Rural Irrigation Operational Expenditure Review

Sunwater

Revision 0.2 – 30-Jan-2020
Prepared for – Queensland Competition Authority – ABN: 43812633965

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Client: Queensland Competition Authority

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0.2	30-Jan-2020	Updated Final Report - Post Stakeholder Submissions	Susheel Prabhakar Technical Director - Advisory	

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Glossary

Term	Definition
ACCC	Australian Competition and Consumer Commission
AEMO	Australian Energy Market Operator
AMP	Asset Management Plan
AMS	Asset Management System
APRA	Australian Prudential Regulation Authority
ASIC	Australian Securities and Investments Commission
ASX	Australian Securities Exchange
BoM	Bureau of Meteorology
BOM	Bill of Materials
CAM	Cost Allocation Manual
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CPI	Consumer Price Index
CPR	Commonwealth Procurement Rules
DEBS	Digital Enterprise Business Solutions
DNRM	Department of Natural Resources and Mines
EAP	Emergency Action Plan
EBA	Enterprise Bargaining Agreement
EGM	Executive General Manager
FTE	Full Time Equivalent
FY	Financial Year
GM	General Manager
HUF	Headworks Utilisation Factor
IAC	Irrigator Advisory Committee
ICA	Insurance Council of Australia
ICT	Information and Communications Technology
IGEM	Inspector General Emergency Management
ISO	International Organization for Standardization
ISR	Industrial Special Risk
kW	Kilowatt
kWh	Kilowatt Hour
LDCC	Local Disaster Coordination Centre
LDMG	Local Disaster Management Group

Term	Definition
ML	Mega litre (one million litres)
NGER	National Greenhouse and Energy Reporting
NMI	National Metering Identifier
NOGGIN	A brand of an integrated safety and security platform
NSP	Network Service Plan
O&M	Operations and Maintenance
QCA	Queensland Competition Authority
RBA	Reserve Bank of Australia
RfI	Request for Information
RFO	Risk Financing Optimisation
SAMP	Strategic Asset Management Plan
SAP	Systems, Applications and Products in Data Processing (an Enterprise Resource Planning system by SAP AG)
SCADA	Supervisory Control and Data Acquisition
SDCC	State Disaster Coordination Centre
Solar PV	Photovoltaic System
SEQ	South East Queensland
SFM	Sunwater Financial Model
SMS	Short Message Service
The price path period	The period 1 July 2020 to 30 June 2024
The Referral	the referral for the review issued by the Queensland Government to the QCA under section 23 of the QCA Act
The Review	the QCA's review of irrigation prices for the period 1 July 2020 to 30 June 2024
ToR	Terms of Reference
TOTEX	Total Expenditure
URBS	Unified River Basin Simulator
UTP	Uniform Tariff Policy
WAE	Water Access Entitlements
WMS	Work Management System
WSS	Water Supply Scheme

Executive Summary

Sunwater is a Queensland Government owned corporation that owns and manages a regional network of bulk water supply infrastructure throughout Queensland that supports irrigated agriculture, mining, power generation, industrial and local government. Sunwater's water storage and distribution infrastructure includes 19 major dams, 64 weirs and barrages, 79 pumping stations, and more than 2500 kilometres of pipelines and water channels.

The Queensland Government has directed the QCA to conduct an investigation into pricing practices relating to the monopoly business activities of Sunwater - bulk water storage and water distribution (the Review). A key objective of the investigation is to recommend prices to be charged by Sunwater to irrigation customers in specified 22 water supply schemes (WSSs) and seven distribution systems for the price path period (1 July 2020 to 30 June 2024). Following QCA's issue of a Notice of Investigation, Sunwater provided its initial submission on proposed costs for the price path period in November 2018.

AECOM was engaged by the QCA to provide advice and guidance to assist the QCA in determining the prudency and efficiency of Sunwater's operational, maintenance and administrative costs proposed in its submission. This report presents the findings of AECOM's review.

AECOM was required to assess:

- How Sunwater has implemented the recommendations regarding policy and procedures that were included in QCA's 2012 irrigation reviews; benchmark Sunwater's internal policies and procedures processes against industry best practice; identify opportunities for improvement and estimate the cost savings that could be expected from improved policies and procedures
- The prudency and efficiency of Sunwater's proposed base year operational costs and determine if the proposed base year is appropriate to use as the basis of an efficient level of recurring operational costs, and if not, recommend an alternative base year
- Sunwater's proposed electricity costs and cost escalation method
- The prudency and efficiency of step changes in cost proposed
- If the cost escalation methods proposed are consistent with prevailing market conditions and historical trends
- The potential for efficiency gains, providing appropriate justification.

We undertook a desktop review of Sunwater's initial submission and supporting information, and additional documents that were requested for clarification purposes through a Request for Information (RfI) process. This was supplemented by several meetings with Sunwater staff that were arranged to provide further clarification on key issues and generally included QCA and AECOM staff.

Sunwater presented a revised submission to the QCA in June 2019, a few weeks before our review was required to be complete. As agreed with the QCA, we completed the review based on the Sunwater's original submission of November 2018, but extended our analysis to include the FY2020 budget provided by Sunwater in the revised submission to the QCA in June 2019.

Sunwater's revised submission reflected a substantial restructuring of cost allocation and company structure. We have presented our findings in a manner that reflects and explains these new arrangements which will be put in place from FY2020 onwards. The restructure involves complex transfers of costs that lead to increased direct costs, reduced local overheads, increased corporate overheads, and the delivery of some efficiency gains.

A number of key issues have affected our findings:

- Sunwater's original submission of November 2018 mentioned a form of normalisation of costs but did not provide details of the issue and the methodology employed for normalisation.[1] We understand that from approximately 2016, Sunwater's procedures regarding time-writing and cost allocation were relaxed. This resulted in decreasing labour cost booked directly to the schemes and increasing levels of residual labour cost allocated as local or corporate overhead. The 'normalised' actual data for FY2018 essentially reflected Sunwater's assessment of what the costs would have been if the time-writing issue had not occurred. We therefore requested the original actual data for FY2018 and have used this data in our assessment.
- The data initially provided for analysis was a selection from Sunwater's financial model and was given as numbers only (without formulae that would enable cost relationships to be examined). This issue was addressed through the RfI process, but access to a working copy of the financial model that included original actual data was not provided until late in the review.
- Electricity is a significant cost in the schemes that rely on pumping stations. Sunwater had arranged an independent review of these costs and relied on the results of the review in its submission. However, the basis for the independent review was not provided to the QCA. We were engaged by the QCA to carry out a separate independent review of Sunwater's electricity usage, costs and cost projections. The results of that assessment are included in our findings.

  Many of the schemes have benefited from preferential tariffs which are used to provide relief to the irrigators, but these are being phased out with the last of the tariffs to be removed in FY2022. This transition has increased the cost of electricity for most schemes.
- Sunwater's insurance costs have almost doubled since 2012 and represent the largest cost increase from QCA's 2012 recommendations. Sunwater procures its cover through a broker and sources competitively from international insurers. We have determined this procurement to be efficient. Sunwater has signed the contract for FY2020 insurance (which has increased from FY2019), and we recommend that this cost increase be accepted.

  Forecasting future premiums is problematic as it relies on the availability of global capital and an assessment of the possible impact that claims of future events may have on the insurance market. Sunwater has suggested a substantial increase of 10% be assumed for FY2021, and we recommend this be accepted (giving consideration to current rate increases advised by Sunwater's broker). Beyond FY2021, there is no documentary evidence of an expected increase in premiums. We have presented and assessed the views of key players in the industry and have concluded that generally there may not be a strong case for an increase in premiums beyond CPI for the remaining years in the price path (FY2022-FY2024).

  Sunwater's allocation of insurance costs is based on asset value, but in our view, relative risk should also be considered. However, we have not altered Sunwater's allocation in this report.
- The level and cost of operations and maintenance activity on the schemes is generally subject to significant variability, which can be caused by a wide range of factors such as weather events, water flows and operational decisions. For instance, most schemes are at risk of tropical cyclones which in the past have caused damage to assets, and many schemes have been impacted by flooding. This variability in direct costs suggests that using a 'base year' for these direct costs is not helpful as there is no 'typical' year. Sunwater commonly uses its experience from the past three years and weather predictions for the next year, when developing next year's budgets.

  We cannot assume that these events typically occur once every three years when establishing prudent costs for the price period. Therefore, we have used all available cost history (six years) to develop an average annual operations and maintenance cost for each scheme and adopted this as the 'base year' for our assessment. We note that non-direct costs are not variable in the same way as direct costs, and are incurred at the aggregate (rather than at the scheme) level. Considering this, we have determined a prudent and efficient base year for these.

[1] Reference: Footnote 17 on page 37 of Sunwater's November 2018 submission stated "A normalised level of direct expenditure and associated overheads were included in 2017/18 routine costs to rectify an under-representation of time-sheet reporting for direct cost activities (and partially as a result of the organisational changes occurring) during that year."

We have adjusted Sunwater's cost base for FY2018 to what we consider prudent and efficient and used this as the base year. The base year costs have been altered to reflect the transfer of schemes to local management arrangements, but future transfers have not been accounted for.

Corporate overhead allocation is affected by Sunwater's unregulated business activity to the extent that labour costs are incurred in this activity. The FY2020 budget in Sunwater's June re-submission includes a significant increase in unregulated business activity compared to FY2018 which reduces the portion of corporate overhead that can be recovered from irrigators. We have taken this at face value as we have not reviewed Sunwater's unregulated business. The corporate overhead allocator is based on the budgeted FY2020 level of unregulated business activity.

- We have included two forms of step change in our cost projection for the price path:
  - Sunwater is required to implement the recommendations of the Inspector-General Emergency Management (IGEM) reviews related to floods. The approach taken to implement IGEM and the associated costs are considered to be prudent and efficient. This cost is included as a step change (assuming that this cost will be recovered from irrigators).
  - The removal of legacy electricity tariffs represents a step change for the schemes affected. We have included our assessment of efficient electricity costs from FY2022.
- We have accepted the various forms of cost escalation proposed by Sunwater, with the exception of the proposed escalation of insurance costs beyond FY2021, and the approach proposed for escalation of non-direct costs. The latter has small impact on the price path period.
- Sunwater has proposed a target to achieve potential future efficiency gains and reduce costs. The proposed target would deliver $0.75 million in cost savings in the base year, and a further $0.69 million thereafter for each year of the price path.

The result of our review of Sunwater's prudent and efficient costs is a total cost difference for all irrigation schemes in the base year that in $FY2019 terms is shown in Table 1 and summarised as being:

- 13% higher than the QCA's 2012 recommendations
- 7% lower than Sunwater's original submission to the QCA in November 2018
- 4% lower than Sunwater's revised submission to the QCA in June 2019.

Table 1 Summary of Proposed Efficient Costs Differences - % Average of all Schemes ($FY2019)

Cost Category	Difference from the QCA's 2012 Recommendation ($FY2019)	Difference from Sunwater's Original Submission of November 2018 ($FY2019)	Difference from Sunwater's Resubmission of June 2019 ($FY2019)
Operations and Maintenance costs	+14%	9%	-3%
Electricity	-1%	-10%	-4%
Insurance	+81%	1%	-8%
Indirect costs allocated (including IGEM)	-1%	7%	-1%
Local overhead allocated	+18%	-54%	-1%
Corporate cost allocated		13%	-12%
Total cost	**+13%**	**-7%**	**-4%**

1.0 Introduction

Sunwater is a Queensland Government owned corporation that owns and manages a regional network of bulk water supply infrastructure throughout Queensland that supports irrigated agriculture, mining, power generation, industrial and local government.

Sunwater's water storage and distribution infrastructure includes 19 major dams, 64 weirs and barrages, 79 pumping stations, and more than 2500 kilometres of pipelines and water channels.

The Queensland Government has directed the QCA to recommend prices to be charged by Sunwater and Seqwater (the businesses) to irrigation customers in specific water supply schemes (WSSs) and distribution systems[2] for the period 1 July 2020 to 30 June 2024. A copy of the Minister's referral notice (the Referral) is available on the QCA's website.[3]

The Referral requires that prices allow the recovery of prudent and efficient costs associated with operational, maintenance and administrative activities and renewing existing assets. The allowance for renewals should also account for prudent and efficient expenditure incurred in the previous price path periods. Both businesses are intending to recover renewals expenditure using a rolling renewals annuity calculated with either a 20-year or 30-year planning period.

Costs recovered should include those required to meet regulatory obligations and deliver agreed service levels, where costs to deliver agreed service levels are not materially higher than the costs of like-for-like replacement or modern equivalent replacement.

AECOM was engaged by the QCA to provide advice and guidance to assist the QCA to determine the prudency and efficiency of Sunwater's operational, maintenance and administrative costs. This report presents the findings of this review.

1.1 Scope of the Review

AECOM was engaged by the QCA to undertake a desktop review to assist the QCA in determining the prudency and efficiency of Sunwater's operational, maintenance and administrative costs attributed to 22 bulk water schemes and five distribution systems including:

Bulk Water:	
Barker Barambah (BBR)	Lower Mary (BBL)
Bowen Broken (KBB)	Macintyre Brook (IBT)
Boyne WS (BBY)	Maranoa (IBM)
Bundaberg (BBB)	Mareeba (MBM)
Burdekin WS (ABB)	Nogoa (LBN)
Callide WS (LBC)	Pioneer (KBP)
Chinchilla Weir (IBH)	Proserpine (ABP)
Cunnamulla Weir (IBN)	St George (IBS)
Dawson (LBD)	Three Moon (LBT)
Eton (KBE)	Upper Burnett (BBU)
Lower Fitzroy (LBF)	Upper Condamine (IBU)
Distribution Systems:	
Bundaberg Distribution (BIG)	Lower Mary (BIC)
Burdekin Distribution (AIE)	Mareeba (MIM)
Eton Distribution (KIA)	

The QCA's Terms of Reference (ToR), which outline AECOM's scope of works, define expenditure as *prudent* where it is required to deliver agreed service levels, results from a legal or compliance obligation, or is required to fulfil regulatory obligations such as those specified in a water management protocol, resource operation plan, resource operation license or interim resource operations license.

[2] These are set out in Schedule 1 of the referral.
[3] http://www.qca.org.au/Water/Rural/Irrigation-price-investigations

For expenditure to be *efficient* it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

The ToR required us to review:

Policies and Procedures	• Sunwater's implementation of policy and procedures recommendations in the QCA's 2012 irrigation reviews, including improvements to internal processes and associated information systems as well as improved consultation with customers in relation to operational initiatives • Sunwater's internal policies and procedures processes against a benchmark of industry best practice • Opportunities for improvement and the cost savings expected from improved policies and procedures
Prudency and Efficiency Assessment	• The base year proposed by Sunwater to determine whether it is the most appropriate base year to establish an efficient level of recurring operational expenditure and, if not, recommend an alternative base year • Base year operational costs to determine whether they are prudent and efficient, investigating direct costs associated with the schemes/systems, indirect costs incurred, and the methodology used to allocate these • The cost escalation methods proposed by Sunwater to determine whether they are consistent with prevailing market conditions and historical trends • The proposed step changes to determine whether they reasonably reflect prudent/efficient costs • The potential for efficiency gains, providing appropriate justification

1.2 Assessment Methodology

Sunwater's operational costs consist of:

- 'Direct' costs, which include labour charged directly by staff doing work under a work order on a specific scheme, and other non-labour costs incurred to complete the task as defined on the work order
- 'Indirect' costs, which include labour and other costs incurred under a work order but cannot be charged directly to a specific scheme and must be attributed to a particular set of schemes that benefit from the work
- 'Local overhead' costs, which are costs incurred in regional offices that cannot be booked directly to a scheme. These include the cost of staff time that cannot be booked directly, referred to by Sunwater as 'residual' labour costs.

  Sunwater changed its cost allocation methodology after FY2018 to allocate these costs on a regional basis (so that residual costs incurred at each regional operations centre are only allocated to the schemes managed by respective centre), replacing the previous approach which allocated the total of all local overhead costs to all schemes.
- 'Corporate overhead' costs, which are generally incurred centrally and relate to overall support and management of the business. These costs are allocated as a multiplier of all labour costs including those incurred by both regulated and unregulated activity, so only a portion of these are allocated to irrigation schemes.

  Sunwater changed its allocation methodology for these costs after FY2018 as well, to use labour costs only as the means of recovering corporate overhead costs, removing other forms of cost allocation.

Sunwater used a 'base year – step – trend' approach to develop projections for its operational costs for the price path period. The approach identifies what it considered a typical 'base year' level of efficient costs (Sunwater nominated FY2019) and drivers of step changes in costs over the price path period, and applies cost trends to forecast its annual costs in nominal terms, adjusted for expected efficiencies over the price path.

We evaluated Sunwater's submission by assessing the prudency and efficiency of its proposed base year (including appropriate adjustments for non-recurrent costs and year-to-year variability), examining the direct costs, the non-direct costs and the non-direct cost allocation methodology. We also evaluated step changes and trends (including efficiency targets) over the price path period.

In order to identify a 'typical' year of direct costs, we needed to identify and account for drivers of year-to-year variability (which can arise from various factors, including for instance weather events, water levels, water flows and operational factors).

In assessing Sunwater's direct costs, we:

- Used the trends in historical costs to identify significant variations and the drivers of these at the aggregate level, comparing the costs to the QCA's 2012 recommendations
- Reviewed maintenance regimes, work scheduling and work delivery policies, procedures and practice to determine the overall prudency and efficiency of operations and maintenance costs, and reviewed electricity demand data to assess the efficiency of electricity used for pumping
- Extended the analysis to the scheme level to identify (and account for) scheme-based year-to-year variability and adjust for any one-off costs incurred at each scheme
- Identified any prudent and efficient step changes required during the price path period and reviewed the cost escalators used to express direct and indirect costs in nominal terms

Sunwater's non-direct costs are less variable to direct costs, being based on staff numbers, accommodation costs and system costs (none of which typically vary to a material extent, in real terms, on an annual basis). Further, non-direct costs are organisation or regional level costs, allocated to the scheme-level. In contrast, direct costs are incurred at the service contract level (we note that when these are viewed on aggregate, variability is generally less pronounced). It is reasonable to nominate a single year for these. We therefore:

- Nominated a single base year for these
- Assessed the efficiency of these costs with reference to the QCA's 2012 recommendations (which were based on a comprehensive review of corporate and local overheads by the QCA's consultants at the time), identifying one-off costs and any cost changes that were not relevant to irrigation
- Reviewed the changes made to Sunwater's organisation structure and the impact of that on non-direct costs, tracing the various cost transfers implemented since 2012 between corporate, local, indirect and direct cost categories that have had a significant impact on Sunwater's submission for the next price path
- Reviewed the approaches used by Sunwater to recover these costs from the schemes and examined how this recovery is affected by the changes to Sunwater's organisation structure
- Identified any prudent and efficient step changes required during the price path period and reviewed the cost escalator used to express the non-direct costs in nominal terms

Our methodology to determine prudent and efficient operational costs for the price path period involved:

Preliminary	1.	Reviewing Sunwater's submission and the regulatory financial models provided, to understand the approach taken and to establish base year costs. All cost data provided was indexed to current (FY2019) dollars and then used to determine whether Sunwater's proposed base year reflected a prudent and efficient cost base. Where we found that it did not, we recommended an alternative base year.
Base Year Direct costs	2.	Determining the prudency and efficiency of historical operations and maintenance costs by reviewing the policies and procedures that apply to operational activity, especially in relation to the specification and management of operations and maintenance work carried out on the schemes. This helps to develop a view of the prudency of this work and the cost-efficiency of its delivery and to assess the degree to which the most common forms of inefficiency have been addressed.
	3.	Evaluating Sunwater's response to the QCA's 2012 recommendations and related consultant's reports to determine the extent to which the recommendations have been actioned.
	4.	Comparing historical direct costs with the QCA's 2012 recommendations to identify and assess the drivers of any significant changes in costs and remove any non-recurring costs.
	5.	Determining representative base-year efficient operations and maintenance costs at the scheme level by accounting for the year-on-year variability in historical costs. Sunwater nominated FY2019 as the base year in its initial submission, using its budget for that year as the cost base. It is usual practice, however, to rely on actual costs for this purpose, and the most recent year with complete actual costs was FY2018. It became clear that the FY2019 budget presented did not represent a typical year, so the direct costs of a 'typical' or representative year were estimated (as a six year average of actual historical costs from FY2013 to FY2018) and used as the base year for direct costs.
	6.	Assessing the use of electricity in those schemes that incur significant pumping costs, and the purchase arrangements used by Sunwater to determine efficient base year electricity costs. Since tariffs and energy costs are changing at rates that differ from inflation, we also reviewed the basis of Sunwater's electricity cost projections to establish any step changes or trends that should apply during the price path. We note that Sunwater treats insurance as a direct cost, but we have chosen to include this cost as an indirect cost because it satisfies Sunwater's definition of indirect costs (insurance is procured as a corporate cost, and the premiums are allocated to schemes following specified rules). We reviewed the basis for Sunwater's projected insurance premiums to establish any step changes or trends that should apply during the price path.

Base year Overhead and Indirect (non-direct) costs	7.	Determining a representative base year overhead and indirect costs, noting that these non-direct costs are not variable in the same way as direct operations and maintenance costs (with non-direct costs being aggregate level costs based on staff numbers, accommodation costs and system costs, none of which typically vary to a material extent, in real terms, on an annual basis).
	8.	Assessing the prudency and efficiency of base year overhead and indirect costs by comparing them to the QCA's 2012 recommendations. In this way we assess the drivers of significant changes in cost, to identify any short-term or non-recurring cost changes that should not be included in the base year.
	9.	Assessing the cost allocation ratios used to allocate overhead and indirect costs to the schemes and therefore recover these costs from those schemes, to: - Determine whether these are reasonable - Identify and account for changes made in recent years and changes proposed during the price path period - Determine whether these changes are prudent and efficient and applicable to Sunwater's irrigation business - Review the impact of costs incurred by Sunwater's unregulated business on the non-direct cost allocation ratios - Establish 'base year' overhead costs allocated to the schemes, reflecting changes made to base year non-direct costs and the labour cost component of base year direct costs.
Step Changes / Trend Growth	10.	Identifying step changes or cost trends that should be allowed in the price path after the base year.
Revision	11.	Reviewing our findings after assessing submissions on the QCA's draft report.

This methodology is summarised in Figure 1, which shows the actions taken in the first column, and the outcomes in the second column.

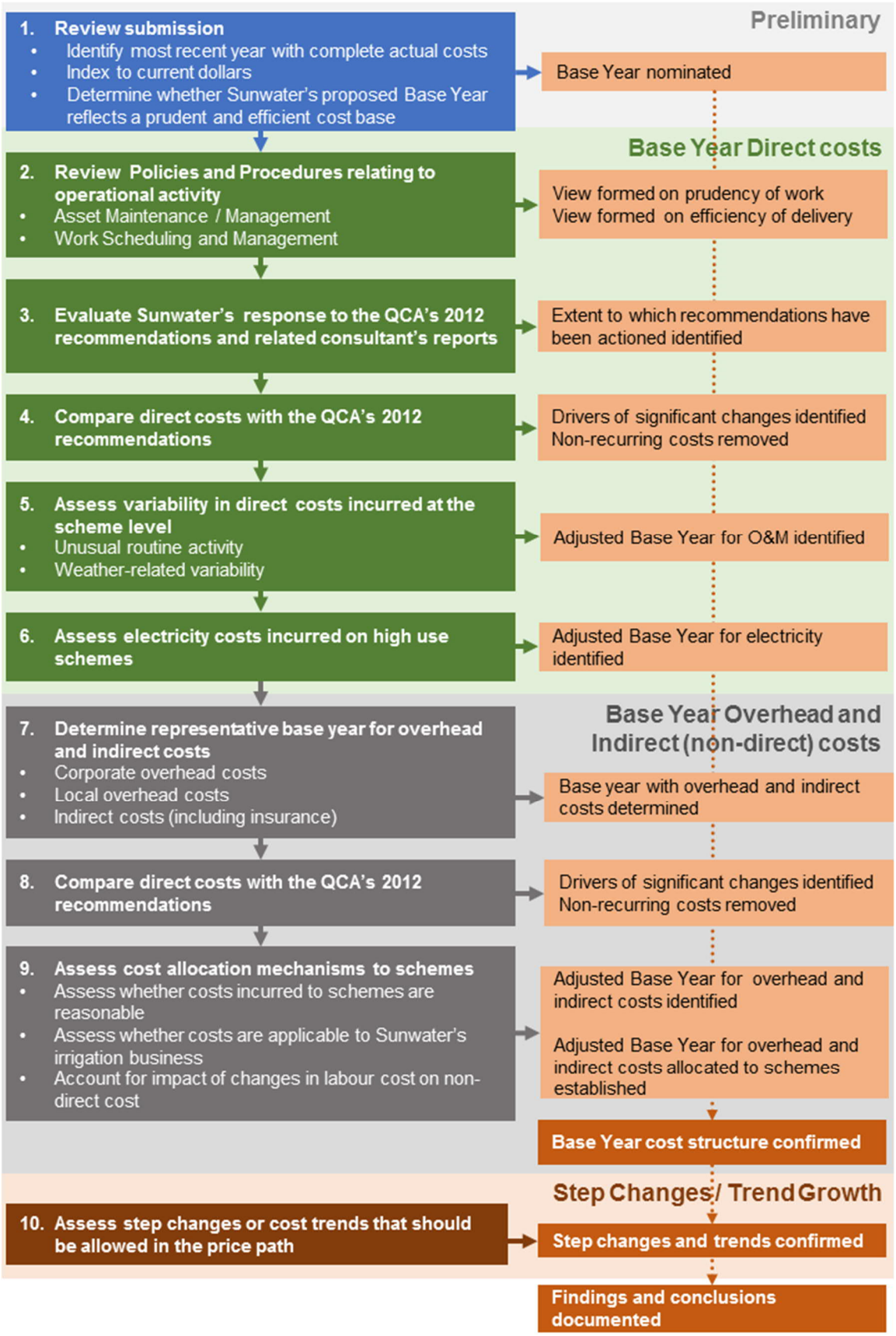


Figure 1 Review Methodology

The review was primarily a desktop review of documents submitted to the QCA by Sunwater, and of additional documents requested for clarification purposes through a Request for Information (RfI) process used by both the QCA and AECOM. Several meetings and interviews were conducted with Sunwater staff during the review to clarify information and address issues where the documentation provided was not sufficient to justify prudency or efficiency of costs.

1.3 Report Structure

The structure of this report follows the methodology outcomes as outlined in Table 2.

Table 2 Report Structure

Executive Summary	
Section 1	Introduction
Section 2	Sunwater's Submission
Section 3	Policies and Procedures Review
Section 4	Direct Costs Incurred on Schemes
Section 5	Local Overhead Costs
Section 6	Indirect Costs
Section 7	Corporate Overheads
Section 8	Base Year Costs
Section 9	Step Changes and Trends
Section 10	Prudent and Efficient Operational Costs during the Price Path
Section 11	Conclusions

2.0 Sunwater's Submission

Sunwater's Irrigation Price Review Submission details its proposed costs for the price path period for the service contracts that serve irrigation customers. It uses the base-year step trend approach and proposes prices based on these costs. During the process of the QCA's investigation, Sunwater has made additional submissions to the QCA. A summary of the relevant submissions made to the QCA by Sunwater is provided in Table 3.

Table 3 Summary of Sunwater Submissions to the QCA

Title	Referred to in this document as	Date submitted
Sunwater: Irrigation Price Review Submission	Original or initial submission	6 November 2018
Revised submission and regulatory model presented to the QCA (not published)	Resubmission or June 2019 submission	17 June 2019
Supplementary submission: Electricity Cost Pass Through Mechanism	Supplementary submission	28 August 2019
Response to the QCA's Draft Report	Response to QCA's Draft Report or November 2019 submission	4 November 2019

In its original submission, Sunwater nominated its budget for FY2019 as the base year for three reasons:

- FY2018 includes non-recurring costs associated with corporate restructuring, which makes it non-typical
- FY2018 includes direct costs (and indirect allocations) for the St George and Theodore distribution service contract areas, which transitioned to local management at the end of that year
- The FY2019 budget was fully adjusted following the restructuring, and includes costs associated with implementing the recommendations from the IGEM Review.

In its November 2019 submission on the QCA's draft report, Sunwater proposed that the actual costs for FY2019 (which were now available) be used as the base year.

Recreational costs that were included in the QCA's 2012 determination have been removed from the current submission. Data relating to the schemes that transitioned to local management arrangements (St George and Theodore at the end of FY2018, and Emerald at the end of FY2019) have also been excluded.

2.1 Our Use of Sunwater's Cost Data

Since it is difficult to understand cost trends where the data is presented in nominal terms (dollars of the day), we have escalated Sunwater's historical costs to FY2019 dollars using the Brisbane 'All groups' July-June data. We also assessed Sunwater's budget data for FY2019 and FY2020, so the latter year has similarly been adjusted to FY2019 dollars for comparison purposes (using AECOM's recommended escalation factors).

Since we refer to the QCA's 2012 recommendations in this report, we have also escalated the QCA's recommendations to current FY2019 dollars. In its 2012 determination, the QCA projected costs through to FY2017 only, and we show those projections as a gold line on our charts and labelled as 'QCA Recommendations' in our tables and text.

Table 4 presents the escalation factors applied to Sunwater's historical and budgeted costs to enable year on year comparison. Escalation is discussed in detail in relation to the price path period in Section 9.4.

Table 4 Escalation Rates used in Presentation of Sunwater's FY2013-FY2020 Costs

	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
CPI [4][5]	1.99%	3.22%	1.51%	1.49%	1.83%	1.71%	1.68%	2.00%
Labour Cost Escalation[6][7]	2.96%	2.62%	2.38%	1.99%	1.95%	2.15%	2.27%	2.25%
Contracted Services Cost Escalation[8]	2.16%	3.12%	1.66%	1.58%	1.85%	1.79%	1.78%	2.04%
Non-Direct Cost Escalation[9]	2.48%	2.92%	1.95%	1.74%	1.89%	1.93%	1.98%	2.13%

All data presented in this report is in current (FY2019) dollars unless we specifically state that it is nominal.

The data provided by Sunwater prior to the QCA's draft report includes actual costs incurred to FY2018 and budgets for FY2019[10] and FY2020[11]. The November 2019 submission includes actual costs for FY19, which we have provided separately in Section 2.8. We have distinguished budget data in our charts by using a diagonal pattern in our charts and shading in our tables to make it obvious which form of data is being reviewed.

2.2 The Evolution of Sunwater's Submission

Sunwater's original November 2018 submission to the QCA included a regulatory model which was based on its financial model. The data included historical costs for the years from FY2013 to FY2018, and the budget for FY2019 which was proposed as the base year cost.

Sunwater's revised submission presented to the QCA in June 2019 included an updated regulatory model as Sunwater continued to revise its budgets and considered the responses to RfIs issued by the QCA and that raised by AECOM.[12] The updated regulatory model included Sunwater's FY2020 budget based on its updated financial model, which incorporated changes resulting from further organisation restructures and a number of policy changes relating to the allocation of non-direct costs, including:

- Restructuring of regional operations to eight local overhead rates from FY2020 (four of which relate to each region), and tracking and allocating local overhead costs for these regions separately
- Removal of corporate overhead recovery via a 5% loading on non-labour costs (excluding electricity costs and major projects), and via an employee-based ICT charge
- Direct charging of fleet costs to the schemes (where previously they were included in local overhead)
- Adjustments made to address time-writing issues experienced between FY2016 and FY2018.

Sunwater's original submission of November 2018 mentioned a form of normalisation of costs but did not provide details of the issue and the methodology employed for normalisation.[13]

Sunwater advised in response to RfIs that the FY2018 data, presented as actual in its submissions, was in fact 'normalised' to adjust for time-writing issues over the FY2015 to FY2018 period resulting

[4] FY2013 to FY2019 CPI sourced from Brisbane 'All groups' July-June data (ABS Cat No 6401.0 - Consumer Price Index, Australia, Sep 2019)
[5] FY2020 CPI sourced from RBA SOMP November 2019 Table 5.1
[6] FY2013 to FY2019 WPI sourced from 6345.0 - Wage Price Index, Australia, Sep 2019 - Series A2711844F
[7] FY2020 WPI sourced from QLD Budget Strategy and Outlook 2019-20 Table 2.2
[8] Contracted services escalator derived as 17.5% WPI, 82.5% CPI
[9] Non-direct cost escalator derived as 50% WPI, 50% CPI
[10] Provided in November 2018 submission
[11] Provided in June 2019 cost update, de-escalated to 2018–19 in Sunwater's updated regulatory model
[12] RfIs 43, 44 and 55
[13] Reference: Footnote 17 on page 37 of Sunwater's November 2018 submission stated "A normalised level of direct expenditure and associated overheads were included in 2017/18 routine costs to rectify an under-representation of time-sheet reporting for direct cost activities (and partially as a result of the organisational changes occurring) during that year."

from a decision taken to allow senior staff to stop recording time spent as a direct cost on schemes (refer to the box below). [14] This change in policy caused a decrease in direct costs charged and an equivalent increase in 'residual' labour costs recovered via allocation of local overhead. As the lower utilisation had not been budgeted for, it also led to a significant under-recovery of costs from the service contracts.

Normalisation of FY2018

Sunwater has noted in its responses that its time-writing system was updated after the 2012 price review to increase managerial oversight of directly allocated labour costs across the business which is consistent with the QCA's recommendation. However, following a period of significant changes to the Board, Executive and Senior Managers and as part of a larger cost efficiency review, a decision was made to minimise administrative costs by allowing managers (at all levels), some supervisors and Brisbane-based staff to stop completing cost allocation timesheets. This impacted time writing over the FY2015 to FY2018, and was particularly notable in FY2016 to FY2018 [15]

Regional operations staff continued to do cost allocation timesheets as before, but the decision reduced labour costs directly charged by senior staff to service contracts and increased the size of the (residual) overhead allocated to the schemes. The issue also caused a shortfall in cost recovery because the direct costs charged were lower than budgeted, and Sunwater found that it was under-recovering labour costs by up to 20% as a result.

The normalisation carried out by Sunwater involved:

- Indexing all direct labour by activity from FY2012 to FY2015 (the period before the time-writing issue arose) to FY2018 dollars using Enterprise Agreement labour cost increases of 3% each year
- Averaging the indexed direct labour costs from FY2012-FY2015 and comparing these to the actual costs recorded in SAP for FY2018, concluding that staff utilisation had reduced from 87.8% in the earlier period to 83.2% in FY2018
- Using the indexed average to create a 'normalised' FY2018 dataset (with costs revised as though utilisation has been 87.8% rather than 83.2%)
- Adjusting overheads and indirect costs on a pro rata basis, based on the labour adjustment. This reduced the unrecovered overhead pool
- Adjusting to recover any residual overheads in proportion to the original cost allocated

Sunwater's FY2019 budget, proposed as the base year in its original submission, included adjustments for time-writing issues. An interim corporate restructure, fully addressed in the new FY2020 budget as part of Sunwater's June 2019 submission, was also included in the FY2019 budget. Considering the difficulties with the FY2019 data and the fact that this data was budget and not actual costs, we requested the actual (un-normalised) cost data for FY2018 and used that to form part of the average for direct costs base year and as the starting base for non-direct costs.

Sunwater provided its FY2020 budget in a revised submission in June 2019, which was too late to be used in the determination of our base year costs, and as a budget it was not suitable for that purpose. However, the FY2020 budget provided cost transfers as a result of organisational changes which we have included in our assessment of the base year to reflect, where possible, Sunwater's new structure and policies.

Finally, in its November 2019 submission on the QCA's draft report, Sunwater recommended that the FY2019 actuals costs be used for the base year, and these were subsequently provided to us for review. The organisational changes included in the FY2020 budgets may have been partly or fully implemented in FY2019, and we have included the data in our charts in Section 2.8 for reference purposes. However, as outlined in Section 2.8 and Section 4.2, we have continued to rely on FY2018

[14] QCA Information Requests A43 A44 and 28_Routine costs and non-direct costs
[15] QCA Information Requests A43 A44 and 28_Routine costs and non-direct costs

as the most recent year of actual costs, as we consider the inclusion of FY2019 year to have limited value (given the adopted long-term averaging approach).

In our analysis we used:

- Actual historical data for years from FY2013 to FY2018, taken from Sunwater's revised Regulatory Model[16], indexed to FY2019 dollars and cleared of normalisation.
- The FY2019 budget data, sourced from the original Regulatory Model[17] from Sunwater's initial submission since this data was previously provided to stakeholders for review. This data has since been replaced by FY2019 actual costs provided by Sunwater in November 2019.
- The new FY2020 budget data, taken from Sunwater's revised Regulatory Model[18] and indexed back to FY2019 dollars.

Sunwater's FY2020 budget assumes that the time-writing issue is addressed. In turn, it assumes direct labour costs will increase and residual local and corporate overhead costs will reduce (compared to FY2018 actual figures). We estimate that this action will transfer approximately $1.71 million from residual local overhead costs to total direct costs (routine and non-routine labour for all schemes) as presented in Table 5.[19]

We note that Sunwater has provided utilisation data for the FY2013 to FY2019 period.

Table 5 Impact of Improved Staff Utilisation

Centre	Labour cost	Utilisation FY2016	Utilisation FY2017	Utilisation FY2018	Utilisation FY2019	Average % Change (to FY2019)	Change to Residual Cost
North	$6.60	82.9%	83.0%	83.2%	88.1%	6.1%	-$0.41
Central	$8.56	77.9%	78.8%	82.7%	88.9%	11.5%	-$0.98
Bundaberg	$5.93	83.6%	83.5%	85.6%	87.7%	4.1%	-$0.24
South	$2.72	81.8%	86.5%	87.0%	87.6%	3.0%	-$0.08
Total	$23.81	81.1%	82.0%	84.1%	87.8%	4.4%	-$1.71

Note:

1) total utilisation rates calculated as the weighted average (by labour cost) of each region

2) The reported utilisation for Operations South in FY2018 was an outlier (23.91%), and has been replaced with the average of FY2017 and FY2018

3) Labour cost is the total labour (routine + non routine) for regulated and non-regulated schemes

Sunwater notes that a decline in direct labour charged is not solely caused by the time-writing issue. The number of staff working on new projects (such as the Burdekin Moranbah Pipeline) and external facility management contracts has also reduced. This decreases the direct labour costs charged (and used for overhead allocation) despite total staff numbers remaining generally constant.

We note that Sunwater has undertaken several restructures since 2012. In particular, the restructuring of regional operations centres has made it difficult to demonstrate changes in costs overtime. This also impacts corporate overhead and some indirect cost categories, where the function performed (and its cost) may have moved between cost centres or between corporate and local cost centres several times over the period. These changes have made it difficult to establish trends in these costs, as well as the cost allocators used to recover these costs from direct labour.

We note that a large number of requests for clarification were issued during AECOM's review and we wish to express our appreciation for Sunwater's responsiveness throughout the review.

[16] Regulatory Model v3 as part of Sunwater's revised submission presented to the QCA in June 2019
[17] Regulatory Model v1 as part of Sunwater's original submission presented to the QCA in November 2018
[18] Regulatory Model v3 as part of Sunwater's revised submission presented to the QCA in June 2019
[19] RfI A28

2.3 Total Regulatory Costs

The historical and projected routine operating expenditure provided in Sunwater's initial submission for the period from FY2013 to FY2020 is summarised in Figure 2, together with the QCA's 2012 recommendations (which were made up to and including FY2017) for comparison. The shaded bars (FY2019 and FY2020) indicate proposed/budgeted costs, while the solid bars indicate actual costs. FY2019 in the graph represents the base year costs proposed by Sunwater in its initial submission.

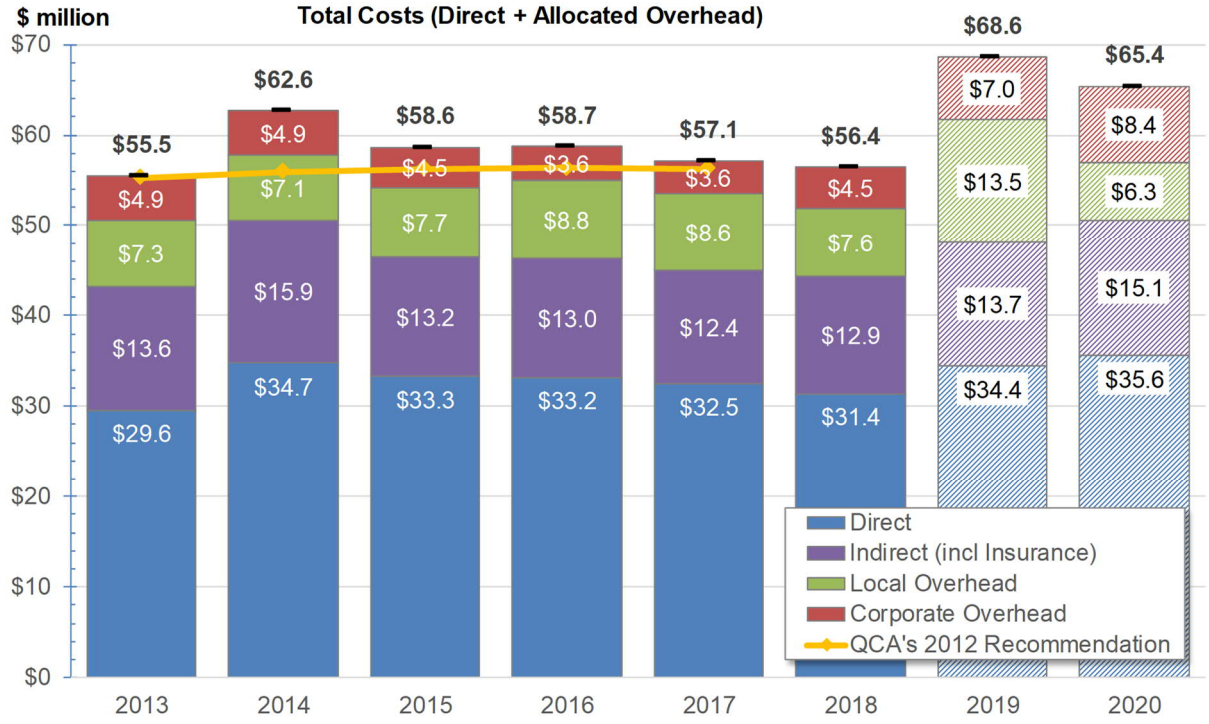


Figure 2 Sunwater's Past and Proposed Base Year Routine Operating Expenditure (Direct and Allocated Overhead)

Figure 2 shows that the actual costs were above the QCA's 2012 recommendations for FY2014 and remained relatively constant during FY2015-17. The budgets for FY2019 and FY2020 increased substantially from FY2018 actuals. Historical costs are evaluated in greater detail the following sections to determine prudent and efficient costs, and the use of FY2019 data addressed in Section 2.8.

The bulk water and distribution service contracts (schemes) are a subset of Sunwater's overall business activity and costs are incurred through work performed directly on each scheme. Sunwater allocates indirect, local overhead and corporate overhead costs using a multiplier on top of the direct labour costs charged to its service contractors. As these schemes are only a part of Sunwater's activity, the allocators used are affected by changes to Sunwater's other (unregulated) business activities and the level of non-routine activity (including large renewal or development projects where the cost incurred may be capitalised).

An understanding of trends in direct costs, the size of various indirect and overhead costs, and changes to the cost allocators are needed to review Sunwater's submission regarding the bulk water and irrigation schemes.

2.4 Direct Cost Trends

Direct costs include labour costs incurred through work orders for operations and maintenance activity, materials and other costs incurred through work orders, and electricity costs (which are significant in some schemes).

2.4.1 Operations and Maintenance (Excluding Electricity Costs)

Figure 3 presents the operations and maintenance expenditure, with the FY2019 and FY2020 bar shaded to indicate that it is derived from a budget.

The blue line indicates labour costs incurred (which are used to determine the share of overhead costs allocated), the black line indicates the average annual cost over the FY2013-18 period, and the orange line indicates the QCA's 2012 decision (extrapolated to this period).

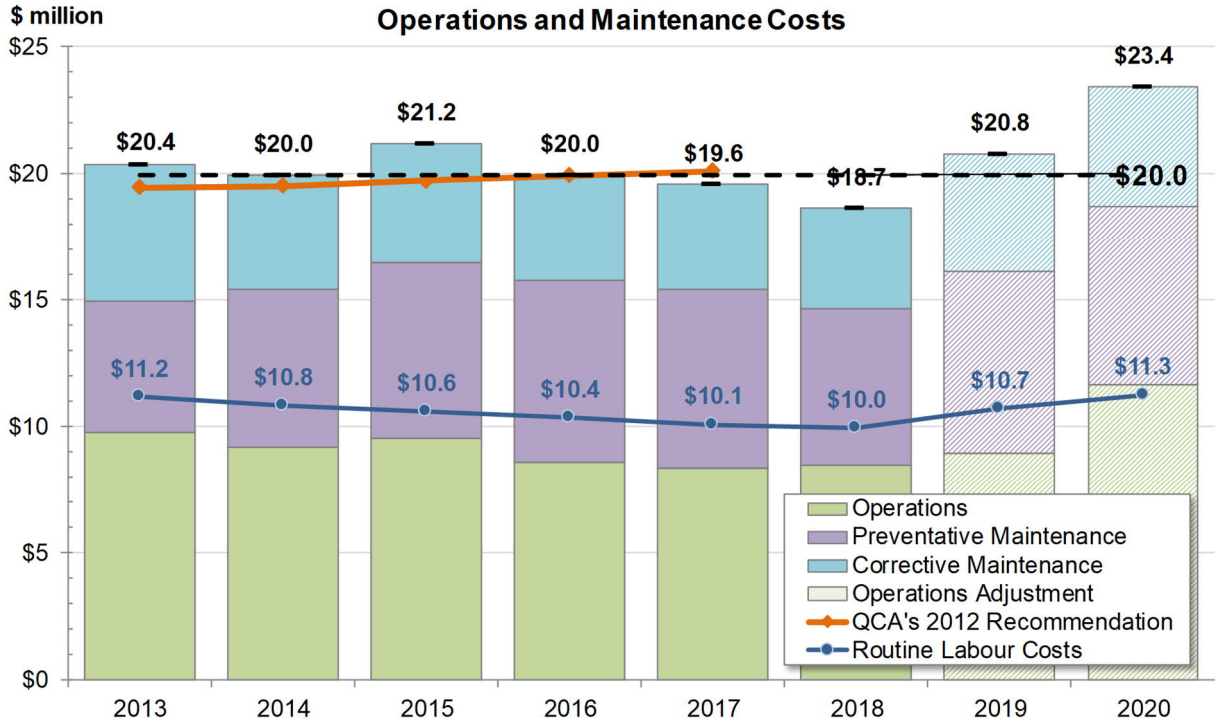


Figure 3 Direct Operations and Maintenance Costs Incurred on the Schemes

Direct costs in the aggregate (for all schemes) remained very similar to the QCA's 2012 determination until FY2018, when they were about 5% lower. FY2019 budgeted costs were about 6% higher than the QCA's determination for FY2017, and approximately $2.1 million higher than the FY2018 direct costs. The budget for FY2020 is 19% higher than the QCA 2012 determination for FY2017, or $4.7 million higher than the FY2018 direct costs.

We note that although aggregated direct costs for all schemes vary by less than 10% year to year (Figure 3), direct costs in some individual schemes in recent years have varied by 50% or more from one year to the next (refer to Sections 4.2 and 4.3).

2.4.2 Electricity

Electricity is a significant variable cost for schemes that require pumping, and several schemes have been on preferential tariffs that are being phased out. This adjustment, coupled with a general increase in the cost of electricity, caused a significant increase in electricity costs after FY2013 (Figure 4). The last of the preferential tariffs are now being phased out, and costs are expected to be impacted over the price path period as obsolete/transitional tariffs cease from 1 July 2021 onwards.

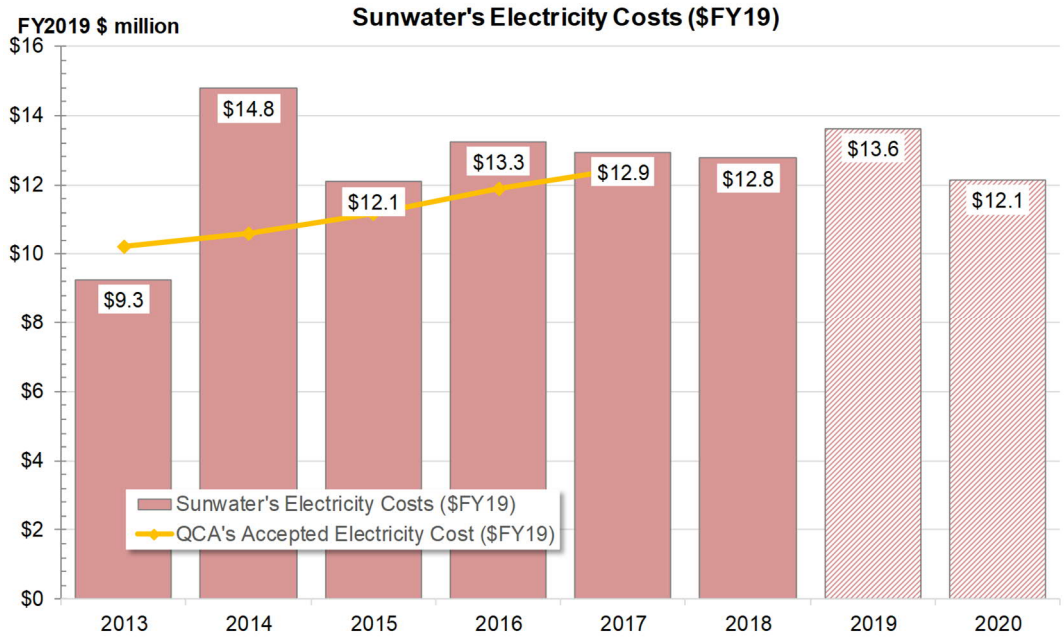


Figure 4 Electricity Costs Incurred on the Schemes

Electricity costs incurred on the schemes are reviewed in detail in Section 4.4.

2.5 Indirect Cost Trends

Indirect costs incurred may relate to a combination of schemes, specific asset groups and types of service contracts. Where indirect costs cannot be allocated to a specific service contract, they are allocated to all relevant schemes in proportion to the direct labour costs at each scheme. This follows cost allocation rules within Sunwater's Cost Allocation Manual (CAM).

The chart in Figure 2 shows indirect costs as one section of the stacked bars (the total of the indirect cost categories). These costs are shown in this section with insurance costs dis-aggregated.

2.5.1 Insurance

Insurance is the most significant indirect cost type by value. Although Sunwater treats insurance as a direct cost, we have treated it as an indirect cost because it meets Sunwater's standard definition of an indirect cost. Sunwater incurs the insurance premium as a whole and allocates the cost to all schemes using cost allocation rules within its CAM.

Insurance costs allocated to the schemes are considerably higher than the QCA's 2012 recommendation (Figure 5).

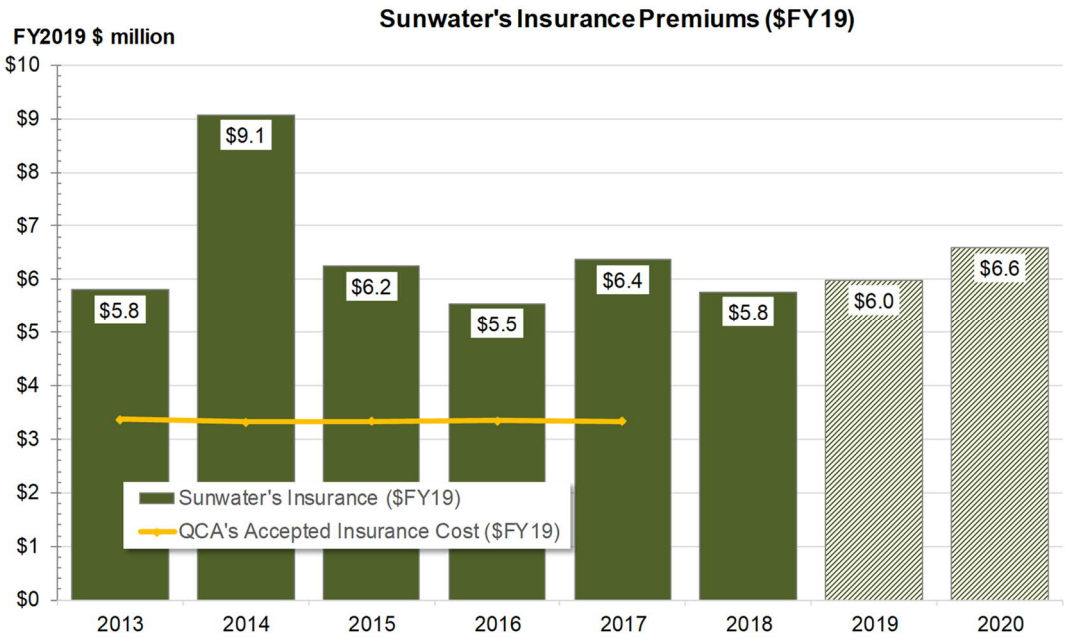


Figure 5 Insurance Premium Costs

The FY2014 increase in insurance premiums is due largely to cyclone activity and flooding, and costs appear to have been more stable from FY2015 onwards. Sunwater, relying on advice from its broker, considered that these costs would increase in FY2020 and thereafter remain relatively constant (in $FY2019).

2.5.2 Other Indirect Costs

Sunwater has numerous functions that are treated as indirect costs. The allocation of indirect costs is complex as the receiving schemes can vary for each function. The total value of indirect costs (excluding insurance) has remained lower than the QCA's 2012 recommendation (Figure 6). From FY2019, Sunwater will incur additional costs for implementing the Inspector-General Emergency Management (IGEM) requirements. This new cost is shown as a dotted bar and will be treated as a step change for pricing purposes.

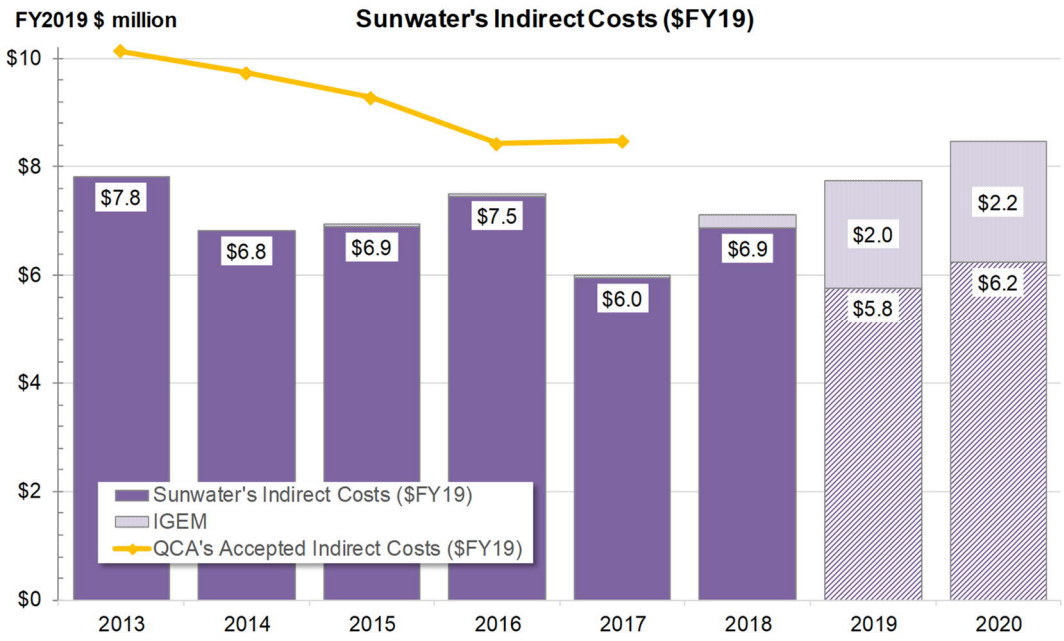


Figure 6 Indirect Costs Allocated (Excluding Insurance)

The reduction in total indirect costs between FY2018 and FY2020 is partly due to the change in policies regarding the allocation of corporate overhead costs. This rationalises work functions between corporate, local and indirect cost pools and reduces indirect costs by approximately $3 million before they are allocated. These costs are reviewed in Section 5.0.

2.6 Local Overhead Costs

Local overhead costs consist of 'residual' staff costs that are not charged directly to schemes or through indirect cost pools for allocation to schemes, as well as non-labour costs incurred at local offices to support staff, such as occupancy and equipment.

Before FY2019, Sunwater aggregated all local overhead costs and allocated them to all direct labour costs using a single allocator. Sunwater was restructured into two regions in FY2018, and now into four regions in FY2019 which changes local overhead cost allocation. Local regional costs will be allocated to local schemes in each of the four regions.

Several policy changes have affected local overhead costs from FY2020.[20] These are presented in Table 6 which provides AECOM estimates of the respective cost impacts of the policy changes.

Table 6 Impact of Policy Changes on Local Overhead Costs

Policy Change	Impact	Impact on Irrigation Schemes
1. ICT desktop and network charges	Transferred from local overhead to corporate overhead, reducing local overhead costs by $0.83 million	Reduces local overhead allocated to irrigation scheme costs by $0.47 million Increases corporate overhead allocated to irrigation schemes by $0.47 million
2. Fleet charging policy	Direct charging of fleet costs reduces local overhead by $2.6 million	Reduces local overhead allocated to irrigation schemes by $1.8 million Increases irrigation scheme direct costs by $1.8 million
3. Staff utilisation	Reduces the residual part of local overhead by $1.71million	Reduces local overhead allocated to irrigation schemes by $0.70 million

[20] RfI A54

Policy Change		Impact	Impact on Irrigation Schemes
	(improved time-writing)		Increases irrigation scheme direct costs by $0.33 million (from the long-term average as outlined in Section 4.5)
4.	Functions moved between Non-direct categories	Net impact on local overheads of all function transfers is a cost increase of $2.68 million	Increase in local overhead allocated to irrigation schemes by $1.5 million Reduced allocation of indirect costs

Sunwater's FY2020 budget reflects the policy changes in Table 6.

As shown in Figure 7, policy changes have impacted local overhead costs which are allocated to irrigation schemes resulting in a $1.71 million reduction in actual costs for FY2018.

Sunwater's FY2019 budget includes a large allocation of local overhead costs. Local overhead costs in FY2019 total $25.4 million, whereas the budgeted recovery of local overhead in FY2019 total $33.5 million. This results in an over-recovery of costs by $8.1 million and makes FY2019 an unsuitable year to use as a base year (amongst other reasons).[21] There is also a budgeted under-recovery of corporate overhead costs of $3.7 million in FY2019.[22]

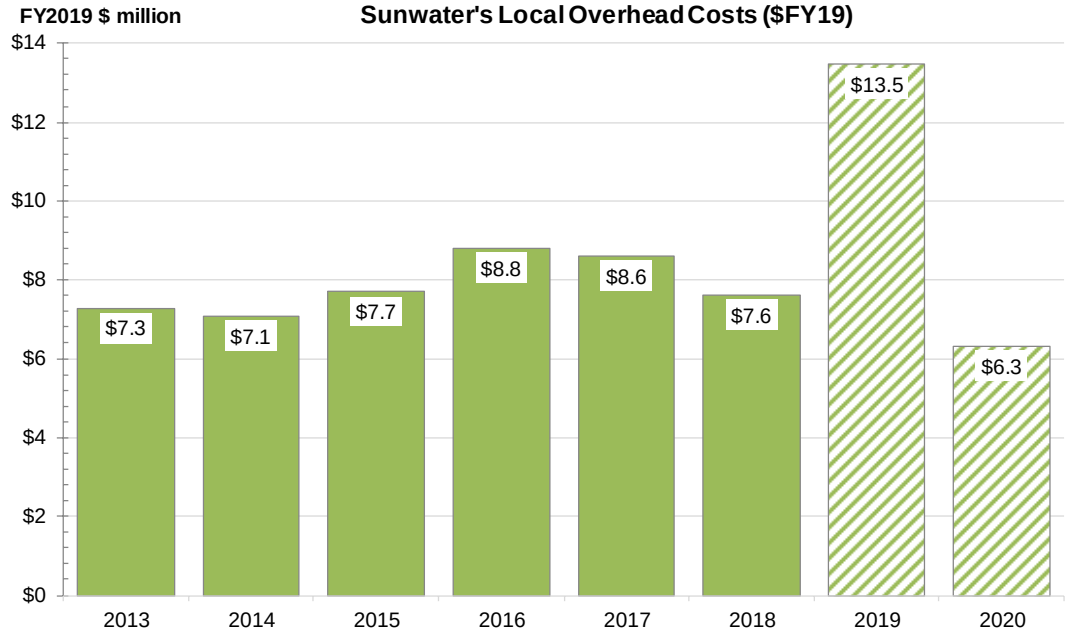


Figure 7 Sunwater's Local Overhead Costs

As QCA's 2012 recommendation did not separate local and corporate overhead, the comparison is made separately below. These costs are reviewed in detail in Section 6.0.

[21] Sunwater Financial Model (November 2018 submission), sourced from the Overheads tab in the Hub.
[22] Sunwater Financial Model (November 2018 submission), sourced from the Overheads tab in the Hub.

2.7 Corporate Overhead Costs

Corporate overhead includes several cost pools which are allocated via direct labour costs to both the regulated and unregulated business. Changes in Sunwater's unregulated business activity can affect the proportion (allocation) of corporate overheads allocated to the schemes. This allocation is budgeted to increase substantially from FY2018 (Figure 8).

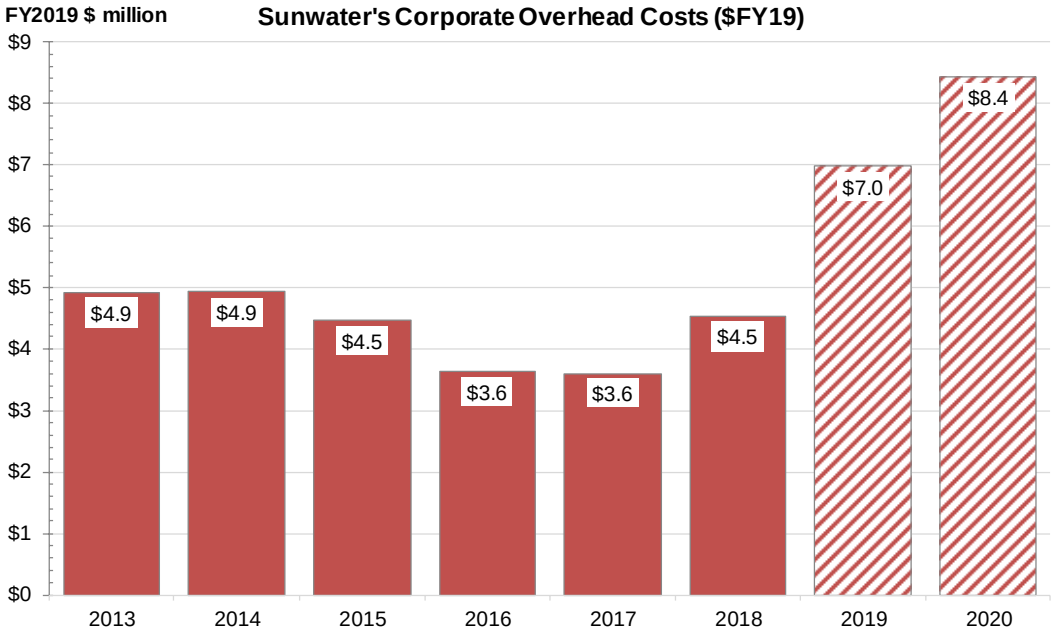


Figure 8 Sunwater's Corporate Overhead Costs

Sunwater's budgeted increase in corporate overhead costs from FY2018 to FY2020 includes:

- A transfer of overhead costs of almost $7 million due to cost allocation policy changes. In FY2018, these were included in local overhead or indirect costs
- Reduced rental costs (for Brisbane)
- Staffing increases.

The labour-based cost allocator used has changed as a result, so that the net impact in Sunwater's FY2020 budget is an increase in corporate overhead allocated to the irrigation schemes of $3.9 million.

Figure 9 combines local and corporate overheads in comparison with the QCA's 2012 recommendations as the QCA did not separate local and corporate overheads. Sunwater remained close to the QCA's 2012 recommendation until FY2019 when the allocation of corporate overhead costs stepped up. These costs are reviewed in Section 7.0.

