



# Hunter Water Expenditure Review

IPART

Comment on Hunter Water's Response to IPART's Draft Report

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## Hunter Water Expenditure Review

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**Appendix B. Extracts from our report discussing to ICT opex and capex**

**Appendix C. Extracts from ISO55001 relating to condition and risk based approach to asset management**

## Executive Summary

IPART engaged Jacobs (us/we/our) to review Hunter Water's (HW) response to IPART's Draft Determination and Draft Report (Draft Report) on prices to apply from 1 July 2016.

The tasks covered in this engagement and set out in this report are:

- 1) Undertake a review of the following issues:
  - HW's arguments against our recommendation to remove \$200,000 per year (\$2015-16) for ICT strategies and studies
  - HW's arguments against our recommended output measure that forecast costs for projects and programs exceeding \$5 million (\$2019-20) should be submitted to IPART on a condition and risk based asset management approach.
- 2) Provide views on HW's submission in response to our recommended capital expenditure reductions – particularly recommendations on extrapolating findings from the 12 projects examined in detail to the remaining proposed expenditure as relevant
- 3) Provide further explanation of our recommended asset lives and the implications of the resulting additional depreciation allowance for HW in providing its regulated services.

In summary our findings on these items are:

- 1) **ICT** – We propose no change to our recommendation to IPART. Consistent with our Final Public Report, we recommend that IPART does not approve this \$200,000 annual expenditure for the 2016/17 to 2019/20 price path. We consider that HW has provided insufficient information to justify this expenditure. We confirm that, in preparing our Final Public Report, we had received and reviewed the information to which HW refers in its response to IPART's Draft Report.
- 2) **Capex extrapolation** – We propose no change to our recommendation to IPART, that is, IPART should maintain its support for the cost savings attributable to our capex extrapolation method and recommendations for 2017-2020. We confirm that our previous recommendations are robust for the reasons outlined in our Final Public Report. We note that on this matter, HW has not provided additional information that would warrant a change to our approach.
- 3) **Asset lives** – We have maintained our recommendation but provided a more complete explanation of how we arrived at the asset lives and the impact of this recommendation.
- 4) **Output measures** – We propose no change to our recommendation to IPART that IPART adopts an output measure with respect to HW requiring to demonstrate a condition and risk based approach to asset management. These practices are consistent with regulated utilities in Australia and the UK and with ISO 55000<sup>1</sup>.

<sup>1</sup> ISO 55001 is a part of the ISO 55000 suite of documents forming the ISO standard for asset management. ISO 55001 is the standard itself and ISO 55002 forms the guidance notes to the standard. ISO 55000 and ISO 55001 are often used interchangeably.

## Important note about your report

This section sets out the assumptions and limitations that apply to this report.

The sole purpose of this report is to present Jacobs' (our) findings and recommendations as part of this review of Hunter Water Corporation's (HW) costs, in accordance with IPART's scope with respect to reviewing HW's responses to IPART's Draft Determination and Draft Report.

We have relied upon and presumed accurate information presented to us by IPART and HW. In some cases we have similarly relied upon information in the public domain, where available from credible sources.

We exclude any warranty or guarantee (expressed or implied) in relation to the data, observations and findings in the report to the extent permitted by law.

This report should be read in full with no excerpts to be used as being representative of our findings.

This report has been prepared exclusively for our client and no liability is accepted for any use or reliance on the report by third parties.

## 1. Introduction

Following Hunter Water's (HW) response to the Independent Pricing and Regulatory Tribunal's (IPART) Draft Determination and Draft Report (Draft Report)<sup>2</sup> for HW's 2016/17 – 2019/20 pricing period which included comments on Jacobs (our/us) Hunter Water Expenditure Review Final Report (Public) (February 2016) (Final Public Report), IPART has asked Jacobs (we/us) to comment on four items raised by HW with respect to our report:

- Exclusion of \$200,000 of Information and Communication Technology (ICT) operating expenditure (opex) from HW's allowance for opex
- Cost savings for HW's capital expenditure (capex) and in particular, our extrapolated capex savings
- Updated asset lives, resulting generally in an increase in the HW's allowance for depreciation (not raised as an issue by HW)
- An output measure encouraging HW to submit forecast costs for projects and programs above \$5 million (\$2019-20) on a condition and risk based asset management approach.

This report documents our response to IPART's scope in relation to HW's comments in response to IPART's Draft Report on these four items.

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<sup>2</sup> Hunter Water Corporation, Maximum prices for water sewerage, stormwater drainage and other services from 1 July 2016, Water – Draft Determination, Independent Pricing and Regulatory Tribunal, March 2016

## 2. Scope of work

We have undertaken a review and commented on the following items raised by HW in its response to IPART's Draft Report:

- HW's arguments against our recommendation to remove \$200,000 per year (\$2015-16) from HW's opex budget for ICT strategies and studies
- HW's arguments against our recommended output measure that forecast costs for capital projects and programs exceeding \$5 million (\$2019-20) should be submitted to IPART on a condition and risk based asset management approach
- Views on Hunter Water's submission in response to our recommended capital expenditure reductions – particularly recommendations on extrapolating findings from the 12 projects examined in detail to the remaining proposed expenditure
- Further explanation of our recommended asset lives and the implications of the resulting additional depreciation allowance for HW in providing its regulated services.

### **3. Method**

To compile this report, we:

- Read our Final Public Report to IPART and re-familiarised our understanding of the issues addressed and reasons for our recommendations with respect to those items set out in IPART's scope for our assignment
- Read the relevant parts of IPART's Draft Report and of HW's response to IPART's Draft Report with respect to the items set out in the scope above
- Assigned the task to relevant subject matter specialists that were involved in developing the relevant sections of our Final Public Report.

We used these subject matter specialists to address the following items:

- Opex reduction of \$200,000 for ICT strategies and studies
- Our recommendation that HW adopts a risk and condition based approach to replacement and refurbishment expenditure over \$5M
- HW's to IPART's Draft Report where HW has questioned our findings in our Final Public Report with respect to certain recommended capital expenditure reductions and our extrapolation of findings
- Further explanation of our recommended asset lives and implications for depreciation.

In undertaking this work we:

- Did not seek additional information from HW. However, we did seek clarification from IPART as to the identity of specific documentation that HW advised IPART that it provided to us regarding the ICT expenditure. Specifically, the documentation that HW has suggested we did not take into account in our review of that expenditure.
- Drawn on our knowledge of relevant organisations and our experience in water and wastewater businesses and their approach to undertaking similar activities to support our responses to HW's comments and our final position on these expenditure items
- Written this report using active plain English in the first person
- Implemented a three level quality assurance process in terms of peer, project manager and project director reviews
- Have substantiated all of our recommendations and conclusions.

## 4. Our response

### 4.1 Information and Communication Technology (ICT)

#### 4.1.1 Background

In our Final Public Report we recommended the removal of the \$200,000 p.a. sought by HW for expenditure on corporate strategies and studies for ICT given that the data we received from HW did not include details of any programs in the proposed list of strategies and studies for this area of expenditure over the price path period.

In its response to IPART's Draft Report, HW requested that we:

*"...reconsider allowing the \$200,000 for corporate strategies and studies in the efficient base year corporate expenditure and on an ongoing basis over the next price period, on the basis that the expenditure relates to ICT investigations of an identified business need as a precursor to capital investment."*<sup>3</sup>

We respond to this comment in Section 4.1.3 below. In addition to this, HW makes the following comments in its response to IPART's Draft Report which we address here in turn.

In its response to IPART's Draft Report HW also stated that our:

*"Recommendation to reduce the allowance for ICT strategies and studies due to lack of justification cannot be relied upon because HW provided supporting information that was not considered."*

We have reviewed all the material provided (including those specific items that HW has advised that it considered we hadn't reviewed) and we confirm that all relevant items previously provided by HW and IPART to us were reviewed by us and taken into consideration in forming our opinion as set out in our Final Public Report.

#### 4.1.2 Our response to HW

*HW has stated in its response to IPART's Draft Report: "1.It is factually incorrect to assert that Hunter Water did not provide substantiating evidence of the ongoing need for this expenditure. Jacobs did not request any information in relation to this expenditure aside from inclusion of a finding in its draft report. In its response to Jacobs' draft report Hunter Water provided a detailed breakdown of 2015-16 expenditure (to a granularity of \$3,000) as an indicative work program for a sample year.' 3 A high level summary by cost category or project (to a granularity of \$10,000 per year) was provided for each year of the next determination period. It appears that this information was not considered by Jacobs. A copy of the information provided to Jacobs is attached in Appendix B"*

**Our response:** As noted above, we reviewed all relevant and related information, including the data summarised in Appendix B of HW's response to IPART's Draft Report. As set out in more detail in our analysis below, we note that, whilst the \$200,000 of expenditure in the base year 2015/16 was well documented and explained, the subsequent annual expenditures of \$200,000 per annum for 2016/17 to 2019/20 were not substantiated. For example, HW did not explain the activities and their purpose that the expenditure was intended support.

