth escalation over the regulatory period through variable operating expenditure.

Along with the adoption of a base, trend and step approach, Seqwater has made a clear distinction between forecasts of fixed operating expenditure and variable operating expenditure. Variable costs are defined as those that vary with the level of service provided whereas fixed costs are those that do not.

These difference between the Seqwater’s base, trend and step approach and the typical approach are discussed in more detail within the following sections.

## 8.5 Base year

### 8.5.1 Fixed opex: approach

The base year is intended to be a normalised year of efficient operating expenditure. It is typically based on either the last preceding year of actual expenditures or actual efficient costs incurred over the last couple of years. These actual costs are typically adjusted as follows:

- The removal of any one-off or non-recurring expenditure items incurred in that year, or the addition of any normally occurring items that did not occur in that year;<sup>41</sup>

<sup>41</sup> Normally occurring items that have not been included are different from the step changes discussed later in the chapter. These items are simply expenditures that would normally be accounted for but, for some reason, are excluded from that particular year. Such expenditures may range from small to large. Steps as defined in the report relate to materially large expenditures associated with significant changes in Seqwater’s operating environment (such things as new obligations or new large scale capacity being brought on line).

- The removal of any further ongoing cost savings or efficiency commitments that will be realised in the final year of the current regulatory period (2017-18).

Seqwater has taken a different approach. Its base year (2018-19) is based on two years of bottom-up budget forecasts (2017-18 and 2018-19). The budget utilised a zero based budgeting process that required all budgeted expenditure to be justified and supported by evidence, such as contractual arrangements, efficiency programs, baseline operating scenarios and trends in actual expenditure for the preceding two years.<sup>42</sup>

KPMG’s expectation is that the zero based budgeting process will account for the removal on non-recurring expenditures and the inclusion of unaccounted items deemed to normally occur. It should also account for the removal of any efficiency requirements realised in the last year of the current regulatory period.

In practice, we have found that the adoption of a base year developed over two budgeted years of forecasts makes it extremely difficult to verify that the appropriate base year adjustments have occurred. The budget process is an internal process, not one that has been developed with transparency to third parties as a primary objective. Identifying non-recurring and recurring costs has therefore been problematic and could only be achieved in an indirect manner (see discussion in Section 8.5.2).

We recommend that at the next price review, Seqwater adopt a base year that is based on the last preceding year of actual expenditures. This approach would provide for greater simplicity and a higher degree of transparency.

Seqwater’s proposed opex including the base year expenditure is outlined in Table 81.

Table 81. Seqwater’s proposed base year operating expenditure (\$million)

\$ million	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Revenue offsets	(\$14.9)	(\$15.3)	(\$15.6)	(\$16.0)	(\$16.6)	(\$17.3)	(\$17.7)	(\$18.1)	(\$18.6)	(\$19.0)
Base year (fixed) plus escalation	\$207.8	\$213.9	\$220.2	\$227.4	\$234.7	\$242.2	\$250.0	\$258.0	\$266.3	\$274.9
Step changes	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6	\$2.6
Efficiency	\$0.0	(\$0.3)	(\$0.6)	(\$0.9)	(\$1.2)	(\$1.6)	(\$1.9)	(\$2.3)	(\$2.8)	(\$3.2)
Total fixed opex costs	\$210.4	\$216.3	\$222.3	\$229.1	\$236.1	\$243.3	\$250.6	\$258.3	\$266.2	\$274.3
Total variable opex costs	\$38.6	\$40.8	\$43.5	\$45.8	\$50.5	\$55.4	\$60.8	\$65.9	\$71.3	\$75.6
Total opex costs	\$249.1	\$257.1	\$265.8	\$274.9	\$286.6	\$298.7	\$311.4	\$324.2	\$337.5	\$350.0
Offset costs	(\$3.6)	(\$3.7)	(\$3.8)	(\$3.9)	(\$4.0)	(\$4.1)	(\$4.3)	(\$4.4)	(\$4.6)	(\$4.7)
<b>Seqwater proposed opex (excl. offsets)</b>	<b>\$245.5</b>	<b>\$253.4</b>	<b>\$262.0</b>	<b>\$271.0</b>	<b>\$282.6</b>	<b>\$294.6</b>	<b>\$307.1</b>	<b>\$319.7</b>	<b>\$332.9</b>	<b>\$345.3</b>

Another difference with Seqwater’s approach is that it does not remove non-controllable expenditure from the base year. Seqwater have estimated the annual efficiency or productivity gains that result through its efficiency target separately by applying the efficiency rates to controllable opex separate from the base year calculations and then accounted for the dollar value of the efficiencies in the roll forward of the baseline expenditure.

<sup>42</sup> Seqwater 2017-18 Budget Guidelines RFI 57

## 8.5.2 Fixed Opex: Assessing the validity of the base year

One of the core activities in this review is an assessment of the appropriateness of the base year for extrapolation. Ideally, the base year should represent a normalised year of prudent and efficient expenditure that is representative of the base or underlying expenditures that will be incurred over the regulatory period.

The degree to which the base year is normalised is discussed in Section 8.5.3.

In the absence of activity based costing, it is difficult to make definitive statements regarding the efficiency of the expenditure in the base year. In order to make a judgment on efficiency, we have adopted an approach that considers efficiency from multiple aspects. We have assessed the base year relative:

- To historical levels of actual operating expenditure. Decreasing trends in expenditure are consistent with the contention that Seqwater is transitioning towards the frontier in terms of efficiency and that, given growth in volumes, has most likely remained efficient since the CH2Hill review (assuming no material changes in operating environment).
- To the operating expenditure approved by the QCA in the current revenue requirement: During the previous review, CH2Hill conducted a highly detailed bottom-up assessment of expenditure. This implies that the current revenue requirement is based on what would be considered the best assessment of efficient expenditure possible at the time the review was undertaken.
- In terms of per volume measures, to other comparable water utilities. Such benchmarking will give some indication of how Seqwater operates relative to its peers and will help inform our assessment. We note that care needs to be taken when interpreting the results of benchmarking. There are many factors that can influence costs that are geographically specific or specific to the utility and its individual obligations, and for this reason, we have exercised care in the interpretation of our benchmarking.
- To the typical approach. Finally, we have taken the last year of actual expenditure, 2015-16, and extrapolated this forward to the base year 2018-19 using the approach developed by Seqwater. This approach is similar to the Base Step Trend approaches adopted in other jurisdictions and gives us a point of comparison. As with benchmarking, we have interpreted the results of this analysis with care.

## 8.5.3 Comparisons with historical opex

The first step in considering the base year is to compare the proposed expenditure (adjusted for inclusions and exclusions) against historical trends in operating expenditure. The expectation is that the base year will be largely consistent with historical operating expenditure, assuming that Seqwater is operating in a fairly steady state environment.

Seqwater's proposed fixed opex for 2018-19 is compared in the following graphs with opex from 2015-16. Based on figure 51, opex appears to be relatively stable with an increase in 2017-18 due primarily to employee expenses and an increase in contractor service delivery costs (see Table 82).

Figure 49. Total fixed opex (net of cost offset)

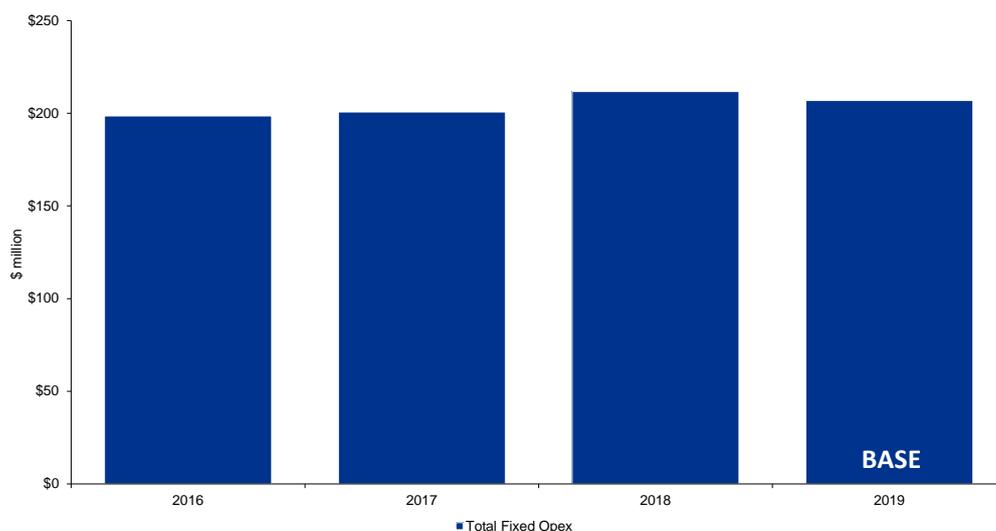


Table 82. Total fixed opex (net of cost offset, \$ million)

Opex categories	2016	2017	2018	2019 (Base Year)
Employee Expenses	\$81.2	\$87.5	\$91.8	\$94.0
Contract Labour	\$3.0	\$2.2	\$1.3	\$1.2
Other Materials and Services	\$47.6	\$47.1	\$48.2	\$39.0
Insurance	-	-	-	\$5.0
Contractors (Service Delivery)	\$60.2	\$58.0	\$64.4	\$67.5
Chemicals	\$0.5	\$0.6	\$0.4	\$0.4
Electricity	\$6.0	\$5.4	\$5.5	\$5.6
<b>Total gross fixed opex</b>	<b>\$198.5</b>	<b>\$200.8</b>	<b>\$211.6</b>	<b>\$207.8</b>

Source: Sewqwater regulatory finance model

We have also examined opex for the base year 2018-19 relative to historical opex on a unit basis for total volume of bulk water (i.e. opex per ML). This analysis allows us to account for the impact of growth on opex over time (see figure below). To complete this analysis, we first reviewed the historical fixed opex taking into consideration the actual demand for the period as shown in Figure 50. We compared actual fixed opex per ML of actual volumes to the forecasted fixed opex per ML of forecasted volume (as approved by the QCA). For the first two years of the regulatory period (2015-16 and 2016-17), we note the fixed opex was below that approved by the QCA. However, in 2017-18 fixed opex per ML is above the approved per ML rate.

This observed increase in the per ML rate of fixed opex is driven by an unanticipated contraction in actual demand in 2017-18 of approximately 10 per cent.

Fixed opex is by definition non-responsive (in the short run) to changes in volumes (or demand). Demand itself is exogenous to Seqwater and is largely outside of its control. In order to provide meaningful comparisons of efficiency in relation to fixed opex, we should account for uncontrollable changes in volume or demand. For comparison purposes, we have reviewed the historical opex and approved opex on a per ML basis based on a common volume denominator. We adopted QCA's forecast volumes and applied them across both the actual fixed opex and the approved fixed opex.

Equally, we could have adopted actual volumes as a common denominator across both approved and actual fixed opex. If we had done so, the results would have led to similar outcomes.

Figure 50. Fixed gross opex per unit (actual ML bulk water) historical and base year

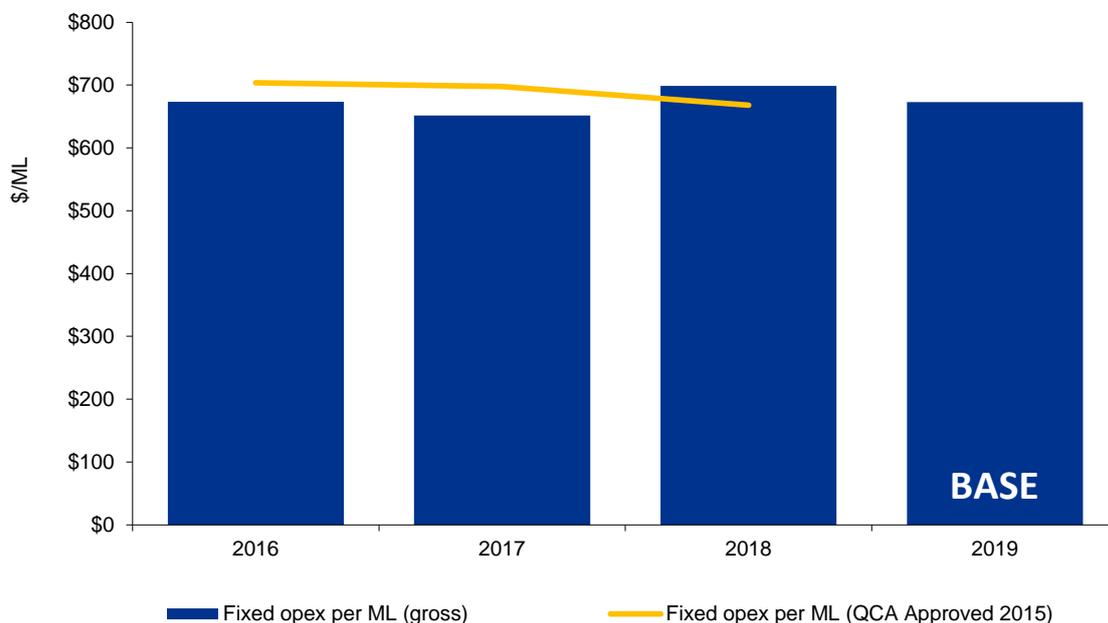


Figure 51. Fixed gross opex per unit (QCA approved ML bulk water) historical and base year

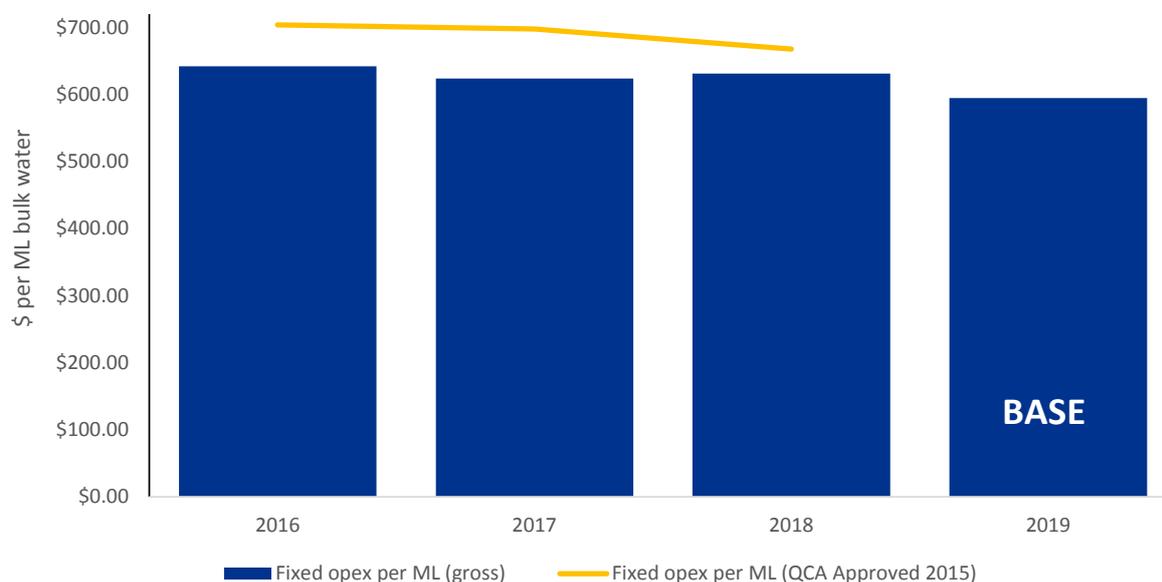


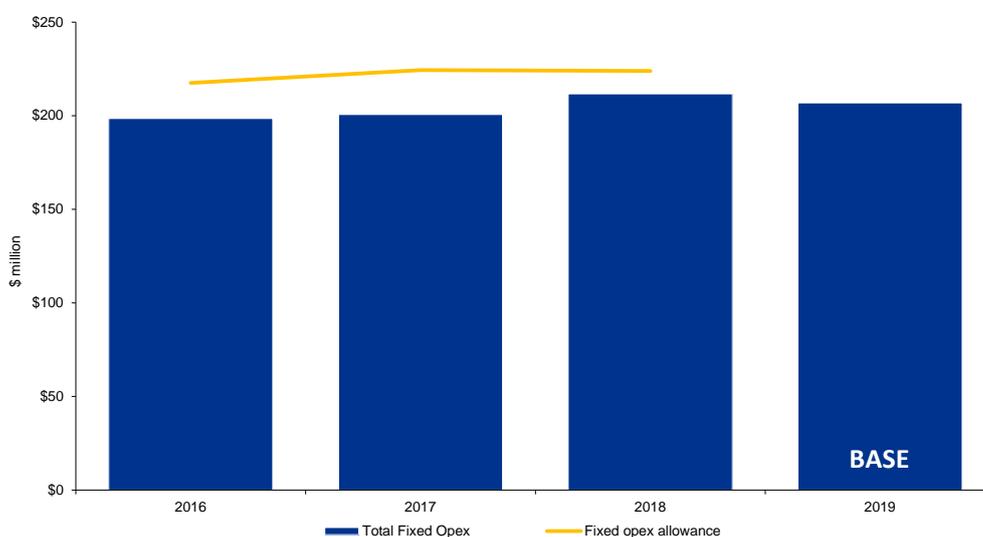
Figure 50 reports the outcomes of comparisons based on a common volume denominator. It is readily apparent from the figure that once the decline in 2017-18 demand is accounted for, actual opex per ML is lower than that of each year of QCA approved expenditures. Given that demand is largely outside of Seqwater’s control, we do not believe that per ML cost comparisons of fixed opex indicate gross inefficiencies in the base year fixed opex.

Despite an increase in 2017-18, it is evident on a per ML basis that fixed opex per ML in the base year is relatively stable when compared to the previous three years. Further, fixed opex per ML in the base year is projected to be slightly lower than the fixed opex per ML projected for 2017-18. This decline in fixed opex is consistent with Seqwater’s contention that it has achieved economies of scale and scope over the course of the current regulatory period.

## 8.5.4 Comparisons with opex allowance

The second step in considering the base year is to compare it against the opex allowance approved by QCA in the current revenue requirement. Actual expenditure and for 2015-16 and 2016-17 is lower than that approved and allowed for by QCA in the previous decision. The two budgeted years of 2017-18 and 2018-19 are also lower than the level of operating expenditure approved by the QCA in the previous price determination.

Figure 52. Total fixed opex (net of cost offset)



The figure shows the relative difference between actual opex and that recommended by the Authority as efficient for the last regulatory period. Recommended opex is represented in the figure by the orange trend line. As can be observed, for each year of the current regulatory period, Seqwater has been able to deliver services at a level materially lower than that approved as efficient in the previous price investigation. The delivery of services at costs lower than those independently reviewed by CH2HILL and recommended by the Authority is consistent with the contention that the opex comprised within the base year is efficient.

## 8.5.5 Comparisons with other utilities

Drawing useful comparisons in relation to efficiency or productivity with comparable utilities is problematic and requires access to adequate data. Detailed frontier based statistical analysis is outside the scope of our current review of Seqwater’s expenditure, however there is value in comparing Seqwater’s operating expenditure per unit of output against those levels experienced by other water utilities.

The cost per ML of water supplied by Seqwater as implied by its proposed base year is outlined in the table below. We also note that these comparisons are by necessity based on total opex as the National Performance Report does not distinguish between fixed and variable opex.

Table 83. Total opex per ML Seqwater

Financial Year	2015-16	2016-17	2017-18	2018-19 (Base Year)
\$ per ML	\$814.4	\$810.3	\$782.5	\$769.4

Source: BOM National Performance Report 2015-16

The degree to which such analysis can inform our decision is heavily qualified and is dictated by the quality of the available data. We have sourced public data from the National Performance Report 2015-16: urban water utilities published by the Bureau of Meteorology. In making comparisons, we are aware that individual utilities are engaged in a number of activities and provide a number of services that differ from those provided by Seqwater. These utilities may also differ in their size and network's density along with the nature or composition of their customer base and the regulatory environments in which they operate. Nevertheless, broad comparisons across a multitude of utilities provides a broader context to Seqwater's proposal.

The following table outlines the opex per ML of water delivered by bulk water utilities.

Table 84. Opex per ML of water delivered, bulk water utilities

\$ per ML	2012-13	2013-14	2014-15	2015-16
Gladstone Area Water Board	-	\$1,041.9	\$969.2	\$866.8
Goldenfields Bulk Water Supply	\$341.9	\$333.5	\$330.9	\$327.6
Melbourne Water	\$1,334.1	\$1,892.3	\$1,824.1	\$1,618.3
Rous Water	\$1,161.0	\$1,140.7	\$1,135.1	\$1,117.1

Source: BOM National Performance Report 2015-16

Note Opex per ML is calculated as 'operating cost – water' divided by 'volume of bulk water exports ML'.

Compared to the bulk water utilities that are included in the National Performance Report, Seqwater is broadly consistent with the Gladstone Area Water Board while being material less than Melbourne Water and Rous Water.

In relation to large water utilities (see following table), with the exception of Hunter Water, Seqwater's opex per ML is materially lower than most large utilities. This difference is most likely attributable to the additional levels of activity and service undertaken by these utilities (such as the provision of retail services and potentially higher levels of treatment). On balance, there does not appear to be any evidence of inefficiency in the Seqwater proposal.

Table 85. Opex per ML of water delivered, large water utilities

\$ per ML	2012-13	2013-14	2014-15	2015-16
Barwon Water	\$1,363.9	\$1,529.2	\$1,472.6	\$2,308.8
City West Water	\$2,010.7	\$2,787.9	\$2,474.3	\$2,520.7
Gold Coast City Council	\$2,778.1	\$2,875.8	\$3,146.8	\$3,036.1
Hunter Water Corporation	\$764.5	\$706.6	\$872.4	\$779.7
ICON Water	\$1,275.6	\$1,097.1	\$1,037.2	\$1,405.8
Logan City Council	\$4,149.1	\$4,079.1	\$4,193.2	\$4,027.9
Queensland Urban Utilities	\$2,954.5	\$3,223.2	\$3,334.7	\$3,370.2
SA Water - Corporation	\$0.0	\$1,491.3	\$1,398.0	\$1,449.4
South East Water Ltd	\$1,943.6	\$3,051.8	\$2,508.4	\$2,661.3
Sydney Water Corporation	\$1,454.2	\$1,410.7	\$1,388.5	\$1,407.7
Tasmanian Water and Sewerage Corporation	\$0.0	\$0.0	\$1,550.6	\$1,698.1
Unitywater	\$2,799.5	\$3,059.3	\$3,270.9	\$3,354.9
Water Corporation - Perth	\$1,109.9	\$1,143.3	\$1,172.0	\$1,173.0
Yarra Valley Water	\$1,932.6	\$2,869.7	\$0.0	\$2,725.0

Source: BOM National Performance Report 2015-16

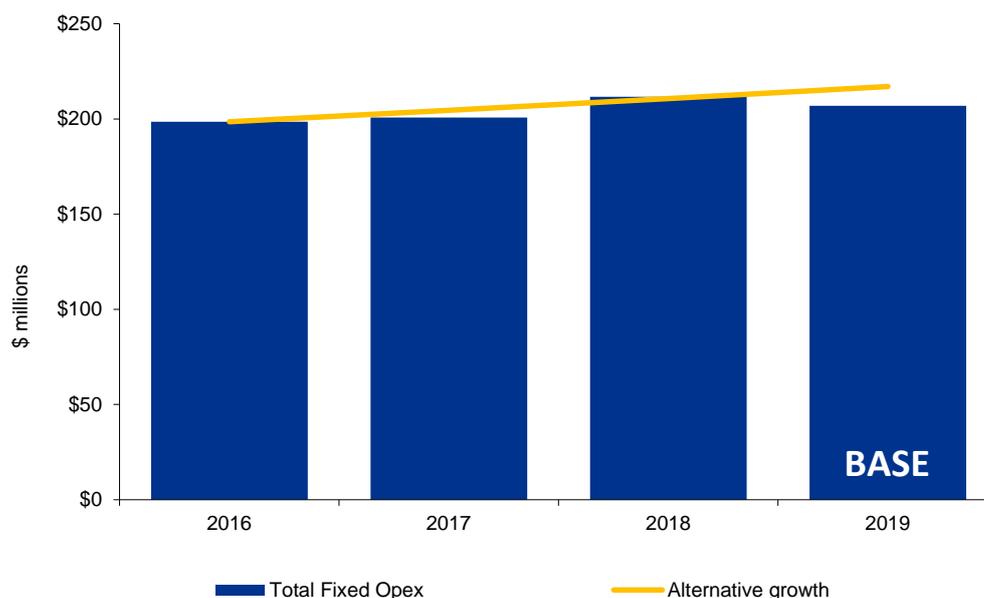
Note Opex per ML is calculated as 'operating cost – water' divided by 'volume of water supplied' – across all user groups.