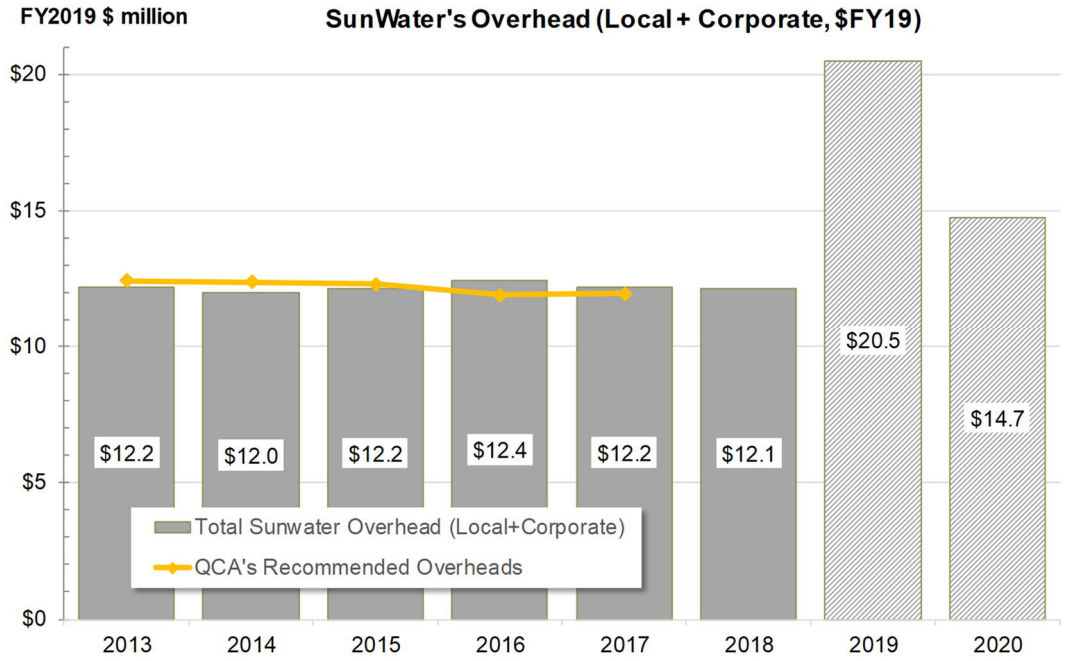


Figure 9 Comparison of Sunwater's Overhead Costs to the QCA's 2012 Recommendation

2.8 Sunwater's Submission to the QCA's Draft Report

In its November 2019 submission in response to the QCA's draft report, Sunwater made a number of observations relating to operational costs, regarding:

- The 'averaging' approach taken to determine the base year direct costs
- 'Errors' in the analysis used to develop the base year costs or step changes
- 'Inappropriate' use of cost escalators.

Sunwater's observations on these three issues and our response to these are summarised in Table 7, Table 7 and Table 8.

Table 7 The 'Averaging' Approach Taken to Determine the Base year Direct Costs

Sunwater's Observations	AECOM Response
It is not appropriate to assess costs at a scheme-by-scheme level because that could ignore scale benefits available from shared resourcing.	• Prices are set on a scheme by scheme basis, and we are required to assess the prudent and efficient costs of providing services in each scheme. Our brief does not enable us to determine whole-of-Sunwater costs and apportion them to all schemes.
The use of an averaging approach for direct costs but a base year approach for non-directs does not reflect future efficient operating costs.	• Sunwater's actual direct costs at a scheme level are demonstrably not consistent on an annual basis (refer to Sections 4.2 and 4.3). There are several possible drivers of this variation, and they have been reviewed in this report (Sections 4.2 in particular). Sunwater's network service plans provide some information on these issues. • Sunwater submitted in the 2012 pricing review that there is significant variability in operating conditions due to factors including climatic and seasonal conditions, water levels and opportunities maintenance activities (taking advantage of low
Sunwater's 'underlying costs' do not vary significantly over time.	
Changes in these underlying costs are driven by input cost variations, operational needs	

Sunwater's Observations	AECOM Response
and compliance requirements that are not strongly correlated with water demand.	water levels, for example). Its operating environment does not appear to have not changed materially since then.[23] • Sunwater has not provided a basis for concluding that the FY2019 year is representative or typical of its activity. The total cost for this year was 21% higher than FY2018, and higher than the budget for FY2020, which suggests that it is anything but a typical year and should not be used as the base year. • The significant difference between the budget and the actual costs for FY2019 for many schemes (provided in Section 4.2) reinforces the view that any particular year is unlikely to be representative, not least because Sunwater could conceivably claim 'operational needs' as justification for a cost increase in one year that may be rescheduled for another (as was the case for at least 7 schemes in FY2019). • The actual data for FY2019 indicates that decisions are made during a year that were not predicted during budget setting for the year, and these can have a material impact on annual costs. If the budget is not a reliable predictor of costs for a given year, we do not believe it reasonable to use either the budget or the actual costs alone to predict costs in future years. • Given that every individual year in the future is likely to vary unpredictably, we view that the most reasonable approach to predict future costs is to take a long-term view of historical costs, adjusting for any known one-off issues, new obligations or cost escalation that differs from CPI, to establish a typical year. • The same argument cannot be made for local overhead, corporate overhead costs or indirect costs. These are based on staff numbers, accommodation costs and system costs, none of which typically vary to a material extent (in real terms) on an annual basis. Further, non-direct costs are organisation or regional level costs, allocated to the scheme-level. In contrast, direct costs are incurred at the service contract level (we note that when these are viewed on aggregate, variability is generally less pronounced). Where there is no significant variation, the use of the standard base year approach is appropriate, and we have followed this approach. • We do not object in general to including the FY2019 year in an assessment of a 'representative' year. However, there is not a compelling reason as to why we should use the latest year of actual expenditure, given that the intent of our analysis is to establish a normalised year of recurrent expenditure. To the extent that actual expenditure in FY2019 is significantly different from previous years, the onus should be on Sunwater to establish the drivers for this.
Since the actual costs for FY2019 are now available, they should be used for the base year, particularly since that would simplify the step changes needed (in contrast to the FY2018 year, which required a wider range of step changes).	

[23] Queensland Competition Authority (2012). *Final Report – Sunwater Irrigation Price Review: 2012-17.* http://www.qca.org.au/getattachment/5fad8dc9-2101-4097-bdc8-d90d25fbfbbb/Sunwater-Irrigation-Price-Review-2012-17-Volum-(1).aspx

Table 8 'Errors' in the Analysis used to Develop the Base Year Costs or Step Changes

Sunwater's Observations	AECOM Response
• Deferral of asset renewal would increase maintenance costs, but this increase is not provided for in the operational cost projections.	• Sunwater correctly note that the timing of renewals may impact on maintenance requirements. However, as noted in Section 3.2.3, we are of the view that the deferral of renewals will not impact on the assessment of prudent and efficient maintenance costs within the price path period as: - The deferral of renewals is more relevant in the longer term (beyond the price path period) - Renewals works which were scheduled to occur within the FY2021-2024 price path period were only deferred where the deferment was supported by projected asset condition (i.e. issues observed in the planning of renewals).
• The calculations used to estimate the impact of Sunwater's new vehicle charging policy were not accurate.	• We have revised the adjustment made in determining base year fleet costs, as outlined in Section 4.5.
• The base year Travel & Accommodation costs are understated due to costs being historically charged to corporate cost pools	• We have included an adjustment to base year Travel & Accommodation costs, as outlined in Section 4.5.
• There were errors in the determination of electricity price step changes at specific pump stations in two schemes.	• We have reviewed the two specific schemes in question (Eton and Bundaberg Distribution) and reviewed the tariff selection for the relevant sites in accordance with Sunwater's submission. We note that; - We have excluded the ineligible tariff (51C) at Quart Pop from our analysis. However, we note that the Quart Pop tariff adjustment relates to the Bundaberg Distribution scheme (not Burdekin Haughton as indicated in Sunwater's submission). - We have reviewed tariff selection at Eton distribution. However, our analysis remains an independent assessment of cost and has not relied on the *'Tariff Comparison Tool'* referenced in Sunwater's submission.
• The impact of Sunwater's time-writing issue on direct costs occurred earlier than previously assumed, which understates costs in those early years.	• Sunwater has noted that the impact of its time-writing issue was particularly significant over the FY2016 to FY2018 period.[24] In November 2019, Sunwater provided utilisation data for earlier periods and we have addressed that in this report (Section 4.5).
• The allocation approach of corporate costs was complex, and would benefit from a more simple and transparent explanation	• The corporate cost allocator is used to allocate these costs to all direct labour costs incurred, including those relating to Sunwater's unregulated business activity. Since our brief did not include an assessment of this unregulated business, we have accepted at face value the labour cost involved in carrying out this business as provided by Sunwater. • Sunwater has budgeted for a substantial increase in its unregulated business activity to FY2020, which will reduce the share of corporate overheads that should be allocated to

[24] QCA Information Requests A43 A44 and 28_Routine costs and non-direct costs

Sunwater's Observations	AECOM Response
	irrigation customers. It is not reasonable to use an allocator based on the FY2018 or FY2019 level of unregulated business for the price path period if it is clear from Sunwater's own budgets that the allocator will be materially different during that period (refer to Table 64). We therefore recommend that the QCA do not accept Sunwater's view on this issue.
• Costs associated with Sunwater's Digital Enterprise Business Solutions (DEBS) program were under-stated.	• We recommend that the QCA do not accept this cost increase related to the DEBS program. Errors suggested by Sunwater have been considered and addressed in Sections 7.0 of this report.
• Step changes in corporate overhead costs that had were rejected should be reinstated.	• Errors suggested by Sunwater have been considered and addressed in Section 7.0 of this report.
• Some conclusions reached in relation to scheme level costs were incorrect.	• Errors suggested by Sunwater have been considered and addressed in Sections 4.2 and 4.3 of this report.
• There has been an increase in rental costs for a project team that should be included.	• We recommend that the QCA do not accept this cost increase. Errors suggested by Sunwater have been considered and addressed in Sections 7.0 of this report.
• Insurance costs for the current financial year are now known and should be used.	• We recommend that the QCA accept the FY2020 insurance cost. This is addressed in Section 6.0 of this report.

Table 9 'Inappropriate' Use of Cost Escalators

Sunwater's Observations	AECOM Response
• Sunwater's labour costs are subject to its Enterprise Bargaining Agreement, which provides for labour cost increases that are consistently higher than the Queensland Government expectations that were used to determine future costs.	• All Sunwater's comments on the cost escalators used to determine the price path costs in nominal terms are addressed in Section 9.0 of this report.
• CPI is not an accurate indicator of Sunwater's price movements.	
• The escalation of insurance premiums is less than the advice provided by Sunwater's broker.	

2.8.1 Total Regulatory Costs (Including FY2019 Actuals)

As part of Sunwater's submission to the QCA's Draft Report, Sunwater provided actual costs for FY2019 and proposed that they should be used for the base year. Sunwater's costs for the period from FY2013 to FY2020, including actual FY2019 costs, are summarised in Figure 10.

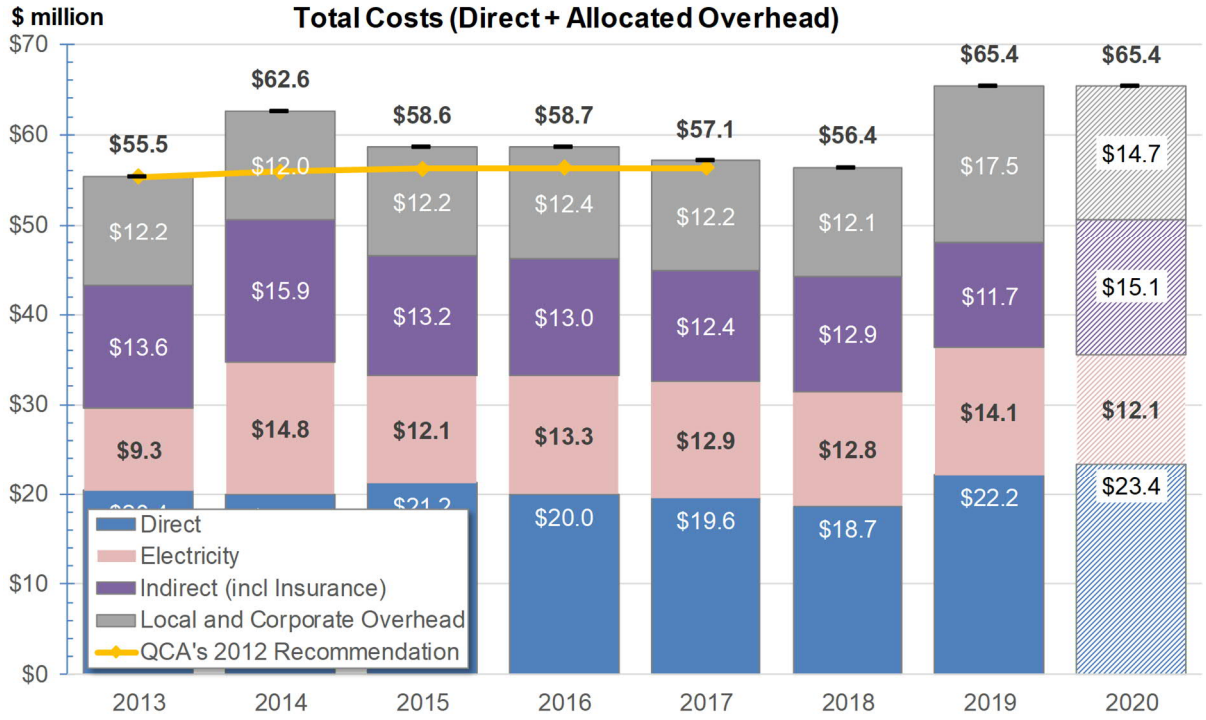


Figure 10 Sunwater's Past and Proposed Base Year Routine Operating Expenditure (Direct and Allocated Overhead)

Aggregate FY2019 costs were about 16% higher than the QCA's 2012 determination for FY2017, and approximately $9.1 million higher than the FY2018 direct costs. Actual FY2019 costs were on aggregate about 4% lower than the forecast FY2019 costs. Further detail of each cost type is provided in the following sections.

2.8.2 Operations and Maintenance (Excluding Electricity Costs, Including FY2019 Actuals)

Figure 11 presents the operations and maintenance expenditure, with the FY2020 bar shaded to indicate that it is derived from a budget.

The blue line indicates labour costs incurred (which are used to determine the share of overhead costs allocated), the black line indicates the average annual cost over the FY2013-18 period, and the orange line indicates the QCA's 2012 decision (extrapolated to this period).

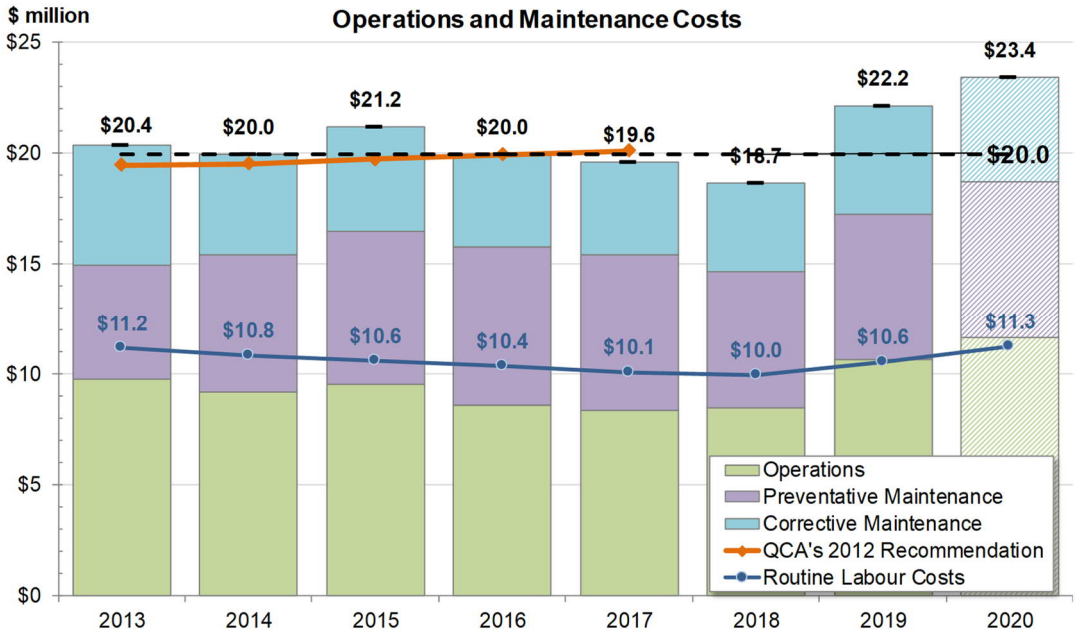


Figure 11 Direct Operations and Maintenance Costs Incurred on the Schemes

Aggregate FY2019 costs (for all schemes) were about 13% higher than the QCA's 2012 determination for FY2017, and approximately $3.5 million higher than the FY2018 direct costs. Actual FY2019 costs were on aggregate about 7% higher than the forecast FY2019 costs (largely due to operations cost variances).

2.8.3 Electricity Costs (Including FY2019 Actuals)

Figure 12 presents the electricity costs incurred in the schemes, including F2019 actuals.

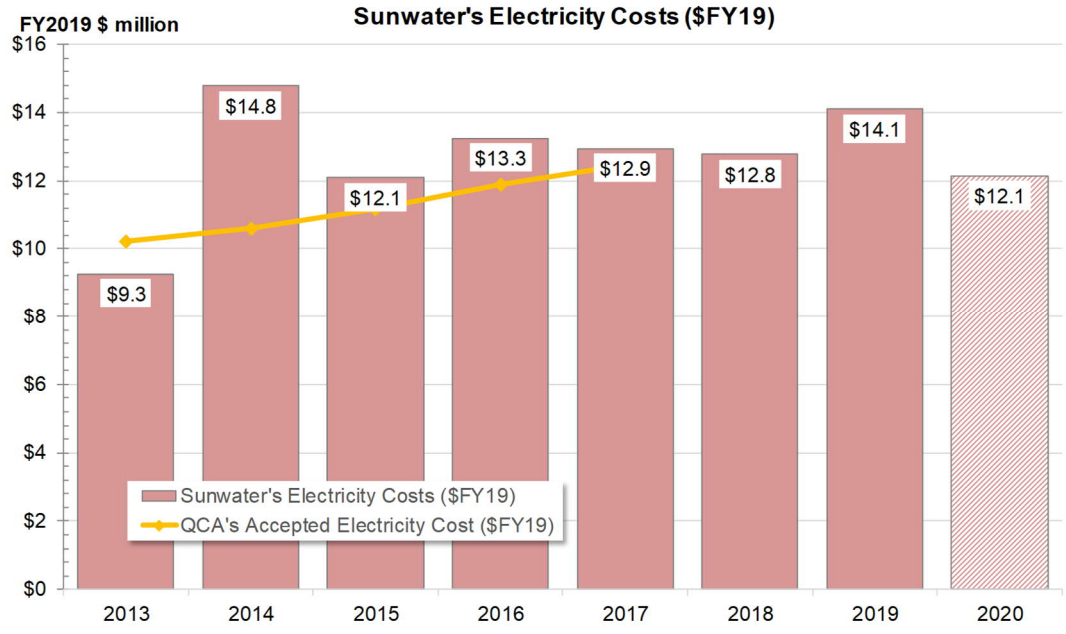


Figure 12 Electricity Costs Incurred on the Schemes

Actual FY2019 costs were on aggregate about 4% higher than the forecast FY2019 costs.

2.8.4 Insurance Costs (Including FY2019 Actuals)

Figure 13 presents the insurance costs allocated to the schemes, including FY2019 actuals.

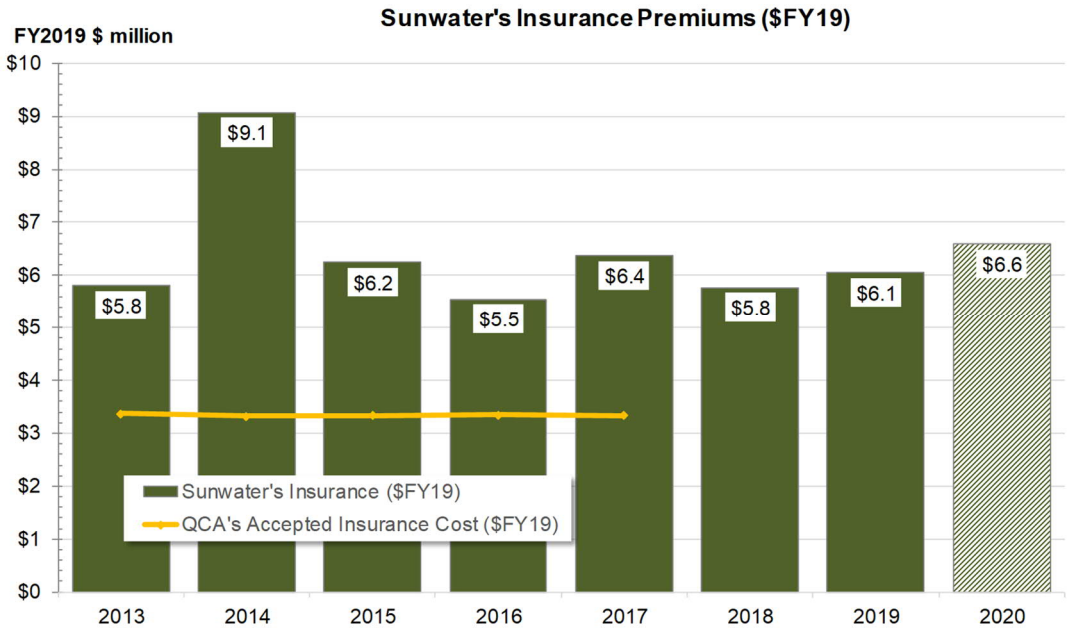


Figure 13 Insurance Premium Costs

Actual FY2019 costs were on aggregate about 2% higher than the forecast FY2019 costs.

2.8.5 Other Indirect Costs (Including FY2019 Actuals)

Figure 14 presents the indirect costs (excluding insurance) allocated to the schemes, including FY2019 actuals.

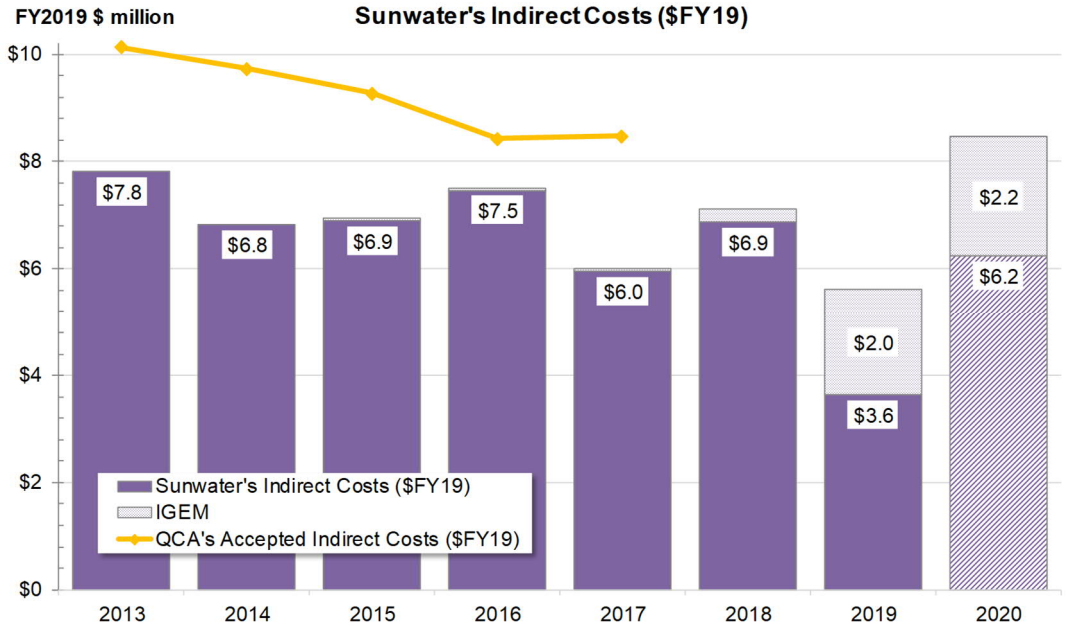


Figure 14 Indirect Costs Allocated (Excluding Insurance)

Actual FY2019 costs were on aggregate about 28% lower than the forecast FY2019 costs.

2.8.6 Overhead Costs (Including FY2019 Actuals)

Figure 15 presents the total overhead costs (local and corporate overheads costs combined) allocated to the schemes, including FY2019 actuals.

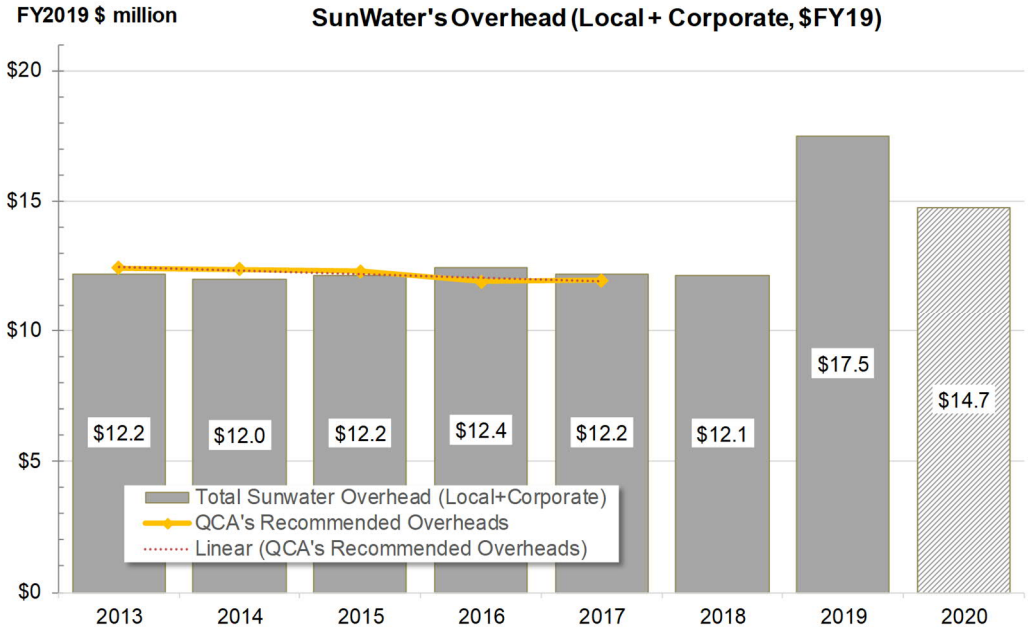


Figure 15 Sunwater's Local and Corporate Overhead Costs

Actual FY2019 costs were on aggregate about 15% lower than the forecast FY2019 costs.

2.9 Conclusions

We have observed an increase in from historical costs to the projected/budgeted costs in the proposed base year FY2019, and FY2020. There is a net increase in costs of $8.8 million (or 15.6%) from the FY2018 actual costs to the FY2020 budget (or a net increase in costs of $7.6 million (or approximately 13.2%) from the long-term average to the FY2020 budget).

The actual costs for FY2019 provided in Sunwater's November 2019 submission appear to be abnormally high. Total costs for FY2019 were 21% higher than FY2018, higher than the budget for FY2020, and 7% higher in total than the budget which had been provided for review in July.

There is a significant ($3.5 million) increase in direct operations and maintenance costs. We note that a significant portion of this is a transfer of cost from local overhead due to policy changes (including improved time-writing and direct charging of fleet costs), which corresponds with a reduction in local overhead costs. For direct operations and maintenance costs, the historical actual cost data provided indicates significant variability of direct costs at many schemes, and we have concluded that it is not possible to demonstrate that FY2019 (or FY2018) are representative or typical years. We have therefore attempted to define a representative year that evens out the highs and lows of annual costs using the historical data available, expecting that this representative year will be a more reliable method of predicting future direct costs.

Non-direct costs (viewed in aggregate) have increased significantly. Of note, there is a substantial increase in corporate costs and in indirect costs (which reflects increases in insurance costs, and the introduction of costs due to the IGEM project). Non-direct costs would not be expected to have the same cost drivers as direct costs, and the data indicates that while they have continued to increase over the historical period (refer to Figure 70, for example), there is no significant annual variability. Under these circumstances, it is possible to determine a base year (and step changes) for non-direct costs, and we have done so.

If there had been time to fully analyse the actual FY2019 data provided in November 2019, we may have been inclined to adopt that year as the base year for non-direct costs, noting, however, that it appears to be an abnormally high cost year (noting that there was a budgeted over-recovery of overheads and FY2019 actual costs which are significantly higher than other historical and budget years). A comprehensive assessment of FY2019 as a possible base year would require a full review of all costs and cost allocation to update changes made in the current model that may or may not have to be revised. We note that this is a substantial body of work which is not efficient given that Sunwater has not provided strong reasons as to why FY2019 reflects a normalised year and would differ substantially from historical years. Considering this, we have continued with our use of FY2018 as the base year for non-direct costs. We have, however, reviewed the efficient and prudent cost base taking into consideration the step changes and trends proposed in Sunwater's November 2019 submission.

Similarly, we have chosen not to use the FY2019 direct cost data in determining a representative or typical year because we are aware that some of Sunwater's policy changes were implemented during that year, which resulted in a transfer of some cost types (staff costs that were previously not charged directly, changes to charging of fleet costs, etc) from local overhead to direct costs. These transfers would have to be reversed to make a fair comparison with the direct costs of earlier years, for little additional benefit (given the intent to derive a typical representative year using long term averages).

We have therefore continued with the use of FY2018 costs for determination of non-direct costs for the base year and step changes, and with our approach to establishing a representative year for direct costs.

3.0 Policies and Procedures

This section summarises the status of Sunwater's actions in response to the QCA's policy recommendations made in the 2012 review. We also assess Sunwater's current policies and procedures as they relate to operational costs.

3.1 The QCA's 2012 Review

Table 10 summaries the QCA's recommendations for policies and procedures that were made in its review of Sunwater's irrigation prices in 2012.[25]

Table 10 Recommendations made by the QCA in its 2012 Review Relating to Operational Expenditure

Topic	Recommendation
Improved planning	1.3 A review of operating planning policies, processes and procedures (p257)
Annual publication of and consultation on improved Network Service Plans (NSPs)	2.3 Variance reporting and re-forecasting of operating costs (p260)
	2.4 Customer consultation on the annual NSPs (p178 & 260)
Improved cost information	3.1 Improved information systems for operating costs (p260)
	3.2 Improved recording and analysis of labour cost information (p264)

Sunwater developed an Implementation Plan to address the QCA's recommendations and provide progress reports that outline the status of the actions taken for this plan.[26] Sunwater's original submission details its position in addressing these recommendations.[27]

We review Sunwater's current position and progress in the following sections to determine the prudency and efficiency of Sunwater's policies and procedures.

3.2 Asset Management

Sunwater is an asset management organisation. Its primary objectives include coordinating activities that maximise customer value through the delivery of water using their asset base. Sunwater utilises high level Strategic Asset Management frameworks and scheme-level Asset Management Plans to define its overall asset management framework, including asset renewal (which is non-routine) and asset maintenance (which is routine work). Good practice involves active optimisation of asset lifecycle costs, implying that maintenance activity and renewals are planned to minimise whole-of-life costs.

3.2.1 Strategic Asset Management

A good strategic asset management plan will identify the most prudent and cost-effective approach for maintenance of a fleet of assets over their service life and develop a works schedule and direct cost budget projection that reflects that optimal approach.

Sunwater has a comprehensive asset management framework, and its asset management policy specifically includes cost-effectiveness as a core objective.[28] It has provided examples of current strategy documents which review options for whole-of-life management of specific asset classes and identifies the optimal (most cost-effective) strategies.

The strategies identified are loaded into Sunwater's asset management system for execution, and reviews are carried out on the effectiveness of the strategies when the plans or strategies are

[25] Queensland Competition Authority (2012). *Final Report – Sunwater Irrigation Price Review: 2012-17.* http://www.qca.org.au/getattachment/5fad8dc9-2101-4097-bdc8-d90d25fbfbbb/Sunwater-Irrigation-Price-Review-2012-17-Volum-(1).aspx
[26] Sunwater (2012). *QCA Pricing Practices Recommendations: Sunwater Implementation Plan*
[27] Sunwater (2018). *Irrigation Price Review Submission: Appendix C 2012 QCA recommendations and other issues*
[28] RfI A1, A8 and numerous examples of asset management documentation and plans.

reviewed and updated. It should be noted that we have reviewed instances of this process and have assumed based on those instances that the process is carried out consistently and rigorously.

3.2.2 Risk Management Framework

Sunwater manages risk through a business-wide risk management framework. This framework helps ensure that Sunwater's risks are identified, assessed and adequately and appropriately managed. Evidence of an effective risk management framework was assessed by AECOM in the way in which cost-risk trade-off has been done, and the approach taken to work prioritisation.

Sunwater has developed risk management framework known internally as the *Methodology for Risk Assessment of Infrastructure Assets*[29]. This framework is aligned with the risk management processes defined in ISO 31000:2009: Risk Management – Principles and Guidelines and applies to all decisions on maintenance, refurbishment and replacement of Sunwater owned infrastructure.

This framework has been developed to provide guidance on the minimum requirements for risk management within Sunwater for asset types based on criticality. The risk assessment process is used to help prioritise expenditure within the Asset Management System for the Sunwater Asset Management Program. In addition, the framework is used to determine the preventative maintenance strategies for asset categories such as run to failure, condition assessment, condition monitor, and condition monitor with risk mitigation.[30]

It is our view that the use of the risk assessment framework demonstrates a prudent assessment of preventative maintenance needs especially noting that run-to-failure considerations are made on non-critical infrastructure.

3.2.3 Asset Management Plans

Examples of asset type strategies were provided and reviewed.[31] All the strategy recommendations considered prudency and efficiency using a risk-based analysis. The use of condition-based replacement life adjustment[32] and whole of life maintenance strategy[33] tools focus on the non-routine refurbishment and rehabilitation of the assets but are generally not sufficient for day to day operational needs. These tools provide insight into longer term non-routine cost planning, but do not provide advice on the regular maintenance activities advised by suppliers and or manufacturers. These are addressed specifically in operations and maintenance manuals.

Evidence discussed previously does demonstrate that the policies and frameworks include for use of operation and maintenance manual requirements to ensure that plant and equipment are useable for their designed life, but these are not included in the whole of life maintenance strategy tool at this time.[34] This may be an opportunity to further drive efficiencies in the overall operation of the assets, especially on non-critical run to failure assets the potential savings are likely to be minimal.

With respect to the condition-based replacement life adjustment,[35] Sunwater has adopted a single degradation curve for all assets. While this approach simplifies the implementation and assessment of adjusting planned interventions it is not best practice as different asset classes will degrade at different rates. This approach is likely to result in early replacement of assets, which may avoid the higher maintenance costs that typically develop as assets age but is likely to deliver higher whole-of-life costs. It is likely that if this issue is addressed and Sunwater is able to delay asset renewal, maintenance costs may increase, but since whole-of-life costs will be lower this option is typically a more efficient one.

Late renewal of assets is likely to result in higher rates of asset failure, increasing maintenance costs at end of life and potentially resulting in breaches of level of service obligations. We therefore expect to see active optimisation of asset maintenance and performance, and specifically optimised timing for asset renewal that delivers the lowest whole-of-life cost that enables the organisation to stay within

[29] Methodology for Risk Assessment of Infrastructure Assets, Sunwater, October 2012, QCA Information Request A1 Attachment 3.
[30] RfI A1.
[31] RfI A1, attachments 11, 12, 13
[32] RfI A1, attachment 14
[33] RfI A1, attachment 2
[34] RfI A1, attachment 2
[35] RfI A1, attachment 14

maximum acceptable levels of risk to service level obligations. Aside from the degradation curve issue, we have concluded that Sunwater's asset management plan policies are prudent and efficient.

In Sunwater's November 2019 submission to the QCA's draft report, Sunwater proposes that the deferral of renewals (implemented in the review of Sunwater's capital expenditure) should correspond with an increase in operations and maintenance costs over the price path period (as outlined in Section 2.8). However, we are of the view that the deferral of renewals will not impact on the assessment of prudent and efficient maintenance costs within the price path period as:

- The deferral of renewals is more relevant in the longer term (beyond the price path period)
- Renewals works which were scheduled to occur within the FY2021-2024 price path period were only deferred where the deferment was supported by projected asset condition (i.e. issues observed in the planning of renewals)

3.2.4 Asset Management System

Sunwater uses a bespoke SAP enterprise asset management system to manage its assets, and works are initiated from the Maintenance Plan via SAP notifications.

The Maintenance Plan for each scheme is based on detailed knowledge of the service lifecycle of assets at the scheme and is updated as necessary by reported asset condition data collected via SCADA or during scheduled visits to site for maintenance or operational purposes.

There is clear guidance on the use of the asset management system specifying that costs for routine and non-routine maintenance should be recorded separately.[36] We conclude from information provided that this is being done.

Within this document there is clear statement that operation and maintenance scheduling should be based on operation and maintenance manuals associated to each asset. Sunwater uses the VIZIYA WorkAlign Scheduler to complement SAP by enabling easy interrogation and updating of work orders for scheduling purposes. VIZIYA provides a range of functionality intended optimise work schedules, including the ability to optimise crews, balance workloads and to optimise staff utilisation and work schedules.[37]

It should be noted that the recorded (current) utilisation of the direct labour force is high and close to best practice.

3.2.5 Planning Framework

In 2011 Halcrow[38] recommended that Sunwater's planning framework should:

- *Provide detail on how an organisation aims to manage key risks and achieve strategic, legislative or regulatory objectives*
- *Identify drivers for investment, including trigger points*
- *Define the processes, principles and accountabilities for developing the capital and operating plans*
- *Provide transparent and robust principles to ensure alignment between strategic objectives and investment priorities, incorporating customer and stakeholder requirements*
- *Provide a rational method of assigning expenditure and prioritising programs and projects, thereby optimising the selection and delivery of the capital and operating expenditure programs*
- *Incorporate approval processes and allow for sufficient monitoring and reporting against budget and implementation plans*
- *Reflect operating environment and service requirements*

[36] RfI A1, attachment 5
[37] RfI A36
[38] Halcrow. (2011). *Sunwater - Biloela Water Supply Schemes ("Cluster 3"): Review of Price Paths 2011-2016. A Consultancy Report Prepared for the Queensland Competition Authority, June.*

In relation to these recommendations, we note that:

- Sunwater has a comprehensive asset management framework, and its asset management policy specifically includes cost-effectiveness as a core objective.[39] It has provided examples of current strategy documents which review options for whole-of-life management of specific asset classes and identifies the optimal (most cost-effective) approach.
- The asset management framework is informed by Sunwater's established risk management framework and risk management policy which guide the approach and responsibilities of risk management. This framework provides for a formal means of assigning and prioritising expenditure programs.
- The roles and responsibilities for risk management and for developing operating plans are defined. There is a structured process for the approval of works and budgets within Sunwater, and consequent reporting. Individual managers are responsible for the implementation of works, and progress performance reporting requirements are clearly defined.
- Customer and stakeholder requirements are incorporated into the planning process via the adopted NSP consultation process.
- The operating environment and service requirements are accounted for in asset management documentation. Operational budgets are built up in regional workshops where factors such as asset age and performance, weather expectations, experience over the past period and resourcing availability are considered in order to determine the optimal operations and maintenance approach for the next year. These workshops can include customer representatives, which allow shutdown periods to be discussed and agreed.

[39] RfI A1, A8 and numerous examples of asset management documentation and plans.

3.3 Cost Forecasting and Budget Determination

In its 2012 review, the QCA recommended that Sunwater review its operating planning policies, processes and procedures, and made specific recommendations relating to Sunwater's forecasting approach. These recommendations, along with Sunwater's actions taken in relation to each recommendation, are summarised in Table 11.

Table 11 Review of Operating Planning Policies, Processes and Procedures

QCA Recommendation *The QCA recommended that Sunwater review its operating planning policies, processes and procedures to better achieve its strategic objectives, and specifically that Sunwater:* • *Develop a consistent definition of the term 'typical year'* • *Determine and articulate the appropriate years to include in the 'typical year'. Consideration should be given to a longer time span which takes into account both wet and dry years. The averaging of historic data should take into account changes in approach and new technology.* • *Document workshop processes, outcomes and adjustments to expenditure forecasts*
Original Action Proposed/Taken by Sunwater Sunwater originally proposed to: • Improve adherence to cost allocation methodology through staff training, improved tracking, reporting and internal checking • Analyse historical cost data for each service contract to determine if a clear correlation to volume exists and select the appropriate forecasting model for each cost category • Generate five-year price path direct operating cost forecasts: - Using long-term average water use for correlating operating costs - By rolling forward the average annual cost for uncorrelated operating costs • For future price path operating cost forecasts: - base forecasts on at least five years of historical cost data - clearly document and justify any data cleansing actions - document any analysis leading to the choice of the forecasting model for each operating cost category - provide spreadsheet models and final forecast figures over the next price path • Sunwater's operating planning process documentation was updated to include production of Annual NSPs and Performance Reports
Sunwater's Current Position • Sunwater decided to adopt a base-step-trend approach to forecast operating costs for the FY2021–24 period, instead of using historic data time series

These recommendations resulted from several issues relating to the forecasting of operational costs which were identified by the QCA's consultants.

For the 2012 review, Sunwater developed activity-level direct operational expenditure forecasts named a 'typical year' forecast, based on costs over previous years, adjusted for costs that were considered not to be representative and price changes.

The QCA's consultants noted in the 2012 review that:

- There was inadequate definition of the 'typical year', making it difficult to validate forecasting assumptions
- The number of years of historical data used in the development of the forecast could be more clearly defined and could be increased to deliver more reliable forecasts
- Workshops were facilitated with Sunwater area managers to develop operational cost forecasts, however there was a lack of documentation around the procedures followed, the adjustments to expenditure and data cleansing actions made, and the justification of the adjustments [40]

[40] Halcrow. (2011). *Sunwater - Biloela Water Supply Schemes ("Cluster 3"): Review of Price Paths 2011-2016. A Consultancy Report Prepared for the Queensland Competition Authority, June.*

- There were issues regarding the reliability and validity of historical data due to incorrect booking and aggregation of costs, which presented a significant challenge to Sunwater in developing accurate forecasts

Sunwater's decision to use a base year step trend approach to forecasting is consistent with current industry practice. Sunwater had proposed to the QCA, however, that it would base future operational cost forecasts on at least five years of historic (actual) data. We note, however that Sunwater's proposed base year costs are a budget including direct costs that were developed based on the judgement of local staff, informed by recent history (over up to 3 years), current weather expectations and resourcing issues.[41]

In response to an RfI on the approach taken to calculating its proposed base year, Sunwater provided copies of the resource planning tools used, and noted in its supporting comments that:[42]

- *Budget guidelines are updated annually and approved by the Executive Leadership Team and Sunwater's Board. Sunwater has a comprehensive budgeting process that incorporates all cost centre managers and supervisors, together with their business accountant, to review current costs and approved staff levels, and forecast future requirements. Workshops are held as part of this process and the outcomes are reflected in the relevant budget. The November 2018 submission was based on a draft version of the FY2019 budget.*[43]
- *Staffing requirements are based on the approved organisational chart and revised as required.*
- *Routine costs (and revenues) are updated in the current version of the Financial Model based on factors including historical actual costs (generally the past three years), adjusted for the conditions expected for the budget year (weed control costs, for example, are estimated based on expected weather conditions). These routine costs are generally applied to future years with adjustments made based on the judgement of the local area manager.*
- *Direct labour is based on staff numbers and is budgeted to direct or non-direct work, using resource planning tools developed for the purpose, relying on an assessment of recent historical costs and the relevant service manager's judgement. Billing rates or efficiency targets are set as part of the budget targets.*
- *Non-routine work for the service contracts is sourced from the Works Management System (WMS) and is managed by the asset management group. Some of the projects planned are discussed with customers at Irrigation Advisory Committee meetings as part of the Network Service Plan consultation process, which can result in changes to the program.*
- *Corporate and indirect cost pools are defined and budgeted through a similar process.*
- *The Financial Model is used to classify costs into direct, indirect, corporate support and local area support cost pools and calculate billing, staff utilisation and cost recovery rates using the rules in the Cost Allocation Manual. These are then applied to the business via SAP.*
- *Budget approval involves a structured process where each level of management approves and signs off before submitting to the next level. Business group presentations are made to the Executive, after which a final budget submission is made to the Board. Operations budgets are reviewed against history as well as the QCA target (Figure 16), and stretch targets imposed for managers to achieve additional savings over those targeted in the budget process (with a focus on discretionary costs in overhead cost pools).*
- *Efficiency gains are sought in every budget.*

[41] RfI A70
[42] RfI A61
[43] Sunwater Financial Model (November 2018 submission)

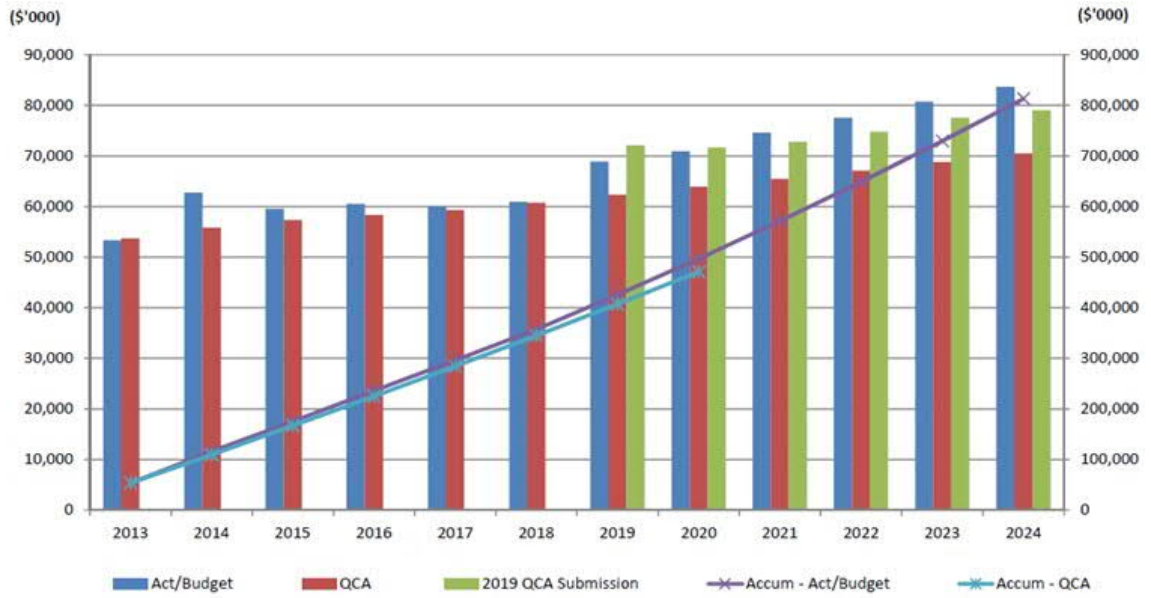


Figure 16 Routine Cost Summary (Source: Sunwater's March 2019 Operations Budget Presentation)

This approach differs from the approach originally proposed by Sunwater and that had been accepted by the QCA. In particular, Sunwater:

- Has proposed a base year that is a budget.
- Has clearly not improved adherence to its cost allocation methodology, given its problems over FY2016 to FY2018 with its time-writing.
- Has used three years or less of history to establish a budget means that weather cycles longer than the period used are likely to be left out of consideration. This focus on short-term (annual) budgeting in a strongly weather-dependent industry is a high risk and was specifically raised as a significant issue by the QCA in 2012.
- Does not appear to have delivered against any of its commitments to the QCA (as summarised in the box above) other than the annual production of NSPs and Performance Reports, and these tend to be highly repetitive with very little scheme-specific information and are therefore of limited value to Sunwater's customers.

3.4 Customer Consultation

In 2012, the QCA recommended that Sunwater consults with customers and annually publish NSPs. The full recommendation and Sunwater's actions taken in response are summarised in Table 12.

Table 12 Customer Consultation on the Annual NSPs

QCA Recommendation *The Authority recommends that Sunwater's Statement of Corporate Intent (SCI) (and relevant legislation) be amended to require Sunwater to consult with customers in relation to, and publish annually on its website, updated NSPs commencing prior to 30 June 2014.* *Customers' submissions in response to the NSPs and annual updates should also be published on Sunwater's website alongside Sunwater's responses and related decisions.*
Original Action Proposed/Taken by Sunwater • Sunwater consulted with customers via the Irrigator Advisory Committees and the Sunwater website. • Analysis of customer NSP feedback led to adjustments to NPS, and responses to NSP Feedback posted on the Sunwater Website • Notification issued to all registered customers when NSPs are published via email and text message
Sunwater's Current Position • Sunwater has continued the adopted approach of customer consultation

The consultation approach taken by Sunwater via Irrigator Advisory Committees and the Sunwater website aligns with the requirements of the QCA recommendation.[44] Sunwater annually publishes NSPs and has continued to consult with customers on NSPs via the Irrigator Advisory Committees and the Sunwater website. Sunwater's approach on customer consultation is considered appropriate.

Some of the submissions to the QCA by customer representatives recommend that greater involvement by community organisations in general and specifically during the pricing review. One noted that consultation is primarily with existing customers and noted that there are also prospective users of an affordable water supply.[45] The same submission recommends that clearer 'level of service' definitions be developed in consultation with customers.

Many submissions note that greater transparency of the basis and allocation of costs is needed, implying that the communication vehicles used by Sunwater are insufficient. Submissions note that water users are asked to pay for works where there has been no consultation, engagement or oversight.[46][47]

The QCA also recommended that Sunwater enhance the NSPs by reporting variances in operating expenditure forecasts. The full recommendation and Sunwater's actions taken in response are summarised in Table 13.

Table 13 Variance Reporting and Re-forecasting of Operating Costs

QCA Recommendation *The NSPs should also be enhanced to present details of Sunwater's proposed operating expenditure for the next year, and to account for significant variances between previously forecast and actual operating expenditure.*
Original Action Proposed/Taken by Sunwater • Sunwater developed an NSP Reporting Tool to summarise detailed SAP operating cost information into reports that are directly comparable with QCA efficiency targets
Sunwater's Current Position • Sunwater continues to report on operating cost variances to the QCA's five-year price path period in NSPs

[44] Submission Irrigation Price Review Appendix A Customer Engagement
[45] Wide Bay Burnett Regional Organisation of Councils, Irrigation Pricing Review Submission, p4,6 (QCA website)
[46] Central Highlands Regional Council, Irrigation Pricing Review letter, p4 (QCA website)
[47] Burdekin River Irrigation Area, Submission to the QCA, March 2019, p40 (QCA website)

The NSPs include operational expenditure projections and describe typical work undertaken in general terms but provide very little specific detail on actual works or drivers of operational or maintenance cost changes in each specific scheme (very similar text is repeated in most NSPs). The NSPs show cost variances to QCA targets reported up to FY2019, but in their current form the NSPs do not provide either a clear comparison of current to prior forecasts or explanation of variances.

The tables of projected non-routine works include high level descriptions of the projects planned and indicate the expected timing. There is no commentary on recently completed works.

We find the NSPs inadequate as communication vehicles to Sunwater's customers, in that they do not provide a summary of the current and future state of its assets, do not provide a basis for the operational and maintenance cost changes planned, and in general do not provide information on recent and expected scheme performance or on the drivers of scheme performance. Service levels definitions are not adequate in that they provide interruption *frequency* targets but not interruption *duration* targets, and both are essential for effective performance management.

There are references to customer engagement to determine work schedules, largely where there are options to be considered, but we have not seen evidence that Sunwater consistently engages with customers on operations and maintenance activity.

3.5 Procurement

Sunwater has a *Procurement Policy*, a *Procurement Decision Matrix* and a *Procurement Compliance Review and Improvement Guideline*. It has published related documents on its website, such as '*Partnering with Sunwater: A guide for contractors, consultants and suppliers*', a '*Code of Conduct*', a '*Fraud and Corrupt Conduct Policy*', the '*Board Delegation of Authority Framework and Policy*' and reference to '*AS 4120—1994, Australian Standard - Code of tendering*'.

Sunwater is bound by State and Federal policies, including the Queensland Government's Procurement Policy and the Commonwealth Procurement Rules (CPRs), and refers to the ASX Code of Conduct for Suppliers. We have not reviewed the results of any audits to confirm levels of compliance or incorporation of any improvement initiatives, expecting that these issues will be being managed by the Queensland Government where necessary.

After review of the Policy documents, we conclude that:

- Policies are reviewed as part of document management practices (including endorsement by the Board) However, we have observed inconsistent use of revision numbers, review date and next review date in the various documents. It appears that Sunwater's *'Board Delegation of Authority Framework'* and *'Policy* and *Director's Code of Conduct'* documents are overdue for revision. Due to omitted information (approval date or next revision date), there is insufficient information to verify that Sunwater's *'Code of Conduct*, *Procurement Decision Matrix'*, *'Procurement Compliance Review and Improvement Guideline'*, and *'Partnering with Sunwater: A guide for contractors, consultants and suppliers'* documents are in date.
- The Risk Scoring Table in the Risk Matrix does not align with the similar table in the Methodology for Risk Assessment of Infrastructure Assets.
- There is a relatively high delegation of authority ($100,000) before corporate procurement or senior manager approval or involvement is required. This has potential for misuse. This concern was also noted in SKM's review of Sunwater's capital expenditure in 2012.
- Sunwater's records management is not closely aligned with the procurement process as required by the Commonwealth, which expects that documentation will provide accurate and concise information on the requirement for the procurement, the process that was followed, how value for money was considered and achieved, the relevant approvals, the relevant decisions and the basis of those decisions.

  Sunwater's procurement policy requires that the Financial Delegate must approve the scope and total spend prior to commencement of any purchase process but does not state what minimum documentation is required to allow this approval.

It appears that business cases, decision rationale or close out documents are often not available or were never developed and hence not recorded.

We recommend that all of these points be addressed.

3.6 Operating Cost Information

Sunwater currently use a bespoke SAP enterprise asset management system, which contains detailed asset information and is used to inform work schedules.

3.6.1 Information Systems

In its 2012 review, the QCA recommended that Sunwater improve its information systems. The full recommendation and Sunwater's actions taken in response are summarised in Table 14.

Table 14 Improved Information Systems for Operating Costs

QCA Recommendation *Sunwater should improve its information systems. In particular, it should document and improve access to information necessary to:* • *Attain greater operating efficiency* • *Achieve greater transparency* • *Facilitate future price reviews* • *Promote more meaningful stakeholder engagement*
Original Action Proposed/Taken by Sunwater • It was assessed that Sunwater's information systems were already capable of providing the required cost data to allow Sunwater to report directly against QCA targets • An NSP Reporting Tool was developed to improve reporting of operating costs and accuracy of cost data • Sunwater has worked to reduce the amount of miscoded financial transactions to improve the quality of the reported cost information
Sunwater's Current Position • Sunwater continues to maintain financial tools to enable the reporting of operating costs, including against the QCA's targets • Sunwater is investigating options to replace legacy systems to improve transparency and operational efficiency

Sunwater contended that its information systems were already capable of providing the required cost data to allow Sunwater to report directly against QCA targets. This is demonstrated by the cost variances against QCA targets which are reported in NSPs. In this respect, this recommendation has been partially addressed.

The recommendation was made after considering issues faced by the QCA's consultants in forming a prudency and efficiency assessment during the 2012 review:

- Arup noted that inadequate information was available on the specific detail of the operations and maintenance activities undertaken, their associated costs, and how this was translated into forecasts. Halcrow[48], Aurecon and GHD noted similar issues regarding the lack of disaggregated cost information.
- In relation to the lack of precise information Aurecon cited, amongst other things, issues relating to the difficulty of obtaining and validating cost information from information systems.

This review has encountered similar issues with a lack of information to connect historic and forecast costs to specific activities. It appears that there are opportunities still present to improve information systems to attain greater transparency and operating efficiency.

[48] Halcrow. (2011). *Sunwater - Biloela Water Supply Schemes ("Cluster 3"): Review of Price Paths 2011-2016. A Consultancy Report Prepared for the Queensland Competition Authority, June.*

Sunwater has introduced some mobility solutions, and the planned enterprise software updates delivered by the Digital Enterprise Business Solutions (DEBS) program are expected to enable additional efficiency gains in the field. The DEBS program is currently funded to FY2023, and Sunwater expects to have delivered performance gains by then.

Since we have concluded that work delivery itself is efficient, the main opportunity is likely to be the use of technology to reduce the need for site visits.

3.6.2 Labour Cost Information

In its 2012 review, the QCA specifically recommended that Sunwater improve its management accounting for the recording, documentation and analysis of labour cost information. The full recommendation and Sunwater's actions taken in response are summarised in Table 15.

Table 15 Improved Recording and Analysis of Labour Cost Information

QCA Recommendation *The Authority recommends that Sunwater improve its management accounting for the recording, documentation and analysis of labour cost information. Sunwater should submit proposals for approval by the Authority by 30 June 2014.*
Original Action Proposed/Taken by Sunwater • Sunwater identified that adequate systems to capture labour costs were already in place, and that improvement in labour cost capture was likely to come from better use of existing systems • Improvements were made to labour cost capture through staff training, improved reporting and internal checking • Improvements implemented to Labour Cost Tracking (via development of a Labour Tracking Tool) • Six-monthly cycle of NSPs and Performance Reports provides additional accuracy checks • Undertaken to improve labour cost forecasting by basing forecasts on at least five years of historical data and improving documentation surrounding the forecasting approach
Sunwater's Current Position • Sunwater adopted a base-step-trend approach to forecast operating costs for the FY2021–24 period, instead of using historic data time series • The estimate of 2019 labour costs is based on the Resources Planning Tool, which details labour requirements for all projects expected to be undertaken that year • Sunwater's SAP financial system and Business Intelligence tools are used to monitor actual versus budgeted labour costs

Labour costs are a primary cost driver because they attract non-direct costs, with the labour effort attributed to schemes acting as a basis for allocation of overall costs to that scheme (refer to Section 3.7). The accuracy of labour cost information plays a significant role in the forecasting of operational costs. The proportion of labour cost that had been miscoded and misallocated was noted by the QCA in its 2012 determination as a significant issue.

In response, Sunwater proposed an approach involving staff training, improved reporting and internal checking to improve the recording, documentation and analysis of labour cost information, and this was approved by the QCA in May 2012. Sunwater's responses to RfIs indicate that time-writing became an increasing problem through to FY2018 despite its undertaking to the QCA and has only been addressed during the latter part of FY2019. This issue has made cost information in several categories unreliable, and Sunwater has attempted to deal with this issue by retrospectively 'normalising' its actual FY2018 data (we commented on this issue in Section 2.2).

While the recording of labour cost information appears to have improved in FY2019, it is difficult to assess the extent of improvement or validate the current accuracy of information based on the information provided, since there is not yet a full year of actual labour costs based on the improved approach. Sunwater has recently automated timesheets as an early deliverable of its DEBS program, and variance reports now available show detailed utilisation data. The value of these reports depends on the quality of the data recorded, however, and it is too early to be able to comment on the reliability of the time-writing carried out by staff.

Labour costs are reported against QCA targets in the NSPs, and Sunwater cites this regular reporting to illustrate early detection of inaccurate labour cost information, noting that it uses SAP and Business Intelligence tools to monitor actual labour costs against budgeted costs.[49]

3.7 Allocation of Non-Direct Costs

Sunwater refers to operational costs as 'routine' and capital costs (and expensed costs) as 'non-routine'. Capital costs are excluded for a review of the efficient Base Year. Sunwater defines its costs as:

- 'Direct' where they are booked to a customer contract. These are the cost of routine activity that directly benefits a specific customer group. The cost types used are shown in Figure 17.
- 'Indirect' where they benefit more than one group of customers, but not all customers. These are identified by cost type in Figure 17, and most are allocated by Sunwater to the relevant customer contracts in proportion to their share of all the relevant direct labour costs according to the purpose of the indirect activity (dam safety costs are allocated to contracts involving dams, for example). The IGEM costs are allocated based on a risk rating developed for the purpose.
- 'Local (regional) overhead' is a form of indirect cost that benefits local customers only and are applied to direct labour costs in the geographic region that benefits from local overhead. Cost type examples are listed in Figure 17.
- 'Corporate overhead' where they benefit all customers and are therefore applied to all contracts in proportion to their share of all direct labour costs. Cost type examples are listed in Figure 17.

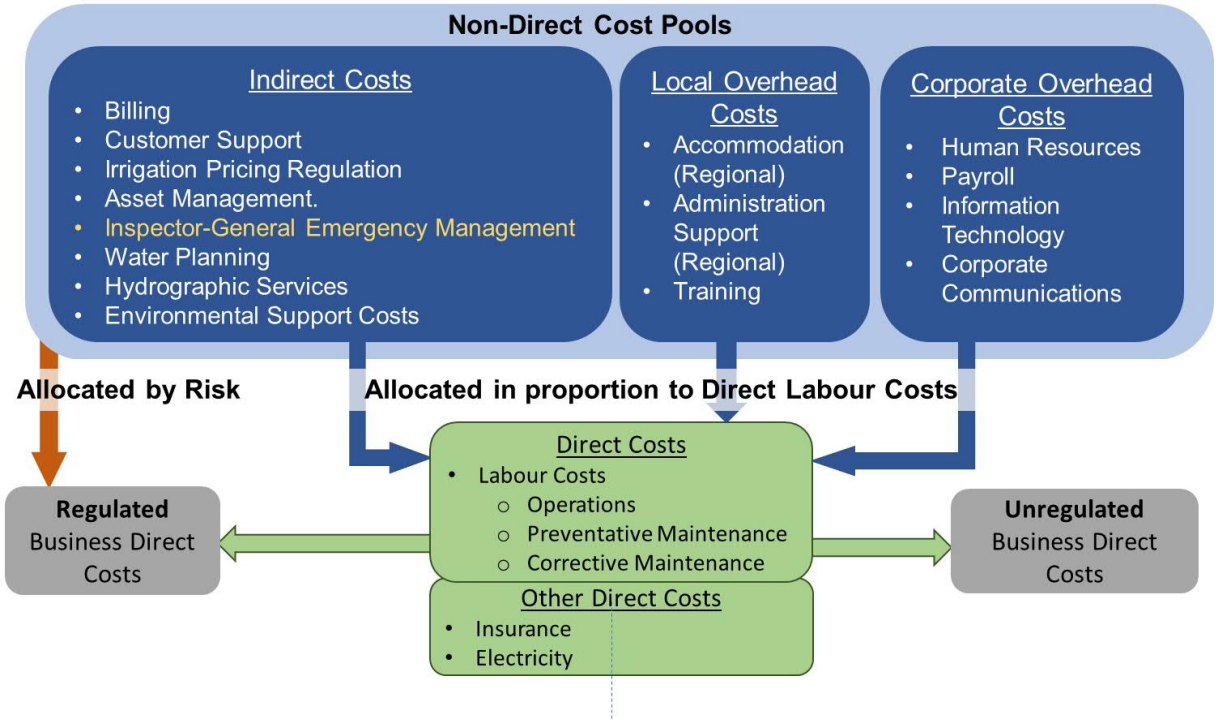


Figure 17 Sunwater's Cost Types in 2019

[49] RfI A62

3.7.1 Cost Allocation Principles

Our research on cost allocation mechanisms for IPART concluded that there are a few key principles which are applied by most regulated entities. Our review of Sunwater's CAM and follow-up interviews with Sunwater staff concluded that Sunwater generally aligns with these key principles.

A summary of these principles is presented in Table 16.

Table 16 Costing Principles

Principle		Application by Sunwater
1.	Wherever possible, costs should be directly identified and attributed to a service, segment or component.	Where costs are directly incurred or directly used in the operations of a service contract or project those costs are directly attributed to the service contract or project. This includes labour charged (via time-writing), materials booked and other costs specific to schemes (such as electricity).
2.	Costs are attributed or allocated to those activities and services that cause the cost to be incurred. Where a cost cannot be directly identified and attributed, then it should be allocated to a service, segment or component based on a causal driver of that cost.	Where costs are incurred in common for the provision of either multiple service contracts or projects (such as dam safety and the Operations Control Centre) and there is a causal relationship between the resources used, these costs are attributed on a reasonable basis of cost causality (commonly referred to as user pays).
3.	In the absence of a causal relationship, then a reasonable (substitute) method of allocation should be used.	Where costs are incurred jointly for the provision of either service contract or projects (such as finance or people and stakeholder relations costs) and where there is no direct causal relationship between the resources used, these costs are allocated using labour costs.
4.	All costs should only be allocated once.	Calculations and adjustments used to identify, attribute or allocate costs must not result in any item being counted more than once.