The only supporting information provided by HW was the titles of the areas of expenditure planned. These titles were identical to the expenditure items in the base year of 2015/16. From our knowledge of undertaking feasibility studies for ICT projects, we do not consider it reasonable to forecast identical expenditure over a five year period covering the same topic areas. Indeed, most ICT feasibility studies are completed within months, at most a year, given the requirements of the changing nature of the technology.

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<sup>3</sup> Hunter Water Response to IPART, Draft Determination and Draft Report on Prices to Apply from 1 July 2016, 18 April 2016, Appendix B page B.2

We do not consider that a detailed description of the purpose of the ICT opex in 2015/16 is an appropriate basis for substantiating ICT expenditure in subsequent years. Further, HW did not provide any detail of the activities for which the 2016/17 expenditure was to be used. It seems to us reasonable to expect HW to understand what its ICT studies budget would be used for one year out, at least at a high level.

We also consider it incorrect for HW to state that we did not request required substantiating information. Notwithstanding the substantial number of information requests submitted to HW over the period of the expenditure review, we advised HW at the start of the expenditure review that a guiding principal for our review was the need for us to be able to receive and evaluate information that substantiated HW's proposed expenditure. We advised that without such information, we would be unable to consider the expenditure prudent or efficient. As such, the onus is on the utility, i.e. HW, to provide evidence substantiating its proposed expenditure.

*HW: "2. It is conceptually incorrect to allow no expenditure to investigate implementation of new technologies yet apply a sector-wide continuing efficiency factor. Technology is an enabler of productivity improvements, pushing the efficiency frontier outwards for all comparable businesses. It is incongruous to expect Hunter Water to keep pace with "improved productivity and efficiency of the entire sector over time" whilst disallowing access to one of the levers."*

**Our response:** In principal we agree with this statement. However, as mentioned, one of the guiding principles of our review process, as described to HW at the commencement of the expenditure review process is that we are unable to recommend an expenditure item is prudent and or efficient if there is insufficient specific information to substantiate that expenditure. As such, we are unable to recommend that an expenditure item is prudent and efficient if it simply represents an allocation of money for activities that have yet to be determined or scoped.

*HW: 3. Disallowing expenditure to investigate the most efficient and effective ICT solution relative to business requirements undermines capital planning governance processes put in place to drive efficiency. Jacobs expects a "robust options investigation to be undertaken for all capital projects to demonstrate the efficiency and prudence of capital expenditure." This includes documentation that:*

- Demonstrates an assessment of alternative means of providing the same outcome
- Explores/considers least cost options"

**Our response:** We note that \$200,000 was spent in 2015/16 on ICT strategy and business cases for improvement to ICT infrastructure and systems. As set out above, we consider such expenditure to be transitory, if not one-off, with respect to the major ICT infrastructure projects. Further, we consider that a repeat of such expenditure will not be required until such time as future technological advances dictated a different, improved approach.

We also consider that development of such strategy and, in particular business cases for this type of expenditure should not span several years but rather should span several months, otherwise, technology will have changed again by the time the strategy/business case is developed.

We therefore consider it not prudent or efficient in this case to simply forecast a base case expenditure out over the regulatory price period, unlike the case with repeat opex items such as chemicals and electricity, without providing further detail as to the new areas of study the expenditure is planned to fund.

Had HW articulated the ICT projects that it proposed to develop business cases and strategy for over the regulatory price period, we would then have been able to assess the prudence, i.e. need for those activities, and efficiency of the expenditure. However, HW did not provide such substantiating information. We therefore concluded that the expenditure was not prudent and hence recommended to IPART that it not be allowed in the 2016/17 – 2019/20 prices.

We note that HW has advised that without this expenditure it will be unable to undertake a comprehensive feasibility study into the benefits and costs of electronic billing. However, we also note that in its Capital Portfolio Summary IPART PP16 (2016/17 to 2019/20) v1.2 12082015, HW, in summarising the IPART ICT Capital Portfolio Submission for the 2016/17–2019/20 Price Path and whilst mentioning that a number of ICT planned

projects related to ICT strategy and billing, HW does not specifically mention a planned capital project related to electronic billing.

However, we also note that in its existing ICT Portfolio capital expenditure program, one of the areas of improvement identified under the preferred option scenario for its customer services (CS) Platform Refresh works, as part of IPART's ICT Customer Care and Billing Major Upgrade Project, is to implement an electronic billing system.

This CS Platform Refresh has an expenditure totalling \$15.3M. Given that the business case for this project has already been approved by the HW Board and the project incorporates electronic billing as one of the customer services improvements and the project is underway, it is unclear to us why HW should need to budget to commit opex to a further business case to support capex implementing an electronic billing system.

As such, we again conclude that the proposed opex budget for ICT business cases has not been substantiated.

#### 4.1.3 Our further analysis

In its response to IPART's Draft Report, HW indicated that its ICT Capital Portfolio for 2017-20 will require HW to undertake studies to ensure that the right option is selected to achieve the most cost effective and architecturally fit solution for HW. However, HW provided only project titles and generic expenditure estimates for its corporate strategies and studies budget for 2016/17 to 2019/20 to follow on from its corporate strategies and studies program for 2015/16 as per Table 1.

Table 1 Corporate strategies and studies budget items 2016-17 to 2019-20 (\$2016 \$'000)

Program	2017	2018	2019	2020
System Management and Resilience	50	50	50	50
Asset Information Systems	20	20	20	20
Customer Care & Billing	10	10	10	10
Client Computing	30	30	30	30
Enterprise Applications and Information	50	50	50	50
ICT Infrastructure Programs	20	20	20	20
Information Management	10	10	10	10
ERP Program	10	10	10	10
<b>Total Corporate Strategy and Studies</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>

HW did provide a description of the activities<sup>4</sup> that it intended to undertake but for 2015/16 expenditure only in this area. We have reproduced the details of HW's submission for 2015-16 in Appendix 1. HW provided information about its proposed ICT activities to be undertaken in the 2015/16 base year only. The corporate strategies and studies costing \$200,000 for which detailed explanation was provided related to activities that occur only in 2015/16 to inform (subsequent) ICT capital investment decisions. Indeed, in the information provided HW states clearly that the opex for which descriptions were provided was for 2015/16 activities. HW does not indicate that these 2015/16 opex costs and associated projects have anything to do with the forecast years.

The HW information to which HW refers in its response to IPART's Draft Report was previously submitted to us and we considered it in detail at the time of our evaluation and took it into account in arriving at our recommendation as part of our Final Public Report. Our opinion has not changed due to the resubmission of the data, albeit we have reconsidered it again, in full, as part of this engagement.

<sup>4</sup> Hunter Water Response to IPART, Draft Determination and Draft Report on Prices to Apply from 1 July 2016, 18 April 2016, Appendix B page B.3-5

HW did not (and still has not) provided sufficient details of the relevant ICT activities it intends to undertake over the 2017-2020 price period to allow us to assess the prudence and or efficiency of that expenditure. HW has indicated, only, that the annual \$200,000 opex proposed for that period will be comprised of activities that have the same title as each activity in 2015/16 and that each activity will cost precisely the same amount as in the base year. Specifically, the limited detail provided to us by HW for the 2017-20 cost items (e.g. a simple continuous replication of the 2015/16 annual budget amounts) indicate to us that HW has not undertaken sufficiently rigorous budgeting to justify including these costs in prices paid by customers.

In summary, we consider the details HW provided for the base year corporate strategies and studies budget are adequate and provide justification for inclusion of those costs in that 2015/16 year only. However, we consider that HW has not sufficiently explained and justified its proposed opex of \$200,000 p.a. for ICT studies through 2017-2020. HW would have needed to provide a greater level of detail in relation to these activities for 2017-2020 for us to justify inclusion of a further \$800,000 of costs in its prices.

#### **4.1.4 Our recommendation**

Consistent with our Final Public Report, we recommend that IPART does not approve inclusion of this annual \$200,000 of opex for ICT studies in the 2016/17 to 2019/20 price path, as HW has not provided sufficient information to justify the expenditure. This conclusion means that there is no change to our Final Public Report recommendation to IPART. We accept that such costs would have been incurred by HW in 2015/16 and that HW has provided information to justify these costs for that year only.