## 8.5.6 Comparisons with alternative approaches to establish a base year

The final comparison of the base year for fixed opex that we made was to assess the budgeted base year of 2018-19 against what would typically be construed to be the base year under a base step and trend approach, in this case the last year of actual expenditure data for 2015-16. We note that we were not able to account for non-recurrent expenditures in the 2015-16 year, however the analysis provides for a useful point of comparison. KPMG took the final year of actual expenditure data and escalated it to 2018-19 based on extrapolating the first year of the escalation factors proposed by Seqwater back to 2015-16.

The comparison indicates that the Seqwater's proposed base year is lower than it would have been had it been based on the last year of actual expenditure (\$236.9 million). This analysis is indicative only and must be treated carefully as we cannot verify the extent of non-recurrent expenditure in the last year of actuals (although we note that total expenditure is lower in 2015-16 than in subsequent years). We also note that the growth trends proposed by Seqwater were not developed to extend back to 2015-16 and reflect Seqwater's expectations from 2018-19 onwards. Based on these observations and subject to our review of inclusions and exclusions, KPMG recommends QCA accept Seqwater's proposed base year.

Figure 53. Total fixed opex (net of cost offset)



## 8.5.7 Addition of further inclusions and exclusions

In Section 8.10.2, we review the step changes proposed by Seqwater to apply to the base line expenditure over the course of the regulatory period. In our analysis, we identify a number of proposed steps that we consider to not be consistent with nature of step change as typically defined within a base trend and step approach to opex forecasting. These expenditures are either non-material in nature or do not relate to new obligations. Under a base trend and step approach, these expenditures should be considered as either exclusions or inclusions to the base year. Accordingly, we have recommended that an additional \$0.2 million be added to the base year. This amount represents an annualised expenditure stream that provides Seqwater with an NPV equivalent to that of the relevant proposed steps. This additional inclusion, when combined with further exclusions identified in Section 8.5.8 of approximately \$0.5 million, result in a base year lower than that proposed by Seqwater and is therefore one that meets the efficiency measures identified in the above analysis (base year lower than historical opex, base year lower than previously allowed opex, and a cost per ML comparable to other utilities).

## 8.5.8 Fixed opex adjustments to baseline inclusions and exclusions

The second aspect of the base year that we need to review is the degree to which it represents what would be considered a normative year. The core activity in ensuring that the year is normative is providing the Authority with advice as to whether the year does or does not include the right activity base and in particular:

- Excludes expenditures that are non-recurrent in nature; and
- Includes expenditures that, while not currently being incurred, are reasonable to expect over the course of the regulatory period and are recurrent in nature.

This entails both a review of the inclusions and exclusions proposed by Seqwater (assessing the validity of those proposals) and a review of the remaining asset base (assessing the comprehensiveness of

the proposal). The first component of this review is relatively straight forward and involves an assessment by KPMG of the nature of each proposed inclusion or exclusion in terms of the likelihood of its recurrence.

Seqwater’s budgeted approach to setting the base year is much less transparent than the typical practice of normalising a year of actual cost data. Another complicating factor is the manner in which Seqwater has characterised expenditure. Rather than adopting an activity based costing framework, Seqwater have characterised cost according to service and to cost type (e.g. salaries and wages, property expenses, consultants and consultancies). This classification of costs makes it extremely difficult to account for activities that are considered to be non-recurrent or recurrent in nature which in turn makes it difficult to verify Seqwater’s proposed inclusions and exclusions. Seqwater’s proposed inclusions and exclusions are outlined in Table 86.

We recommend that in future price reviews Seqwater develop an activities based costing framework.

Table 86. Proposed inclusions and exclusions from the base year

Expenditure driver	Base Year (2018-19 \$ million)
Base year expenditure 2018-19	\$212.3
Inclusions (add)	\$0
Exclusions (less)	(\$4.5)
<b>Total</b>	<b>\$207.8</b>

Source: Seqwater RFI 93

Seqwater have proposed to exclude 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. Seqwater have elected to remove this expenditure due to the uncertainty of the associated project being undertaken.

On the basis of the data provided, Seqwater’s proposed exclusion is appropriate given that it relates to a project that Seqwater holds to be subject to uncertainty.

## 8.5.9 Fixed opex: Assessment of the base year for non-recurrent expenditure

Ideally, a review of the base year opex to account for the comprehensiveness of the proposed inclusions and exclusions relies on the reviewer being able to directly identify the activities associated with the expenditure. Through interviews with Seqwater staff, KPMG understand activity based expenditure data is not available. Instead, the most detailed data available is based on input costs for each of the Authority’s categorized functions. This data does not identify individual activities but rather the costs associated with inputs, such as labour and power, for a core number of functions including Corporate Finance, General Counsel, WSSP, and Operations.

While the available data does not allow us to directly identify activities, it does allow us to identify material changes in input costs associated with the core functions and thus indirectly identify changes in the scale, scope or nature of activities. These material changes in cost can only result from a small number of circumstances:

- Changes in the costs of inputs (e.g. increases in labour rates or bulk prices for electricity and chemicals);

- The restructuring of existing activities between different core functions (e.g. reallocating activities from one function to another); and
- The cessation of existing activities or the implementation of new activities.

Material changes in input costs due to movement in the prices for inputs should be observable across all functions utilising that input. For example, broad based unit increases in the price for labour should affect both operations and corporate finance costs.

As a result, KPMG has adopted the following process in its review of non-recurrent expenditure:

- Reviewed the group summaries of each of the Authority’s functional categories to identify outlier costs — that is, identify instances where costs exhibit significant changes from one year to the next or from actuals to forecasts; and
- Consulted with Seqwater to determine the driver for cost changes, including:
  - Increased input prices;
  - Restructuring of activities across functions; and
  - Cessation of existing activities or inclusion of new activities.

The cessation of existing activities or inclusion of new activities relates directly to the issue of proper base year inclusions and exclusions. Any such identified activities were separately reviewed by us for either inclusion or exclusion.

KPMG’s review considered every individual expenditure stream included by Seqwater in its estimation of the base year. The review covered two years of actual costs for 2015-16 and 2016-17 and two years of budget costs for 2017-18 (budget for the current year) and 2018-19 (budget based on an escalation of the current year), where 2018-19 constitutes the base year.

KPMG reviewed the expenditure for potential costs relating to both inclusions and exclusions. KPMG’s identification of potential costs relating to exclusions was premised on observable recurrent actual expenditure that was discontinued in the budget years or observable material step decreases in expenditure in the budget years (see following tables) Querying these expenditures with Seqwater allowed us to identify potential exclusions that have not been accounted for in the proposed base year.

Table 87. Potential inclusions identified by KPMG in the budgeted base year \$000s

Operations group	Sub group	2016-17 Q3 Forecast	2017-18 Budget	2015-16 Actual	2018-19 Budget
<b>Employer Contribution - Accumulation Schemes</b>	Superannuation	(2,335)	(4,376)	(1,528)	(4,519)
<b>Contractor - General Mtce</b>	Operations and Maintenance	(2,774)	(5,653)	(904)	(5,693)
<b>Contractor - Process Improvement</b>	Operations and Maintenance	(51)	(136)	0	(133)
<b>WTP Residuals Disposal - Landfill (Fixed)</b>	Operations and Maintenance	0	(50)	0	(51)
<b>MP-Control System Mtce Svces</b>	Operations and Maintenance	(326)	(803)	(489)	(823)
<b>Wood Group Timesheet Costing</b>	Woodgroup Contract	(6,215)	(9,508)	0	(9,746)
<b>Wood Group Lump Sum Services</b>	Woodgroup Contract	(869)	(633)	0	(649)
<b>Carbon Dioxide</b>	Chemicals	(441)	(816)	(530)	(884)
<b>Vacancy Rate</b>	Salaries and Wages	0	78	0	79
<b>Training – Professional Development</b>	Training / Professional Development	(4)	(80)	(3)	(82)
<b>Insurance - Other</b>	Insurance	(1,817)	(4,500)	(2,021)	(4,613)
<b>Other Allowances</b>	Allowances	(80)	(487)	(97)	(487)
<b>Employer Contribution - Accumulation Schemes</b>	Superannuation	(435)	(922)	(177)	(948)
<b>Uniforms</b>	Uniforms	(200)	(280)	(121)	(615)
<b>FLT-Diesel Fuel</b>	Operations and Maintenance	(485)	(566)	(381)	(722)
<b>FLT-Fleet Repair &amp; Mtce</b>	Operations and Maintenance	(444)	(536)	(478)	(712)
<b>EBA Savings Efficiencies</b>	Internal Charges	0	1,946	0	1,994
<b>Vacancy Rate</b>	Salaries and Wages	0	964	0	968
<b>Employer Contribution - Accumulation Schemes</b>	Superannuation	(745)	(2,044)	(175)	(2,114)
<b>Contractor - General Mtce</b>	Operations and Maintenance	(7)	(89)	(17)	0
<b>Consultants - Engineering Scientific</b>	Consultants and Contractors	(4,845)	(8,417)	(4,075)	(7,732)
<b>Consultants - Communication</b>	Consultants and Contractors	(2)	0	0	0
<b>Vacancy Rate</b>	Salaries and Wages	0	137	0	138
<b>Employer Contribution - Accumulation Schemes</b>	Superannuation	(404)	(716)	(252)	(722)
<b>Memberships and Subscriptions</b>	Administrative Expenses	(50)	(170)	(0)	(174)

Operations group	Sub group	2016-17 Q3 Forecast	2017-18 Budget	2015-16 Actual	2018-19 Budget
<b>Personal Leave</b>	Leave Entitlements	(182)	(247)	(121)	(241)
<b>Employer Contribution - Accumulation Schemes</b>	Superannuation	(439)	(818)	(301)	(798)
<b>Room Hire - Training</b>	Training / Professional Development	(1)	(101)	(1)	(1)
<b>Training – Professional Development</b>	Training / Professional Development	(11)	(400)	(1)	0
<b>VET</b>	Training / Professional Development	(2)	(400)	(4)	(410)
<b>Safety</b>	Operations and Maintenance	(256)	(428)	(198)	(476)
<b>Contractor - Civil Construction</b>	Operations and Maintenance	0	(350)	0	0
<b>Public Comms/ Mktg &amp; PR</b>	Administrative Expenses	(259)	(828)	(39)	(281)
<b>Marketing and Advertising</b>	Administrative Expenses	(32)	(674)	(112)	(106)

Source: Seqwater

Table 88. Potential exclusions identified by KPMG in the budgeted base year \$000s

Operations group	Sub group	2015-16 Actual	2016-17 Q3 Forecast	2017-18 Budget	2018-19 Budget
<b>Time Off In Lieu</b>	Leave Entitlements	(821)	(475)	0	0
<b>Employer Contribution - Sal Sac - Accumulation Schemes</b>	Superannuation	(1,994)	(1,532)	0	0
<b>Employer Contribution - Defined Benefit Schemes</b>	Superannuation	(128)	(83)	0	0
<b>Employer Contribution - Sal Sac - Defined Benefit Schemes</b>	Superannuation	(217)	(145)	0	0
<b>Training</b>	Training / Professional Development	(91)	(41)	0	0
<b>Materials and Consumables</b>	Operations and Maintenance	(1,050)	(988)	(69)	(71)
<b>Minor Material &amp; Consumables</b>	Operations and Maintenance	(2,269)	(2,052)	(843)	(865)
<b>Contractor - Electrical Mtce</b>	Operations and Maintenance	(710)	(724)	(5)	(5)
<b>Contractor - Mechanical Mtce</b>	Operations and Maintenance	(722)	(616)	(15)	(15)

Operations group	Sub group	2015-16 Actual	2016-17 Q3 Forecast	2017-18 Budget	2018-19 Budget
<b>Contractor - Plumbing &amp; Drain</b>	Operations and Maintenance	(151)	(111)	(10)	(10)
<b>MP-Electrical Mtce Svces</b>	Operations and Maintenance	(1,651)	(651)	(3)	(3)
<b>MP-Instrument Mtce Svces</b>	Operations and Maintenance	(206)	(121)	(7)	(7)
<b>MP-Mechanical Mtce Svces</b>	Operations and Maintenance	(2,446)	(1,118)	(78)	(80)
<b>MP-Pipeline Mtce Svces</b>	Operations and Maintenance	(135)	(173)	(7)	(7)
<b>Energy Emission Expenses (Fixed)</b>	Property Expenses	(454)	(563)	0	0
<b>Contractor - Other</b>	Consultants and Contractors	(219)	0	0	0
<b>Consultancy - Dam Safety Moni</b>	Consultants and Contractors	(203)	16	0	0
<b>Consultancy - Others</b>	Consultants and Contractors	(667)	(4)	0	0
<b>Consultancy - Engineering</b>	Consultants and Contractors	(368)	10	0	0
<b>Consultancy - Process Improvement</b>	Consultants and Contractors	(10)	0	0	0
<b>Contractors</b>	Consultants and Contractors	(9,075)	(601)	0	0
<b>Professional Services Contract</b>	Consultants and Contractors	(27)	(79)	0	0
<b>Labour Hire (Agency) FTE</b>	Consultants and Contractors	(73)	(101)	0	0
<b>Labour Hire (Apprenticeship) Non FTE</b>	Consultants and Contractors	(169)	(430)	0	0
<b>WTP Residuals Disposal - Landfill (Variable)</b>	Residuals Disposal Costs	(318)	(174)	(20)	(21)
<b>Other Allowances</b>	Allowances	(62)	(63)	0	0
<b>Employer Contribution - Sal Sac - Defined Benefit Schemes</b>	Superannuation	(60)	(39)	0	0
<b>Consultancy - Others</b>	Consultants and Contractors	(61)	(50)	0	0
<b>Insurance - Industrial Special</b>	Insurance	(2,609)	(2,000)	0	0
<b>Insurance - Public Liability</b>	Insurance	(244)	(264)	0	0
<b>Insurance - Directors &amp; Offcra</b>	Insurance	(292)	(377)	0	0
<b>Time Off In Lieu</b>	Leave Entitlements	(94)	(103)	0	0
<b>Employer Contribution - Sal Sac - Accumulation Schemes</b>	Superannuation	(465)	(299)	0	0
<b>Consultants - Strategic</b>	Consultants and Contractors	(148)	(43)	0	0
<b>Contractors</b>	Consultants and Contractors	(257)	(71)	0	0

Operations group	Sub group	2015-16 Actual	2016-17 Q3 Forecast	2017-18 Budget	2018-19 Budget
<b>Professional Services Contract</b>	Consultants and Contractors	(246)	(30)	0	0
<b>Labour Hire (Agency) FTE</b>	Consultants and Contractors	(178)	(289)	0	0
<b>PA-Other PA Equipment</b>	Portable Equipment	(398)	(194)	0	0
<b>Salaries and Wages - Awards</b>	Salaries and Wages	(962)	(879)	(569)	(589)
<b>Employment Termination / Redundancy Payments</b>	Employment Termination / Redundancy Payments	0	(219)	0	0
<b>Consultancy - Others</b>	Training / Professional Development	(75)	(36)	0	0
<b>Consultants - Strategic</b>	Consultants and Contractors	(199)	0	0	0
<b>Consultants - Engineering Scientific</b>	Consultants and Contractors	(70)	(201)	0	0
<b>Consultants - Communication</b>	Consultants and Contractors	(96)	(108)	0	0
<b>Professional Services Contract</b>	Consultants and Contractors	(533)	11	0	0
<b>Marketing and Advertising</b>	Consultants and Contractors	(538)	(650)	0	0
<b>Overtime Expenses</b>	Administrative Expenses	(906)	(732)	0	0
<b>Time Off In Lieu</b>	Salaries and Wages	(72)	(89)	0	0
<b>Other Allowances</b>	Leave Entitlements	(392)	(286)	0	0
<b>Employer Contribution - Sal Sac - Accumulation Schemes</b>	Allowances	(223)	(231)	0	0
<b>Repairs &amp; Maintenance</b>	Superannuation	(1,337)	(1,027)	0	0
<b>Contractor - Civil Maintenance</b>	Operations and Maintenance	(253)	(26)	0	0
<b>Contractor - Civil Construction</b>	Operations and Maintenance	(55)	0	0	0
<b>Contractor - Electrical Mtce</b>	Operations and Maintenance	(621)	(90)	0	0
<b>Contractor - Mechanical Mtce</b>	Operations and Maintenance	(361)	(1)	0	0
<b>Contractor - Mowing &amp; Slashing</b>	Operations and Maintenance	(68)	(2)	0	0
<b>MP-Specialised Mtce Svces</b>	Operations and Maintenance	0	(23)	0	0
<b>CP-Fencing Services</b>	Operations and Maintenance	(85)	(19)	0	0
<b>CP-Vegetation Mgmt Svces</b>	Operations and Maintenance	(3)	(11)	0	0
<b>Consultancy - Water Quality</b>	Operations and Maintenance	(43)	(35)	0	0

Operations group	Sub group	2015-16 Actual	2016-17 Q3 Forecast	2017-18 Budget	2018-19 Budget
<b>Consultancy - Engineering</b>	Consultants and Contractors	(107)	0	0	0
<b>Consultancy – Process Improvement</b>	Consultants and Contractors	(584)	(552)	0	0
<b>Consultancy – Natural Assets</b>	Consultants and Contractors	(64)	(60)	0	0
<b>Consultancy – Asset Management Planning</b>	Consultants and Contractors	(57)	0	0	0
<b>Consultancy - Project Management</b>	Consultants and Contractors	55	(8)	0	0
<b>Contract Labour - Non FTE</b>	Consultants and Contractors	(242)	(11)	0	0
<b>Contractor - Environ Serv - Restoration</b>	Consultants and Contractors	(64)	0	0	0
<b>Contractors</b>	Consultants and Contractors	(239)	0	0	0
<b>Professional Services Contract</b>	Consultants and Contractors	(741)	(196)	0	0
<b>Labour Hire (Agency) FTE</b>	Consultants and Contractors	(1,540)	(2,123)	0	0
<b>Labour Hire (Agency) Non FTE</b>	Consultants and Contractors	(163)	(197)	0	0
<b>Licences and Permits</b>	Consultants and Contractors	(2,006)	(876)	(230)	(236)
<b>Time Off In Lieu</b>	Licences and Permits	(190)	(8)	0	0
<b>Other Allowances</b>	Leave Entitlements	(97)	(49)	0	0
<b>Employer Contribution - Sal Sac - Accumulation Schemes</b>	Allowances	(117)	(93)	0	0
<b>Consultants - Governance Compliance</b>	Superannuation	(280)	(176)	0	0
<b>Contractors</b>	Consultants and Contractors	0	(68)	0	0
<b>Professional Services Contract</b>	Consultants and Contractors	(14)	(31)	0	0
<b>Labour Hire (Agency) FTE</b>	Consultants and Contractors	(487)	(119)	0	0
<b>Grants Expense</b>	Consultants and Contractors	(46)	(74)	0	0
<b>Time Off In Lieu</b>	Grants Subsidies and Partnerships	(255)	(50)	0	0
<b>Employment Termination / Redundancy Payments</b>	Leave Entitlements	(180)	(103)	0	0
<b>Leadership: Connect to Learn</b>	Employment Termination / Redundancy Payments	(42)	(130)	0	0
<b>Training - Internal</b>	Training / Professional Development	(289)	(289)	(60)	(62)

Operations group	Sub group	2015-16 Actual	2016-17 Q3 Forecast	2017-18 Budget	2018-19 Budget
<b>Prop - Repairs &amp; Maintenance</b>	Training / Professional Development	(272)	(89)	0	0
<b>Contractors</b>	Property Expenses	0	545	0	0
<b>Professional Services Contract</b>	Consultants and Contractors	(125)	(57)	0	0
<b>Labour Hire (Agency) FTE</b>	Consultants and Contractors	(292)	(198)	0	0

Source: Seqwater

Conversely, KPMG’s identification of potential costs relating to inclusions was premised on the identification of new costs in the budget years that were not preceded by the incursion of actual costs over the preceding 2015-16 to 2016-2017 period. The analysis also included identifying material step increases in expenditure into the budget years. Querying these expenditures with Seqwater allowed us to both confirm the validity of the proposed inclusions and potentially identify inclusions that are non-recurrent in nature and should therefore be removed from the base year.

KPMG’s review identified 86 expenditure streams constituting \$23 million that potentially related to exclusions. Through consultation with Seqwater on each of these expenditure streams, we were able to identify that the majority of these expenditures related to valid exclusions and that a small number of the expenditures related to changes in budgeting accounting.

KPMG’s review identified 33 expenditure streams constituting \$41 million that potentially related to inclusions. Through consultation with Seqwater on each of these expenditure streams, we were able to identify that as with exclusions, the majority of these expenditures were related to valid inclusions or changes in budgeting accounting. However, there were a small number of expenditures that either Seqwater indicated should be removed from the base year or alternatively, KPMG did not believe that the feedback provided by Seqwater justified their inclusion. These expenditures are listed in Table 89. KPMG did not make any adjustments to account for additional inclusions.

Another consequence of Seqwater’s cost characterisations is that we were unable to account for non-regulated services in the base year. QCA have indicated that there is a cost allocation framework for declared irrigation services and services provided to high priority water entitlement holders in declared irrigation schemes. The allocation is mainly on the basis of the share of water access entitlements. For other non-bulk water supply services, the referral notice contemplates a revenue offset approach.

Table 89. Additional identification of non-recurrent expenditure for exclusions (\$2018)

Expenditure item	Discussion	Base Year Adjustment (\$)
Training professional development (code 515341)	Seqwater advised that diversity training costs (Initiative to cover three years), actual costs for 2016-17 held in CEO office. This is proposed to be ending by 30 June 2019 and not treated as recurring.  Given its non-recurrent nature, KPMG is recommending the expense be excluded from the base year.	(\$82,000)
Other allowances (code 511108)	Seqwater advised that the expenditure previously related to an 'Ipswich Relocation Allowance' which expired in March 2017.  Given the uncertainty associated with the expenditure and in the absence of any further information from Seqwater, KPMG is recommending that the expenditure be excluded from the base year.	(\$487,000)
<b>Total Adjustment</b>		<b>(\$569,000)</b>

Table 90. KPMG recommendation: base year additional inclusions and exclusions (\$2018)

Expenditure driver	Base Year (2018-19 \$ million)
Seqwater proposed base year	\$207.8
Additional exclusions identified by KPMG	(\$0.6)
<b>KPMG proposed base year (additional exclusions)</b>	<b>\$207.2</b>

Note: This base year valuation does not include the steps that we identified as inclusions in section 8.10.

## 8.6 Fixed opex adjustments for offsetting costs

There are a number of non-bulk water costs that are also accounted for in the base year. These expenditures relate primarily to irrigation cost offsets. In the base year, they total approximately \$3.6 million (based on the data provided in the financial template). These proposed cost offsets are consistent with historic actuals as reported by Seqwater (see Table 91).

QCA have indicated that under the terms of the referral notice, it must assess whether the cost allocation approach adopted by Seqwater is the same as the cost allocation approach it recommended in the 2013 irrigation price review. QCA have requested information from Seqwater to confirm that this is the case. Seqwater has provided information which confirms an irrigation cost offset of \$3.4 million in 2016-17 and a cost offset for HP water entitlement holders of \$0.2 million in 2016-17.

Table 91. Offsetting costs (\$million nominal)

Offsetting costs	2016	2017	2018	2019
<b>Non-bulk water costs</b>	\$3.4	\$3.3	\$3.3	\$3.6

Note: Seqwater Submission part B and Seqwater regulatory finance model

Table 92. Summary of KPMG recommended base year (\$millions)

Expenditure driver	Base Year (2018-19 \$ million)
Seqwater proposal base year	\$207.8
KPMG base year adjusted for inclusions and exclusions	\$207.2
Offsetting costs	-\$3.6
<b>KPMG recommended base year</b>	<b>\$203.7</b>

Note: Seqwater's proposed base year is determined using data from RFI 93 and the regulatory financial templates

## 8.7 Variable Opex: assessing the validity of the base year

Seqwater have proposed three categories of variable opex over the course of the regulatory period: chemicals, electricity and sludge (in the accompanying regulatory finance model sludge is referred to as "other materials and serviced"). Seqwater's proposed variable opex forecast is outlined below.