Sunwater's policy is to allocate labour costs directly to service contracts (schemes). Staff working in corporate overhead, indirect or local overhead cost pools are expected to charge all time spent on activities directly benefiting specific service contracts to those contracts. The residual corporate overhead, indirect or local overhead costs must then be recovered from customers, and this is done via allocation of the residuals to direct costs using rules documented in the CAM.

Sunwater's cost allocation methodology was agreed with the QCA at the last Irrigation Price Review. This methodology was reviewed in 2017 by Aither,[50] who recommended that Sunwater should:

- Allocate local overheads in a more targeted manner
- Develop and publish a set of criteria and principles for cost allocation, considering pricing objectives, customer relations, regulatory requirements, and business needs
- Improve transparency and communication of costs and cost allocation, to improve customer understanding and more effectively meet regulatory requirements
- Create a monitoring and review process in support of the criteria and principles to allow identification of issues and adaptation over time

Sunwater revised its cost allocation methodology after consideration of the Aither recommendations[50] and the changes made by Sunwater[51] are summarised in Table 17. Examples of each form of allocation follow the summary table.

[50] High level review of Sunwater's cost allocation method, Aither, 26 May 2017
[51] Sunwater RfI Response A8

Table 17 Sunwater Cost Allocation Methodology Changes

Cost Category	As Agreed with the QCA in 2012	2017 Revision by Sunwater	AECOM Comments
Local overheads (residual)	• One local overhead rate applied to all direct costs • Allocation in proportion to labour cost	Local overhead rate applied on a regional basis to regional direct costs. Allocation in proportion to labour cost.	The use of several regional overhead pools and allocation to regional schemes is more complex, but provides more accurate cost allocation, removes possible cross subsidies between regions, and makes cost control more transparent in each region.
Indirect costs (residual)	• Use of multiple indirect cost pools • Allocation of specific indirect cost pools to specific direct cost types / schemes	Redefined indirect cost pools.	The restructuring of indirect costs reflects the changing structure of the organisation.
	• Allocation in proportion to labour cost	Allocation of selected indirect cost pools using a part or fully risk-based approach	The cost of IGEM and similar indirect activities is driven largely by risk, so use of this driver to allocate these costs more accurately reflects causality.
Corporate overheads (residual)	• A 5% overhead loading on non-labour costs (excluding electricity and major projects)	The 5% overhead loading on non-labour costs removed.	Loading of overhead to non-labour costs increases the cost of activities involving high material or contractor costs.
	• Corporate overhead applied to all direct and indirect labour costs	Corporate overhead rate applied to all direct labour costs excluding indirect costs pools.	The cost of senior management and head office functions is not usually closely correlated with the quantity of material used – it more commonly relates to staff effort (FTEs). Allocation to direct costs only avoids double allocation of overhead via indirect costs.

Sunwater uses resource (operations) centres to capture costs across their business. These resource centres interact with each other to ensure that costs flow through the business appropriately and that they are recorded in the correct manner.

3.7.2 Cost types

Staff time is charged to service contracts (such as the schemes) via work orders raised in SAP, and a cost is added to the service contract that represents the full cost of the staff member. Regional staff currently charge between 80% and 90% of their time to service contracts (these are 'direct' labour costs).[52]

The remainder is referred to as a 'residual', and with support costs such as occupancy and administration, is allocated to the service contracts as a loading on (a multiplier of) direct labour costs charged to the scheme. This process enables all 'direct' costs and all local overhead costs to be charged to and recovered from the schemes maintained by each resource centre.

This approach to cost allocation is discussed in more detail in Sections 5.0, 6.0 and 7.0.

The costs types used in resource centres can include:

Employee costs (labour costs)	• Salaries and wages • Statutory costs: superannuation, recreation leave, long service levy, payroll tax, workers compensation insurance. • Non-Statutory costs: TOIL, salaries banked time, uniforms and protective clothing, staff rewards and incentives, staff training, professional memberships.
Non-labour costs incurred via work orders on service contracts	• Accommodation & travel • Contractors • Depreciation - infrastructure • Electricity • Materials • Plant, equipment & vehicles.
Non-direct costs (overheads)	• Insurance, legal & administration costs • Depreciation – non-infrastructure • Occupancy costs • Other asset costs.

A similar process is used to charge and recover indirect costs and corporate overhead.

[52] RfI A3 Attachment 3

3.7.3 Examples of Cost Allocators

There are various cost allocation methods available to allocate non-direct costs. The most common include:

Direct Cost Allocator	Overhead costs are allocated to the proportion of operational costs directly identified and attributed to the service, segment or component. This is the most widely used allocator in the absence of a reasonable causal driver or proxy. It is most commonly used for the following cost categories: • Board and CEO costs • Executive level personnel costs • Some finance costs The allocation would be based on direct internal cost proportions, which would include costs associated with the management of outsourced components, but not the outsourced costs. This allocator has potential to be prone to bias due to irregular maintenance patterns. Average costs over a reasonable length of time could be used to account for this. Subsets of the direct cost allocator have been used previously, including direct labour costs for people driven costs (as described below) and maintenance costs for strategic planning costs. This form of allocator is used by Sydney Water and Seqwater for corporate costs. Power and Water Corporation, in contrast, allocates all indirect costs in proportion to direct expenditure.[53]
FTE (head count) Allocator / Labour Allocator	Overhead costs are allocated to the proportion of FTEs directly identified and attributed to that service, segment or component. Allocating at a scheme level, FTEs may not be able to be directly attributed to one component, so proportion of labour costs or hours may be a suitable proxy for FTEs. This allocator is generally used for people driven costs, for example, human resources costs, learning and development, payroll, safety management costs. In addition, the FTE/labour allocator may form a component of a blended allocator. For example, some IT costs, such as hardware costs and licence costs, would be driven by headcounts, whereas others, for example, specific software used in treatment plants, may be directly attributable to certain supply chain or geographical components. Direct labour is the current allocation approach used for all Sunwater's non-direct costs.
Blended Allocator	Blended allocators are used when it is reasonable to assign a proportion of costs via one allocator, and the rest by a different allocator. An example is IT costs, some of which would be driven by headcount and may be allocated via FTE or labour allocators. The remainder may be able to be directly identified and attributed or may be more reasonable allocated by the direct cost method.
Revenue allocator	Overhead costs are allocated to a service or segment in accordance with the proportion of revenue generated by that component. This method is not used as widely and may be used to allocate costs as functions of revenue, for example billing costs may be considered a function of revenue. The revenue allocator is used by SA Water to allocate costs between regulated services, excluded costs and non-regulated services. However, cost allocation via revenue in service contracts where prices are based on cost recovery creates a circularity issue.

[53] AECOM Report *Sydney Water and Hunter Water Component Costing Approach Paper* AECOM, 2018 (for IPART)

Floor Area	Costs are allocated according to proportion of floor area that can be attributed to a component. Costs allocated via this method could include property management costs, which may be driven by property size. A substitute or alternative to floor area may be allocation of costs according to the proportion of market value of the properties.
Number of Customers	This allocator sees costs allocated proportional to the number of customers or dwellings with a service contract. This could be used for functions such as customer service costs, billing, contracts etc.
Managerial Assessment	Overheads are allocated based on management decisions. This allocation is the most subjective and is used when a causal allocator or proxy is not available or practical.

3.7.4 The use of a Single Cost Allocator

Sunwater has chosen to use a single cost allocator (direct labour costs) to allocate local and corporate overhead costs.

General costing principles suggest that in the absence of a causal relationship, a reasonable method of allocation should be used as a substitute or proxy for an ideal causal allocator. It is difficult to claim that the use of direct labour costs alone is an appropriate proxy for an ideal causal allocator for all corporate overhead costs, given the different drivers associated with each individual cost category.

Multiple causal drivers may impact different costs, making cost allocation complex and potentially cumbersome, so use of a single cost allocator as a simpler approach has become more common. Several water organisations, including Seqwater, use a single cost allocator to allocate their costs (although Seqwater use all direct costs as opposed to direct labour costs only).

A multiple driver approach was suggested by Deloitte in the previous Irrigation Price Review. In its submission to the QCA on the Deloitte report, Sunwater emphasised that it has identified a strong positive correlation between direct labour costs and centralised (local, indirect or corporate) functions, and noted that the alternatives offered had not had a similar correlation or causality demonstrated.

Sunwater concluded that it could see no benefit from adopting Deloitte's approach, especially since it would be more complex, more difficult and costly to implement and run, and suffer from a comparative lack of transparency.[54]

Sunwater did, in fact, adopt other allocation methods for specific cost categories, primarily for selected Indirect cost types which only benefited a subset of schemes, and the complexity of that approach is evident (Section 6.7).

Prior to FY2018 Sunwater recovered corporate overheads primarily as a loading on direct labour costs, but also with a 5% loading on non-labour costs (excluding electricity) recognising that the purchase and use of materials also has some bearing on centralised costs. This loading was not applied to large development and dam safety projects where costs such as procurement and legal are directly charged.[55]

After consultation with its customers, the recovery of corporate overhead via a loading on non-labour costs was removed in favour of a single, simple allocation/recovery via direct labour costs, and this simplified approach has been used by Sunwater in its budget for FY2020.[56]

In our view, the impact of a more complex approach to cost allocation in general is unlikely to have a material impact on the costs actually allocated, but the effort involved in establishing it very quickly becomes an issue, as does the lack of transparency and the difficulty in understanding the end result. We therefore favour a simple approach.

The use of total direct costs versus direct labour costs only as the basis for allocation can be justified either way depending on the type of organisation or the type of work typically carried out. The

[54] Sunwater submission on Deloitte Administration Cost Review Stage 2 Report, Aug 2011
[55] Sunwater: Background paper QCA Review of irrigation prices Centralised costs, Jan 2011
[56] Sunwater Irrigation Pricing Review Submission, Appendix A Customer engagement, Nov 2018

overhead costs being allocated are generally incurred as a result of employee activity, and it is common to specify levels of management by using rules of thumb in terms of an efficient number of reports. The quantity or value of materials procured do not themselves increase the cost of managerial oversight or of the information systems or occupancy need to procure them (the overheads) – these costs are generally driven by the number of people involved.

A strongly project-based organisation undertaking a relatively high level of capital works may find, however, that recovery via the value of materials as well as labour is more equitable, because more overhead would be drawn to the capital projects than operational activity.

Sunwater is not currently in a capital-intensive state, so we consider the use of direct labour for overhead cost allocation to be efficient.

3.8 Summary of Findings

Sunwater has acted on the majority of the QCA's 2012 recommendations for performance improvement, and most of the recommendations made by external consultants. We found that its policies, procedures and frameworks generally include the prudency and efficiency considerations needed within all aspects of routine operations and maintenance:

- Sunwater's asset management activity, work planning and scheduling, and work execution were found to be prudent and efficient, and in many cases independent reviews had been obtained in an attempt to further optimise maintenance activity.
- There is clear evidence of an ongoing focus on cost control in relation to direct (maintenance) activity. Sunwater applies State-mandated procurement policies but does engage in a level of sole-sourced procurement from contractors in remote regional areas (where options may be limited).
- Sunwater publishes Network Service Plans (NSPs) and consults with its customers during the annual reviews. Cost projections are provided and compared to the QCA's 2012 recommendations. Capital projects being planned are listed in schedules.

  We note, however, that the supporting text is generic and repetitive from scheme to scheme and provides very little specific information to the reader on reasons for operational cost changes. Comments along these lines were made by customer representatives in their submissions to the QCA (refer to Section 3.4).
- Sunwater proposed an approach to improve the accuracy and management of labour costs during the 2012 pricing review, and this was accepted by the QCA. It appears that this approach was revised in or around 2015 and time recording (for costing purposes) became less accurate from then until the beginning of the current pricing round (the 'time-writing' issue discussed in this report).

  The result is that Sunwater felt obliged to 'normalise' actual FY2018 costs, and that reliable (actual) staff utilisation data is only available for part of FY2019. This means that labour costs cannot be assessed and performance trends established using actual data.
- Sunwater's complex financial model and the frequency, extent and range of changes made to non-direct cost pools and cost allocation make it difficult to differentiate and explain cost transfers and cost increases. We do, however, accept the most recent policy changes made to local overhead cost allocation where regional local overhead is allocated to local schemes only, because the change should enable better scrutiny and cost management by regional managers.

4.0 Prudency and Efficiency of Direct Costs

Direct costs are defined as the labour and materials used for work performed at a specific scheme, as scheduled and assigned by work orders raised in SAP.[57] These costs include:

i.	Employee costs (labour costs)	• Salaries and wages • Statutory costs including superannuation, recreation leave, long service levy, payroll tax, workers compensation insurance • Non-statutory costs including TOIL, uniforms and clothing, staff rewards and incentives, training, professional memberships
ii.	Direct costs	• Consumables (such as electricity) • Materials • Plant, equipment and vehicles • Contractors • Accommodation and travel • Depreciation (infrastructure)

Costs are booked to schemes via work orders for operational and maintenance activities that include a description of the activity to be undertaken and identify the assets involved. This enables costs to be posted to specific service contracts using work breakdown structure (WBS) elements. Actual labour hours and costs are recorded via timesheets and transferred into SAP using the work order for reference. The work is planned, scheduled and delivered by applying standard policies, procedures and information systems. We found that Sunwater's direct work activity is delivered efficiently based on our review in the previous section.

Given that the work is efficient, we assessed the variability in workload using the historical data available, comparing the costs incurred with the QCA's 2012 recommendations. We attempted to identify non-recurring operational and maintenance tasks that should be excluded from a representative year, and reviewed work variability over the review period to determine a prudent 6-year average cost that could be used as the representative base year. We note that this is the approach that Sunwater committed to the QCA to use after 2012.

4.1 Operations and Maintenance Costs for all of Sunwater

Sunwater noted in its November 2019 response to the QCA's draft report that it would prefer to have historical labour costs escalated to current dollars using its enterprise agreement, although it previously argued for the Queensland Wage Price Index (WPI). We accepted the use of the WPI for escalating costs to the price period rather than the enterprise agreement (Section 9.4). We apply the same principle to historical costs, noting that we do not view it reasonable to allow for a heightened rate of escalation without providing for an offsetting efficiency gain. The operations and maintenance costs incurred in the bulk water and distribution schemes for all of Sunwater have therefore been escalated to FY2019 dollars using the WPI, and these are presented in Figure 18.

Sunwater also noted that fleet costs and travel and accommodation costs were accounted for in different cost categories historically (costs were provided as $0 in the first two years of the dataset) and requested this be corrected. We consider this to be a reasonable adjustment and have chosen to adjust the recommended base year to compensate (this adjustment is now included in Section 4.5).

One-off legal costs in Boyne have been removed from the operations and maintenance costs in this section.

[57] The work order creation process and an example were provided as RfI A3 Attachment 3

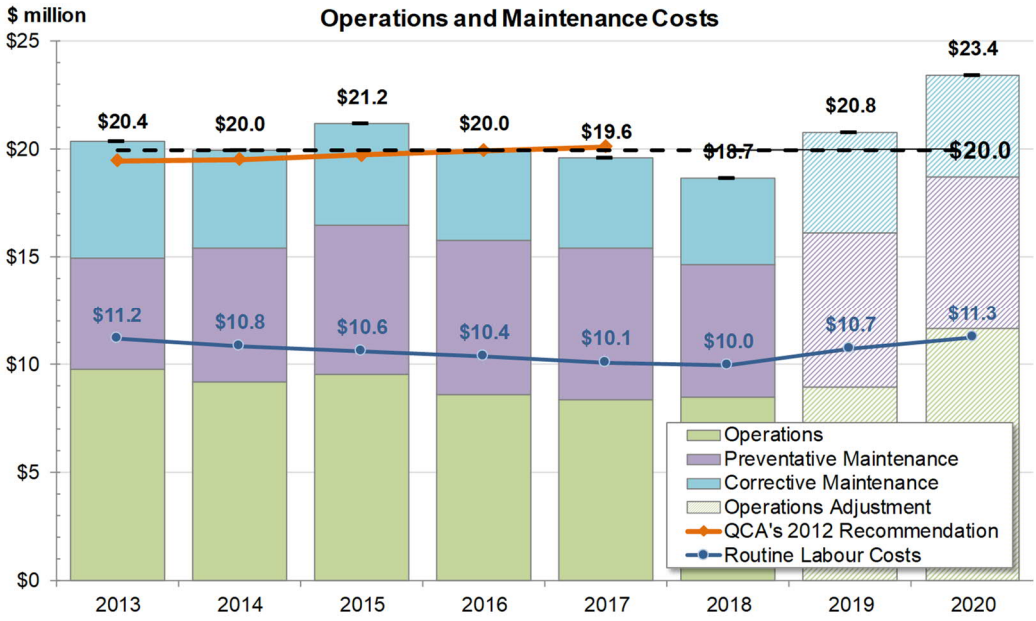


Figure 18 Sunwater's Direct Costs

At the end of FY2018, two distribution schemes (St George and Theodore) transitioned to local management arrangements and Emerald transitioned at the end of FY2019.

There is projected increase of $4.8 million in direct costs on irrigation schemes from FY2018 to FY2020. This is partly a cost transfer from local overhead and a corresponding decrease in local overhead allocated. We note that:

- Sunwater's customers requested more transparency in cost reporting, and in response Sunwater changed its policy with regard to fleet and some travel and accommodation costs which had been treated as local overhead. From FY2020 these costs will be directly charged. This policy change is estimated to transfer approximately $1.9 million from local overhead to direct costs.
- This change is partly attributed to heightened utilisation, which we estimate to be $0.6 million from FY2018 to FY2020 (we have applied $0.3 million to the long-term average labour cost in our recommended base year, as discussed in Section 4.5)

The net impact of these two cost transfers on scheme direct costs is an estimated increase of $2.4 million from FY2018 to FY2020.

The average cost for the FY2013-18 period is $20 million, but this is budgeted to increase $23.4 million in FY2020.

On average, operations and maintenance costs represent 34% of Sunwater's annual operating expenditure from FY2013 to FY2018. Costs can vary as the impact of weather events; asset failures and operational requirements can be specific to each scheme. Sunwater's total cost is aggregated, however these issues must be understood at the scheme level. We analyse the operations and maintenance costs by scheme in Section 4.2.

Understanding how Sunwater plans, manages and completes this work is critical in assessing the prudency and efficiency of Sunwater's operating expenditure. We have reviewed:

i.	Asset management plans, which we expect to identify optimised maintenance and renewal strategies for the asset classes addressed	• Manufacturer recommendations, applicable standards and regulations which may apply • Industry standard maintenance regimes or those used by similar operators of similar assets where available, and the cost of these programs if available (this is benchmarking of specific blocks of work on specific assets, such as routine maintenance of pumps) • Any reviews of maintenance effectiveness undertaken by reputable third parties • Environmental management • Corporate strategic and operational plans, long term planning reports • Risk management • Compliance policies • ICT • Procurement • Use of automated data collection technology for remote data acquisition
ii.	The efficiency of management and scheduling of maintenance staff, to identify possible inefficiencies	• The scheduling of field work, particularly where significant travel time is required to reach remote locations, and specifically evaluating management of priorities (changes to existing schedules for urgent works) • Policies and practice in relation to the potential use of local contractors instead of staff to minimise costs • The location of depots and resource centres in relation to asset location • Measured utilisation of staff (time booked to chargeable work as a proportion of available time), which is an indication of both efficient use of staff resources and the appropriateness of the size and skill mix of the staff pool • The use of mobility solutions by staff to access and record asset information and minimise time required for administration • The extent of rework (repeated visits to site because earlier work was not satisfactory or didn't fix the problem; couldn't be completed because staff skills, parts or tools required were not available; or because other scheduled work was not done during the visit) • How rarely used or uncommon skills are managed and where they are located

In our review, we raised several RfIs and referred to recent reports by independent agencies. Our review was supplemented by interviews with Sunwater staff that enabled us to make the findings presented in this report.

4.1.1 Staffing

Head count and staff wages contribute to labour costs and Sunwater's head count data is presented in Figure 19.[58] Staff numbers dropped in FY2014 following a restructuring and gradually increased from FY2014 to FY2018. Staff numbers dropped in FY2019 by nine FTEs due to the transition of St George and Theodore irrigation schemes to local management. It is projected that direct staff numbers will reduce by a further seven and a half FTEs in FY2020 mostly due to transitions to local management.

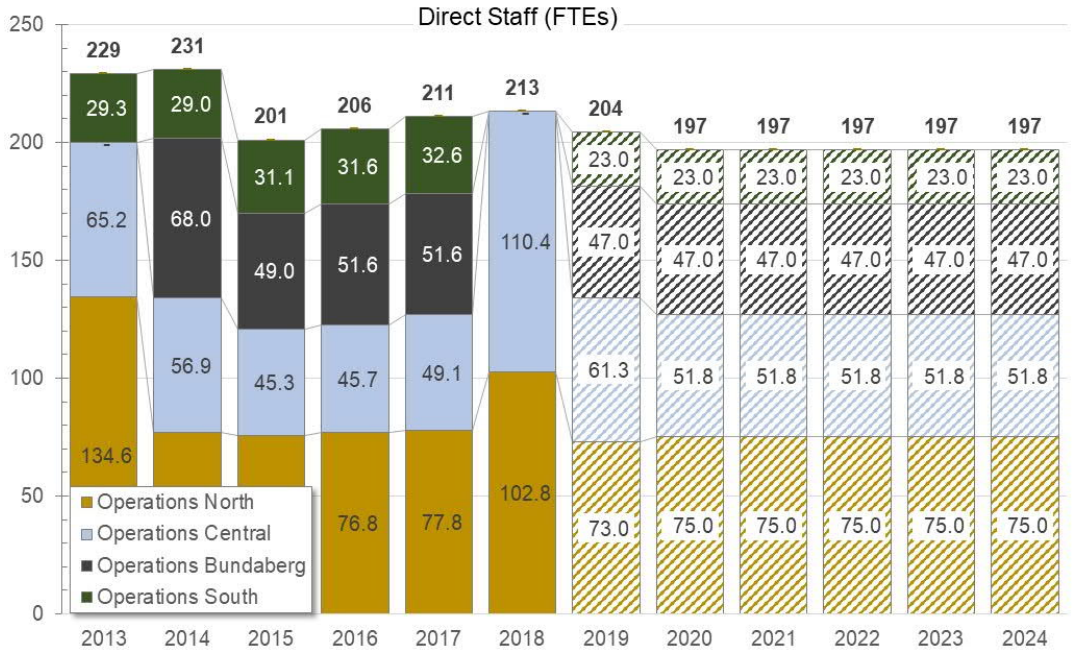


Figure 19 Whole of Organisation FTE Count

There was a net increase in Sunwater's average cost of staff by about 1% in FY2018 after a decrease of 6.5% in the previous year. This change can be attributed to the Sunwater's field staff participating in an Enterprise Bargaining Agreement (EBA) and a change in the mix of staff.

4.1.2 Staff Utilisation

Sunwater provided updated staff utilisation data in November 2019.[59] Reported staff utilisation levels, which compare hours booked to work activities on a scheme to the total available time, averaged 87.8% in the FY2019. This represents an increase from an average of 81.1% in FY2016, 82.0% in FY2017 and 84.1% in FY2018 (Table 18).[60]

Operations Centre	Labour cost	Staff Utilisation				Average % Change (to FY2019)
		FY2016	FY2017	FY2018	FY2019	
North	$6.60	82.9%	83.0%	83.2%	88.1%	6.1%
Central	$8.56	77.9%	78.8%	82.7%	88.9%	11.5%
Bundaberg	$5.93	83.6%	83.5%	85.6%	87.7%	4.1%
South	$2.72	81.8%	86.5%	87.0%	87.6%	3.0%
Total	$23.81	81.1%	82.0%	84.1%	87.8%	4.4%

Table 18 Utilisation of Direct Staff

[58] RfI A14
[59] QCA Information Request FR3_Attachment 1_Sunwater utilisation rates
[60] RfI A28.

Sunwater notes that time-writing over the FY2015 to FY2018 period was impacted as supervisory staff in regional offices reduced their use of time writing and booked less time to scheme-based work orders, (noting that relaxed direct labour charging was *"particularly notable in 2015/2016 to 2017/18"*).[61] These staff members tended to book time using the 'Operations' activity, so this cost pool reduced in value (and residual local overhead costs increased). A renewed emphasis on the need for accurate records improved the quality of the data for FY2019. We note that:

- Maximum possible staff utilisation during the year is reduced by the requirement for staff to have regular toolbox time and other training. Supervisors and local management generally have a lower utilisation level relative to their staff as they undertake management activity. These lower utilisation figures will pull down the group's utilisation performance. A utilisation target of 90% for field staff is generally considered as excellent compared to best practice.
- Utilisation figures should closely match staff numbers with workload if the quantity of work required is being delivered at each scheme.
- Staff time (and cost) incurred in a regional operations centre that is not booked directly to service contracts becomes part of the local residual. This is allocated as local overhead in proportion to labour cost booked to each local service contract.

Sunwater tends to use its own staff for routine work and relies heavily on contractors for non-routine work (Table 19).[62] This is an effective way to balance a varying demand for resources and enables Sunwater to maintain a core capability in-house that it can keep highly utilised.

4.1.3 Maintenance Regimes

Sunwater groups its maintenance tasks by resource type, for example mechanical, electrical or operational tasks. Sunwater schedules calendar-based (typically three or six month) inspections for condition and functionality, as well as more detailed annual servicing that may involve more comprehensive testing, servicing and/or interrogation. This approach allows grouping of maintenance activities at each facility, which optimises travel requirements.

The use of calendar-based routine maintenance to minimise travel is an acceptable method if based on manufacturer's guidelines and/or regulatory requirements. When the asset management system is used according to the asset management system manual, the timing and type of routine operation activities should be taken from the suppliers O&M manuals. This appears to be the case for Sunwater.

Information provided[63] identifies time bound routine maintenance items, such as pump station inspection/service or electrical inspections and testing. Planning specifically includes optimisation of trips and travel time, but the frequency of the visits may not be optimised to coincide with the manufacturer's recommendations.

Sunwater identifies typical durations between inspections and services for various asset classes, and states that routine maintenance tasks vary from scheme to scheme, as would be expected.[63] We have reviewed several studies commissioned by Sunwater from independent specialists as spot checks to assess the level and nature of maintenance carried out, and these concluded from this sample, that Sunwater's maintenance practices are prudent and efficient.

The more expensive inspections and inspections of critical assets are currently subject to review by independent third parties. This is considered prudent where expertise may not exist within Sunwater.

[61] QCA Information Requests A43 A44 and 28_Routine costs and non-direct costs
[62] RfI A30.
[63] RfI A23, including attachment 1

Sunwater's submission to the QCA includes reference to the engineering due diligence report produced by Jacobs in 2016 for the local management transition review. Sunwater notes that Jacobs found its asset strategy, scheme condition and risk data to be generally consistent with industry standards (with some minor exceptions).

A good example of third-party reviews was the bulk water crane inspection frequency assessment based on risk and usage.[64] The review in this case noted that Sunwater's regime involved a lower rate of inspection or servicing than Australian standard recommendations. As these were considered to be excessive in Sunwater's case, its approach was considered appropriate in terms of risk management and cost-efficiency. It appears from the review that Sunwater had taken deliberate action to determine whether the standard inspection regime was appropriate and settled on a lower cost alternative.[65]

Sunwater undertakes a review of options for significant assets to determine the optimal strategy after considering ongoing maintenance requirements, refurbishment and replacement.[66]

4.1.4 Work Scheduling

Sunwater specifies and rigorously uses a three-month planning cycle (Figure 20). This is used to optimise work done on site at scheduled visits by ensuring that everything needed for the planned work will be and is available. Where possible, related work due on site can also be grouped for delivery during single visits.

TASK	90 days								28 days	21 days	14 days	7 days	Execute
	Wk-12	Wk-11	Wk-10	Wk-9	Wk-8	Wk-7	Wk-6	Wk-5	Wk-4	Wk-3	Wk-2	Wk-1	Wk-0
90 Day Plan													
28 Day Schedule: Draft and Review													
21 Days: Finalise Labour, Materials and Isolations													
14 Days: Confirm Isolations and Shutdowns													
7 Days: Lock in 7 day Schedule for Execution													
Execute 7 day Schedule													

Figure 20 Sunwater's Work Planning Cycle

The detailed program underpinning Figure 20 also includes notification of customers in advance of planned works, feedback on progress where appropriate and validation of works completed. This is considered efficient.

4.1.5 Delivery

Sunwater coordinates work between regional offices as necessary but has found that it is more cost-effective to use local contractors if they are available rather than pay significant travel costs for its own staff. Exceptions exist where specific skills are required, and uniquely skilled staff may have to travel more frequently if the capability required is not available locally.[67]

The time spent in travel and other travel costs were not able to be separated out in the data provided, so it has not been possible to extract evidence that would indicate that this practice is prudent and efficient.

We understand that Sunwater would have to change the way its data is recorded to enable this analysis and accept that this could measurably increase time-writing complexity for field staff.

Sunwater has included local sourcing principles in its procurement policy specifically to obtain efficiency advantages by using local contractors to minimise staff travel costs and provide a more

[64] RfI A23, Attachment 2
[65] RfI A32 (an example using irrigation cranes and winches).
[66] RfI A33 (two examples using BHWSS Tom Fenwick PSTN Pump 3 and the shutters at the Ben Anderson Barrage)
[67] RfI A29 (scheduling examples)

responsive service to customers.[68] In some cases, Sunwater has been able to engage the local shire councils to carry out local operations work in remote sites.

Sunwater tends to use its own staff for routine work and relies heavily on contractors for non-routine work (Table 19).[69] This is an effective way to balance a varying demand for resources and enables Sunwater to maintain a core capability in-house that it is able to keep highly utilised.

Table 19 Non-routine Work Breakdown, FY2018

	Burnett & Lower Mary	Central	North	South	Total
Contractors	69%	71%	69%	58%	69%
Direct Labour	6%	3%	7%	7%	5%
Materials	6%	4%	5%	7%	5%
Other Direct Charges	3%	7%	2%	6%	5%
Ownership Labour	16%	15%	17%	22%	17%

4.1.6 SCADA

Sunwater operates a SCADA[70] system for remote control and data collection of critical assets. It is constrained in some remote areas by poor wireless communication facilities. IGEM requires additional data collection to predict and monitor flood events, and delivery of this functionality may assist with extending the SCADA system and enable further automation.

We understand that the version of SAP currently in use by Sunwater is not suitable for the current generation of mobility solutions in support of work activity, but staff have and use laptops and tablets, and have limited access to mobility solutions. This is an area where efficiency gains are likely to be still available, and Sunwater expects that its DEBS program will enable these.[71]

4.1.7 Spares Management

Sunwater does not currently have a policy or documented strategy in relation to critical spares, and in practice spares and parts are managed by staff at local depots.

Stock holdings are not extensive because the preference is to order spares and parts when required for scheduled work, so we have not assessed the extent to which stock outs may occur or identified the stock turns being achieved at the depots. This is a potential risk, however, and Sunwater has noted that it is currently running a critical spares pilot program to assess requirements, risks and benefits which may recommend improvement in this area.[72]

Sunwater has specified and rigorously uses a three-month planning cycle (Figure 20) to optimise work done on site at every scheduled visit by ensuring that everything needed for the planned work will be and is available when needed, and that related work due on site can be grouped for delivery where possible during single visits. The detailed program underpinning Figure 20 also includes actions such as notification of customers in advance of planned works, feedback on progress where appropriate and validation of works completion.

[68] RfI A2, A31.
[69] RfI A30.
[70] Supervisory Control and Data Acquisition system
[71] RfI A11 (Digital Enterprise Business Systems program)
[72] RfI A16

4.2 Operations and Maintenance Costs by Bulk Water Scheme

The bulk water service contracts (schemes) are a subset of Sunwater's business activity and are allocated local overhead and corporate overhead costs calculated as a multiplier of direct labour costs. The scale of the direct labour costs incurred on a scheme therefore determines the overhead allocated. The same is true for some indirect costs depending on nature of the scheme.

In this section we examine the direct costs incurred historically on each scheme in an attempt to identify a representative year to be used as the base year for the price path. This requires that non-recurrent routine costs that should be identified and excluded for this purpose, and the impact of the various drivers of cost variability identified and addressed in order to develop a base year that is most representative (most reliable when used to predict future costs).

As discussed in Section 2.3 and 2.8 (and in the following scheme level analysis), there is a high degree of variability observed in operations and maintenance expenditure. There are several possible reasons for variability:

- All schemes have experienced variable water flows from season to season, which can impact maintenance activities (for instance, some maintenance activities can't be conducted in periods of high-water flows).
- Several schemes have experienced two or even three significant weather events (droughts, floods, cyclones) since the last pricing review.
- The need for weed control in affected schemes varies with water flows and weather conditions. Increased weed control activities are typically required following periods of high rainfall and warm weather which promote weed growth. Additionally, flooding and heightened water turbidity can impact on weed growth by reducing water clarity, reducing the need for some weed management activities. [73]
- Maintenance requirements may vary depending on water usage (noting that customer demand drives the workload for the delivery of water).
- Sunwater may undertake non-routine works in a particular year for operational reasons, diverting its staff from routine work (with the effect that direct operational costs are reduced for that period) or alternatively by engaging contractors (which increases overall costs). These decisions themselves may be driven by opportunity – some works cannot be carried out during periods of high water flows and must be scheduled for more suitable working conditions.
- Changes in asset condition may prompt increased/decreased maintenance activity
- There may be variations in the unit cost of materials from one year to the next, particularly where the materials are imported and subject to foreign exchange rates (such as acrolein, used for weed control). We note that the input cost has been addressed specifically in Section 4.5.3.

Sunwater acknowledge this variability in the 2012 review, wherein Sunwater submitted that there was not a constant workflow when operating and maintaining schemes, with significant variability in operating conditions and effort due to factors including:[74]

- Climatic and seasonal conditions; impacting conditions for aquatic weeds and weed control costs, such as the frequency of slashing access roads, channels and drains.
- Volume of water in storages and customer demand; driving the workload for delivery of water.
- Opportunistic maintenance activities; for example when the storages are low and assets normally under water can be accessed.

We note that Sunwater's operating environment does not appear to have changed materially since the time of this review.

[73] Document reference: QCA Information Request 35_Weed control
[74] Queensland Competition Authority (2012). *Final Report – Sunwater Irrigation Price Review: 2012-17.* http://www.qca.org.au/getattachment/5fad8dc9-2101-4097-bdc8-d90d25fbfbbb/Sunwater-Irrigation-Price-Review-2012-17-Volum-(1).aspx

This variability influences the operations and maintenance workload in ways that are difficult to predict in advance. The FY2019 actual costs provided in November 2019 vary considerably at scheme level from the FY2019 budget costs originally provided, with variations in excess of 50% in two schemes (BBL, LBT) and in excess of 30% in seven schemes (Figure 21). This substantial difference between the budget and the actual costs for this one year illustrates the difficulty in relying on budget data to establish a base year, and also the difficulty in accepting that direct costs in any one year are typical or representative enough to be used as the base year for the future price path.

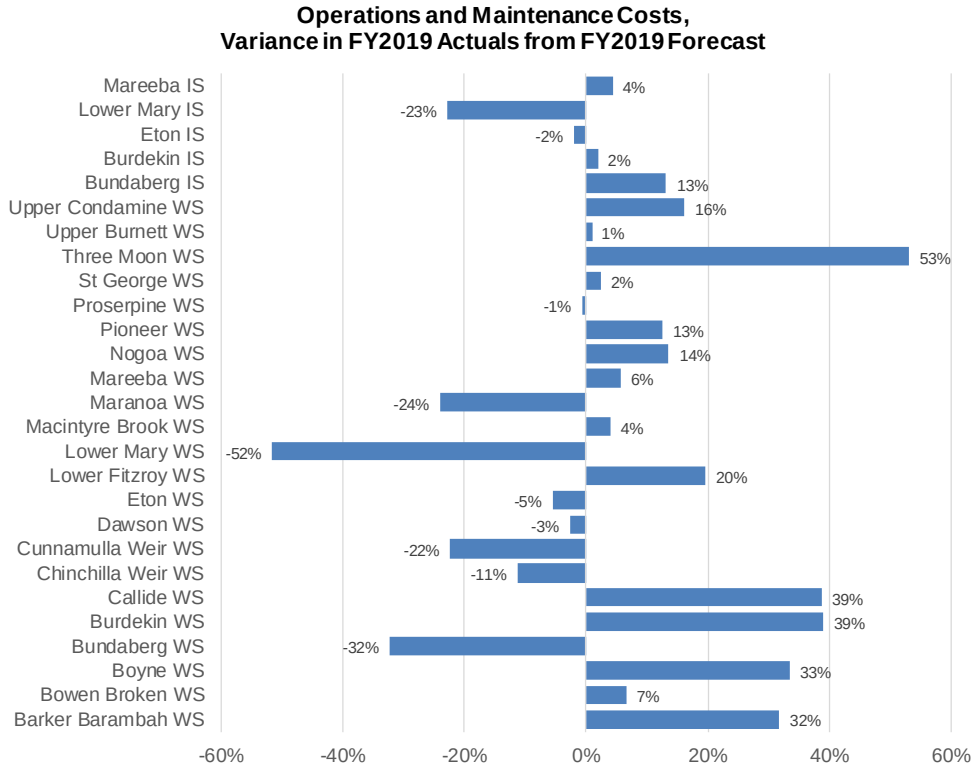


Figure 21 Operations and Maintenance Costs, Percentage Difference in FY2019 Actuals to FY2019 Forecast

We provided a summary of issues relating to the selection of a base year in Section 2.8. In this section we review the cost drivers based on information available and arrive at a representative direct cost for each scheme based on the unique circumstances applying in each case after removing any non-recurring or one-off costs. The only effective solution to high variability is some method of smoothing over time, noting that the longer the period able to be used for smoothing the more certain that short and long-term cost drivers are taken into account and the more reliable the cost for prediction of future costs.

As referenced in Section 2.8, Sunwater has proposed that FY2019 actuals should be adopted as base year cost, stating that constructing average costs that are appropriately representative of a base year is a complex and time-consuming task. However, we note that Sunwater's 2014 Implementation Plan stated that Sunwater would base future price path operating cost forecasts on at least five years of historical data.[75] Sunwater stated that with at least five years historical data, "*the historical data set doesn't require correction or modification to bring it back to average expectations*". However, "*It may require correction or cleaning where there are clear justifications for change…However, any corrections to the historical dataset will be supported by clear documentation and justification of any changes made.*"

[75] Sunwater (2014). QCA Pricing Practices Recommendations Operating Planning Review and Improvements to Labour Cost Information.

In keeping with Sunwater's 2014 Implementation Plan, we derive base year operations and maintenance costs by averaging historical data to reflect the expected costs based on long-term average conditions, with adjustments made to the historical dataset where there is clear documentation and justifications for change. We consider that six years of historical data is adequate for this purpose (noting Sunwater's proposition to use five years of historical data in its 2014 Implementation Plan[76]) and have used the available historical data from FY2013 to FY2018 for this analysis. We show the FY2019 and FY2020 budgeted costs for context only.

As outlined in Section 2.8, in its November 2019 submission Sunwater contended that it is not appropriate to assess costs at a scheme-by-scheme level because that could ignore scale benefits available from shared resourcing. We have undertaken the assessment of the base year in relation to each scheme, noting that prices are set on a scheme by scheme basis, and we are required to assess the prudent and efficient costs of providing services in each scheme.

In its November 2019 submission, Sunwater proposed a number of scheme-specific adjustments as a result of our long-term averaging approach. These, alongside a summary of our position in relation to each issue, are summarised in Table 20 for the bulk water schemes. Sunwater also proposed a number of global adjustments (impacting numerous schemes). These are summarised in Section 4.5.

In assessing Sunwater's proposed adjustments to the base year, we consider that:

- If an adjustment has already been captured in the recommended base year (via the long-term averaging approach) the adjustment should not be accepted, on the basis of efficiency and operational variability
- If an adjustment has not already been captured in the recommended base year, the cost should be;
    - **Prudent -** the proposed inclusions should be justified by reference to an identified need or cost driver (for instance, is required to deliver agreed service levels, is required to meet new legal or regulatory obligations, or there is a reasonable expectation of future benefits)
    - **Efficient –** the expenditure must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework

Table 20 Sunwater's Proposed Scheme-Specific Adjustments, Bulk Water Schemes

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
North					
Burdekin Haughton bulk	Travel & accom-modation	*"There has been a recent shift in Sunwater's approach to risk and fatigue management in the North Region. To ensure that Sunwater has an extended group of staff trained to manage each individual dam site during a prolonged event or due to North Region team absences, dam staff from the*	$21,000	This cost relates to staff from other regions delivering work in the North Region due to staff absences. We consider this to be a reasonable practice (being required to deliver service levels). However, we note that staff from other regions will not necessarily be required to relieve North region staff over the entire price path period to this recent heightened extent. As such, we view that this cost (as it is typically expected to	$0

[76] Sunwater (2014). QCA Pricing Practices Recommendations Operating Planning Review and Improvements to Labour Cost Information.

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
		Bundaberg/Lower Mary Region and South Region are brought up when relief is required."		occur) is captured in the base year. We recommend that the QCA do not accepted this cost increase, on the basis that it is captured in the base year.	
	Legal & adminis-tration	*"Between 2012/13 and 2017/18, rates fluctuated due to updates in Valuer General property valuations and changes to our property portfolio. Rather than applying an average, given the negative adjustment in 2018/19, the most appropriate starting point is the forecast local authority rates for 2019/20—$236k, as per Sunwater's June 2019 update, an increase of $83k."*	$83,000	This reflects a cost increase which would be not captured in our long-term averaging approach. **Prudency:** This is an obligatory cost, and as such is considered prudent. **Efficiency:** Sunwater notes that rates applicable to this scheme have increased for FY2020. As this cost is not within Sunwater's control, we consider this adjustment to be efficient. We recommend that the QCA accepted this cost increase.	$83,000
Mareeba-Dimbulah bulk	Direct Labour	*"In 2018, Sunwater underwent a significant regional restructure of roles and responsibilities and carried several vacancies for the last half of 2018. The Operations Manager role (Exec02) was vacant and covered by internal staff until appointment of full time FTE in July 2018. In addition, the SW05 role of Works Scheduler was vacant for approximately five months and covered internally. Based on rates of pay for these roles and impacts of transitioning other staff between roles, there was*	$24,000	Sunwater notes that it had several vacancies during FY2018 (during which Sunwater underwent a significant regional restructure of roles and responsibilities) which reduced costs for that year by about $80,000. We expect vacancies to contribute to the variability of operating costs in the past and into the future. Given that we are determining a 'typical' base year, we consider it appropriate to include this year of actual costs to address operational variability. We recommend that the QCA do not accept this adjustment, on the basis that it is captured in the base year.	$0

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
		approximately $80k reduced direct labour. As a result, from 2015, all years except 2018 significantly exceed the AECOM base year costs suggesting the simple average is not representative of an appropriate base for operating cost requirements."			
Central					
Bowen Broken Rivers	Direct labour	*"There are two exceptionally low years for direct labour (2014/15 and 2015/16) due to the changed operating model which Sunwater implemented during this period."*	$24,000	We regard this operating model changes as one of the possible factors which will contribute to the variability of operating costs in the past and into the future. Given that we are determining a 'typical' base year, we consider it appropriate to include low cost years to address operational variability. We recommend that the QCA do not accept this adjustment, on the basis that it is captured in the base year.	$0
Callide Valley	Contract-ors	*"Sunwater conducted significant roadworks and desilting on the Callide diversion channel in 2019. These works have been added to our routine work program and will be required again by 2023. As a result, these works (along with the existing operations and managements activities) will require higher base year costs than those currently proposed by the QCA...* *A three-year average, from 2016/17 to 2018/9 is probably*	$32,300	As the works were added to Sunwater's routine work base in 2019, this reflects a cost increase which would be not captured in our long-term averaging approach. **Prudency:** Roadworks and desilting activities are reasonably required to maintain assets in a functional state and deliver services. We consider this adjustment prudent. **Efficiency:** These costs were not present in earlier years, so they require an adjustment to the base year. The approach being taken to establish a representative	$32,300

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
		the best proxy of year-on-year contractor costs, given the expanded scope of works in Callide Valley. This will require an increase of $32.3k to the current base year contractor costs."		year implies that these costs should be averaged over the period, so we consider this average annual expenditure reasonable to cover this cost for this scheme. We consider this cost adjustment efficient. We recommend that the QCA accept this cost adjustment.	
	Legal & administ-ration	*"Local authority rates have only been charged directly to this service contract since 2016/17. The longer historical average proposed by the QCA does not account for local authority rates before this year. We anticipate a reduction to the 2018/19 charges in future years, of $30k, but an increase to the remaining charges of 8 per cent in 2019/20. This results in a base year amount of $75.6k. We will require an additional $40.6k to meet this cost"*	$40,600	As costs were incurred from FY17 only, this reflects a cost increase which would be not captured in our long-term averaging approach. **Prudency:** This is an obligatory cost, and as such is considered prudent. **Efficiency:** Sunwater notes that rates applicable to this scheme have increased for FY2020. Sunwater have proposed an ongoing cost of $75.6k (which is lower than the FY18 cost). Given this, we consider this adjustment to be efficient (noting that this cost is largely not within Sunwater's control). We recommend that the QCA accept this cost adjustment.	$40,600
Nogoa Mackenzie bulk	Contract-ors	*"While there has been some fluctuation since 2012/13, there has been a sustained increase in contractor use in and around some corrective civil works in the dam surrounds. In 2019, contractor expenditure reached $343k, but is expected to come back down to $300k per year from 2019/20."*	$43,000	Sunwater has noted that costs have fluctuated in this scheme. We note that there is no identified driver to indicate that this is an ongoing shift in maintenance requirements. We note that contractor expenditure may be offset by labour costs and consider this to be an example of operational variability. Given that we are determining a 'typical' base year, we consider that this cost variability is captured in our averaging approach.	$0

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
				We recommend that the QCA do not accept this adjustment, on the basis that it is captured in the base year.	
	Legal & administ-ration	*"Legal and administration costs also need to be increased slightly. While the higher costs in 2015/16 and 2016/17 are related to a one-off event, there is an increased in legal work around people on the flood margin and negotiating recreational facility handover details."*	$9,000	Sunwater's submission refers to incurring one-off legal and administration costs in the historical period and indicates that specific projects (e.g. the recreational facility handover) are the driver for future costs. We believe that it is reasonable to use the average of the past six years as 'typical' year costs and recommend that the QCA do not accept this adjustment, on the basis that it is captured in our base year.	$0
Bundaberg					
Bundaberg bulk	Direct labour	*"Lower maintenance levels in response to flood damage repairs means that the costs in those years are substantially understated compared to current levels of operations and maintenance…The Bundaberg bulk water supply scheme incurs maintenance costs that are higher now than what they were historically. This reflect more recent responses to environmental concerns surrounding fish habitats... increasing levels of weed control costs associated with a higher level of focus around Sunwater's obligations under the Biosecurity Act 2014."*	$55,000	We view the flood damage and weed control requirement issues raised as issues that contribute to the variability of the scheme that are addressed via the adopted long-term averaging approach. We recommend that the QCA do not accept these adjustments, on the basis that they are reflected in our base year.	$0
	Materials		$25,000		$0
	Contact-ors		$14,000		$0

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
Barker Barambah	Direct labour	*"AECOM's averaging approach does not account for additional costs in river surveillance at Barker Barambah.... Prior to 2018/19, lower levels of surveillance were undertaken with available resources at a lower cost. This additional activity is performed using current resources (2 full-time equivalents (FTEs)) with operations and maintenance activities normally undertaken by these staff resourced externally."*	$28,000	Sunwater cites in its submission the need to optimise water ordering and usage due to decreasing water supplies. We view water supply as a source of variability which is addressed via the adopted long-term averaging approach. We recommend that the QCA do not accept this adjustment, on the basis that this variability is accounted for in our base year.	$0
Upper Burnett	Direct labour	*"This scheme has experienced increasing maintenance costs due to environmental concerns for fish habitats. There is now a greater focus on fishway monitoring and maintenance in response to public and government scrutiny. AECOM's historical average base year also includes years impacted by flood restoration—these years had lower maintenance levels in response to flood damage and repair... Additionally, decreasing water supplies has caused a growing need for additional surveillance of Rivers to ensue water usage is optimised."*	$38,000	Sunwater notes that there has been an increase in concern for fish habitats, that early years were affected by flood restoration works, and that current low levels of water supply have increased surveillance of the river. We consider these as examples of weather and operational variability. We recommend that the QCA do not accept this adjustment, on the basis that this variability is accounted for in our base year.	$0

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
South					
Macintyre Brook	Direct Labour	*"There are three low years for direct labour (2013/14, 2014/15 and 2015/16) due to the changed operating model which Sunwater implemented during this period. More recent labour costs are a better indication of direct labour costs for the 2021/24 price period, which will be around $271k."*	$47,000	We regard this as an example of variation caused by operational factors. We consider it likely that the low labour years will be incurred over the price path period, and that this cost is captured in our base year. We recommend that the QCA do not accept this adjustment.	$0
Upper Condamine	Direct labour	*"Direct labour in the Upper Condamine has increased in recent years, consistent with Sunwater's strategy to better reflect the direct costs of services and improving transparency of those costs."*	$16,000	We make an adjustment for time writing issue separately (refer to Section 4.5) and recommend that the QCA do not accept this further scheme-specific adjustment.	$0

For convenience, this scheme by scheme review is presented geographically.

4.2.1 North Region Bulk Water Schemes

The bulk water schemes associated with the North Region are:

a. Burdekin (BW-ABB)
b. Proserpine (BW-ABP)
c. Mareeba (BW-MBM)

a. Burdekin (BW-ABB)

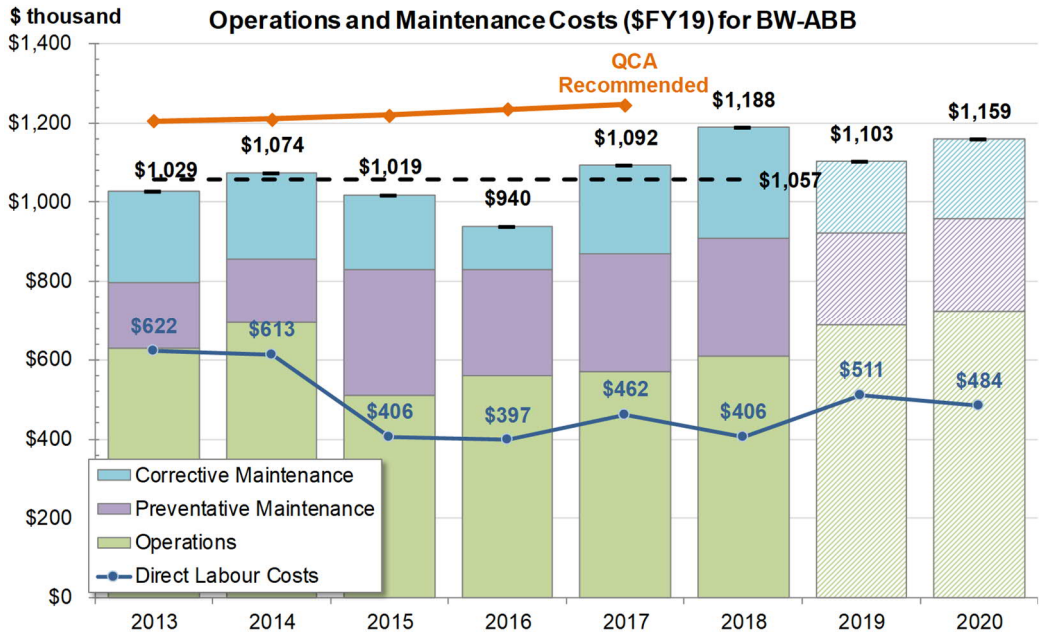


Figure 22 Operations and Maintenance Costs at BW-ABB

O&M costs at the Burdekin bulk water scheme have been consistently below the QCA's 2012 recommendations (Figure 22). The scheme is subject to flooding and was affected by flood events in FY2011 and FY2017.

There was an increase in O&M activity after both events, including an extensive maintenance and upgrade program for Clare Weir in FY2018. Sunwater increased its use of contractors in FY2015 and FY2016 for corrective and some preventative maintenance in response to increasing levels of non-routine work but reversed that policy in FY2017 as the non-routine workload reduced and its own staff became available for routine work. This scheme requires a relatively high level of staff travel.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme.

Sunwater notes that rates applicable to this scheme have increased for FY2020. We recommend that the QCA accept this cost increase. We have treated it as a step change to the base year for this scheme.

b. Proserpine (BW-ABP)

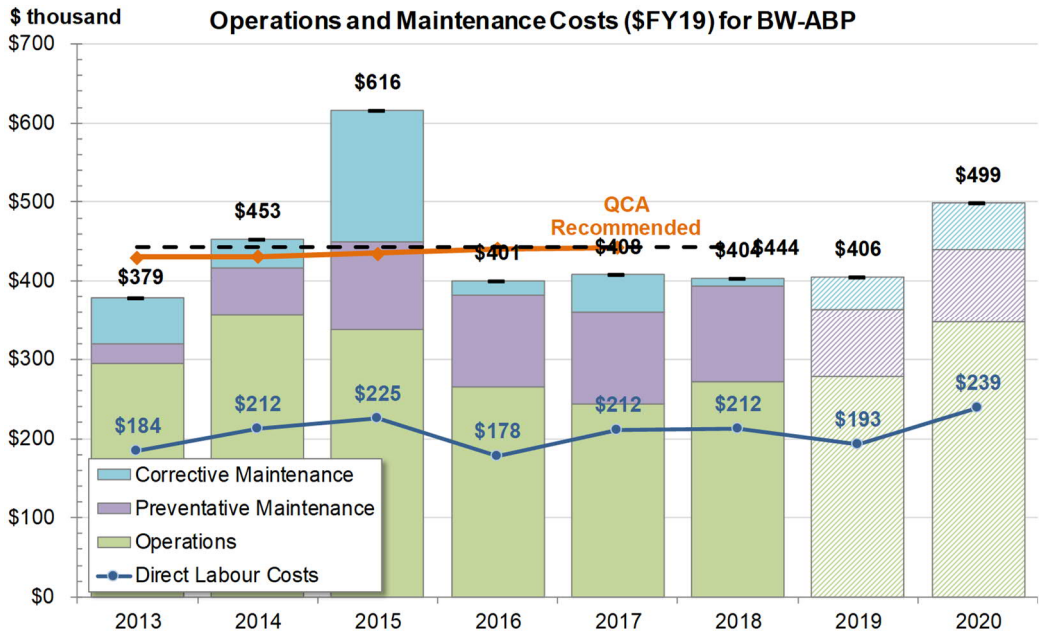


Figure 23 Operations and Maintenance Costs at BW-ABP

O&M costs at the Proserpine bulk water scheme have been below the QCA's 2012 recommendations except for FY2014-15 (Figure 23). The scheme is subject to flooding, and the increase in corrective maintenance during FY2015 was required to manage the impact of an earlier flood event on the revetment mattresses at Peter Faust Dam that protect the bank (and other damage).

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme.

c. Mareeba (BW- MBM)

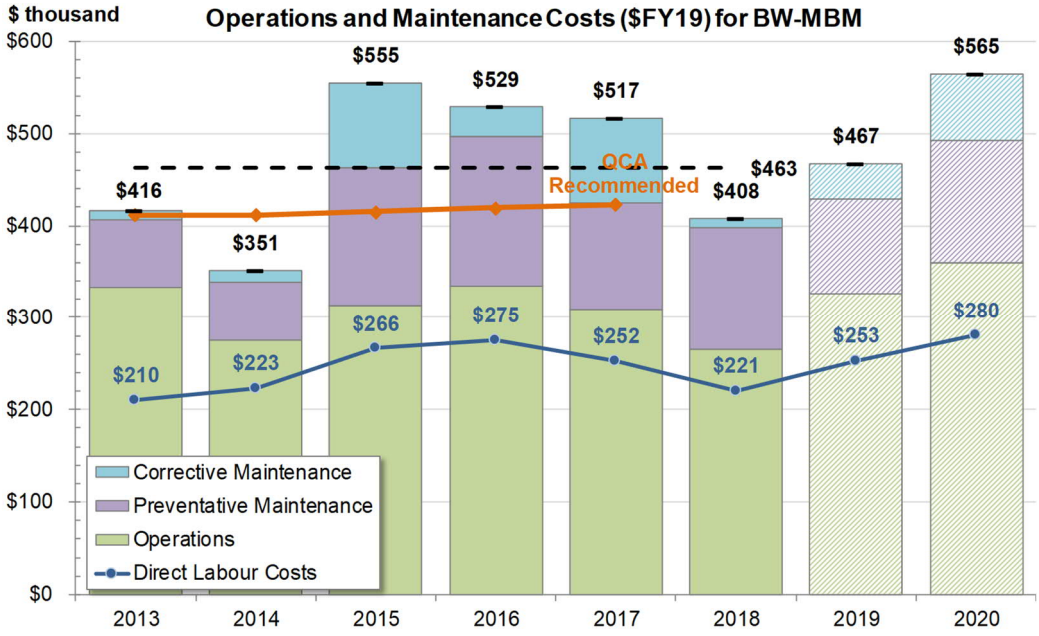


Figure 24 Operations and Maintenance Costs at BW-MBM

The Mareeba bulk water scheme has required higher levels of preventative and corrective maintenance since FY2015 because of ongoing repairs (Figure 24). Sunwater has scheduled non-routine work to replace some of these assets to reduce maintenance work on pipework and other assets.

Many of the assets at Tinaroo Falls dam have deteriorated and require increased levels of maintenance until they can be refurbished or replaced. While there are some non-routine works planned, it appears that current levels of maintenance will need to continue for the near future.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be an increase of about 10% from the QCA's 2012 recommendation.

Sunwater notes that it had several vacancies during FY2018 (during which Sunwater underwent a significant regional restructure of roles and responsibilities) which reduced costs for that year by about $80,000. We expect vacancies to contribute to the variability of operating costs in the past and into the future. Given that we are determining a 'typical' base year, we consider it appropriate to include this year of actual costs to address operational variability. We recommend that the QCA do not accept this adjustment, on the basis that it is captured in the base year.

4.2.2 Central Region Bulk Water Schemes

The bulk water schemes associated with the Central Region are:

d. Bowen Broken (BW-KBB)
e. Eton (BW-KBE)
f. Pioneer (BW-KBP)
g. Callide (BW-LBC)
h. Dawson (BW-LBD)
i. Lower Fitzroy (BW-LBF)
j. Nogoa (BW-LBN)

d. Bowen Broken (BW-KBB)

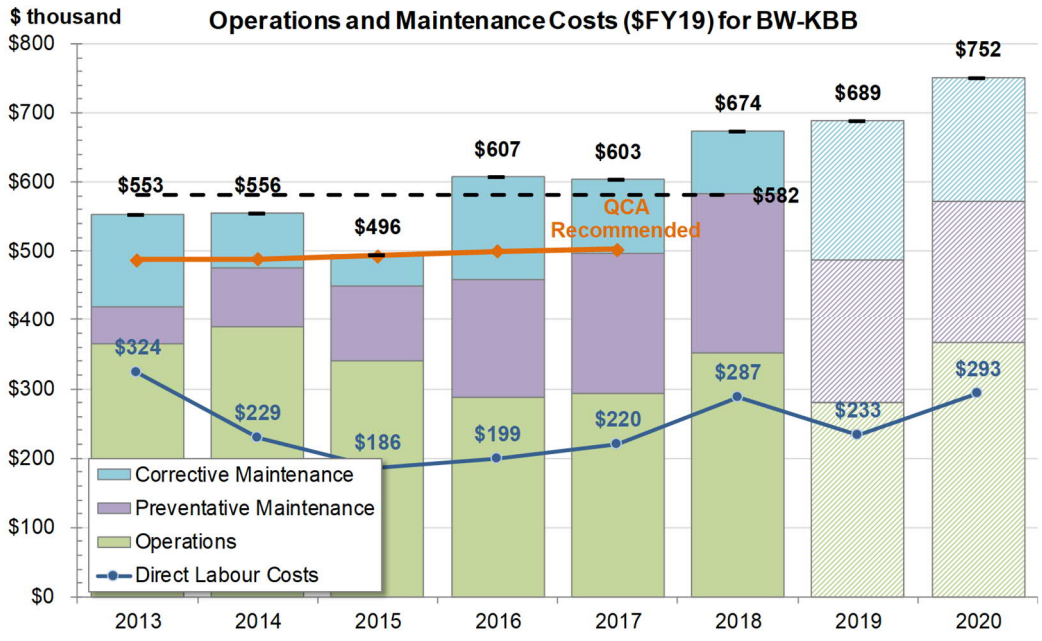


Figure 25 Operations and Maintenance Costs at BW-KBB

The Bowen Broken bulk water scheme was affected by cyclones in 2011, 2015 and 2017,[77] each of which caused damage to assets in the scheme (Figure 25). There have been problems with the intake

[77] Bureau of Meteorology

tower at Eungella Dam and damage to the Gattonvale Off-stream Storage, both of which required increased preventative and corrective maintenance in advance of capital works scheduled to stabilise these assets.[78]

The scheme has assets that are now at end-of-life and will need refurbishment or replacement (two of the Gattonvale pumps are scheduled for refurbishment in FY2023-24) and will continue to require higher levels of maintenance until that time. Assuming that the works will occur as scheduled, it seems reasonable to assume that operations and maintenance costs will then reduce to levels experienced before the cyclones.

Sunwater has noted in its submission to the QCA's draft report that FY2015-16 was an abnormally low period for direct labour caused by operating model changes during this period, and have proposed an adjustment of $24,000 (additional to the proposed global labour adjustment) to account for this. We regard operating model changes as one of the possible drivers of variability which will impact costs in the past and into the future. Given that we are determining a 'typical' base year, we consider it appropriate to include these years of low actual costs to address operational variability.

We recommend that the QCA do not accept this adjustment, on the basis that it is captured in the base year.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be an increase of about 15% from the QCA's 2012 recommendation.

e. Eton (BW-KBE)

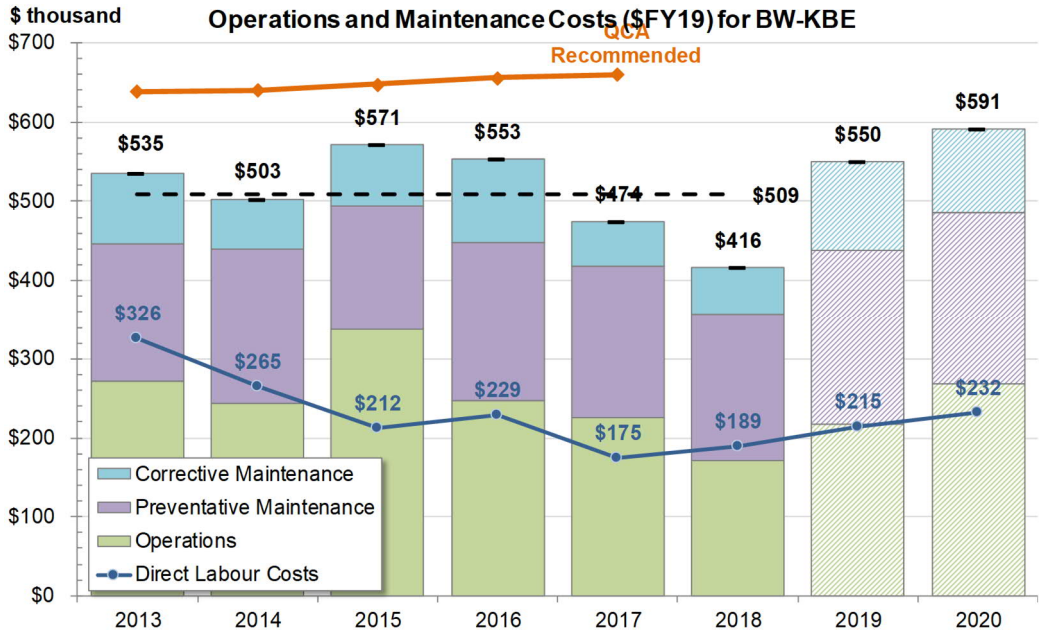


Figure 26 Operations and Maintenance Costs at BW-KBE

Costs at Eton bulk water scheme have remained relatively consistent, and well below the QCA's 2012 recommendation (Figure 26). Eton is subject to silting, and maintenance levels are relatively high as a result.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be well below the QCA's 2012 recommendation.