We confirm that in preparing our Final Public Report we had received and reviewed the information to which HW refers in its response to IPART's Draft Report. Accordingly, as no new information has been provided by HW and the submissions it provided were not sufficiently detailed to warrant inclusion of this \$200,000 opex item in the prices for 2017-2020 our conclusions and recommendations in our Final Public Report with respect to this expenditure item stand.

## **4.2 Capex extrapolation**

### **4.2.1 Background**

We reviewed HW's proposed capex and published a Final Public Report in January 2016. Our recommendations included reducing HW's proposed capex by \$27.5 million over 2012-13 to 2019-20.

Specifically, in its response to IPART's Draft Report, HW indicated the following in relation to its capex:

- That IPART's decisions on efficient capex should be reconsidered as the draft decisions relied upon an expenditure review that extrapolated cost savings at a disproportionately fine resolution (HW's view). HW indicated that the review did not account for its internal governance processes for overseeing variances whilst being mindful of overall portfolio objectives and limits.
- That we recommended capex reductions that will increase compliance risks and may defer capital until future price periods.

Notwithstanding the above we note that HW agrees with the majority of IPART's Draft Report, but that its key concerns relate to the setting of forward opex and capex. HW identifies specific areas where it considers that we went further than the data would allow in scaling back allowed expenditure relative to the proposals detailed in HW's 2015 price submission.

HW outlines the following views relating to our (and IPART's) capex related recommendations:

*"Hunter Water takes the position that capital works planning needs to take account of the process for framing overall funding levels and the governance processes for managing project budgets. This requires consideration of spending limits and balancing tolerable levels of compliance risk over different time horizons. It is inevitable that variances of actual expenditure to budget occur. The critical element is the robustness of the governance processes for managing these variances and ensuring prudent and efficient expenditure."*

*Hunter Water argues that the proposed efficiencies for the capital works program have not considered the manner in which the capital portfolio was developed, nor all of the risks associated with cutting expenditure below proposed levels. This is particularly relevant as the portfolio is based on what Hunter Water considers is an acceptable level of business and compliance risk and the proposed cuts would see necessary expenditure being deferred. This always carries the possibility of price instability if there is a build-up of capital works necessary to maintain compliance levels and system reliability when budgets are reset in future price reviews.*

*It is the nature of any expenditure review for the consultant to look for reasons to cut and scale back the regulated utility's proposed spending. It is an intrusive approach that relies on questioning and second guessing the basis of almost all management decisions. Hunter Water doubts whether any expenditure consultant is capable of thoroughly and robustly reviewing four-year spending plans and making exact findings on efficient funding levels within the limited timeframe and resources allocated to the task."*

#### **4.2.2 Our analysis and response to HW**

In its response to IPART's Draft Report HW states that:

*"Hunter Water derived its proposed capex program by considering the pricing and balance sheet impact of various expenditure scenarios and the level of corporate and compliance risks."*

**Our response:** We agree with this statement. We have seen evidence of HW considering the balance between corporate and compliance risks. We note that HW has proposed a relatively consistent capex budget over the determination period, which has significantly reduced forecast expenditure compared to previous years' expenditure.

Hunter Water also states that:

*"Hunter Water recognises that there will be savings compared with budget on some capital projects. However, other projects will require an increase in authorised funds to meet project objectives provided they satisfy the approvals process."*

**Our response:** We acknowledge that the estimated costs for a project can change over time, as more precise project scope and cost information becomes available. We have reviewed and approved HW's cost estimation process involving contingency allowances and probabilistic costing, that HW uses to determine likely final costs for projects.

We have adopted the latest costs for all projects, including recommending an increase in costs where appropriate. Of the 12 projects we reviewed, we recommended an increase in costs for 4 projects (refer to our Final Public Report).

However, of the 12 projects we reviewed we found that there were instances where the final costs for the projects had or, in the case of Kurri Kurri WWTP, were likely to come in significantly below HW's proposals in its pricing submission. Where such cost reduction was due to a scope change, such as the technology changes for Burwood Beach WWTP, we have not extrapolated the cost difference.

However, where this cost reduction was found to be due to reduced contract price, due to e.g. market softening since the original estimate was undertaken, we have recommended extrapolation of the difference/s to other capital projects that were likely to experience the same reduction in costs due to reduced contract price.

HW also states that:

*"Hunter Water has a proven track record of managing project funding at a portfolio level to ensure that expenditure is within IPART's approved expenditure allowance and business and compliance risks are within acceptable levels."*

**Our response:** We acknowledge that HW's expenditure has been aligned, generally, to IPART's approved expenditure allowance. In addition, we acknowledge that HW has achieved full compliance with standards for

water pressure, water continuity and wastewater overflow, as set out in the terms of HW's Operating License (refer to Section 2.5.4 of our Final Confidential Report).

We recognise that HW, as a mature utility organisation, will manage its projects on a portfolio level. We also recognise that this allows HW to manage cost changes and risks. However, as stated above, because we consider that the issue identified (market softening) results in reduced costs across the portfolio for certain categories of capex proposals/projects, we consider that such cost reductions can still be managed on a portfolio level.

Our Final Public Report states: *"We consider that HW has followed good practice to develop its capital works program, including consideration of corporate risk associated with various expenditure levels. We have reviewed HW's gateway and estimating procedure and found these procedures to be reasonable. However, we consider that there are likely to be cost savings within individual projects which comprise the overall program of works, which will allow HW to achieve our proposed reductions due to, for example, changes in market conditions."*

Our analysis of HW's specific comments and specifically of the comments raised by HW in its responses to IPART's Draft Report supports our earlier opinion that the least cost option has not always been selected. We note that HW had previously provided the same comments on our draft report which we responded to in full and in the manner set out above in our Final Public Report.

HW also states that:

*"Four of the 10 projects reviewed chose an option that was not the least cost option of the technically feasible options. Only one of these was a full business case. HW will undertake options analysis on the three preliminary business cases prior to the development of a full business case. The costs to implement the options that are currently lower than the preferred solution may change as more detail is developed."*

*Over 2015, a further nine full business cases for water and wastewater projects have been presented to HW's Expenditure Review Committee with a total value of \$137 million. Of these, two projects chose an option that was not least cost to a total of \$0.4 million (0.3%) of the total cost. On each occasion, non-cost factors were a consideration and were clearly justified."*

*Over 2015, a further ten preliminary business cases for water and wastewater projects have been presented to the Expenditure Review Committee with a total value of \$117 million. Of these, two projects chose an option that was not least cost to a total \$0.4 million (0.3%) of the total cost. One project was a 1% increase on the least cost solution and the other had non-cost factors that made the least cost option not preferred, representing an 8% increase for this project (Central Coast transfer that Jacobs reviewed as prudent and efficient and provided a one-off adjustment)."*

**Our response (taken directly from our Final Public Report):** HW provided further evidence subsequent to the issue of our draft report regarding the selection of projects of projects that are not the least cost:

*"Over 2015 a further nine full business cases for water and wastewater projects have been presented to the ERC with a total NPV of \$137 million. Of these, two projects chose an option that was not least cost to a total \$0.4 million (0.3%) of the total cost. On each occasion, the non-cost factors were a consideration and were clearly justified."*

*Over 2015, a further 10 preliminary business cases for water and wastewater projects have been presented to the ERC with a total cost of \$117 million. Of these, two projects chose an option that was not least cost to a total \$0.4 million (0.3%) of the total cost. One project was a 1% increase on the least cost solution and the other had non-cost factors that made the least cost option not preferred, representing an 8% increase for this project (Central Coast transfer that Jacobs reviewed as prudent and efficient)."*

Whilst we have not reviewed the business cases mentioned above, we acknowledge that this demonstrates that, generally, the impact of not always selecting the lowest cost option is low in the cases cited.

With respect to the comments raised in Section 2.2.3 of HW's responses to IPART's Draft Report, that we opined that costs have been "overestimated", we note that these comments have been provided previously by HW when it commented on our draft report and that we responded to and addressed these comments in our Final Public Report. Our position on this matter therefore does not change.