After taking account of inflation, the proposed increase in opex for the period 2017-18 to 2020-21 is approximately 14 per cent while over the remainder of the regulatory period (2020-21 to 2027-28) the increase in variable costs in real terms is 46.5 per cent.

Table 93. Seqwater's proposed variable opex \$ million

Variable Opex	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Chemicals	\$15.0	\$15.6	\$16.2	\$16.9	\$18.0	\$19.3	\$20.6	\$22.0	\$23.4	\$24.4
Electricity	\$21.2	\$22.6	\$24.6	\$26.1	\$29.3	\$32.8	\$36.5	\$40.0	\$43.8	\$47.0
Sludge	\$2.3	\$2.4	\$2.5	\$2.7	\$2.9	\$3.1	\$3.4	\$3.6	\$3.8	\$4.0
<b>Total</b>	<b>\$38.4</b>	<b>\$40.6</b>	<b>\$43.3</b>	<b>\$45.6</b>	<b>\$50.2</b>	<b>\$55.2</b>	<b>\$60.5</b>	<b>\$65.6</b>	<b>\$71.0</b>	<b>\$75.4</b>

Seqwater's variable costs are based on a bottoms up base year budget of costs for 2018-19. These costs in total are lower than those approved by the QCA for the current regulatory period.

Total production per asset and input costs (chemicals, electricity and other) per asset are used to generate per asset unit costs. These costs are then utilised to generate forward cost estimates for each year of the regulatory period using the demand forecasts discussed in Section 6 of this report.

For those assets such as dosing stations and pump stations that are focused primarily on throughput and not output, per unit cost is based on the total cost per asset over the total level of production.

KPMG acknowledges that this approach adopted by Seqwater would lower per unit cost relative to any alternative based on an allocation of flows to specific assets. By adopting this approach, Seqwater is effectively absorbing the risk associated with error rather than passing it on to its customers.

KPMG also notes that the allocation of predominately chemical costs to dosing stations and the allocation of predominately electricity costs to pumping stations is consistent with KPMG's expectations of cost given the nature of the assets and the activities they undertake.

### 8.7.1 Comparisons with historical costs

Historical actual costs are compared with forecasts in the following figures. The base year variable costs for chemicals is higher than historical costs. However, this increase appears consistent with an observable trend in actual opex over the period 2014-15 to 2016-17. Similarly, the base year variable costs for electricity is higher than historical costs, consistent with an observable trend in actual opex over the period 2014-15 to 2016-17.

Variable cost data for the base year 2018-19 for sludge (other materials and services) is greater than actual data for 2015-16 and 2016-17, but is lower than expenditure in 2014-15.

Figure 54. Variable costs total

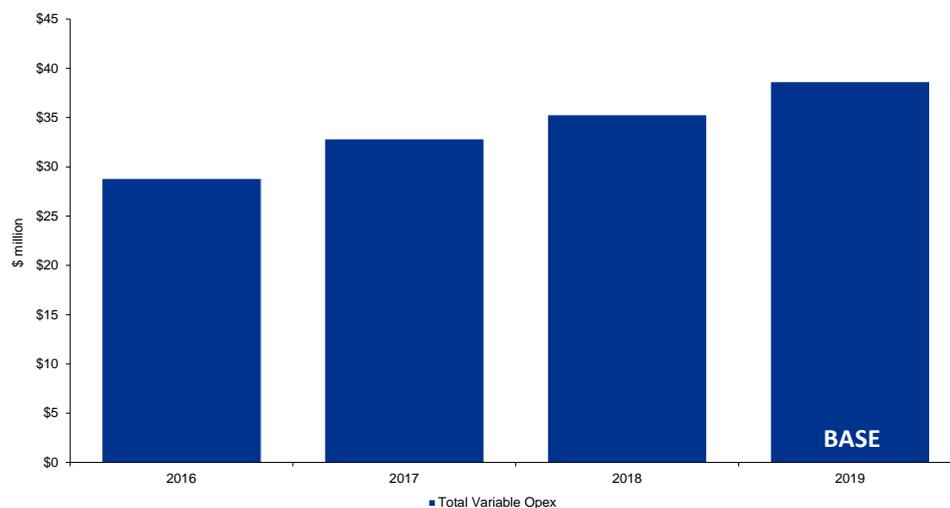


Figure 55. Variable costs chemicals

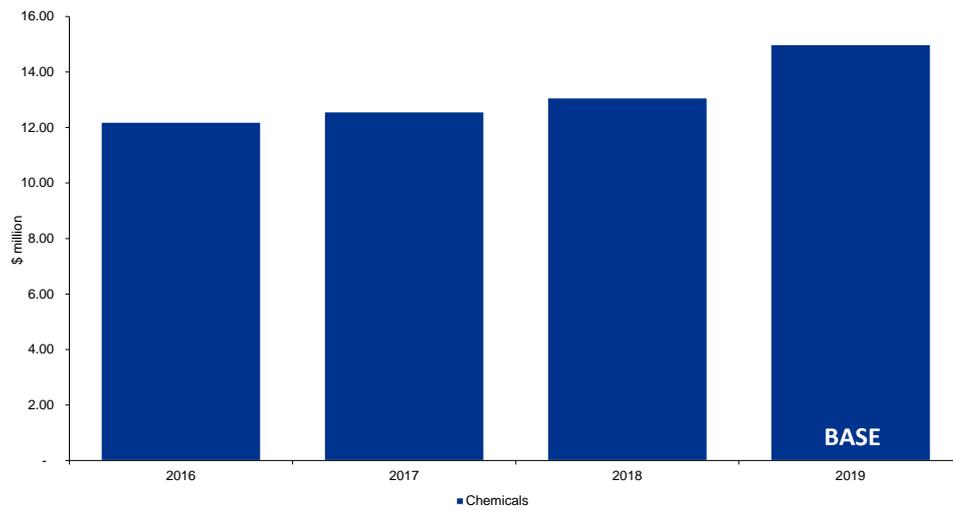


Figure 56. Variable costs energy

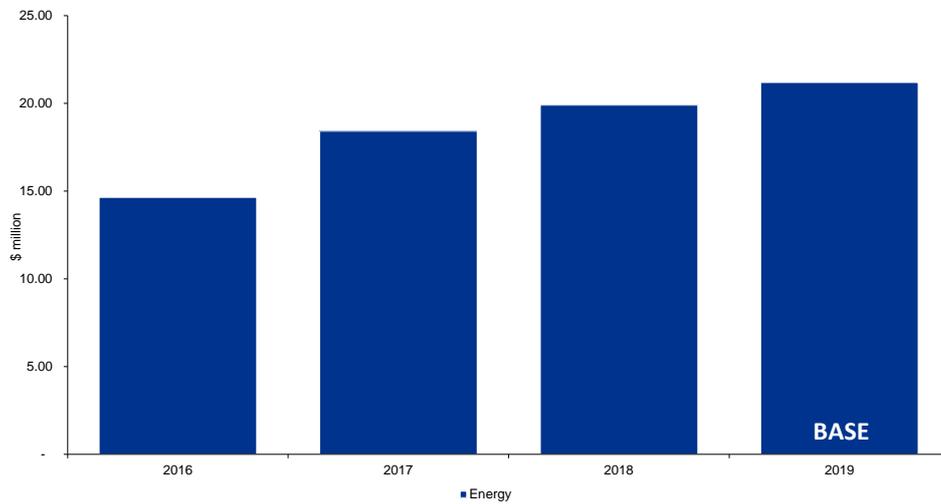


Figure 57. Variable costs sludge (other materials and services)

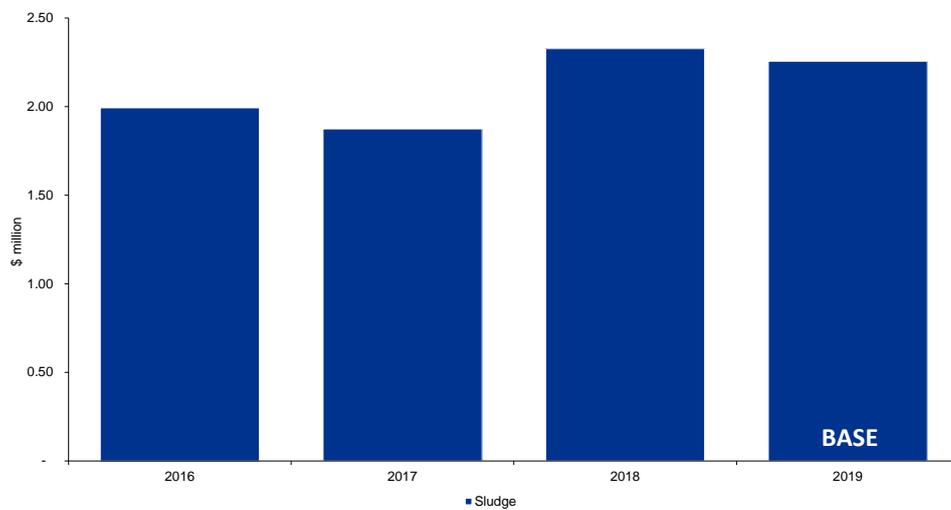
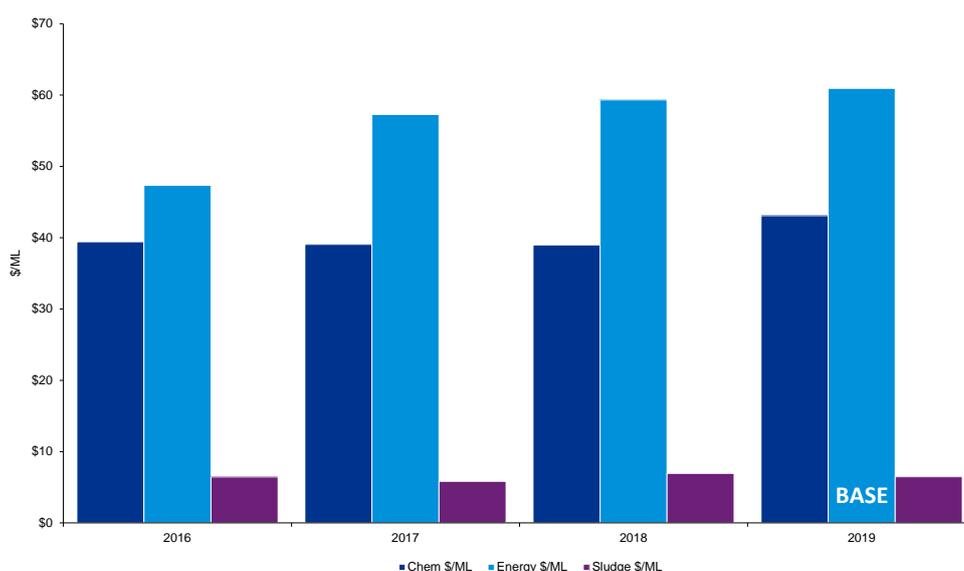


Figure 58. Variable gross opex per unit (ML bulk water) historical and base year



We have also examined variable opex for the base year 2018-19 relative to historical opex on a unit basis for each category of variable opex (i.e. chemical opex per ML). This analysis allows us to account for the impact of growth on variable opex over time (see chart below). Chemical and sludge costs per ML appear to be relatively stable over the period in terms of actuals and are consistent with the base year. Actual energy costs per ML appear to have been increasing over the period. This trend appears to have been extended into the base year.

Table 94. Total variable opex per ML Seqwater

	2015-16	2016-17	2017-18	2018-19 (Base Year)
\$ Total variable per ML	\$93.2	\$102.2	\$105.3	\$110.5

Source: Seqwater regulatory finance model

In total variable cost terms, there is an observable trend of a slight per annum increase over the period which is extended into the base year (see table above).

## 8.7.2 Comparisons with allowed costs

In relation to the expenditure recommended by the Authority as prudent and efficient in the previous price investigation, Seqwater has been able to deliver services and achieve significant efficiencies on both chemicals and sludge approved expenditure. In relation to power, Seqwater achieved significant efficiencies over 2014-15 to 2015-16 but converged on the approved level of expenditure towards the latter half of the current regulatory period.

Figure 59. Variable opex base year and allowed

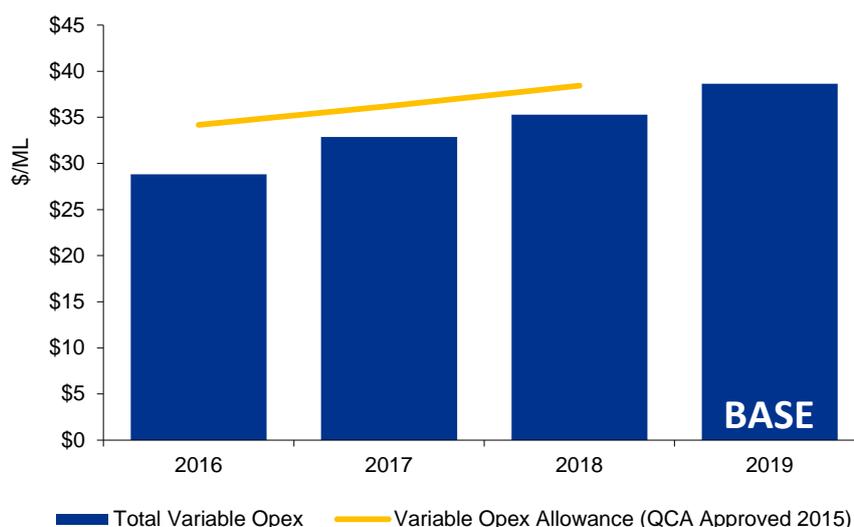


Table 95. Seqwater's variable opex performance over the current regulatory period \$ million

Variable opex	2015	2016	2017	2018
<b>Total opex recommended by QCA</b>	\$32.1	\$34.2	\$36.2	\$38.4
<b>Actual opex</b>	\$28.0	\$28.8	\$32.9	\$35.3
<b>Efficiency achieved</b>	13%	16%	9%	8%

The table above sets out total opex approved by QCA against actual opex incurred over the current regulatory period by Seqwater. As can be observed in the table, Seqwater generated material efficiencies in opex for each year in the current regulatory period. The proposed base year 2018-19 of \$38.6 million is broadly consistent with the total approved for 2017-18 of \$38.4 million.

## 8.8 Variable opex: Inclusions and exclusions in the base year

The only stated inclusion by Seqwater relates to a contingency of \$1.2 million per annum to account for variation in the feedwater quality. The contingency addresses 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 powdered activated carbon (PAC).

This contingency does not relate to major events (such as cyclones or floods). The expenditure associated with major events is addressed through mid-period or end of period adjustments.

Managing the risk associated with events such as these is a core activity for Seqwater. We have not had sufficient information to assess the validity of the contingency for this report. We note that prudence and efficiency will be largely determined by the probability of events occurring and the associated cost impacts of such events. In order to determine prudence and efficiency Seqwater would need to provide:

- The number of each type of event anticipated over the course of the regulatory period and their frequency; and
- The anticipated cost of each type of event.

In the absence of this information, we have not been able to assess the efficiency of the proposed expenditure and we have recommended that the \$1.2 million per annum inclusion in variable costs be excluded.

If Seqwater believe that the contingency fund is a valid inclusion under the QCA's regulatory framework, it should respond either to this report or the QCA's draft decision with further information regarding the probability of events occurring and the associated nature of events and their cost impact. Included in this information should be sufficient historical data of actual events to allow KPMG or QCA to inform its assessment of the probability of future events.

## 8.8.1 Original Assessment – Base Year

In its original assessment, KPMG recommended a base year of \$242.4 million (total opex). KPMG also assessed a number of proposed step changes and recommended that it would be more appropriate, under a Base Step Trend approach, to treat the proposed changes as inclusions in the base year. The amendment to the base year for these changes was \$1.13 million. Inclusions in the base year differ from step changes in a number of ways. Inclusions are recurrent in nature and are expected to be incurred either over the full extent of the regulatory period. The base year represents all efficient opex typically incurred in the provision of services and, as such, typically relate to current obligations, these include expenditures that are relatively immaterial. Step expenditures are typically large expenditures related to new obligations and they occur during the regulatory period (making it inappropriate to extrapolate them over the full regulatory period).

In response to QCA's draft decision, Seqwater has provided information regarding a number of inclusions in the base year that KPMG had originally recommended be excluded from the base. KPMG's review of this information and its subsequent recommendations are discussed in detail in the following sections. The impact that these additional inclusions have on the base year of Seqwater's Base Step Trend forecast are outlined in the following table.

Table 96. Seqwater proposed base year inclusions \$ million

Recommended inclusion	Base Year
Tech development and deployment	0.31
Correction of specified capex	0.54
Omitted opex	0.28
Total additional inclusions	1.13
Adjusted base year (total = fixed plus variable)	243.5

## 8.8.2 Revised assessment – Base year

KPMG has reconsidered the base year it recommended in its initial review in light of the additional inclusions and recommends that QCA accept the amended base year on the basis of:

- Comparisons with the costs approved by QCA for the last year of the current regulatory period 2017-18 of total opex \$262.3 million (\$223.9 million fixed plus \$38.4 million variable) compared to an amended base year of \$243.5 million. KPMG notes that, unlike the current forecasts based on a Base Step Trend approach, the previous allowance was based on a detailed bottom-up review of each opex activity and expenditure for each year of the regulatory period.
- Comparison with historical actual costs for 2017-18 of \$247.0 million indicates that the amended base year (\$243.5) is consistent, if not slightly lower, than historical spend.
- Additional inclusions all relate to ongoing operating activities and, as such, are recurring in nature.

## 8.9 Trend analysis

The second component of the base-trend-step approach are the trends in input costs and output growth that Seqwater have applied to its extrapolation of the base year opex over the course of the regulatory period.

### 8.9.1 Output Growth

Extrapolating the base year out over the regulatory period requires an adequate accounting of the cost impact of growth in the customer base, in this case growth in the volume of water delivered by Seqwater. It is reasonable to assume that any increase in the consumption of water, and thus the volume of water delivered, will have a material impact on the costs incurred by Seqwater.

Seqwater account for growth exclusively through its forecasting approach to variable costs. They adopt a bottom-up approach at the level of the individual asset to apply volume growth to each sub-stream of variable expenditure. These volumes are discussed in the demand chapter.

In contrast, the approach undertaken in Victoria is to apply one simple growth factor based on the year on year growth rate in total output. The ESC has taken the position that it is reasonable to expect that total opex will trend with growth. That is, the greater the number of customers being serviced, the greater the associated opex used to fund those services will be. The growth escalator is applied to all controllable opex.<sup>43</sup> The ESC also differs in that it approves real expenditures (not nominal) and real prices, prices are then adjusted annually to account for real inflation.

It is worth noting that the ESC's expectation is that changes in input costs (e.g. chemicals and electricity) over the course of the regulatory period will be manageable within the bounds of the growth escalator. ESCOSA in South Australia has taken a similar approach in regard to SA Water.

Under the AER framework, growth is accounted for in a slightly more complicated manner. Output drivers are used to escalate expenditure over the regulatory control period. These drivers are used to account for an increase to the opex program as a result of an increase in the size, or a change to the characteristics of the distribution network. A relatively small number of output drivers are identified for use as scale escalators in the base-step-trend model. Each functional area has been assigned to an output driver (or composite) to escalate expenditure over the regulatory control period. The output drivers provide the gross growth rate. A subsequent allowance for economies of scale is included to calculate the net growth rate.

KPMG has reviewed Seqwater's approach and application in its regulatory finance model and believe the approach is logical, consistent and valid. We have also compared the outcomes of Seqwater's approach with the outcomes of an approach similar to that adopted by the ESC and found that the Seqwater approach is relatively conservative and provides for lower growth outcomes.<sup>44</sup>

Given the logical validity of Seqwater's growth escalation and its relatively conservative outcomes in comparison to other approaches, we recommend that QCA accept Seqwater's approach to growth.

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<sup>43</sup> In practice, the ESC nets the efficiency target off the escalator before its application.

<sup>44</sup> We note that a comparison between Seqwater's approach and the ESC's must be treated with care. The broader context of the ESC's growth factor is that the regulator's base expectation is that businesses will be able to manage their input costs within the bounds of the growth escalation and, as a result, the regulator does not typically allow for separate input escalators.

## 8.9.2 Input cost escalation approach

The approach adopted by Seqwater differs from a typical base trend and step approach in that the business has chosen to develop a relatively large number of input cost escalation factors. These escalation factors have been applied to both the fixed and variable components of the base year.

Seqwater have developed separate input cost escalation factors for seven different opex cost categories ranging from electricity to chemicals and insurance as shown in Table 97. Seqwater categorises its fixed and variable opex into classes consistent with each escalation factor then applies the escalation factor to extrapolate each class of expenditure over the course of the regulatory period.

Table 97. Seqwater's proposed escalation factors

Cost category	Escalation factor
<b>Employee Expenses</b>	<ul style="list-style-type: none"> <li>• Seqwater enterprise agreement 2018-19</li> <li>• Queensland Treasury WPI Forecast for 2019-20 to 2020-21</li> <li>• Long term (15 year) historical growth in the Queensland WPI for the remainder of the regulatory period.</li> </ul>
<b>Contract Labour</b>	<ul style="list-style-type: none"> <li>• Seqwater enterprise agreement 2018-19</li> <li>• Queensland Treasury WPI Forecast for 2019-20 and 2020-21</li> <li>• Long term (15 year) historical growth in the Queensland WPI for the remainder of the regulatory period.</li> </ul>
<b>Other Materials and Services</b>	<ul style="list-style-type: none"> <li>• RBA inflation forecasts to 2018-19, mid-point of RBA inflation target range for the remainder of the regulatory period</li> </ul>
<b>Insurance</b>	<ul style="list-style-type: none"> <li>• Seqwater applied a flat 5% per annum escalation factor</li> </ul>
<b>Contractors (Service Delivery)</b>	<ul style="list-style-type: none"> <li>• Weighted index of the Qld WPI (forecasts and long run growth forecasts) and CPI (RBA inflation forecasts to 2018-19 and mid-point of the RBA inflation target) for remainder of period.</li> <li>• Escalation factor = 0.56(WPI) + 0.44(CPI)</li> </ul>
<b>Chemicals</b>	<ul style="list-style-type: none"> <li>• RBA inflation forecasts to 2018-19, mid-point of RBA inflation target range for the remainder of the regulatory period</li> </ul>
<b>Electricity</b>	<ul style="list-style-type: none"> <li>• Average annual growth rate in AEMO Qld commercial electricity price forecasts between 2020 and 2030 over the regulatory period.</li> <li>• Annual growth in AEMO QLD commercial electricity price for the remainder of the forecast period.</li> </ul>

## 8.9.3 Employee expenses and contract labour

Labour costs are one of the most significant contributors to total operational expenditure proposed by Seqwater. For example, in 2018-19, labour costs comprised 40 per cent of Seqwater's 2017-18 forecast opex. Labour costs include such things as salaries, wages, superannuation, leave, penalty and overtime payments.

Total labour costs are a function of both wage levels and the number of employees (typically measured as full time equivalents (FTEs)). For Seqwater, wage increases for the vast majority of its employees occur subject to enterprise bargaining agreements (EBAs) – the exception is senior employees who are engaged under separate contractual arrangements. Seqwater's current EBA outcomes are outlined in Table 98.

Table 98. Seqwater's EBA wage increases

Element	2016	2017	2018
<b>Annual wage increase</b>	3%	3%	3%

Source: PWC 2017 Cost escalation factors

Seqwater’s proposed employee and contract labour escalation factors are outlined in Table 99. The escalation factor applies to employees and fixed term contractors. Seqwater’s proposed escalator has three distinct components based on timing:

- For the remainder of the current term of Seqwater’s EBA (to 2018-19), Seqwater is proposing escalating employee costs in-line with wage increases stipulated in the EBA (three per cent per annum in nominal terms).
- For 2019-20 and 2020-21, Seqwater is applying the Queensland Treasury forecast of WPI growth (3.0 per cent in both years). This reflects Treasury’s current expectation that while nominal wage growth is expected to pick-up from current levels over coming years, it will not have yet returned to long-term historical trends by the end of the forecast period.
- For the remainder of the period (to 2021-22 to 2027-28), Seqwater proposes to apply the long-term average growth in the Queensland WPI of 3.4 per cent in nominal terms (between 2002 and 2016). This is the more conservative of the two WPI estimates commonly applied in the water sector (the other being the WPI for the national EGWWS sector, which has an average long-term growth rate of 3.9 per cent annually over the same period).