[78] Sunwater (2018). 2018/19 to 2023/24 Network Service Plan - Bowen Broken Rivers Bulk Water Service Contract.

f. Pioneer (BW-KBP)

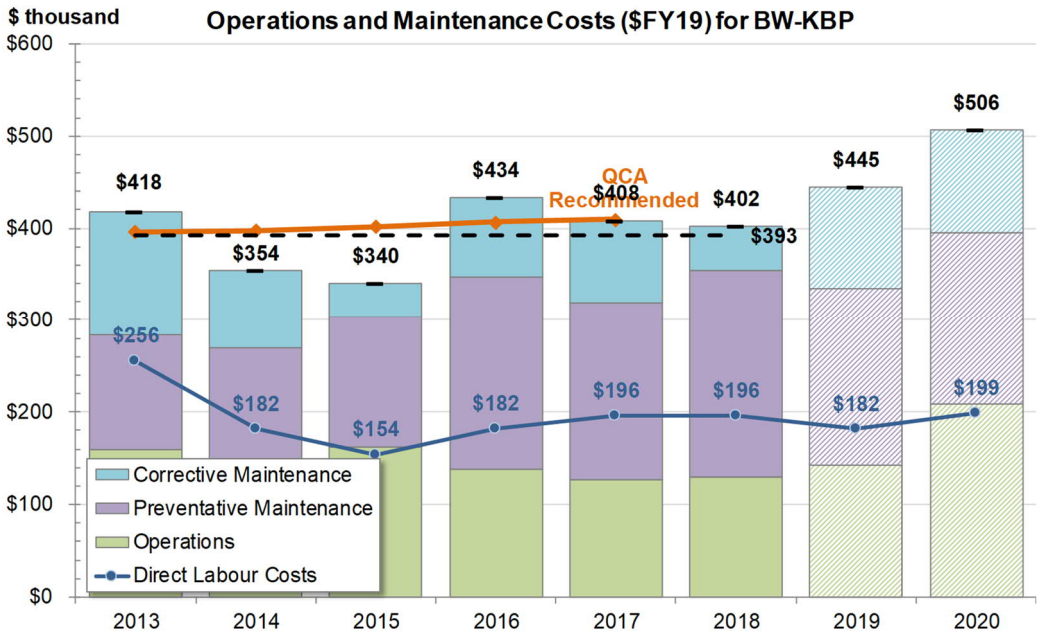


Figure 27 Operations and Maintenance Costs at BW-KBP

The Pioneer bulk water scheme is flood prone, and was affected by flood events in 2011, 2015 and 2017, all of which caused damage. The fabri-dams in the scheme are at end-of-life and require increased levels of maintenance until they are de-commissioned.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be slightly below the QCA's 2012 recommendation (Figure 27).

g. Callide (BW-LBC)

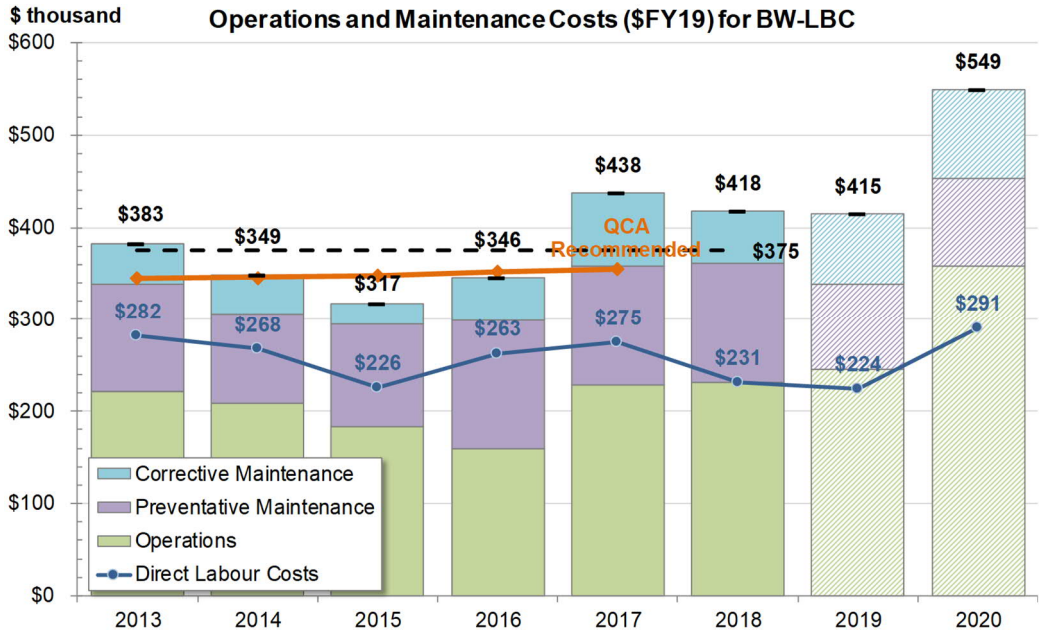


Figure 28 Operations and Maintenance costs for BW-LBC

The Callide bulk water scheme is subject to floods and was affected by events in FY2013, FY2015 and FY2017 that caused damage to assets at the scheme and also restricted operational activity. Rates have been charged to this scheme from FY2017 only, so a step change adjustment has been made to account for these properly.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be slightly above the QCA's 2012 recommendation (Figure 28).

Sunwater notes that roadworks and desilting were carried out in FY2019 and will be required again in FY2023. These costs were not present in earlier years, so they represent a step change for this scheme. Roadworks and desilting activities are reasonably required to maintain assets in a functional state and deliver services. As such, we consider this adjustment prudent. These costs were not present in earlier years, so they require an adjustment to the base year. The approach being taken to establish a representative year implies that these costs should be averaged over the period, so we consider this average annual expenditure reasonable to cover this cost for this scheme. We consider this cost adjustment efficient. We recommend that the QCA accept a cost adjustment to account for this.

The approach being taken to establish a representative year implies that these costs should be averaged over the period, so we have added an averaged annual expenditure to cover this cost as a step change for this scheme (approximately $73,000 per annum).

h. Dawson (BW-LBD)

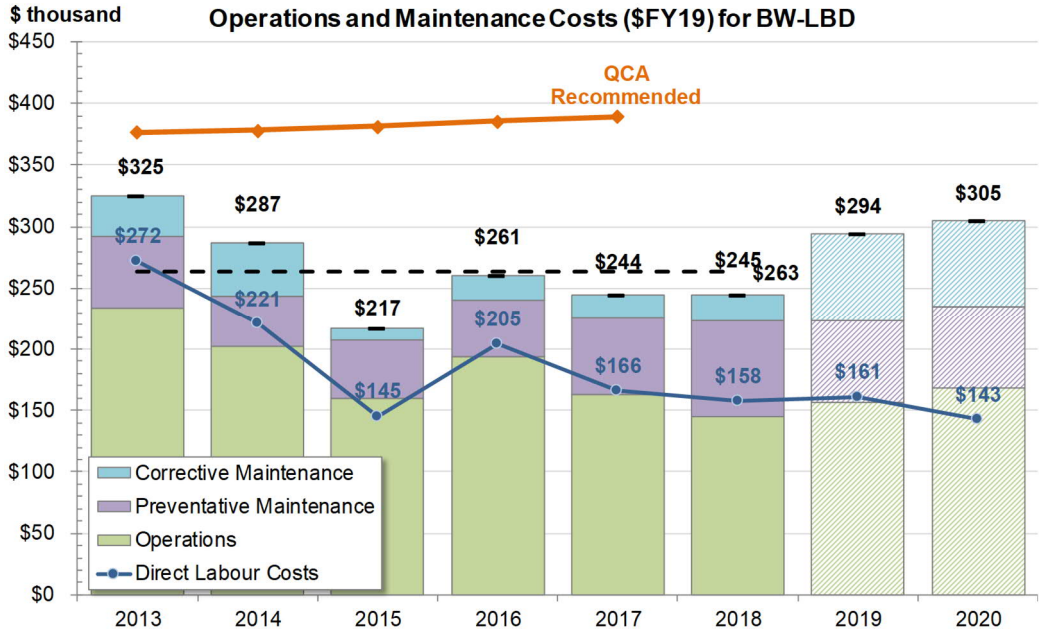


Figure 29 Operations and Maintenance costs for BW-LBD

The Dawson bulk water scheme experienced a flood events in FY2011 and less significant events in FY2013 and FY2017. Costs at this scheme are well below the QCA's 2012 recommendation (Figure 29). We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme.

i. Lower Fitzroy (BW-LBF)

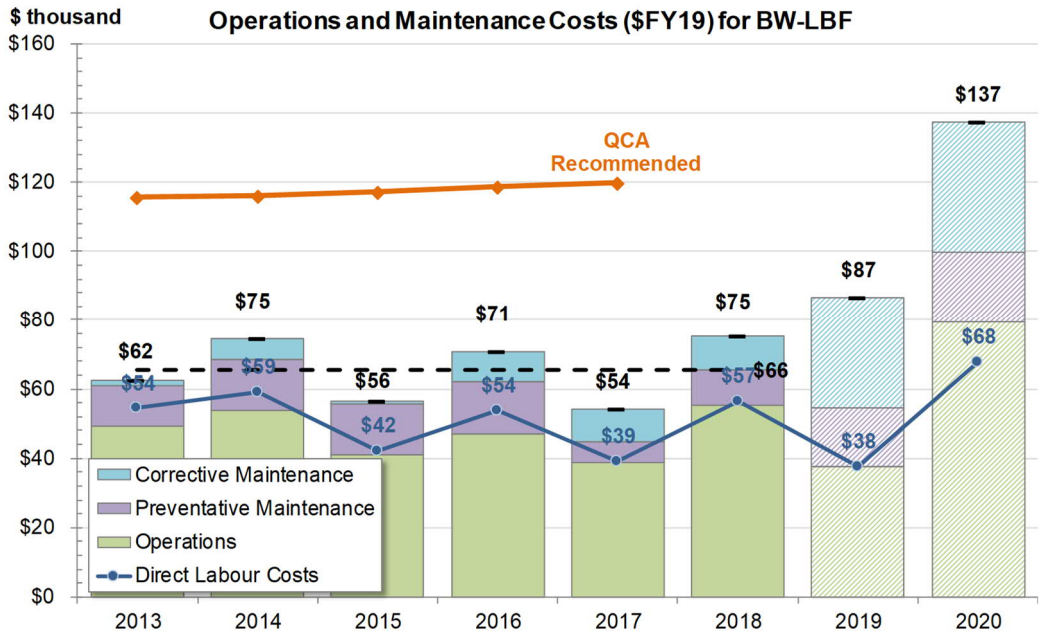


Figure 30 Operations and Maintenance Costs at BW-LBF

Cyclone Debbie damaged Eden Bann Weir in FY2017 which resulted in increased operations costs in FY2018.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be almost 50% lower than the QCA's 2012 recommendation (Figure 30).

j. Nogoa Mackenzie (BW-LBN)

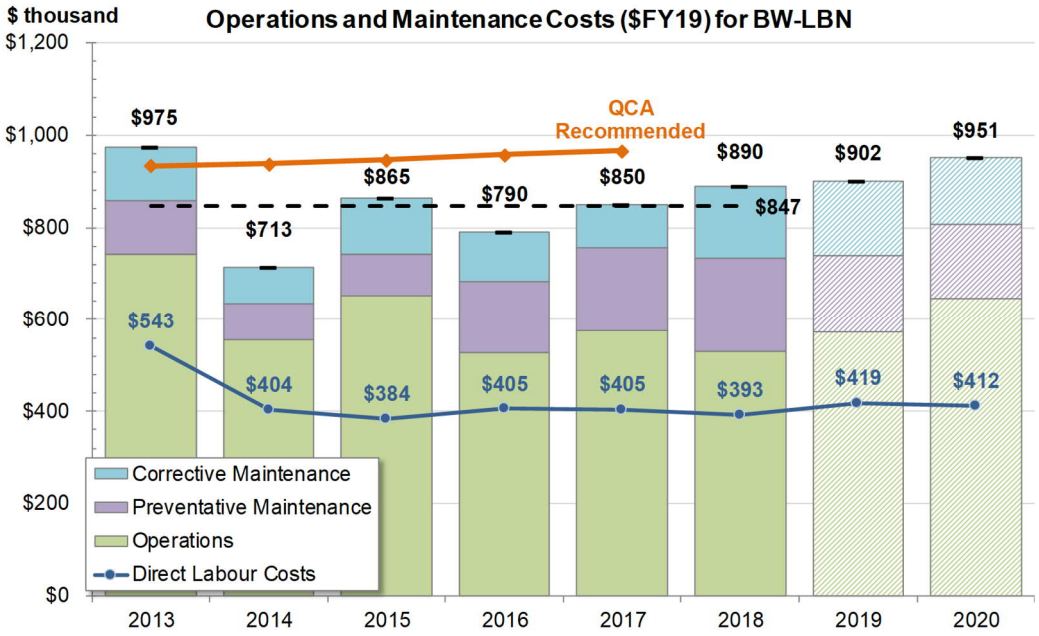


Figure 31 Operations and Maintenance Costs at BW-LBN

There are a variety of assets at Nogoa Mackenzie (such as the lift and regulating gates and the treatment plant) that are near end-of-life and have caused increased levels of maintenance.

This scheme was affected by cyclone Oswald in 2013. Costs do not vary significantly at this scheme, although Sunwater has noted that contract, legal and administration costs have fluctuated in this scheme. We note that the increased contractor expenditure may be offset by reduced labour expenditure. We also note that Sunwater submission makes reference to incurring one-off legal and administration costs in the historical period, and indicates that specific projects (e.g. the recreational facility handover) are the driver for future costs. We consider these fluctuations to be an example of operational variability, and believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be about 10% lower than the QCA's 2012 recommendation (Figure 31).

4.2.3 Bundaberg Region Bulk Water Schemes

The bulk water schemes associated with the Bundaberg Region are:

k. Bundaberg (BW-BBB)
l. Lower Mary (BW-BBL)
m. Barker Barambah (BW-BBR)
n. Upper Burnett (BW-BBU)
o. Boyne (BW-BBY)
p. Three Moon (BW-LBT)

k. Bundaberg (BW-BBB)

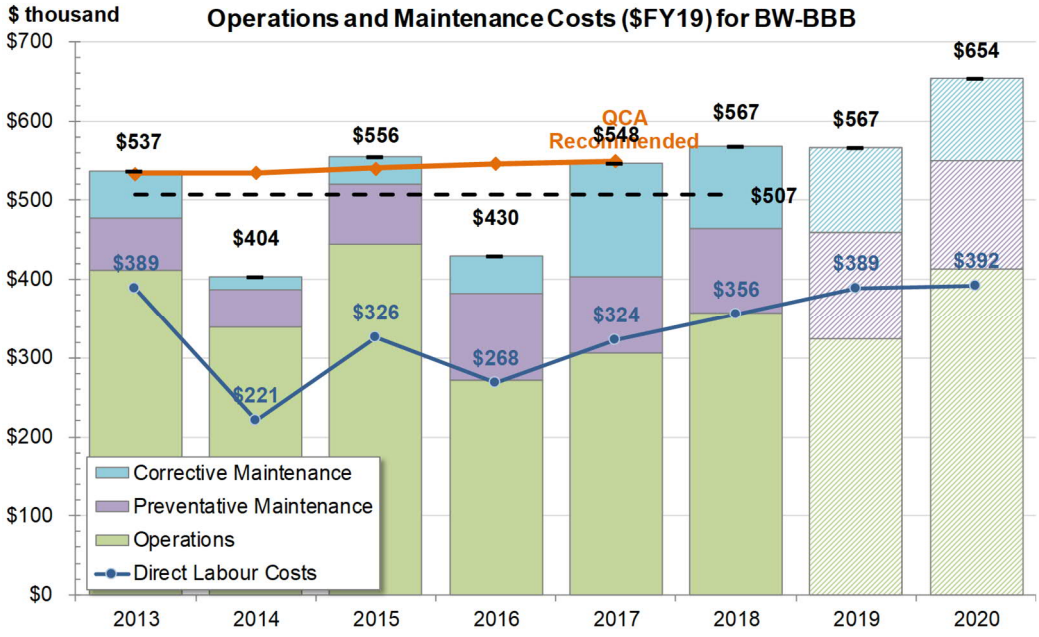


Figure 32 Operations and Maintenance Costs at BW-BBB

The Bundaberg bulk water scheme has had high water levels for the past six years which has forced delays to scheduled asset refurbishment and resulted in steadily increasing maintenance workloads, in particular on the Ben Anderson Barrage shutters. Some of these costs will reduce when the assets are refurbished or replaced.

The scheme is subject to flooding and had abnormally low maintenance levels in FY2019 while flood repairs were carried out. Sunwater notes in its submission to the QCA's draft report that recent concern about fish habitats has increased environmental costs, and that weed control costs have increased due to a higher level of focus around Sunwater's obligations under the Biosecurity Act 2014. We note that Sunwater has stated that acrolein usage (for chemical injections to control weeds) was normal in four of the six years due to hot and dry conditions with clear water enabling weed growth. [79] We view these as issues that contribute to the variability of the scheme that are addressed via the adopted long-term averaging approach.

[79] Document reference: QCA Information Request 35_Weed control

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be about 10% lower than the QCA's 2012 recommendation (Figure 32).

I. Lower Mary (BW-BBL)

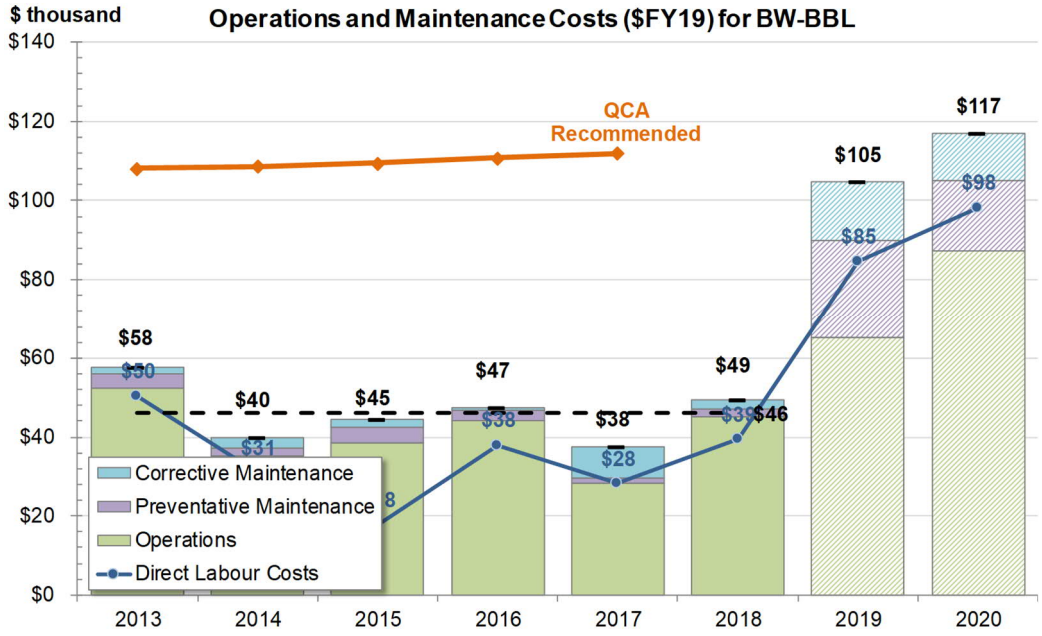


Figure 33 Operations and Maintenance Costs at BW-BBL

Many assets at the Lower Mary bulk water scheme are near or at end-of-life, especially the baffle plates at the Tinana and Mary Barrages. High river flows have prevented access to replace displaced rock. Maintenance costs are projected to increase until these issues can be resolved.

The delayed works do not appear to be major, with the exception of the rock downstream of the Mary Barrage, and we have not seen evidence that suggests an ongoing three-fold increase in maintenance costs for FY2019 and FY2020. We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be considerably lower than the QCA's 2012 recommendation (Figure 33).

m. Barker Barambah - BBR

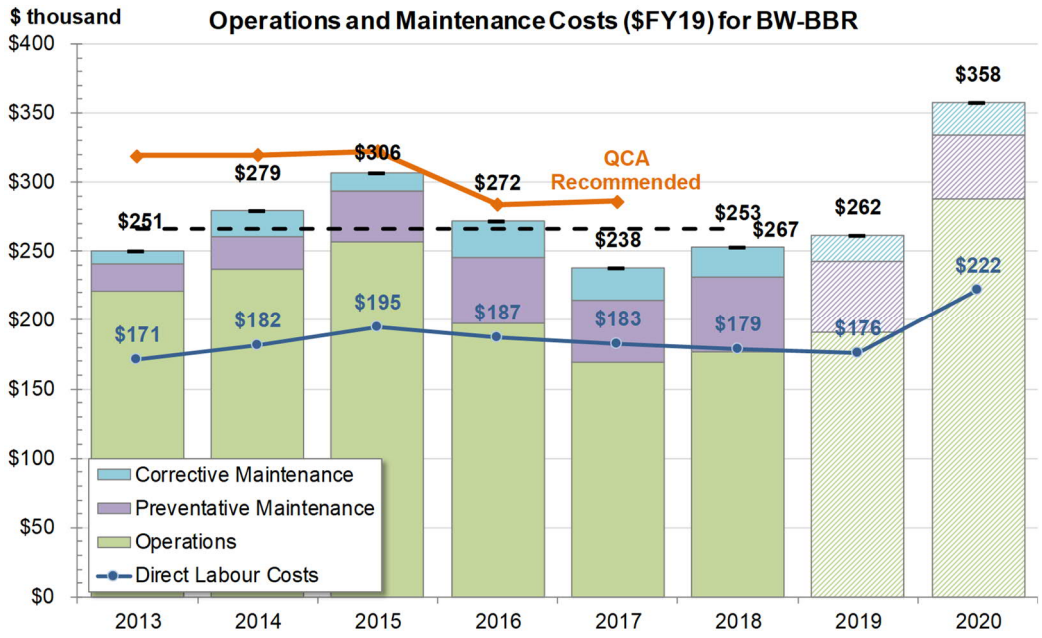


Figure 34 Operations and Maintenance Costs at BW-BBR

O&M costs at the Barker Barambah bulk water scheme have been relatively stable apart from increased operations costs in FY2015 as a result of high river levels. Maintenance costs have increased at Silverleaf Weir, which is due for refurbishment. Sunwater notes in its November 2019 submission that the cost of river surveillance increased in FY2019, citing the need to optimise water ordering and usage due to decreasing water supplies. We view water supply as a source of variability.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be slightly lower than the QCA's 2012 recommendation (Figure 34).

n. Upper Burnett (BW- BBU)

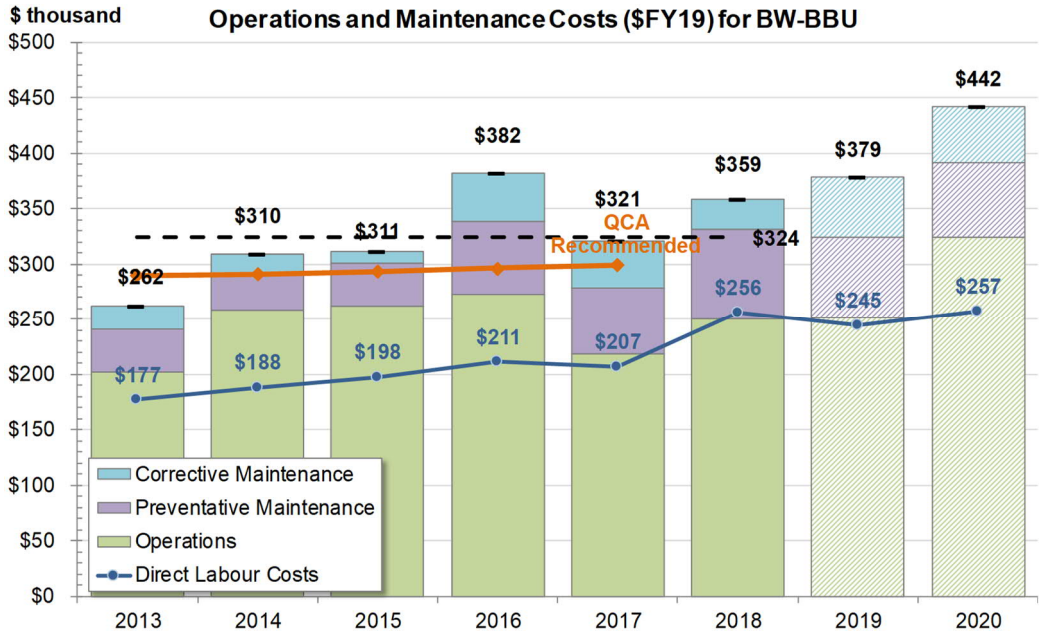


Figure 35 Operations and Maintenance Costs at BW-BBU

O&M costs at the Upper Burnett bulk water scheme have been relatively stable apart from the impact of the FY2015 flood event. Successive floods have damaged Jones Weir and high-water levels have prevented access for refurbishment, so maintenance costs have increased.

It is likely that maintenance costs will reduce after the refurbishment works are completed, but this scheme remains subject to flood events and damage is likely to recur in the future. Sunwater notes that there has been an increase in concern for fish habitats, that early years were affected by flood restoration works, and that current low levels of water supply have increased surveillance of the river. We consider these as examples of weather and operational variability.

Although costs are slightly higher than the QCA's 2012 recommendation (Figure 35), we believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme.

o. Boyne - BBY

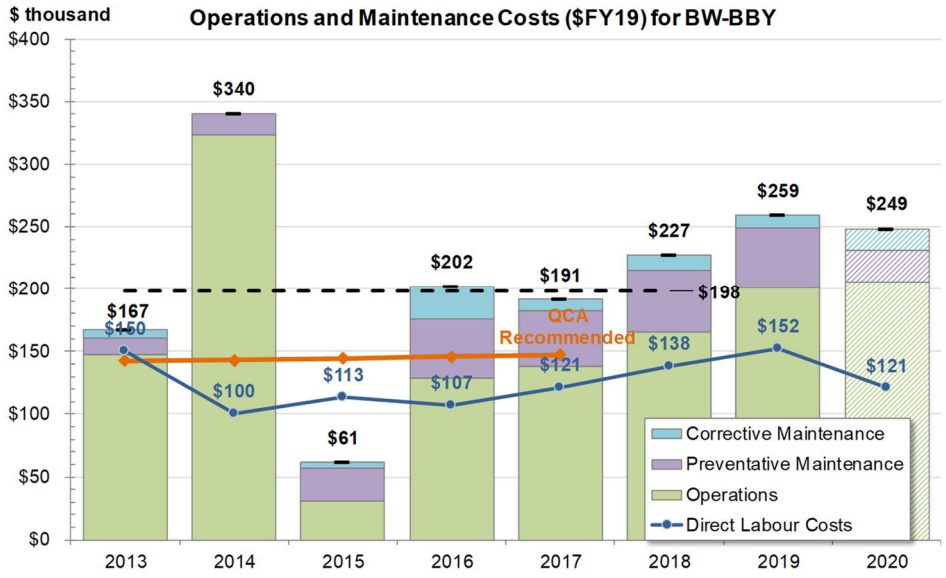


Figure 36 Operations and Maintenance Costs at BW-BBY

Operational costs at this scheme have consistently been above the QCA's 2012 recommendation (Figure 36) and have experienced a significant degree of variability. This scheme was subject of a flood claim and incurred substantial legal fees, which impacted costs over FY2013 to FY2015.[80] Since these were one-off costs, we have removed them in order to establish a representative year for this scheme.

We believe that it is reasonable to use the average of the past six years (removing the flood-related legal costs) as a 'typical' year for this scheme. The six-year average annual cost is therefore $244,200, which is 65% above the QCA's 2012 recommendation.

p. Three Moon (BW-LBT)

O&M costs at Three Moon Creek bulk water scheme have remained fairly consistent. There has been damage at Mulgildie Weir as assets deteriorate, but operational costs have generally varied according to water levels.

Costs are about 10% higher than the QCA's 2012 recommendation and have been since before FY2013. We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this will be approximately 10% higher than the QCA's 2012 recommendation (Figure 37).

[80] Sunwater 2015 Annual Performance Report - Boyne Bulk, October 2015

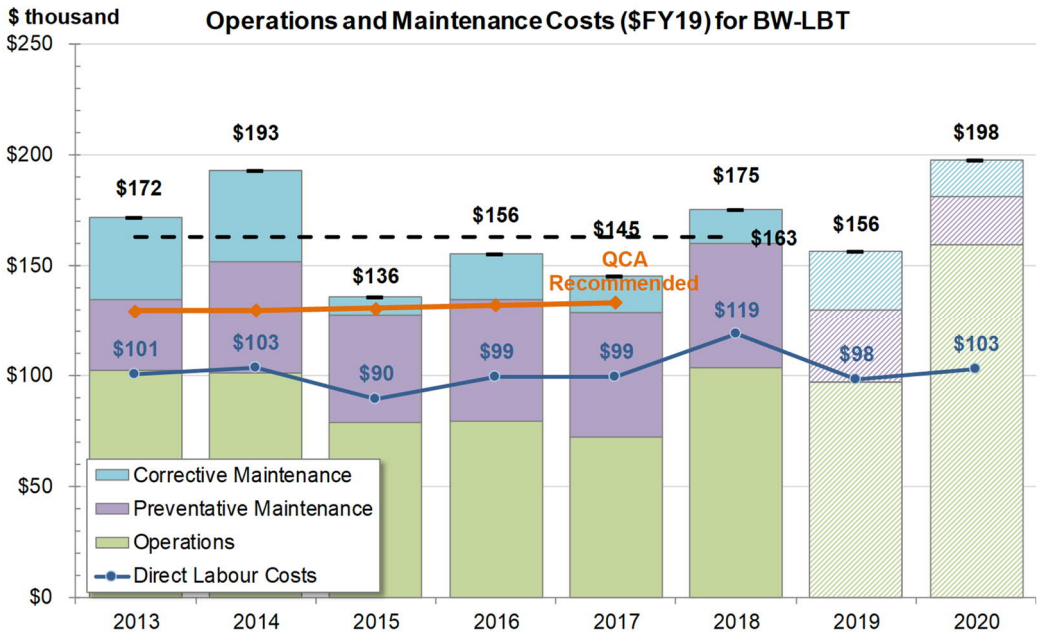


Figure 37 Operations and Maintenance Costs at BW-LBT

4.2.4 South Region Bulk Water Schemes

The bulk water schemes associated with the South Region are:

q. Chinchilla Weir WS (BW-IBH)
r. Maranoa WS (BW-IBM)
s. Cunnamulla Weir WS (BW-IBN)
t. St George WS (BW-IBS)
u. Macintyre Brook WS (BW-IBT)
v. Upper Condamine WS (BW-IBU)

q. Chinchilla Weir (BW-IBH)

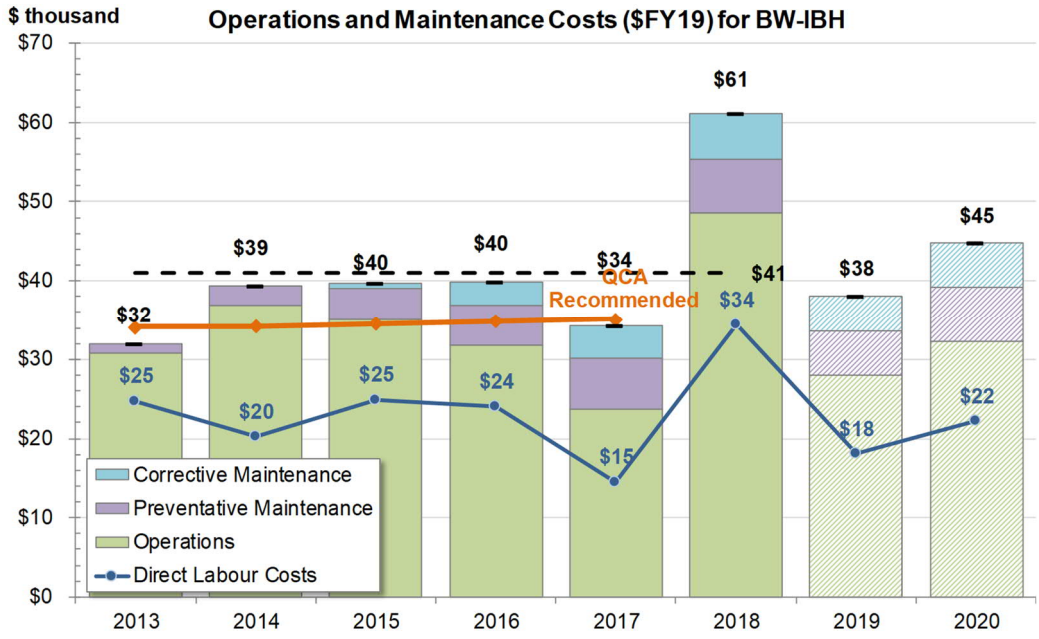


Figure 38 Operations and Maintenance Costs at BW-IBH

Chinchilla Weir bulk water scheme experienced high water levels in FY2018 that required higher than usual operational costs (travel costs are significant for this scheme, and repeated visits for operations reasons are costly). Costs are relatively low for this scheme, so the impact of extra trips is more significant than it would be for larger schemes.

Aside from FY2018, costs have remained consistent at about 20% above the QCA's 2012 recommendation (Figure 38). We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme.

r. Maranoa (BW-IBM)

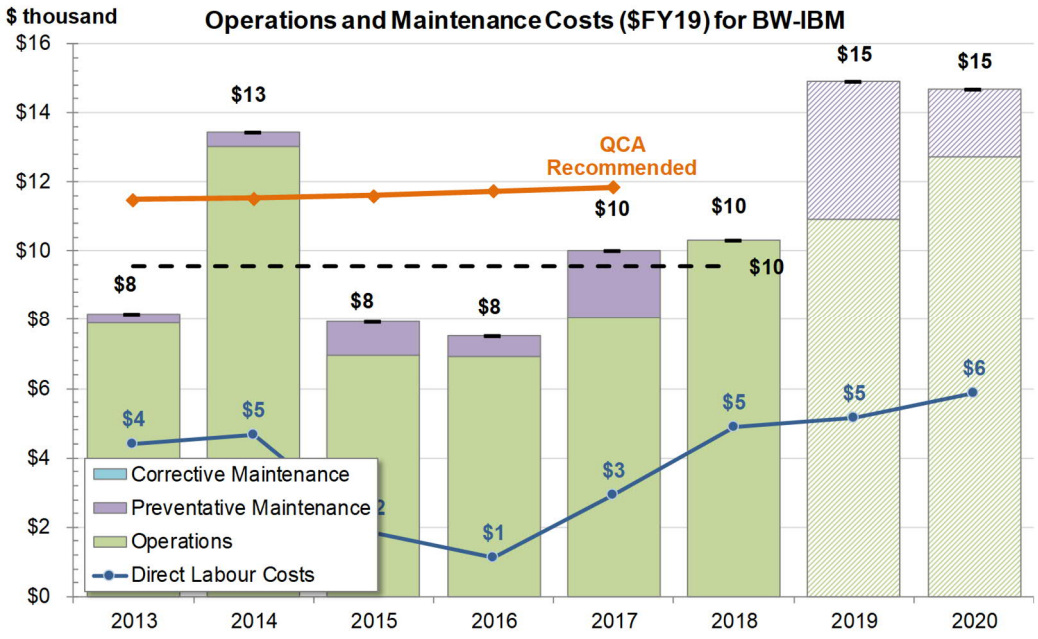


Figure 39 Operations and Maintenance Costs at BW-IBM

The Maranoa bulk water scheme is another small scheme (like Chinchilla) where occasional events can significantly increase annual costs. Unusual water levels in FY2013 caused an increase in operational costs, but on average costs have remained slightly below the QCA's 2012 recommendations (Figure 39).

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme.

s. Cunnamulla Weir (BW-IBN)

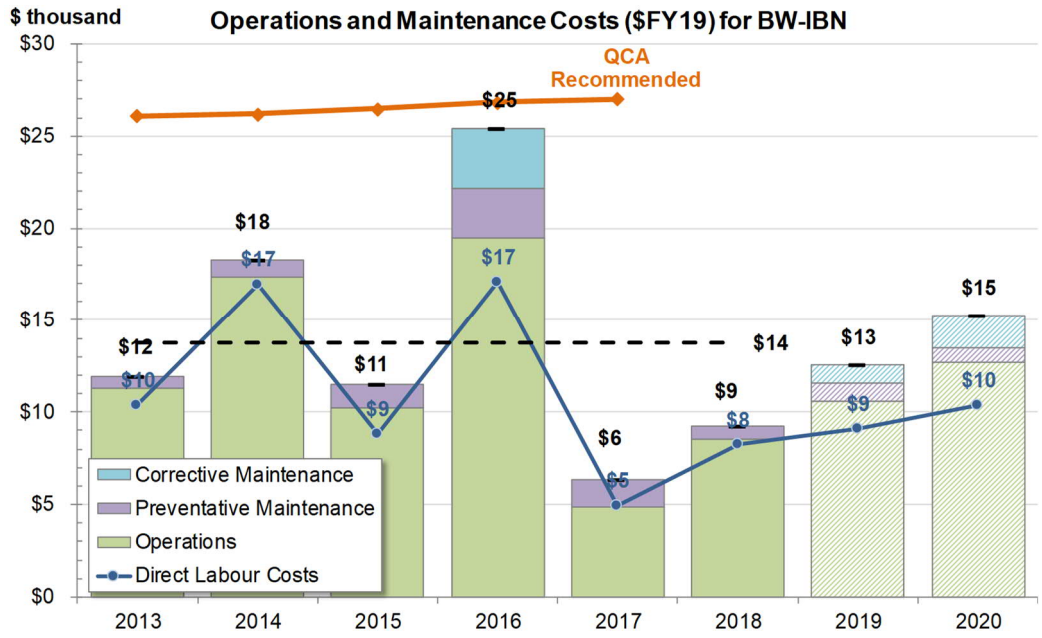


Figure 40 Operations and Maintenance Costs at BW-IBN

Cunnamulla bulk water scheme is another that is distant from Sunwater's operations centre and therefore incurs travel costs when visits are required. It is also a small scheme, and costs vary considerably if additional visits are required. Costs have been approximately 50% of the QCA's 2012 recommendations (Figure 40). We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme.

t. St George (BW-IBS)

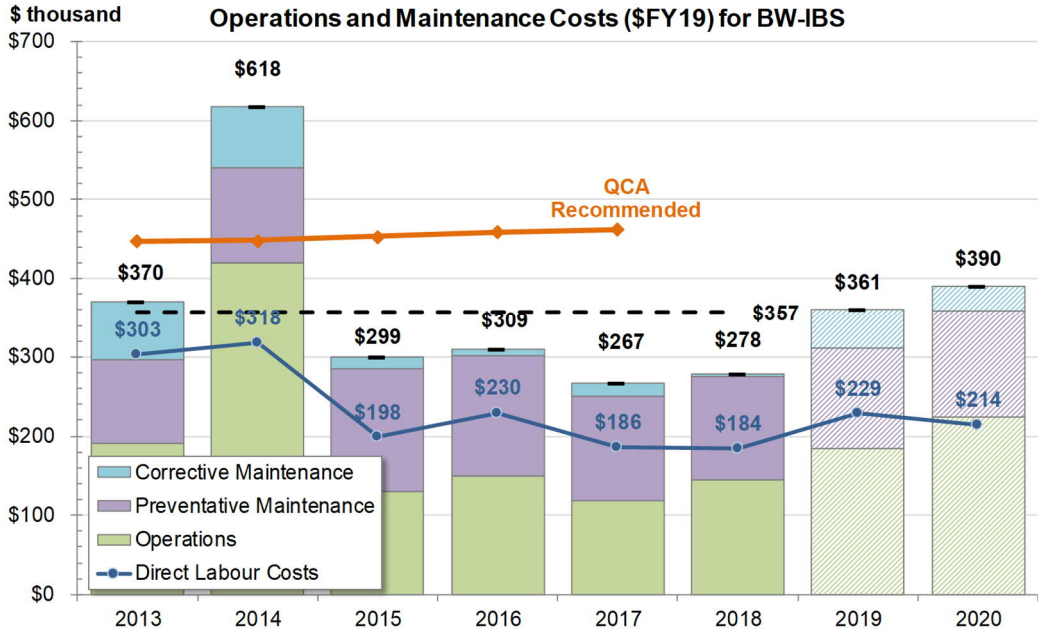


Figure 41 Operations and Maintenance Costs at BW-IBS

Apart from higher than usual operations costs in FY2014 caused by high water levels, costs at the St George bulk water scheme have been consistent and well below the QCA's 2012 recommendation.

Flood events occur at this scheme, and we believe it would be prudent to assume that another may occur during the price path.

We therefore believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme, noting that this cost is well below the QCA's 2012 recommendation (Figure 41).

u. Macintyre Brook (BW-IBT)

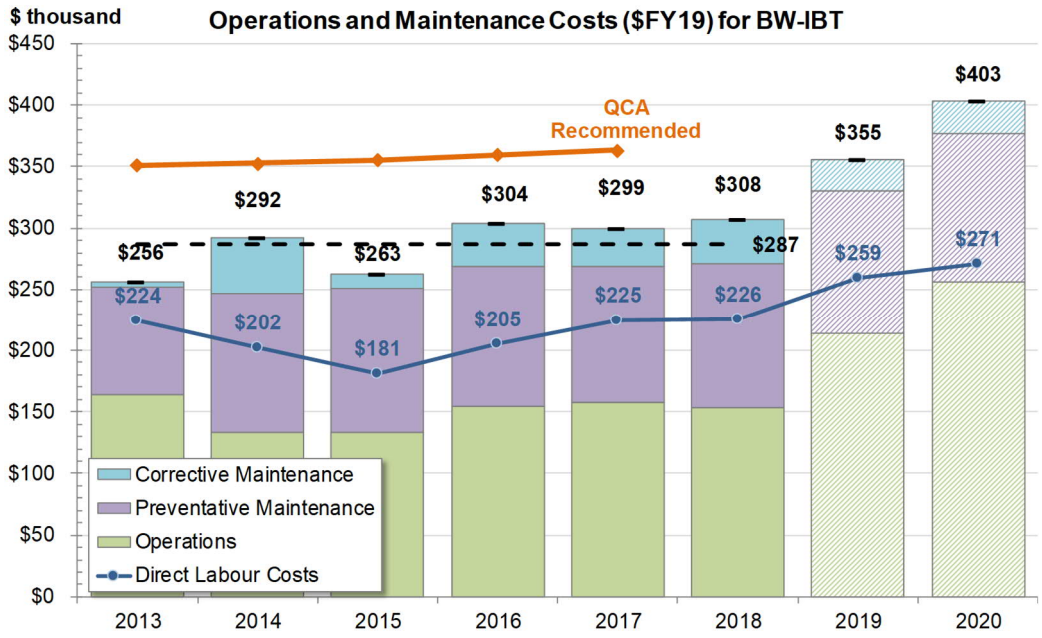


Figure 42 Operations and Maintenance Costs at BW-IBT

The Macintyre Brook bulk water scheme has had consistent annual costs since FY2014, at levels well below the QCA's 2012 recommendation (Figure 42). Sunwater notes that labour costs were abnormally low during FY2014, FY2015 and FY2016 due to 'changes in the operating model'. We regard this as an example of variation caused by operational factors.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme.

v. Upper Condamine (BW-IBU)

The Upper Condamine bulk water scheme experienced high water levels in FY2017 but has otherwise had consistent annual O&M costs. The North Branch needs de-silting on average every two or three years, but otherwise O&M costs do not vary a great deal (Figure 43).

Sunwater proposes in its November 2019 submission that FY2019 costs are a better indication of future price path period costs, stating that direct labour has increased in recent years, consistent with Sunwater's strategy to improve time writing. We note that we make an adjustment for the time writing issue separately (refer to Section 4.5) and recommend that the QCA do not accept this further scheme-specific adjustment.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme.

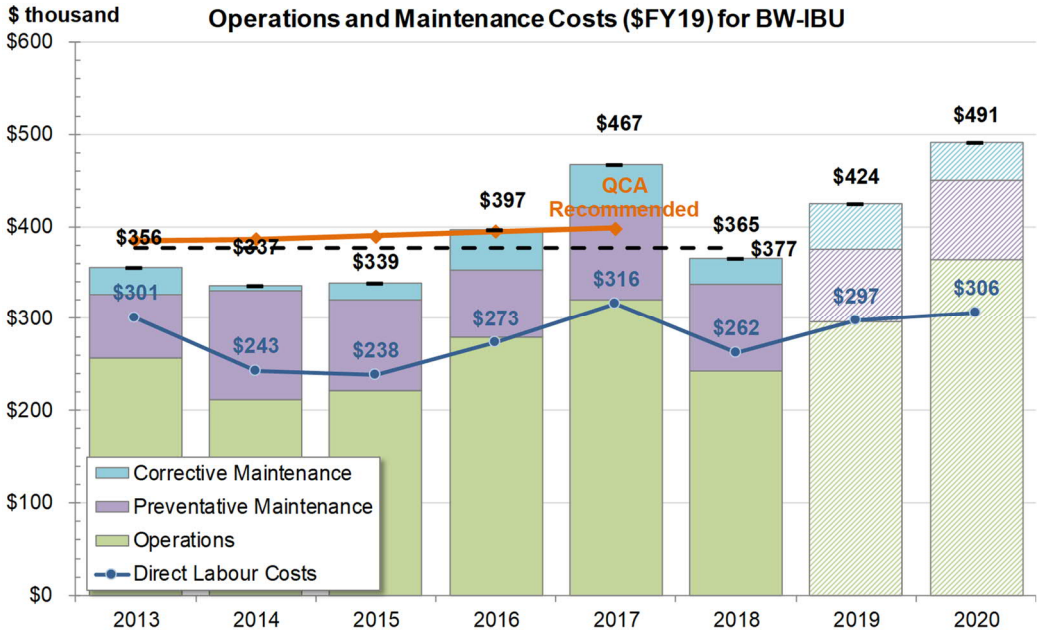


Figure 43 Operations and Maintenance Costs at BW-IBU

4.3 Operations and Maintenance Costs by Distribution Scheme

Distribution schemes tend to have higher preventative maintenance costs, particularly where they have channel supply systems that require weed control. They are therefore sensitive to the cost of acrolein, and this issue has been addressed separately.

Sunwater has a documented program and strategy for weed management.[81] [82] Sunwater's weed management program includes the use of chemical controls (the application of Acrolein, an aquatic herbicide), mechanical control (slashing), biological controls and water level manipulation.

Sunwater's direct weed control costs (indirect costs are included in corporate costs attribution mechanism) for the five irrigation schemes in this review scope are outlined in Table 21. [83] This represents 72% of the direct preventative maintenance costs of the five irrigation schemes over the historical FY2013 to FY2018 period. Figure 44 provides a graphical representation of the historic weed control costs, along with the quantity of Acrolein[84] used.

Table 21 Direct Weed Control Costs ($'000s, FY2019)

	2013	2014	2015	2016	2017	2018	Average
BIG - Bundaberg IS	$484	$835	$817	$860	$908	$784	$782
AIE - Burdekin IS	$1,646	$1,825	$2,058	$2,177	$2,048	$1,218	$1,829
KIA - Eton IS	$208	$299	$382	$375	$402	$474	$357
BIC - Lower Mary IS	$42	$11	$26	$29	$22	$18	$24
MIM - Mareeba IS	$359	$358	$332	$259	$290	$235	$305
Total	**$2,739**	**$3,328**	**$3,614**	**$3,699**	**$3,670**	**$2,729**	**$3,297**

[81] Document reference: QCA Information Request 35_Attachment 1_EM13 P2 Weed Management Action Plan
[82] Document reference: QCA Information Request 35_Attachment 2_EM13 G4 Considerations for Managing Weeds
[83] Document reference: QCA Information Request 35_Attachment 3_Historical weed control costs
[84] Acrolein is the only herbicide approved by the Australian Pesticides and Veterinary Medicines Authority (APVMA) to treat weeds in irrigation channels

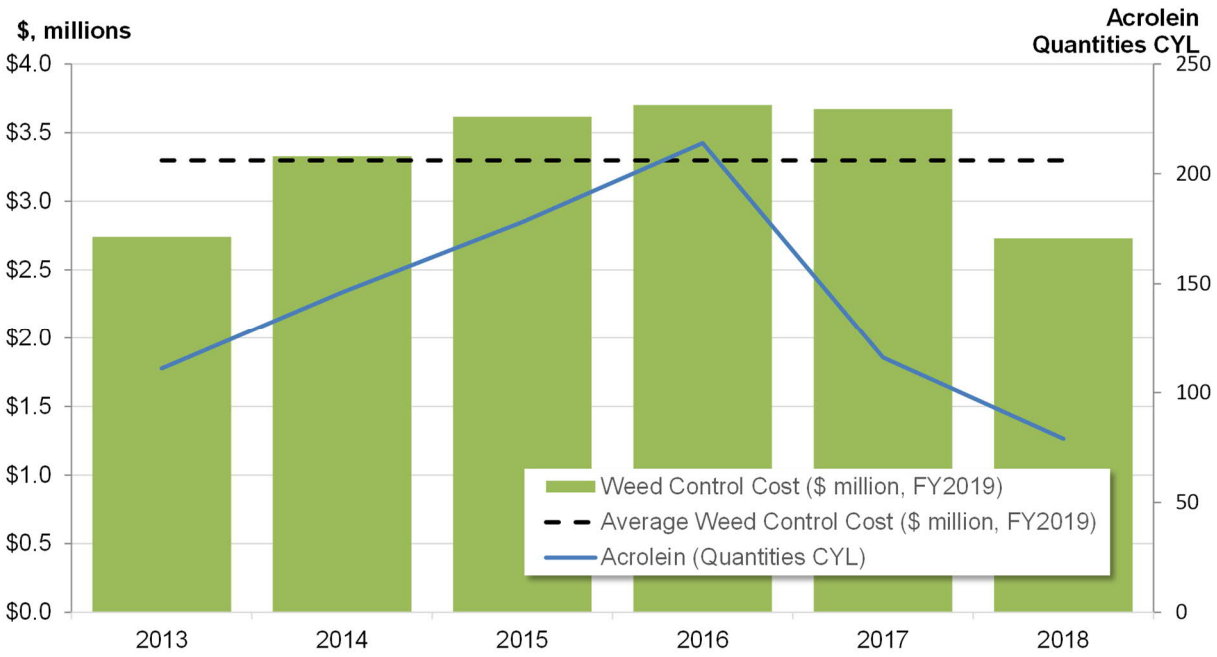


Figure 44 Direct Weed Control Costs and Acrolein Usage ($'000s, FY2019)

We note that there is significant variability in weed management cost over the historical FY2013 to FY2018 period. Sunwater attributes this to weather related variability and increases in the cost of Acrolein.

Weed control costs are weather dependent; with increased weed control activities typically being required following periods of high rainfall and warm weather which promote weed growth. Additionally, flooding and heightened water turbidity at certain locations (such as at Burdekin Haughton) over the period impacted on weed growth by reducing water clarity, reducing the need for some weed management activities. At Burdekin Haughton, which represents over half of the weed control costs over the period, the annual volume of Acrolein used varied from 13CYL (FY2018) to 137CYL (FY2016). We note that the significant variability in weed management costs relating to weather fluctuations lends support to a long-term averaging approach.

When the QCA developed its preventative maintenance projections during the prior price review, the price of a cylinder of Acrolein was $5721 (excluding GST), however increased over the period to $7980.[85] In general, it seems, that the cost of Acrolein has increased at a rate greater than inflation over the historic period.[86]

Sunwater reports that there is currently only one supplier of Acrolein, due to constraints on importing Acrolein into the Australian market. [87] We note that Sunwater has attempted to stabilise prices by entering into a long-term contract to 2022 (with consideration for rate of exchange fluctuations), which we consider to be a prudent and an efficient measure.

We recommend that Sunwater consider testing of and if successful us of alternative products to Acrolein which are currently under testing in Australia.[88]

[85] Document reference: QCA Information Request 35_Weed control
[86] https://www.abc.net.au/news/rural/2017-06-14/ord-trials-chemical-weapon-endothal-for-aquatic-weed-control/8601206 and http://www.watercareer.com.au/archived-news/oic-tests-next-weed-tool
[87] Document reference: QCA Information Request 35_Weed control
[88] Trial of 'Endothal' as an alternative to 'Acrolein' as reporting in https://www.abc.net.au/news/rural/2017-06-14/ord-trials-chemical-weapon-endothal-for-aquatic-weed-control/8601206 and http://www.watercareer.com.au/archived-news/oic-tests-next-weed-tool

Irrigation schemes also generally have a much higher cost base than bulk water schemes (only two bulk water schemes have operations and maintenance costs over $1 million, whereas Burdekin irrigation scheme averages around $6 million per annum).

In keeping with Sunwater's original 2014 Implementation Plan, we derive base year operations and maintenance costs by averaging historical data to reflect the expected costs based on long-term average conditions, with adjustments made to the historical dataset where there is clear documentation and justifications for change. We consider that six years of historical data is adequate for this purpose (noting Sunwater's proposition to use five years of historical data in its 2014 Implementation Plan[89]) and have used the available historical data from FY2013 to FY2018 for this analysis. We show the FY2019 and FY2020 budgeted costs for context only.

In its November 2019 submission, Sunwater proposed a number of scheme-specific adjustments as a result of our long-term averaging approach. These, alongside a summary of our position in relation to each issue, are summarised in Table 22 for the irrigation schemes. We have applied the same assessment approach as outlined in Section 4.2.

Table 22 Sunwater's Proposed Scheme-Specific Adjustments, Irrigation Schemes

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM Proposed Adjustment
Burdekin Haughton distribution	Direct labour	*"Direct labour in 2014/15 and 2015/16 was increased due to the intensive treatment of aquatic weeds. Since 2016/17, operations and maintenance at the Burdekin Haughton distribution system has transitioned from being discreetly managed as its 'own' asset, to being part of a regionally focused team. As mentioned previously, part of the risk and fatigue management of Sunwater's regional plan is to upskill staff across the organisation, to ensure we have trained dam operators available when and where they are needed. This resulted in lower direct labour costs in 2017/18 and 2018/19, as some distribution staff spent significant time filling roles in other service contracts. As there was a general decline in aquatic weeds due to increased turbidity in those years, those staff who would otherwise have been needed to deal with the weed, were made available*	$18,000	Sunwater proposes cost increases in labour and materials due to changes in the extent of weed treatment required, changes in the quantity of acrolein required for weed treatment and changes in the cost of acrolein over the price path period. We see this as variability resulting from weather and operational changes, and consider it likely that there will be periods of low weed control activity over the price path period for these same reasons. We also note that an in increase in labour should be offset by a reduction in labour elsewhere. A base year adjustment to account for changes in the cost of acrolein has been addressed separately.	$0

[89] Sunwater (2014). QCA Pricing Practices Recommendations Operating Planning Review and Improvements to Labour Cost Information.

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM Proposed Adjustment
		to cover other roles. This saw a direct reduction in direct labour in Burdekin Haughton."		We recommend that the QCA do not accept these cost increase, on the basis that they are reflected in our base year.	
	Materi-als	*"Material costs relate directly to the increase (decrease) in Acrolein each season. In 2014/15 and 2015/16, we used more than 100 acrolein cylinders at approximately $6k per cylinder. In the past three years, the use of Acrolein has been significantly less (down to 17 cylinders in 2017/18) due to dirty water in channels slowing growth. In 2019/20, we have seen aquatic weed growth increase significantly due to optimal conditions (ie sunny, dry and clean channel water). Based on experience, we expect to have more an extensive aquatic weed season for at least the next two years. Based on observations of weed condition and weed treatments already completed in 2019/20 so far, we expect that Sunwater will require the original materials costs to be reinstated to account for additional cylinders expected to be used and the increased cost of cylinders since 2015/16."*	$156,000		$0
Mareeba-Dimbulah distribution	Direct labour	*"Direct labour in Mareeba-Dimbulah distribution system consists of 22 staff charging collectively 33,430 hours to the service contract, and has been planned using Sunwater's resource planning tool, which was reviewed by AECOM. The increase in costs compared to the QCA's historical average base year reflects Sunwater's business*	$123,000	We make an adjustment for the time writing issue separately (refer to Section 4.5). However, we note that the introduction of a new FTE may represent a cost increase which is not captured in our base year. **Prudency:** This role is not warranted by a change	$0

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM Proposed Adjustment
		strategy to improve transparency of costs, direct charge more labour and reduce local area support rates. There has also been an increase in the combined Mareeba-Dimbulah water supply scheme resource pool of 1 FTE ([redacted]).”		in obligations. However, we view that it is prudent to the extent that it offers future efficiency benefit. **Efficiency:** We consider that the introduction of a [redacted] should be offset by some form of efficiency gain. This has not been accounted for. As such, we do not consider this adjustment efficient. We recommend that the QCA do not accept this scheme-specific adjustment.	
	Legal & adminis-tration	*“Legal and administration costs also required adjustment, as the QCA's historical base year understates the Rubicon software maintenance costs (introduced in 2016/17). In addition to a higher annual cost, Burdekin Haughton distribution, Eton distribution and Mareeba-Dimbulah distribution now have larger shares, as Emerald distribution is no longer a Sunwater scheme. This results in an increase of approximately $12k per scheme.”*	$25,000	This change represents a shift which may not be reflected in the base year. **Prudency:** It is expected that software maintenance costs will be incurred to facilitate efficient operations. We consider this cost prudent. **Efficiency:** We are of the view that these costs should not increase as a result of Emerald transitioning to local management. We consider that Emerald should contribute to the cost, or that opportunity should be sought to scale back software maintenance expenditure in light of its reduced usage. We recommend that the QCA do not accept this cost increase for this scheme.	$0

Scheme	Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM Proposed Adjustment
Eton distribution	Direct labour	*"A reduction as high as the one proposed by the QCA will require a reduction in staff, which will impact Sunwater's ability to meet our service standards... Further, of the seven years of actual costs (2012/13 to 2018/19), direct labour costs have materially exceeded the QCA's base year four times. The historical average used by the QCA is being influenced by the two outlier years, and it has materially impacted the result."*	$149,500	We view these issues raised by Sunwater as an example of the variability caused by weather (flooding). We view it possible that low labour years will be experienced over the price path period, and that this cost is accounted for in our 'typical' base year. We recommend that the QCA do not accept this cost increase for this scheme.	$0
	Direct labour	*"The QCA's contractor base year also needs to increase to reflect the concentrated work currently being undertaken to desilt the channels and balancing storages. While the works will be ongoing, we expect the cost will decrease over time."*	$35,000	We view this as an example of the variability caused by operational drivers (the scheduling of works for operational reasons). We do not view this as a shift (ongoing increase) in requirements over the price path period. We recommend that the QCA do not accept this cost increase for this scheme, on the basis that variability is addressed by our averaging approach.	$0

w. Burdekin (IS-AIE)

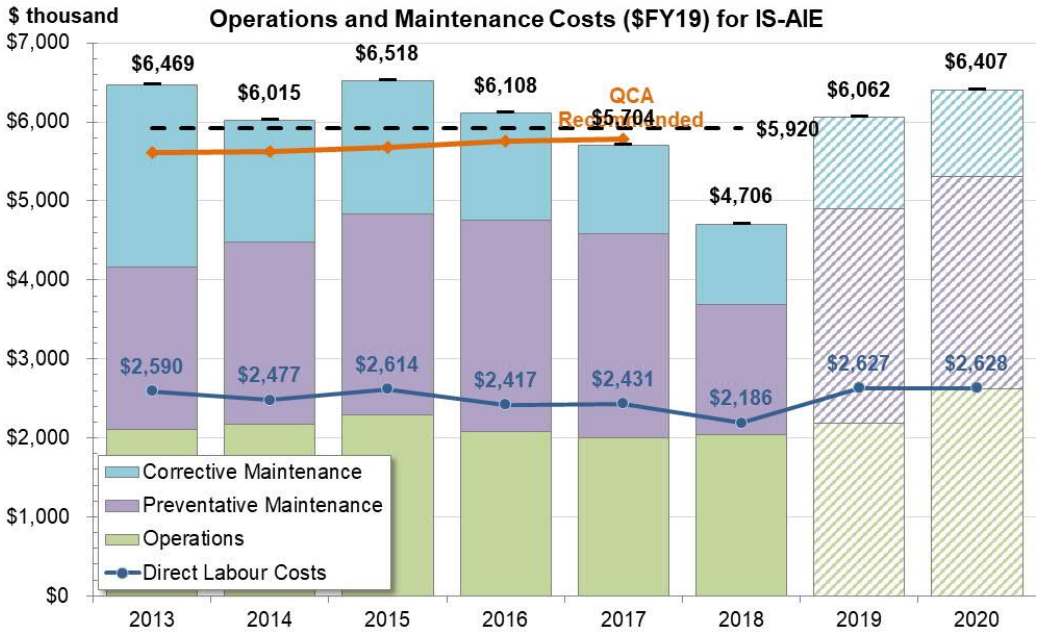


Figure 45 Operations and Maintenance Costs at IS-AIE

O&M costs at the Burdekin irrigation scheme were consistently above the QCA's 2012 recommendations but reduced steadily after FY2015 (Figure 45), although that trend may also reflect Sunwater's worsening time-writing issue. The scheme was impacted by cyclone Debbie early in 2018 and the planned preventative maintenance program could not be completed in FY2018 as a result.

Sunwater notes variation in direct labour costs because of weed growth (from 100 cylinders of acrolein in FY2016 down to 17 in FY2018 due to increased water turbidity), and that the decline in the need for weed control freed staff to work on other schemes in FY2018. Sunwater proposes cost increases in labour and materials due changes in the extent of weed treatment required, changes in the quantity of acrolein required for weed treatment and changes in the cost of acrolein over the price path period. We see this as variability resulting from weather and operational changes and note that an in increase in labour should be offset by a reduction in labour elsewhere. We recommend that the QCA do not accept this cost increase.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for this scheme. The average annual cost is very similar to the QCA's 2012 recommendation for this scheme.

x. Mareeba (IS-MIM)

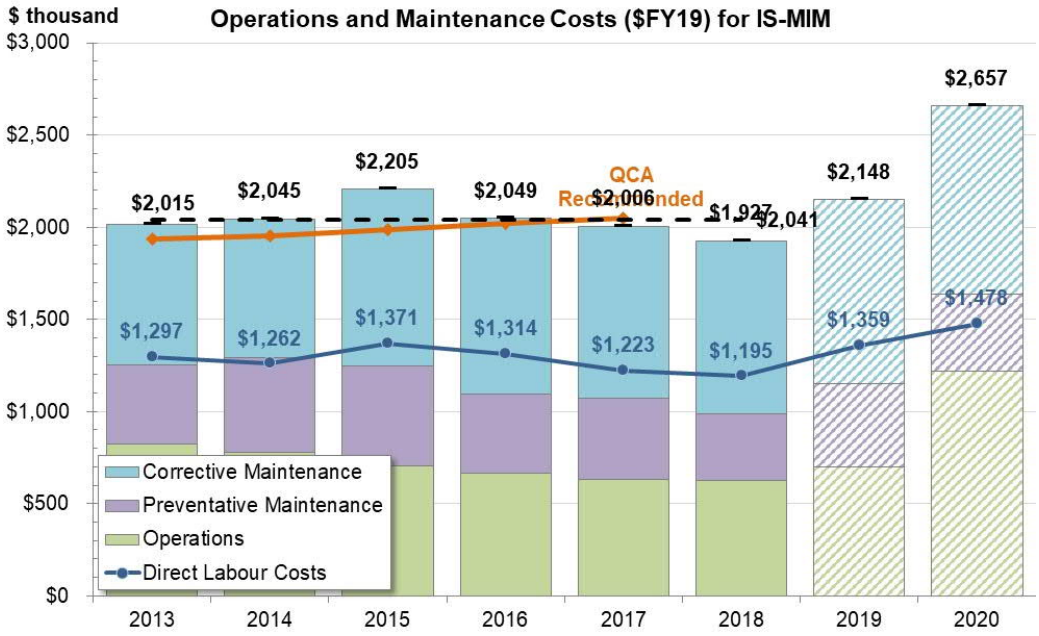


Figure 46 Operations and Maintenance Costs at IS-MIM

O&M costs at the Mareeba distribution scheme have been stable and similar to the QCA's 2012 recommendation since FY2013 (Figure 46), although with a change of emphasis from preventative maintenance to corrective mainly due to repairs of pipework. This scheme was also affected by Cyclone Debbie in 2018.

Sunwater proposed an increase of $123,000 in direct labour, citing improved direct booking of time and the introduction of an additional FTE (one SCADA technician). We note that we make an adjustment for the time writing issue separately (refer to Section 4.5). Further, we consider that the introduction of a SCADA technician should be offset by some form of efficiency gain (Sunwater expects to save 8,300 ML from the Mareeba modernisation works).[90] We recommend that the QCA do not accept this scheme-specific adjustment.