HW has also stated that:

*"First, Jacobs has endorsed HW's overall gateway approval process for capital projects and associated cost estimating practices. Under the gateway process, projects that are at gateway 2 have a cost estimate that is based on a P50 estimate (i.e. there is a 50% probability that the actual cost will be above or below the estimate). Gateway 3 is the point at which total project funding is approved, hence a higher level of cost certainty is required. At this stage a P90 estimate is prepared (i.e. a 90% probability that the actual cost will be below the estimate). Using estimates with these confidence levels has been in affect endorsed by both Atkins Cardno in its 2012 review and by Jacobs in reviewing HW's estimating practices.*

*Second, Jacobs' analysis focuses on the actual costs for two projects at the gateway 3 stage, whereas about 85% of projects in the forward capital program are at gateway 1 or gateway 2. As noted above projects at the Gateway 3 stage have an estimate with a high level of confidence that actual costs will be less than the estimate. HW does not consider it reasonable for the consultant to extrapolate savings from a small sample of gateway 3 projects across the remainder of the capital program. Such an approach penalises the implementation of the estimating principles that Jacobs has endorsed as being reasonable (i.e. that a higher level of cost certainty is warranted at the point of approving full project funding).*

*The broader program of projects has, by definition, a lower level of project development and a cost estimate with a higher level of uncertainty. The analysis also ignores instances where actual costs at the gateway 3 stage have been greater than budget and an increase in funding was required to achieve project objectives."*

**Our response (taken directly from our Final Public Report):** We note HW's submission to us which states:

*"Jacobs has accepted that Hunter Water's estimating practices and gateway approval process are reasonable and reflect current industry practice. Under these processes, projects that are pre-Gateway 3 have a cost estimate that is based on P50 estimate i.e. there is a 50% probability that the actual cost will be below the estimate. Gateway 3 is the point at which total project funding is approved, hence a higher level of cost certainty is required. Estimates prepared for gateway 3 are a P90 estimate i.e. there is a 90% probability that the actual cost will be below the estimate. Therefore it is to be expected that the actual costs for the two projects examined will be below the project estimate. The forward capital program predominantly contains projects that are pre-gateway 3 (approximately 85% of projects). It is not reasonable to extrapolate savings from Gateway 3 projects across the remainder of the projects in the program that have a lower level of project development and definition and which have an estimate with a higher level of uncertainty."*

We have considered the above HW perspective and, notwithstanding this, conclude that the approach we have applied to be fair and reasonable as our identified savings are based on tightly scoped projects (i.e. two of the projects at Gateway 3). We have applied these savings on a pro rata basis to projects with less certain scope. We have done this because, given that our sample projects are at advanced planning stages, we are confident that these savings are real and achievable. Hence we have applied these savings to projects which are less certain in scope and are likely to have higher contingency values. Our approach is therefore conservative (in HW's favour).

HW also commented:

*"Finally, Jacobs' report misrepresents the point that HW had sought to make about the state of construction market pricing in New South Wales. HW accepts that the construction sector has experienced some level of easing in the rate at which construction costs increase. However, Jacobs' approach, based on small sample size and questionable analysis, finds that there has been a material reduction in construction costs that will endure for the full term of the determination period.*

*This assumption about construction price deflation is not supported by the Jacobs' data nor by evidence provided to the consultants of rising costs for some projects. HW will be exposed to compliance risk at the recommended expenditure levels if the consultant's view of local contract market conditions is not realised."*

**Our response:** As noted above, our finding is based on cost reductions noted in 4 of the 12 projects reviewed.

HW further stated that:

*"IPART's Draft Report states, in bold, that Jacobs considered there to be a "systemic over-estimation of project costs". HW notes that Jacob's finding was more cautiously worded (i.e. HW costs showed a moderate systemic bias due to market conditions softening since the time of its proposal to IPART."*

**Our response:** We acknowledge that the wording used in IPART's Draft Report does not align precisely with the wording used by us. However, the expression "a systemic over estimation of project costs" is consistent with our statement that "costs showed a moderate systemic bias due to market conditions softening". Nevertheless, we recommend that IPART adopts a statement that is more closely matched to our text than is currently the case to address this comment of HW.

#### **4.2.3 Our recommendation**

We propose no change to our recommendation to IPART on this aspect in our Final Public Report. That is, IPART should maintain its support for the cost savings attributable to our capex extrapolation method and recommendations for 2017-2020 prices. We confirm and consider that our previous recommendations are robust for the reasons outlined in our Final Public Report. We note that on this matter, HW has not provided additional information that would warrant a change to our approach or conclusions. However, we do recommend that IPART adopts a statement closer to our text in relation to the point directly above (i.e. adopts: "HW's costs showed a moderate systemic bias due to market conditions softening" rather than the following words: "a systemic over estimation of project costs").

### **4.3 Asset lives and HW's depreciation allowance**

IPART asked us in its scope of work for:

*"Further explanation of Jacobs' recommended asset lives and the implications of the resulting additional depreciation allowance for Hunter Water in providing its regulated services."*

#### **4.3.1 Background**

HW recommended continuing to use the same asset lives from the last three price determinations in its submission to IPART. IPART asked us to review these lives as part of our expenditure review.

We reviewed the asset lives used for regulatory depreciation and arrived at our recommended asset lives using:

- New assets: the expected useful lives of new assets weighted by the proportion of capex spending on each asset over the years 2016-21
- Existing assets: the estimated remaining useful life of the assets in each asset class weighted by the proportion of the depreciated replacement cost less contributed assets of each asset class.

In our Final Public Report we recommended a reduction to the weighted mean asset life for new assets from 100 years to 67 years, and a reduction of the weighted mean asset life for existing assets from 70 years to 62 years.

### 4.3.2 Our response and analysis

#### 4.3.2.1 Further explanation of our recommended asset lives

##### 4.3.2.1.1 New asset life

To calculate our recommended new asset life, we multiplied the expected life of new assets for each asset category in each business division by its proportion of total planned (new) capex to derive a weighted asset life. We then summed these to obtain a weighted mean asset life for new assets.

Table 2 presents the expected life of new assets for the three business divisions of HW that have information on expected new asset lives.

Table 2 : Expected life of new assets (years)

Asset category	Water	Wastewater	Stormwater
Dams	80	0	0
Treatment plants	60	50	0
Pipelines	100	90	0
Reservoirs/tanks	80	0	0
Pump stations	50	50	0
Office equipment	4	4	4
Buildings	40	40	40
Vehicles	4	3	3
Outfall sewers	0	100	0
Pipelines/canals	0	0	100
Drains	0	0	100

Source: HW's updated Special Information Report (SIR) 2015

Table 3 shows the portion of HW's total planned (new) capex spending on each asset category in each of the three business divisions of water, wastewater and stormwater for the years 2016-21.

Table 3 : Portion of total capex 2016-21 (%)

Asset category	Water	Wastewater	Stormwater	Total
Dams	4	0	0	4
Treatment plants	5	35	0	40
Pipelines	21	12	0	33
Reservoirs/tanks	2	0	0	2
Pump stations	4	15	0	19
Office equipment	0	0	0	0
Buildings	1	1	0	1
Vehicles	0	0	0	0
Outfall sewers	0	0	0	0
Pipelines/canals	0	0	1	1
Drains	0	0	0	0
<agency defined>	1	0	0	1
<b>Total</b>	<b>37</b>	<b>63</b>	<b>1</b>	<b>100</b>

Source: HW's updated SIR 2015

The sum product of the new asset lives in Table 2 with the portions of capex in Table 3 is 67 years.

Table 2 and Table 3 show the drivers of the revised weighted mean asset life for new capex of 67 years:

- 40% of capex is planned for treatment plants (that is, 35% on wastewater treatment plants with an expected life of 50 years and 5% on water treatment plants with an expected life of 60 years)
- 33% of capex is planned for pipelines (that is, 21% for water pipelines with an expected life of 100 years and 12% on wastewater pipelines with an expected life of 90 years)
- 19% of capex is planned for pump stations which have an expected life of 50 years.

Two of the three components of capex which make up more than 5% of the total of capex spending have expected new asset lives of less than 60 years.

#### 4.3.2.1.2 Existing asset life

To calculate our recommended weighted mean asset life for existing assets, we multiplied HW's estimate of the remaining useful life for each asset category in each business division by its proportion of the total depreciated replacement cost of all assets (less contributed assets) to derive a weighted asset life.

We summed these to obtain a total weighted mean asset life for existing assets.

Table 4 shows the expected remaining useful life for existing assets in the three business divisions of HW. For presentational reason we have also shown the weightings of each class as a portion of the current asset value used for pricing purposes (i.e. the final column shows the portion of depreciated replacement cost (DRC)).