Table 99. Seqwater’s proposed employee and contractor labour escalation rates

Escalation factor	2017	2018	2019	2020	2021	Remaining forecast years to 2028
Inflation	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
Nominal escalation factor	3.0%	3.0%	3.0%	3.0%	3.0%	3.4%
Real escalation factor	1.0%	1.0%	0.5%	0.5%	0.5%	0.9%

Source: PWC 2017 Cost escalation factors.

Note: 2016-17 and 2017-18 represent actual outcomes. CPI forecast produced by the RBA (for years this is available), and beyond this period the mid-point of the RBA’s inflation target (2.5 per cent).

We note the proposed approach is broadly similar to that recommended by the Authority in the previous investigation for 2015-16 to 2017-18. Seqwater escalated labour costs according to the escalation provisions provided for in its Certified Agreement (CA) for the period of the agreement (to June 2016) of 2.5 per cent per year (nominal). For the remainder of the regulatory period (to 2016-17), Seqwater applied the Queensland WPI forecast developed by Queensland Treasury of 3.5 per cent (nominal) annually.

We also note that the WPI growth and long term average WPI growth is consistent with that determined by Authority in its recent review of the Gladstone Area Water Board for 2015-16 to 2019-20. The Authority determined that labour costs be escalated by the Queensland State Budget forecast of WPI growth for three years, and by the 10 year average of the Queensland WPI for the remaining two years of the regulatory period.

The forecasts are also broadly consistent or less than those recently developed by BisShrapnel for Icon Water in its 2017 pricing submission to ICRC (Act). The BisShrapnel forecasts are outlined in the following table.

Table 100. BisShrapnel wages growth forecast

Year	2017	2018	2019	2020	2021	2022	2023
Wage Price Index (collective agreements)	3.1%	3.0%	3.0%	3.0%	3.1%	3.3%	3.5%

Source: BisShrapnel 2017. All Industries Australia (by Workforce segmented by pay setting method). Year average per cent change

An alternative approach to adopting Old WPI forecasts would be to consider the ABS average weekly ordinary time earnings data as a basis for forecasts. However, the Authority in its Aurizon Network 2013-14 to 2016-17 review considered the ABS WPI index to be a better estimate of wage cost inflation because it is designed to measure pure price changes in wages independent of workforce composition factors.

While both the WPI and Average Weekly Ordinary Time Earnings (AWOTE) are measures of the value of labour, they are different. The WPI measures changes in the wages and salaries paid by employers for a unit (i.e. hour) of labour where the quality and quantity of labour are held constant. It has the dual purpose of monitoring wages and salaries inflation in the economy and supporting the compilation of the Australian System of National Accounts. To achieve this, the WPI is designed to produce a measure of pure price change in wages and salaries independent of compositional factors (i.e. the quantity and quality of labour are held constant).

In contrast, an average weekly earnings based series, such as the AWOTE, is designed to provide an accurate estimate of the current average value of wages and salaries paid to employees by an employer over a specified period. The emphasis placed on producing a contemporary measure of average wages and salaries means that the series reflects structural changes that occur over time (such as changes in hours paid for and employment).<sup>45</sup>

Based on regulatory precedent and the use of WPI based indexes, KPMG recommends that Seqwater’s cost escalator for employee expenses and contractors be accepted.

## 8.9.4 Other materials and services

Other materials and services are one of the less significant contributors to total operational expenditure proposed by Seqwater. For example, in 2018-19, such costs comprised 24 per cent of Seqwater’s opex costs. Other materials and services costs include such things as administrative expenses, property related expenses, operations and maintenance costs (not related to external contractors or internal labour), Insurance costs and residuals disposal.

Table 101. Seqwater’s proposed other materials and services escalation rates (%)

Escalation factor	2017	2018	2019	2020	2021	Remaining forecast years to 2028
Inflation	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
Nominal escalation factor	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
Real escalation factor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: PWC 2017 Cost escalation factors.

Note: 2016-17 and 2017-18 represent actual outcomes. CPI forecast produced by the RBA<sup>45</sup> (for years this is available), and beyond this period the mid-point of the RBA’s inflation target (2.5 per cent).

Seqwater has proposed escalation factors that, in practicable terms, equate with CPI (inflation). In doing this, Seqwater has proposed to maintain the value of these expenditures in real terms at a constant level over the course of the regulatory period. We note that the nature of the costs covered by this escalation factor is relatively broad, and we have uncovered no evidence in broad based costs indices to indicate a general decline in real prices over the course of the regulatory period. This approach is equivalent with other regulators such as the ESC that update approved prices and revenues annually to account for CPI adjustments.

We note that forecasts beyond 2018-19 are based on the mid-point of the Reserve Bank of Australia’s (RBA) inflation target. There is an increasing argument that this approach could be too high given that

<sup>45</sup>ABS (2015) feature article: average weekly earnings and wage price index – what do they measure? Last accessed 24/09/2017 <<http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/6302.0main+features9May%202014>>

in recent years inflation has constantly under-shot the target rate. However, to date there has been no regulatory precedent set for the adoption of an alternative forecast.

Based on the appropriate maintenance of the real values of costs over the period, KPMG recommends that Seqwater’s cost escalator for other materials and services be accepted.

## 8.9.5 Insurance

Insurance costs are one of the less significant contributors to total operational expenditure proposed by Seqwater. For example, in 2018-19, such costs comprised two per cent of Seqwater’s total operating costs.

Unlike the other escalation factors, this factor is not discussed in the accompanying PWC *Cost Escalation Factors Final Report* or in *Seqwater Submission Part A and Part B*. This escalator is presented solely in the regulatory financial pricing model.

Table 102. Seqwater’s proposed insurance escalation rates (%)

Escalation factor	2017	2018	2019	2020	2021	Remaining forecast years to 2028
Inflation	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
Nominal escalation factor	2.0%	2.0%	2.5%	5.0%	5.0%	2.5%
Real escalation factor	0.0%	0.0%	0.0%	2.5%	2.5%	2.5%

Source: Seqwater regulatory finance pricing model

Note: 2016-17 and 2017-18 represent actual outcomes. CPI forecast produced by the RBA45 (for years this is available), and beyond this period the mid-point of the RBA’s inflation target (2.5 per cent).

KPMG notes that one of the cost drivers included by Seqwater in its derivation of an escalator for other materials and services is insurance. Given the lack of explanatory documentation, KPMG cannot recommend the Authority accept this escalator. Instead, KPMG recommends the Authority apply the other material and services escalator to the insurance costs identified in the regulatory model.

We are also concerned that it may be inappropriate to pass on the costs of risks to customers. If the costs of insurance are increasing in real terms then there is a question of whether it would be more appropriate for Seqwater (as the entity most able to manage risk) to account for the costs of risk rather than the customer base.

If Seqwater believes that the insurance escalator it proposed is valid then it should respond to this report with sufficient supporting documentation to allow KPMG to verify the escalator. In its response, Seqwater will need to outline how a separate insurance escalator impacts on its calculation of the other material and services escalator. Ideally, insurance related costs should only be included in a single escalator.

Table 103. KPMG’s proposed insurance escalation rates (%)

Escalation factor	2017	2018	2019	2020	2021	Remaining forecast years to 2028
Inflation	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
Nominal escalation factor	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
Real escalation factor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

## 8.9.6 Contractors (service delivery)

Third party service delivery costs are a significant contributor to total operational expenditure proposed by Seqwater. For example, in 2018-19 such costs comprised 23 per cent of Seqwater's total operating expenditure. Seqwater outsources a number of services to third party providers on a contract basis, including collaborative maintenance contracts, standard operations and maintenance service contracts, and consulting services.

Of total contractor (service delivery) costs, approximately three-quarters relate to operations and maintenance contractors, with the remaining cost relating to consulting and general contractors. Seqwater's proposed escalation factor is outlined in Table 104. The escalation factor is based on a weighted average of the WPI (Queensland) and CPI.

Table 104. Seqwater's proposed contractors (service delivery) escalation rates (%)

Escalation factor	2017	2018	2019	2020	2021	Remaining forecast years to 2028
Inflation	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
Nominal escalation factor	2.0%	2.1%	2.5%	2.8%	2.8%	3.0%
Real escalation factor	0.0%	0.1%	0.0%	0.3%	0.3%	0.5%

Source: PWC 2017 Cost escalation factors.

Note: 2016-17 and 2017-18 represent actual outcomes. CPI forecast produced by the RBA45 (for years this is available), and beyond this period the mid-point of the RBA's inflation target (2.5 per cent).

The WPI (Qld) index is intended to cover labour costs, which comprise a significant share of operations and maintenance contract costs (particularly long term operations and maintenance contracts for major assets, and the recently implemented collaborative maintenance contract) and are expected to drive the vast majority of general consulting and contractor costs (of which labour is the major input).

The CPI index is intended to cover general materials or 'other' costs, which represent a range of goods and services associated with service contracts (for example, equipment purchases).

The following assumptions have been applied to allocate contract costs to either the WPI basket or CPI basket:

- For the major service contracts currently in place, Seqwater provided a disaggregation of labour costs and other costs;
- For consulting and contractor costs, Seqwater have assumed that the major cost driver is labour, and allocated all costs to the WPI basket; and
- General operations and maintenance contract costs (which tend to represent shorter-term, smaller-scale contracts) have been allocated CPI basket of costs.

Based on these assumptions, the weights applied to each index to develop the weighted contractor (service delivery) index are: WPI (Queensland) – 56 per cent, and CPI – 44 per cent. The derivation of the escalation factor is outlined in Table 105.

We note that Authority accepted Seqwater's proposed escalator in the previous 2015-16 to 2017-18 price investigation. Seqwater's previous index resulted in higher estimations. Seqwater proposed 3.46 per cent (nominal) for 2013-14 and 2014-15 and 3.38 per cent (nominal) for each year thereafter. The escalator was based on a composite index of Qld WPI forecasts, forecast CPI and the 10 year average of the non-residential building index. Costs were weighted based on assumptions regarding rise and fall provisions in Seqwater contracts.

KPMG believes that PWC's proposed approach for this regulatory period represents an improvement on that previously adopted by Seqwater. The PWC escalator is relatively simpler, logically valid and is

cost reflective. We also note that the PWC escalator appears to generate lower rates than the previous approach.

KPMG recommends the QCA accept Seqwater’s proposed escalation factor for this cost category.

Table 105. Seqwater’s calculation of the contractors (service delivery) escalation rates (%)

Escalation factor	Weight	2017	2018	2019	2020	2021	Remaining forecast years to 2028
CPI	44%	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
WPW	56%	2.0%	2.3%	2.5%	3.0%	3.0%	3.4%
Escalation factor		2.0%	2.1%	2.5%	2.8%	2.8%	3.0%

Source: PWC 2017 Cost escalation factors.

Note: 2016-17 and 2017-18 represent actual outcomes. CPI forecast produced by the RBA45 (for years this is available), and beyond this period the mid-point of the RBA’s inflation target (2.5 per cent). Queensland Treasury forecast of the Queensland WPI43 (for years this is available), and beyond this period applied the long term (15 year) average historical growth rate in the Queensland WPI (as produced by the ABS)

## 8.9.7 Chemicals

Chemical costs are a significant contributor to variable operational expenditure proposed by Seqwater, 39 per cent (2018-19) but a relatively minor cost driver of total opex six per cent (2018-19). Of total chemical costs, approximately 80 per cent are comprised of five chemicals – alum, sodium hypochlorite, lime, activated carbon and carbon dioxide. Seqwater’s proposed escalation factor is outlined in Table 106.

Table 106. Seqwater’s proposed chemicals escalation rates (%)

Escalation factor	2017	2018	2019	2020	2021	Remaining forecast years to 2028
Inflation	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
Nominal escalation factor	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%
Real escalation factor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: PWC 2017 Cost escalation factors.

Note: 2016-17 and 2017-18 represent actual outcomes. CPI forecast produced by the RBA45 (for years this is available), and beyond this period the mid-point of the RBA’s inflation target (2.5 per cent).

Current commentary views the Australian chemical sector as relatively flat (see box below). IBIS’s latest market report assesses chemicals as *unreactive: low demand and weak chemical price have constrained the industry*. This weak market state is forecast to improve slowly.

Figure 60: Chemical sector outlook 2016

### **Chemical sector outlook (IBIS 2016)**

Unreactive: Low demand and weak chemical prices have constrained the industry's performance.

Over the five years through 2016-17, the industry's performance is expected to fluctuate in line with key downstream sectors. External variables, including changes in downstream demand, global chemical price variations and a weaker Australian dollar, have influenced the industry's performance. Industry revenue is projected to contract by 0.5 per cent annualised over the five years through 2016-17, to total \$11.8 billion. This includes an expected 2.3 per cent contraction in the current year due to reduced demand from the Manufacturing and Construction divisions.

Over the next five years, the industry is expected to grow on the back of greater demand from manufacturing, agriculture, mining and construction firms. Industry revenue is forecast to increase by an annualised 1.1 per cent over the five years through 2021-22, to total \$12.5 billion. Year-on-year

growth rates will fluctuate in response to changing conditions in key market segments, including upstream manufacturing industries and downstream markets. Stringent regulatory controls relating to chemical production and use will continue to affect the industry's performance, as will requirements for the sustainable production and consumption of chemicals and chemically derived products.

In addition to a flat market, prices for chemicals appear to be experiencing limited growth (see Table 107 below). The combined index for organic and non-organic chemical shows a slight decline in prices over the period 2011-12 to 2016-17. The current state of the market and recent behaviour in prices do not support any contention that forecasts should exhibit real price increases.

Table 107: Chemicals price index – for organic and inorganic chemical manufacturing outputs (Australia)

Year	2012	2013	2014	2015	2016	2017
Index	100.0	99.4	103.3	104.6	101.2	98.5
% Change		-0.6	3.9	1.3	-3.3	-2.7

Source: IBISWorld Industry Market Research. Industrial, and agricultural chemical product wholesaling. December 2016.

Seqwater's has proposed escalation factors based on CPI (inflation). In doing this, Seqwater has proposed to maintain the value of these expenditures in real terms at a constant level over the course of the regulatory period.

KPMG recommends that Seqwater's cost escalator for chemicals be accepted on the basis that it is consistent with reasonable expectations given recent market activity in chemicals.

## 8.9.8 Electricity

Electricity costs are a minor contributor to total fixed operational expenditure proposed by Seqwater, but account for over half of the variable operating costs. Seqwater has proposed to escalate its electricity costs by the average growth rate in Queensland commercial electricity prices contained in the AEMO National Electricity Forecasting Report between 2020 and 2030 over the regulatory period. For remaining years, it has escalated electricity costs in line with annual estimates contained in the AEMO series. Seqwater's proposed escalation factor is outlined in in the following table.

Seqwater's current retail electricity contract does not stipulate any escalation factors for electricity prices. The contracted component for electricity varies every three months, therefore movements in Seqwater's electricity costs largely reflect movement in the market price for electricity. From KPMG's consultations with Seqwater, we understand that it manages the risk of volatility in prices by engaging in derivatives.

Table 108. Seqwater's proposed electricity escalation rates (%)

Escalation Factor	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Inflation	2.0%	2.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Nominal escalation factor	4.3%	4.3%	4.8%	4.8%	4.8%	6.3%	5.4%	3.9%	4.1%	4.8%	5.2%
Real escalation factor	2.3%	2.3%	2.3%	2.3%	2.3%	3.7%	2.9%	1.3%	1.6%	2.2%	2.6%

Source: PWC 2017 Cost escalation factors.

Note: 2016-17 and 2017-18 represent actual outcomes. CPI forecast produced by the RBA45 (for years this is available), and beyond this period the mid-point of the RBA's inflation target (2.5 per cent).

Seqwater is proposing to apply electricity escalation rates over the 10 year forecast period based on a composite of constant growth over the first three years followed by direct reference to AEMO year on

year forecasts for the remainder of the period. Seqwater have adopted this approach on the assumption that over the immediate period, prices will grow in a continual manner.

In developing its proposal, Seqwater has noted that the QCA has previously accepted electricity cost escalation factors that refer to recent decisions made by the Australian Energy Regulator (AER). In recent reviews for both Gladstone Area Water Board (GAWB) and Seqwater, the QCA revised the proposed electricity escalation factor estimates down to reflect recent decisions by the AER that resulted in downward revisions in relation to network cost growth.

- Seqwater (2015-16 to 2017-18 regulatory period) — The QCA revised figures based on network businesses' submissions to the AER that foreshadow declining costs to 2020
- Gladstone Area Water Board (GAWB) (2015-16 to 2019-20 regulatory period) — The QCA updated the Distribution Use of System (DUOS) component made by Jacobs to reflect the AER's decision on Ergon (2015).

As noted by Seqwater in the PWC escalator factors final report, the ESC in Victoria also relied on recent determinations of the AER in order to estimate network prices over the regulatory period for Melbourne Water.

Seqwater believes that the proposed AEMO real escalation factor (2.27 per cent) should be considered within the context of both the AER determination on the Energex price path and also the AEMC forecasts of residential electricity prices in SEQ. Both the AER and the AEMC forecasts suggest that electricity costs should start to level out, if not decline, over the immediate future.

The AER determination for Energex for the July 2015 to June 2020 period resulted in nominal decreases for the network component of the electricity price over the period. This network component represents approximately 45 per cent of the total price.

*Table 109. AER final decision estimated impact on average bills for Energex's network*

Percentage change	2015	2016	2017	2018	2019	2020
Annual change in residential bill	-1.7%	-1.2%	-1.5%	-1.2%	-1.0%	-1.6%
Annual change in small business bill	-1.7%	-1.2%	-1.5%	-1.2%	-1.0%	-1.9%

*Source AER Final Decision Energex Determination 2015-16 to 2019-20*

The AEMC forecast of residential electricity prices for SEQ from 2016-17 over the next two years to 2018-19 expect a nominal six per cent decrease in 2017-18 (driven by falling transmission prices) followed by a four per cent nominal increase. The AEMC made the following observations:

- Residential electricity market offer prices for the representative consumer in South East Queensland are expected to:
  - Decrease by 6.8 per cent in 2017-18; and
  - Increase by 4.2 per cent in 2018-19.
- This is equivalent to an annual average decrease of 1.5 per cent over the two years.
- The expected increases in residential market offer electricity prices in 2016-17 and 2018-19 are largely attributable to increases in the competitive market component of electricity prices in those years.

- The expected decrease in residential market offer electricity prices in 2017-18 is attributable to expected decreases in the regulated network component and environmental policy component of residential market offer electricity prices.<sup>46</sup>

The QCA published its final determination for Regulated Retail Electricity Prices for 2017-18 in June. QCA noted the primary drivers for change in cost over the course of this year were wholesale energy costs. As set out in its 2017–18 final report for the QCA, ACIL Allen has estimated that wholesale energy costs will increase for all retail tariffs in 2017–18 compared with 2016–17. The increase reflects the projected continuation of the increase in gas prices for gas-fired generation and the continued tightening of the supply–demand balance in the National Electricity Market (NEM) due to:

- Increased demand from in-field gas compression associated with the liquefied natural gas (LNG) export facilities in Queensland;
- The closure of Hazelwood Power Station in 2017 and the continued operation of the Portland aluminium smelter in Victoria; and
- Little new renewable energy capacity entering the market in 2017–18, particularly in Queensland.

In addition to wholesale energy costs, the QCA also acknowledged the cost impact of other energy costs that a retailer incurs when it purchases energy from the NEM, which are:

- Renewable Energy Target (RET) costs;
- NEM participation fees and ancillary services charges; and
- Prudential capital costs.

KPMG acknowledges that it is extremely difficult to estimate long-term trends in electricity prices given current uncertainty in the investment environment.

Overall, AEMO escalation factor is reasonable as an independent metric in the absence of doing separate market modelling. Therefore, AEMO is appropriate escalation for the base year going forward to 2028. However, we are concerned that if the AEMO escalation factor has been used to calculate the base year, this may not capture the decrease in network costs resulting from the AER determinations of Energex and Powerlink. Ideally, the base year should be based on actuals. In response to this report, we request Seqwater clarify the basis upon which the escalator for 2016-17 and 2017-18 has been derived.

Post the current revenue control periods, future trends in transmission, distribution network and wholesale energy costs are subject to multiple and diverse factors which could either increase or decrease charges. For example, DUOS rates are sensitive to movements in the rate of return, the volume and cost of investment and electricity consumption. Past trends are not an appropriate metric to forecast future costs given the current transformation and changes incurring in the electricity sector.

### 8.9.9 Original assessment

While KPMG supports the use of AEMO forecasts for the final seven years of the regulatory period, it does not support the use of a composite forecast based on the 10 year average for the first three years of the regulatory period. Seqwater have not provided a compelling case that the AEMO year on year growth forecasts are not valid for these years. Our preference is to adopt the AEMO year on year forecasts from 2018-19 onwards, as this ensures that the forecasting method is consistent over the period and is not subject to the error typically associated with composite approaches.

We also note that AEMO have updated its forecasts since Seqwater submitted its proposed escalators. While we support the use of AEMO forecasts, we also believe that the escalators should be based on the most recent reliable information available and that, subsequently, the escalation factors should be

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<sup>46</sup> AEMC Final Report 2016 Residential Electricity Price trends.

updated to reflect the forecasts contained within AEMO 2017 Retail Electricity Price History and Projected Trends.

The AEMO forecasts are well respected within the broader utility sector and have been utilised in regulatory decisions across a number of jurisdictions. KPMG has updated the escalators to:

- Take into account the most recent available AEMO forecasts in *Retail electricity price history and projected trends AEMO 2017*.<sup>47</sup>
- Amend the first three years to reflect year on year growth forecasts.

The updated forecasts are set out in the table below.

Table 110: Seqwater’s proposed escalation factors and KPMG recommendations (%)

Year	Seqwater proposal			KPMG recommendation	
	Inflation	Real factor	Nominal factor	Real factor	Nominal factor
2018-19	2.50%	2.27%	4.83%	5.26%	7.76%
2019-20	2.50%	2.27%	4.83%	-3.05%	-0.55%
2020-21	2.50%	2.27%	4.83%	-2.73%	-0.23%
2021-22	2.50%	3.70%	6.29%	0.95%	3.45%
2022-23	2.50%	2.86%	5.43%	0.25%	2.75%
2023-24	2.50%	1.34%	3.87%	-4.06%	-1.56%
2024-25	2.50%	1.56%	4.09%	-2.95%	-0.45%
2025-26	2.50%	2.24%	4.80%	-0.45%	2.05%
2026-27	2.50%	2.59%	5.16%	-0.42%	2.08%
2027-28	2.50%	1.93%	4.48%	1.86%	4.36%

## 8.9.10 Revised assessment

In response to Seqwater’s submission, KPMG has reviewed the escalation rates recommended in initial findings. Whilst this review confirmed the real escalation rates recommended, it uncovered an error in the transformation of those rates to nominal terms. This error leads to either a small over or under estimation of the nominal escalation rates in the order of less than a 10<sup>th</sup> of a per cent. The recalculated rates are outlined in the table below. They have been estimated annually using the fisher equation for the transformation of real interest rates to nominal interest rates.

These rates are outlined in the following table.