Sunwater also notes that the transition of the Emerald distribution scheme to local management arrangements will mean that legal and administration costs will be allocated to one less scheme, so budgeted costs have increased as a result. No other reason has been provided for the budgeted cost increase in FY2020. We are of the view that these costs should be reduced instead and recommend that the QCA do not accept this cost increase for this scheme.

There are no unusual maintenance issues at this scheme, and we believe that it is reasonable to use the average of the past six years as a 'typical' year for the scheme.

[90] QCA Information Request FR2b - Drivers of proposed increase in base year direct O&M costs.

y. Bundaberg (IS-BIG)

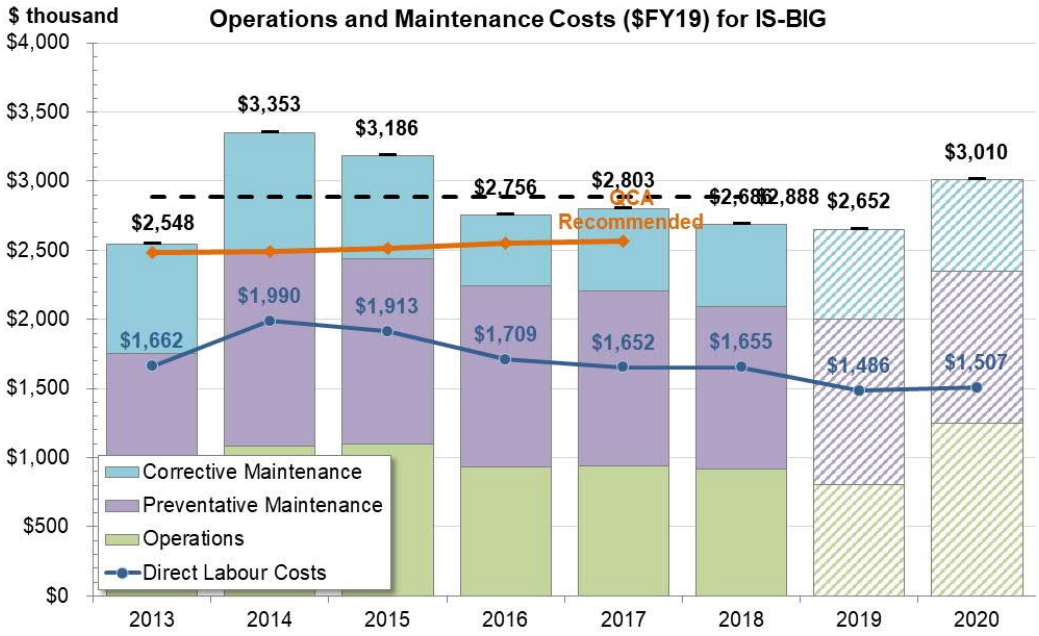


Figure 47 Operations and Maintenance Costs at IS-BIG

Preventative maintenance at the Bundaberg distribution scheme is relatively high because of the need to control weeds. O&M costs have been consistently above the QCA's 2012 recommendation since FY2013. The relatively high costs in FY2014 and FY2015 were incurred as a result of exceptionally high water use.

This scheme is subject to cyclones. We believe that it is reasonable to use the average of the past six years as a 'typical' year for the scheme. This cost would be about 10% higher than the QCA's 2012 recommendation (Figure 47).

z. Lower Mary (IS-BIC)

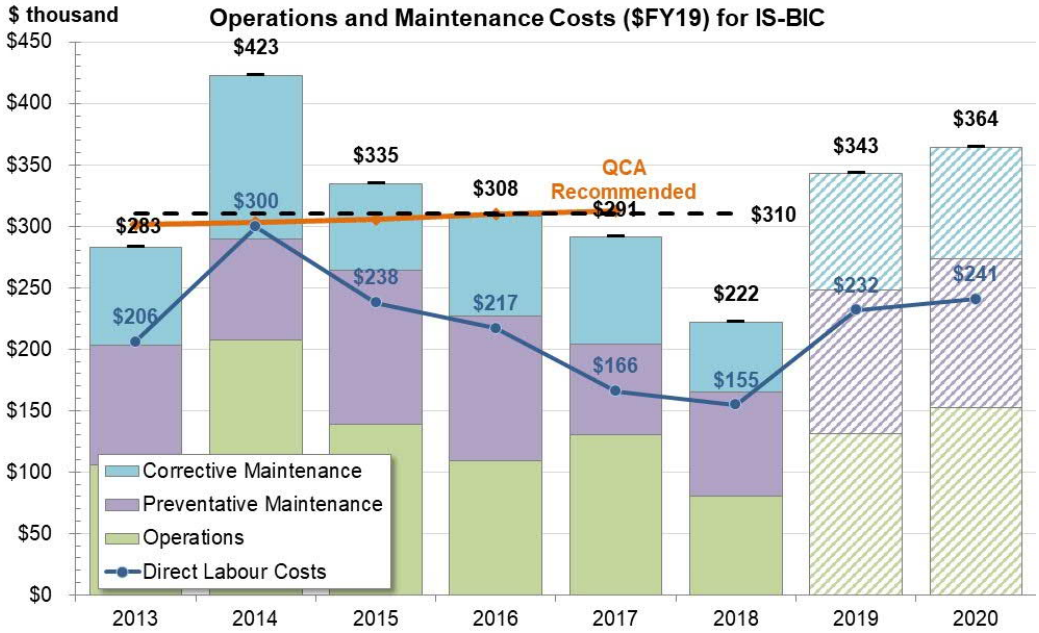


Figure 48 Operations and Maintenance Costs at IS-BIC

The Lower Mary distribution scheme was affected by flooding and cyclone damage in early 2013 but had a steady decline in O&M costs after that. The area suffered floods during the summer of FY2018 which reduced operational and corrective maintenance activity in FY2018.

We believe that it is reasonable to use the average of the past six years as a 'typical' year for the scheme. This cost would be very similar to the QCA's 2012 recommendation (Figure 48).

aa. Eton (IS- KIA)

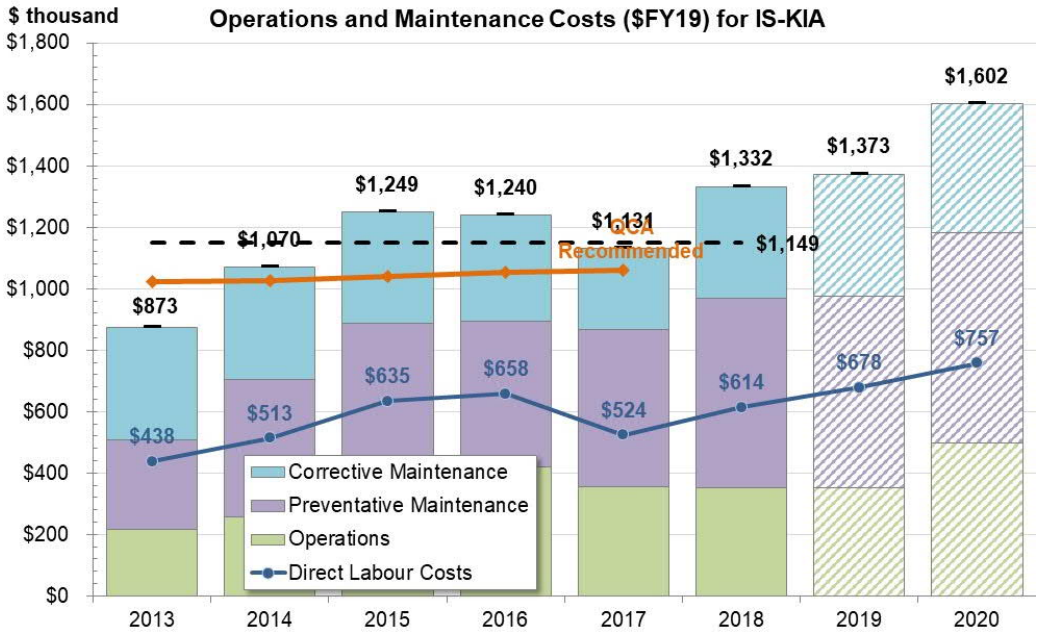


Figure 49 Operations and Maintenance Costs at IS-KIA

The Eton distribution scheme has consistently had O&M costs slightly above the QCA's recommendation. A flood affected year in FY2013 due to Cyclone Oswald reduced operations activity, as did Cyclone Debbie to a lesser extent in 2017.

Sunwater proposes that the six-year average operations and maintenance labour cost would impact Sunwater's ability to meet its service standards and has proposed that the average be increased by $149,500, on the basis that FY2013 and FY2014 were abnormally low-cost years. Sunwater also proposed that the contractor base year needs should be increased by $35,000 to reflect the concentrated work currently being undertaken to desilt the channels and balancing storages. We note that the concentrated work is expected to reduce.

We view these issues raised by Sunwater as an example of the variability caused by weather (flooding) and operational drivers (the scheduling of works for operational reasons).

We believe that it is reasonable to use the average of the past six years as a 'typical' year for the scheme. This cost would be very similar to the QCA's 2012 recommendation (Figure 49).

4.4 Electricity

Electricity costs are incurred by Sunwater's use of pumps and other equipment that consumes high levels of power and are a significant proportion of Sunwater's overall operational costs. Several schemes have been operating under preferential tariffs, but these are being phased out.

Sunwater's electricity cost has consistently exceeded the QCA's accepted electricity cost from FY2014 (Figure 50), which Sunwater attributes to increases in power prices well above the previous forecast. This is supported by the trend in average annual electricity spot prices for Queensland indicated in Figure 50, presents uses sourced from AEMO[91] to show spot prices in nominal terms. The average spot price in FY2018 was more than double the FY2012 price.

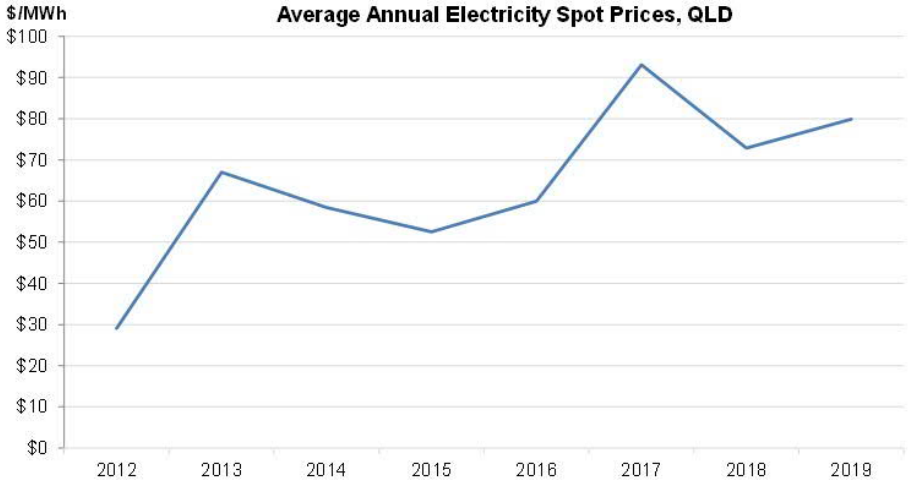


Figure 50 Average Annual Electricity Spot Prices, QLD

4.4.1 Procurement of Electricity

Sunwater follows a formal procurement process in accordance with the Queensland Procurement Policy for the supply of electricity under a market contract arrangement.[92] Since 2012, Sunwater has engaged external market consultants to undertake annual tariff reviews with energy retailers and recommend optimal regulated retail tariffs or market contract arrangements. More recently Ergon Energy Retail analysed some larger sites on transitional tariffs to provide regulated retail tariff options for Sunwater to consider post FY2020.

Sunwater intends to develop an Energy Procurement Strategy before the end of 2019 that will detail a procurement approach for sites subject to transitional and obsolete tariffs, and that it is currently assessing the opportunity to enter into the Queensland Government Large Electricity Supply Contract. Haughton Pump Station (in the Burdekin Haughton scheme) moved to a contestable tariff in FY2019, reducing costs there.

On the basis that Sunwater obtains competitive tariffs via a formal procurement process, we consider the procurement of electricity to be efficient.

4.4.2 Sunwater's Current Usage of Electricity during Peak and Off-peak Periods

Previous assessment of Sunwater's operations concluded that Sunwater has not historically sought to optimise pumping regimes (Halcrow, 2011).

We investigated how Sunwater operates their pumps, which are its main form of energy consumption, to assess the prudency of electricity use. This required a time-of-use assessment based on the pre-sorted peak and off-peak data provided by Sunwater for three bulk water schemes and five distribution schemes. The results of these analyses are attached in Appendix A.

[91] AEMO (2019). Data Dashboard.
[92] RfI A20.

The analysis concluded that pump stations regimes have been optimised to perform most of their pumping within off-peak tariff periods.

4.4.3 Tariffs in Use

We investigated electricity tariffs selected for Burdekin Bulk Water Supply (BW-ABB), Bowen Broken Bulk Water Supply (BW-KBB), Eton Bulk Water Supply (BW-KBE), Bundaberg Distribution (IS-BIG), Burdekin Distribution (IS-AIE), Lower Mary Distribution (IS-BIC) and the Mareeba-Dimbulah Distribution (IS-MIM). The data used included:

- Sunwater/QCA metered energy data and current network tariff and connection data
- Sunwater's publicly available information on scheme details and operations
- QCA's publicly available prior submissions/assessments and recently released price rulings
- AEMO's publicly available National Electricity & Gas Forecasting data.

Sunwater engages external market consultants to undertake regular annual tariff reviews and recommend the optimal regulated tariffs or market contract arrangements.

In our assessment, we reviewed the schemes with the highest electricity costs to assess electricity consumption, tariff selection and costs, and compared the results to those obtained by Sunwater to confirm that prudent and efficient electricity costs are incurred at each scheme. We have applied FY2020 Ergon Energy retail tariffs in our calculations.

A summary of this analysis is presented in Table 23, which compares the average annual consumption presented by Sunwater (covering the period from March 2014 to Feb 2018) to the average consumption found by AECOM using the data provided (FY2014-18). A commentary on the quality of the data provided is also included.

Where the data is described as 'complete', both consumption (kWh) and demand (power in kW) data was available. 'Incomplete' data indicates that consumption, demand or time of use information was not available.

Large meters in the schemes (generally at pumping stations) were prioritised because they have the most complete and available data and represent the majority of the electricity consumption. Where sufficient complete data is available for at least 90% of energy consumption for the scheme, we have deemed the range of data sufficient to assess electricity costs and escalations.

Table 23 Electricity Consumption FY2014-18

Scheme	Sunwater's Declared Average Consumption (kWh)	AECOM's Estimated Average Annual Consumption (kWh)	AECOM Comments on Energy Data provided
Bulk Water Schemes			
BBR–Barker Barambah	[redacted]	[redacted]	Five years' incomplete monthly data, covering, covering 88% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
KBB-Bowen Broken			Five years' complete interval data for Large Sites, covering 85% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
BBY–Boyne			No NMI, Site Name or Energy Data provided.
BBB–Bundaberg			All site data in the form of single year annual totals provided by Sunwater

Scheme	Sunwater's Declared Average Consumption (kWh)	AECOM's Estimated Average Annual Consumption (kWh)	AECOM Comments on Energy Data provided
ABB–Burdekin	[redacted]	[redacted]	Four years' incomplete quarterly data available for Large Sites, covering 5% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
LBC–Callide			All site data in the form of single year annual totals provided by Sunwater
IBH–Chinchilla Weir			No NMI, Site Name or Energy Data provided.
IBN–Cunnamulla Weir			No NMI, Site Name or Energy Data provided.
LBD-Dawson			Five years' incomplete quarterly data, covering 99% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
KBE–Eton			Combination of five years' complete interval data and five years' incomplete monthly data for large sites, covering 59% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
LBF–Lower Fitzroy			All site data in the form of single year annual totals provided by Sunwater.
BBL–Lower Mary			No NMI, Site Name or Energy Data provided.
IBT–Macintyre Brook			No NMI, Site Name or Energy Data provided.
IBM–Maranoa			No NMI, Site Name or Energy Data provided.
MBM–Mareeba			All site data in the form of single year annual totals provided by Sunwater
LBN–Nogoa			All site data in the form of single year annual totals provided by Sunwater
KBP–Pioneer			All site data in the form of single year annual totals provided by Sunwater
ABP–Proserpine			All site data in the form of single year annual totals provided by Sunwater
IBS–St George			All site data in the form of single year annual totals provided by Sunwater
LBT–Three Moon			All site data in the form of single year annual totals provided by Sunwater
BBU–Upper Burnett			All site data in the form of single year annual totals provided by Sunwater

Scheme	Sunwater's Declared Average Consumption (kWh)	AECOM's Estimated Average Annual Consumption (kWh)	AECOM Comments on Energy Data provided
IBU–Upper Condamine	[redacted]	[redacted]	Five years' incomplete monthly data, covering 99% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
Distribution Schemes			
BIG–Bundaberg	[redacted]	[redacted]	Combination of five years' complete interval data, five years' complete monthly data and incomplete monthly data for large sites, covering 99% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
AIE–Burdekin			Combination of five years' complete interval data, five years' complete monthly data and incomplete monthly data for large sites, covering 90% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
KIA–Eton			Five years' complete monthly data for Large Sites, covering 90% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
BIC–Lower Mary			Combination of five years' complete interval data, five years' complete monthly data and incomplete monthly data for large sites. Data covers 81% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater
MIM-Mareeba			Five years' complete monthly data for large sites, covering 96% of total consumption. The balance of site data in the form of single year annual totals provided by Sunwater

Table 23 shows that very similar results have been produced despite the different approach taken to estimating annual averages. Larger discrepancies relative to total consumption (Upper Condamine Supply, Lower Mary Distribution) can be attributed to a single site in each scheme, possibly reflecting different data sets being used by Sunwater's consultant and ourselves. Other discrepancies can be attributed to the different approach taken to deriving average consumption.

Where site energy data is in the form of an annual total sourced from the National Greenhouse and Energy Reporting Scheme (NGER), we used this to represent average consumption for the site, in the absence of more suitable data.

The impact of this is minimal because total consumption of these sites is typically less than 10% of total consumption for the major schemes.

For small schemes, where all consumption data has been provided in this form, we used the Sunwater average consumption to assess for tariff costs. These sites have also been identified above.

We determined the current optimal tariff by reviewing tariffs currently available at specific sites (Table 24) and used this to assess the prudency and efficiency of Sunwater's tariff selection.

We took the average annual consumption during the FY2014-18 period for each site and compared this to site energy data to identify a *representative year* within the data set, defined as the year with

total consumption that was closest to the calculated average annual consumption, and used the recorded pattern of demand in that year to evaluate tariff options.

This representative year was then costed according to the currently used tariff, as well as the alternative FY2020 Ergon Energy Retail tariffs available to that site, to generate a total cost.

Where only a single year of data was available for the small meters in the scheme, we used this data as the representative year to find electricity costs. The impact of this issue is minimal because total consumption of these small meters is typically less than 10% of the scheme total.

In its November 2019 submission Sunwater proposed alternative tariffs for pump stations in Eton distribution and a pump station at Bundaberg distribution (Quart Pop), noting issues relating to the eligibility of schemes. We have reviewed and updated our tariff selection for these locations accordingly.

For sites where the available data is sufficiently complete (a full year of monthly consumption data sorted into the peak and off-peak periods, along with corresponding demand data), we calculated a cost for the relevant tariffs to assess the current optimal tariff.

Table 24 Pump station FY2020 Tariff and Current Optimal Tariffs

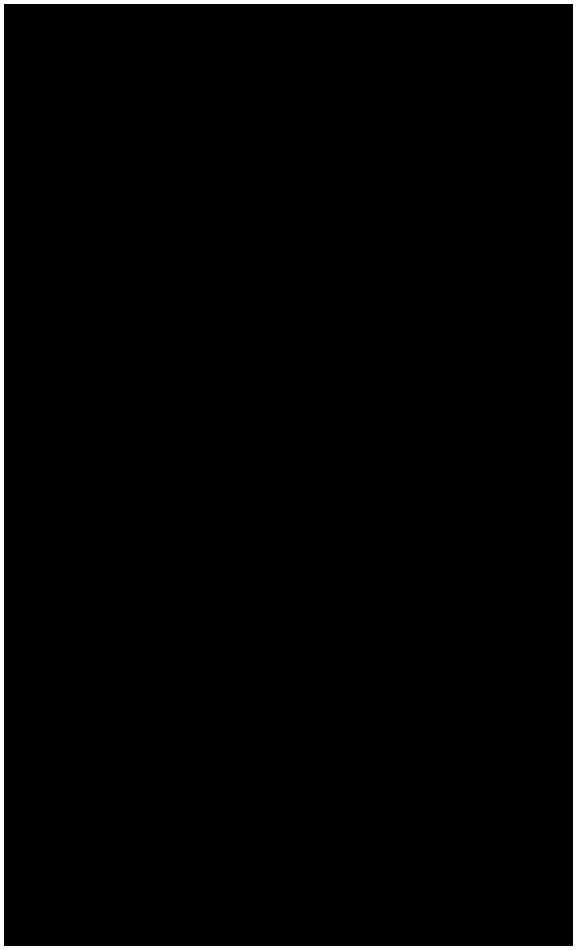
[redacted]

For the remaining sites, we made the following assumptions to generate a representative cost for the site with the available tariffs:

- Where consumption data is provided in quarterly increments, monthly data has been assessed by assuming an even distribution of consumption across the quarter.
- Where demand data was not available, two methods were used to estimate a reasonable demand reading:
    i. We assumed an equal demand load for the total hours of a measured interval. This produced an ‘average demand’ as opposed to a maximum demand and is likely to be a lower demand maximum. This demand reading produces costs for demand-based tariffs that are lower than will likely occur but allows a conservative estimate to be made in the absence of demand data.
    ii. We used a pump power equation, an assumption of 250kPa differential pressure and an efficiency of 65%, along with daily pump capacities sourced from Sunwater’s’ published Asset Management Plans, to estimate the power demand of the pump station. This estimate may produce higher peak demands than actually occur across periods of lower pumping demand.
- Pump size (kW) has been used as the demand maximum where monthly demand data is not available. This approach may produce a higher demand than the actual peak demand in that

measured interval, possibly overestimating the cost of the site.

- Where consumption data has been provided in day, shoulder and night categories, Day and Shoulder has been sorted as Peak usage, whilst Night data has been sorted as Off-Peak usage.
- Where only an annual total is available for a site, a cost has only been calculated using simple usage-based tariffs with no time of use component. This has typically occurred for small meters using Tariff 20 and Tariff 21.
- To estimate costs for Tariff 21, we assumed usage does not exceed 100kWh each month.
- We have not assessed sites where an annual total only is available for a large meter because no sufficiently accurate estimate can be made. To estimate the cost of the scheme where a site has been unassessed, the remaining estimated costs have been increased in proportion to the remaining consumption, to give a pro rata result.



We applied a conservative approach when using assumptions to fill in data gaps and used available data (pump size) where possible.

Table 24 shows the results of the current optimal tariff assessment for the large sites, where sufficient data was available or could be conservatively assumed to perform the assessment.

The comparison by pump station indicates that 17 of the 37 sites' tariffs could be reassessed and altered to reduce overall costs. These sites are highlighted in the Current Optimal Tariff column.

4.4.4 Efficient Costs

We estimated a baseline variable electricity cost in $/ML for seven applicable schemes, and derived a total cost for each scheme in order to assess the prudency and efficiency of Sunwater's total scheme costs,

An efficient base year electricity cost was developed by deriving the total cost using the optimal current tariff for each meter within a scheme. For seven of the bulk water supply and distribution schemes, we removed the fixed tariff cost (supply, capacity and connection charges) and used the average water volume delivered (less distribution losses) during the five-year period to FY2018 to develop an efficient variable cost in $/ML.

Table 25 displays the results, along with the estimated fixed costs where applicable.

The efficient costs were then applied to the 20-year average demand to develop an efficient base year for electricity.

The outcome indicates a total electricity cost across all the schemes that is overall 6% lower than Sunwater's estimates, but with significant variability when compared on a scheme by scheme basis.

Table 25 Efficient Costs per Scheme

			AECOM's Estimated Efficient Variable Cost $/ML	5 Year Average Usage excl. Distribution Losses, ML	AECOM's Estimated Efficient Fixed Cost For the Scheme	20 Year Average Usage excl. Distribution Losses, ML	AECOM's Efficient Base Year Cost (20 Year average, $ FY2019)	Sunwater Average Annual Cost (FY2013-18, $FY2019)	AECOM as % Sunwater
Bulk Water Schemes									
BBR - Barker Barambah WS	BW-BBR		$122.09	377	$2,111	690	$86,353	$34,598	150%
KBB - Bowen Broken WS	BW-KBB				$2,810		$162,759	$152,333	7%
BBY - Boyne WS	BW-BBY	*		*		*		$0	
BBB - Bundaberg WS	BW-BBB				$1,910		$11,168	$8,364	34%
ABB - Burdekin WS	BW-ABB	*			$24,653		$82,730	$92,712	-11%
LBC - Callide WS	BW-LBC				$1,600		$7,999	$4,597	74%
IBH - Chinchilla Weir WS	BW-IBH	*		*		*		$0	
IBN - Cunnamulla Weir WS	BW-IBN	*		*		*		$0	
LBD - Dawson WS	BW-LBD				$1,910		$51,731	$40,876	27%
KBE - Eton WS	BW-KBE				$2,468		$450,493	$427,026	5%
LBF - Lower Fitzroy WS	BW-LBF				$533		$1,943	$1,364	42%
BBL - Lower Mary WS	BW-BBL	*		*		*		$0	
IBT - Macintyre Brook WS	BW-IBT	*		*		*		$4,163	
IBM - Maranoa WS	BW-IBM	*		*		*		$0	
MBM - Mareeba WS	BW-MBM				$533		$4,350	$3,271	33%
LBN - Nogoa WS	BW-LBN				$2,667		$41,656	$18,648	123%
KBP - Pioneer WS	BW-KBP				$3,150		$5,587	$3,950	41%
ABP - Proserpine WS	BW-ABP				$1,600		$7,832	$2,450	220%
IBS - St George WS	BW-IBS				$533		$5,210	$6,154	-15%
LBT - Three Moon WS	BW-LBT				$1,067		$9,874	$16,313	-39%
BBU - Upper Burnett WS	BW-BBU				$1,067		$7,169	$5,596	28%
IBU - Upper Condamine WS	BW-IBU		$5.17	9,018	$15,484	6,693	$50,096	$94,250	-47%
Distribution Schemes									
BIG - Bundaberg IS	IS-BIG		$54.13	101,185	$534,279	75,682	$4,630,780	$4,571,624	1%
AIE - Burdekin IS	IS-AIE		$17.18	295,100	$1,371,714	232,035	$5,357,847	$5,784,110	-7%
KIA - Eton IS	IS-KIA		$26.09	19,579	$20,149	22,488	$606,861	$391,023	55%
BIC - Lower Mary IS	IS-BIC		$46.03	7,040	$17,642	4,975	$246,643	$348,003	-29%
MIM - Mareeba IS	IS-MIM		$89.36	6,154	$18,756	5,067	$471,531	$505,556	-7%
* Insufficient Data							**$12,300,613**	**$12,516,979**	-2%

4.4.5 Sunwater's current Electricity Usage during Peak Periods

Previous assessments of Sunwater's operations concluded that Sunwater has not historically sought to optimise pumping regimes.[93]

We investigated how Sunwater operates the pumps that are its main form of energy consumption to assess the prudency of electricity use. This required a time-of-use assessment based on the pre-sorted peak and off-peak data provided by Sunwater for three bulk water schemes and five distribution schemes. The results of these analyses are attached in Appendix A.

The analysis concluded that in most cases power supply requirements mean that there is little opportunity to reduce peak period pumping any further. Power consumption during peak periods is typically between 40% and 50% of the total, but there are several pump stations where peak period pumping is a much lower percentage of the total; suggesting that Sunwater is managing this issue where it can practically manage.

We used the usage data available to identify optimal tariffs for the majority of the pumping stations, separating fixed and variable costs to make it easier to apply cost trends (refer to Section 9.2).

4.4.6 Energy Efficiency

We agree with Sunwater's Energy Strategy and the priorities identified within the Energy Efficiency Initiatives, [94] and note that the Energy Strategy Roadmap aims to incorporate an energy management system design and implementation, ideally in accordance with standards such as ISO50001 Energy Management Systems. This will prioritise the installation of smart metering and/or energy monitoring systems.

[93] Halcrow, 2011
[94] RfI A38.

However, Sunwater states that it has not incorporated cost savings or efficiency targets nominated in the Energy Strategy into the forecast electricity prices in Sunwater's regulatory submission, because:

- the targets are intended for internal continuous improvement purposes
- many of the potential efficiencies cannot be quantified at this time
- some of the efficiencies are dependent on capital expenditure which is not yet included in capital expenditure forecasts
- there is a need for flexibility in the targets due to external political and market factors. [95]

Although Sunwater appears to have optimised costs where possible, there will be opportunities to further improve the efficiency of its electricity usage power by focusing on time-of-day usage. The apparent lack of suitable interval data for several large and small sites, along with the increasing cost of electricity, highlights the importance of having the capability to perform detailed measurement of its power systems. Smart metering and the associated monitoring platforms are available and in use amongst Australian water utilities. We note that Sunwater has installed interval meters at pumping stations as a recent initiative.[96]

Easy access to detailed energy interval data is necessary for accurate measurement and efficient optimisation of the operations, as well as efficient integration of renewable and other behind-the-meter power generation.

4.4.7 The Use of Renewable Energy

Sunwater relies on obtaining electricity from the retail market as well as its significant hydro-electric generation assets, and states that it is investigating options to incorporate other forms of renewable energy generation across the business as a means of controlling costs and reducing their exposure to a fluctuating energy market.

Sunwater piloted installation of solar panels during FY2019 to monitor benefits and inform future investment decisions, installing a 22kW system at the Biloela Office at Callide Dam. This is estimated to reduce the annual electricity cost by 78%, with 98% of energy consumption being provided by solar. Solar panels have also been installed at Moranbah Office. Sunwater has indicated an intention to increase its renewable energy generation capacity by at least 500kW by FY2020, intending that the final capacity will be informed by pilot studies and energy audits.[97]

We recommend that Sunwater:

- Continue energy audits and studies into renewable generation technologies, and invest in renewables that are economically sound and reduce costs to customers, giving consideration to internal use and also potential export
- Investigates the suitability of any existing land bases for large-scale private solar farm developments
- Investigates the suitability of emerging floating solar photovoltaic (PV) technologies for use in dams and off-stream storage facilities, as this may be a suitable alternative if existing land bases are found unsuitable.

[95] RfI A19.
[96] RfI A38.
[97] RfI A38.

4.5 Global Base Year Direct Cost Adjustments

In its November 2019 submission, Sunwater proposed a number of global adjustments as a result of our long term averaging approach (additional to the scheme-specific adjustments outlined in Section 4.2 and Section 4.3). These, alongside a summary of our position in relation to each issue, are summarised in Table 26. The same assessment approach to that outlined in Section 4.2 has been followed in assessing these cost adjustments. Further discussion of the adopted adjustments is provided in the following sections.

Table 26 Sunwater's Proposed Global Adjustments to the Base Year

Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
Direct labour	*"The labour escalation for wages should be based on the Sunwater Enterprise Agreement, currently being negotiated under the Queensland Government-approved bargaining framework, for the period 2018-2021, which includes pay increases of 3 per cent per annum and no forced redundancies. Previous Sunwater Enterprise Agreements (which covered the 2013-18 period) also included 3 per cent.* *Sunwater requests that the QCA adjust the labour escalation rates in its modelling to estimate the historical base year to 3 per cent for the 2013–18 period. This increases total base year costs from $59.864 million to $60.289 million. Table B2 below shows the changes by service contract to AECOM's input years (before being adjusted for IGEM) in AECOM's model of Sunwater's operating costs."*	$426,000	We note this proposed cost adjustment relates to escalation, which would be not captured in our long-term averaging approach. **Prudency:** We note that labour cost escalation for wages is standard practice, and we consider this prudent. **Efficiency:** As discussed in Section 2.1 and Section 9.4, the labour cost escalation is in line with the WPI. It is not clear why Sunwater's staff should consistently receive wage adjustments higher than available to other government employees. For this to be acceptable, we would expect the award to include an ongoing provision for efficiency improvements. Some of the efficiency improvements identified by Sunwater include; improved employee utilisation, rationalisation of office space, utilisation of a new travel provider and reductions in licences/premiums.[98] We consider that the efficiency improvements should offset the cost of Sunwater's Enterprise Agreement, and consider the proposed cost adjustment to be not efficient. We recommend that the QCA do not accept this cost adjustment, as an incentive for Sunwater to realise productivity gains.	$0

[98] QCA Information Request FR4_Attachment 3_EA productivity initiatives report

Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
Fleet costs	*"AECOM has used a six-year historical average of fleet costs to calculate its base year for each service contract.86 This reflects that fleet costs are now directly charged, rather than being local area support costs. AECOM's proposed six-year average for each service contract is shown in the second column of Table B3 below. AECOM's total base year fleet costs are shown in the third column. However, in 2013/14 and 2014/15, almost all 'Plant & Equipment' costs were charged to corporate support—most fields in the first two years of the dataset are zero. This skews the historical average down, understating the average fleet costs in years with data. We recommend that the QCA adopt a four-year average of fleet costs, to avoid under-recovery"*	$398,000	We note that as corporate support costs are not derived as a long-term average, this proposed adjustment would not be captured in our base year. **Prudency:** Plant and equipment costs are necessary to deliver service levels, and we consider this adjustment prudent. **Efficiency:** We agree with Sunwater that base year costs should be informed by historical actual costs, for the four-years where data is available. We have made an adjustment to the base year to reflect the difference between the four-year and six-year average to account for this. We recommend that the QCA accept AECOM's proposed adjustment.	$266,946
Travel & Accommodation	*"... in 2013/14 and 2014/15, almost all 'Travel & Accommodation' costs were charged to corporate support or local area support costs—most fields in the first two years of the dataset are zero. Due to issues with cost controls, many service contracts had not begun directly charging in 2015/16 either. AECOM has not normalised for these adjustments, which skews the historical average down and understates the average travel and accommodation costs. We recommend that the QCA adopt a three-year average of travel and accommodation costs, to avoid under-recovery."*	$42,000	As corporate support costs are not derived as a long-term average, this proposed adjustment would not be captured in our base year. **Prudency:** It is expected that travel and accommodation costs will be required to deliver service levels (noting the sharing of labour between regions), and we consider this adjustment prudent. **Efficiency:** We agree with Sunwater that base year costs should be informed by historical actual costs, for the three-years where data is available. We have made an adjustment to the base year to reflect the difference between the three-year and six year average to account for this. We recommend that the QCA accept AECOM's proposed adjustment..	$37,437

Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
Remote communications	*"AECOM's modelling does not account for the direct operations and maintenance costs of communications infrastructure that have been installed since 2017/18. These costs are not reflected in earlier years' expenditure."*	$251,000	Sunwater note that this is new infrastructure. As such, the related maintenance costs would not be reflected in historical costs or captured in our base year. **Prudency:** Sunwater noted in its November 2019 submission that it has incurred additional costs for communications equipment (Telstra iTerra Satellite) which should be recovered from FY2020. The project is intended to address network reliability and usability issues at remote sites (e.g. congestion and network outages).[99] We applaud the initiative because it should promote more the efficient operation of Dam operators and enable wider use of SCADA at remote locations and therefore reduce staff travel costs. On the basis that this project will drive efficiency gains, we consider this adjustment prudent. **Efficiency:** The driver of this project is efficiency (noting that Sunwater were previously able to deliver the same services without the additional infrastructure). In the briefing note for approval of the project, Sunwater indicates that the issues driving inefficiency (e.g. outages) are current.[100] This document is dated May 2017, and these issues would have been present for some time before this. As such, our direct cost base year (which is based on average historical costs), reflects these inefficiencies. Given this, and given the project driver, we would expect the outcome of this project to be a net reduction in cost, driven by efficiency improvements. Since the benefits have not been included	$0

[99] QCA Information Request FR2a - Drivers of proposed increase in base year direct O&M costs.
[100] QCA Information Request FR2a_Attachment 1_BN Site connectivity improvement program

Cost	Sunwater's Submission	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
			in cost projections, we consider this adjustment to be not efficient. We recommend that the QCA do not accept this cost adjustment.	

4.5.1 Utilisation

Sunwater's reported staff utilisation was impacted over the historical period as senior staff reduced or stopped time-writing to work orders. In order to determine the impact of higher utilisation (through improved time-writing), the change in utilisation for FY2016, FY2017 and FY2018 relative to utilisation in FY2019 was calculated for each region.[101] The average change was used to adjust (increase) the FY2016, FY2017 and FY2018 routine labour cost. The six-year average routine labour cost was then calculated using these revised costs, and the three years (FY2013-FY2015) of prior actual labour cost. In the November 2019 submission, Sunwater made numerous observations in relation to our on our approach:

- Sunwater has indicated that normalisation for labour utilisation should cover years earlier than FY2017 and FY2018.[102] We have since revised the utilisation adjustment to include FY2016 (noting that Sunwater has reported that relaxed direct labour charging was *"particularly notable in 2015/2016 to 2017/18"*).[103]
- Sunwater proposed that the target utilisation rate of 90% should be applied, instead of the FY2019 actual utilisation rate. We note that over the FY2013 to FY2019 period, the 90% utilisation rate was only achieved 10.7% of the time (only in FY2013 in three of the four regions, over a seven-year period).[104] Based on this, we consider the actual FY2019 utilisation (87.8%) to be a more representative utilisation figure and have applied this in our calculations.
- Sunwater stated that our approach to normalising historical costs for labour utilisation assumed that the direct labour costs of each service contract reflected regional staff only, and noted that some Brisbane-based staff book time to the regions.[105] We have calculated the utilisation adjustment in relation total costed labour to (i.e. including Brisbane based staff who have directly charged to regional cost centres).

  Sunwater (in RFI responses) calculated the base year Brisbane staff cost as the FY13-FY16 (four-year) average.[106] We have calculated the FY13-FY18 (six-year) average of total labour (regional and Brisbane based staff) and have applied the utilisation uplift to the total, maintaining a consistent six-year averaging approach.

  We note that the Brisbane based component of total labour is small in relation to total labour booked to the schemes (11% of the average). We also note that our adjusted approach following the draft report (adjusting for the time writing issue from FY2016), means that our recommended base year is very similar to Sunwater's adjusted average cost calculation ($10.9 million).[107]

The impact of higher utilisation by senior staff primarily in the Operations centres is estimated to be a total (across all service contracts served in each region) of $1.71 million (refer to Table 5 for the

[101] QCA Information Request FR3_Attachment 1_Sunwater utilisation rates
[102] QCA Information Request FR3_Attachment 1_Labour utilisation
[103] QCA Information Requests A43 A44 and 28_Routine costs and non-direct costs
[104] QCA Information Request FR3_Attachment 1_Sunwater utilisation rates.
[105] QCA Information Request FR3_Labour utilisation
[106] QCA Information Request FR3_Attachment 2_Costed labour by location (Brisbane and Regions)
[107] QCA Information Request FR3_Attachment 2_Costed labour by location (Brisbane and Regions)

derivation of this cost estimate). The higher costed labour attracts additional indirect costs, local overhead and corporate overhead according to Sunwater's CAM.

The estimated impact of improved time-writing by scheme is presented in Table 27, which shows the estimated change to the Operations costs at each scheme, and the increase in total costed labour. The increase in Operations is assumed to apply to all service contracts, but data is only shown for the schemes included in this review.

Table 27 Changes to Base Year Direct costs by Scheme for Improved Utilisation

Service Contract ($ million)	Impact of Improved Utilisation	Costed Labour (with FY2018 adjusted for improved utilisation)		
		Average Routine	Adjusted Base Year (Routine)	Adjusted Base Year (Total)
BBR - Barker Barambah WS	4.13%	$0.18	$0.19	$0.37
KBB - Bowen Broken WS	11.46%	$0.24	$0.25	$0.47
BBY - Boyne WS	4.13%	$0.12	$0.12	$0.14
BBB - Bundaberg WS	4.13%	$0.31	$0.32	$0.73
ABB - Burdekin WS	6.15%	$0.48	$0.50	$1.28
LBC - Callide WS	11.46%	$0.26	$0.27	$0.41
IBH - Chinchilla Weir WS	2.96%	$0.02	$0.02	$0.07
IBN - Cunnamulla Weir WS	2.96%	$0.01	$0.01	$0.01
LBD - Dawson WS	11.46%	$0.19	$0.20	$0.24
KBE - Eton WS	11.46%	$0.23	$0.24	$0.33
LBF - Lower Fitzroy WS	11.46%	$0.05	$0.05	$0.05
BBL - Lower Mary WS	4.13%	$0.03	$0.03	$0.04
IBT - Macintyre Brook WS	2.96%	$0.21	$0.21	$0.46
IBM - Maranoa WS	2.96%	$0.00	$0.00	$0.00
MBM - Mareeba WS	6.15%	$0.24	$0.25	$0.30
LBN - Nogoa WS	11.46%	$0.42	$0.45	$2.69
KBP - Pioneer WS	11.46%	$0.19	$0.21	$0.48
ABP - Proserpine WS	6.15%	$0.20	$0.21	$0.25
IBS - St George WS	2.96%	$0.24	$0.24	$0.44
LBT - Three Moon WS	4.13%	$0.10	$0.10	$0.20
BBU - Upper Burnett WS	4.13%	$0.21	$0.21	$0.30
IBU - Upper Condamine WS	2.96%	$0.27	$0.28	$0.68
BIG - Bundaberg IS	4.13%	$1.76	$1.80	$2.16
AIE - Burdekin IS	6.15%	$2.45	$2.53	$2.69
KIA - Eton IS	11.46%	$0.56	$0.60	$0.72
BIC - Lower Mary IS	4.13%	$0.21	$0.22	$0.29
MIM - Mareeba IS	6.15%	$1.28	$1.32	$1.42
All Schemes	**6.58%**	**$10.51**	**$10.84**	**$17.23**

The increased costed labour will:

- Reduce the Local overhead to be allocated to each scheme but increase the scheme's share of that overhead
- Increase the direct labour cost used for corporate labour allocation, and marginally increase each scheme's share of corporate overhead
- Spread indirect costs over a slightly larger cost base (for the majority of the indirect cost categories that are allocated using labour costs)

4.5.2 Averaging of Travel and Accommodation and Fleet Costs

Adjustments have also been made as a result of Sunwater's response to the QCA's draft report in November 2019, affecting travel and accommodation and fleet costs.

In keeping with Sunwater's November 2019 submission, we have made an adjustment to travel and accommodation costs (noting that FY2013, FY2014 and FY2015 were anomalous years). The adjustment to the base year has been calculated as the difference between the three-year average (requested by Sunwater), and the six-year average travel and accommodation cost for the regulated schemes.

Following Sunwater's November 2019 submission, we have also made an adjustment to fleet costs (noting that FY2013 and FY2014 were anomalous years). We have made an adjustment to the base year to reflect the difference between the four-year average and the six-year average routine plant and equipment costs for the regulated schemes. We have made an additional adjustment to base year fleet costs to account for the shift of fleet costs from local overhead cost centres. This adjustment has been calculated as the difference between the FY2020 and the four-year average of FY2015 to FY2018 routine plant and equipment costs allocated to the regulated schemes.

The breakdown of the adjustments by scheme is presented in Section 4.5.4.

4.5.3 Acrolein Cost Adjustment

Sunwater have noted that Acrolein (a chemical used for weed control) has increased in cost at a rate greater than CPI over the historical period. We note that this means that the adopted averaging approach requires adjustment, to reflect the current contracted unit cost of Acrolein. In order to determine this adjustment, we have (for the irrigation schemes where there is a high degree of weed control activity):

- Calculated the six-year average of Acrolein cylinders required[108]
- Determined the base year Acrolein cost as the six-year average multiplied by the current contract price[109]
- Determined the difference between this and the six-year average Acrolein cost incurred.[110]

The outcome of this is presented in Table 28.

Table 28 Acrolein Cost Adjustment

	Six-Year Average Acrolein Cost ($'000s)	Six Year Average Acrolein Quantity (CYL)	Base Year Acrolein Unit Cost ($/CYL)	Base Year Acrolein Cost (Current Cost x Average Qty) ($'000s)	Adjustment to Base Year ($'000s)
BIG - Bundaberg IS	$291	39	$8,778	$342	$51
AIE - Burdekin IS	$606	81	$8,778	$708	$102
KIA - Eton IS	$159	21	$8,778	$184	$25
BIC - Lower Mary IS			$8,778		
MIM - Mareeba IS			$8,778		

[108] QCA Information Request 35_Attachment 3_Historical weed control costs.XLSX
[109] QCA Information Request FR2a_Attachment 4_Acrolein calculations
[110] QCA Information Request 35_Attachment 3_Historical weed control costs.XLSX

4.5.4 Summary of Adjustments

Table 29 summarises the discussed adjustments made to the base year.

This also contains the scheme-specific base year adjustments arising from Sunwater's November 2019 submission (which we have reviewed on a scheme by scheme basis in Section 4.2 and Section 4.3) These included instances where rates have had to be charged recently or in future years, where costs have been low in a particular year because of staff vacancies, and where new costs have emerged for compliance or similar reasons.

Table 29 Summary of Adjustments to Base Year Direct costs by Scheme

Service Contract ($ million)	Routine O&M Adjustments					
	Utilisation Adjustment	Travel & Accomodation Adjustment (Averaging)	Fleet Adjustment (Averaging)	Fleet Adjustment (Shift from Local OH)	Acrolein Adjustment	Scheme Specific Adjustments
BBR - Barker Barambah WS	$0.00	$0.00	$0.00	$0.03		
KBB - Bowen Broken WS	$0.01	$0.00	$0.02	$0.07		
BBY - Boyne WS	$0.00	$0.00	$0.00	$0.02		
BBB - Bundaberg WS	$0.01	$0.00	$0.01	$0.01		
ABB - Burdekin WS	$0.01	$0.01	$0.00	$0.04		$0.08
LBC - Callide WS	$0.01	$0.00	$0.00	$0.05		$0.07
IBH - Chinchilla Weir WS	$0.00	$0.00	$0.00	$0.00		
IBN - Cunnamulla Weir WS	$0.00	$0.00				
LBD - Dawson WS	$0.01	$0.00	$0.00	$0.02		
KBE - Eton WS	$0.01	$0.00	$0.00	$0.04		
LBF - Lower Fitzroy WS	$0.00	$0.00	$0.00	$0.02		
BBL - Lower Mary WS	$0.00	$0.00	$0.00	$0.00		
IBT - Macintyre Brook WS	$0.00	$0.00	$0.00	$0.03		
IBM - Maranoa WS	$0.00	$0.00	$0.00	$0.00		
MBM - Mareeba WS	$0.01	$0.01	$0.00	$0.03		
LBN - Nogoa WS	$0.02	$0.00	$0.00	$0.04		
KBP - Pioneer WS	$0.01	$0.00	$0.00	$0.07		
ABP - Proserpine WS	$0.01	$0.00	$0.00	$0.04		
IBS - St George WS	$0.00	$0.00	$0.00	$0.04		
LBT - Three Moon WS	$0.00	$0.00	$0.00	$0.02		
BBU - Upper Burnett WS	$0.00	$0.00	$0.00	$0.03		
IBU - Upper Condamine WS	$0.00	$0.00	$0.00	$0.05		
BIG - Bundaberg IS	$0.03	$0.00	$0.06	$0.42	$0.05	
AIE - Burdekin IS	$0.07	$0.00	$0.10	$0.31	$0.10	
KIA - Eton IS	$0.03	$0.00	$0.03	$0.15	$0.03	
BIC - Lower Mary IS	$0.00	$0.00	$0.01	$0.01		
MIM - Mareeba IS	$0.04	$0.00	$0.03	$0.42		
All Schemes	**$0.33**	**$0.04**	**$0.27**	**$1.97**	**$0.18**	**$0.16**

4.5.5 Base Year

The base year direct costs by scheme, after applying the adjustments to the averaging approach, are presented in Table 30.

Table 30 Base Year Direct Costs by Scheme

Service Contract ($ million)	Routine O&M				
	Operations (Average)	Preventative Maintenance (Average)	Corrective Maintenance (Average)	Adjustments	Adjusted Base Year
BBR - Barker Barambah WS	$0.21	$0.04	$0.02	$0.04	**$0.30**
KBB - Bowen Broken WS	$0.34	$0.14	$0.10	$0.10	**$0.68**
BBY - Boyne WS	$0.16	$0.03	$0.01	$0.03	**$0.23**
BBB - Bundaberg WS	$0.36	$0.08	$0.07	$0.03	**$0.53**
ABB - Burdekin WS	$0.59	$0.25	$0.21	$0.14	**$1.20**
LBC - Callide WS	$0.21	$0.12	$0.05	$0.14	**$0.52**
IBH - Chinchilla Weir WS	$0.03	$0.00	$0.00	$0.00	**$0.04**
IBN - Cunnamulla Weir WS	$0.01	$0.00	$0.00	$0.00	**$0.01**
LBD - Dawson WS	$0.18	$0.06	$0.02	$0.03	**$0.30**
KBE - Eton WS	$0.25	$0.18	$0.07	$0.06	**$0.57**
LBF - Lower Fitzroy WS	$0.05	$0.01	$0.01	$0.02	**$0.09**
BBL - Lower Mary WS	$0.04	$0.00	$0.00	$0.00	**$0.05**
IBT - Macintyre Brook WS	$0.15	$0.11	$0.03	$0.03	**$0.32**
IBM - Maranoa WS	$0.01	$0.00		$0.00	**$0.01**
MBM - Mareeba WS	$0.31	$0.12	$0.04	$0.04	**$0.50**
LBN - Nogoa WS	$0.60	$0.14	$0.11	$0.07	**$0.91**
KBP - Pioneer WS	$0.14	$0.17	$0.08	$0.09	**$0.48**
ABP - Proserpine WS	$0.30	$0.09	$0.06	$0.05	**$0.49**
IBS - St George WS	$0.19	$0.13	$0.03	$0.05	**$0.40**
LBT - Three Moon WS	$0.09	$0.05	$0.02	$0.02	**$0.18**
BBU - Upper Burnett WS	$0.24	$0.05	$0.03	$0.04	**$0.37**
IBU - Upper Condamine WS	$0.26	$0.09	$0.03	$0.06	**$0.43**
BIG - Bundaberg IS	$0.96	$1.24	$0.68	$0.57	**$3.46**
AIE - Burdekin IS	$2.12	$2.30	$1.50	$0.59	**$6.51**
KIA - Eton IS	$0.33	$0.47	$0.34	$0.23	**$1.38**
BIC - Lower Mary IS	$0.13	$0.10	$0.08	$0.03	**$0.34**
MIM - Mareeba IS	$0.71	$0.45	$0.88	$0.49	**$2.53**
All Schemes	**$8.95**	**$6.45**	**$4.49**	**$2.93**	**$22.83**

4.6 Summary of Findings

We have reviewed the way in which Sunwater specifies, schedules and dispatches its operational and maintenance work, and concluded that these activities are efficient.

We have noted that travel (to and from site) is a significant cost for some schemes, and that some attempt has been made to engage local resources in place of Sunwater staff in order to optimise costs. Sunwater has an extensive SCADA system to record and transmit control and asset-related data, which serves to reduce travel needed for some inspections and operational activity.

Limited use is being made of mobility solutions.

There may be opportunities to reduce direct costs by enhancing these two areas.

Direct costs are variable in most schemes because they are subject to weather events, and most have been affected by at least one cyclone and/or flood event since 2012, experiencing damage and operational constraints as a result. Events like these are likely to re-occur during the price period but are inherently unpredictable in terms of timing and impact. They are, however, the main driver of variability in direct costs on the schemes.

In our view, establishment of the base year direct costs should use a simple and transparent approach. We have therefore chosen to address this event-dependent variability by taking the average of direct costs incurred during the years of actual data available to us (6 years) and recommending that as the base year direct cost on a scheme-by-scheme basis. We looked for one-off routine costs that could potentially be excluded from any year before averaging, but concluded that, while there are irregular routine costs, these were the result of a weather event and could therefore occur again.

These costs remained very similar in total to the QCA's 2012 recommendations through to FY2018 (if all costs are expressed in FY2019 dollars), although there has been more significant variation from the recommendations in a small number of schemes, for justifiable reasons.

In relation to electricity costs:

- Several schemes will benefit from legacy tariffs until FY2022. We have reviewed the tariffs available and identified the most cost-effective one for each pumping station, but in general this will result in an increase in electricity costs for many schemes. The new tariffs allow separation of fixed costs from variable, so we have identified both elements and derived fixed and variable costs by scheme.
- Electricity demand is also subject to weather variability, and since we have power demand over a longer period (20 years) we have established a 20-year average demand in order to develop a total cost per scheme. This 20-year average water usage demand was applied in the calculation of our efficient base year costs. The tariff changes are included as step changes.
- We established that the pump stations that could be operated primarily to make use of off-peak tariffs are being operated that way, and there is very limited ability to optimise costs by avoiding pumping during peak periods.
- There are potential opportunities, however, to increase the generation of renewable energy (as noted in Section 4.4.7). We recommend that Sunwater continue to investigate these opportunities, giving consideration to whether opportunities are economically sound and likely to reduce costs to customers.

5.0 Local Overhead Costs

Staff who deliver work (via work orders) have their time charged to each scheme at a rate that provides for recovery of their labour costs.

Not all these costs are charged directly, however, because a small proportion (approximately 12%) of all regional staff time is spent on non-chargeable activities such administration, training, toolbox meetings, attendance at conferences, etc.).

The cost of this time that is not booked directly is referred to as the 'residual' labour cost and is part of the local overhead that is allocated to local schemes via direct labour costs (along with local support costs such as local administration, occupancy, etc.) from FY2019.

Local overhead costs are not weather dependent, and there is no reason for them to have any significant annual variability. It is therefore not necessary to consider average costs, and a typical base year approach can be used.

This section examines the size and allocation of local overhead. It should be noted that all resource groups may have local overhead, including corporate cost centres, and that the same approach is used in all cases from FY2020. The two major restructures of local overhead since FY2018 have caused complex changes to local overhead cost pools that make it difficult to establish trends.

5.1 Regional and Local Overhead FTEs

To simplify the impact of the two major restructures of regional operations centres, we have aggregated regional operations centres into the regional grouping that Sunwater plans to use from FY2020 forward. Changes to the regional FTEs since FY2013 are shown in Figure 51, using data provided by Sunwater.[111] [112]

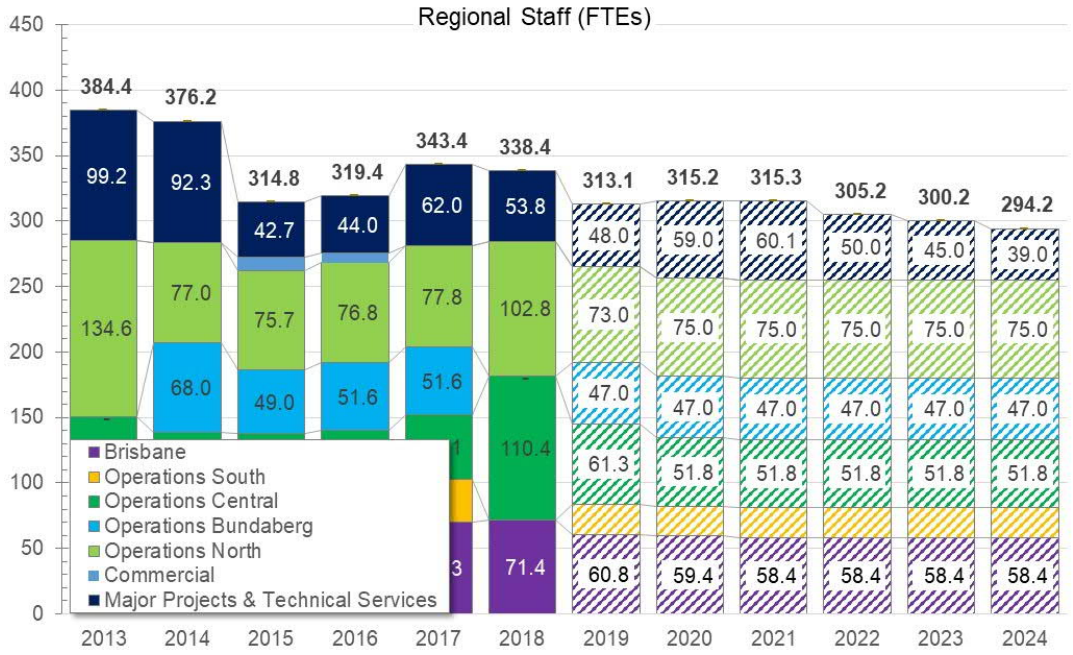


Figure 51 Regional and Local Overhead Staffing

Of most interest for local overhead allocation is the residual labour cost (the remaining staff costs after direct charging) because from FY2020 this is allocated to all local schemes/profit centres, along with local regional non-labour costs.

[111] RfI A68.
[112] RfI A7.

5.2 Regional Resource Centre Performance

51% of Sunwater's employees are based in regional resource centres. Three schemes have been moved to local area management (Emerald, Theodore and St George), which has resulted in a reduction in direct staff of 16.5 FTEs.

Staff based in the operations centres book time (and cost) directly to schemes via work orders, and the proportion of available time booked to schemes as direct work as referred to as 'utilisation'.

Local overhead costs relating to the FY2019 regional operations centre structure are not available for prior years (Sunwater's business systems were configured for earlier structures), and the absence of reliable staff utilisation data prior to FY2019 means that we have only been able to assess the performance of the current regional resource centres using a part year of actual results included in Sunwater's from internal performance reports for the year to May 2019[113], and using the budget for FY2020. With these limitations, the relative performance during FY2019 of the four resource centres that Sunwater is using from FY2019 is indicated in Figure 52, where:

- The horizontal axis shows the reported utilisation percentage (direct costs charged vs hours paid)
- The vertical axis shows the cost recovered from the service contracts per FTE
- The size of bubble indicates the total number of FTEs based at each resource centre.

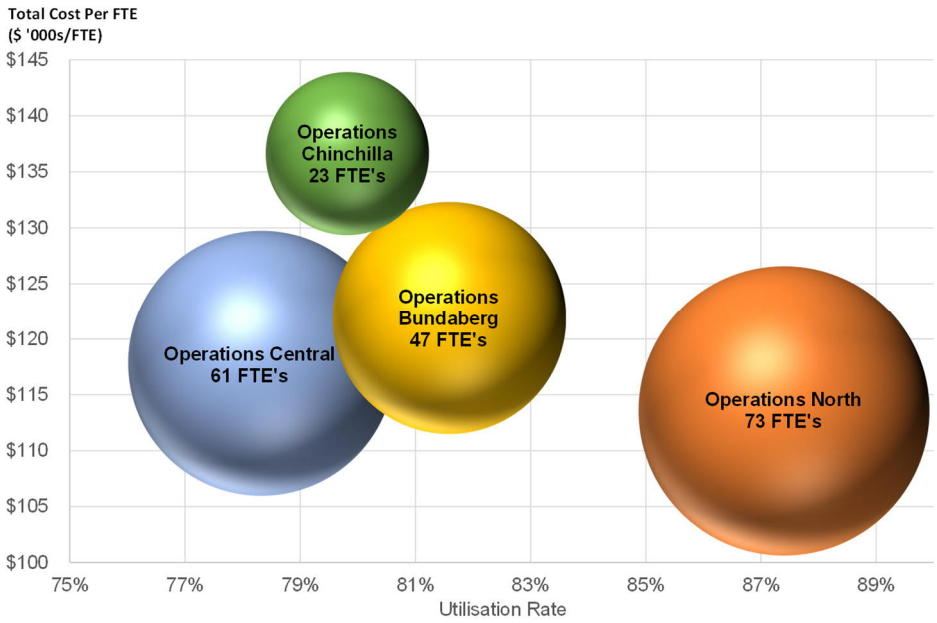


Figure 52 Resource Centre Performance

Operations North has the largest number of staff, operates at a high utilisation rate and has a lower total cost (labour plus support) per FTE than the others (the high utilisation means that the size of the residual is lower). The lower cost per FTE reflects a lower residual cost but may also be a result of a higher proportion of lower paid staff and/or lower resource centre support costs.

These performance outcomes would have been significantly lower during FY2017-18 when poor time-writing meant that direct booking of time was reduced.

The resource centres also carry non-labour costs that we have referred to as 'support' costs. The regions operate depots and other facilities which do not always have staff costs associated with them but do have non-labour costs which we have included in the support costs. The mapping of depots and other facilities to operations centres was taken from Sunwater's Financial Model.[114]

[113] RfI A28
[114] Sunwater Financial Model (November 2018 submission) and Sunwater Financial Model (June 2019 submission),

We indicate utilisation and the contribution of residual labour costs and local support costs to the local (residual) overhead to be allocated to the schemes in the following set of charts, where:

- The left bar shows resource centre costs (labour and support costs) using the FY2020 budget
- The right bar shows direct labour costs charged and the size of the residual local overhead cost (which is then allocated to all local schemes in proportion to direct labour costs charged)

5.2.1 Operations North Region

A simple summary of cost allocation in FY2020 in the North Region (including the Mareeba, Townsville and Clare cost centres) is shown in Figure 53, indicating a budget utilisation of 90%.

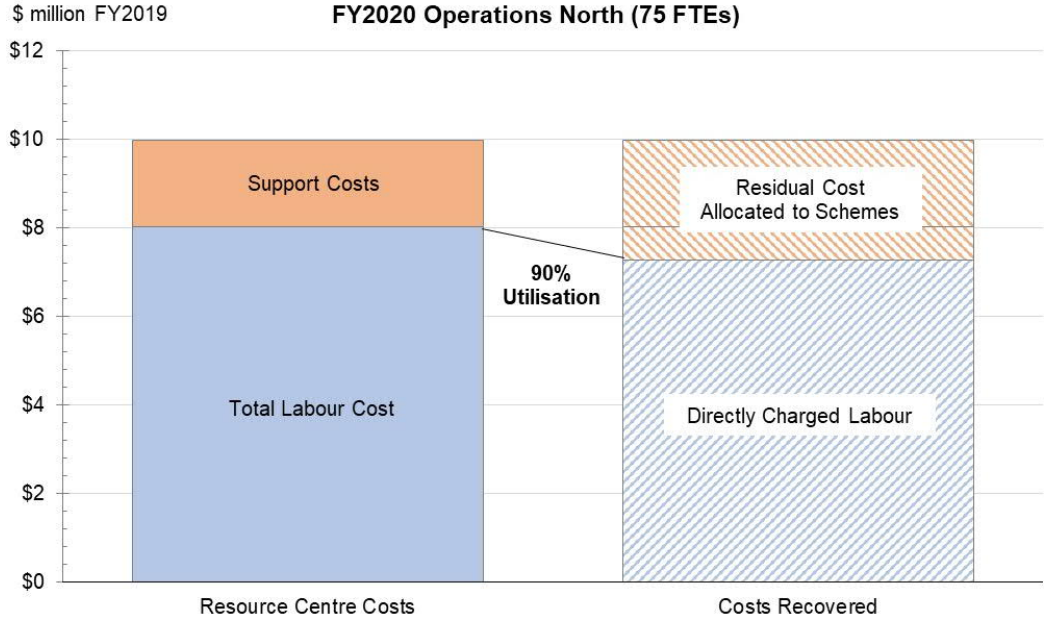


Figure 53 Operations Northern Region

The budgeted performance trend is shown in Table 31.

Table 31 Operations North Residual Cost Pool

$ million FY2019

Operations North	2016	2017	2018	2019	2020
Total Cost				$11.14	$9.99
Labour				$8.02	$8.04
Non-Labour				$3.12	$1.95
Direct Charging of Labour				$7.01	$7.27
Utilisation Rate				87%	90%
Net Adjustments				$2.23	$1.18
Residual Cost Pool	$5.58	$5.35	$5.50	$6.36	$3.90

5.2.2 Operations Central Region

A simple summary of the cost allocation in the Central Region for FY2020 (including the Eton, Moranbah, Theodore, Emerald and Biloela cost centres) is shown in Figure 54, indicating a budget utilisation of 95%.