Table 4 : Expected remaining life of existing assets (years)

Asset category	Water	Wastewater	Stormwater	Portion of DRC
Dams	31	0	0	5%
Treatment plants	22	24	0	9%
Pipelines	74	78	0	67%
Reservoirs/tanks	28	0	0	3%
Pump stations	26	30	0	9%
Office equipment	3	3	0	0%
Buildings	39	14	0	0%
Vehicles	0	0	0	0%
Outfall sewers	0	56	0	3%
Pipelines/canals	0	0	59	2%
Drains	0	0	40	2%
Total	Na	Na	Na	100%

Source: HW's updated SIR 2015

Table 4 shows that the key drivers for the weighted mean remaining asset lives of existing assets are pipelines (67%), treatment plants (9%), pump stations (9%) and dams (5%).

Table 5 shows the portion the existing assets in each of HW's business division comprising the depreciated replacement cost (excluding assets contributed to HW and non-depreciable assets such as land).

Table 5 : Portion of depreciated replacement cost (%)

Asset category	Water	Wastewater	Stormwater	Total
Dams	5	0	0	5
Treatment plants	3	6	0	9
Pipelines	20	46	0	67
Reservoirs/tanks	3	0	0	3
Pump stations	2	7	0	9
Office equipment	0	0	0	0
Buildings	0	0	0	0
Vehicles	0	0	0	0
Outfall sewers	0	3	0	3
Pipelines/canals	0	0	2	2
Drains	0	0	2	2
<b>Total</b>	<b>34</b>	<b>62</b>	<b>4</b>	<b>100</b>

Source: HW's updated SIR 2015

The sum product of the existing asset lives in Table 4 with the proportion of the depreciated replacement cost in Table 5 is 62 years.

Table 4 and Table 5 show the drivers behind the weighted mean asset life of existing assets of 62 years:

- 67% of the asset value is comprised of pipelines (that is, 46% are wastewater pipelines with a remaining life of 78 years and 20% are water pipelines with a remaining life of 74 years)
- 23% of the asset value is comprised of treatment plants, pump stations and dams, which have remaining lives of between 22 and 31 years
- The remaining assets (33%) have remaining asset lives less than 60 years.

#### 4.3.2.2 Increase of regulatory depreciation

Decreasing the asset lives for new and existing assets increases the regulatory depreciation allowance.

Table 6 compares indicative depreciation allowances using our recommended new asset life of 67 years and the asset life of 100 years used in previous reviews. We calculated these indicative allowances by dividing our prudent and efficient capex in each year by the asset life.

Table 6 : Indicative depreciation allowance for new assets

Year	2017	2018	2019	2020
Our recommended prudent and efficient capex (\$2016 million)	105.00	89.00	90.00	80.00
Depreciation allowance with our recommended asset life of 67 years (\$2016 million)	1.57	1.32	1.35	1.20
Depreciation allowance with asset life of 100 years (\$2016 million)	1.05	0.89	0.90	0.80
Difference (\$2016 million)	0.52	0.44	0.44	0.40
Difference (%)	49	49	49	49

Table 6 shows that our recommended asset life of 67 years increases indicative depreciation by about 49%.

Table 7 compares indicative depreciation allowances for existing assets in 2017 using our recommended asset life of 62 years and the asset life used in previous determinations of 70 years. We found the indicative

allowance by dividing the opening RAB by the asset life. The depreciation allowance will be less if the RAB includes non-depreciable assets such as land.

Table 7 : Indicative depreciation allowance for existing assets

Year	2017
Opening RAB (\$2016 million)	2,381.50
Depreciation allowance with our recommended asset life of 62 years (\$2016 million)	38.41
Depreciation allowance with asset life of 70 years (\$2016 million)	34.02
Difference (\$2016 million)	4.39
Difference (%)	13

Table 7 shows that decreasing existing asset life from 70 to 62 years increases indicative depreciation by 13%.

Table 8 shows the cumulative indicative depreciation allowance in the years 2017-20. We derived this by adding the depreciation allowance for new capex in a year to the depreciation allowance from the previous year. We have ignored non-depreciating assets, contributions and disposals.

Table 8 : Cumulative indicative depreciation allowance

Year	2017	2018	2019	2020
Cumulative depreciation allowance with our recommended asset lives (\$2016 million)	39.98	41.30	42.65	43.85
Cumulative depreciation allowance with asset lives from previous determinations (\$2016 million)	35.07	35.96	36.86	37.66
Difference (\$2016 million)	4.91	5.34	5.79	6.18
<b>Difference (%)</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>16</b>

Table 8 shows that indicative depreciation increases 14-16% as a result of using our recommended asset lives.

The increase in depreciation allowance will:

- Increase the maximum allowable depreciation-related revenue HW can recover through prices
- Increase the rate at which the regulatory asset base (RAB) is reduced.

#### 4.3.2.2.1 Impact on HW's customers

The importance of an accurate asset life is clear when only one asset is considered (but applies equally to HW's multiple assets). For illustrative purposes:

- If the starting life of the asset is too low, the depreciation allowance will be high, and the capex will be recovered before the end of the life of the asset. This will increase the allowance above what is necessary to return the capital over the whole asset life.
- If the starting life of the assets is too high, the capex will not be recovered before the end of the useful life of the asset. This will mean:
  - Users will be paying for an asset which is no longer in use (paying depreciation and a return on capital, because the asset still would have an asset value after its service life has ended)
  - Charges may recover costs from a replaced asset and the replacement asset at the same time.

Apart from the direct impact the depreciation allowance has on the maximum allowable revenue, a higher rate of regulatory depreciation also reduces the regulatory asset base (RAB) at a higher rate than under the previously applied asset lives. The return on capital, based on the size of the RAB, is larger than the

depreciation allowance, \$470.2 million compared to the \$156.5 million (\$2015-16) for depreciation over the price period<sup>5</sup>.

Deferring an appropriate asset life (and therefore maintaining lower depreciation rates), may have the impact on prices of maintaining a higher than warranted 'return on capital' cash flow. It is possible that this may not be offset by the change in the depreciation allowance determined by IPART.

The complexity of the interaction between the pricing building blocks supports our recommendation of adopting assets lives reflective of the actual useful lives of HW's assets during the 2017-20 price path and of moving subsequently to a position of more accurately reflecting asset lives using CEMELND asset classes and asset lives for the subsequent period (say 2021).

#### 4.3.2.2.2 Impact on HW ability to provide its regulated services

The asset lives previously used for calculating the depreciation allowance have not been updated for the last three reviews. This means that the asset lives used for calculating regulatory depreciation no longer accurately reflect the remaining useful lives of the assets they represent. Generally, the stated asset class lives have increased due to greater understanding of asset condition deterioration, improvements in technology and or improvements in maintenance processes. At the same time, however, over these three price periods, HW's assets have aged commensurately, resulting in less remaining asset life for some assets or asset classes.

We have compared the indicative depreciation allowance with HW's renewals capex to illustrate how the depreciation allowance contributes to HW ability to maintain its regulated services. We did not separate total capex into spending on renewals and augmentation for our Final Public Report.

We estimated the renewal and augmentation capex allocated to recycled water in HW's updated AIR&SIR 2015 on a pro-rata basis. We then added these to the renewal and augmentation capex for water, wastewater and stormwater, resulting in total capex. From this we calculated renewals capex as a portion of total capex. On this basis, we estimated our renewals capex by applying the portion (identified above) to our total recommended capex. Table 9 shows this estimation.

Table 9 : Estimation of our recommended renewals capex (\$2016 Real)

Year	2017	2018	2019	2020
Renewals capex - HW's AIR (\$2016 million) *	69	63	64	67
Augmentation capex - HW's AIR (\$2016 million) *	45	30	25	26
Total capex - HW's AIR (\$2016 million) *	113	93	89	93
Renewals capex as a portion of total capex - HW's AIR (%)	61	68	72	72
Our recommended prudent and efficient capex (\$2016 million)	105	89	90	80
<b>Renewals capex using our recommended prudent and efficient capex (\$2016 million)</b>	<b>64</b>	<b>60</b>	<b>65</b>	<b>58</b>

\* Numbers provided as whole numbers (no decimal places) for consistency with our calculated values.

Table 10 shows a comparison between the depreciation allowances for HW capex under the previous and our recommended approach. It also shows the indicative recommended depreciation as a portion of renewals capex estimated using our recommended total prudent and efficient HW capex 2017-2020.