<sup>47</sup> AEMO (2017) <http://forecasting.aemo.com.au/> last accessed 15-11-2017

Table 111: Seqwater's proposed escalation factors and KPMG amended recommendations (%)

Year	Seqwater proposal		KPMG recommendation		
	Inflation	Real factor	Nominal factor	Real factor	Nominal factor
2018-19	2.50%	2.27%	4.83%	5.26%	7.89%
2019-20	2.50%	2.27%	4.83%	-3.05%	-0.63%
2020-21	2.50%	2.27%	4.83%	-2.73%	-0.30%
2021-22	2.50%	3.70%	6.29%	0.95%	3.47%
2022-23	2.50%	2.86%	5.43%	0.25%	2.76%
2023-24	2.50%	1.34%	3.87%	-4.06%	-1.66%
2024-25	2.50%	1.56%	4.09%	-2.95%	-0.52%
2025-26	2.50%	2.24%	4.80%	-0.45%	2.04%
2026-27	2.50%	2.59%	5.16%	-0.42%	2.07%
2027-28	2.50%	1.93%	4.48%	1.86%	4.41%

## 8.10 Step changes

The base, trend and step forecasting method allows for Seqwater's revenue requirement to change to reflect the cost of new initiatives and new obligations, providing that such expenditure is justified. This allowance constitutes the step changes that can be applied under the method. Steps typically need to relate to changes in obligations imposed on Seqwater (e.g. through changes in government policies or technical regulation) or to serve a new or changed customer need where there is a clear willingness to pay established (and supported by cost benefit analysis).

This stage of KPMG's analysis involves the review of Seqwater's proposed step changes. Steps are typically:

- New or changed government obligations that come into effect over the course of the regulatory period or, alternatively, came into being prior to the regulatory period but are not expected to come into effect until the regulatory period and are not reflected in the base year;
- New or changed customer service demands; and
- Changes in opex associated with the commissioning of new capacity.

Step changes should relate to output changes that are not captured by the escalation factors discussed above. They should not relate to discretionary changes in inputs. Step changes should not relate to changes in volume. Under a typical approach, the application of a growth escalator to the base year is expected to provide for changes in volume.

## 8.10.1 Criteria for assessing step changes

In order to assess Seqwater's proposed step changes, we have identified a number of criteria that are consistent with regulatory best practice and KPMG's experience of the manner in which base, trend and step forecasts are developed. These criteria are:

1. Step changes should relate directly to:
  - o New or changed obligations levied on Seqwater by government, and/or
  - o New prudent and efficient operating expenditure.
2. The expenditure associated with step changes needs to be material relative to the total operating expenditure proposed over the regulatory period.
3. The expenditure associated with step changes must be prudent and efficient.

Steps are not intended to include expenditures that are relatively immaterial. Immaterial changes in expenditure are ideally accounted for through the application of escalation factors to the base year as it is extrapolated forward over the regulatory period or alternatively are expected to be offset over the regulatory period by unanticipated efficiencies. Immaterial steps can be either positive or negative (representing costs or savings) and KPMG's expectation is that they should balance out over the period.

We acknowledge that there is very little value in applying regulatory rigour to such expenditures and we also acknowledge that the base trend and step approach is intended to be a simpler, cost effective forecasting approach relative to zero based bottom-up forecasts. The consideration of micro movements in expenditure over each year of the regulatory period is not consistent with the application of a base trend and step approach.

We have based our threshold for materiality on 0.2 per cent of the NPV of total step related expenditure relative to the NPV of total operating expenditure over the regulatory period. KPMG set its threshold in reference to Seqwater's proposed productivity hurdle, but also notes that this hurdle is relatively conservative compared to the efficiency targets set in other jurisdictions (see Section 8.11).

## 8.10.2 Seqwater's proposed steps

Seqwater's proposed steps are outlined in Table 112. Seqwater is proposing 14 separate steps that range in magnitude of cost from approximately \$1million per annum to \$50, 000 per annum. The steps are associated with a broad range of activities.

Table 112. Seqwater's proposed steps \$ million

Proposed Step	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Assessment of major contracts	\$0.0	\$0.5	\$0.5	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Water quality reporting	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Gold Coast Desal and WCRWS contracts	\$0.0	\$0.2	\$0.1	\$0.1	\$1.2	\$0.2	\$0.3	\$0.6	\$0.6	\$0.9
ICT projects	\$0.0	\$0.2	-\$0.3	-\$0.3	\$0.0	\$0.6	\$0.6	-\$0.6	-\$0.6	\$0.0
Provision of additional drafting services	\$0.0	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
QCA reviews	\$0.0	-\$0.7	\$0.3	-\$0.7	-\$0.8	\$0.4	-\$0.7	-\$0.9	\$0.4	-\$0.8
Future water security program updates	\$0.0	\$0.0	\$0.2	\$0.1	\$0.0	\$0.0	\$0.0	\$0.3	\$0.1	\$0.0
Integrated master plan update	\$0.0	\$0.0	\$0.1	\$0.1	\$0.0	\$0.0	\$0.0	\$0.1	\$0.1	\$0.0
Communication and education for recycled water	\$1.1	\$1.1	\$1.2	\$1.2	\$1.2	\$1.3	\$1.3	\$1.4	\$1.4	\$1.5
EBA advice	\$0.1	\$0.0	\$0.0	\$0.1	\$0.0	\$0.0	\$0.1	\$0.0	\$0.0	\$0.1
Additional training spend leadership	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Budget Assumptions	\$0.3	\$1.2	\$1.2	\$1.2	\$1.3	\$1.3	\$1.4	\$1.4	\$1.4	\$1.5
Wyaralong WTP	\$0.0	\$0.0	\$0.8	\$0.8	\$0.9	\$0.9	\$0.9	\$0.9	\$1.0	\$1.0
Ewan Maddock	\$0.8	\$0.8	\$0.8	\$0.8	\$0.9	\$0.9	\$0.9	\$0.9	\$1.0	\$1.0
<b>TOTAL STEP OPEX</b>	<b>\$2.6</b>	<b>\$3.7</b>	<b>\$5.4</b>	<b>\$4.1</b>	<b>\$5.2</b>	<b>\$5.6</b>	<b>\$5.0</b>	<b>\$4.2</b>	<b>\$5.5</b>	<b>\$5.4</b>

### 8.10.3 Original assessment

The following table outlines KPMG's assessment of each of the proposed steps against the criteria outlined in Section 8.10.1. Based on this assessment, we have provided recommendations as to whether the proposed step is valid and justifiable under a base trend and step approach and whether in KPMG's view the expenditure is defensible in a regulatory context.

Table 113. KPMG's assessment of the proposed steps \$million

Step	NPV (@6%)	% Total Opex	Assessment	KPMG Recommendation
<b>Assessment of major contracts prior to expiry</b>	\$0.86	0.043%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with typical operational activity and not a new obligation or new capital.</li> <li>Materiality: at 0.0432% of total proposed opex the expenditure is immaterial</li> <li>Prudent and efficient. Given the step is an operational activity to be efficient, the step should result in offsetting benefits and not net costs. We note that the 10 year regulatory period should provide ample time for efficiencies to be realised.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver, immateriality and concerns regarding efficiency.</li> <li>Do not recommend the step be treated as an inclusion in the base year as it only relates to two years of the total regulatory period.</li> </ul>

Step	NPV (@6%)	% Total Opex	Assessment	KPMG Recommendation
<b>Water quality reporting</b>	\$1.47	0.074%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure only applies to the first five years of the regulatory period and is not an ongoing obligation or new capital.</li> <li>Materiality: at 0.074% of total proposed opex the expenditure is immaterial.</li> <li>Prudent and efficient. Insufficient information to assess prudence and efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> </ul>
<b>Gold Coast Desal and WCRWS contracts</b>	\$2.36	0.118%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with typical operational activity and not a new obligation or new capital.</li> <li>Materiality: at 0.118% of total proposed opex the expenditure is immaterial.</li> <li>Related expenditures are ongoing in nature.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion to the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>ICT projects</b>	-\$0.20	-0.010%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with typically operational activity and not a new obligation or new capital.</li> <li>Materiality: at -0.010% of total proposed opex the expenditure is immaterial.</li> <li>Prudent and efficient. Insufficient information to assess prudence and efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> </ul>
<b>Provision of additional drafting services</b>	\$0.39	0.019%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with typical operational activity and not a new obligation or new capital.</li> <li>Materiality: at 0.019% of total proposed opex the expenditure is immaterial.</li> <li>Related expenditure are ongoing in nature.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion to the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>QCA reviews</b>	-\$2.15	-0.108%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with typical operational activity and not a new obligation or new capital.</li> <li>Materiality: at -0.108% of total proposed opex the expenditure is immaterial.</li> <li>Related expenditure are ongoing in nature.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion to the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>Future water security program updates</b>	\$0.43	0.022%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with new obligation.</li> <li>Materiality: at 0.022% of total proposed opex the expenditure is immaterial.</li> <li>Related expenditures occur on an cyclical basis over the course of the regulatory period.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of immateriality.</li> <li>Recommend proposed step be treated as an inclusion to the base year.</li> </ul>

Step	NPV (@6%)	% Total Opex	Assessment	KPMG Recommendation
<b>Integrated master plan update</b>	\$0.22	0.011%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with typical operational activity and an existing obligation.</li> <li>Materiality: at 0.011% of total proposed opex the expenditure is immaterial.</li> <li>Related expenditures occur on an cyclical basis over the course of the regulatory period and are correlated to future water security updates.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion in the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>Communication and education for recycled water</b>	\$8.10	0.405%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with typical operational activity.</li> <li>Prudent and efficient: note that expenditure is being proposed during a period of relatively stable supply.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step be included at an amended rate. Given the step relates to the implementation of a three year program, we suggest the expenditure be capped at three years. If Seqwater elects to continue the program into the next regulatory period, it can propose for an extension of the program.</li> <li>The driver for the step is not a new obligation or new capital program. The driver appears operational in nature.</li> <li>In the absence of drought and high level restrictions, we believe it would not be prudent to include 10 years of ongoing recycled water education programming.</li> </ul>
<b>EBA advice</b>	\$0.30	0.015%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with typical operational activity and an existing obligation.</li> <li>Materiality: at 0.015% of total proposed opex the expenditure is immaterial.</li> <li>Associated expenditure is cyclical and ongoing in nature.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> <li>Recommend proposed step be treated as an inclusion in the base year on the basis that it is related to a typical operating activity and is ongoing in nature.</li> </ul>
<b>Additional training spend leadership</b>	\$0.37	0.018%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be associated with typical operational activity and an existing obligation.</li> <li>Materiality: at 0.018% of total proposed opex the expenditure is immaterial.</li> <li>Prudent and efficient. Insufficient information to assess prudence and efficiency. Seqwater QCA KPMG RFI 90 indicated that the expenditure related to an ongoing leadership training course and would primarily be spent on consultancies. The RFI provided no information about the value of the benefits or specific outcomes being sought from the program. In terms of</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver and immateriality.</li> </ul>

Step	NPV (@6%)	% Total Opex	Assessment	KPMG Recommendation
			efficiency, our expectation is that the operational benefits (efficiencies) associated with the program should outweigh the costs over the course of time.	
<b>Budget Assumptions</b>	\$7.47	0.374%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure appears to be corrections of the budget. RFI 80 indicated that the adjustments included incorrect allocations of costs that Seqwater wished to retain in order to consider potential technological changes over the long term.</li> <li>Materiality: at 0.374% of total proposed opex the expenditure is material.</li> <li>Prudent and efficient. Prudence and efficiency: Insufficient information to assess prudence and efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step not be included on the basis of inappropriate driver, insufficient information and an inability to establish efficiency.</li> </ul>
<b>Wyaralong WTP</b>	\$5.59	0.280%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure is related to capital expenditure over the course of the regulatory period.</li> <li>Materiality: at 0.280% of total proposed opex the expenditure is material.</li> <li>Prudent and efficient. Prudence and efficiency will depend on the acceptance of the corresponding capital proposal by QCA. Seqwater QCA / KPMG RFI 91.</li> <li>Seqwater noted in its RFI 91 that in transposing the Noosa WTP fixed costs, Fixed Operational Costs were incorrectly double counted. This should be corrected such that the 2018-19 dollar fixed costs change from \$760,000 to the corrected \$702,880.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step be excluded on the basis that the associated capex was excluded.</li> </ul>
<b>Ewan Maddock</b>	\$4.20	0.210%	<ul style="list-style-type: none"> <li>Relevant driver: expenditure is related to capital expenditure over the course of the regulatory period.</li> <li>Materiality: at 0.210% of total proposed opex the expenditure is material.</li> <li>Prudent and efficient. Prudence and efficiency will depend on the acceptance of the corresponding capital proposal by QCA.</li> </ul>	<ul style="list-style-type: none"> <li>Recommend step be included on the basis of it being associated with capex aimed at increasing capacity and securing higher levels of security of supply.</li> </ul>
<b>TOTAL step OPEX</b>	<b>\$29.41</b>	<b>1.472%</b>		

KPMG notes that only two of the proposed steps are directly related to capex. KPMG's expectations based on our experience and the work we have undertaken in reviewing Seqwater's proposed capital expenditure is that there would be more opex steps relating to the commissioning of new capex. If it

is the case that Seqwater’s submission was not comprehensive, it should reply to KPMG’s report with documentation supporting additional capex related steps.

In relation to the steps that we have recommended be included in the base year, we calculated the NPV of the expenditure streams over the 10 year period and determined an annualised amount that is NPV neutral to Seqwater (that is delivers the same revenue stream over the period). This annualised revenue stream was then added to the base year.

Table 114. Summary of KPMG findings steps \$ million

Recommended Steps	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Communication and education for recycled water	\$1.1	\$1.1	\$1.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Ewan Maddock	\$0.8	\$0.8	\$0.8	\$0.8	\$0.9	\$0.9	\$0.9	\$0.9	\$1.0	\$1.0

Steps to be treated as inclusions / exclusions in Base year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gold Coast Desal and WCRWS contracts	\$0.0	\$0.2	\$0.1	\$0.1	\$1.2	\$0.2	\$0.3	\$0.6	\$0.6	\$0.9
Provision of additional drafting services	\$0.0	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
QCA reviews	\$0.0	-\$0.7	\$0.3	-\$0.7	-\$0.8	\$0.4	-\$0.7	-\$0.9	\$0.4	-\$0.8
Future water security program updates	\$0.0	\$0.0	\$0.2	\$0.1	\$0.0	\$0.0	\$0.0	\$0.3	\$0.1	\$0.0
Integrated master plan update	\$0.0	\$0.0	\$0.1	\$0.1	\$0.0	\$0.0	\$0.0	\$0.1	\$0.1	\$0.0
EBA advice	\$0.1	\$0.0	\$0.0	\$0.1	\$0.0	\$0.0	\$0.1	\$0.0	\$0.0	\$0.1
<b>Total</b>	<b>\$0.1</b>	<b>\$0.2</b>	<b>\$0.4</b>	<b>\$0.5</b>	<b>\$1.3</b>	<b>\$0.3</b>	<b>\$0.5</b>	<b>\$1.0</b>	<b>\$0.9</b>	<b>\$1.1</b>
<b>NPV of total STEP</b>	<b>\$1.7</b>									
<b>NPV neutral annualised revenue flow</b>	<b>\$0.2</b>									

## 8.10.4 Revised assessment

### 8.10.4.1 Seqwater response to QCA draft decision; Wyaralong WTP

In response to the QCA’s draft decision, Seqwater re-stated its proposal for Wyaralong and provided QCA with additional information supporting its proposal.

### 8.10.4.2 Revised findings: Wyaralong WTP

In light of Seqwater’s response, KPMG has reassessed its proposal and has recommended that QCA include Wyaralong WTP in Seqwater’s capital program.

In making its recommendation, KPMG has reduced the capital expenditure associated with the project on the basis of efficiency. Based on KPMG’s assessment of the cost estimates, KPMG recommends

removing \$31.1 million in proposed costs. This is largely driven by Seqwater’s application of contingency and owner’s costs, and some minor adjustments to the assumptions.

While KPMG has recommended cost reductions, it has not recommended any changes to the planned capacity of the WTP or the engineering solution being proposed (see Section 7.9).

Given that Wyaralong WTP is being reinstated in Seqwater’s capital program, KPMG is recommending that QCA accept the associated operating expenditure, noting that such expenditure should remain unchanged from the draft report given there has been no change in either capacity or the technology used to deliver the capacity.

As noted in the draft report, Seqwater have applied fixed operating costs for the Wyaralong WTP from 2020-21 (escalated) based on the 2018-19 Fixed Cost Budget for Noosa WTP as a proxy. Noosa is seen as a suitable proxy given the plants will be of similar size, capacity and underlying processes.

In its response to the QCA draft decision, Seqwater has proposed the same level of operating expenditure \$703,000 but has changed the proposed timing from 2020-21 to 2023-24 to reflect its reassessment of the project.

KPMG notes that the expenditure of \$703,000 is expressed in 2017-18 and Seqwater has escalated the expenditure overtime in line with the nominal escalation factors adopted by QCA.

KPMG recommends QCA accept the opex to be applied from 2023-24 on the basis that its forecast is founded on that of an equivalent treatment plant and has been subject to options analysis that considered both the capex and opex impacts of each option, including additional grid wide costs and benefits relating to each option, to determine the least cost supply solution.

Table 115. KPMG findings steps, Wyaralong WTP \$ 000

Recommended Steps	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Wyaralong WTP	\$0	\$0	\$0	\$0	\$0	\$813.7	\$838.5	\$864.5	\$891.3	\$919.3

#### 8.10.4.3 Seqwater response to QCA draft decision; budget adjustment for technical development and deployment resourcing

In its initial report, KPMG recommend budget adjustments be excluded both from the steps and base year for opex forecasts. KPMG has considered new information on the proposed step change associated with budget adjustments.

Seqwater has indicated that the adjustment relates to planning costs for the Monitoring and Control Systems class of assets, and represents the recurrent costs associated with establishing the need and identifying the preferred option for control system replacements and upgrades, prior to commencing design activities. This planning work is ongoing as individual components to the control system reach their end of life, and decisions are needed about renewal and replacement.

Seqwater indicated that these costs had been included in 2014-15 (\$520,000), 2015-16 (\$625,000) and 2016-17 (\$510,000) but were mistakenly omitted thereafter. Available historic cost for this activity average \$550,000 however Seqwater are seeking a lesser amount representing a revised scope and cost.

Table 116. Seqwater proposed base year adjustment (escalated over the regulatory period) \$ million

Recommended inclusion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Tech development and deployment	\$0.31	\$0.32	\$0.33	\$0.34	\$0.35	\$0.36	\$0.37	\$0.39	\$0.40	\$0.41

#### 8.10.4.4 Revised findings: budget adjustment for technical development and deployment resourcing

In order to better understand this correction, KPMG sought further information from Seqwater. Based on the information provided by Seqwater, KPMG recommends that this expenditure be included in the base year on the basis that:

- The classification of the expenditure as operating expenditure is consistent with KPMG’s understanding of the current accounting standards which base the decision to capitalise on the likelihood of future benefits flowing from the expenditure. Seqwater has indicated that such capitalisation only occurs at the identification of the preferred option in Gateway 2. These expenditures are those incurred up to but not including the identification of the preferred option.
- Seqwater was able to provide excerpts from its ledgers showing the historical opex spend, which was consistent with those expenditures reported in its response to QCA’s draft decision.
- Seqwater was able to provide copies of internal communications between senior management accountant and the relevant engineering manager outlining the omission and the details of the activities associated with the expenditure.
- The correction being sought by Seqwater is materially lower than the average over the period 2014-15 to 2016-17 (\$0.55 million). This is highly likely to be exceeded in the current year with to date expenditure incurred over the partial year 2017-2018 being \$0.23 million.

#### 8.10.4.5 Seqwater response to QCA draft decision; budget adjustment to account for misspecified capital expenditure

Seqwater have indicated that this item addresses the improper classification of expenditure for the planning costs for the Monitoring and Control Systems class of assets. The proposed amendment changes expenditure mistakenly categorised as capital to operating expenditure in the 2018-19 base year.

Table 117. Seqwater proposed base year adjustment (escalated over the regulatory period) \$ million

Recommended inclusion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Correction of specified capex	0.54	0.55	0.56	0.58	0.60	0.62	0.64	0.66	0.68	0.71

#### 8.10.4.6 Revised findings: budget adjustment for misspecified capital expenditure

In order to better understand this proposal, KPMG sought further information from Seqwater. Based on the information provided by Seqwater, KPMG recommends that this expenditure be included in the base year on the basis that:

- Seqwater was able to provide internal correspondence between the business and its accountants and with senior executive that evidenced the error.
- Seqwater indicated that the expenditure related to administration and support services and in particular communication with consultants, marketing and advertising activities (as evidenced by excerpts from the 2018-19 Budget). These activities would ordinarily be treated as operating expenditure.
- The activities associated with this correction are separate from those associated with the technological development and deployment correction.
- The correction involves a corresponding reduction in capex for the period 2018-19 to 2021-22.

In relation to the corresponding adjustments to capital expenditure, Seqwater have advised that the capex from 2022-23 to 2027-28 should not be adjusted to exclude the expenditure on the basis that it

is intending to utilise a different methodology to estimate capitalised planning costs for these years. KPMG notes that there is no corresponding decrease in opex in the same latter period and that this implies that the total cost of planning is expected to increase by approximately the same amount as the current correction due to a change in methodology. KPMG has not been provided with any evidence justifying such an increase and recommends to the QCA that capex for the entire regulatory period be reduced to reflect the reallocation of this expenditure to opex, regardless of the latter change in methodology.

#### 8.10.4.7 Seqwater response to QCA draft decision; budget adjustment to address omission of corporate planning and strategy resourcing expenditure

Seqwater responded to the QCA’s draft decision with further information justifying the proposed budget adjustment. Seqwater indicated that the adjustment addresses a \$0.5 million omission of expenditure related to public education campaigns and community research, which was inadvertently removed from the base year as a result of organisational restructuring associated with the abolishment of Seqwater’s Brand and Customer Insights team and the transfer of functions to the Corporate and Community Communications team. These functions include:

- Public education campaigns, such as the annual public safety campaign ‘Play it Safe’; and
- Seqwater’s ongoing community research program.

Table 118. Seqwater proposed base year adjustment (escalated over the regulatory period) \$ million

Recommended inclusion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Omitted opex	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37

#### 8.10.4.8 Revised findings; budget adjustment for omission of corporate planning and strategy resourcing expenditure

In order to better understand this correction, KPMG sought further information from Seqwater. Based on the information provided by Seqwater, KPMG recommends that this expenditure be included in the base year on the basis that:

- Seqwater was able to provide copies of internal communications between the business executive (CFO), finance manager and assisting management accountant outlining the omission.
- Seqwater is seeking to include an amount in the base year that is materially lower than the \$0.5 million that had been omitted, which implies that they have reassessed the budgeted forecasts and expect to achieve significant efficiencies over the course of the regulatory period.

## 8.11 Efficiency targets

### 8.11.1 Original Assessment

In the 2015 Review, the Authority chose not to recommend an ongoing efficiency target on the basis of cost savings already identified by Seqwater in its proposal. Seqwater have proposed a cumulative ongoing efficiency target of 0.2 per cent per annum of controllable costs.

We note that most regulators impose an efficiency target on controllable opex. In most cases, these targets range from 1-2 per cent per annum. For example the ESC in Water Price Review 2013 imposed an efficiency hurdle of one per cent per annum on each of the Victorian water businesses. We also note that under the ESC’s new PREMO regulatory framework, businesses are incentivised to propose alternative efficiency targets (other than the one per cent hurdle set by the regulator). While the ESC is yet to conduct its price review, we note that of the 17 participating water businesses, the average

opex efficiency factor they have proposed is approximately two per cent (with a minimum of one per cent).

In 2015, IPART imposed on Sydney Water both continuing and catch-up efficiencies that maxed at three per cent per annum in 2020.

Other recent reviews include that undertaken by ESCOSA of SA Water. The independent reviewer of SA Water’s opex recommended:

*“Acceptance of SA Water’s proposed efficiency target of 1 % per annum (compounding) for the first two years of the RBP2016 regulatory period but applying an additional efficiency target equal to 50% of the general efficiencies identified by SA Water for the last two years of the regulatory period to reflect the level of ongoing efficiencies we consider that SA Water will be able to achieve.”*

We note that continuing efficiency reflects the continuing efficiencies being gained across all major sectors through innovation and new technologies and is on-going in nature. Relative to efficiency targets in other jurisdictions, the Seqwater proposal is low. This implies that there may be scope for the QCA to consider higher targets.