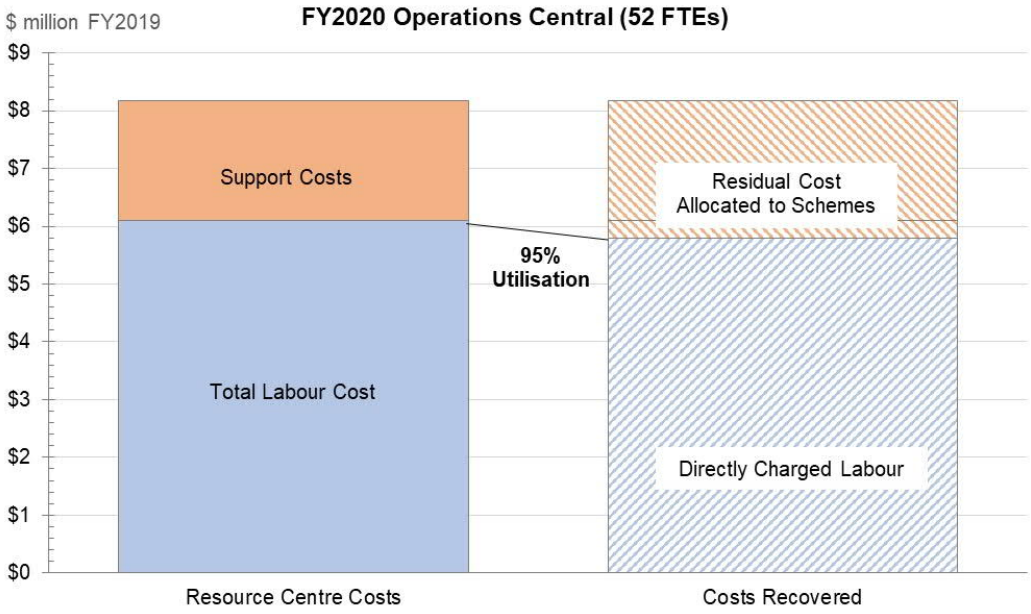


Figure 54 Operations Central Region

The budgeted performance trend is shown in Table 31.

Table 32 Operations Central Residual Cost Pool

$ million FY2019

Operations Central	2016	2017	2018	2019	2020
Total Cost				$10.06	$8.17
Labour				$6.79	$6.10
Non-Labour				$3.27	$2.07
Direct Charging of Labour				$5.32	$5.80
Utilisation Rate				78%	95%
Net Adjustments				$0.89	$0.35
Residual Cost Pool	$5.10	$4.31	$5.68	$5.63	$2.73

5.2.3 Operations Bundaberg Region

A simple summary of the cost allocation in the Bundaberg Region for FY2020 (including the Lower Mary cost centre) is shown in Figure 55, indicating a budget utilisation of 87%.

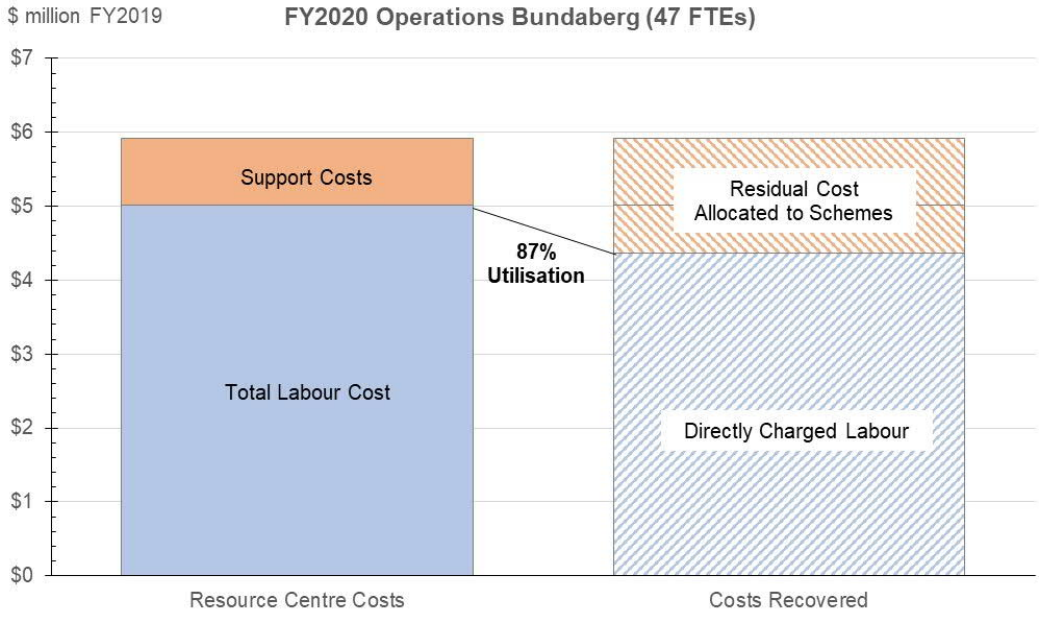


Figure 55 Operations Bundaberg Region

The budgeted performance trend is shown in Table 33.

Table 33 Operations Bundaberg Residual Cost Pool

$ million FY2019

Operations Bundaberg	2016	2017	2018	2019	2020
Total Cost				$6.35	$5.92
Labour				$4.90	$5.01
Non-Labour				$1.45	$0.91
Direct Charging of Labour				$3.99	$4.37
Utilisation Rate				81%	87%
Net Adjustments				$0.11	
Residual Cost Pool	$3.69	$3.35	$2.06	$2.47	$1.54

5.2.4 Operations South Region

A simple summary of the cost allocation in the South (Chinchilla) Region for FY2020 is shown in Figure 56, indicating a budget utilisation of 62%.

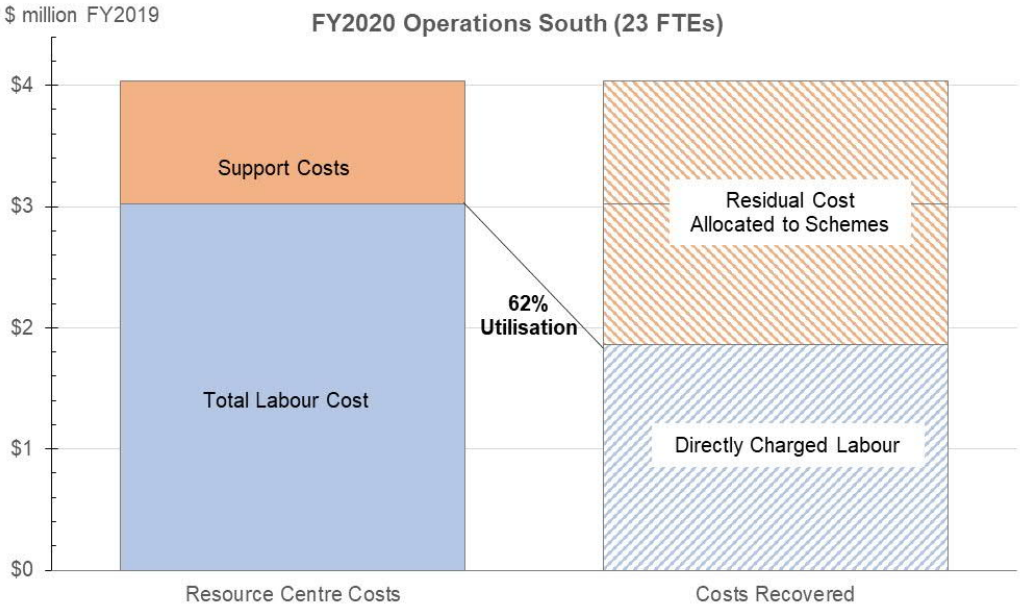


Figure 56 Operations South Region

The budgeted performance trend is shown in Table 34.

Table 34 Operations South Residual Cost Pool

$ million FY2019

Operations South	2016	2017	2018	2019	2020
Total Cost				$4.22	$4.04
Labour				$2.89	$3.02
Non-Labour				$1.33	$1.02
Direct Charging of Labour				$2.02	$1.86
Utilisation Rate				70%	62%
Net Adjustments				-$0.49	
Residual Cost Pool	$2.50	$2.06	$2.03	$1.72	$2.15

5.2.5 Brisbane (Head Office)

Brisbane-based resource centres (including those indirect cost centres that have staff associated with them) have their own local overhead, which is allocated in the same way as regional local overhead. Utilisation rates for this group of resource centres are lower than they are in the regions because the type of work carried out in Head Office is less often directly chargeable to specific schemes. The utilisation and residual cost of Brisbane-based resource centres is shown in Figure 57.

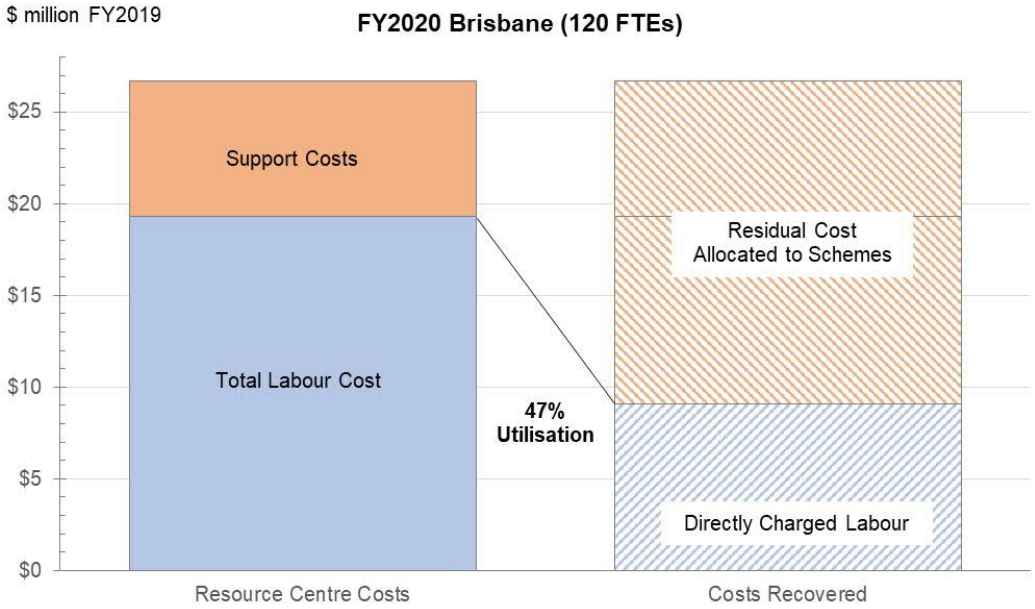


Figure 57 Brisbane Region

The budgeted performance trend is shown in Table 35.

Table 35 Brisbane Region

$ million FY2019

Operations Brisbane Region	2016	2017	2018	2019	2020
Total Cost	$58.11	$61.29	$51.53	$25.54	$26.66
Labour	$40.82	$43.38	$49.07	$17.68	$19.31
Non-Labour	$17.29	$17.90	$2.46	$7.86	$7.36
Direct Charging of Labour	$22.76	$24.38	$6.83	$5.99	$9.09
Utilisation Rate	56%	56%	14%	34%	47%
Net Adjustments	-$16.50	-$16.68	-$22.34	$1.95	$5.77
Residual Cost Pool	$18.85	$20.23	$22.35	$21.51	$23.34

5.3 Total Local Overhead Costs before Allocation

The total residual local overhead cost pool (before allocation, expressed in FY2019 dollars) was more or less constant from FY2015 to FY2018, after which Sunwater's budget shows them decreasing by 24% by FY2020 (Figure 58).

Sunwater has restructured its regional offices, so the trends suggested by Figure 58 may be misleading. The cost changes are primarily a result of three factors:

- The restructuring has transferred some functions performed as part of local overhead to corporate cost pools, so a reduction in local overhead is matched by an increase in corporate overhead
- Fleet costs will be direct charged to the schemes and are therefore not included as a local overhead cost in the budgets. These total approximately $1.9 million
- Inaccurate charging of staff time has been addressed, so that more time is charged directly to schemes and therefore the residual cost pool is smaller.

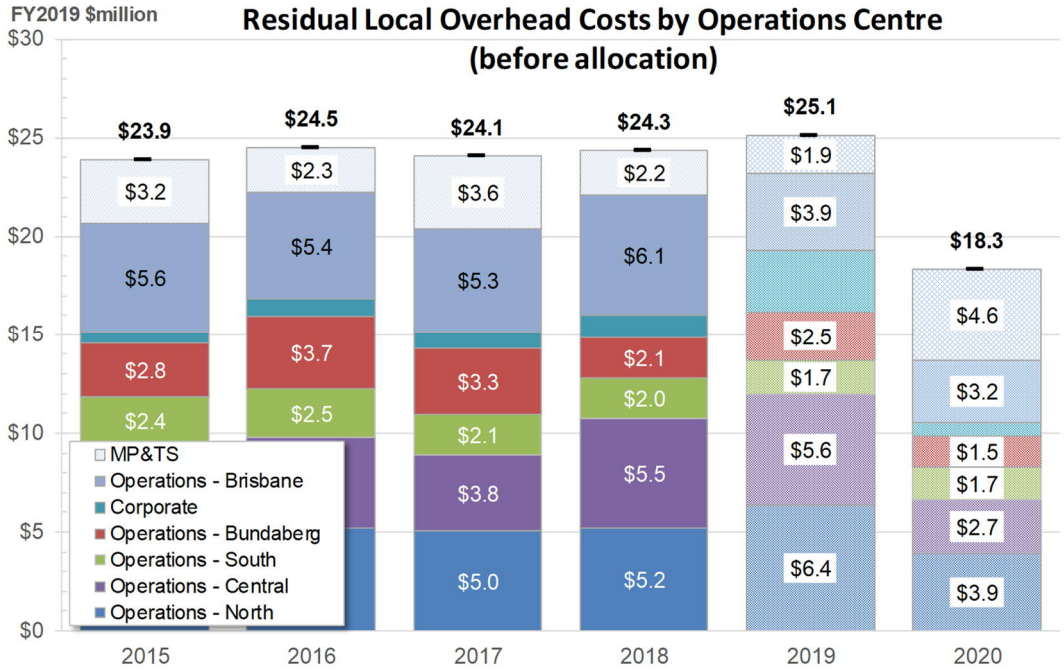


Figure 58 Sunwater's Local Overhead Cost Pools

5.4 Base Year Local Overhead Costs for Allocation

We note that Sunwater provided actual FY2019 non-direct costs as part of their November 2019 submission, and proposed that this be used as the base year for non-direct costs. A comprehensive assessment of FY2019 as a possible base year would require a full review of all costs and cost allocation to update changes made in the current model that may also require revision. We note that this is a substantial body of work which is not efficient given that Sunwater has not provided strong reasons as to why FY2019 reflects a normalised year and would differ substantially from historical years. Further, it appears to be an abnormally high cost year (noting that there was a budgeted over-recovery of overheads and FY2019 actual costs which are significantly higher than other historical and budget years). Considering this, we have continued with our use of FY2018 as the base year. We have, however, reviewed the efficient and prudent cost base taking into consideration the step changes and trends proposed in Sunwater's November 2019 submission.

Our review of local overheads identified the FY2018 costs that we consider would be prudent and efficient to include in the cost pool to be allocated. There are many changes to local overhead cost pools as a result of restructuring, with increases in some cost pools as a result of relocation of project managers from corporate to local, and consolidation of several local cost centres to corporate. These are shown in Table 36, which derives the total local overhead, including residual labour costs, that will be allocated to the schemes.[115]

The adjustments shown in Table 36 are the calculated impact on residual labour cost of improved staff utilisation, the impact of policy changes effective in FY2020 (affecting treatment of fleet costs and ICT charges) and a complex set of transfers between local overhead, direct costs, corporate and indirect cost pools.[116]

The end result of these complex changes is a net reduction in total local overhead before allocation.

[115] RfI A51
[116] RfI A28

Table 36 Base Year Residual Local Overhead Costs before Allocation ($million, FY2019)

Cost Attribution	Code	Cost Centre	FY2015	FY2016	FY2017	FY2018	FY2020	Adjustment to FY2018	Utilisation Adjustment to FY2018	Fleet Policy Adjustment to FY2018	ICT Desktop Adjustment to FY2018	Other Adjustment to FY2018	Adjusted FY2018
Corporate	634	Asset Renewal - Sth		$0.51	$0.60	$0.90		No longer in use (moved to 615)			-$0.03	-$0.86	
	721	Asset Renewal - Nth	$0.56	$0.37	$0.29	$0.26		No longer in use (moved to 615)			-$0.02	-$0.24	
	125	Communications					$0.14	Charged from Corporate 125				$0.14	$0.14
	272	Commercial					$0.04	Charged from Corporate 272				$0.04	$0.04
	213	Finance					$0.03	Charged from Corporate 213				$0.03	$0.03
	261	Legal					$0.26	Charged from Corporate 261				$0.26	$0.26
	262	P&C					$0.20	Charged from Corporate 262				$0.20	$0.20
MP&TS	632	Project Delivery BW	$0.00	$0.57	$0.56	-$0.03		No longer in use				$0.03	
	630	Infrastructure Dev GM						No longer in use					
	631	Mgr Program Control	-$0.01	$0.28	$0.29	$0.50	$0.67				-$0.01	$0.17	$0.67
	637	Mgr Program Delivery		$0.14	$0.64	-$0.18		No longer in use				$0.18	
	639	AD Cons Projects				$0.00		No longer in use				$0.00	
	680	Technical Services	$2.21	$0.88	$0.90	$0.93	$1.42			-$0.02	-$0.03	$0.53	$1.42
	629	Rockwood Weir					$0.46	New cost centre (Residual)			-$0.03	$0.49	$0.46
	710	MP&TS GM					$0.49	Moved from Indirect			-$0.01	$0.49	$0.49
	730	Major Projects	$1.00	$0.43	$1.24	$0.98	$0.73				-$0.01	-$0.24	$0.73
	635	Major Projects - Fairbairn					$0.87	New cost centre (Residual)			-$0.01	$0.88	$0.87
Operations - Brisbane	122	Safety	$0.22	$0.79	$0.84	$0.81		Indirect)			-$0.02	-$0.79	
	615	Asset Planning RC				$0.34	$1.19	New cost centre (Residual)				$0.85	$1.19
	695	Environment RC	$0.32	$0.29	$0.31	$0.29		Indirect)				-$0.29	
	740	IP Provisions	$0.67	-$0.02	$0.00			No longer in use					
	643	Hydrographic Services	$0.34	$0.48	$0.39	$0.30		Indirect)			-$0.03	-$0.27	
	644	Operations & Sched	$0.59	$0.83	$0.41	$0.62		Indirect)			-$0.04	-$0.58	
	645	WR & DS RC	$1.23	$1.17	$1.38	$1.63	$0.96	Residual		-$0.02		-$0.66	$0.96
	650	Asset Strategy RC	$0.89	$0.74	$0.73	$1.27	$1.05	Residual		-$0.01		-$0.21	$1.05
	656	Water & Waste Water	$0.04	$0.02				No longer in use			-$0.04	$0.04	
	660	Water Accounts RC	$0.03	$0.01	$0.00	$0.00		Indirect)				$0.00	
	690	Customer Services RC	$0.75	$0.59	$0.75	$0.75		Indirect)				-$0.75	
	682	IS Provisions	$0.12					No longer in use					
	720	IPRC - Service Dlvry	$0.37	$0.52	$0.45	$0.13		Indirect)				-$0.13	
Operations - Bundaberg	520	ISRC - IS Bundaberg	$1.13	$1.44	$1.24	$1.02	$1.51	Residual (reduced by 4.1% due to improved utilisation)	-$0.14	-$0.29		$0.92	$1.51
	523	ISOHC-Bndbrg Res Hse	$0.00	$0.00	$0.00			520)					
	524	ISOHC-Bundabrg Wshop	$0.03	$0.04	$0.09	$0.04		520)				-$0.04	
	526	ISOHC-Bundaberg Prem	$0.19	$0.25	$0.32	$0.25		520)				-$0.25	
	570	ISRC - IS Lower Mary	$0.05	$0.06	$0.07	$0.06	$0.00	Residual (reduced by 4.1% due to improved utilisation)	-$0.01	-$0.01	-$0.27	$0.24	$0.00
	671	BWRC - SD Bundaberg	$1.34	$1.89	$1.62	$0.69	$0.04	Residual (reduced by 4.1% due to improved utilisation)	-$0.10	-$0.14		-$0.42	$0.04
Operations - Central	*400*	*Operations Cntrl RC*				*$1.57*	*-$4.11*	*Recovery (costed labour)*				*-$5.68*	*-$4.11*
	510	ISRC - IS Emerald	$0.51	$0.74	$0.38	$0.42		LMA (discontinued)				-$0.42	
	513	ISOHC-Emerld Res Hse	$0.07	$0.03	$0.02	$0.01		400)				-$0.01	
	516	ISOHC - Emerald Prem	$0.08	$0.07	$0.10	$0.08		400)				-$0.08	
	540	ISRC - IS Eton	$0.47	$0.80	$0.41	$0.38	$1.21	Residual (reduced by 11.5% due to improved utilisation)	-$0.12	-$0.10		$1.05	$1.21
	543	ISOHC - Eton Res Hse	$0.02	$0.06	$0.03	$0.03		540)				-$0.03	
	546	ISOHC - Eton Prem	$0.10	$0.09	$0.09	$0.09		540)				-$0.09	
	560	ISRC - IS Theodore	$0.26	$0.39	$0.30	$0.22		LMA (discontinued)				-$0.22	
	722	IPRC-Svc Del-Moranbh	$2.32	$1.69	$1.73	$1.57	$3.28	Residual (reduced by 11.5% due to improved utilisation)	-$0.50	-$0.39	-$0.28	$2.87	$3.28
	723	IPRC-Svc Del-Biloela	$0.63	$0.71	$0.77	$1.15	$2.35	Residual (reduced by 11.5% due to improved utilisation)	-$0.37	-$0.27		$1.84	$2.35
Operations - North	*300*	*Operations North RC*				*$1.50*	*-$6.23*	*Recovery (costed labour)*				*-$7.73*	*-$6.23*
	500	ISRC - IS Clare	$1.60	$1.80	$1.72	$1.04	$4.01	Residual (reduced by 6.1% due to improved utilisation)	-$0.13	-$0.38		$3.48	$4.01
	503	ISOHC-Clare Res Hse	$0.21	-$0.04	$0.10	$0.09		500)				-$0.09	
	506	ISOHC - Clare Prem	$0.19	$0.20	$0.20	$0.17		500)				-$0.17	
	509	ISDIR-Clare Consult	$0.02	$0.04	$0.00			500)					
	550	ISRC - IS Mareeba	$0.84	$0.90	$0.84	$0.72	$2.95	Residual (reduced by 6.1% due to improved utilisation)	-$0.09	-$0.25		$2.56	$2.95
	553	ISOHC-Mba BC Res Hse	$0.00			$0.01		550)				-$0.01	
	556	ISOHC - Mba BC Prem	$0.19	$0.20	$0.21	$0.18		550)				-$0.18	
	670	BWRC - SD Townsville	$1.93	$2.10	$1.97	$1.51	$3.18	Residual (reduced by 6.1% due to improved utilisation)	-$0.19	-$0.24		$2.10	$3.18
Operations - South	530	ISRC - IS St George	$0.28	$0.32	$0.24	$0.22		LMA (discontinued)		-$0.09		-$0.13	
	533	ISOHC-St Gge Res Hse	$0.03	$0.02	$0.01	$0.02		LMA (discontinued)				-$0.02	
	536	ISOHC-St George Prem	$0.03	$0.04	$0.02	$0.03		LMA (discontinued)				-$0.03	
	539	ISDIR-St Gge Consult			$0.00			No longer in use					
	672	BWRC - SD Goondiwndi	$1.09	$1.18	$1.05	$0.88	$2.11	Residual (reduced by 3% due to improved utilisation)	-$0.08	-$0.23		$1.54	$2.11
	724	*IPRC-Svc Del-Chnchla*	*$0.93*	*$0.93*	*$0.73*	*$0.87*	*-$0.44*	*Recovery (costed labour)*		-$0.17		*-$1.14*	*-$0.44*
Total Cost			**$23.90**	**$24.51**	**$24.06**	**$24.34**	**$18.34**		**-$1.71**	**-$2.60**	**-$0.83**	**-$0.85**	**$18.34**
Corporate *(included in Corporate Overhead)*			$1.61	$1.44	$1.12	$0.37							$0.28
MP&TS *(charged to AS&D service contracts)*			$3.21	$2.29	$3.64	$2.21	$4.63	[Removed because of policy changes]					$4.88
Operations - Brisbane *(charged to Indirect cost pools)*			$1.77	$2.11	$2.75	$3.38							
Local Overhead for allocation to Service C			**$17.30**	**$18.67**	**$16.55**	**$18.39**	**$13.71**						**$13.19**

Until FY2018 all local overhead was aggregated and allocated to all direct labour costs as a single rate. Sunwater changed its policy for FY2020 so that local overhead costs are allocated via direct labour costs to local schemes only, effectively replacing the single cost allocator with one per region (and another for corporate costs that attract their own local overhead).

It should be noted that overhead and indirect costs as presented in this report follow Sunwater's FY2020 practice of including any local overhead attributable to them. We have shown the total of these in Table 36 (and also in the similar tables for overhead and indirect costs).

Sunwater appears not to have changed its treatment of local overheads applicable to indirect cost pools (which are generally based in Brisbane and should therefore attract a share of Brisbane office local overhead). It appears that approximately $3.38 million of local overhead attributable to indirect costs have been allocated to the schemes in addition to the regional local overhead. A stated purpose of this change in policy is to improve accountability and performance in the regions - adding some Brisbane-based cost that the regional manager has no influence over does not help achieve that outcome.

A summary of the changes to local overhead is presented in Table 37.

Table 37 Summary of Changes to Local Overhead Costs

Non-Direct Adjustments	Local Overhead
Original Cost (Actual, in $FY2019)	**$24.36**
Adjustments	
Fleet costs	-$2.60
Labour cost residual (net)	-$0.98
Cost pools merged / no longer in use	-$0.68
LMA (cost reduction)	-$0.83
New function / cost increase	$2.23
Function moved between Local Overhead and Indirect	-$2.31
ICT charges (removed)	-$0.83
Base Year	**$18.34**

Overhead Recovery (FY2018)	Local Overhead
Overhead Cost	**$24.36**
Local overhead charged to Corporate Cost Pools	-$0.37
Local overhead charged to Indirect Cost Pools	-$3.38
MP&AS	-$2.21
Total Cost for Allocation via Costed Labour (FY2018)	**$18.40**

Overhead Recovery (FY2020)	Local Overhead
Overhead Cost	**$18.34**
Local overhead charged to Corporate Cost Pools	-$0.28
MP&AS	-$4.88
Total Cost for Allocation via Costed Labour (FY2018)	**$13.19**

Note: Most functions that were moved were combined with related functions and cannot be easily traced. Rows do not reconcile.

All these have been provided for in the base year. There are no step changes in local overhead for the price path.

5.5 Allocation of Residual Local Overhead Costs

Local overhead is applied to labour costs as a multiplier and included in labour rates used to determine the total cost charged to service contracts. Non-direct costs are allocated in proportion to direct labour costs, so the minor differences in direct costs that have occurred on a whole-of-Sunwater basis over the period means that the divisor used for the allocator has effectively remained the same.

There will, however, be small changes to regional local overhead allocation as a result of the restructuring, where local overheads incurred at a resource centre will in the future be allocated locally (as demonstrated in the previous section) rather than aggregated into a single cost pool and allocated on a whole-of-Sunwater basis.

Sunwater intends to restructure regional staff into four resources centres and have eight local overhead cost pools from FY2020:

Regional Local Overhead:	**North**	ABB - Burdekin WS ABP - Proserpine WS MBM - Mareeba WS AIE - Burdekin IS MIM - Mareeba IS	**South**	IBH - Chinchilla Weir WS IBM - Maranoa WS IBN - Cunnamulla Weir WS IBS - St George WS IBT - Macintyre Brook WS IBU - Upper Condamine WS
	Central	KBB - Bowen Broken WS KBE - Eton WS KBP - Pioneer WS LBC - Callide WS LBD - Dawson WS LBF - Lower Fitzroy WS LBN - Nogoa WS KIA - Eton IS	**Bundaberg**	BBB - Bundaberg WS BBL - Lower Mary WS BBR - Barker Barambah WS BBU - Upper Burnett WS BBY - Boyne WS LBT - Three Moon WS BIG - Bundaberg IS BIC - Lower Mary IS
Head Office Local Overhead:	**Corporate**			
	Operations Brisbane			
	Operations Centre			
	Major Projects			

Sunwater's cost allocation policy and supporting manual provide for local overhead costs to be allocated to all direct labour costs. This means that:

- An individual scheme is allocated residual local overhead costs according to its share of direct labour costs incurred across all Sunwater
- Labour costs incurred in Sunwater's unregulated activities that involve direct labour will be allocated residual local overhead on the same basis, so the allocation to schemes can change from one year to the next if the labour content of Sunwater's unregulated business changes
- The allocation of residual overhead costs to irrigation schemes may vary as a result of changes to non-routine project work on the scheme.

The actual cost recoveries for FY2018 indicate a fairly consistent allocation (recovery) of overhead costs (Figure 71).

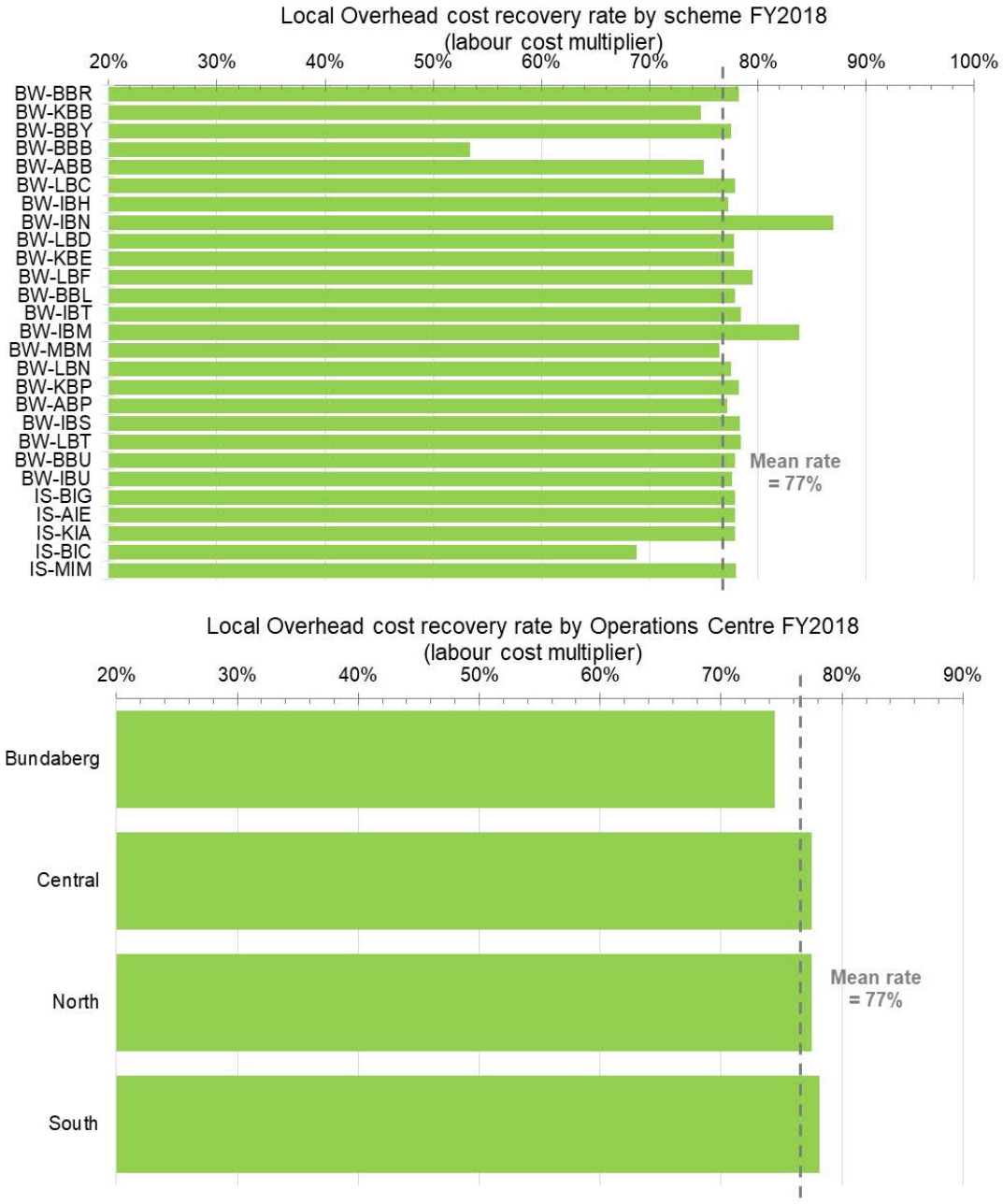


Figure 59 Local Overhead Cost Allocation/Recovery from the Schemes in FY2018

Three schemes appear to be outliers, due primarily to unusual levels of non-routine works or use of contractors at those schemes.

The aggregated local overhead cost allocation rate used during up to FY2018 is based on an allocation of all local overhead costs as a single multiplier of all direct labour costs. The rate will be different for each regional grouping after FY2020, and we have illustrated this by estimating the local cost allocation rates (as if they had been applied to FY2018) in four charts in Figure 60, one for each future operations centre (where the rates prior to FY2019 are the same in each chart).

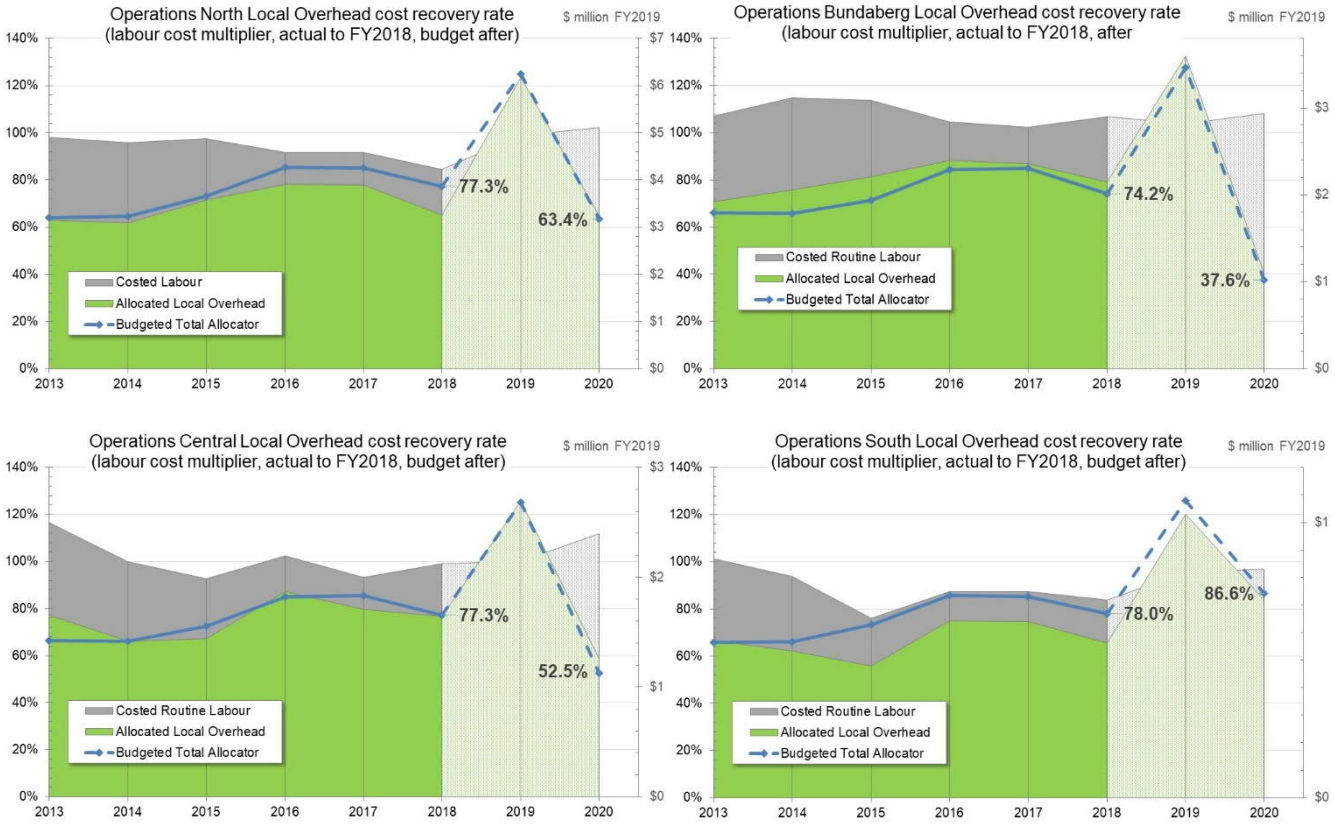


Figure 60 Changes in the Aggregated Local Overhead Cost Allocator over the Period

Figure 60 indicates some variation in the local overhead allocation rate to FY2018, but a significant decrease for two of the regions in FY2020 as local overhead costs reduce and improved time-writing reduces the residual labour cost.

The FY2019 budget shows a spike in cost, which largely reflects a budgeted over-recovery of costs in FY2019 (a budgeted over-recovery of $8.1 million in local overhead costs across all eight local overhead cost pools). This issue lends the budgeted FY2019 year to be an anomalous year. We note that Sunwater has not budgeted for an over (or under) recovery of local overhead costs in FY2020.

Table 38 summarises the above discussion on overhead recovery as budgeted for FY2019 and FY2020.

Table 38 Summary of Overhead Recovery Budgeted for FY2019 and FY2020

Local Ovehead Recovery	**2019**	**2020**
Total Cost	$25.4	$18.3
Total Recovery	-$33.5	-$18.3
Total Over (under) recovery	**$8.1**	**$0.0**

The increase in the South region may reflect a delay in the impact of the transition of St George to local management to affect local overhead costs. There are variations in cost recovery rates by region and it is clear from the charts that these variations will increase. This outcome supports Sunwater's view that assigning local costs locally would be more cost reflective and likely to encourage management action to improve performance in lower utilised regions.

Our analysis for the price period uses a base year step trend approach. This implies that once the prudent and efficient base year cost has been determined, the only changes to these costs and their allocation can come from step changes that, by definition, reflect regulatory requirements or new cost drivers.

The cost allocator is, however, influenced by labour costs incurred in Sunwater's unregulated business, and also by the level of non-routine work using labour costs. These elements are outside the scope of this review. Historical levels of unregulated labour costs are not necessarily an indication of the future, and since we have not reviewed the drivers of these costs, we have chosen to take at face value the levels of unregulated and non-routine activity provided for in Sunwater's FY2020 budget in order to calculate the base year local overhead cost allocator.

5.6 Summary of Findings

Local overhead costs include non-labour costs in the regions and residual labour (the cost of staff time not booked to work on the schemes).

There have been many changes to local overhead costs, but in general these have transferred cost to either direct cost categories (fleet costs) or to corporate overhead (removal of alternative forms of overhead cost recovery, and transfer of some work functions). Sunwater expects improved time-writing to reduce labour residual costs, which also reduces local overhead to be allocated to the schemes.

The limited data available on staff utilisation indicates that Sunwater's operational and maintenance (field) workforce are operating at close to industry best practice levels of utilisation. The time-writing issue is thought to affect senior staff primarily, and if the issue is resolved successfully residual local overheads will reduce further.

Sunwater's budget for FY2019 included a large increase in local overhead costs compared to other years, which we have concluded is the result of trying to recover losses made in earlier years as a result of poor time-writing practices.

It is our view that the non-labour local overhead costs are efficient, and the proposed increase in staff utilisation (via improved time-writing) would make the residual costs efficient.

6.0 Indirect Costs

Sunwater uses a set of cost pools to which time can be booked where the work activities (via work orders raised through SAP) are not specific to a single service contract. This generally applies where the work required benefits all assets in a class, covering multiple service contracts. While there are indirect cost pools which have dedicated staff; the majority of the indirect cost pools are ones to which costs are assigned by staff who belong to other resource centres and those costs are then allocated to individual schemes using cost allocation rules.

Where staff are permanently located in a dedicated indirect cost pool, their residual labour cost will attract a share of the local overhead (in Head Office, for example), and the combined residual will be allocated to (recovered from) service contracts using the relevant cost allocation rule for their indirect cost pool.

Time booked to an indirect cost pool by staff based in other resource centres will carry a loading for their own resource pool local overhead, and the combined cost will be allocated to service contracts using the relevant cost allocation rule for their indirect cost pool.

6.1 Indirect FTEs

Historically, only four indirect cost centres have had dedicated staff and are therefore resource pools, namely Safety, Water Planning and Environment, Operations EGM and Strategy - the remainder of the indirect cost centres act as virtual cost pools. Changes to the indirect cost centres and the allocated FTEs since FY2013 are shown in Figure 61, using data provided by Sunwater.[117] [118]

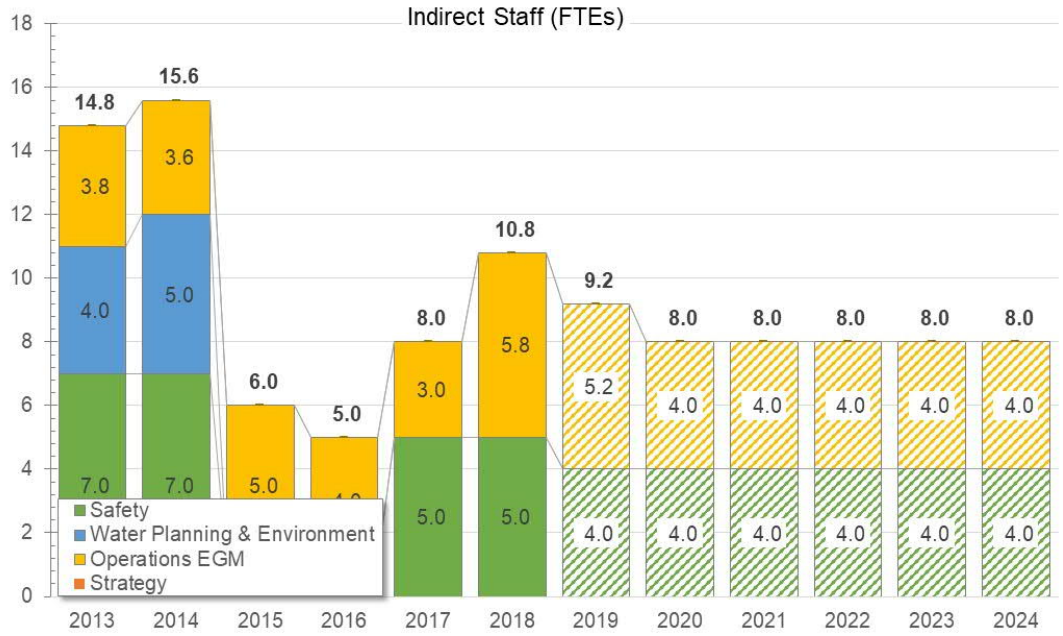


Figure 61 Number of Indirect FTEs

[117] RfI A68.
[118] RfI A7.

6.2 Indirect Costs

Sunwater's indirect costs increased by ~16.6% from FY2017 to FY2018 but decreased by ~3.8% in FY2019 as shown in Figure 62. A new cost centre for IGEM was added in FY2018. It should be noted that Figure 62 shows the whole-of-Sunwater indirect overhead before allocation. The allocation to the schemes under review is approximately $6 million in FY2018.

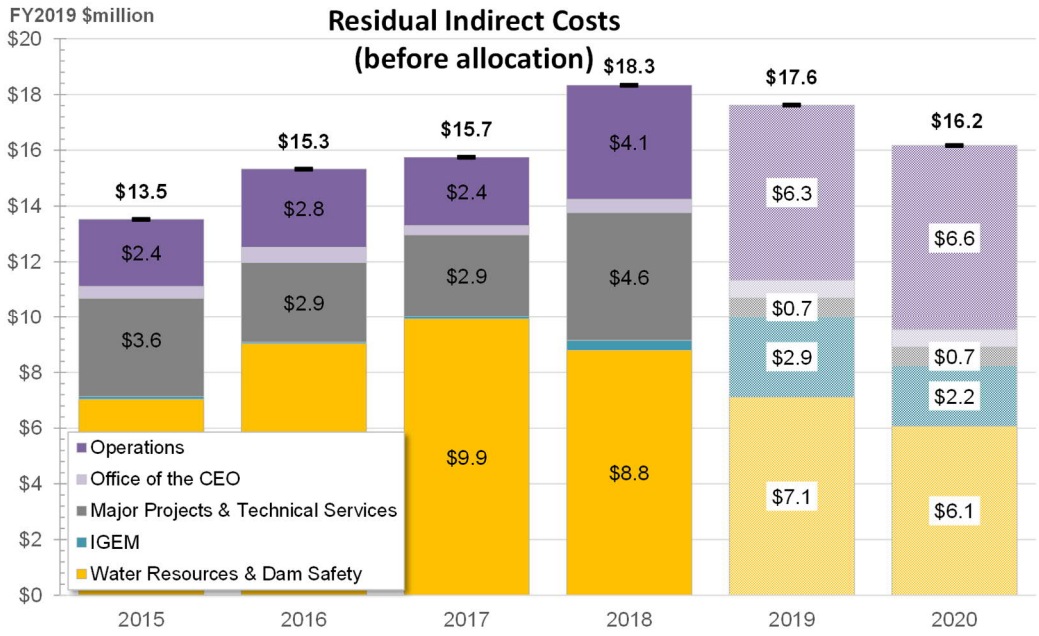


Figure 62 Sunwater's Indirect Costs

Sunwater has treated insurance as a direct cost, but since it pays one premium to cover all assets at risk and allocates a share of that premium to schemes, insurance meets Sunwater's definition of an indirect cost, and we have treated it as such. Since Sunwater doesn't include the cost of insurance in its indirect cost pools, we have assessed insurance as a separate topic in this section.

6.3 Insurance

Sunwater is insured via two major programs; Industrial Special Risks insurance (ISR) and Liability insurance. ISR premiums make up about 80% of Sunwater's insurance costs and are dependent upon declared asset value.[119] Combined general liability makes up approximately 15% of insurance premium costs.

In this section we address:

- Sunwater's policies and procedures for procurement of insurance
- Whole-of-business risk optimisation, with a review of self-insurance options and the deductible
- The predicted cost of insurance during the next regulatory period, Sunwater's expectations for insurance premium costs and the scale of deductibles
- The methodology used to allocate insurance costs to schemes.

[119] Generally defined as gross replacement cost for the assets covered.

6.3.1 Procurement of Insurance

Sunwater has engaged a professional broker (Marsh) to access the global market and provide advice on the appropriate level of insurance.

Prior to commencing the insurance renewal process each year, Sunwater completes an insurance renewal strategy which documents the proposed approach to renewal, an analysis of options and a market update.

Marsh submits the underwriting submission to the market at the end of March and undertakes market negotiations in conjunction with Sunwater until June, each year. Sunwater reports that it engages with insurance providers with the intention of obtaining better premiums by conducting workshops and infrastructure tours with providers to demonstrate Sunwater's risk management capability.[120] Sunwater also reports that it conducts a series of presentations and provides detailed documentation (such as dam safety inspection reports and asset valuations) to potential insurers each year, and has changed insurance providers to obtain more competitive premiums, sourcing from the Sydney, London and occasionally Asian markets.[121]

Sunwater reports that it has been '*actively managing insurance premium costs by reviewing Sunwater's risk profile, identifying and removing possible overlaps in coverage level and reviewing policy specifications (including deductibles) to ensure that our insurance coverage is appropriate and reflective of the risks faced by our business'.* This is evidenced by Sunwater undertaking a risk financing optimisation exercise, as discussed in Section 6.3.2.

We note that brokerage arrangements have not recently been formally reviewed. However, Sunwater has stated that that it intends to consider other insurance brokers as part of the FY2021 renewal process.

Concerns have been raised in the past on the level of competition of the insurance market. For instance, the Australian Government Actuary has previously reported that insurers have seemingly been able to implement premium rate increases specifically in Northern Australia unrestrained by competitive forces.[122] The Insurance Council of Australia (ICA) argues that despite challenges for insurance in Northern Australia (outlined in Section 6.3.3), the market for insurance is competitive.[123]

A recent Senate Inquiry into Australia's general insurance industry found premiums to be commensurate with the level of risk.[124] In a submission to this inquiry, the Australian Prudential Regulation Authority (APRA) notes a trend towards consolidation and heightened price competition.[125] The insurance industry is highly regulated, with insurance in Australia overseen by the Australian Securities and Investments Commission (ASIC), the APRA and the Australian Competition and Consumer Commission (ACCC).[126]

We conclude that:

- The *procurement* of insurance is prudent and efficient, since Sunwater uses the services of a professional broker to obtain competitive premiums via the global market and actively engages with insurance providers with the intent of negotiating better premiums
- The *cost of procuring insurance* is prudent and efficient, since Sunwater follows a competitive procurement process and obtains advice on the level of insurance annually from a professional broker.

[120] Sunwater (2018). Sunwater: Irrigation Price Review Submission - 1 July 2020 to 30 June 2024.
[121] Sunwater RfI Response A65
[122] Australian Government Actuary (2014). AGA Home & Contents Investigation Report North Queensland 3rd November 2014. Retrieved from: http://www.aga.gov.au/publications/home_contents_nth_qld/downloads/Home-Contents-North-QLD.pdf
[123] Insurance Council of Australia (2018). ICA RESPONSE TO ACCC ISSUES PAPER – NORTHERN AUSTRALIA INSURANCE INQUIRY.
[124] Australian Senate (2017) Final Report of the Senate Inquiry into Australia's general insurance industry. 10 August 2017. Pages 20-21.
[125] APRA (2017). APRA Submission to the Senate Economics References Committee Inquiry into Australia's general insurance industry. Page 1.
[126] Insurance Council of Australia (2018). ICA RESPONSE TO ACCC ISSUES PAPER – NORTHERN AUSTRALIA INSURANCE INQUIRY. Page 6.

6.3.2 Risk Optimisation, Self-insurance and the Deductible

Some customer representatives, including Queensland Federated Farmers and some Irrigator Advisory Committees, have questioned whether options for insuring risks have been adequately considered, particularly the extent of self-insurance.

Benchmarking conducted by Marsh in 2018 indicated that the majority of water companies self-insure Business Interruption.[127] Sunwater undertook a review of its major customer contracts in order to determine the likelihood of a business interruption loss and assessed the likelihood of a Business Interruption loss as *'highly unlikely'.* It decided to self-insure for Business Interruption in 2018.[128]

Sunwater has been investigating self-insurance for a broader range of risks as a means of potentially reducing insurance costs, and with the help of Marsh, has undertaken a risk financing optimisation exercise to assess the costs and benefits to Sunwater of insurance versus self-insurance specifically for water distribution assets.[129]

The key outcomes of the risk financing optimisation exercise as reported by Sunwater, are:

- Based on its net profit after tax, it could retain up to $9.9 million of self-assumed losses in a financial year
- The weighting allocation method indicated a risk tolerance of $16.1 million
- Losses in excess of $6.0 million could impact Sunwater's key financial ratios.[130]

Sunwater's current insurance policy has a deductible amount of $4.0 million. [131]

We note that benchmarking data from the Australian Water Industry Benchmarking Survey 2018 provided in Sunwater's Insurance Renewal Strategy[132] indicates that most water companies have differing deductible amounts for dams and other assets. Of the seven benchmark water firms with Property and Industrial Special Risk cover, four firms had specific exposure to dams, and all four of these had differing deductible amounts specific to dams. Sunwater's justification for specifying a single deductible amount for all assets is not clear, given the relatively higher value and risk of dam assets to assets such as pipelines or channels.

Sunwater has examined the possible outcome of self-insuring two types of assets:

- The cost reduction that could be achieved by excluding pipelines and channels was estimated to be $1.1 million. [133] It is unclear whether the risk in relation to pipelines is considered low enough to warrant their exclusion.
- The potential premium cost reduction achievable by excluding channels was calculated to be $380,000 (subject to market conditions).[134] Sunwater's current view based on this estimate, it's claims history and the replacement value of the excluded assets (reported to be $2.8 billion) is that the anticipated premium benefit does not sufficiently compensate for the risk retained.

Sunwater incurred flood damage in excess of the deducible in FY2011 and FY2013 (Table 39), in both years the damage costs were well above the deductible. Aside from those two years, the maximum annual damage was approximately $2 million. [135] If this pattern were to continue, the deductible would have to be reduced to about $1 million to have any significant impact in terms of claimed amounts, but it is likely that the increase in annual premium would make this a marginal benefit. On the other hand,

[127] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.
[128] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.
[129] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.
[130] Sunwater RfI Response A65
[131] Sunwater RfI Response A65
[132] Sunwater RfI Response A65
[133] Sunwater RfI Response A65
[134] Sunwater RfI Response A37
[135] Sunwater RfI 16 Attachment 1

a case could be made that the deductible should be increased, since recent history suggests that when a flood event does occur, the cost of the damage is considerably higher than the deductible in any case.

Table 39 Flood Damage

Flood damage ($ million nominal)							
FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018
$54.41	$2.03	$49.72	$0.00	$1.96	$0.56	$1.42	$0.62

Given stakeholder concerns, the significant increases in insurance costs and the consistent deviation from QCA accepted amounts outlined Figure 63, we consider that a detailed investigation should be continued into the optimal extent of self-insurance and the most efficient level of deductible.

6.3.3 The Cost of Insurance During the next Regulatory Period

Sunwater's recent annual insurance costs (expressed in $FY2019) appear to have stabilised since the sharp increase in FY2014 but remain considerably higher than the value recommended by the QCA in its 2012 pricing determination (Figure 63).

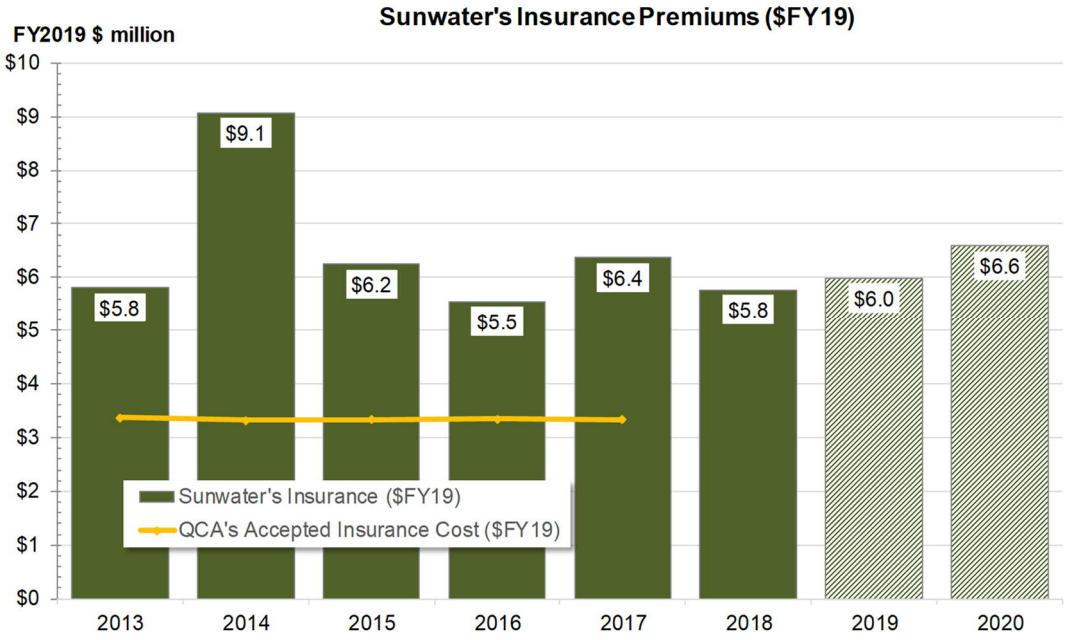


Figure 63 Sunwater's Insurance Cost ($FY2019)

This significant variance is highlighted in Table 40.

Table 40 Comparison of Sunwater Insurance Cost to the QCA 2012 Recommendation ($FY2019)

Year	Sunwater's Insurance Cost ($m)	QCA 2012 Recommendation ($m)	Actual vs QCA Recommendation
FY2013	$5.9	$3.4	72%
FY2014	$9.1	$3.4	173%
FY2015	$6.3	$3.4	87%
FY2016	$5.6	$3.4	66%
FY2017	$6.4	$3.4	91%

Sunwater has attributed this increase in insurance premiums during the period to global market movements, extreme weather events causing flood damage and changes in declared asset values.[136]

Of specific note in terms of increases over the period:

- The Queensland flood events in FY2011 and FY2013 (major flooding in the Fitzroy, Condamine/Balonne, Weir, Mary and Burnett Rivers and in the Lockyer Creek system) placed considerable upward pressure on the pricing of ISR insurance policies during the following years amongst bulk water supply businesses. There is a significant increase in insurance costs in FY2014, reflecting flood damage caused during Cyclone Oswald in FY2013 which had a significant impact on the pricing of ISR insurance policies.

  There is also a notable increase in insurance costs in FY2017, due to a revaluation of bulk water assets in FY2016 that resulted in an increase in declared asset values by $3.3 billion.[137]

  The bulk water asset revaluation involved updating the schedule of rates, bill of materials and ownership cost percentages in Sunwater's Work Management System to calculate replacement costs and was completed by two contractors from Maintenance Systems Solutions with assistance from Sunwater.[138]

  Sunwater values assets at replacement cost and applies indexation annually[139] to determine declared asset values. Revaluations of significant assets are done independently every five years, and the next asset revaluation is scheduled to occur in FY2021, during the price path.[140]

  Sunwater also completed an irrigation systems asset revaluation in FY2016, which increased irrigation system asset values by $1.0 billion.[141] This was an increase of 48% from the previous valuation carried out in 2008. The notes to the valuation indicate that the previous valuation had used unit rates dating from 1999, and the ownership cost percentages used were based on a methodology developed in 1991. In our opinion the 2016 increase in value was substantially driven by updating of missing or outdated data, and a future revaluation increase of this magnitude seems unlikely. In our opinion, future revaluations are likely to remain consistent with the *Queensland Roads and Bridges Index* that Sunwater currently uses, which has averaged 1.75% per annum since 2012 (slightly less than CPI). [142]

- A slight insurance cost increase is expected in FY2019. Marsh reports that this is due to local and global insurance losses in direct insurance and reinsurance markets impacting on premium rates.[143]

Marsh reported in 2018 that Sunwater's ISR premium rates have been around 0.04% of the gross replacement value of the assets covered for the past three years. [144]

Marsh believed the current insurance market to be a 'hard market' characterised by increases in global insurance rates, global insurance losses due to catastrophe, reduced capacity and restrictive coverage.[145] Marsh anticipated that premiums will rise given current market conditions, and that reductions should not be expected in the short to medium term until market loss ratios of insurance and reinsurance markets fall below 100% (citing combined loss ratios which exceeded 100% in 2017).[146] The Marsh report provided in Sunwater's pricing submission does not however quantify the expected change in future premium.

[136] Sunwater (2018). Sunwater: Irrigation Price Review Submission - 1 July 2020 to 30 June 2024.
[137] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.
[138] Sunwater (2016). Sunwater Bulk Water Asset Revaluation Project.
[139] Using the Queensland Roads and Bridges Index, which has increased by an average of 1.8% annually since June 2012 (slightly lower than CPI over the same period)
[140] RfI A37.
[141] Sunwater (2018). Sunwater Irrigation Systems Asset Revaluation Project.
[142] QCA Information Request FR5_Insurance costs
[143] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.
[144] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.
[145] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.
[146] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.

In order to provide further clarity on the pressures on insurance premiums, we researched, identified and reviewed recent reports on the global insurance industry.

A report from the Australian Business Roundtable for Disaster Resilience and Safer Communities estimates that annual extreme weather losses to infrastructure will grow to $39 billion per annum by 2050. [147] The ICA states that exposure in Northern Australia to natural disasters, specifically to tropical cyclones and floods, are particularly high relative to Southern Australia, as are claims costs.[148]

Figure 64 shows the tracks of tropical cyclones in Australia over the past 100 years, supporting the ICA's conclusion. [149]

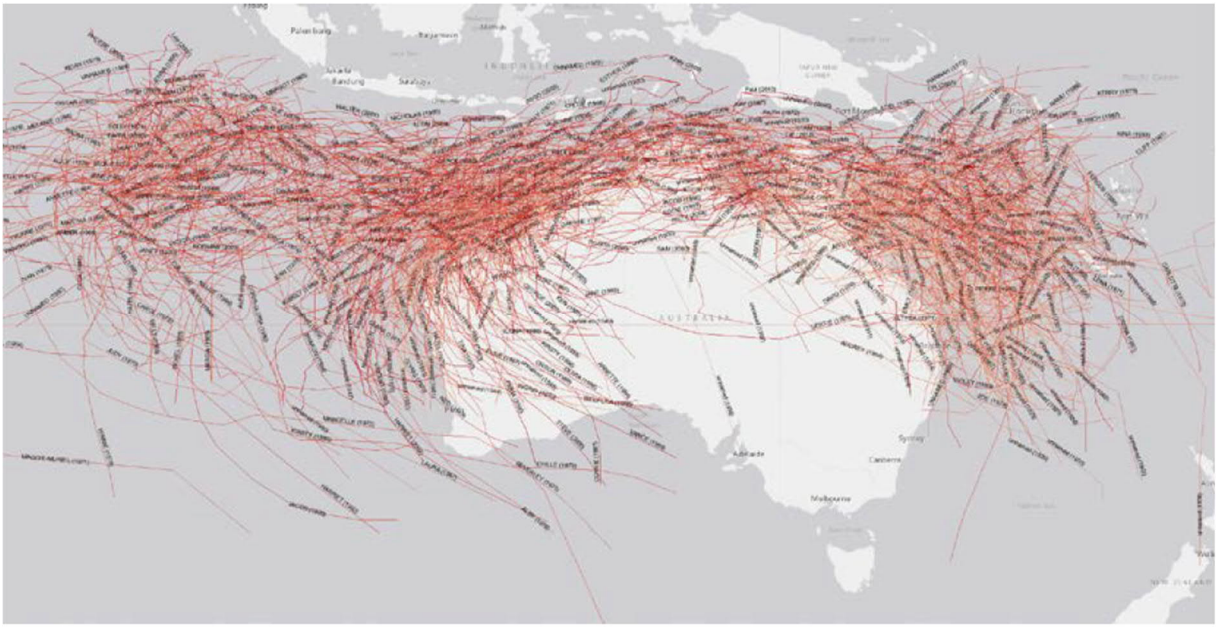


Figure 64 Tropical Cyclones in Australia over the Past 100 Years[150]

Figure 65 shows insured losses for global natural loss events, using data sourced from Munich RE.[151] The data indicates that the frequency of natural loss events has increased over the period. The value of global losses has been somewhat volatile, with significant loss years occurring in 2011 and 2017.