Table 10 : Depreciation allowance and capex (\$2016 Real)

Year	2017	2018	2019	2020
Cumulative depreciation allowance - Our recommended asset lives (\$2016 million)	40	41	43	44
Cumulative depreciation allowance - Asset lives from previous price periods (\$2016 million)	35	36	37	38
Renewals capex using our recommended prudent and efficient capex (\$2016 million)	64	60	65	58

<sup>5</sup> Hunter Water Corporation, Maximum prices for water sewerage, stormwater drainage and other services from 1 July 2016, Water – Draft Determination, Independent Pricing and Regulatory Tribunal, March 2016

Year	2017	2018	2019	2020
Our recommended cumulative depreciation as a portion of renewals capex (%)	63	69	66	76
Depreciation allowance (asset lives from previous determinations) as portion of renewals capex (%)	55	60	57	65

Table 10 shows using our recommended asset lives, the indicative depreciation allowance contributes 63-76% of the funds needed for our estimate of renewals capex. Using the asset lives from previous price periods, the indicative depreciation allowance only contributes 55-65% of these funds.

The depreciation allowance more closely resembles renewals capex. Our recommended asset lives more closely resemble the actual useful lives of HW's assets, resulting in a fund more appropriate for replacing HW's assets, as shown in Table 10. The impact of this is improving HW's ability to provide its regulated services.

## 4.4 Output measures

IPART has asked that we respond to HW's arguments in its response to IPART's draft submission regarding our comments on HW adopting best practice with respect to an asset condition and risk based approach to asset management in particular we have been asked by IPART in its scope of work to comment on:

*"Hunter Water's arguments against our recommended output measure that forecast costs for projects and programs exceeding \$5 million (\$2019-20) should be submitted to IPART on a condition and risk based asset management approach".*

### 4.4.1 Background

In HW's management presentation on expenditure governance and asset management HW states that it plans to achieve certification to ISO 55001<sup>6</sup> for Asset Management by July 2017. One of the fundamentals of ISO 55001 is a risk and condition based assessment of assets when planning and budgeting for asset refurbishment, maintenance and replacement. We therefore consider that a risk and condition based approach to asset management, including its use to plan the timing for asset replacement and refurbishment, to be good practice.

In the Atkins Cardno Hunter Water Expenditure Review report of 2012, Atkins Cardno notes that HW had advised that it was developing a risk and condition based approach to asset management and was using this to schedule and hence budget for asset replacement and refurbishment. Atkins Cardno reproduced an asset condition decay curve that it said HW had developed and adopted.

We discussed this with HW management during the workshops and HW confirmed that it had adopted this approach. However, at the time of undertaking our expenditure review HW did not produce any supporting documentation demonstrating its adoption of a risk and condition based approach to asset replacement and refurbishment planning. Additionally, HW was not able to provide us with a copy of the asset condition decay curve reproduced in the Atkins Cardno report. Nevertheless, we understood from our discussions with HW management that it considered adoption of a risk and condition based approach to asset management to be in keeping with good industry practice and trends in asset management. Indeed, HW management assured us that they did not plan asset replacement and replacement simply on an asset age approach but took asset condition and risk into account.

### 4.4.2 What we said in our report

In Section 2.2.6.1 of our Final Public Report concerning Asset replacement/refurbishment expenditure we stated:

*"HW advised that it was migrating to a risk and condition based approach to asset replacement/refurbishment expenditure planning but that this was currently an aspiration. In IPART's consultant's report for the 2012 price*

<sup>6</sup> ISO 55001 is a part of the ISO 55000 suite of documents forming the ISO standard for asset management. ISO 55001 is the standard itself and ISO 55002 forms the guidance notes to the standard. ISO 55000 and ISO 55001 are often used interchangeably.

review, Atkins Cardno noted that HW utilised an asset condition decay curve to determine whether an asset could exceed its standards asset class life or whether replacement needed to be brought forward. We consider such an approach to be in keeping with good practice. However, we have not sighted such a process and, from our discussion with HW staff, we understand that this process is not yet in place.

As such we recommend that HW accelerates its migration to condition and risk based approach to asset replacement/refurbishment planning. In such a process, asset condition is compared with the condition the asset condition decay curve predicts for the current age of the asset. If the asset condition is superior to what the curve predicts, an algorithm determines an extended asset life, thus deferring expenditure. If the condition is inferior, then the algorithm projects a replacement date earlier than the standard asset class life, thus bringing forward replacement. HW then overlay a risk assessment, which uses likelihood and consequence of failure to develop a risk rating.”

In our discussion of output measures we recommended that HW reports on the following output measure (Table 8.6 of our Final Public Report):

Table 11 : Jacobs proposed output targets for 2017 to 2021

Output measure	Units	HW proposed 5 year pro-rated target <sup>(a)</sup>	IPART 2013 determination 5 year pro-rated target <sup>(a)</sup>	Our proposed measures	Jacobs proposed 5 year target
<b>Business processes</b>					
1. Condition and risk based approach	%	N/A	N/A	Develop and implement an enhanced condition and risk based approach to portfolio asset management, consistent with good practice. This includes enhancing capture and storage of asset condition data and comparing that against expected condition for each asset.	For projects and programs exceeding \$5 million (\$2020), base forecast costs submitted to IPART on an improved condition and risk based asset management approach.

This output measures relates to asset management and, taken in context with our other comments in the report, relates to asset replacement/refurbishment expenditure as opposed to asset augmentation (growth triggered) expenditure. By definition, a condition based approach can only apply to existing assets not new assets.

That said, when undertaking a holistic approach to augmentation expenditure, there is merit in taking into consideration, when applicable, the condition of related assets and business risk associated with such. For example a least-cost approach to infrastructure augmentation may be to retire prematurely aged assets and integrate their service delivery into planned augmentation assets.

#### 4.4.3 What HW said in its response to IPART re IPART’s Draft Report

In Appendix A of HW’s response regarding IPART’s following decision:

*“We have decided to require Hunter Water to report annually on progress against the output measures outlined in Appendix C”*

HW stated:

*“IPART’s draft decision was to include Hunter Water’s proposed output measures, with the addition of an output measure recommended by Jacobs. That additional output measure would require Hunter Water “to submit base forecast costs to IPART on a condition and risk based asset management approach”.*

*Hunter Water does not support the inclusion of this proposed measure, and had previously provided advice to Jacobs on the reasons why it would be impractical to implement. The measure is imprecisely worded, difficult to*

*quantify and is only applicable to asset replacements where the risk of asset failure is the driver for undertaking the project.*

*Hunter Water currently implements a mature asset renewal program, considering asset criticality (risk), and compliance and service objectives. Asset condition is an indicator, not the sole driver of investment. Hunter Water considers that the best measures for the renewal program are existing system performance.”*

#### **4.4.4 Our reply to HW’s response**

We consider that our recommendation that IPART adopts an output measure encouraging HW to use a risk and condition based approach to asset management and, in particular, asset replacement and refurbishment expenditure is in keeping with IPART’s role in encouraging the utilities that it regulates to adopt good practice. In this case, the adoption of modern asset management practices consistent with ISO55001.

We accept that condition is not the only metric to take into account when determining timing of asset replacement. We do consider, though, that condition of asset (which impacts on performance) and risk (likelihood of and consequence to the business of failure) should be key drivers in planning the timing of and expenditure on asset replacement and refurbishment. We note that likelihood of failure is driven by a number of factors of which condition is a major element, as is the level of utilisation of the asset as compared to its capacity and rating. As such, knowledge of the condition of assets, beyond simply its service delivery capability at a given point in time is fundamental to good asset management.

A risk and condition based approach to asset management is adopted by all of the power and water utilities in the UK given that it is a regulatory requirement. In Australia, a number of power utilities use this approach and it is now being endorsed if not required by the Australian Energy Regulator. We are also aware that such an approach to asset management is adopted by a number of water utilities in Australia and has been put into practice for a number of years<sup>7</sup>.

We therefore see no reason to change our recommendation that HW should adopt (or continue to use if the comments in the Atkins Cardno report are correct) a risk and condition based approach to asset management planning in keeping with ISO 55001. We have reproduced extracts from ISO 55001 in Appendix C. These extracts support our position that a risk and condition based approach to asset management is consistent with the provisions of ISO 55001. In keeping with good regulatory practice, we also consider that there is merit in HW being required to demonstrate, by means of an output measure, that it is adopting good practice in accordance with ISO 55001 in asset management and in asset portfolio replacement and refurbishment planning.

For clarity, though, this only applies to asset replacement and refurbishment expenditure (repex) not augmentation expenditure (augex) related to growth. We consider that it is also important to undertake risk analysis and life cycle costs analysis techniques similar to the provisions of ISO 55001 for asset management. We note that we have seen evidence of HW undertaking these techniques in its planning of capital works.