KPMG considers that there is a case for a more challenging efficiency target to be applied over the course of the regulatory period. We recommend a one per cent per annum continuous target be applied over the coming regulatory period. We note that this recommendation is based primarily on regulatory precedent and industry standards. We acknowledge that we have not undertaken a Total Factor Productivity study or any frontier based statistical analysis (such analysis is outside the scope of this review). For this reason, we have taken a conservative approach and recommended an efficiency target of one per cent per annum, which is at the lower end of targets currently being adopted by businesses in other jurisdictions as shown in the table below.

Table 119: Recent efficiency targets % per annum

<b>Sydney Water</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>			
Continuing efficiency	0.3%	0.5%	0.8%	1.0%			
Catch up efficiency	0.5%	0.8%	2.0%	2.0%			
<b>SA Water</b>	<b>2016-17</b>	<b>2018-18</b>	<b>2018-19</b>	<b>2019-20</b>			
Continuing efficiency	1.0%	1.0%	1.5%	1.5%			
<b>Victorian Urban Water</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>			
Continuing efficiency	1.0%	1.0%	1.0%	1.0%			
<b>Water Corporation</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>			
Continuing efficiency	2.5%	2.5%	2.5%	2.5%			
<b>Icon Water</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>
Continuing efficiency	1.75%	1.75%	1.75%	1.75%	1.75%	1.75%	1.75%

Source: Atkins Cardno 2015 Expenditure Review Final Report (Sydney Water), Cardno Atkins Review of Capital Expenditure Plans of SA Water (2016), ESC Water Price Review 2013-18. ERA 2017 The efficient costs and tariffs of the Water Corporation, Aqwest and Busselton Water Draft Report. ICON Water 2017 2018–23 Water and Sewerage Price Proposal.

We also note that Seqwater has applied the efficiency targets selectively to variable costs. Seqwater has classified both electricity related costs and chemical related costs as uncontrollable and therefore not subject to an efficiency target. Seqwater site IPART’s recent decision in regard to Hunter Water and Sydney Water as regulatory precedent. An alternative approach is adopted by the ESC in Victoria. Uncontrollable costs are defined strictly as costs that the business has no control over and include such

items as licence fees set and environmental levies set by government. All other opex costs are subject to the Commission's set efficiency target.

KPMG does not consider electricity or chemical costs to be strictly uncontrollable. While Seqwater may be subject to market prices and have little negotiating power or ability to achieve discounts, the associated cost is a product of both price and quantity. Seqwater has direct control over the manner in which it utilises these inputs through its technological choices and service supply solutions and therefore has control over the quantity and manner in which these inputs are utilised. Accordingly, we recommend that the efficiency factor be extended to include both variable chemical costs and variable electricity costs.

The efficiency factor has also been applied to controllable fixed opex costs. We have reviewed Seqwater's definition of its controllable opex cost base. There are a number of proposed non-controllable costs that we believe should be treated as controllable. We have included contract based costs in the controllable base on the basis that the 10 year length of the regulatory period provides Seqwater with opportunity to influence or exert control over contracts as they are negotiated or renegotiated. Similarly, we believe the EBA represents a controllable cost as Seqwater has multiple opportunities within the 10 year period to negotiate for more efficient outcomes.

We have also included other expenditures, such as property expense, initiatives, chemicals fixed, and portable equipment, which we believe should also be controllable in nature. Our approach is premised on the assumption that uncontrollable costs refer to those costs associated with a regulatory obligation and imposed by a third party or alternatively are totally outside any capacity of Seqwater to control. Seqwater's proposed controllable cost base and our recommended controllable cost base are set out in the following table.

It is worth noting that a significant number of Victorian water utilities are currently investing in alternative sources of energy (including solar generation) to offset increasing electricity prices and to manage their electricity costs.

Table 120: Controllable cost base 2018-19 (\$'000)

Seqwater proposed cost base	\$'000	KPMG recommended cost base	\$'000
<b>Fixed operating costs</b>			
Salaries and Wages	\$62,085	Salaries and Wages	\$62,085
Allowances	\$1,801	Allowances	\$1,801
Bonuses	\$1,665	Bonuses	\$1,665
Directors Fees	\$380	Directors Fees	\$380
Leave Entitlements	\$14,281	Leave Entitlements	\$14,281
Other employee costs - direct	\$13,795	Other employee costs - direct	\$13,795
Other employee costs - indirect	\$2,813	Other employee costs - indirect	\$2,813
Administrative Expenses	\$15,741	Administrative Expenses	\$15,741
Consultants and Contractors	\$19,568	Consultants and Contractors	\$19,568
FBTable Expenses	\$11	FBTable Expenses	\$11
Bank Charges	\$10	Bank Charges	\$10
		Operations and Maintenance	\$25,586
		Operations & Mtce - Collaborative Mtce Contract (labour)	\$9,746
		Operations & Mtce - Collaborative Mtce Contract (Other)	\$649
		Property Expenses	\$14,530

Seqwater proposed cost base	\$'000	KPMG recommended cost base	\$'000
		Initiatives	-\$4,530
		Chemicals – Fixed	\$746
		Portable Equipment	\$319
		EBA Savings Efficiencies	-\$1,994
<b>Variable operating costs</b>			
Residual disposal costs	\$10	Residual disposal costs	\$2,277
		Chemicals	\$13,810
		Energy	\$18,514
<b>Total operating costs</b>			
<b>TOTAL</b>	<b>\$134,429</b>		<b>\$211,806</b>

Table 121: Efficiency targets recommended by KPMG (%)

Target	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Seqwater</b>	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
<b>KPMG</b>	0.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

## 8.11.2 Seqwater response to the QCA Draft Report and KPMG assessment

In response to KPMG’s initial recommendation of a one per cent per annum continuing efficiency target, Seqwater re-stated its proposed target. Seqwater have expressed its proposal as a 0.2 per cent per annum cumulative target for continuous efficiency, intending it to be a dynamic target that increases annually by 0.2 of a percentage point, and 0.0 per cent for catch up efficiency. The following table outlines its proposal. Seqwater did not provide in either its original proposal or subsequent submission to QCA’s Draft Decision any rationale for this growth profile to be applied to assumed efficiency growth rates.

Table 122. Seqwater proposed efficiency targets

Target	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Proposed annual target: continuous efficiency</b>	0.0%	0.2%	0.4%	0.6%	0.8%	1.0%	1.2%	1.4%	1.6%	1.8%
<b>Proposed annual target: catch-up efficiency</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Seqwater (2018) Response to QCA draft decision

Further, Seqwater has submitted analysis of regulatory precedent that sought to standardise efficiency gains across businesses such that they are readily comparable. Included in Seqwater’s analysis was SA Water, the Victorian water businesses, Water Corporation, Icon Water and Sydney Water. Seqwater’s analysis found that its proposed efficiency gain of 0.2 per cent was broadly comparable to other businesses and industry standard. For example, Seqwater’s analysis in relation to Victorian water businesses found that its proposed approach resulted in a greater efficiency adjustment compared to ESC’s approach at both the one per cent and two per cent level but was slightly less at the 2.5 per cent level.

### 8.11.3 Revised assessment

KPMG has a number of reservations with the analysis undertaken by Seqwater, including:

- A potential misunderstanding of the application of efficiency hurdles.

For example, Seqwater have treated the ESC's efficiency hurdle as static (i.e. constant overtime), whereas the ESC efficiency hurdle is applied in a compounding manner — a base year opex is rolled forward over the course of the regulatory period with a set percentage efficiency gain incorporated on an annual basis. This means that opex for each successive year will reflect all previous efficiency gains as well as the efficiency gain for that particular year. For example, a one per cent annual efficiency estimate would result in a 5.1 per cent adjustment in total at the end of a five year period. Note that, due to the compounding nature of efficiency rates, the annual efficiencies are not strictly additive in nature ( $5\% \neq 5.1\%$ ).

- Consideration of the differences between cost impacts over the short and the long term and the concepts of efficiency gain (either ongoing or catch-up) and its application over a 10 year period, which in most cases is more than twice as long as the typical regulatory period.

This is particularly important when making comparisons against jurisdictions with relatively short regulatory periods that make distinctions between catch up and continuous efficiencies. For example, comparisons with Sydney or Hunter Water need to take into consideration that, over a 10 year period, IPART (the regulator) would potentially review both continuous and catch up efficiency on three separate occasions due to the relatively short, four-year regulatory period. Comparing forecasts over 10 years with forecasted efficiencies over four or five years needs some consideration of the temporal relationship between catch-up efficiency and continuous efficiency.<sup>48</sup>

- Differences in definitions of controllable and non-controllable costs between the jurisdictions, and differences in the application of growth factors and cost escalators.

For example, Seqwater has not proposed a growth escalator for fixed opex (such an escalator is not precluded by the QCA's regulatory framework), whereas the Victorian regulatory framework applies a growth escalator to all controllable opex (fixed and variable). One potential interpretation of Seqwater's proposal is that it believes it has significant economies of scale present in its current network. KPMG notes that growth escalators and efficiency savings are distinctly different elements of the businesses' forecasts and should each be assessed separately on their own merits (i.e. are they a fair representation of actual growth impacts, cost escalations or actual efficiency improvements). They do interact, but the manner in which they do so will be influenced by the degree of capacity in each system, the level of growth and the manner in which the systems costs respond to growth.

- Differences in the application of the efficiency forecasts and differences in the opex forecasting approach adopted.

KPMG also notes that there may be materially different approaches in the application of efficiency targets between those jurisdictions that use Base Step Trend approaches to forecasting efficiency and those that use bottom up approaches. A Base Step Trend approach to forecasting naturally lends itself to the application of a compounding efficiency target. Under this approach, a base year is defined and rolled forward over the regulatory period. Escalators are typically applied to the base

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<sup>48</sup> Comparing 10 year forecasts against four year forecasts may not be appropriate, particularly in reference to catch up efficiency, which by its nature implies a short term adjustment to shift the business towards the frontier (as defined by comparator businesses). If under a shorter regulatory time frame the regulator applies a catch-up efficiency in subsequent periods, it would imply that the frontier itself was not static over the period and moved at a rate different from that implied by the original continuous efficiency.

year to account for increases in costs. Given the focus, under a Base Step Trend approach, is on the trend in opex, these escalators are typically compounding in nature. One-off adjustments are addressed through step changes. The application of efficiency targets in a cost forecasting context is analogous to a negative escalation of the base year. This approach differs from a bottom up approach that assesses the efficiency deliverable for each year of the regulatory period based on a detailed understanding of the specific activities associated with the opex for that year and efficiencies deliverable in that year.

In order to provide an example KPMG has converted Seqwater's proposed nominal dynamic cumulative efficiency rate into a single average compounding rate. This conversion was achieved by separately accounting for inflation and rolling forward a base year of controllable opex (expressed in real terms) based on a single compounding rate. The value of this rate was determined by identifying the level at which the rate provided for a forward expenditure stream which equated in NPV terms with that being proposed by Seqwater.

The analysis identified a comparable real average compounding rate of 0.16%. This rate is lower than the minimum efficiency hurdle of 1% real average compounding rate as imposed by the ESC.

Direct comparisons between efficiency forecasts need to be undertaken with care. Seqwater, in response to the QCA's draft decision, contend that the efficiency target should be viewed within the broader context of the combined impact of cost escalator, growth and economies of scale as well as efficiency. Seqwater in its response sought to account for differences in the type of expenditures and activities used to achieve efficiencies (see analysis on SA Water) and differences in the application of growth escalators for Victoria, WA and ACT.

KPMG acknowledges that there is an interaction between cost escalators, growth, economies of scale and efficiency, and that all of these factors interact to impact on the escalation of a base year opex over the regulatory period. However, KPMG also notes that other elements of the regulatory framework, such as the identification of an efficient and prudent base year, along with the treatment of step changes over the course of the regulatory period, equally impact on the realisation of efficiency targets and the extrapolation of opex over the course of the regulatory period. KPMG believes that, in a regulator context, each of these factors must be assessed on its own merits.

In the case of Seqwater, we note that its regulatory framework did not preclude it from proposing growth escalations that equate with those applied in Victoria or Western Australia and that it escalated its variable opex for growth. KPMG has interpreted Seqwater's proposal to imply that it believes that there are sufficient unrealised economies of scale relating to its fixed operating expenditure that it does not need to be escalated.

In reconsidering Seqwater's proposal in light of its response to the QCA's draft decision, KPMG has considered both the application of the proposed approach and the level of the efficiency saving proposed. KPMG remains of the opinion that the target is relatively low. However, we acknowledge that direct comparisons between efficiency forecasts need to be undertaken with care.

In the absence of a more sophisticated examination of efficiency such as a total factor productivity, data envelopment analysis or stochastic frontier analysis study, KPMG does not recommend an alternative efficiency rate to that proposed but does recommend QCA consider undertaking a separate efficiency study prior to its next price review of Seqwater. Such a study would allow the QCA to further examine the differences between Seqwater and other comparable businesses and would present the regulator with an opportunity to pursue more robust forms of statistical analysis.

### **Differences between catch-up and continuing efficiency**

There are two types of efficiency that regulators often consider when assessing efficiency assumptions. Catch-up efficiency relates to the degree to which the regulated firm's productivity differs from that of its best performing peers (comparable firms operating on the frontier). Continuous

efficiency relates to the movement in the frontier itself over time, due to changes in technology and practice. Some regulators, such as IPART, deal with both types of efficiency differently whereas others, such as the ESC, make no distinction between the two. In the case of the ESC, the efficiency hurdle is treated as a target to incentivise businesses to pursue efficiencies in an ongoing manner.

Determining catch up efficiency involves the identification of a production function that represents the frontier or, alternatively, the identification of a frontier based on industry best practice, and the respective distance that Seqwater's operates from that frontier. Determining catch up efficiency requires access to reliable input and output data across a number of comparable water businesses. For this reason and the timing constraints associated with the review, such analysis was considered out of scope.

In Section 8.5.2, KPMG undertook benchmarking of opex per ML of water delivered based on the National Performance Report. The cost per ML of water supplied by Seqwater as implied by its proposed base year (\$769.4 million) was compared to that historically reported by a number of bulk water suppliers.

Table 123. Opex per ML of water delivered, bulk water utilities

\$ per ML	Base year (2018-19)	2012-13	2013-14	2014-15	2015-16
<b>Gladstone Area Water Board</b>		-	\$1,041.9	\$969.2	\$866.8
<b>Goldenfields Bulk Water Supply</b>		\$341.9	\$333.5	\$330.9	\$327.6
<b>Melbourne Water</b>		\$1,334.1	\$1,892.3	\$1,824.1	\$1,618.3
<b>Rous Water</b>		\$1,161.0	\$1,140.7	\$1,135.1	\$1,117.1

Source: BOM National Performance Report 2015-16

Note Opex per ML is calculated as 'operating cost – water' divided by 'volume of bulk water exports ML'.

The degree to which such analysis can inform our decision is heavily qualified and is dictated by the quality of the available data. KPMG has sourced public data from the National Performance Report 2015–16: urban water utilities published by the Bureau of Meteorology. In making comparisons, we are aware that individual utilities are engaged in a number of activities and provide a number of services that differ from those provided by Seqwater. These utilities may also differ in their size and network's density along with the nature or composition of their customer base and the regulatory environments in which they operate. Nevertheless, broad comparisons across a multitude of utilities provides a broader context to Seqwater's proposal.

Compared to the bulk water utilities that are included in the National Performance Report, Seqwater was broadly consistent with the Gladstone Area Water Board while being materially less than Melbourne Water and Rous Water. Section 8.5.2 also made favourable comparisons between Seqwater and other large water utilities that provided multiple services. On balance, and in the absence of a detailed statistical study, there does not appear to be any evidence of relative inefficiency in the Seqwater proposal that would require catch-up efficiency to be applied to the base year of the regulatory period.

KPMG notes that, in this context, the potential improvements in process identified in Sections 4 and 5 of this report are related to continuous efficiency. Continuing efficiency being the scope for frontier businesses to improve their efficiency. It reflects the continuing efficiencies being gained across all major sectors through innovation and new technologies.

## Empirical assessment

KPMG sought to undertake analysis on the historical trends in efficiency exhibited by Seqwater and comparable water utilities. The purpose for undertaking such analysis is that it would better inform our

advice to the QCA. Notwithstanding anticipated changes in the future operation environment, historical trends in actual efficiency gains are often useful in assessing the reasonableness of proposed trends. In order to undertake this analysis within the timeframe of the review, we need to be able to access a reliable and complete publicly-available data set for both Seqwater and its comparator businesses.

The data set associated with WSAA's National Performance Reports is the most obvious candidate for such analysis. Unfortunately, inconsistency within the data and different reporting arrangements for the comparison businesses would have necessitated KPMG enlisting the co-operation of the comparator businesses and then developing and implementing a survey of the businesses in order to obtain the necessary data. This analysis was not deemed to be achievable within the timeframes associated with the review.

This general lack of available data also precluded KPMG from undertaking sophisticated forms of efficiency analysis such as benchmarking total factor productivity, data envelopment analysis or stochastic frontier analysis.

Statistical studies have been undertaken in other jurisdictions. These studies are typically of a scale and scope that preclude them from being undertaken as part of an expenditure review. For example, Economic Insights has undertaken a number of benchmarking studies in Victoria to help inform the ESC regarding appropriate efficiency rates. The most recent of these was conducted in 2014 and considered a number of approaches including:

- Multilaeral TFP indexes — a TFP approach that uses an index for comparing productivity between utilities and trends over time as opposed to econometric analysis. The index number method used had fixed weights for each input and output that were universally applied to all utilities.
- Stochastic Frontier Analysis — an econometric method of fitting the frontier function making use of a composite error term which includes the classical 'white noise' disturbance and the one-sided disturbance with represents inefficiency.
- Data Envelopment Analysis — linear programming technique for enclosing a set of data points within the highest possible linear concave space (for production functions) or convex space (for cost functions).
- Distance functions — a distance function relates technical efficiency to the mix of inputs and outputs and firm specific technical inefficiency. The output oriented distance function describes a firm's combination of output and inputs in terms of the maximum set of outputs that can be produced given a set of inputs. The input oriented distance function describes a firm's combination of output and inputs in terms of the minimum set of inputs that can be produced given a set of outputs.
- Malmquist TFP index — this index was defined in terms of input oriented and output oriented distance functions.
- Random Effects Models — this model was an econometric technique for analysing panel data (combined cross sectional time series data) which includes a random cross-sectional disturbance as well as a random disturbance over all observations in the sample.<sup>49</sup>

The Victorian analysis was conducted outside of the price review process and the data used in the study was obtained from a number of sources, including:

- ESC's regulatory accounts;
- WSAA facts report;
- National Performance Report;
- Directly sourced from water utilities; and
- Directly sourced from local governments.

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<sup>49</sup> Economic Insights (2014) Victorian Urban Water Utility Benchmarking

## 8.12 Adjustments for offsetting revenue

Another material driver of Seqwater’s proposed opex forecast are the application of offsetting revenues. These revenues relate to activities associated with regulated assets but with non-bulk water services, such as the delivery of raw water to power stations and revenues from hydro power schemes. The offsetting revenues are outlined in Table 128.

As can be observed in the table, Seqwater is forecasting a significant drop in the offsetting revenues for the base year. The primary driver for this decline in revenue is a 43 per cent decrease in the revenue associated with raw water sales to the Stanwell power station and Toowoomba Regional Council.

Table 124: Offsetting revenues (\$m nominal)

Offsetting revenues	2015-16	2016-17	2017-18	2018-19 (Base Year)
Power Stations (Stanwell) and Toowoomba Regional Council	\$21.8	\$22.2	\$23.8	\$13.5
Raw water	\$0.1	\$0.1	\$0.1	\$0.1
Property and facilities	\$0.8	\$0.8	\$0.9	\$0.9
Wivenhoe boot scheme	\$0.0	\$0.0	\$0.0	\$0.1
Landers Schute Hydro	\$0.2	\$0.0	\$0.2	\$0.2
<b>Total</b>	<b>\$23.0</b>	<b>\$23.1</b>	<b>\$25.0</b>	<b>\$14.9</b>

Seqwater has indicated that the observable decline is attributable to a change in contract associated with the Stanwell power station and Toowoomba Regional Council. Seqwater stated:

*“A new contract for water supply to Stanwell is with the Minister (Treasurer) for deeming. [REDACTED] which is from 1/7/17 to 30/6/23. There is provision for extension to 30/6/28 and subsequently to 30/6/33 at Stanwell’s request.”<sup>50</sup>*

Seqwater has advised that it assumed the risk with the revenue offsets by assuming that the contract will continue to 2028, so there is another 10 years of revenue offsets to the benefit of the bulk water price to other customers. Seqwater have also stated:

*“For Toowoomba Regional council a contract has been in place since 20/12/12 expiring 28/1/20 [REDACTED]. There is an option to extend for a further 10 years which requires TRC to notify Seqwater by 28/7/19. At this point there is no negotiation contemplated until early 2019. Seqwater believes that TRC will seek to extend the contract in light of Toowoomba’s historic and continuing issues with water supply and has included this revenue offset out to 2028.”<sup>51</sup>*

KPMG has assessed Seqwater’s proposed revenue offsets for inclusion in the base year and notes that the expenditure proposed for [REDACTED]. We note that the proposed revenue offset for Toowoomba Regional Council is consistent with the contract information provided by Seqwater.

Seqwater has indicated that the difference between the contract values is to compensate Seqwater for ending the old contract one year early (i.e. 30 June 2017 instead of 30 June 2018) and moving to a new contract with a lower fixed charge.

<sup>50</sup> Seqwater RFI 070 / QCA RFI 1 Question 1 (a) and (b).

<sup>51</sup> Seqwater RFI 070 / QCA RFI 1 Question 1 (a) and (b).

## 9 Review events

In handing down its 2015 final recommendation, the Authority defined three types of review events to be considered as part of a future price review, including:

- Emergency events;
- Law or government policy events; and
- Feedwater quality events.

Where Seqwater can demonstrate that it is not at fault for an emergency event, or it cannot manage the impact of a change in law or government policy or feedwater quality, each of which may cause a change in revenue, or prudent and efficient costs, the Authority recommended:

- a) a material change be eligible for a mid-price path review; and
- b) where not subject to a mid-price path review, the change be recouped by an end-of-period adjustment.

In addition to these events, the referral notice to the Authority requires it to review additional costs incurred by Seqwater for drought response measures taken in accordance with the WSP, where the costs associated with those measures are efficient and material over the period 1 July 2015 to 30 July 2018.

At the time of submitting its initial proposal to the QCA on 30 June 2017, Seqwater had not finalised its assessment of the additional costs incurred by the business resulting from the review events and drought response costs. As a result, KPMG's initial report did not provide for a detailed assessment of each category of review event / drought response costs.

Subsequent to the initial proposal and in its response to the QCA's Draft Report, Seqwater are now seeking for the recovery of costs related to:

- Tropical Cyclone Debbie ('Debbie') – an emergency event as defined in the QCA's 2015 Bulk Water Review<sup>52</sup> (cost incurred - \$1.507 million);
- Grid operating costs to supplement bulk water supply to the Northern region of South East Queensland ('Drought Response') – a drought response event as defined in the Referral Notice (cost incurred - \$0.83 million; and
- A feedwater event, which required additional chemical costs at Mt Crosby Water Treatment Plants (WTP) ('Feedwater Quality') – a feedwater quality event as defined the QCA's 2015 Bulk Water Review<sup>53</sup> (cost incurred - \$0.44 million).

The prudence and efficiency of costs associated with each event as identified by Seqwater and included in its submission has been reviewed below.

### 9.1 Approach to assessing review events

Consistent with KPMG's approach to reviewing Seqwater's proposed step changes, KPMG has applied a similar criteria aligned with regulatory best practice and our experience of the manner in which review

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<sup>52</sup> Queensland Competition Authority, *SEQ Bulk Water Price Path 2015-18*, March 2015, pg. 92

<sup>53</sup> Queensland Competition Authority, *SEQ Bulk Water Price Path 2015-18*, March 2015, pg. 94

events are typically treated within existing regulatory frameworks. Specifically, the expenditure (capex or opex) associated with a review events needs to be:

1. Reflective of an external event outside of the control of Seqwater which is not reasonable foreseeable or which cannot be responded to under normal operation;
2. Both prudent and efficient; and
3. For drought response events only, material and in accordance with the WSP.

The expenditure associated with a review event is not intended to form part of the forecast base revenue requirement moving forward. Instead, as an end of period adjustment the recovery of these costs occur over a defined period subject to their materiality.