[147] Insurance Council of Australia (2018): ICA Response to ACCC Issues Paper – Northern Australia Insurance Inquiry
[148] Insurance Council of Australia (2018): ICA Response to ACCC Issues Paper – Northern Australia Insurance Inquiry
[149] Insurance Council of Australia (2018): ICA Response to ACCC Issues Paper – Northern Australia Insurance Inquiry, Page 24
[150] Source: ICA Response to the ACCC issues paper
[151] Munich RE (2019). NatCatSERVICE. https://www.munichre.com/en/reinsurance/business/non-life/natcatservice/index.html

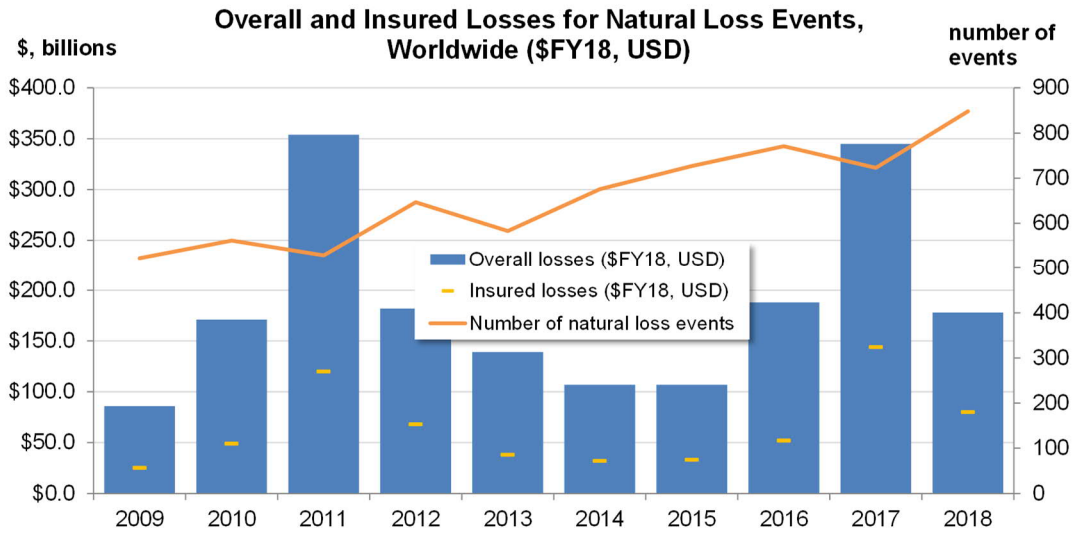


Figure 65 Worldwide Insurance Losses for Natural Loss Events ($FY2018, USD)

In its 2019 *Insurance Outlook*, Deloitte reported that property and casualty insurance markets and reinsurance markets experienced growth in the first half of 2018, citing a reduction in natural disaster losses from 2017,[152] and concluded that climate change may be correlated with a rise in frequency and severity of natural disasters. This appears to be a core issue for insurers.[153]

However, reports published by the Risk and Insurance Management Society (RIMS) argue that reinsurance rates are not necessarily expected to increase as a result of more frequent natural disasters,[154] because catastrophe related losses are offset by other underwriting profits, investment profits or new capital inflow, and there is competing capital from the securities markets through insurance-linked securities (ILS). This implies that the likelihood of the reinsurance market (and the insurance market) increasing rates as a result of catastrophic events is reduced.[155]

Data obtained from Aon on the global reinsurer capital supply (Figure 66) reinforces the RIMS view, indicating an increase in global reinsurance capital of 46% between 2009 and 2018.[156] Aon reports that whilst the insurance industry has experienced significant catastrophe loss years, there is excess reinsurance capacity.[157] Aon also states that the reinsurance market has accrued a relatively small proportion of the losses (approximately 25%), and that the reinsured portion of losses has been distributed around a broader pool of investors than was the case in the past.[158]

[152] Deloitte (2018). 2019 Insurance Outlook
[153] *ibid*
[154] Key Coleman. (2019, April 1). *Will Climate Change Impact Reinsurance Rates?* Retrieved June 2019, from Risk Management: http://www.rmmagazine.com/2019/04/01/will-climate-change-impact-reinsurance-rates/
[155] *ibid*
[156] Aon (2019). Reinsurance Market Outlook.
[157] *ibid*
[158] *ibid*

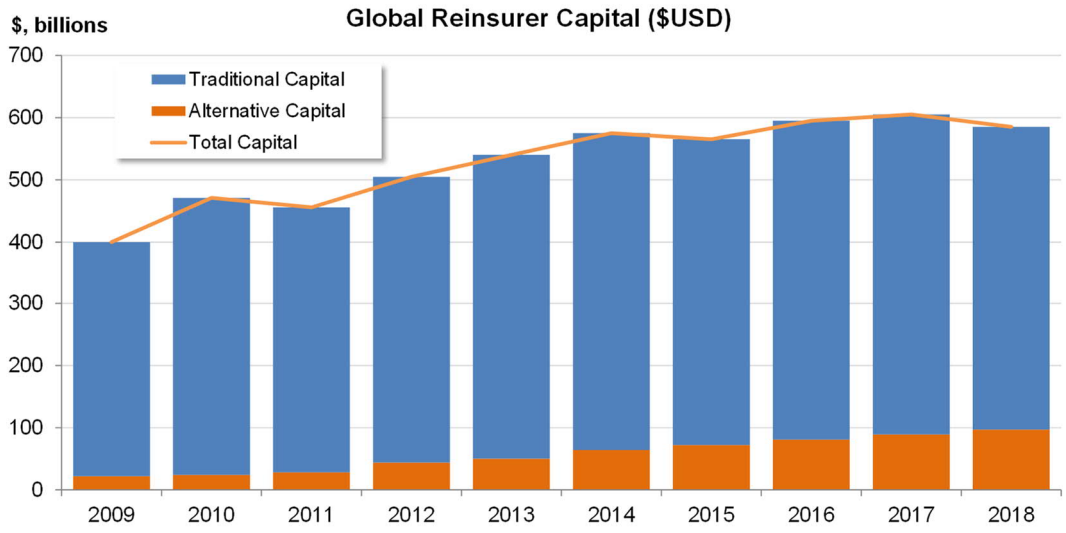


Figure 66 Global Reinsurer Capital

Jardine Lloyd Thompson (JLT Re) reported that global property-catastrophe pricing as of January 2019 was approximately 30% below 2013 levels on a risk-adjusted basis.[159]

Figure 67 presents data sourced from Munich RE,[160] indicating the insured losses for natural loss events in Australia/Oceania.

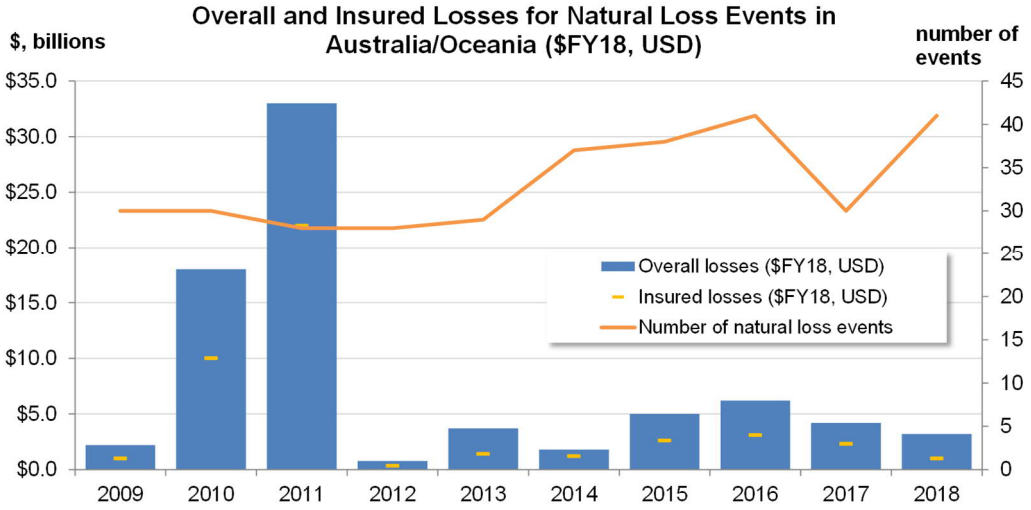


Figure 67 Insurance Losses for Natural Loss Events in Australia/Oceania ($FY2018, USD)

The number of natural loss events occurring in Australia/Oceania have increased over the period, but losses peaked in 2010 and 2011 (as a result of fires) and have fluctuated around much lower levels since then.

[159] JLT Re. *Reinsurance Market Prospective - Uncharted Territory* Retrieved June 2019, from FLT Re: https://www.jltre.com/our-insights/publications/reinsurance-market-prospective-2019/download-uncharted-territory
[160] Munich RE (2019). *NatCatSERVICE*. Retrieved from: https://www.munichre.com/en/reinsurance/business/non-life/natcatservice/index.html

Figure 68 presents data obtained from APRA[161], which shows that the net loss ratio (calculated as net incurred claims divided by net earned premium) for Australian Fire and ISR Insurers is highly variable around a medium-term mean of about 70%.

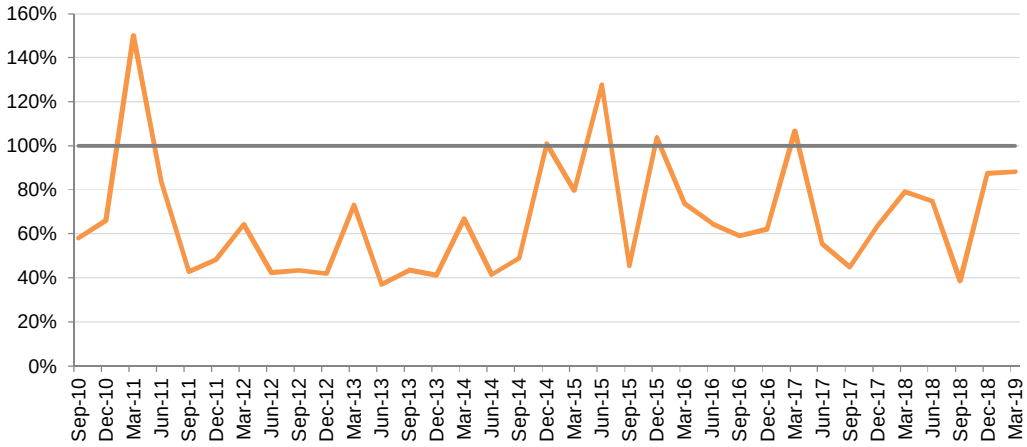


Figure 68 Net Loss Ratio, Fire and Industrial Specific Risks (ISR)

Insurance costs are also exposed to exchange rate movements through the global reinsurance market.

More recently a number of commentators (including Marsh[162]) note short-term upwards pressure on property insurance costs and reductions in limits following two years of big property losses, especially in Asia-Pacific. Aon (and others) expect increases in double digits through 2020 until additional capital is drawn into the market. It is clear that the market has continued to tighten, and that it may remain tight for at least one if not two cycles.

6.3.4 Sunwater's Proposed Insurance Costs

We note that Sunwater has not provided for step changes for insurance in the regulatory model, however:

- Sunwater states that it has assumed a 9% increase in FY2020 for property insurance in its budget based on advice provided by its broker.[163] The contract signed for the year is 4% higher than that.
- Sunwater states that the total FY2020 insurance cost has increased substantially.[164] [165] The insurance costs allocated to irrigation schemes amounts to $6.9 million in $FY2020.[166] This is greater than the change attributable to inflation.
- An asset revaluation is scheduled to occur in FY2021, during the price path period.[167] As ISR costs are dependent upon asset replacement value, this may impact on the insurance premiums paid, depending on the magnitude and direction of changes in asset values.

  The bulk water asset revaluation completed in FY2016 and associated increases to declared asset values by $3.3 billion (as reported by Marsh) were cited by Sunwater as the cause of insurance costs increasing from FY2016 to FY2017.[168] The change in replacement cost is due to

[161] APRA (2019). *Quarterly general insurance statistics*. Retrieved from: https://www.apra.gov.au/publications/quarterly-general-insurance-statistics
[162] November 2019 Insights, Marsh.
[163] RfI A37.
[164] RfI A24.
[165] QCA Information Request FR5_Insurance costs
[166] QCA Information Request FR1_Attachment 1_SFM version 2022
[167] RfI A37.
[168] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.

updated schedule of rates, bill of materials, and ownership cost percentages used to calculate replacement costs.

We also note that distribution systems assets were revalued on this basis in FY2018.[169] While an asset revaluation is scheduled to occur in FY2021, we have not been given reason to believe that changes in asset value resultant of this revaluation will be materially higher (or lower) than inflation, and we therefore assume that the revaluation will be broadly in line with Sunwater's indexation. The index used by Sunwater (the Queensland Roads and Bridges Index)[170] has historically (from FY2013) been slightly lower than consumer price index (CPI). We do not have reason to believe that Sunwater's indexation will be materially higher (or lower) than CPI over the price path. On that basis, Sunwater's asset valuations will remain constant in real terms.

Sunwater has accepted a quote for its insurance for FY2020 that was obtained competitively, so we recommend that this be accepted.

Insurance premiums are market driven and inherently difficult to forecast. In its November 2019 submission Sunwater refers to a Marsh report which indicates that the current annual rate of increase in insurance costs for Pacific Property is 17.8%.[171]

Sunwater has suggested in its November 2019 submission insurance costs could increase by 10% (or more) in 2021, and we recommend this be accepted although it is lower than the current rate increases advised by Marsh. We note that commentary on market conditions (and the current upward pricing pressure) is generally limited to the short term. In relation to the following years in the price path, Sunwater has received advice from Marsh that *'[Marsh does] not have any written evidence to support the 10% increase; this is based on [Marsh's] experience and knowledge of the insurance market'*. The implication is that the rate changes over the later years of the price path period are more uncertain (being influenced by the extent of claims in relation to natural disasters over that period, which cannot be predicted in advance). As there is no documentary evidence of an expected increase beyond FY2021 and it is not possible to predict what will happen in future years, we recommend that insurance costs be escalated by CPI for the remaining years in the price path (FY2022-FY2024).

We therefore recommend that:

- The insurance premium for FY2020 be accepted as signed by Sunwater
- A substantial increase of 10% be assumed for FY2021
- Insurance costs be escalated by CPI for the remaining years in the price path (FY2022-FY2024)
- There is no indication or good reason that Sunwater's asset values should increase in real terms over the next period, and we recommend that Sunwater's indexation be assumed to continue (so that values are increased by CPI)
- Potential premium reductions may still exist as a result of risk financing optimisation.

We note that Sunwater has received compensation for most of the damage that occurred in FY2011 and for part of its FY2013 claims. The cost analysis performed for this review has not included consideration for any insurance compensation.

Numerous stakeholder submissions raised concerns regarding the assessment of insurance costs following from the QCA's draft report. These, alongside our position on the respective issues, are outlined in Table 41.

[169] Sunwater (2018). Sunwater Irrigation Systems Asset Revaluation Project.
[170] QCA Information Request FR5_Insurance costs
[171] Global Insurance Prices Insights, November 2019. Marsh

Table 41 Stakeholder Submissions on Insurance Costs

Stakeholder	Summary of Issue	AECOM Position
Mareeba Dimbulah Irrigation Area Council[172]	Recommended that the insurance costs be reviewed, to ensure that declared asset values excludes schemes that have shifted to Local Management Arrangements.	Sunwater's declared asset values decreased from FY2018 to FY2019. [173] We also note that the insurance costs outlined in this report are those which have been allocated to regulated schemes.
Fairbairn Irrigation Network[174]		
Queensland Farmer's Federation[175]		
Wide Bay Burnett Regional Organisation of Councils[176]	Noted there has not been a comparison of insurance costs to other jurisdictions and no assessment of the insurance costs in North Queensland vs South Queensland.	Sunwater is not insured on a basis that distinguishes north and south Queensland. Sunwater's insurance is determined using one premium rate for the overall business, and costs are allocated to schemes by declared asset value. We have recommended risk as an alternative allocation methodology. We have also reviewed benchmarking data from the Australian Water Industry Benchmarking Survey 2018 provided in Sunwater's Insurance Renewal Strategy[177] in relation to the form of Sunwater's insurance.
Fairbairn Irrigation Network[178]	Noted there was no comment on the claim process to ensure maximum benefit is derived from the insurance programs.	We have reviewed Sunwater's insurance process and found this to be efficient.

[172] Mareeba Dimbulah Irrigation Area Council (2019). Irrigation Price Review 2020-24 - Submission on Draft Prices - Mareeba Dimbulah Water Supply Scheme (MDWSS). https://www.qca.org.au/wp-content/uploads/2019/11/mareeba-dimbulah-irrigation-area-council-submission-irrigation-price-review-2020-24.pdf
[173] Marsh (2018). Sunwater Irrigation Price Review Submission Appendix E - Marsh: Report on insurance market.
[174] Fairbairn Irrigation Network (2019). https://www.qca.org.au/wp-content/uploads/2019/05/fairbairn-irrigation-network.pdf
[175] Queensland Farmer's Federation (2019). Re: Queensland Competition Authority (QCA) irrigation price investigation 2020-24. https://www.qca.org.au/wp-content/uploads/2019/11/qff-submission-irrigation-price-review.pdf
[176] Wide Bay Burnett Regional Organisation of Councils (2019). WBBROC Response to the QCA Draft Review of Sunwater Irrigation Pricing – 2019-2024. https://www.qca.org.au/wp-content/uploads/2019/11/wbbroc-submission.pdf
[177] Sunwater RfI Response A65
[178] Fairbairn Irrigation Network (2019). https://www.qca.org.au/wp-content/uploads/2019/05/fairbairn-irrigation-network.pdf

6.4 Other Indirect Cost Pools

In 2017, Sunwater restructured its corporate activity to increase its regional focus, improve customer service and cost efficiency. The restructure included relocating project manager roles from Brisbane to enable better engagement with customers and aligning 'like' indirect functions (the dam safety team was moved into the Operations Centre with hydrology and flood modelling).

The restructure was intended to reduce travel costs, deliver greater efficiencies and integration across planning and delivery teams and improve engagement between customers and Sunwater's planning processes, and resulted in a net reduction of 20 FTEs mostly from Head Office.

Deloitte reviewed indirect cost pools during its review of Sunwater's staffing in 2012. The cost pools have been changed significantly since then. With functions moved and/or merged with local overhead resource centres, most of these cost pools are now virtual; such that costs are now allocated to groups of schemes as there are no permanent staff costs that can be allocated to a single scheme.

Operations This group of cost pools includes several cost centres that have moved from local overhead, and some cost centres have been merged from FY2020 onwards as shown in Table 42. The cost increases shown in Operations are transfers from the Major Projects cost pools and from local overhead and are matched by cost reductions those areas.

Table 42 Indirect Operations Costs

Code	Cost Centre	FY2015	FY2016	FY2017	FY2018	FY2020	Adjustment to FY2018
124	IND - IP Environment		$0.17	$0.19	$0.16		No longer in use (merged with 695)
640	Operations - EGM RC	$0.99	$1.23	$1.01	$1.54	$1.97	
652	Pump & Dist Indirect	$0.63	$0.73	$0.65	$0.65	$0.73	
653	Ops Support Indirect				$0.62	$0.95	Moved from 732
644	Operations & Scheduling					$0.68	Moved from Local Overhead
657	Headworks Indirect	$0.18	$0.14	$0.13	$0.68	$0.70	
664	IND - BW Environment		$0.31	$0.29	$0.23		No longer in use (merged with 695)
695	Environment					$0.75	Moved from Local Overhead
122	Safety					$0.85	Moved from Local Overhead
697	IND - Environment	$0.60	$0.22	$0.18	$0.21		No longer in use (merged with 695)
Total Cost		**$2.40**	**$2.80**	**$2.45**	**$4.09**	**$6.63**	

Water Resources and Dam Safety This group of cost pools has reduced in cost since FY2017, largely as a result of rationalisation with local or corporate overhead functions as shown in Table 43.The group includes a new cost centre for IGEM. This cost is reviewed specifically in Section 6.5.

Table 43 Indirect Water Resources and Dam Safety Costs

Code	Cost Centre	FY2015	FY2016	FY2017	FY2018	FY2020	Adjustment to FY2018
643	Hydrographic Services					$1.01	Moved from Local Overhead
646	IGEM	$0.10	$0.05	$0.10	$0.36	$2.17	New cost centre
648	Flood Room Ops	$0.16	$0.59	$1.06	$0.50		Event-based variable cost, recovered separately
651	Dam Safety Indirect	$0.61	$0.76	$0.97	$0.80	$1.30	
654	Asset Strat Supp Ind	$0.00	$0.00		$1.60	$0.65	Previously part of 731
655	BWIND-Channels&Drnge	$0.11	$0.01	$0.02			No longer in use
661	Cust Supp IND	$4.15	$4.47	$4.53	$4.25		No longer in use (11 FTEs retained and assigned to 690)
663	Hydrographic Service	$0.00	$0.00	$0.00	$0.00		No longer in use (merged with 643)
665	Bill & Compl IND	$0.97	$1.02	$0.91	$0.76		No longer in use (merged with 690)
666	Comm Contrct-IND	$0.25	$1.11	$1.17	$0.58		No longer in use (moved to Corporate)
690	Customer Services					$3.11	Moved from Local Overhead
696	Water Planning Ind	$0.76	$0.20	$0.27	$0.30		No longer in use
731	Ass Del - BW IND	$0.01	$0.86	$0.99	$0.00		No longer in use (merged with 654)
Total Cost		**$7.13**	**$9.08**	**$10.02**	**$9.15**	**$8.24**	

The remaining cost groups included as indirect costs are for the Major Projects and Technical Services and Irrigation Pricing (grouped as the Office of the Chief Executive):

- The Major Projects group of indirect costs has been reduced to a single cost pool, a cost reduction of almost $4 million from FY2018 to FY2020 ($2.6 million of this cost has been moved to Operations). This reflects the downturn in Sunwater's project activity.
- Irrigation pricing is treated as an indirect cost (it only applies to irrigation schemes), and the cost is spread over the price path. This cost has increased by 30% since FY2018.

6.5 IGEM

In 2015, Inspector-General Emergency Management (IGEM) conducted two reviews into Queensland flood events - the Callide Creek flood events during Tropical Cyclone Marcia and the East Coast low in May. The reviews revealed some gaps in relation to warning messages, community education and flood monitoring, and recommendations were made to improve the emergency management.

From the Callide Creek Review, the IGEM concluded that the information communicated to the community on rainfall predictions and how the forecasted flash flooding would affect them could be significantly improved, and that the availability of this information could have made a difference to their preparedness for and during both cyclone events. The warnings issued were not received by some residents, while others received them too late because Sunwater's warning service was by subscription only and the Local Disaster Coordination Centre (LDCC) was not aware of this.

The review into the east coast low in South East Queensland effectively reinforced that the outcomes of the Callide review should be implemented state-wide. Subsequent legislation changes in July 2017 effectively cemented the EAP components of the projects as a legal requirement.

The Callide Creek Flood review recommendations are summarised in Table 44.

Table 44 2015 Callide Creek Flood Review IGEM Recommendations

Recommendations	
1	That *the Department of Energy and Water Supply and Sunwater undertake the necessary studies to determine whether or not it is feasible to operate Callide Dam as a flood mitigation dam. Such studies should include matters in relation to, but not limited to:* • *The effect on the Callide Valley water supply* • *Dam safety issues* • *Actual mitigation outcomes* • *Cost-benefit analysis of alternative strategies* • *Alternative means of effecting improved community outcomes* *The results of this work should be made public to enhance public knowledge and provide confidence regarding dam operations.*
2	That *Sunwater provide downstream residents with easily understood information regarding operation of the dam, and the impacts that various outflows may have for them, in accordance with mapping prepared for the Emergency Action Plan. This information should be complementary to any information from the Banana Shire Council.*

5	That *the Department of Energy and Water Supply, in conjunction with Sunwater, seek clarification of the dam owners' legal obligation to comply with Emergency Action Plans and, if required, investigate how a more flexible approach may be adopted.*
6	That*, in accordance with recommendations of the BMT WBM report, the Banana Shire Council, Sunwater, and the Bureau of Meteorology, under the stewardship of the Department of Natural Resources and Mines, jointly identify the requirements for a suitable gauge network for the Callide Valley to allow meaningful and timely flood warnings. The review should identify key stakeholders, examine potential funding sources and include a cost benefit analysis.*
8	That*, prior to September 2015, Sunwater and the Banana Shire Council jointly develop a multi-channel, common warning strategy, including common language and consistent messaging, for residents downstream of Sunwater assets within the Banana Shire Council, and clearly articulate procedures for dissemination.*
9	That *… the Banana Shire Council and Sunwater ensure Emergency Alert messages are pre-formatted, consistent, polygons are identified according to risk, and that they are tested and practiced with the State Disaster Coordination Centre.*

The IGEM review of Seqwater and Sunwater flood warnings communication made separate recommendations to improve the effectiveness and timeliness of communication with the public and other stakeholder groups and are summarised in Table 45.

Table 45 2015 IGEM Warnings Review Recommendations

Recommendation		Responsible (lead) entity	Recommendation
1	Messaging	Seqwater and Sunwater	*Seqwater and Sunwater focus immediate attention and action on issues of collaboration with local disaster management groups, addressing information sharing, messaging responsibilities, terminology and timing.*
7	Disaster Operation	Seqwater and Sunwater	*Emergency Alert messages for dam related events are:* • *pre-formatted, consistent and current polygons are identified* • *content aligned with the Queensland Emergency Alert Guidelines* • *stored and practised in consultation with the State Disaster Coordination Centre*
8	Training, Education and Public Information	Seqwater, and Sunwater (and other referable dam owners where relevant)	*Seqwater and Sunwater (and other referable dam owners where relevant) proactively engage with relevant local governments to develop and implement a community education and information program for identified communities at risk of dam release scenarios where the downstream flooding can be directly related to dam outflow.*

Sunwater's response to the IGEM's recommendations and our commentary on its response is presented in Table 46.

Table 46 Sunwater's Response to the IGEM Recommendations

IGEM Recommendation	Sunwater Proposal	Commentary
Warning Review: 1, 7	Establish a dedicated control room that will be staffed continuously during events. The control room will provide continuous monitoring of weather, stream and storage conditions, and activate early warnings and notifications.	• A number of referable dams (Callide, Cania, Coolmunda, Julius, Kinchant Kroombit, Leslie, Moura, Teemburra and Tinaroo Falls) currently don't have any Bureau of Meteorology (BoM) or Local Disaster Management Groups (LDMG) warning system in place • Sunwater needs to hire new skilled staff in order to run and monitor the re-established flood and control rooms The Sunwater proposal and associated cost claim appears to be prudent.
Callide Flood Review: 9 Warning Review: 1, 7	Upgrade and integrate data sources on weather forecasts, rainfall and streamflow from various sources such as the Bureau of Meteorology, local councils and state agencies.	Dedicated control rooms will provide the latest monitoring data on dam and weather condition, but this data will need to be integrated with information from other agencies and will require further collaboration and better information sharing. Sunwater had to contract new skills to update the mapping polygons. The proposal from Sunwater to upgrade and integrate data sources is prudent for better communication of warning messages.
Callide Flood Review: 4 Warning Review: 1, 7	Develop and sustain emergency planning processes and documentation that will update EAPs to reflect LDMG engagement and agreed messages.	Developing emergency planning processes will enable Sunwater to keep the EAPs up to date in future. There is an opportunity for Sunwater to simply update their existing emergency planning process (if any) rather than developing a new one completely.

IGEM Recommendation	Sunwater Proposal	Commentary
Callide Flood Review: 4, 8 Warning Review: 1, 7	Implement communication and engagement arrangements for partnering with LDMGs to develop new tailored messages and triggers for each dam and redevelop all Emergency Action Plans (EAPs). This will also develop a real-time graphical interface and messaging platform that will provide both a push and pull information service directly to communities.	Sunwater is responsible for collaboration with local disaster management groups (LDMGs). Sunwater needs to develop its relationships with LDMGs for referable dams in order to be able to fulfil their proposal and redevelop all EAPs. Sunwater only has an advisory role for some of the referable dams, but interactions with LDMGs appear to be irregular. Sunwater currently assesses its relationships with Moura, Callide and Glenlyon as 'poor'. A majority of the referable dams lack a flood messaging framework, and Sunwater's proposal to develop a real-time graphical interface and messaging platform seems prudent for these reasons.
Callide Flood Review: 4 Warning Review: 8	Deploy a community education and staff training program that will ensure communities understand their flood risk and have personal emergency plans in place ready for an event.	Training and public education on risk of dam releases is a responsibility Sunwater is expected to share with local government. There appears to be room for improvement in this area.

This is a new obligation imposed on Sunwater, and therefore is a prudent cost increase. Sunwater is permitted to recover prudent and efficient costs incurred to implement the IGEM recommendations under the Minister's referral notice. The procedure Sunwater has proposed for cost allocation/recovery is summarised in Section 6.7.1.

Sunwater prepared a business case for implementation of the IGEM recommendations in March 2016, in which it identified and evaluated four possible options and recommended the option that was considered to offer the most cost effective and prudent outcome. This option, to develop a dedicated control room staffed to provide monitoring and oversight during flood events, was approved by the Board and has been implemented.

The key project outcomes and activities include:

Upgrading and integrating data sources

- Utilising a number of existing systems and providers that will provide the eyes and ears necessary to inform decisions, plan, educate and advise
- Accessing existing systems available to Department of Natural Resources and Mines (DNRM) and the BoM (such as Environment) and also partnering with Councils to better manage local hydrographic installations
- Strengthening Sunwater's existing capabilities with new stations and reorganised internal systems such as SCADA to ensure access to all operational data
- Installing additional river height and rainfall stations to fill critical data gaps
- Installing cameras at strategic locations to compliment data feeds
- Installing gate monitoring of the operations of analogue spillway gates

Developing forecast modelling and impact mapping	• Strengthening Sunwater's forecasting ability using Unified River Basin Simulator (URBS) hydrologic models that are linked to BoM rain forecasts to ascertain from an early stage what messaging to the community will be required • Operational hydrological modelling capability including probabilistic forecasting through URBS to give a range of possible scenarios • Hydraulic modelling including calibration, zone mapping and historical events
Developing a dedicated control room	The control room will: • Provide continuous monitoring of weather, stream and storage conditions • Activate early warning and notifications • Rapidly ramp up capacity in an event to undertake the roles of Incident Controller, Flood Modelling, and Communications • Be staffed by from Flood and Streamflow and Corporate Communications group
Ensuring the quality and assured delivery of ongoing planning and documentation	• Routinely updating EAPs to reflect changing LDMG engagement/awareness strategies and agreed messages • Periodically testing emergency management arrangements and organising and participating in exercises • Providing messages to the Emergency Alert platform at State Disaster Coordination Centre (SDCC) • Coordinating multichannel messaging
Delivering and maintaining communication and engagement systems	• Developing a real time graphical interface and messaging platform that will provide both a push and pull information service directly to communities. This will involve a graphical flood alert platform allowing anyone to register to receive information, automated data flows from river height stations direct to residents, graphical flood risk information and multichannel communications including SMS, Sunwater App, Twitter, Facebook • Establishing a new automated water information / alert service that will equip the business to provide robust messaging to the community using new technologies and social media • Partnering with LDMGs to develop new tailored messages and triggers for each dam and redeveloping all EAPs • Implementing non-telephone network dependent siren warning systems at high risk dams as an emergency backup warning system • Adopting NOGGIN software to allow Sunwater to contribute directly to the State Disaster Coordination Centre during events
Ongoing roll-out and updating of community education and staff training materials and programs	• Developing flood risk messaging maps (similar to Callide brochure) for each dam • Delivering a flood risk education campaign similar to Callide which includes flood risk map brochure and open days • Staff training

Sunwater's approach was assessed by an independent reviewer who reported in January 2017 that the response is appropriate for meeting the recommendations of the two IGEM reviews, referring to the Attorney Generals Department system design brief for a Total Flood Warning System in his review.

The initial cost estimate was $9.5 million plus net annual operational costs of $2.1 million as detailed in Table 47.

Table 47 Sunwater's IGEM Development and Operational Costs

Project Development	$ million
Control Centre Establishment	**$0.51**
Control Centre design, fitout and testing	$0.13
Forecasting and messaging system development	$0.16
Data acquisition	$0.02
Develop web based portal (information presentation platform)	$0.20
New/Improved Hydrographic Infrastructure	**$1.04**
New River Stations	$0.24
New Rain Stations	$0.08
New Connection to stations owned by others	$0.04
New Gate Sensor systems (Callide & Coolmunda)	$0.20
New Camera Locations	$0.06
Siren system as a backup emergency warning	$0.42
Hydrology	**$0.91**
Flood forecasting models	$0.12
2D Modelling and flood risk mapping	$0.72
Establish flood classifications	$0.07
Emergency Planning and LDMG Partnering	**$1.40**
Develop alert levels, messages and EAPs for 23 Dams in partnership with LDMGs	$1.40
Community Education	**$0.64**
Develop Education Resources	$0.23
Community Open Days	$0.14
Education campaigns	$0.28
Training and Testing	**$0.74**
Training	$0.51
Emergency Exercises	$0.23
Indirect Costs	**$1.63**
Project Management	$0.80
Project Administration, documentation, support and approvals	$0.57
Procurement and Legal	$0.26
Contingencies	**$2.58**
Total Project Cost	**$9.45**

Operational Costs	$ million
Additional staff positions	**$0.73**
Two hydrologists to develop, maintain and operate during events 2D flood models, URBS flood forecast models and impact mapping	
An additional corporate communications advisor to develop and deliver education programs and manage communications during events	
A data technologist to develop and maintain data systems and multimedia platforms	
An emergency management advisor to engage and partner with disaster management organisations to ensure seamless operation between SunWater EAPs and LDMG Disaster Management Plans, and to develop and run regular emergency exercises	
Three additional regional staff to develop and maintain relationships with LDMGs, in field flood risk hazard identification and assist with the delivery of community education campaigns	
A project support officer to provide support for the development, publication and management of EAPs	
System support costs from external contractors	$0.35
Additional accommodation costs	$0.14
Depreciation	$0.05
Total Project Cost (exclusing overheads)	**$1.27**
Offset by savings in costed labour	**-$0.48**

We assessed the scope of works and the cost estimates provided in the business case and note that the actual development costs finished lower than the estimate (as advised by Sunwater). The solution required $0.5 million for a control centre, almost $2 million for flood modelling and hydrographic infrastructure, and $2.8 million for emergency planning, community engagement, training and testing. Given the risk that this solution is intended to mitigate, we consider these costs reasonable.

Our assessment of Sunwater's response to the IGEM recommendations is that it is an investment in new capability that appears to be prudent and cost effective. IGEM expected this new service to be funded by irrigators through pricing. Some related services will be funded separately through Community Service Obligation grants from the Government.

The change for IGEM is a cost increase of $2.21 million per annum to the base year.

6.6 Base Year Indirect Costs for Allocation

Our review of indirect costs identified FY2018 costs that we believe would be prudent and efficient to be included in the cost pools to be allocated. We show the FY2018 costs in Table 48, together with the adjustments that we consider reasonable and Sunwater's structural changes (which are largely cost transfers between indirect, corporate and local overhead categories).

Table 48 Base Year Indirect Costs Before Allocation

Cost Attribution	Code	Cost Centre	FY2015	FY2016	FY2017	FY2018	FY2020	Adjustment to FY2018	Corporate Overhead Adjustment to FY2018	ICT Desktop Adjustment to FY2018	Adjustment to FY2018	Adjusted Base Year
Major Projects & Technical Services	726	Ind AssRen Plan&Ctrl	$0.80	$1.14	$1.29	$2.60		No longer in use (moved to 653, 654)	-$0.43		-$2.17	
	732	Ind Asset Mgt	$0.00	$0.34	$0.59			No longer in use (moved to 653, 654)				
	733	Ind Major Projects				$0.90		No longer in use	-$0.17		-$0.73	
	751	IPIND- Quality Assur	$0.73					No longer in use				
	681	Ind Technical Serv	$0.89	$0.35	$0.26	$0.01	$0.67		$0.00		$0.67	$0.67
	683	Ind Technical Serv				$0.21		No longer in use	-$0.03		-$0.18	
	710	GM Mjr Projects & TS	$1.13	$1.05	$0.80	$0.89		No longer in use (moved to Local Overhead)	-$0.01	-$0.01	-$0.87	
Office of the CEO	254	Irr Pricing Indirect	$0.43	$0.55	$0.34	$0.48	$0.62		-$0.05		$0.20	$0.62
Operations	124	IND - IP Environment		$0.17	$0.19	$0.16		No longer in use (merged with 695)	-$0.03		-$0.13	
	640	Operations - EGM RC	$0.99	$1.23	$1.01	$1.54	$1.97		-$0.01	-$0.01	$0.45	$1.97
	652	Pump & Dist Indirect	$0.62	$0.73	$0.65	$0.65	$0.73		-$0.10		$0.18	$0.73
	653	Ops Support Indirect				$0.62	$0.95	Moved from 732	-$0.04		$0.37	$0.95
	644	Operations & Scheduling					$0.68	Moved from Local Overhead	-$0.20		$0.88	$0.68
	657	Headworks Indirect	$0.18	$0.14	$0.13	$0.68	$0.70		-$0.10		$0.12	$0.70
	664	IND - BW Environment		$0.31	$0.29	$0.23		No longer in use (merged with 695)	-$0.04		-$0.18	
	695	Environment					$0.75	Moved from Local Overhead	-$0.02	-$0.02	$0.78	$0.75
	122	Safety					$0.85	Moved from Local Overhead	-$0.01	-$0.01	$0.87	$0.85
	697	IND - Environment	$0.60	$0.22	$0.18	$0.21		No longer in use (merged with 695)	-$0.04		-$0.18	
Water Resources & Dam Safety	255	Strtgy Ind Reg IND						No longer in use				
	643	Hydrographic Services					$1.01	Moved from Local Overhead	-$0.09		$1.10	$1.01
	646	IGEM	$0.10	$0.05	$0.10	$0.36	$2.17	New cost centre	-$0.35		$2.16	$2.17
	648	Flood Room Ops	$0.16	$0.59	$1.06	$0.50		Event-based variable cost, recovered	-$0.08		-$0.42	
	651	Dam Safety Indirect	$0.61	$0.76	$0.97	$0.80	$1.30		-$0.14		$0.65	$1.30
	654	Asset Strat Supp Ind	$0.00	$0.00		$1.60	$0.65	Previously part of 731	-$0.27		-$0.68	$0.65
	655	BWIND-Channels&Drnge	$0.11	$0.01	$0.02			No longer in use				
	661	Cust Supp IND	$4.15	$4.47	$4.53	$4.25		No longer in use (11 FTEs retained and assigned to 690)	-$0.40		-$3.85	
	663	Hydrographic Service	$0.00	$0.00	$0.00	$0.00		No longer in use (merged with 643)	$0.00		$0.00	
	665	Bill & Compl IND	$0.97	$1.02	$0.91	$0.76		No longer in use (merged with 690)	-$0.14		-$0.63	
	666	Comm Contrct-IND	$0.25	$1.10	$1.17	$0.58		No longer in use (moved to Corporate)	-$0.14		-$0.44	
	690	Customer Services					$3.11	Moved from Local Overhead	-$0.04	-$0.04	$3.18	$3.11
	696	Water Planning Ind	$0.76	$0.20	$0.27	$0.30		No longer in use	-$0.05		-$0.25	
	731	Ass Del - BW IND	$0.01	$0.86	$0.99	$0.00		No longer in use (merged with 654)	$0.00		$0.00	
Total Cost			**$13.52**	**$15.32**	**$15.74**	**$18.32**	**$16.17**		**-$2.96**	**-$0.08**	**$0.90**	**$16.17**
Local Overhead allocation included			*$1.77*	*$2.11*	*$2.75*	*$3.38*						
Indirect costs allocated as per Sunwater's CAM												

Sunwater's cost allocation policies have changed since FY2018, and corporate overhead is no longer allocated to indirect costs. The ICT charge that previously applied has also been removed. The net impact is a reduction of indirect costs by approximately 12% from FY2018 to FY2020.

A summary of changes to indirect costs is presented as Table 49.

Table 49 Summary of Changes to Indirect Costs

Corporate Overhead	Indirect
Original Cost (Actual, in $FY2019)	**$18.33**
Adjustments	
Cost pools merged / no longer in use	-$6.35
New function / cost increase	$2.16
Function moved to Corporate Overhead	-$0.44
Function moved between Local Overhead and Indirect	$5.94
ICT charges (removed)	-$0.08
5% Loading on materials (removed)	-$0.25
Corporate Overhead (removed)	-$2.71
Allocated separately (MP&AS, Flood Room Ops)	-$0.42
Base Year	**$16.17**

6.7 Allocation of Indirect Costs

These cost pools are treated as indirect because their costs are only relevant to a specific subset of Sunwater's service contracts. Allocation of these costs vary for almost every cost type, and we have illustrated the complexity of this process for indirect costs in this section. Most cost types are allocated using labour costs, but IGEM, flood operations and insurance related costs are allocated differently.

We regard insurance as an indirect cost type, and therefore have discussed the allocation of insurance costs in this section.

6.7.1 Allocation of Flood Room Operations and IGEM Costs

Allocation of flood room operations and IGEM is made to specific service contracts that benefit from the cost pool, as highlighted in Table 50.

Table 50 Allocation of Flood Room Operations and IGEM Indirect Costs

Service Contract	Service Contract Type	Flood Room Operations Indirect Cost Pool	Inspector General Emergency Management Indirect Cost Pool
BBR - Barker Barambah WS	Bulk Water - Full		
KBB - Bowen Broken WS	Bulk Water - Full		
BBY - Boyne WS	Bulk Water - Full		
BBB - Bundaberg WS	Bulk Water - Full		
ABB - Burdekin WS	Bulk Water - Full		
LBC - Callide WS	Bulk Water - Full		
IBH - Chinchilla Weir WS	Bulk Water - Full		
IBN - Cunnamulla Weir WS	Bulk Water - Full		
LBD - Dawson WS	Bulk Water - Full		
KBE - Eton WS	Bulk Water - Full		
ABJ - Julius WS	Bulk Water - Full		
LBF - Lower Fitzroy WS	Bulk Water - Full		
BBL - Lower Mary WS	Bulk Water - Full		
IBT - Macintyre Brook WS	Bulk Water - Full		
IBM - Maranoa WS	Bulk Water - Full		
MBM - Mareeba WS	Bulk Water - Full		
LBN - Nogoa WS	Bulk Water - Full		
KBP - Pioneer WS	Bulk Water - Full		
ABP - Proserpine WS	Bulk Water - Full		

Service Contract	Service Contract Type	Flood Room Operations Indirect Cost Pool	Inspector General Emergency Management Indirect Cost Pool
IBS - St George WS	Bulk Water - Full		
LBT - Three Moon WS	Bulk Water - Full		
BBU - Upper Burnett WS	Bulk Water - Full		
IBU - Upper Condamine WS	Bulk Water - Full		
BIG - Bundaberg IS	Irrigation		
Other Irrigation Schemes	Irrigation		
Commercial Pipelines	Pipeline		
Offtakes	Offtake		
Treatment Plants	Treatment		
Hydro Plants	Hydro		
BXB - BWPL - Paradise & Kirar WS	Bulk Water - Full		
IXA - NCA Scrivener	Bulk Water – O&M		
AXQ - NQ Water	Bulk Water – O&M		
IXB - NRW Border Rivers	Bulk Water – O&M + AM		
IXD - NRW Dumaresq	Bulk Water – O&M + CS		

Flood room operations costs are allocated to the service contracts that have flood room operations, in proportion to labour costs incurred.

IGEM costs have been allocated using an adjusted weighted risk score, not labour costs. The methodology initially adopted for cost allocations was based on risk categories of High, Medium and Low, weighted using criteria as shown in Table 51. This approach was eventually seen as unhelpful since most schemes were classified into the High-risk category.

Table 51 Criteria for Weighting a Risk Score for IGEM

Criteria	Relative Weighting
The effectiveness of Sunwater's messaging	1.0
The quality of Sunwater's relationships with their customers	1.4
The risk of the particular dam flooding	3.0

The current revision splits IGEM costs to provide for 57.5% to be allocated on an equal-share basis, and 42.5% to be allocated according to a risk score as presented in Table 52.

The calculated total risk score was then adjusted to account for the relative size of the population (Low, Medium, High) at risk, and the adjusted score used to determine the allocator for each dam as indicated in Table 52. The final allocation by scheme for FY2019 and FY2020 using this current approach in shown in Table 53.[179]

[179] RfI A12

Table 52 IGEM Cost Allocation

Name of Dam	Dam's Service Contract	Weighted Risk Score	Population Adjustment	Cost Allocation
ISIS Balancing Storage		28%	Low	2.87%
Woongarra Balancing Storage		28%	Low	2.87%
Moura		49%	Low	3.14%
Boondooma	BBY – Boyne WS	54%	Low	3.21%
Teemburra	KBP – Pioneer WS	65%	Low	3.36%
Wuruma	BBU - Upper Burnett WS	62%	Low	3.32%
Julius	ABJ - Julius WS	62%	Low	3.32%
Cania	LBT - Three Moon WS	74%	Low	3.48%
Eungella	KBB - Bowen Broken WS	76%	Low	3.51%
Fred Haigh	BBB - Bundaberg WS	36%	Medium	3.46%
Peter Faust	ABP - Proserpine WS	68%	Medium	4.30%
Bjelke Peterson	BBR - Barker Barambah WS	58%	Medium	4.03%
Fairbairn	LBN - Nogoa WS	49%	High	4.45%
Leslie	IBU - Upper Condamine WS	72%	Medium	4.41%
Glenlyon		74%	Medium	4.45%
Burdekin Falls	ABB - Burdekin WS	59%	High	4.84%
Paradise	BBB - Bundaberg WS	60%	High	4.88%
Kinchant	KBE - Eton WS	75%	High	5.47%
Kroombit	LBC - Callide WS	84%	High	5.84%
Beardmore	IBS - St George WS	79%	High	5.63%
Tinaroo Falls	MBM - Mareeba WS	94%	High	6.22%
Callide	LBC - Callide WS	100%	High	6.47%
Coolmunda	IBT - Macintyre Brook WS	100%	High	6.47%

Table 53 IGEM Costs Allocated to Service Contracts

Business Line	Service Contract	FY2019		FY2020 (revised)	
		% IGEM Costs Allocated	IGEM Costs ($'000s)	% IGEM Costs Allocated	IGEM Costs ($'000s)
Bulk water	BBR - Barker Barambah	5.5%	$159	4.0%	$89
	KBB - Bowen Broken	3.1%	$90	3.5%	$78
	BBY - Boyne	3.1%	$90	3.2%	$71
	BBB - Bundaberg	5.5%	$159	3.5%	$77
	ABB - Burdekin	4.9%	$141	4.8%	$107
	LBC - Callide	9.8%	$282	12.3%	$273
	IBH - Chinchilla Weir				
	IBN - Cunnamulla Weir				
	LBD - Dawson	3.1%	$90	3.1%	$70
	KBE - Eton	4.9%	$141	5.5%	$121
	ABJ - Julius	3.1%	$90	3.3%	$74
	LBF - Lower Fitzroy				
	BBL - Lower May				
	BT - Macintyre Brook	4.9%	$141	6.5%	$143
	IBM - Maranoa				
	MBM - Mareeba	4.9%	$141	6.2%	$138
	LBN - Nogoa	5.5%	$159	4.4%	$99
	KBP - Pioneer	3.1%	$90	3.4%	$75

Business Line	Service Contract	FY2019		FY2020 (revised)	
		% IGEM Costs Allocated	IGEM Costs ($'000s)	% IGEM Costs Allocated	IGEM Costs ($'000s)
	ABP - Proserpine	5.5%	$159	4.3%	$95
	IBS - St George	4.9%	$141	5.6%	$125
	LBT - Three Moon	3.1%	$90	3.5%	$77
	BBU - Upper Burnett	3.1%	$90	3.3%	$74
	IBU - Upper Condamine	5.5%	$159	4.4%	$98
Bulk water (other)	BXB - BWPL - Paradise & Kirar	4.9%	$140	4.9%	$108
	IXB - NRW Border Rivers	5.5%	$159	4.5%	$99
Irrigation system	BIG - Bundaberg	6.2%	$180	5.7%	$127
	AIE - Burdekin				
	KIA - Eton				
	BIC - Lower Mary				
	MIM - Mareeba				

6.7.2 The Allocation of Insurance Costs

Sunwater currently allocates insurance costs to schemes by asset value, reflecting the approach taken by the insurer to determine the premium. We understand why the insurer could take this approach, but in our view this approach disadvantages schemes where the risk is relatively low, and in practice results in a cross subsidy from low risk schemes to higher risk schemes.

We recommend that a risk-based approach be taken by Sunwater to allocate insurance premium costs, including consideration of the consequence of the insured event occurring. This is consistent with the trend reported by ICA to adopt risk-based pricing in the insurance industry based on increasingly accurate hazard data, a better understanding of the impact of natural disasters to assets and an expectation from customers that they should only pay for risks to which they are exposed. [180]

We consider that the risk analysis undertaken by Sunwater for the allocation of IGEM and flood operations costs and reviewed in Section 6.7.1 would be a better approach for allocation of insurance costs, since the insurance cover is largely sought against damage from weather events. We suggest that use of the risk scores developed by Sunwater and presented in Table 52 (ignoring the population adjustments), weighted by the asset value of the scheme, would result in the allocation of insurance premium costs to those schemes where the risk is highest and reduce premium costs for those schemes where the risk is assessed as being low.

[180] ICA Response to ACCC Issues Paper – Northern Australia Insurance Inquiry, Insurance Council of Australia (2018). Page 9.

For indicative purposes, this allocation approach is outlined in Table 54.

Table 54 Proposed Allocation of Insurance Costs ($FY2019, '000s)

Scheme	2018 Insurance Cost	Risk Band	Asset Value	Weighted Risk	Allocation	Proposed Cost
IBS - St George WS	$105	3				
IBT - Macintyre Brook WS	$160	3	$253,650	760,949	5%	$299
KBB - Bowen Broken WS	$139	3	$218,273	654,819	4%	$257
KBE - Eton WS	$186	3	$291,356	874,068	6%	$343
LBC - Callide WS	$306	3	$487,269	1,461,808	10%	$574
MBM - Mareeba WS	$149	3	$234,988	704,964	5%	$277
ABB - Burdekin WS	$737	2	$1,171,615	2,343,229	16%	$920
ABP - Proserpine WS	$172	2	$268,582	537,165	4%	$211
BBR - Barker Barambah WS	$196	2	$311,486	622,971	4%	$244
BBU - Upper Burnett WS	$102	2	$157,769	315,537	2%	$124
BBY - Boyne WS	$286	2	$477,338	954,676	6%	$375
IBU - Upper Condamine WS	$126	2	$195,829	391,658	3%	$154
KBP - Pioneer WS	$322	2	$506,362	1,012,723	7%	$397
LBT - Three Moon WS	$103	2	$163,588	327,177	2%	$128
AIE - Burdekin IS	$478	1	$594,361	594,361	4%	$233
BBB - Bundaberg WS	$246	1	$383,770	383,770	3%	$151
BBL - Lower Mary WS	$10	1	$13,419	13,419	0%	$5
BIC - Lower Mary IS	$54	1	$85,893	85,893	1%	$34
BIG - Bundaberg IS	$724	1	$984,073	984,073	7%	$386
IBH - Chinchilla Weir WS	$12	1	$20,262	20,262	0%	$8
IBM - Maranoa WS	$11	1	$17,605	17,605	0%	$7
IBN - Cunnamulla Weir WS	$5	1				
KIA - Eton IS	$195	1	$311,953	311,953	2%	$122
LBD - Dawson WS	$117	1	$180,845	180,845	1%	$71
LBF - Lower Fitzroy WS	$21	1	$33,704	33,704	0%	$13
LBN - Nogoa WS	$474	1	$744,684	744,684	5%	$292
MIM - Mareeba IS	$356	1	$427,201	427,201	3%	$168
Total	**$5,792**		**$8,535,873**			**$5,792**

In Table 54, the reported risk band is based on the total risk to each scheme prior to the population adjustment (as calculated by Sunwater for the allocation of IGEM and flood operations costs).[181] Where a scheme has not been included in this assessment, it would be assumed to be a low risk scheme for the purposes of this exercise. The reported asset values by scheme are based upon the replacement cost data contained in Sunwater's asset register.[182] Allocation has been calculated as the weighted risk of the scheme (the product of risk and asset value) divided by the total weighted risk of all schemes.

We recommend that Sunwater conducts further investigation into the risk-based allocation approach for the allocation of insurance costs. For clarity, we have not, however, adopted this approach for the assessment of cost allocations in this review.

[181] RfI A25.
[182] RfI A1.

6.7.3 Allocation of Other Indirect Cost Types

Sunwater has restructured its indirect cost pools to varying degrees every year. In FY2019, it proposes to use 12 indirect cost pools in addition to flood room operations and IGEM.

These indirect cost pools are allocated to individual service contracts based on the line of business (irrigation, pipelines, bulk water) and the contract type (full contract, operate and maintain contract, operate and maintain and asset management contract), as illustrated in Table 55, which uses a tan colour to indicate where an allocation applies.

Table 55 Allocation of Indirect Cost Pools to Service Contracts (excluding IGEM, Flood Room Operations)

	Bulk water - Full	Irrigation	Pipeline - Full	Offtake	Treatment	Hydro	Bulk water - O&M	Pipeline - O&M	Bulk water - O&M + AM	Bulk water - O&M + CS
640 OPS - EGM	■	■	■	■	■	■	■	■	■	■
643 Hydrographic Services	■									
644 Operations & Scheduling	■	■	■	■	■	■	■	■	■	■
696 Water Planning	■									
651 Dam safety	■								■	
654 Asset Strategy Support	■	■	■	■	■	■			■	
637 MP&TS - GM	■	■	■			■			■	
652 Pump & Distribution		■	■	■						
657 Headworks	■								■	
653 Operations Support	■	■	■	■	■	■	■	■	■	■
681 Technical Services	■	■	■	■	■	■			■	
254 Irrigation Pricing	■	■								

For example, an indirect cost pool of $1.682 million allocated to specific schemes with a total labour cost pool of $23.9 million would have a cost allocator (multiplier) of 7.03% of the scheme's total labour cost. 7.03% would therefore be added to the total labour cost to recover the cost of the indirect pool.

$$Indirect\ Rate = \frac{Indirect\ Cost\ Pool\ Total}{Total\ Labour\ Costs\ for\ All\ Service\ Contracts\ Attracting\ this\ Indirect}$$

$$Indirect\ Rate = \frac{\$1.682m}{\$23.932m} = 7.03\%$$

6.7.4 Indirect Cost Allocated

The allocation of indirect costs is complex and has varied annually as the need for each type of service changes and as Sunwater changes the way it chooses to manage these costs.

The current allocation for the base year (of those indirect costs that use direct labour costs based on Sunwater's current cost allocation manual) is presented in Table 56. Insurance, IGEM and flood room operations costs are allocated differently and have had their allocation documented separately in previous sections.

The allocation of these indirect costs to unregulated service contracts has been calculated but is not shown in Table 56.

Table 56 Allocation of Indirect Costs in the Base Year

Service Contract	681 Ind Technical Serv	254 Irr Pricing Indirect	640 Operations - EGM RC	652 Pump & Dist Indirect	653 Ops Support Indirect	657 Headworks Indirect	651 Dam Safety Indirect	654 Asset Strat Supp Ind	643 Hydrographic Service	122 Safety	690 Customer Services	644 Operations & Scheduling	695 Environment	Labour Cost (Routine)	Indirects Cost Per Scheme (Routine)
BBR - Barker Barambah WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.19	$0.13
KBB - Bowen Broken WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.25	$0.18
BBY - Boyne WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.12	$0.09
BBB - Bundaberg WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.32	$0.23
ABB - Burdekin WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.49	$0.35
LBC - Callide WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.26	$0.19
IBH - Chinchilla Weir WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.02	$0.02
IBN - Cunnamulla Weir WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.01	$0.01
LBD - Dawson WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.20	$0.14
KBE - Eton WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.24	$0.17
ABJ - Julius WS	3%		8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.15	$0.10
LBF - Lower Fitzroy WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.05	$0.04
BBL - Lower Mary WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.03	$0.02
IBT - Macintyre Brook WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.21	$0.15
IBM - Maranoa WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.00	$0.00
MBM - Mareeba WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.25	$0.18
LBN - Nogoa WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.43	$0.31
KBP - Pioneer WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.20	$0.14
ABP - Proserpine WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.21	$0.15
IBS - St George WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.24	$0.17
LBT - Three Moon WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.10	$0.07
BBU - Upper Burnett WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.21	$0.15
IBU - Upper Condamine WS	3%	4%	8%		4%	6%	11%	3%	9%	4%	14%	3%	3%	$0.28	$0.20
BIG - Bundaberg IS	3%	4%	8%	7%	4%			3%		4%	14%	3%	3%	$1.79	$0.92
AIE - Burdekin IS	3%	4%	8%	7%	4%			3%		4%	14%	3%	3%	$2.49	$1.29
LIT - Dawson IS	3%		8%	7%	4%			3%		4%	14%	3%	3%		
LIW - Emerald IS	3%		8%	7%	4%			3%		4%	14%	3%	3%		
KIA - Eton IS	3%	4%	8%	7%	4%			3%		4%	14%	3%	3%	$0.58	$0.30
BIC - Lower Mary IS	3%	4%	8%	7%	4%			3%		4%	14%	3%	3%	$0.22	$0.11
MIM - Mareeba IS	3%	4%	8%	7%	4%			3%		4%	14%	3%	3%	$1.30	$0.67
IIS - St George IS	3%		8%	7%	4%			3%		4%	14%	3%	3%		
Cost Pool	**$0.67**	**$0.62**	**$1.97**	**$0.73**	**$0.95**	**$0.70**	**$1.30**	**$0.65**	**$1.01**	**$0.85**	**$3.11**	**$0.68**	**$0.75**		

6.8 Summary of Findings

Indirect costs are costs that cannot be booked to a single scheme, but since the cost only applies to a specific set of service contracts it cannot be treated as an overhead. The work involved is specified, planned and managed in the same way as direct work. We discussed our review of the way in which Sunwater specifies, schedules and dispatches its operational and maintenance work i.e. direct work in Section 4.1, and concluded that these activities are efficient. Our assessment of the efficiency of direct work applies to indirect work as well except for IGEM, which we have assessed separately.

Indirect costs are substantially lower than previously (other than the IGEM cost), due largely to consolidation of indirect work functions and transfer of those functions to either local or corporate overhead cost pools. Indirect costs had corporate overhead and rent allocated to them until after FY2018, so with these removed according to Sunwater's new CAM (in order to eliminate cascading of overhead costs) the remainder of the indirect costs are now lower.

A new indirect cost category has been created for IGEM. We have assessed Sunwater's strategy, approach and cost structure for implementation of IGEM, and concluded that they are reasonable in terms of Sunwater's obligation and therefore, prudent and efficient.

Sunwater proposes to allocate IGEM costs to irrigators using relative risk, modified by the size of the downstream population. Assuming irrigation customers are required to pay for this service, the cost allocation mechanism seems prudent.

Costs to date have largely been capitalised as Sunwater re-establishes a flood control room, improves and adds hydrographic infrastructure to enable it to provide advance notice of flood events as required.

Sunwater has developed a stakeholder and community engagement program and assigned staff to new roles for ongoing liaison with stakeholders and delivery of community education programs. There may be opportunities to persuade local government to take a more extensive role on behalf of their communities, but we are satisfied that this work is required to fulfil Sunwater's obligations in this area.

Sunwater treats scheme insurance premiums as a direct cost, it is our view that this cost is more aligned with Sunwater's definition of an indirect cost, and therefore insurance premium costs have been assessed as indirect costs for the purposes of this review.

Summary of our observations and conclusions in relation to insurance premium costs are:

- Insurance costs reached 91% above the QCA's 2012 recommendations in FY2017.
- We have reviewed Sunwater's procurement process for its insurance, and also reviewed the global market to assess the likelihood of substantial insurance premium increases during the next price path. We concluded that Sunwater's sourcing of insurance is competitive and efficient, and therefore that the increase is largely because of global factors beyond its control.
- Sunwater has signed the contract for FY2020 insurance. As this was obtained competitively, we recommend that this cost increase be accepted. Sunwater has suggested a substantial increase of 10% be assumed for FY2021, and we recommend this be accepted (although it is lower than the current rate increases advised by Marsh). As there is no documentary evidence of an expected increase beyond FY2021 and it is not possible to predict what will happen in future years, we recommend that insurance costs be escalated by CPI for the remaining years in the price path (FY2022-FY2024).
- We also reviewed the de-facto self-insurance position adopted by Sunwater and noted that claims were lodged for two years since 2010 for amounts of $50 million or more, while insurable damage in the other years did not exceed about $2 million. There may therefore be room to increase Sunwater's current deductible (which is $5 million) and that could result in a lower premium.
- Sunwater's current allocation of insurance premium to schemes is based on asset value. In our view the allocation method should also account for the risk of a claimable event occurring in each scheme, and we have recommended that an alternative approach be evaluated (but we have not included the proposed alternative approach in our assessment of costs for this review).

7.0 Corporate Overhead

This section provides an assessment of corporate overhead costs, staffing levels and the allocation of corporate overhead costs to schemes.

7.1 Corporate FTEs

Corporate overheads partly reflect staff costs, so we first analysed staff movements between the various departments and the resultant changes to FTEs. Changes in corporate FTEs since FY2013 are shown in Figure 69, using data provided by Sunwater.[183] [184]

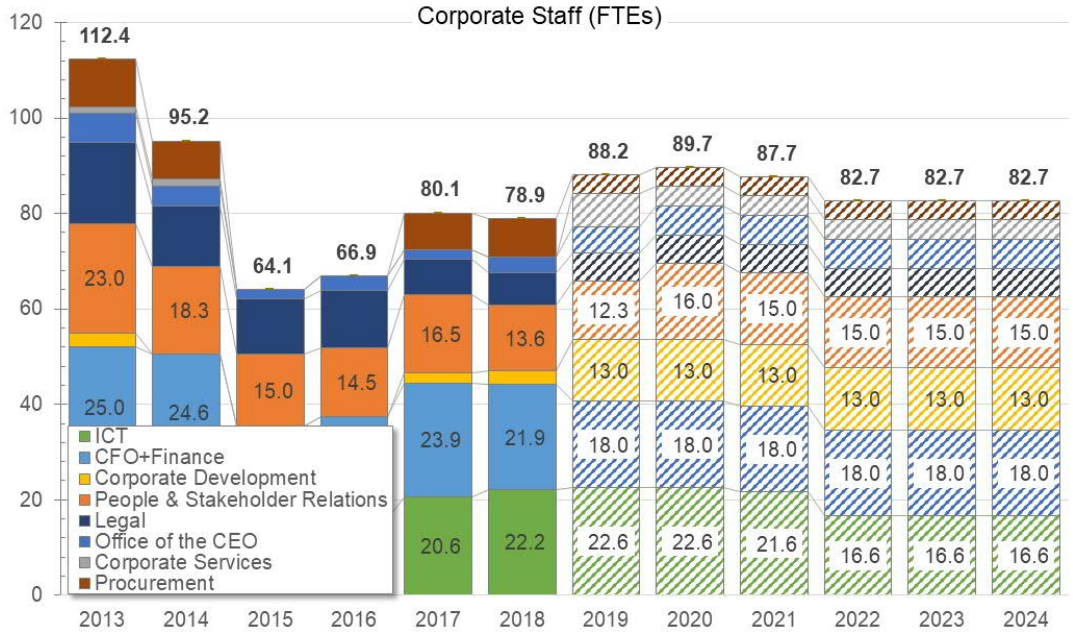


Figure 69 Number of Corporate FTEs

Deloitte undertook a comprehensive review of Sunwater's staffing in 2012 during a review of administrative costs, using benchmarks obtained from similar organisations to form a view of the efficiency of Sunwater's organisation structure and staffing.[185] The QCA based its recommendations on Deloitte's findings, so we have focused on changes to staffing rather than revisiting the Deloitte analysis.

Sunwater delivered a reduction in corporate staffing by ~32.7% in 2015 but has increased staffing since then to be approximately 7.4% below the 2014 level by FY2020. The major changes include:

- A reduction in ICT staff by 10 FTE after FY2014 (39%), and then an increase from FY2017 due to contract staff hired for a project and returning to ~17 FTE in 2022 when the contract staff is expected to leave at the end of their contract.
- A decrease by a total of 17 FTE in several cost pools (finance, legal, procurement and major projects) by FY2020.

[183] RfI A68.
[184] RfI A7.
[185] Deloitte – Final Report: Phase 2 Review of Sunwater's Administration Costs, 25 August 2011, http://www.qca.org.au/getattachment/88705ad2-dedc-4728-90a6-9f4f42d9681e/Deloitte-%E2%80%93-Final-Report-Phase-2-Review-of-Sunwater.aspx

- The creation of new cost pools (corporate development, commercial, business transformation and people & capability EGM), and increases in staffing of corporate services (excluding ICT) and the Office of the CEO, totalling 21 additional FTE in FY2020.

The cost pools added since FY2014 (totalling 24 FTEs in FY2020) were clearly not required prior to FY2016, and since the irrigation business has reduced in size (through transition to local management), we conclude that they are intended for Sunwater's un-regulated business, and on that basis should be excluded from corporate overhead allocated to the schemes. ICT project contract staff (6 FTE) are currently funded through to FY2023.

7.2 Corporate Resource Centres

Corporate resource centres perform the functions listed in Table 57.

Table 57 Resource Centre Functions

Business Group	Resource Centre	Function
CFO & Finance	Corporate GM / Chief Financial Officer	Oversight of the operations of Sunwater with the primary responsibility for managing the company's finances.
	Finance	Responsible for accounts payable and receivable, finance reporting and analysis, cash and funds management and budgeting and planning.
Corporate Services	Business Transformation	Temporary function, present in 2018 and 2019 only.
	Commercial Manager	Responsible for Sunwater's un-regulated commercial activity.
ICT	Information Communication and Technology	Responsible for delivering and managing all network infrastructure including business systems analysis, infrastructure support (IT and phone), information governance (including hard copy and library function) and IT service desk.
Legal	Legal	Responsible for legal issues.
Major Projects and Technical Services	Strategic Program Management Office	Responsible for water planning, corporate relations and business strategy.
Office of the CEO	Board	Oversight of the operations of Sunwater, oversight of the implementation of board policies and ensuring that good governance practices are maintained.
	Executive	Oversight of the operations of Sunwater with the primary responsibility of leading the development of the company's short and long-term strategy.
	Audit	Internal audit function (now outsourced).
People & Stakeholder Relations	People and Capability - Executive General Manager	Responsible for workforce planning and strategy, recruitment and exit, training, leadership development and performance management, remuneration advice and managing industrial relations.
	Stakeholder Relations & Communications	Communications are responsible for strategic external communications such as website and advertising.
	People & Culture	Oversight and delivery of staff services including recruitment, reward and performance management.
Procurement	Procurement	Undertaking major purchases for whole of Sunwater (minor purchases undertaken by relevant cost centres) Management of property portfolio such as housing and land-based issues Management of Sunwater's fleet.