<sup>7</sup> [http://www.gca.org.au/getattachment/012bcb38-447f-4ead-b6bd-7915961bc14a/SunWater-%E2%80%93Submission-re-Irrigation-Prices-for-\(5\).aspx](http://www.gca.org.au/getattachment/012bcb38-447f-4ead-b6bd-7915961bc14a/SunWater-%E2%80%93Submission-re-Irrigation-Prices-for-(5).aspx)

## 5. Conclusion

We have reconsidered three of the recommendations contained in our Final Public Report for which IPART asked us to re-visit in this report. Following this re-review we recommend the following to IPART:

- 1) **ICT** – IPART does not approve the proposed \$200,000 annual expenditure for the 2016/17 to 2019/20 price path
- 2) **Capex extrapolation** - IPART should maintain its support for the cost savings attributable to our capex extrapolation method and recommendations for the 2017-2020 price path
- 3) **Output measures** – IPART should adopt an output measure on condition and risk based asset management.

We have also provided further explanation of the derivation of our recommended asset lives and the implications of the resulting additional depreciation allowance for Hunter Water in providing its regulated services.

We have considered the following responses to IPART's Draft Report:

- 1) **ICT** – HW argued that it had provided information to justify the additional ICT expenditure
- 2) **Capex extrapolation** – HW argued that our review of its capex did not:
  - Take account of the manner in which the portfolio was developed
  - Take account of the risk to service levels of reducing capex below proposed levels
  - Did not have a sufficient timeframe or resources for a thorough and accurate review of capex decisions.
- 3) **Output measures** – HW argued that our proposed output measure would be impracticable to implement as it is imprecisely worded, difficult to quantify and only applicable to asset replacements.

Following our re-review of the data and our analysis re the above, we do not propose any changes to our recommendations to IPART for the following reasons:

- 1) **ICT** – We consider that HW has provided insufficient information to justify this proposed expenditure of \$200,000 p.a. for the 2017-2020 price path. We confirm that in preparing our Final Public Report we had received and reviewed the information to which HW refers in its response to IPART's Draft Report.
- 2) **Capex extrapolation** – We confirm that our previous recommendations are robust for the reasons outlined in our Final Public Report. We note that on this matter, HW has not provided additional information that would warrant a change to our approach.
- 3) **Output measures** – We propose no change to our recommendation to IPART, as these practices are consistent with asset management practices adopted by other regulated utilities in Australia and the UK and with ISO55001.

## **Appendix A. HW's Description of the ICT element of its Corporate Strategy and Studies – Opex budget 2015/16**

Hunter Water (HW) provided a description of the activities<sup>8</sup> that it intends to undertake as part of its \$200,000 opex budget for 2015/16, only, as follows:

- Consultancy services required to analyse the current state of HW's information management and deliver agreed artefacts for the development phase of the Document Information and Records Management (DIRM) project. The DIRM project will deliver foundational components that future information management activities will build on. This includes the governance required across the organisation to manage information as an asset, set the foundations for the supporting technology and provide the change management required to embed new practices into HW.
- HW recently implemented Stage 1 of the corporate intranet exploiting the SharePoint 2010 technology platform. SharePoint is a broad offering with an emphasis on business collaboration for the enterprise and the web. SharePoint 2010 focuses on six key areas including sites, communities, content, search, insights and composites. Stage 2 is to further develop and promote the use of SharePoint technologies after the upgrade to SPP2012 by leveraging newly available functionality. This is expected to provide benefits to HW including improved work practices, increased productivity and better knowledge management.
- To identify the major security risks facing HW, evaluate gaps in the Information Security Management System (ISMS) (ISO27001/2) implementation and assess the scope and prioritisation of future works to address identified gaps.
- Develop and implement an ISMS framework of policies, procedures and governance that ensures the Confidentiality, Integrity and Availability of HW Information Assets. This requires assessing the risk to information and the systems that store and transmit information. The security controls must be financially responsible and sustainable with minimal impact on the usability of HW systems to users.
- In 2013/14 a high level Security Model was developed that defined the foundational enterprise security governance framework and security objectives to be implemented through standardised security controls. In conjunction with the Information Classification Program the Security Model guidelines will be implemented to deliver a holistic approach to System Management and Resilience that addresses the areas of
  - Information and System Classification
  - SCADA Network Security
  - Corporate Network Security
  - Enterprise Monitoring and Incident Management
  - ICT Perimeter and System Security
  - Identity Management
  - Business Continuity Planning and Implementation
  - Asset Life Cycle Management
- The current SCADA and Corporate Networks are tightly integrated at a Domain and managed shared services level. The WAN telecommunications roll out will provide a physically separate service to each SCADA and Corporate connection at each site. In doing the physical separation a full design of the internal decoupling of the current shared services such as Domain Controllers, Network Devices, Server and Storage must be addressed to meet the target security state and full SCADA separation from Corporate. SCADA access will be managed through firewall access controls that allow the navigation from Corporate to SCADA via a SCADA Hosted Remote Desktop Services Environment that enforces SCADA roll-based access control (RBAC) on the published applications for that user.

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<sup>8</sup> Hunter Water Response to IPART, Draft Determination and Draft Report on Prices to Apply from 1 July 2016, 18 April 2016, Appendix B page B.3-5

- Establish the capability to quickly respond to security and/or system incidents that can impact on business continuity. In 2013/14, Manage Engine Operations Managed was installed to provide visibility of HW network health. The installation was a proof of concept and requires remediation to standardise the deployment to monitor network devices and HWC business systems. The system management/monitoring reporting capabilities need to be consolidated with security monitoring, logging to provide a single reporting environment provides real-time security and system health status.
- Upgrade the HP Quality Centre software to the current commercially available version and return to full support arrangements. This comprises identifying the most viable and cost effective approach to upgrade the HP Quality Centre application along with conducting a market scan to confirm HP QC remains the best solution for HW. This will also include identifying the most suitable deployment model for HW such as upgrading the existing HP QC self-hosted licence, upgrade existing HP QC licence and seek a managed services partner or not upgrading the existing HP QC licence and adopting a SaaS fully hosted solution.
- Develop the Business Continuity framework and relevant test documentation and procedures required to implement the ICT Business Continuity Plan. ICT services are sourced from the main data centre located at Honeysuckle and an alternative disaster recovery (DR) data centre is located at IPERA Communications Pty Ltd (located in Newcastle).
- There are existing DR activation plans that have been developed for core business systems and information stores based on the existing software and technology stack. As part of the 2013/14 Server, Storage and Datacentre Program there was an increase in capability within the virtualisation software, technology stack (DELL) and inter datacentre bandwidth. The existing DR plans are based on the old infrastructure; establish updated DR plan needs will be validated against the new technology stack.
- As part of continuous improvement of HW processes the DR plans will take into account any technology enhancements and validate each DR plan such that ICT services are maintained in the case of a DR Incident. The ICT Business Continuity Implementation identify appropriate alternative site(s) that will be provisioned for staff to continue operating in the event of a disaster, services will be continue to be available from the alternative DR Datacentre.
- GIS current server version does not support Windows 8.1, although it has been tested successfully with the new Windows 8.1 SOE it is not officially supported by the vendor. A scheduled technical upgrade is due in 2015/2016, three years after the initial implementation to leverage new functionality and address compatibility issues.
- HW's ICT Strategy 2014-2017 outlines the need to provide the business with data analytics which can be provided by developing data warehouse and business intelligence capabilities. HW's Information Management Strategy and Roadmap was developed in 2014 and includes asset management and customer information analytics initiatives.
- A more targeted Data Warehouse and Business Intelligence Strategy and Roadmap is required to provide clear guidance on the next steps to achieve these outcomes. Due to HW's low level of maturity with information management, HW requires the IT services from a consulting firm with recent and relevant experience developing these deliverables for similar water utilities.
- The incumbent Enterprise Risk Management Software, Methodware, is significantly out of step with current releases. As a result, functionality is restricted and widespread business uptake has been limited due to its lack of integration with other systems. An upgrade or replacement is required to deliver improved clarity of business risks, centralisation of risk information, reduction of the duplication of risk data, easier reporting of risk profiles and dynamic tracking of key risk indicators.
- A review of the current environment and HWC's requirements will be undertaken to determine the optimal risk management technology to support our requirements and dictate an upgrade or replacement of Methodware. A recent analysis for commitments tracking has highlighted some dependencies with the risk management solution and audit/compliance solution. A detailed analysis will provide further directions to combine these into a GRC (Governance, Risk, and Compliance) consolidated solution.