Review events that arise from a law or government policy event, an emergency event or a feedwater quality event (as defined in the QCA's 2015 Review) do not have a materiality threshold associated with them.

This means that the pass through of costs associated with Debbie (an emergency event) are not linked to the costs' materiality.

## 9.2 Emergency events

Ex-tropical cyclone Debbie, which hit the east coast of Australia in March 2017 represents the only emergency event experienced by Seqwater over the current regulatory period. Having made landfall in Airlie Beach, Debbie continued to travel south, causing significant damage and flooding South East Queensland and the northern rivers. Seqwater has incurred (in 2016-17) and will continue to incur (in 2017-18) costs related to Debbie, predominantly related to:

- Labour costs related to related overtime and allowances;
- Chemicals to treat dirty water; and
- Changes to the operation of the Gold Coast Desalination (over and above what was built into the baseline).

In reporting costs related to this event, Seqwater has only included incremental costs over and above those which were already built into its existing opex budget. The costs claimed in 2016-17 are mainly variable costs associated with the event at the time to allow the water grid to continue to deliver water.

### 9.2.1 Assessment

#### 9.2.1.1 Establishment of general ledger accounts to capture costs

Seqwater established new cost codes at the time of the event to be able to accurately capture the additional costs associated with Debbie. The following table details the work order numbers that were established, including a description of those work order numbers.

Table 125. Cyclone Debbie Work Order Numbers

Work order number	Definition
A-0192275	MAINTENANCE STH-2017 MARCH CYCLONE EVENT
A-0192281	DAM OPS STH-2017 MARCH CYCLONE EVENT
A-0192284	CATCHMENT STH-2017 MARCH CYCLONE EVENT
A-0192289	OPS SCENIC RIM-2017 MARCH CYCLONE EVENT

Work order number	Definition
A-0192292	CATCH SCENICRIM-2017 MARCH CYCLONE EVENT
A-0192294	OPS SOUTH-2017 MARCH CYCLONE EVENT
A-0192295	A192295 SCADA-2017 MARCH CYCLONE EVENT
A-0197814	DAM OPS STH-2017 MARCH CYCLONE EVENT *
A-0197860	OPS SOUTH-2017 MARCH CYCLONE EVENT
A-0189965	Northern Region Ex TC DEBBIE Repairs
A0197860	Water Tankering- Kunungra
A0192289	Water Tankering- Beaudesert
A0192275	Maintenance Sth- Cyclone Event
A0189965	Maintenance Nth- Cyclone Event

Seqwater provided KPMG with an extract of each of the itemised expenses incurred by region, including work order number, relevant General Ledger (GL) project codes, activity codes and account numbers. In presenting this information, Seqwater has noted that it is not viable to allocate chemical and energy costs to separate work orders, whereas direct costs such as labour, materials and supplies can be.<sup>54</sup> Rather, these are derived through calculating the difference between business as usual (BAU) and emergency events. KPMG accepts this reasoning.

Utilising information contained in these activity codes and account numbers, Seqwater incurred the following costs by region/asset.<sup>55</sup> This includes additional water tankering, overtime, additional chemical and additional sludge costs incurred in the northern, central and southern regions, additional asset maintenance costs and additional costs related to running the Gold Coast Desalination Plant (GCDP).

### 9.2.1.2 North region

Seqwater is claiming the recovery of \$0.11 million in overtime, water tankering and additional chemical dosing costs in the northern region. These costs are detailed in the table below, while Figure 61 provides a breakdown over each of the supply costs incurred under each of these expenditure categories, including the dates those costs were incurred. Seqwater also incurred overtime and oncall costs for Dam operations of \$7,735 between 30 March and 5 April. These costs are detailed in Seqwater's GL.

Table 126. North region – Additional costs Debbie

Expenditure category	Cost (\$)
<b>On Call &amp; Overtime</b>	\$21,620
<b>Water Tankering- Dayboro</b>	\$28,420
<b>Additional Chemical Dosage (Alum)</b>	\$61,386
<b>Total</b>	<b>\$111,426</b>

<sup>54</sup> Seqwater, RFI 104

<sup>55</sup> Seqwater, Total Costs ex TC Debbie - Detailed Analysis scott e 31 jan.xlsx,

Figure 61. North Region – Cost breakdown by expenditure category

	Ex TC Debbie- OT & Oncall- For all sites		Ex TC Debbie- Dayboro Water Cartage		Additional Alum Usage in April
30/03/2017	\$2,136	31/03/2017	\$2,450	North Pine Alum	\$42,886
31/03/2017	\$2,071	1/04/2017	\$4,180	Noosa Alum	\$1,532
1/04/2017	\$3,234	2/04/2017	\$6,240	Landers Alum	\$6,153
2/04/2017	\$3,221	3/04/2017	\$6,600	Image Flat Alum	\$3,381
3/04/2017	\$1,039	4/04/2017	\$6,300	Kilcoy Alum	\$1,352
4/04/2017	\$664	5/04/2017	\$2,650	Petrie Alum	\$6,082
5/04/2017	\$749		<u>\$28,420</u>		<u>\$61,386</u>
6/04/2017	\$773				
	<u>\$13,886</u>				

### 9.2.1.3 Central region

Seqwater is claiming the recovery of \$0.34 million in additional chemical dosing costs in the central region as shown in Table 131.

To determine this additional cost, Seqwater compared the chemical costs incurred at Mt Crosby WTP and the average monthly cost incurred at the plant for the period July 2016 to February 2017 (\$35.20/ML). KPMG has found a small error in the calculation, as Seqwater determined an ‘average’ across the 12 monthly averages, as opposed to dividing to total cost incurred over the period, and dividing it by the total production volume over the period. This resulted in an average production cost of \$35.26/ML.

Table 127. Central region – Additional costs Debbie

Expenditure category	Cost (\$)
<b>Additional chemical dosage (Crosby)</b>	\$337,104

To determine the incremental cost, Seqwater then divided the chemicals costs incurred for April (\$786,092) and by total production volumes (12,756.2ML), to determine an average production unit cost of \$61.62 per ML for the month. The difference between this and \$35.26/ML is the incremental unit cost related to Debbie, being \$26.36/ML, or a total incremental cost of \$336,291 (using the aforementioned total production volume). Given the immateriality of this against Seqwater’s claim (\$337,104), the cost incurred is considered efficient and prudent.

### 9.2.1.4 Gold Coast Desalination Plant (GCDP)

Seqwater is claiming the recovery of \$0.46 million in incremental costs incurred at the GCDP. These costs are detailed in the following table. Prior to Debbie, the GCDP was operating due to a Mudgeeraba shutdown. Its throughput was increased during the event due to decreased production at other plants. Seqwater estimated that 71 per cent of the operating costs incurred during this period relates to the impact of Debbie.

Table 128. GCDP – Additional costs Debbie

Expenditure category	Cost (\$)
<b>Energy Costs for Operation from 31/3- 11/4</b>	\$308,219
<b>Chemical Costs Est Cost for Operation</b>	\$113,600
<b>Labour- Veolia</b>	\$28,400
<b>Sludge waste removal</b>	\$12,070
<b>Total</b>	<b>\$462,289</b>

When questioned on the basis of 71 per cent, Seqwater noted that this estimate was provided by the operator of the GCDP, Veolia. As justification for this estimate, Seqwater tabulated the amount of water

produced at the plant, allocated to either the Mudgeeraba shutdown or Debbie. This is detailed in the following table - \$308,219 represents the additional energy costs incurred from running the GCDP that are as a result of Debbie.

Table 129. GCDP – Driver for additional costs Debbie

Date	Amount (ML)	Incremental cost	Driver	
			Mudgeeraba	Debbie
28/03/2017	61	\$58,576	\$58,576	
29/03/2017	58	\$55,696	\$55,696	
30/03/2017	57	\$54,735	\$54,735	
31/03/2017	44	\$42,252		\$42,252
1/04/2017	81	\$35,786		\$35,786
2/04/2017	88	\$38,879		\$38,879
3/04/2017	74	\$32,694		\$32,694
4/04/2017	64	\$28,276		\$28,276
5/04/2017	43	\$18,998		\$18,998
6/04/2017	44	\$19,439		\$19,439
7/04/2017	64	\$28,276		\$28,276
8/04/2017	43	\$18,998		\$18,998
9/04/2017	44	\$19,439		\$19,439
10/04/2017	44	\$19,439		\$19,439
11/04/2017	13	\$5,743		\$5,743
<b>TOTAL</b>	<b>822</b>	<b>\$477,226</b>	<b>\$169,007</b>	<b>\$308,219</b>

Seqwater has then applied 71 per cent to the other costs incurred at GCDP for that month, which include the following:

Table 130. GCDP – Other incremental costs

Cost	Cost (Mar-April 2017)	Allocation to Debbie (@71%)
<b>Chemicals</b>	\$160,000	\$113,600
<b>Labour</b>	\$40,000	\$28,400
<b>Sludge waste removal</b>	\$17,000	\$12,070
<b>Total</b>		<b>\$154,070</b>

During the month of April, the GCDP produced 574ML of water, 532ML higher than forecast (i.e. 42ML). This avoided an equivalent volume of water treatment at other plants. As a proxy for determining avoided costs, Seqwater determined the average cost per megalitre across its top seven plants (i.e. Mount Crosby, Landers Shute, Molendinar, Mudgeeraba, North Pine, North Stradbroke Island and Mount Crosby West Bank), leveraging data produced by Finance for the Business Performance Report. These plants account for 90 per cent of Seqwater production, therefore providing a reasonable basis for average costs avoided.

The average cost of production at those other plants was \$84.88/ML in 2016-17. To determine the likely impact, Seqwater applied this annual average to 532ML (total volume of production avoided), proposing costs avoided of \$45,156, which it deducted from the total claim for 2016-17.

However, information provided by Seqwater indicated that average production costs in April were \$167.67/ML, almost twice the annual average.

When asked of the basis for applying the average monthly production cost of \$84.88 instead of the April average of \$167.67, Seqwater noted there are two issues to consider.<sup>56</sup> Whilst the first makes the second redundant, both are included for completeness.

*When Seqwater puts together its Opex forecasts for QCA it does so on a BAU basis – assuming fair weather and normal operation. The starting point for the Variable cost estimates are the budget figures submitted to QCA. However Seqwater accepts that it takes forecasting and operation risk on BAU weather conditions. So the baseline for any of the event –based claims is the actual BAU costs. That is the figure of \$84.88 in this instance as it reflects the actual outcome under BAU conditions.*

*The figure of \$167/ML reflects the cost of operating the top 7 WTPs under event conditions (ie Debbie). That is this is not a BAU figure, but one which has been affected by Debbie itself. The incremental cost of operating other plants should be to BAU not to the event-affected figure when considered against the basis of the original submission.*

*The second issue with the \$167 figure is that it was also affected by the booking of the full years RECs. The accounting entry is done in April for the full year and also upwardly biases the figure.*

*However we believe that the correct methodology as in the first point above has been applied.*

KPMG understands this to mean that while there were some costs avoided (related to additional production at the GCDP), Debbie still imposed additional costs on these treatment plants, hence the material increase in costs at these seven plants during April. As such, KPMG agrees with Seqwater’s use of the average production cost of \$84.88/ML

### 9.2.1.5 South Region

Seqwater is claiming the recovery of \$0.39 million in water tankering, additional chemical dosing and additional sludge costs in the south region as shown in Table 135 below.

Table 131. South Region - Incremental costs Debbie

Expenditure category	Cost (\$)
Water Tankering- Kunungra	\$109,876
Water Tankering- Beaudesert	\$90,274
Ex TC Debbie Exps (Activity- A00129)	\$111,235
Additional Chemical Dosage (Alum)	\$39,000
Additional Sludge Costs	\$40,000
<b>Total</b>	<b>\$390,385</b>

The first three cost items (water tankering – Kunungra, water tankering – Beaudesert, Ex TC Debbie Exps are all extracts from Seqwater’s GL, and consistent with evidence provided, were accepted as prudent and efficient by KPMG.

For additional chemical dosage, Seqwater identified that the average monthly cost at Molendinar is \$38,000 and at Mudgeeraba \$40,000. These are the average for the first nine months of 2016-17. It has then determined the incremental cost incurred during April, over and above this cost, consistent with those costs presented in Table 136. This approach to determining the incremental chemical costs is appropriate. Within its claim, Seqwater rounded its figures down to be conservative, to \$40,000.

<sup>56</sup> Seqwater, Debbie questions 12 feb.docx, attachment to email provided by Damian Scholz dated 14 February 2018

Table 132. South Region - Incremental chemical costs

Chemical costs	Average monthly cost (Jul 2016 – Mar 2017)	Actual monthly cost (April 2017)	Incremental cost related to Debbi
<b>Molendinar</b>	\$38,000	\$65,000	+\$27,000
<b>Mudgeeraba</b>	\$40,000	\$61,000	+21,000

For additional sludge costs, Seqwater identified that the average monthly cost at Molendinar is \$23,654 and at Mudgeeraba is \$18,076. The basis of this average is the average of the previous nine months for the year. This approach seems reasonable as the monthly costs do not appear to vary materially from month to month. Based on this analysis, Seqwater has determined the following incremental costs related to Debbie as shown in the table below. This approach to determining the incremental sludge costs is appropriate. Similar to above, Seqwater rounded its claim down, to \$39,000

Table 133. South Region - Incremental sludge costs

Sludge costs	Average monthly cost	Actual monthly cost	Incremental cost related to Debbi
<b>Molendinar</b>	\$23,654	\$55,603	+\$31,949
<b>Mudgeeraba</b>	\$18,076	\$27,356	+\$9,280

### 9.2.1.6 Asset maintenance

Seqwater is claiming the recovery of \$0.25 million in additional asset maintenance costs. These costs are detailed in the following table. In support of its claim for maintenance costs, Seqwater has provided an extract from its GL, detailing each individual maintenance related expense incurred during 2016-17 related to Debbie (for both the North and South Region). The summation of these costs match the total cost for which Seqwater is requesting to be recompensed.

Table 134. Asset maintenance – Incremental costs Debbie

Expenditure category	Cost (\$)
<b>Maintenance Sth- Cyclone Event</b>	\$117,317
<b>Maintenance Nth- Cyclone Event</b>	\$56,750
<b>TNP- Storm Damage Repairs</b>	\$77,054
<b>Total</b>	<b>\$251,113</b>

Seqwater has also included within its claim an amount of \$77,054 for storm damage that affected North Pine Water Treatment Plant about three weeks before Debbie, noting:

*...this event was similar in nature to the Debbie event and being three weeks earlier was dealt with in a similar way. Whilst it was technically a different event it was submitted together with Debbie for efficiency of the review process.*

Seqwater has not sought to validate that the event meets the criteria of an ‘emergency event’, nor sought to demonstrate the activation of emergency response plans, staff overtime and rectification costs. As such, KPMG has excluded these costs from its recommended cost recovery.

## 9.2.2 Summary findings

Debbie is an event that was outside of the control of Seqwater, which was not be reasonably foreseeable earlier than a week in advance of the event. Further, the magnitude of the event was such that it could not be responded to under normal network operations, and required the incurrence of addition costs to ensure the continued operation of the water grid. Debbie meets the criteria of an emergency event as detailed within the QCA’s 2015 Bulk Water Price Review.

The reliability of the water grid is paramount to the provision of services. It is therefore reasonable that Seqwater incurred costs over and above the baseline, both during and after the event to maintain water quality and repair assets impacted. It is therefore appropriate the costs were incurred at that time.

Seqwater developed general ledger accounts for Debbie that enabled it to adequately capture the additional costs incurred. It has provided adequate evidence to KPMG that these accounts were appropriately defined, that all relevant costs were captured, and that only incremental costs incurred by the business were allocated to these accounts.

Seqwater has generally provided robust evidence and analysis to support its claim for the recovery of \$1.507 million in additional costs incurred. Where Seqwater has provided an extract from its GL, the recovery of these costs have been accepted.

Where Seqwater has completed analysis on its GL data to determine an estimate of the incremental cost related to Debbie, we have accepted the following:

- Incremental energy, chemicals, labour and sludge costs related to operation of the GCDP;
- Incremental chemical dosage and sludge costs related to Molendinar and Mudgeeraba Water Treatment Plants; and
- Avoided costs due to additional production at the GCDP.

Based on the above information, KPMG recommends Seqwater be allowed to recover total costs as shown in Table 139.

Table 135. KPMG recommended adjustment to Seqwater’s emergency event (Debbie) claim

	Claim	KPMG recommendation	Adjustment	Basis for adjustment
<b>Total claim</b>	\$1,507,170.46			
<b>North Pine Water Treatment Plant – storm damage repairs</b>	\$77,054	\$0	-\$77,054	Unjustified costs related to another weather event
<b>Recommended cost recovery</b>	<b>\$1,430,116</b>			

## 9.3 Law or government policy events

Seqwater is not seeking any adjustments arising from a change in law or government policy.

## 9.4 Feedwater quality events

As a result of rainfall from 15 to 22 October 2017, Mt Crosby experienced three conductivity spikes lasting several days each. A combined effect of elevated organics along with the elevated bromide levels increased the chemical demand significantly to treat the raw water. In order to maintain water quality, substantial additional chemicals were required at Mt Crosby WTPs from 20 October and 15 November 2017, resulting in \$443,000 in additional chemical costs. This amount forms the basis of Seqwater’s claim.

The raw water bromide level increased to 0.4 mg/L from its background level of 0.18 mg/L and dissolved organic levels increased to 10 mg/L from its background level of 4.5 mg/L. A combined effect of elevated organics along with the elevated bromide levels increased the chemical demand

significantly to treat the raw water. These levels meant water quality criterion exceeded the trigger points in Seqwater’s<sup>57</sup> procedure for responding to extraordinary water events (bromide  $\geq 0.18$  mg/L).

The main focus of the treatment was to remove additional organics from water due to the increased level of organics and bromide in raw water, thereby ensuring the THM and other water quality criteria are in accordance with water quality specifications. This was achieved with additional aluminium sulphate (alum) usage for the coagulation process. Additional caustic soda and lime were required for the correction of water pH since the usage of additional alum reduced the settled water pH.

In summary, additional chemicals were used for the following treatment outcome:

- Alum – to remove additional organics;
- Raw Water (RW) Caustic – to operate the coagulation process at a target pH;
- Settled Water (SW) Caustic – to correct the settled water pH when the lime system is inadequate to adjust the pH; and
- Lime – to correct the treated water pH to supply to the network system.

## 9.4.1 Assessment

Seqwater has identified in RFI 115<sup>58</sup> the additional chemical costs related to this event, as summarised in the following table. These costs are based on the chemical unit rates shown in Table 141.

Table 136. Table – Additional chemical costs incurred 20 October to 15 November 2017

Mt Crosby Site	Alum	Caustic	Lime	Caustic	Additional Total Chemical
<b>West Bank</b>	\$44,966	\$4,264	\$6,616	\$27,969	\$83,814
<b>East Bank</b>	\$213,310	\$25,789	\$37,823	\$82,794	\$359,716
<b>Total</b>	\$258,275	\$30,053	\$44,439	\$110,763	\$443,531

Table 137. Chemical unit rates

Chemical	\$/Tonne
<b>Alum</b>	166.8
<b>Caustic RW</b>	530
<b>Caustic SW</b>	530
<b>Lime</b>	373

The source of these unit rates is the average daily cost for the period 20 October to 15 November 2017, as documented in Seqwater’s CIS Inventory System. To demonstrate these costs, Seqwater provided screenshots from the CIS Inventory System. KPMG has confirmed the source of these rates. Seqwater has then applied these unit rates to daily quantities of chemicals, in particular dosages (mg/L or mL/s) for each of Mt Crosby East Bank and Mt Crosby West Bank. KPMG can confirm the arithmetic accuracy of the analysis provided.

## 9.4.2 Summary findings

The driver for the incurrence of additional costs is that water quality criterion was breached at Mt Crosby WTPs, where bromide levels of 0.4 mg/L breached the trigger point of 0.18 mg/L. This is

<sup>57</sup> Seqwater, *Procedure for tracking and claiming of additional costs for extraordinary water events*, Table 1, pg. 4

<sup>58</sup> Seqwater, RFI 115

consistent with the criteria for a feedwater event as defined by the QCA in the 2015 Bulk Water Price Review.

Seqwater implemented operational procedures that were consistent with its procedure for tracking and claiming of additional costs for extraordinary water events. Further, Seqwater provided daily chemical dosages at the Mt Crosby WTPs by chemical, and applied unit rates that reflected average daily costs as documented in the CIS Inventory System. KPMG considers Seqwater to have demonstrated both the prudence and efficiency of the costs it has incurred.

Based on the above information, KPMG recommends Seqwater be allowed to recover total costs of \$443,000.

## 9.5 Drought response

Drought conditions and lower storage levels in northern SEQ have triggered a change in operations from 'least cost' mode to 'drought' mode by Seqwater. In doing so, Seqwater has sought to provide additional support to the northern region under normal seasonal conditions, including re-commissioning Ewen Maddock to bring it into hot standby mode. Seqwater has also been required to pump water north via the Northern Pipeline Interconnector (NPI). In addition to these measures, Seqwater has been required to cart water from its Dayboro WTP to the Dayboro off grid community.

Seqwater are seeking to recover \$0.83 million in additional drought response costs incurred over the period 2017-18.

During 2016, Seqwater was actively monitoring the storage level decline for Baroon Pocket Dam (BPD) located in the Sunshine Coast. BPD is the largest storage in the Sunshine Coast sub region and an important supply source. In mid-December 2016, BPD dropped below the 60 per cent storage level that triggered operational actions designed to protect the storage and prolong water supply availability. In early February 2017, this storage level dropped below 50 per cent and triggered further measures designed to supplement supply for the Sunshine Coast through grid system water transfer from central SEQ.

The operational response implemented by Seqwater was as per the operational triggers specified in the WSP.<sup>59</sup> The specific triggers for the northern sub region associated with BPD storage level are specified in Figure 62 below.

Since early February 2017, Seqwater has changed operating mode pursuant to these sub regional triggers identified in the WSP. The operation of the Northern Pipeline Interconnector (NPI) in a northerly flow direction will continue until such time as BPD is completely replenished (100 per cent). Seqwater's annual operating statement has an exit trigger of 100 per cent for the northerly flow operating direction of the NPI, and this operating mode incurs a higher level of operating cost for Seqwater compared to a least cost mode of operation.

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<sup>59</sup> Seqwater. Water Security Program. Appendix H Operational plan and approach

Figure 62. Operation triggers for operating the NPI in a northerly direction

Baroon Pocket Dam storage level	Trigger O – Operational PO – Pre-operational C – Capital	Action	Estimated Landers Shute WTP production (ML/day)
60%	O	<ul style="list-style-type: none"> <li>Reduce export to the NPI to achieve minimum operational requirements in the NPI</li> <li>Minimise import from the NPI to Maroochy via the Nambour off take</li> <li>Noosa WTP increases production to supply local Noosa demand and export 15 ML/day into the NPI2 in SFD</li> </ul>	85
50%	O	<ul style="list-style-type: none"> <li>Stop all exports to the NPI and operate NPI1 in a northerly direction (i.e. 40 ML/day from North Pine/central sources)</li> <li>Eudlo pump station import of 15 ML/day to Landers Shute supply area from NPI1 and NPI2</li> </ul>	45
40%	PO	<ul style="list-style-type: none"> <li>Review Ewen Maddock and Banksia Beach WTP operational need</li> </ul>	45
35%	PO	<ul style="list-style-type: none"> <li>Initiate hot standby operation planning for Ewen Maddock and Banksia Beach WTPs (i.e. 6 month notice period begins)</li> </ul>	45
25%	O	<ul style="list-style-type: none"> <li>Maximise Ewen Maddock and Banksia Beach WTPs and reduce import from NPI by approximately 5 ML/day</li> <li>Eudlo pump station import of 20 ML/day to Landers Shute supply area from NPI1 and NPI2</li> </ul>	40

Source: Seqwater, *Water for life - South East Queensland's Water Security Program 2016-2046, Appendix H, Table H-2*

In responses to queries from KPMG regarding the basis for recharging BDP to 100 per cent of capacity, Seqwater stated<sup>60</sup>:

*...100% is the trigger level set against the storage volume for BPD. This makes it clear to the Seqwater operators to continue this operating mode. The Annual Operating statement (AOS) reviews the exit trigger every 6 months and if Baroon Pocket was significantly higher than the Grid 12, the exit trigger or operation instruction may be changed to ensure balanced drawdown of the storages.*

*When the emerging drought conditions were being experienced Baroon was at 45% and the combined key bulk water storage (KBWS) level was approaching 70%. Under this situation it was identified that the KBWS demand management triggers (set to be introduced when the KBWS reached 60%) was going to be too late to adequately protect BPD as it was declining rapidly. Seqwater has learnt from this experience that the Northern Region water supply security needs higher support at times.*

*The comparative water supply situation has changed now in that BPD is 77.7% and the Grid 12 is 76.2%. However, with the NPI operating in a northerly flow direction the storages are tracking on a similar drawdown which now means that the KBWS demand management restrictions will work for BPD should overall adverse inflow conditions be experienced again. BPD would be dropping at a greater rate without importing water from the NPI.*

KPMG accepts that an exit trigger of 100 per cent is appropriate for BDP, as it reflects historical storage performance. In the future, Seqwater should seek to demonstrate that the potential cost impact of returning to drought conditions, multiplied by the likelihood, is greater than the cost of operating the NPI until an exit trigger of 100 per cent is reached. This would demonstrate that the benefits outweigh the costs.