## Appendix B. Extracts from our report discussing to ICT opex and capex

We have reproduced extracts from our report in which we discuss ICT opex and capex. We note from this that whilst HW has and plans to incur opex and capex related to ICT expenditure including upgrading its billing systems. We note in its current capex project, CS Platform Refresh Programme, there is a bullet point reference to electronic billing systems. However, we note, with respect to HW's comment to IPART about the need for opex budgeting to conduct a study into electronic billing there is no specific mention of a plan to undertake a further study into electronic billing, in addition that used to substantiate the CS Platform Refresh Programme capital expenditure, in its proposed opex for ICT project strategy studies.

### OPEX

FY 2016 opex related to billing:

System/Business Process Reviews - Document and review end-to-end business and billing system processes for re-engineering in advance of a new or upgraded billing system.	50.0
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Over the forecast period, contract labour is expected to increase in FY 2017 during planned billing system upgrade (to backfill for the Customer Services area) and in 2020 as the resourcing and backfill for the LHWP review is required

Table 5.1 : HW's proposed other expenditure for 2017 to 2020 (\$2016 '000)

Other cost items	2017	2018	2019	2020
Rates and Land Tax	106.7	110.2	113.9	117.7
Computer Software- Licences	282.8	249.9	7.5	0.0
Printing and Postage	7.3	7.4	7.5	7.6
Surveys	4.9	-39.1	136.7	-117.2
Property Management and Leasing	34.9	40.9	41.6	42.3
<b>Total</b>	<b>436.6</b>	<b>369.4</b>	<b>307.2</b>	<b>50.4</b>

HW provided to us details of two of the largest cost items - rates and land taxes and computer software licences. The proposed opex for rates and land taxes for the next price submission period incorporated an average increase in council rates of 4.4% across all council areas in which HW's assets are located and is based on IPART's council rate decisions. Computer software licence fees are payable on the software that HW uses to manage its operations and assets. This software includes its GIS, drawings management system, SCADA system and upgrades, maintenance workflows and customer support and billing systems.

We have examined the business cases for the Client Computing Program and the Customer Service Platform Refresh Program. There are no associated opex impacts included in the Client Computing Program and increased opex requirements in the Customer Service Platform Refresh Program. We have not observed any consideration of efficiencies in these business cases, despite both projects having the potential to realise them given their nature, objectives and scope:

- The Client Computing Program business case notes in relation to its objectives, the continuing ability of field staff and others to work remotely and access information in real time, the ongoing use of smart phones to enable access to email and communications while outside the office and the focus on optimising the workforce efficiency with the theme 'anywhere, any device'. These all suggest that the possibility of additional efficiency savings, particularly in relation to labour costs, should be considered.

The Customer Service Platform Refresh Program notes in terms of the options analysis and what is proposed to be implemented at least electronic billing, on-line self service capabilities, IVR integration and mobile applications (for option 2). Again these suggest the possibility of efficiencies should be considered in the

development of the business case, particularly in relation to printing and postage costs for bills and customer service staff

**Capex:**

The ICT Portfolio encompasses the renewal of HW’s ICT computing environment to support business operations, information management needs and compliance requirements. The ICT Portfolio includes provisions for the following programs:

- Customer Service (CS) Platform Refresh - customer service, customer information management, customer relationship management and billing

Customer Care and Billing (CC&B) program – including sustaining existing Customer Information System (CIS), metering and backflow systems

We have selected two programs to review, and at least one sub-program from those two programs, on the basis of highest cost, as outlined below:

- The ICT Infrastructure Programs (PP16 Investment \$15.4 million)
  - ICT Infrastructure - Network & Communications (\$4.5 million)
  - ICT Infrastructure - Client Computing (\$2.9 million)
- The ICT Customer Care and Billing Major Upgrade (PP16 Investment \$11.1 million)
  - CS Platform Refresh (\$8.7 million in PP16, \$6.6 million in PP13)

The ‘ICT Network and Communications’ program covers LAN/WAN services, telecommunications and IP telephony, while the ‘ICT Client Computing’ covers PCs, laptops, printers and peripherals, mobile phones, tablets and mobility.

The CS Platform Refresh program will identify and implement an up-to-date Utility Billing System, Customer Relationship Management (CRM) solution and a Trade Waste Management and Billing solution.

CS Platform Refresh	Implementation of a new billing system, Customer Relationship Management (CRM) solution and trade waste system.	Improve/Transform	Existing mandatory standards, business efficiency	A Customer Service Deliver Review was undertaken in 2011 which identified deficiency in HW’s system. This project is to address these deficiencies, as outlined in the Customer Service Delivery Strategy.
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Preferred options scope

Program	Scope
ICT Infrastructure - Network & Communications	<ul style="list-style-type: none"> <li>• LAN Refresh</li> <li>• WAN Refresh</li> <li>• WAN Optimisation</li> <li>• SCADA Network Refresh</li> <li>• IP Telephony Refresh</li> <li>• Fleet GPS Tracking</li> </ul>
ICT Infrastructure - Client Computing	<ul style="list-style-type: none"> <li>• Desktop PC and Laptop Refresh (including 400-450 desktops, and 300-350 laptops)</li> <li>• Windows/SOE Upgrade</li> <li>• Minor Client Computing Assets</li> <li>• Tablet Refresh (including 125 field tablets, and 20 office tablets)</li> <li>• Smartphone Refresh (including 500 phones)</li> </ul>

Program		Scope	
CS Platform Refresh		<ul style="list-style-type: none"> <li>• Technical Upgrade of CC&amp;B or a system replacement</li> <li>• IVR Integration</li> <li>• Complaint Management integration</li> <li>• Customer Relationship Manager</li> <li>• Tanker Receivals</li> <li>• Tradewaste Management and Billing</li> </ul>	<ul style="list-style-type: none"> <li>• Meter Management System</li> <li>• Backflow Prevention</li> <li>• Commercial Customer management</li> <li>• Integration strategy</li> <li>• Electronic Billing</li> <li>• Self Service portals for Customers or third parties</li> <li>• Mobile Applications</li> </ul>
HW	25/09/2015	Media Release- 25 Sep 2015 -Online Billing to Stamp Out Postage Pain	Yes
HW	1/04/2014	Billing System Review	Yes

**Billing System Review Final April 2014 - Scope of the Review**

The review addresses the following:

1. The background of the current billing system including how it is being utilised by HW.
2. Gap analysis including current and future business requirements.
3. Overview of how other water authorities manage billing and related systems/modules.
4. Strategic considerations for future upgrade or replacement of CC&B.

This review does not provide a recommendation regarding upgrade or replacement of CC&B as this decision should be part of the options analysis based on the business requirements which will be undertaken by Information Services in consultation with Customer Services at a future point.

## Appendix C. Extracts from ISO55001 relating to condition and risk based approach to asset management

Extracts from ISO55001:2014 relating to a condition and risk based approach to asset management.

### ISO55001:2014 Section 62.2 Planning to achieve asset management objectives

*When planning how to achieve its asset management objectives, the organization shall determine and document:*

- a) *the method and criteria for decision making and prioritizing of the activities and resources to achieve its asset management plan(s) and asset management objectives;*
- b) *the processes and methods to be employed in managing its assets over their life cycles;*
- c) *what will be done;*
- d) *what resources will be required;*
- e) *who will be responsible;*
- f) *when it will be completed;*
- g) *how the results will be evaluated;*
- h) *the appropriate time horizon(s) for the asset management plan(s);*
- i) *the financial and non-financial implications of the asset management plan(s);*
- j) *the review period for the asset management plan(s) (see 9.1);*
- k) *actions to address **risks** and opportunities associated with managing the assets, taking into account how these risks and opportunities can change with time, by establishing processes for:*
  - *identification of risks and opportunities;*
  - *assessment of risks and opportunities;*
  - *determining the significance of assets in achieving asset management objectives;*
  - *implementation of the appropriate treatment, and monitoring, of risks and opportunities.*

### **Appendix A of ISO55001:2014 Information on Asset Management Activities**

*Relevant asset management subject areas addressed by other published international, regional, or national standards include, but are not limited to, the following:*

- *data management;*
- ***condition monitoring;***
- ***risk management;***
- *quality management;*
- *environmental management;*
- *systems and software engineering;*
- *life cycle costing;*
- *dependability (availability, reliability, maintainability, maintenance support)...*

### **ISO55002:2014 (Guidance notes) states in ISO55000 guidance document states in paragraph 2.5.2c**

*The organization's risk-based decision making processes can become more effective by addressing asset and financial risks together, and by balancing performance, costs and risks.*