Seqwater has provided the incremental costs incurred between the period February 2017 to May 2017 and July 2017 to October 2017. In June 2017 a failure at the Eudlo pump station prevented northerly

<sup>60</sup> Seqwater, RFI 107

transfers of water to continue. Seqwater are seeking to recover total costs of \$826,136 resulting from the prevailing drought conditions.

## 9.5.1 Assessment

### 9.5.1.1 February 2017 to May 2017

Seqwater has provided an extract from its general ledger which allows it to identify the costs incurred by each pumping station to pump water in a northerly direction through the NPI to BPD. The following table details these pumping stations and monthly costs incurred.

Table 138. Additional costs – Pumping NPI

Pumping Station	February	March	April	May	Total
<b>Byrnes Rd</b>	\$6,063	\$8,604	\$9,726	\$7,426	\$31,819
<b>Eudlo</b>	\$4,342	\$5,381	\$7,219	\$8,175	\$25,116
<b>Lloyd St</b>	\$5,665	\$6,380	\$17,783	\$6,480	\$36,308
<b>Morayfield</b>	\$30,892	\$39,173	\$57,122	\$52,111	\$179,383
<b>Noosa</b>	\$2,905	\$1,978	\$4,589	\$5,207	\$14,679
<b>North Pine</b>	\$69,934	\$71,347	\$174,903	\$92,988	\$409,172

Seqwater has then applied weightings to each pump station to reflect the percentage of operations related to drought response as shown below. The total rounded incremental cost related to these pumping stations is \$392,000.

Table 139. Incremental costs – Pumping NPI

Pumping Station	Total	% of operations related to drought response	Incremental cost incurred
<b>Byrnes Rd</b>	\$31,819	100%	\$31,819
<b>Eudlo</b>	\$25,116	100%	\$25,116
<b>Lloyd St</b>	\$36,308	50%	\$18,154
<b>Morayfield</b>	\$179,383	100%	\$179,383
<b>Noosa</b>	\$14,679	100%	\$14,679
<b>North Pine</b>	\$409,172	30%	\$122,752

### 9.5.1.2 July 2017 to October 2017

Seqwater has provided a reconciliation that demonstrates the incremental volumes at all related treatment plants and pumping stations, and the average unit cost (\$/ML) for each, to determine the cost impact. This is detailed in the following table.

Table 140. Incremental volumes by treatment plans and pumping stations

Site	Unit Cost (\$/ML)	Incremental Volume (ML/day)				Incremental Cost July - October
		July	August	September	October	
<b>Noosa WTP</b>	\$166	15	8	20	3	\$230,034
<b>Image Flat WTP</b>	\$60	-2	-1	-3	-9	-\$28,189
<b>Landers Shute WTP</b>	\$67	-36	-22	-30	-64	-\$303,605
<b>Ewen Maddock WTP</b>	\$165	11	18	18	15	\$308,890
<b>North Pine WTP</b>	\$58	-28	-30	-22	-4	-\$145,744

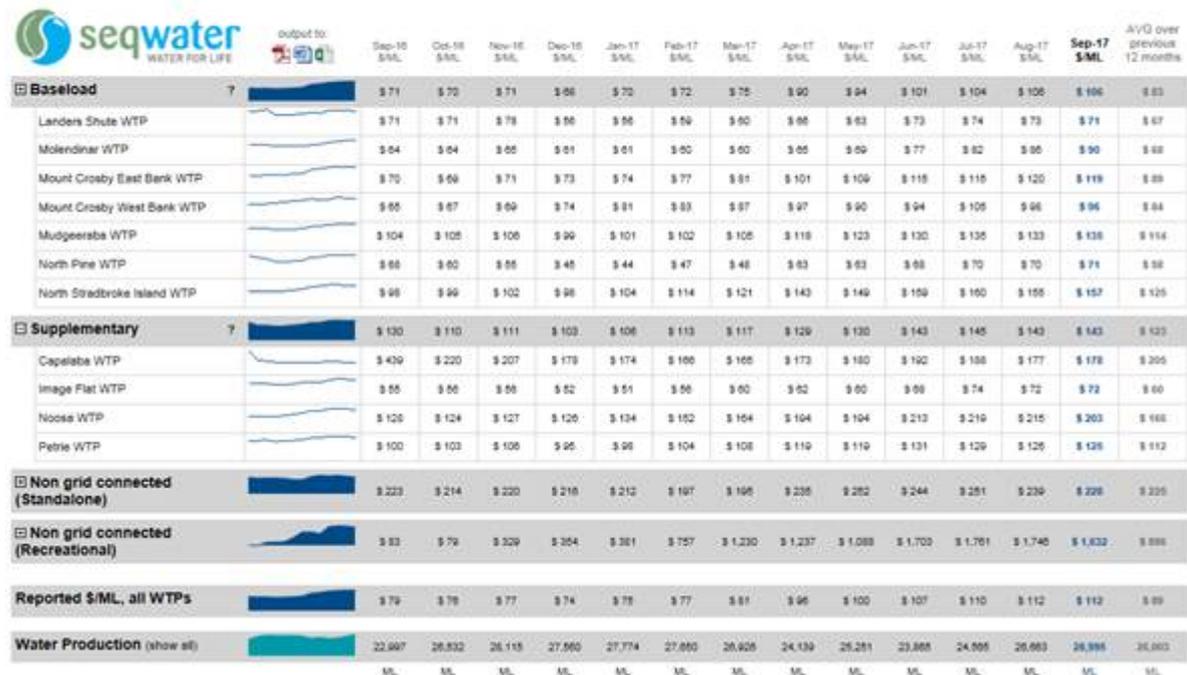
Site	Unit Cost (\$/ML)	Incremental Volume (ML/day)				Incremental Cost July - October
North Pine PS	\$27	-28	-30	-22	-4	-\$66,461
Mt Crosby WTP	\$87	35	35	35	35	\$364,412
Noosa PS	\$20		5	5		\$5,766
Noosa OT	\$0					\$0
Eudlo PS	\$14				10	\$4,167
Caloundra Street WQMF	\$10					\$0
Morayfield PS	\$57			4	29	\$56,267
Narangba PS	\$10				29	\$8,599
Byrnes Road PS	\$20					\$0
Lloyd Street	\$20					\$0
Network						\$434,136

The unit costs (\$/ML) are from Seqwater's Unit Costs Variable Dashboard. This dashboard uses Seqwater accounting data to calculate the unit costs for water treatment plants. The dashboard excludes pump stations however the same methodology was applied for these pump stations (an assumption was made for Narangba PS due to insufficient data for calculating \$/ML). Seqwater informed KPMG that these are rolling 6 or 12 month averages, and provided the following extract to support the basis of its assumptions. KPMG can confirm the above table reconciles with the last column of the figure below. These unit costs provide an appropriate basis for estimating incremental costs.

Figure 63. Seqwater Unit Variable Costs

## Unit Costs (Variable)

For a brief explanation of how these figures are calculated, go [here](#).



## 9.5.2 Summary findings

The referral notice to the Authority requires it to review additional costs incurred by Seqwater for drought response over the period 1 July 2015 to 30 July 2018. The driver for the incurrence of additional costs is storage levels in BPD dropping below agreed trigger levels, as identified in the WSP. As this event is caused by drought, it is outside of Seqwater's control and required changes to normal operating procedures. As such, the event meets the definition of a drought response review event.

Seqwater implemented operational procedures that were consistent with actions detailed for the relevant trigger levels contained in the WSP. This included operating the NPI in a northerly flow direction and importing water to Landers Shute supply area from NPI. Furthermore, operating NPI until 100 per cent capacity is reached is consistent with the Annual Operating Statement.

The implementation of agreed operational procedures when these trigger levels were breached demonstrates the prudence of the activities.

Seqwater has provided extracts from its general ledger which detail the costs incurred to respond to this drought event. Seqwater has also validated that it has appropriately apportioned costs related to use of impacted assets to this event. Seqwater has demonstrated the appropriateness of cost estimates, including allocation of pumping and treatment costs at assets to recharge BPD – this supports the efficiency of the claim. As such, the costs incurred were prudent and efficient.

Based on the above information, KPMG recommends Seqwater be allowed to recover total costs of \$826,136.

# 10 Other key issues raised by Seqwater in its response to the QCA Draft Report

In response to the QCA Draft Report, Seqwater also sought additional allowances, specifically:

- More flexible arrangements in relation to large projects providing for the capitalisation of opex; and
- Additional expenditure allowance (capex and opex) associated with remobilisation of the Luggage Point Advanced Water Treatment Plant.

At the request of the QCA, KPMG has reviewed Seqwater's proposals for each of the above allowances, where necessary requesting further information or clarification from Seqwater staff.

## 10.1 Capitalisation of opex

In Section 7 of its submission, Seqwater are seeking more flexible arrangements in relation to large projects which are categorised as opex by accounting definitions, but are more akin to capital expenditure, and which can be difficult to estimate when projects are at the early planning phases. Seqwater has identified the following costs as those that should be treated as capex:

- Operating plants normally in hot-standby to maintain supply during major shutdown for works at other water treatment plants. Seqwater note:

*"these projects could not occur without providing an alternative source of water to meet ongoing demands... therefore (it is) appropriate that the efficient incremental expenses of operating other assets during this time are capitalised (through being added to the RAB), so that all of the costs associated with the capital upgrades are recovered from both current and future users of those assets. Seqwater also notes the inherent uncertainty in forecasting these costs in advance and that capitalisation of these costs avoids the need for re-opening the price review."*

In support of this proposition, Seqwater refers to the ESC's recent decision to capitalise the lease payments of the Victorian Desalination Plant (VDP) to better reflect the services provided over the life of the assets

- Large payments for assets owned by third parties for capital-related work or assets that is defined as opex under accounting standards. Seqwater note:

*"the specific accounting treatment often rests on the specifics of the situation which are often not known until closer to project delivery. Until this time, the default assumption is that such expenditure is capital and would be added to the RAB accordingly. This means opex forecasts do not need to include large and uncertain allowances for such projects. Further, that payments to third parties for asset augmentations or modifications as a result of a Seqwater project are best considered part of that project's capital cost, and recovered over the asset life."*

KPMG notes that capex is typically associated with acquiring or improving a long term asset from which the business will receive a future stream of benefits. Operating and maintenance expenditure is associated with the operation of assets or their maintenance and repair (where such expenditure does not extend the life of the asset).

Seqwater's submission does not present clear evidence of the need to capitalise these costs. KPMG has drawn this conclusion based on the following:

- Regulators typically rely on accounting standards as the basis for treatment of expenditure, unless the regulated business can demonstrate a more reasonable basis. KPMG makes the following observations based on current accounting standards.
  - The capitalisation of operating expenditure of stand-by-equipment during major overhaul works is not consistent with AASB 116 Property, Plant and Equipment principles under Australian accounting standards. AASB 116 allows for the capitalisation of expenditure that is directly related to bring an asset (including a component of an asset) into a condition that is ready for use. The operation of stand-by-equipment is not directly attributable to the construction of an asset, as it is directly attributable to the delivery of the underlying service.
  - Where large payments are made for assets owned by a third party, consideration needs to be given to what rights and obligations that will be retained by Seqwater. If they have been assessed as operating expenditure under AASB already, then it would be challenging to capitalise unless it is directly attributable to a construction of an asset. For example, depreciation of a truck used during construction activities can be capitalised as a cost of construction whereas if the same truck is used for maintenance activities, the depreciation expense recognised during these maintenance period is expensed. Seqwater has not detailed which large third party contracts that it is referring to and that it is seeking to capitalise.
  - Departures from these standards are typically by exception and driven by the regulator seeking to address issues that may be significantly distorting outcomes. In such instances, regulators have been able to establish clear economic rationales to support their decisions. The example cited by Seqwater is the capitalisation of contract payments associated with Victorian Desalination Plant by Melbourne Water. In this instance, the ESC as the regulator was seeking to address the material impact that the payments were having on customer bills due to the apparent disassociation between the economic life of the desalination plants assets and the magnitude of the contract payments. Capitalising some of the contract costs was seen as a mechanism for providing billing outcomes to customers that were consistent with what they would have experienced had Melbourne Water constructed the plant itself and rolled the associated expenditure in to an asset base where it would be recovered overtime by earning a return on and off the asset value. KPMG notes that the costs associated with this issue where of a magnitude greater than those associated with the Seqwater proposal.
- The hot standby assets referred to by Seqwater are not direct inputs into the capital works in question. Rather, they are aimed at ensuring continuance of security of supply. Given the network nature of Seqwater's infrastructure, there is no prima face reason to treat differently the opex associated with the hot standby assets from the opex associated with any of the other assets contributing to the same security of supply.

KPMG recommends that these costs are treated as opex, consistent with the existing treatment under accounting standards and therefore not capitalised by Seqwater.

## 10.2 Remobilising the Luggage Point Advanced Water Treatment Plant

From 31 March 2015, the WCRWS has been maintained in a care and maintenance mode such that it can be remobilised within a two year notice period. The scheme pipeline (some 220km) needs to be periodically flushed to avoid water quality problems as part of the care and maintenance program. Due to that requirement, one of the three reverse osmosis trains at the Luggage Point Advanced Water Treatment Plant (AWTP) remains operational, albeit in a reduced preservation state.

That train runs several times a year to produce approximately 200 ML/year for pipe flushing purposes. The other two AWTPs at Gibson Island and Bundamba remain shut down.

Seqwater's WCRWS *High Level Remobilisation and Restart Program Plan*<sup>61</sup> (Remobilisation Plan) outlines the high level activities that would be required to be undertaken to remobilise the scheme and includes a detailed risk assessment. Seqwater's WSP details that the remobilisation commences when the Grid 12 water storages reach 60 per cent of combined storage capacity. The program requires that the WCRWS be operating to its full installed capacity of 180 ML/day within two years of the scheme remobilisation trigger.

In Section 7.2 of its submission to the QCA, Seqwater proposes to fully remobilise a single train at the Luggage Point AWTP to reduce key risks associated with restarting the WCRWS when required as a drought response. The water produced would be supplied for industrial or community education purposes.

Seqwater states that it will take four and a half months to remobilise one train at Luggage Point. The additional capital costs are estimated at \$1.4 million in 2017-18, of which Seqwater will seek to be rolled into the RAB at the next review. On an ongoing basis, Luggage Point will produce 6ML/day at an additional operating cost of \$3 million per annum above care and maintenance and \$0.5 million per annum in ongoing renewals costs.

The basis for Seqwater proposing to remobilise the plant when storage triggers have not been breached are as follows:

- Reduction of remobilisation risks;
- Gain an understanding of the operational condition of assets and allow for operating and maintenance strategies to be developed to improve scheme availability;
- Identify and address existing process risks;
- The build contractor operational knowledge and expertise;
- A community engagement exercise and to reduce demand on potable supplies for non-potable purposes; and
- Seqwater is in discussions with a number of large industrial users for a recycled water supply from the scheme, as a substitute to bulk water, and is satisfied that it will achieve substitution of 6ML/day from 2018-19.

While KPMG recognise some of the purported benefits raised, it is not clear that those benefits articulated by Seqwater of remobilising the Luggage Point AWTP in advance of the 60 per cent trigger being breached, outweigh the costs that will be passed through prices. KPMG has identified the following challenges to Seqwater's proposal:

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<sup>61</sup> Seqwater, Western Corridor Recycled Water Scheme High Level Remobilisation and Restart Program Plan, 18 August 2017

- As of 21 February 2018, current storage levels are 75.2 per cent<sup>62</sup> in the Grid 12 Water Storages and there is no evidence provided that storages are expected to materially decrease in the short term, that might require the WCRWS to be remobilised to address drought issues;
- Seqwater currently has funding of \$1 million per annum for the next three years for community and stakeholder consultation. It is not clear why physical operation of the assets is required to support this consultation;
- Seqwater has not clearly demonstrated that the Luggage Point train needs to be remobilised to allow for effective engagement with stakeholders;
- Seqwater has not offset the additional costs with the bulk water costs saved;
- The costs related to remobilising Luggage Point AWTP are significant, resulting in a 0.2 per cent increase in bulk water prices;
- Once Luggage Point AWTP is remobilised, it will be operating on an ongoing basis into the future, and if storages remain above trigger levels, then end consumers will be paying for recycled water that they do not need;
- Seqwater has not provided adequate evidence that community and stakeholder engagement cannot be effectively completed during the two year allowance for the WCRWS be operating to its full installed capacity of 180 ML/day; and
- The referral notice to the Authority requires it to review additional costs incurred by Seqwater for drought response over the period 1 July 2015 to 30 July 2018 - it is not clear why in the future, Seqwater cannot recover any additional costs for remobilising the WCRWS as a review event.

On this basis, KPMG recommends excluding forecast costs related to remobilising the Luggage Point WCRWS.

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<sup>62</sup> <http://www.seqwater.com.au/water-supply/dam-levels> - 21 February 2018

# Appendix A – Initial Seqwater Meetings

Table 141. KPMG meetings with Seqwater staff

<b>Capital Expenditure – 21/22 August 2017 (David Francis, Julian Watts, Lance Brooks)</b>
• Long term planning – Kate Lanskey
• Strategic asset management – Mark Wilson
• Overview of capital planning – Bruce Hutton, Arran Canning
• Renewals program – TBC
• Delivery of program – Kathleen Thatcher
• Benefits realisation – Brett Myatt, Arran Canning
• Project 1: All Pipes – PAA Beaudesert WSZ Upgrade – Mark Smith, Bruce Hutton, Amelia Jewell
• Project 2: Mt Crosby East Bank WTP - PID01566 - TEB: Filtration Upgrade / Improvement – Lee Foster
• Project 3: Mt Crosby East Bank WTP - TEB: Eastbank WTP Sedimentation Upgrade (Resilience) – Lee Foster
Capex - Monday 22 August 2017 (David Francis, Lance Brooks).
• Project 4: North Pine WTP - TNP: Filtration Capacity Upgrade (250 ML/day) - Lee Foster, Amelia Jewell
• Project 5: Ipswich Office - Enterprise Resource Planning Program CAPEX - Murray Heke, Graham Welch, Edwin Sayers
• Project 6: Holts Hill Reservoir - RHH: pH Correction Upgrade – Lee Foster
• Project 7: Somerset Dam - DSO: Dam safety upgrade – Barton Maher
• Project 8: Lake MacDonald Dame - PID01688 - DLM: McDonald Dam Upgrade Stage 2 – Barton Maher
• Project 9: Leslie Harrison Dam - PID01430 - DLH: Leslie Harrison Dam Upgrade Stage 1 – Barton Maher
• Project 10: Administration Indirect Costs - Mobile Plant and Fleet Renewals - Darren Hayman, Karen Jones
<b>Operating expenditure - 24 August 2017 (Mark Fitzgibbon, Lance Brooks)</b>
• Operating Costs Forecast Methodology – Adam Kay-Spratley
• Regulatory model overview – Adam Kay-Spratley
• Base Year 2018-19 development – Kimberley Harding,
• Opex governance – Kimberley Harding,
• Escalation / Growth – Adam Kay-Spratley
• One off step changes: MWA (Major Contracts, WQ Reporting, Fixed Opex mode-driven) – Mark Cullian
• One off step changes: ICT – Murray Heke, Edwin Sayers
• One off step changes: Water Security Programme, Integrated Master Plan – Kate Lanskey
• One off step changes: Community Engagement and education – Liz Kearins, Sophie Walker
• Overview of Procurement Processes – Michael Harkin

# Appendix B – KPMG Original Assessment Sampled Capex

Table 142. KPMG recommended adjustments to incurred expenditure – sample projects (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
<b>Beaudesert WSZ Upgrade</b>	(\$1.0)	(\$10.1)	(\$30.4)	(\$33.4)	\$0.0	\$0.0	\$0.0	\$0.0	(\$4.9)	\$0.0	(\$79.8)
<b>Mt Crosby Filters Upgrade</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Mt Crosby Sedimentation</b>	(\$1.4)	(\$16.0)	(\$16.0)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	(\$33.3)
<b>North Pine WTP Filters</b>	\$0.0	\$0.0	\$0.0	\$0.0	(\$3.9)	(\$16.8)	(\$16.7)	\$0.0	\$0.0	\$0.0	(\$37.5)
<b>ICT ERP Upgrade</b>	(\$2.5)	(\$2.5)	(\$1.6)	(\$0.9)	(\$0.9)	(\$0.9)	(\$2.5)	(\$1.6)	(\$0.9)	(\$0.9)	(\$15.3)
<b>Holts Hill pH Upgrade</b>	(\$1.4)	(\$3.9)	(\$3.8)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	(\$9.1)
<b>Somerset Dam Upgrade</b>	\$0.0	\$0.0	(\$1.6)	(\$2.6)	(\$40.5)	(\$33.9)	(\$25.8)	(\$0.6)	(\$0.7)	(\$0.5)	(\$106.3)
<b>Lake MacDonald Dam Upgrade</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Leslie Harrison Dam Upgrade</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Fleet and Mobile Plant Renewals</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Mudgeeraba WTP Renewals</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Mt Crosby WPS Renewals</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Total - Sample Projects</b>	<b>(\$6.4)</b>	<b>(\$32.5)</b>	<b>(\$53.3)</b>	<b>(\$37.0)</b>	<b>(\$45.4)</b>	<b>(\$51.7)</b>	<b>(\$45.1)</b>	<b>(\$2.2)</b>	<b>(\$6.5)</b>	<b>(\$1.4)</b>	<b>(\$281.4)</b>

Table 143. KPMG recommended incurred expenditure profiles – sample projects (real December 2016 \$ million)

FY	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
<b>Beaudesert WSZ Upgrade</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Mt Crosby Filters Upgrade</b>	\$12.5	\$11.7	\$7.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$31.4
<b>Mt Crosby Sedimentation</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>North Pine WTP Filters</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>ICT ERP Upgrade</b>	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$10.0
<b>Holts Hill pH Upgrade</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Somerset Dam Upgrade</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>Lake MacDonald Dam Upgrade</b>	\$2.4	\$40.0	\$35.0	\$6.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$84.2
<b>Leslie Harrison Dam Upgrade</b>	\$5.0	\$17.5	\$2.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$24.7
<b>Fleet and Mobile Plant Renewals</b>	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$1.7	\$17.0
<b>Mudgeeraba WTP Renewals</b>	\$0.0	\$0.2	\$0.7	\$0.5	\$0.4	\$0.0	\$10.5	\$3.9	\$0.4	\$0.8	\$17.4
<b>Mt Crosby WPS Renewals</b>	\$0.0	\$4.1	\$1.5	\$3.0	\$4.7	\$8.0	\$0.1	\$0.8	\$0.0	\$0.0	\$22.3
<b>Total - Sample Projects</b>	<b>\$22.6</b>	<b>\$76.2</b>	<b>\$49.3</b>	<b>\$13.0</b>	<b>\$7.8</b>	<b>\$10.7</b>	<b>\$13.3</b>	<b>\$7.4</b>	<b>\$3.1</b>	<b>\$3.5</b>	<b>\$207.0</b>



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