7.3 Corporate Overhead Costs

The corporate overhead cost pool (before allocation, $FY2019) is provided in Figure 70 for the historical FY2015-FY2018 period and the FY2019-FY2020 budgets.

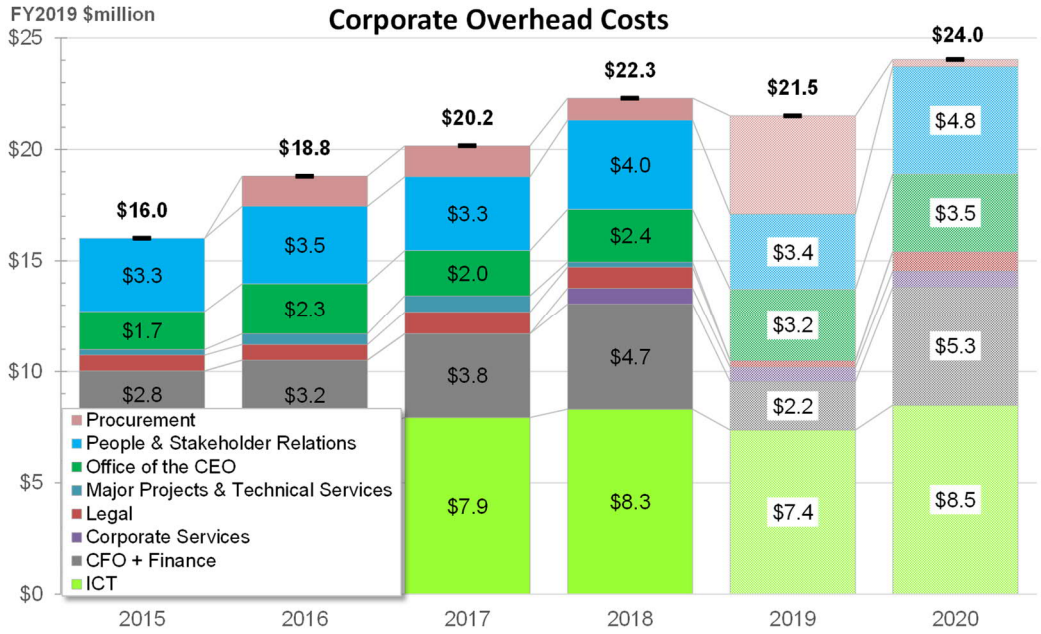


Figure 70 Sunwater's Corporate Overhead Costs

The corporate overhead cost pool before allocation increased by 10% from FY2017 to FY2018 and is budgeted to increase by another 8% from FY2018 to FY2020. ICT costs dominate corporate overheads.

Sunwater has moved individual cost centres between the groupings shown in Figure 70 several times during recent years, which makes it difficult to track trends.

Sunwater revised its cost allocation methodology from FY2019, removing:

- An overhead loading of 5% on non-labour costs (excluding electricity)
- Overhead previously allocated to indirect costs
- A charge per unit of personal computing equipment that was previously included in local overheads
- Rent for occupancy at Turbot St, replacing it with a lower rent payable at St Pauls Terrace, and consolidating rent previously allocated to all corporate cost pools into finance

The first three of the above transferred costs from local overhead and indirect cost pools to corporate overhead resulting in reducing the former and increasing the latter cost pools. Restructuring has been extensive, with cost pools created or changed in scope, moved to different parts of the business or removed entirely, new cost pools created to support the new management focus, and changes to the classification of some of the pools such as from overheads to indirect costs and vice versa.

We further assessed each of the cost pools individually, drawing on information provided through various RfIs:[186]

CFO & Finance	In its 2012 review of Sunwater's overheads, Deloitte identified a potential saving of 1.2 FTEs (a 5% FTE efficiency saving). [187] The total number of finance FTEs has reduced by 18% since 2011, but the number of finance FTEs per employee (the benchmark used by Deloitte) has increased because total staff numbers have reduced further. Sunwater proposes to reduce finance FTEs by a further 15% from FY2020 (from 18.9 to 16.0). In FY2017 and FY2018 Sunwater allocated most of the $3 million Turbot Street rental cost as non-direct occupancy cost to other corporate overhead cost centres, with the remainder posted to the Turbot Street cost centre. In October 2018, (FY2019) Sunwater moved its headquarters to Green Square in Fortitude Valley, and in that year paid 10 months of rent on its old headquarters on Turbot Street and six months of rent at its new headquarters. The cost of rent for FY2019 was: $\left(\frac{10}{12} \times \$3m\right) + \left(\frac{6}{12} \times \$2.3m\right) = \$2.5m + \$1.15m = \$3.65m.$ Sunwater's relocation cost was included in the procurement cost pool for FY2019. A period of double rent and the cost of the relocation increased total rent payable in FY2019, and this was posted to the procurement cost group. The full rent reduction is taken from FY2020.
Information Communication and Technology	In its 2012 review, Deloitte identified a potential saving of 0.7 FTEs in ICT (a 2.5% FTE efficiency saving). [188] The number of ICT FTEs reduced by 21% from FY2011 as Sunwater increased its reliance on contractors. A change of policy removed recovery of staff ICT equipment costs from the operations centres, and these are now in the corporate ICT cost pool. Sunwater's Digital Enterprise Business Solutions (DEBS) was presented to the Board in February 2019 and reflects the linkages between the DEBS program and broader business strategy and alignment. Sunwater notes that it has underinvested on ICT solutions over the past 10 years and solutions have been run to end-of-life.[189] Bespoke solutions have been developed by business units where commercial offerings were not available, resulting in a disparate ICT architecture with multiple technology offerings supported by multiple suppliers. This has resulted in an inconsistent and complicated end user experience with increased complexity in security and access management, and DEBS is intended to address these issues. DEBS is expected to deliver a range of benefits and efficiency gains, but these have not been well defined. The Board has approved DEBS and Sunwater initially made a provision of approximately $14 million over three years. The cost estimate has since increased to approximately $19 million and the program extended a further year, but Sunwater has stated that it will not increase the cost included in its submission.[190]

[186] RfI A13, A43, A51, A54 and A55
[187] Deloitte – Final Report: Phase 2 Review of Sunwater's Administration Costs, 25 August 2011, Page 27. http://www.qca.org.au/getattachment/88705ad2-dedc-4728-90a6-9f4f42d9681e/Deloitte-%E2%80%93-Final-Report-Phase-2-Review-of-Sunwater.aspx
[188] Deloitte – Final Report: Phase 2 Review of Sunwater's Administration Costs, 25 August 2011, Page 29. http://www.qca.org.au/getattachment/88705ad2-dedc-4728-90a6-9f4f42d9681e/Deloitte-%E2%80%93-Final-Report-Phase-2-Review-of-Sunwater.aspx
[189] RfI A11
[190] RfI A11, Attachment 1, Board Presentation, Page 18; A11 – Attachment 2

Legal	Sunwater's legal services cost centre is almost entirely driven by the number of FTE working within the legal services team. Roughly 77% of Sunwater's legal services costs before allocation are employee costs. This cost centre includes the Property group, which in recent restructures was moved from legal to finance, then to commercial and finally back to legal. Sunwater planned to remove one FTE in FY2019, achieving a $305,200 cost saving (32% cost saving).
Major Projects (Strategic Program Management Office)	This function has historically been devoted to major construction projects and commercial activity carried out by Sunwater. The value of major projects carried out dropped considerably after FY2013, but Sunwater expects a minor resurgence during the next few years. This activity is part of Sunwater's unregulated commercial activity and does not benefit the irrigators. We note, however, that staff in this group attract overhead, so a lower level of work in this area means that the irrigation business will contribute more to overhead recovery. This is handled through the corporate overhead cost allocator.
Office of the CEO	The executive has largely been allocated to this cost group. Staff numbers have been increased in this group, and the cost of the Board has increased. The audit function has been outsourced, and the cost moved to this group. Since the irrigation business has reduced in size and value since 2012 (with transfer of some schemes to local ownership), we do not believe that it is reasonable for governance costs to increase (in relation to irrigation). ***We therefore recommend that the increase in this group be excluded from allocation to the schemes.***
People and Stakeholder Relations	In its 2012 review, Deloitte identified a potential saving of 1.8 FTEs (16%) in this cost group. [191] The number of HR FTEs dropped by 30% after FY2011. Sunwater proposes a number of staffing changes, including additional staff in the People & Culture cost pool that were not required prior to FY2018. We note that regional staff numbers are budgeted to reduce. ***We do not accept these additional staff as a benefit to the irrigation business and recommend that the increase be excluded from allocation to the schemes.***
Procurement	The variation in Procurement costs in FY2019 reflects the relocation of Head Office from Turbot St to Green Square in Brisbane. Procurement FTEs decreased by 50% from FY2018-FY2019.

7.4 Direct Charging by Staff in Corporate Cost Pools

Staff in some corporate cost centres do some direct and indirect work on schemes. Since this is booked and recovered directly, the labour cost involved must be removed from the total overhead to leave a residual labour cost for allocation.

Direct charging from these corporate cost centres is shown in Table 58, where it is 2% or more of the labour cost of the cost centre (lesser amounts of direct charging have been ignored because they are not material, are typically volatile and are therefore not suited to establishing a typical year).

[191] Deloitte – Final Report: Phase 2 Review of Sunwater's Administration Costs, 25 August 2011, Page 29. http://www.qca.org.au/getattachment/88705ad2-dedc-4728-90a6-9f4f42d9681e/Deloitte-%E2%80%93-Final-Report-Phase-2-Review-of-Sunwater.aspx

Table 58 Direct Charging by Corporate Cost Centres

Finance	2016	2017	2018	2019	2020
Total Cost	$ 3,459	$ 3,491	$ 3,598	$ 2,838	$ 2,589
Labour	$ 2,696	$ 2,748	$ 2,893	$ 2,169	$ 2,193
Non-Labour	$ 763	$ 743	$ 705	$ 670	$ 396
Direct Charging of Labour	$ 1,166	$ 765	$ 411	$ 467	$ 25
Utilisation Rate	43%	28%	14%	22%	1%
Net Adjustments	$ (43)	$ (43)	$ (358)	$ (187)	$ (186)
Residual Cost Pool	$ 2,250	$ 2,683	$ 2,829	$ 2,184	$ 2,377

Legal	2016	2017	2018	2019	2020
Total Cost	$ 1,843	$ 1,797	$ 1,288	$ 1,184	$ 1,184
Labour	$ 1,508	$ 1,370	$ 995	$ 1,008	$ 1,016
Non-Labour	$ 335	$ 428	$ 293	$ 176	$ 168
Direct Charging of Labour	$ 1,119	$ 793	$ 295	$ 538	$ 301
Utilisation Rate	74%	58%	30%	53%	30%
Net Adjustments	$ (22)	$ (18)	$ (33)	$ 0	$ (2)
Residual Cost Pool	$ 701	$ 987	$ 960	$ 646	$ 881

Procurement, Property & Fleet	2016	2017	2018	2019	2020
Total Cost	$ 1,219	$ 1,286	$ 1,341	$ 4,929	$ 682
Labour	$ 998	$ 1,029	$ 1,143	$ 601	$ 598
Non-Labour	$ 221	$ 257	$ 198	$ 4,328	$ 84
Direct Charging of Labour	$ 329	$ 344	$ 127	$ 516	$ 362
Utilisation Rate	33%	33%	11%	86%	61%
Net Adjustments	$ (16)	$ (15)	$ (227)	$ 0	$ (1)
Residual Cost Pool	$ 874	$ 927	$ 987	$ 4,413	$ 319

Five corporate resource centres are budgeted to charge to local overhead in FY2020, and these costs ($0.67 million) have been included in local overheads.

7.5 Benchmarking of Corporate Overhead

Benchmarking of bulk water supply companies has limited value given the vastly different operating structures of various bulk water supply companies. A possible benchmark is the cost per ML of water delivered, and Sunwater's performance using that indicator in comparison to selected other utilities is presented in Table 59.

Table 59 Sunwater Performance

$ per ML	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018
Sunwater*	-	-	-	139.5	165.5	169.8

*Sunwater benchmarking data has been calculated using data published in Sunwater FY2018 Annual Report for the whole of Sunwater's business, using total operating expenditure ($) divided by volume of customer water deliveries (ML).

$ per ML[192]	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018
Gladstone Area Water Board	239.8	1080.3	1004.5	898.6	980.7	985.0
Melbourne Water	1383.3	1962.1	1890.6	1677.7	1653.1	1549.4
Rous Water	1203.8	1182.8	1176.6	1158.1	966.9	1004.5
Seqwater	1132.8	839.0				817.0

* $/ML has been calculated using BOM data as the total operating cost ($) divided by the volume of bulk water exports (ML).

[192] Bureau of Meteorology, National Performance Report 2017 – 2018: Urban Water Utilities, Part B, http://www.bom.gov.au/water/npr/

The comparison shows that Sunwater has a considerably lower (better) cost per ML of water delivered. This indicator, however, is skewed by the size of the catchments and water flows, which do not correlate well with operating cost. The benchmark may not be useful in comparing Sunwater to other water supply companies, but it does have some value to indicate performance trends. Sunwater's performance using this indicator is projected to increase over the years shown.

7.6 Base Year Corporate Overhead Costs for Allocation

Our review of corporate overheads identified the FY2018 costs that we believe would be prudent and efficient to include in the cost pool to be allocated. The recommended residual overhead cost for allocation to direct labour is indicated in Table 60. This includes cost adjustments made in light of Sunwater's November 2019 submission (which have been reviewed in detail in Section 7.8).

Table 60 The Corporate Overhead Cost Pool Before Allocation

Cost Attribution	Code	Cost Centre	FY2015	FY2016	FY2017	FY2018	FY2020	Adjustment to FY2018	Charged to Operations Centres (from FY2020)	Adjustment to FY2018	Rent	Adjusted Base Year
CFO + Finance	213	Finance	$2.02	$2.24	$2.67	$2.82	$2.38	Planned reduction by 2.9 FTEs in FY2020	-$0.03	-$0.14	-$0.28	$2.38
		Rent (Turbot St, from 703; remaining Head Office rent included in other cost pools)				*$1.01*	*$2.31*	*Green Square - Turbot St, rent transferred from other Head Office cost centres, excluding rent allocated to Indirect cost centres)*		-$0.19	*$1.50*	*$2.31*
		Additional rental costs—level six						*Adjustment following from Sunwater's November 2019 submission*		$0.40		*$0.40*
	[redacted]		$0.74	$0.92	$1.10	$0.91	$0.64	[redacted]		-$0.19	-$0.08	$0.64
Corporate Services	126	Business Transform				$0.03		Temporary cost (one-off in FY2018)		-$0.03		
	[redacted]					$0.69	$0.73	[redacted]	-$0.04	$0.16	-$0.08	$0.73
ICT	273	ICT Project Delivery					$0.49	New ICT cost pool		$0.49		$0.49
	269	Info & Comm Tech	$7.26	$7.34	$7.93	$8.30	$8.00	6 FTEs in contract role FY2020-23 (DEBS)		$0.15	-$0.45	$8.00
Legal	261	Legal Services	$0.72	$0.70	$0.98	$0.96	$0.88	Reduced by 1 FTE in FY2019	-$0.26	$0.31	-$0.12	$0.88
Major Projects & Technical Services	750	Strtgic Prg Mgmt Off	$0.25	$0.49	$0.74	$0.22		No longer in use (moved to Indirect)		-$0.16	-$0.06	
Office of the CEO	[redacted]		$0.47	$0.42	$0.73	$1.01	$1.71	[redacted]			-$0.03	$0.98
			$0.89	$1.42	$1.13	$1.35	$1.76				-$0.04	$1.31
	270	Internal Audit	$0.37	$0.42	$0.18	$0.00		Outsourced, cost moved to CEO Office		$0.00		
		Portfolio Assurance Committee and Project Management Office						*Adjustment following from Sunwater's November 2019 submission*		$0.25		$0.25
People & Stakeholder Relations	[redacted]						$1.76	[redacted]				
	125	Stakeholder Rel&Comm	$1.16	$1.32	$1.10	$1.09	$0.97	Reduction by 1.6 FTEs by FY2020	-$0.14	$0.15	-$0.12	$0.97
	262	People & Culture	$2.15	$2.16	$2.20	$2.91	$2.09	Two management positions added in FY2018 (not relevant to irrigation service contracts) Planned reduction by 3 FTEs by FY2020	-$0.20	-$0.48	-$0.14	$2.09
	[redacted]							[redacted]		$0.05		$0.05
Procurement	271	Procurement		$0.87	$0.92	$0.98	$0.32	Reduction of 4 FTEs in FY2019		-$0.56	-$0.11	$0.32
		Contractor Management Framework						*Adjustment following from Sunwater's November 2019 submission*		$0.25		$0.25
	703	Rent (Turbot Street)		$0.48	$0.47			No longer in use (moved to 213)				
Totals	**Total Corporate Overhead**		**$16.01**	**$18.79**	**$20.15**	**$22.28**	**$24.03**		**-$0.67**	**$0.44**		**$22.05**
Local Overhead allocation included			*$1.61*	*$1.44*	*$1.12*	*$0.37*						*$0.28*
Adjustments to Overhead Allocation (not required after FY2018)												
ICT charge		ICT desktop & network charges				-$0.83		[transferred from Local Overhead and Indirect]				
Corporate recovery		5% loading on materials (non-labour)				-$3.08						
		Recovery from Indirect / Local overhead				-$3.07						
	Corporate Overhead for Allocation using Costed Labour					**$15.30**						**$22.05**

Adjustments considered appropriate for corporate overheads include:

- A one-off reduction in rental costs for Head Office from FY2020

- An increase in ICT costs for the DEBS project. Sunwater has transferred six FTEs to a contract role for this project and expects this cost to terminate on completion of the DEBS program (currently expected to be in FY2024)[193]
- Restructuring and associated staff reductions planned for FY2020 that is expected to reduce corporate overheads
- Removal of alternative forms of corporate cost recovery following policy changes, which has reduced costs in other areas but increased the amount of corporate overhead that must be recovered via direct labour costs

  These adjustments are shown near the bottom of Table 60 where they reduce the amount of corporate overhead to be recovered via direct labour in FY2018. We have assumed that the new policies will apply to the base year, and therefore that the total overhead must be recovered via direct labour costs in the base year.

[redacted]

Corporate cost pools include their share of local overhead costs applicable to them. This cost is $0.28 million in the adjusted base year as shown below the Table 60 and this amount is deducted from local overheads that must be recovered from local schemes.

A simpler summary of corporate cost changes is presented in Table 61.

Table 61 Summary of Corporate Overhead Cost Changes

Corporate Overhead	Corporate Overhead
Original Cost (Actual, in $FY2019)	**$22.30**
Adjustments	
Rent (Brisbane change, all rent consolidated)	-$0.20
Cost pools merged / no longer in use	-$0.16
New function / cost increase	$0.63
Function moved to Corporate Overhead	$0.29
Reduced Staffing (cost reduction)	-$1.87
Base Year	**$20.98**

Overhead Recovery (FY2018)	Corporate Overhead
Overhead Cost	**$22.30**
ICT charges	-$0.83
5% Loading on materials	-$3.08
Corporate Overhead recovered from Indirect / Local	-$3.08
Total Cost for Allocation via Costed Labour (FY2018)	**$15.31**

Overhead Recovery (FY2020)	Corporate Overhead
Overhead Cost	**$20.98**
Local overhead charged to Corporate Cost Pools	
MP&AS	
Total Cost for Allocation via Costed Labour (FY2018)	**$20.98**

There are no step changes to the overhead costs during the price path period.

[193] RfI A11, Attachment 1, Board Presentation, Page 18; A11 – Attachment 2

7.7 The Allocation of Corporate Overhead

Prior to FY2019, Sunwater recovered corporate overhead costs via a per employee ICT desktop and network charge, a 5% loading on non-labour costs (excluding electricity) and a multiplier of direct labour costs incurred on service contracts.

This approach was simplified for the FY2020 year, and corporate overheads are now only recovered via labour costs incurred on service contracts. This has meant that cost has been transferred from indirect and local overhead cost pools (reducing both) to corporate overhead (increasing this pool), and that the allocator used to recover corporate overhead from direct labour has increased.

The current, simplified approach to recovering corporate overhead costs involves:

- Aggregating the non-labour cost of corporate overhead functions and including the cost of all labour not charged directly to schemes (referred to as 'residual' labour)
- Calculating Sunwater's total direct costed labour for all service contracts, including unregulated activity, non-routine activity and major projects
- Deriving the allocator (multiplier) by dividing the total corporate overhead by the total direct labour. In FY2020 this multiplier is budgeted to be approximately 1.8 times (or 80% on top of) total costed labour.

In FY2018, with some of the overhead recovered via costs other than direct labour, the cost allocator actually required was 43.1% as shown in Table 62. Sunwater's budget for the year provided for a recovery from labour using 39%, and therefore it under-recovered its corporate overhead by $1.6 million.[194] A similar problem occurred with local overheads, and it appears that Sunwater budgeted to recover this loss in FY2019.

Table 62 Overhead Recovery Rates

Corporate overhead cost allocation ($ million FY2019)		
	FY2017	**FY2018**
Overhead cost pools total	$18.34	$19.15
Recovery: ICT desktop and Network charges	$1.03	-$1.02
Recovery: based on non-labour costs excluding electricity	-$2.05	-$1.44
Remainder to be recovered via labour costs	**$17.32**	**$16.70**
Costed labour	**$40.52**	**$38.70**
Calculated overhead recovery rate	**42.73%**	**43.14%**
Recovery rate applied in SFM	**28.00%**	**39.00%**
Under-recovery of corporate overheads (calculated rate less SFM rate)	*$5.97*	*$1.60*

The recovery via direct and indirect labour, together with recoveries via the ICT desktop charge and the loading of 5% on non-labour costs excluding electricity, gave a total combined recovery rate of approximately 45% (the sum of all three recovery types).

The actual cost recovered in FY2018 indicates an inconsistent allocation (recovery) of overhead costs as demonstrated in Figure 71, a result of factors such as under-booking of direct labour to schemes, differing mixes of non-labour and labour costs and varying use of contractors (who do not attract overhead).

[194] RfI A54, Attachment 1

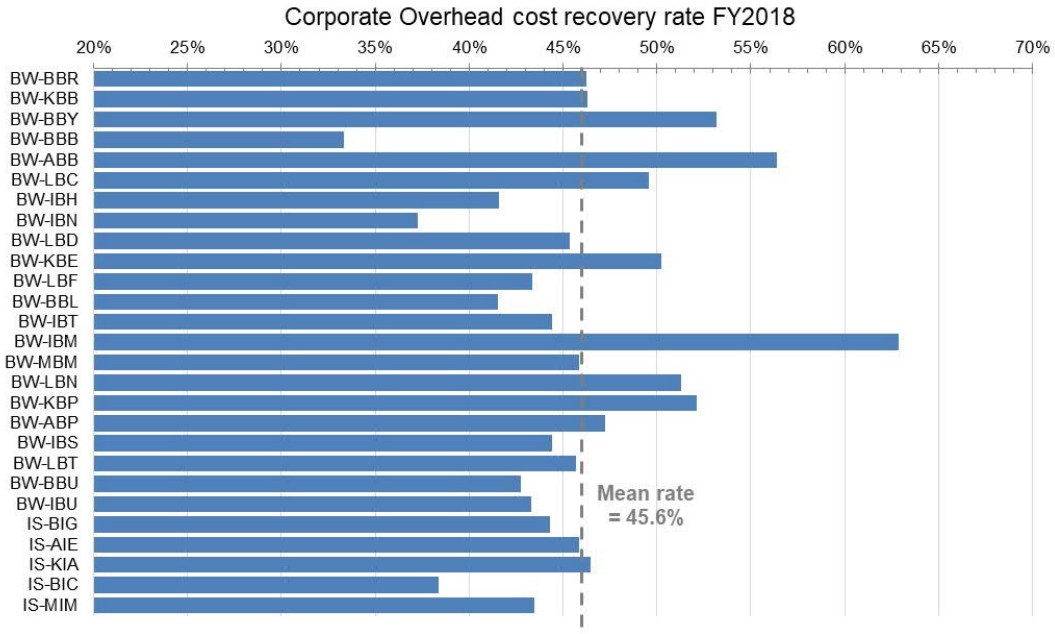


Figure 71 Corporate Overhead Cost Allocation / Recovery from the Schemes in FY2018

The historical trend in the recovery rate for corporate overhead reflects changes to total direct labour costs and the size of the corporate cost pools. Direct labour costs declined between FY2013 and FY2018, although the decline has been attributed to Sunwater's time-writing issue because FTEs and the unit cost of labour did not decline over the period. Corporate costs also declined until FY2018, when restructuring transferred costs from local overhead to corporate cost pools.

The cost allocator (recovery) rate shows a slight decline until FY2018 as shown in Figure 72. Sunwater's budgets for FY2019 and FY2020 provided for a rapidly increasing corporate cost recovery rate assuming that the time-writing issue is addressed (increasing direct labour charged and reducing the residual labour cost) and that budgeted increases in corporate costs occur.

We address these projected changes in Section 9.0.

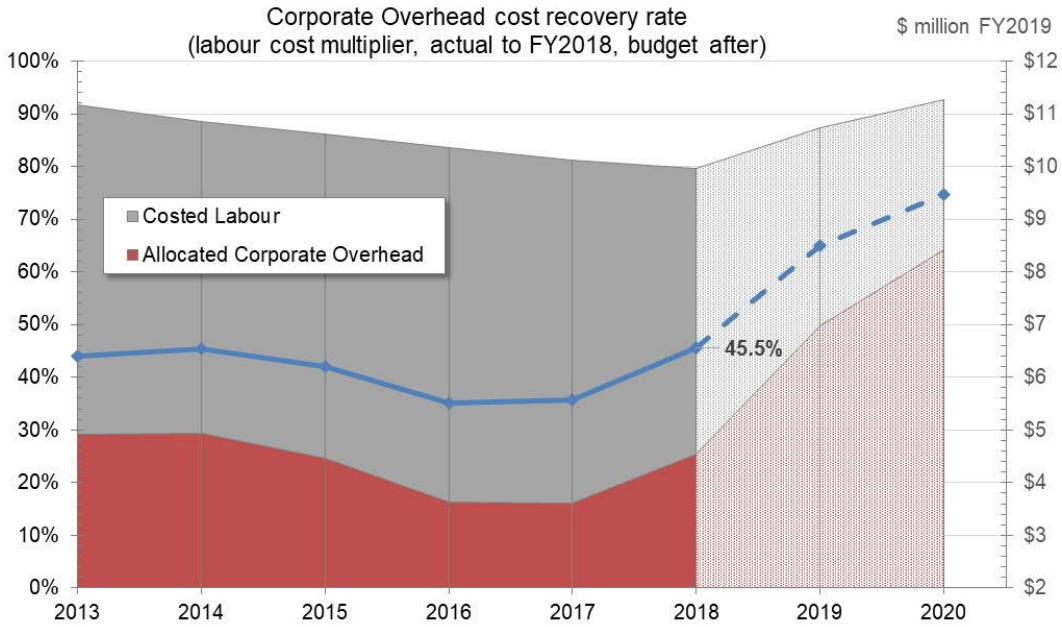


Figure 72 Corporate Overhead Cost Recovery

The overhead cost allocator uses Sunwater's total direct labour costs both regulated and unregulated. The latter was expected to increase from FY2019. However, Sunwater revised its submission to the QCA in June 2019 and used its FY2020 budgets for the updated cost projections, including projections of direct labour costs expected to be incurred in its unregulated business.

The cost attributed to Sunwater's unregulated business (shown as 'other' in Table 63) sharply increases in FY2019 and again in FY2020 (and then declines over the remainder of the price path period), changes that are clearly not related to irrigation costs. Since a review of the unregulated business is not in scope, we have accepted Sunwater's cost estimates for this activity.

The allocation of corporate overhead to irrigation was 90.5% in FY2018 but would be 67.0% in FY2020 by our calculations, which is a material difference. We think it reasonable to accept Sunwater's forecast of its unregulated business activity at the beginning of the price path period (FY2020) rather than the level as it was in FY2018, seeing as it takes into account Sunwater's new cost allocation approach, and is generally more representative of forecast years. We have therefore taken the FY2020 overhead cost allocator as it would be in that year based on Sunwater's forecast (67.0%) and used that as our adjusted efficient labour cost for the price-path period (Table 64).

Table 63 Direct Labour Costs Incurred/Budgeted

$ million FY2019

Line of Business	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1. Bulk water	$10.62	$10.66	$9.97	$10.87	$12.47	$12.24	$12.07	$12.42	$12.76	$13.29	$12.27	$12.41
2. Irrigation system	$8.52	$8.79	$8.86	$8.40	$8.23	$7.95	$7.87	$7.46	$7.53	$7.36	$7.52	$7.40
Other	$3.41	$4.34	$5.05	$6.62	$5.15	$4.45	$9.64	$11.05	$11.57	$8.48	$5.38	$4.42
Total	**$22.54**	**$23.79**	**$23.89**	**$25.89**	**$25.84**	**$24.64**	**$29.57**	**$30.93**	**$31.86**	**$29.14**	**$25.17**	**$24.23**

Table 64 Corporate Costs Allocator

$ million FY2019

Corporate Costs												
Actual			$16.02	$18.80	$20.17	$22.30						
Adjusted Base Year						$20.43	$20.43	$20.43	$20.43	$20.43	$20.43	$20.43

Corporate Cost Allocator	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Actual			67.1%	72.6%	78.0%	90.5%						
Adjusted						67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%

Corporate cost allocation example:

If a scheme has a total labour cost of $0.273 million and the corporate overhead allocator is calculated to be 82% in FY2018, then:

$$Corporate\ Overhead\ Allocated = Costed\ Labour \times Corporate\ Overhead\ Rate$$

$$Corporate\ Overhead\ for\ BBR = \$0.273\ million \times 82\%$$

$$Corporate\ Overhead\ Allocated\ to\ (recovered\ from)\ BBR = \$0.224\ million$$

7.8 Sunwater's Submission on the QCA's Draft Report

7.8.1 Corporate support resource costs

In Section 3.8.4 of its November 2019 response to the QCA's draft report, Sunwater proposed several adjustments to corporate support costs if the base year is retained as FY2018. These are largely cost increases that we had previously found to provide no additional benefit to irrigation customers and therefore had recommended be rejected. Sunwater provided additional rationale in its submission to support its proposal.

In assessing Sunwater's proposed adjustments to the base year, we consider that for an adjustment to be accepted it should be:

- **Prudent -** the proposed inclusions should be justified by reference to an identified need or cost driver (for instance, is required to deliver agreed service levels, is required to meet new legal or regulatory obligations, or there is a reasonable expectation of future benefits)
- **Efficient –** -the expenditure must;
  - Represent the least-cost means of providing the requisite level of service within the relevant regulatory framework
  - Have clear specification and accounting of the value of the benefits associated with the expenditure, including a quantification of any efficiencies expected to result from the expenditure
  - Demonstrate consistency of the associated procedures and governance with good industry practice (including evidence of robust options analysis and businesses case where expense relates to material capital investments or material ongoing programs)
  - Give appropriate consideration of customer values and needs

If an adjustment has already been captured in the base year, it is already part of the ongoing cost base, and therefore will not be accepted as an efficient addition to the base year, as this would constitute double counting.

Sunwater's proposed adjustments, alongside a summary of our position in relation to each issue, are summarised in Table 65.

Table 65 Summary of Sunwater's Proposed Adjustments to Non-Direct Costs

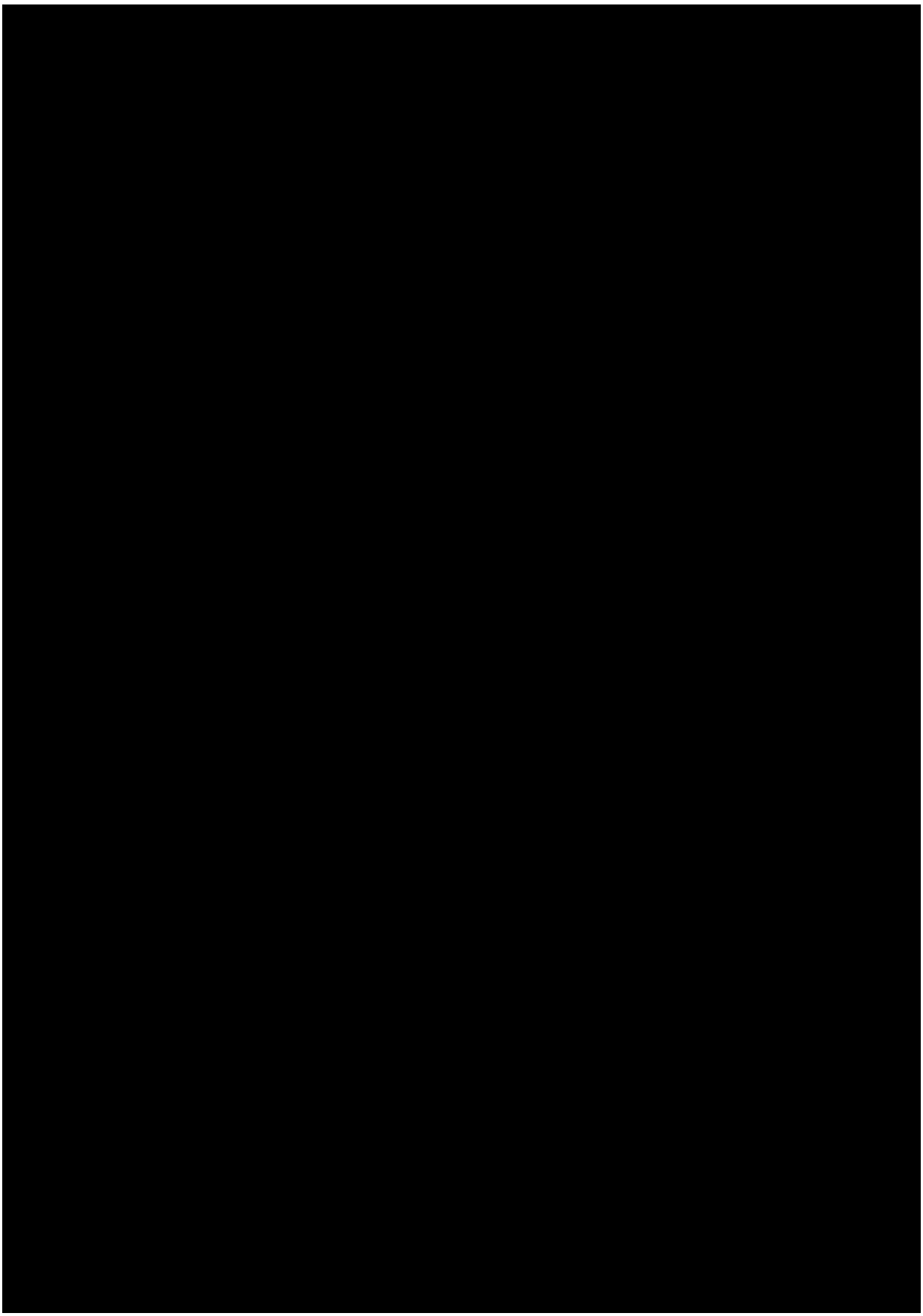
Cost Category	Sunwater's Proposed Adjustment	AECOM Assessment	AECOM's Proposed Adjustment
People and Transformation	$1,279,000	We recommend that the QCA accept this adjustment (in part).	$48,000
Office of the CEO	$413,000	We recommend that the QCA accept this adjustment (in part).	$250,000
CFO and Finance	$650,000	We recommend that the QCA accept this adjustment.	$650,000
ICT	$2,136,000	We recommend that the QCA do not accept this adjustment.	$0

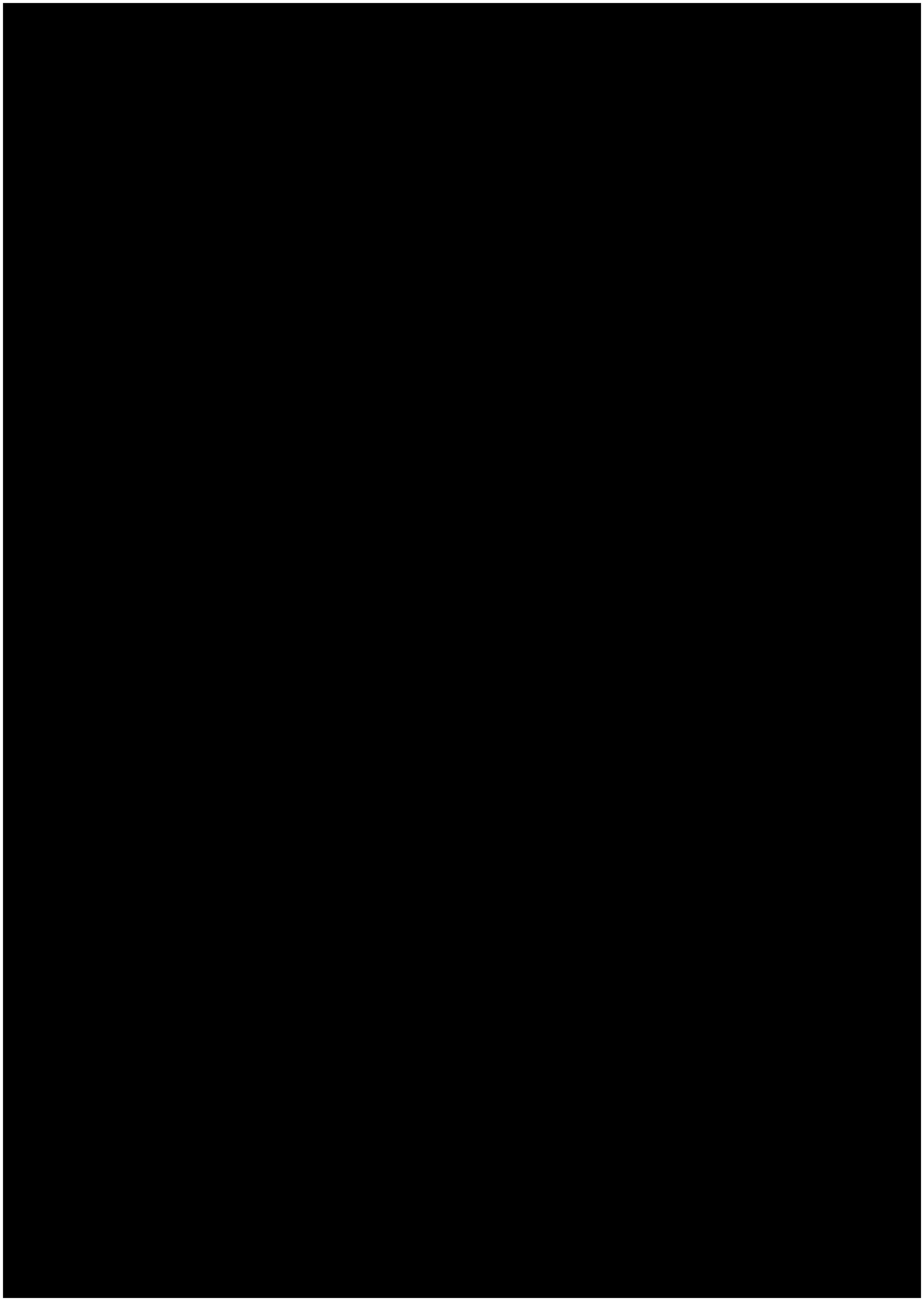
Commentary on each of these items is provided in Table 66. In general, we note that:

- Few of these proposed step changes relate to a new obligation or a change in an existing obligation. The proposals are predominantly in effect a proposed restructuring of activities that were previously delivered in a different way.
- Sunwater refers to outcomes that 'customers are looking for' but has not provided evidence of customer support.
- Most of the rationale provided refers to efficiency gains as a result (lower recruiting costs, streamlined approval processes, operational savings that 'almost completely fund' the cost increase, improved staff retention, etc). We note that internal approval of these cost increases has obviously been obtained, and a prudent manager would have required these initiatives to be at worst cost neutral and preferably a means of driving further efficiency gains.

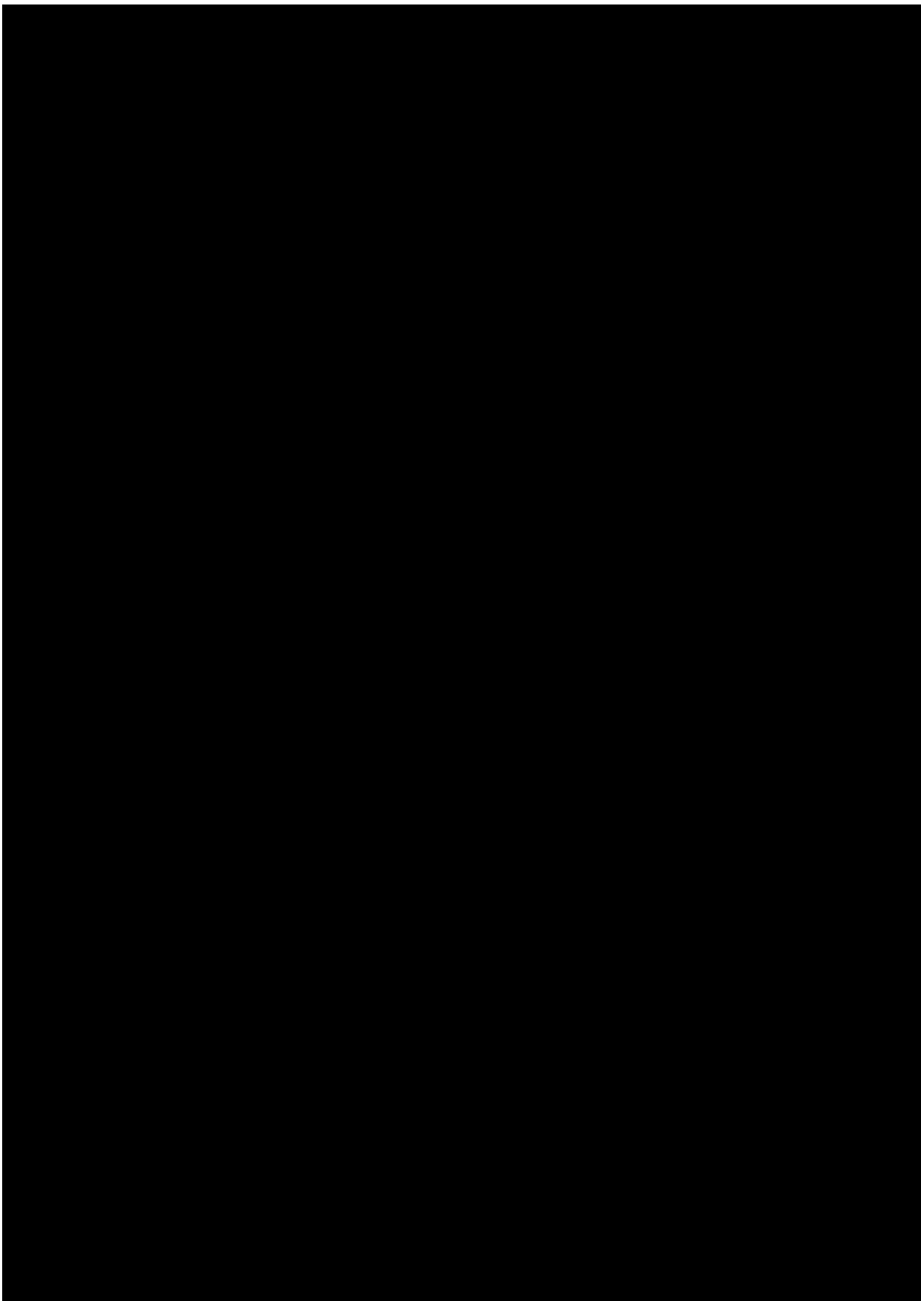
  It is not apparent where in Sunwater's cost projections these efficiency gains have been accounted for. The irrigation business is mature and other than via LMA has not changed in scope since 2012 (or earlier). In that context, it seems reasonable to assume that an increase in cost should (unless clearly justified by a cost driver that is not related to future efficiency, i.e. a change in obligations) be at least balanced by a reduction elsewhere, and in fact should result in net lower costs overall.

Table 66 Sunwater's Proposed Adjustments to Non-Direct Costs

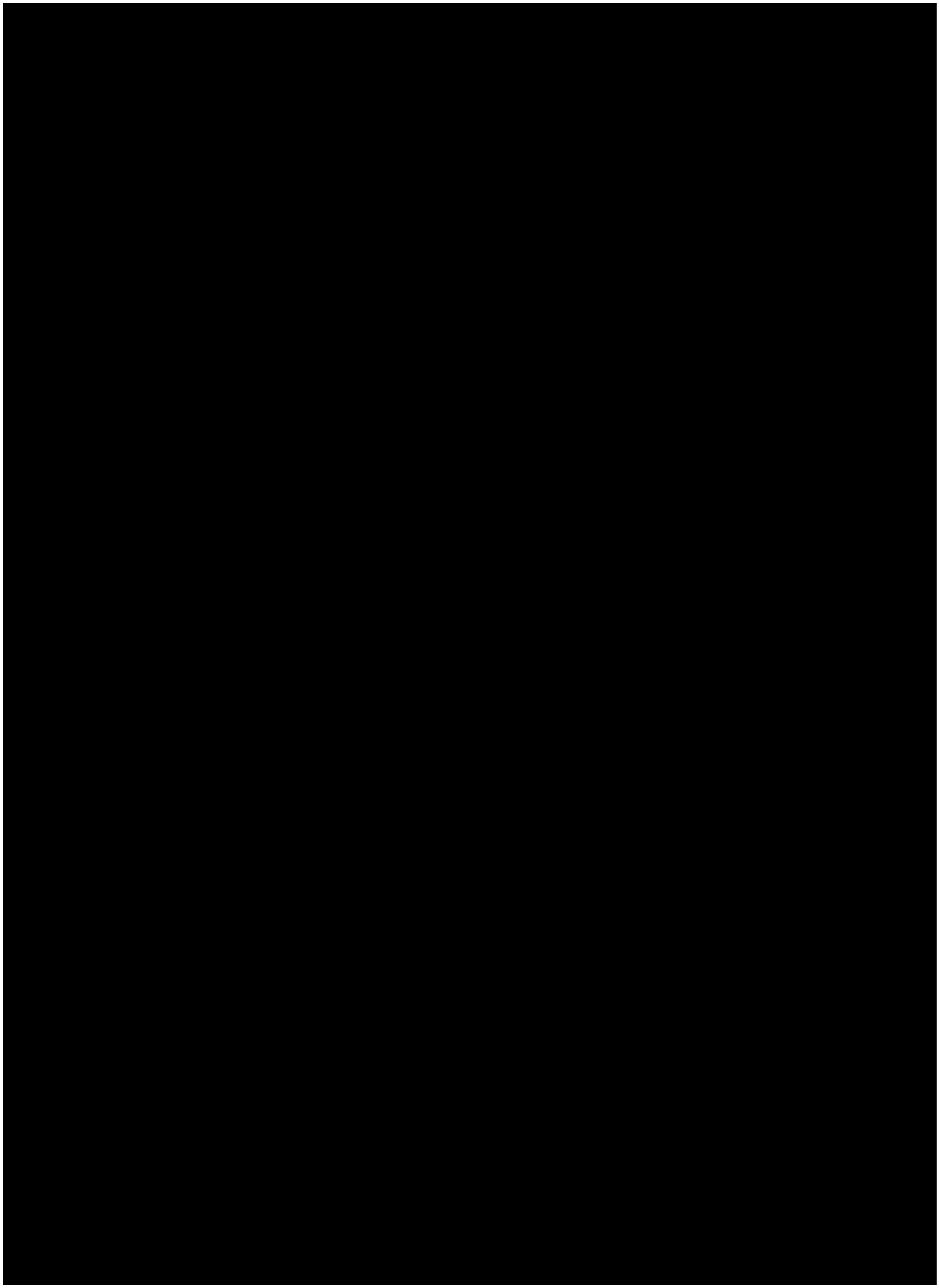




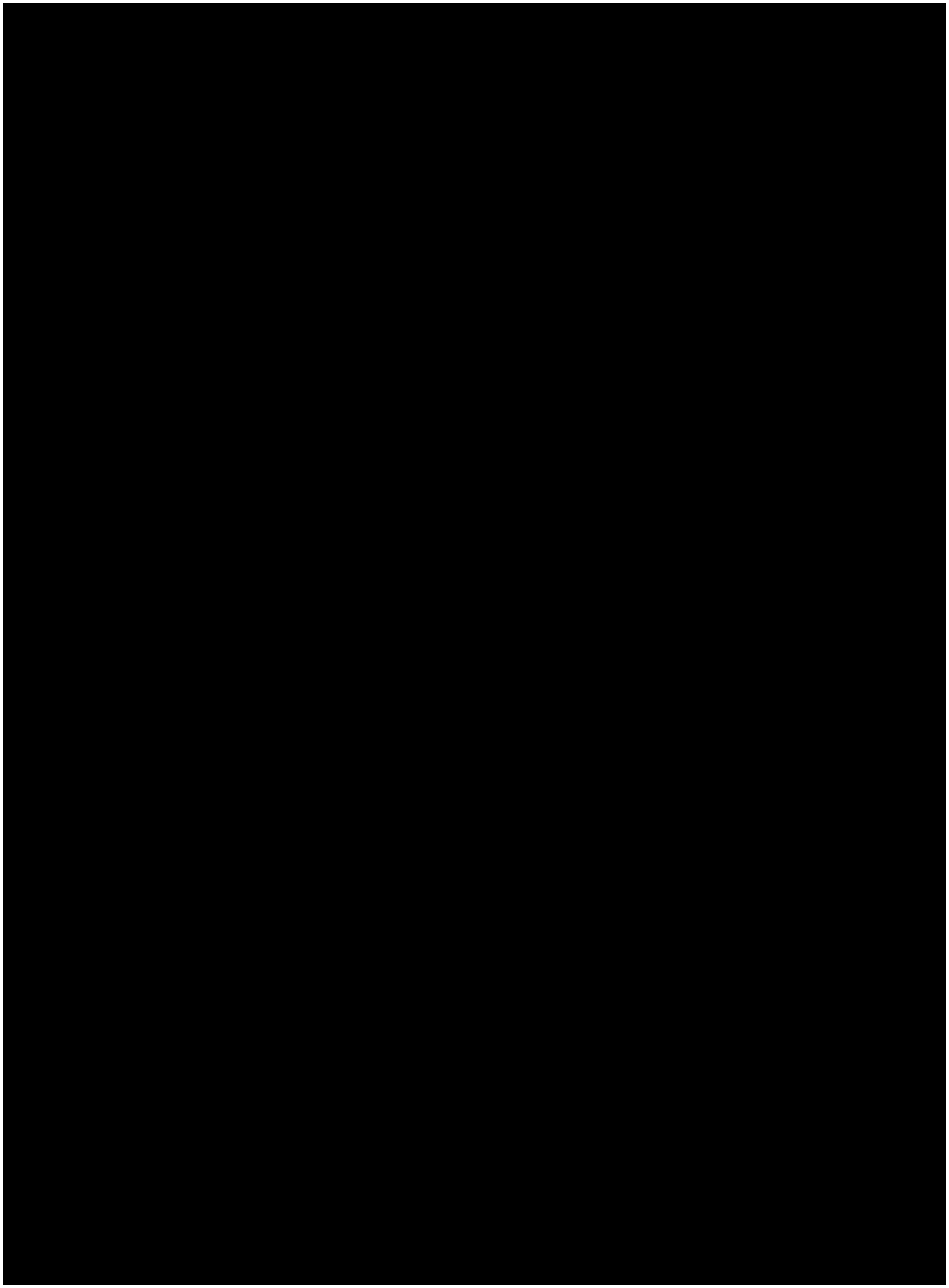
[195] QCA information request FR6b P&T drivers



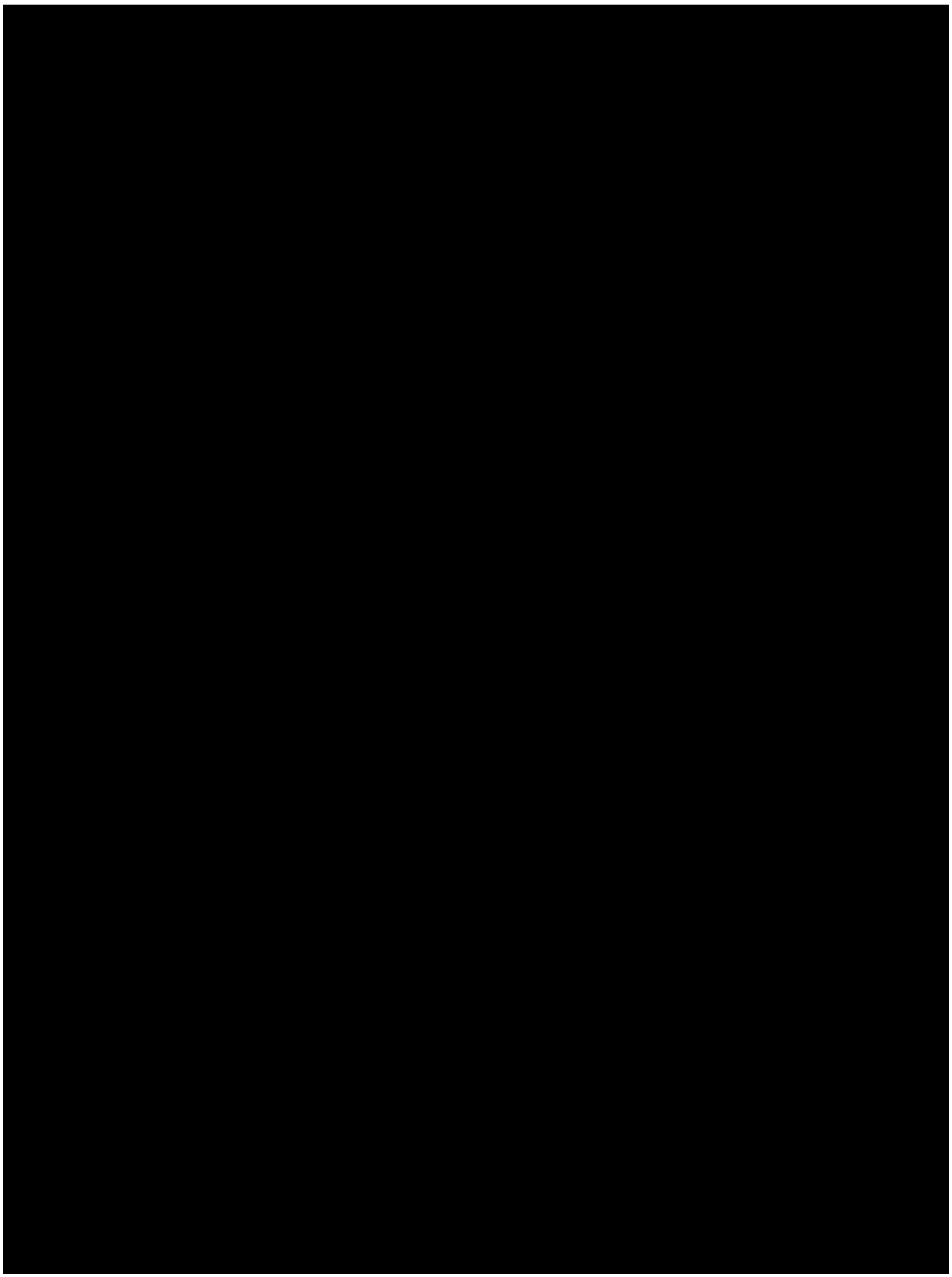
[196] QCA information request FR6b P&T drivers



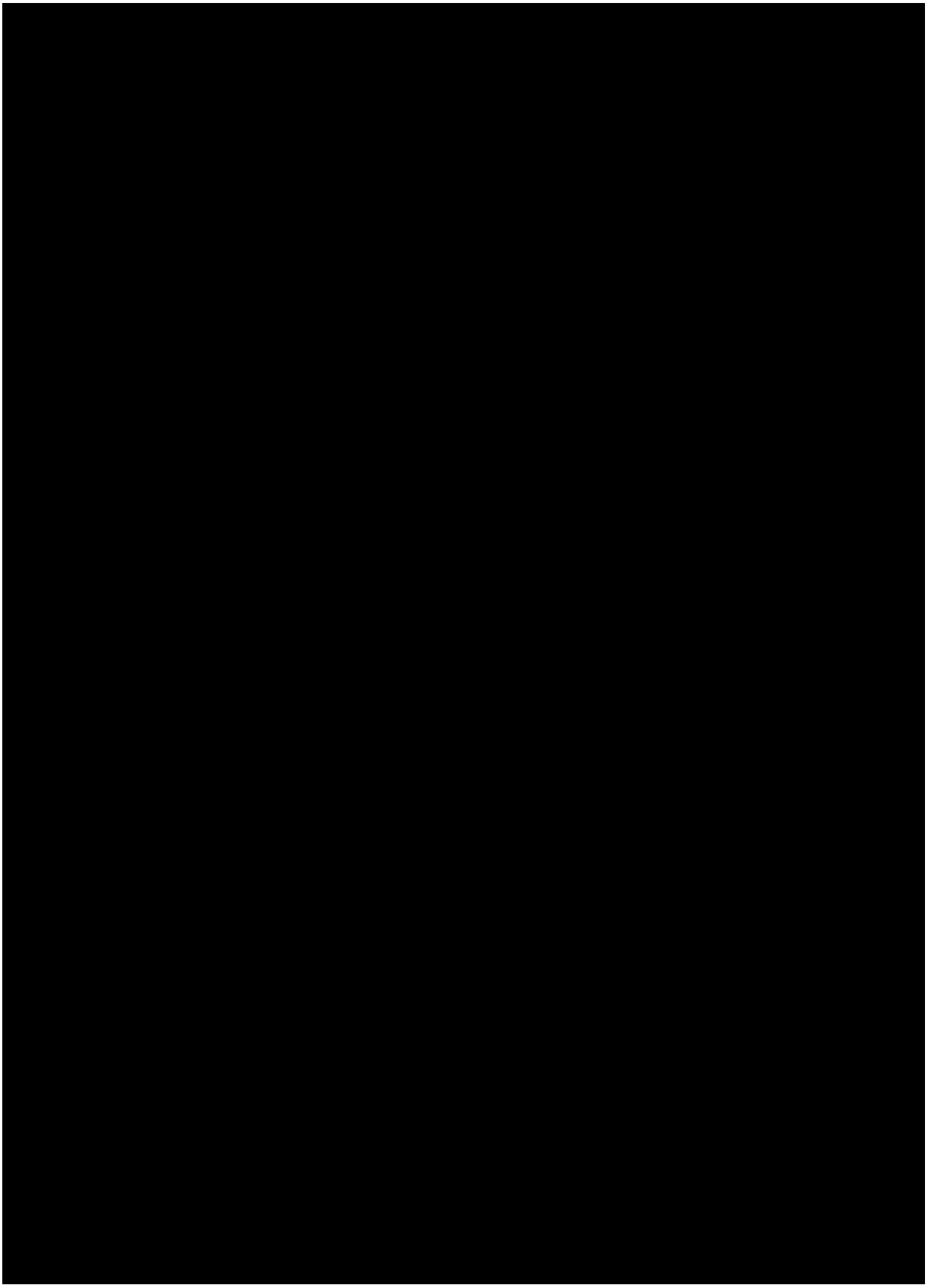
[197] QCA information request FR6b P&T drivers
[198] QCA information request FR6b P&T drivers
[199] QCA Information Request FR4_Attachment 3_EA productivity initiatives report



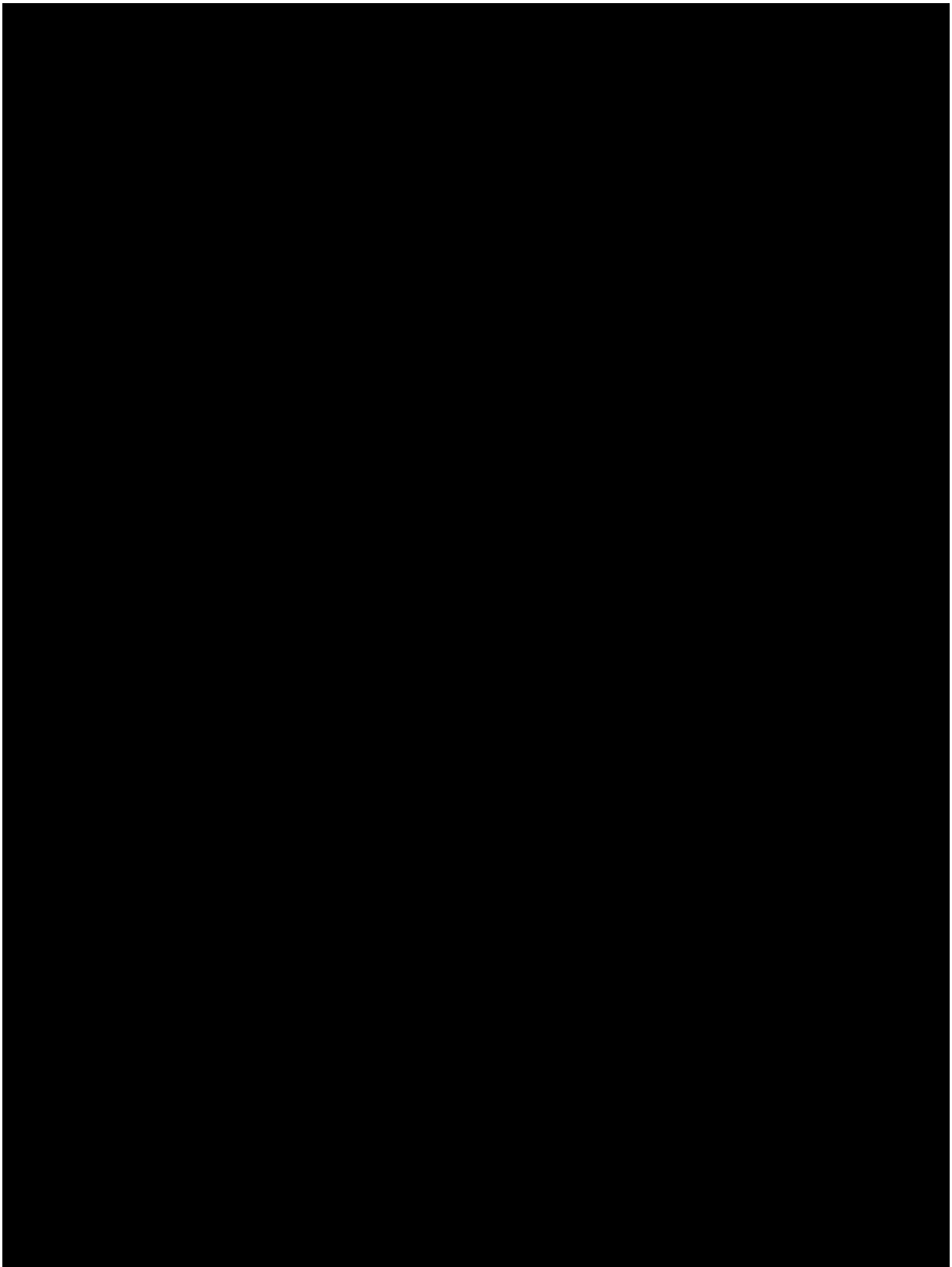
[200] QCA information request FR6b P&T drivers
[201] QCA information request FR6b P&T drivers
[202] QCA information request FR6b P&T drivers
[203] QCA information request FR6b P&T drivers



[204] QCA Information Request FR6b Attachment 5b Portfolio Assurance function



[205] QCA information request FR6b P&T drivers
[206] QCA Information Request FR6b Attachment 4 Safety program briefs



Digital Enterprise Business	Sunwater's submission states as justification for the cost adjustment that:

[207] QCA information request FR6b P&T drivers

Solutions (DEBS)	*"Sunwater underinvested in technology since at least the last price review and has not kept pace with comparable utilities. We operate a disparate set of bespoke applications and outdated commercial products running on multiple technologies supported by multiple suppliers…* *we were already aware that these legacy systems have reached the end of their cost effective lives, and that was reflected in many of the comments raised by the QCA and its consultant. We expect that without the investment, Sunwater will continue to have inefficient business processes, unstable business solutions, increased operational costs, end user frustration, and inability to effectively complete work in a timely manner. Management decisions, compliance reporting and customer access to online services will continue to be impacted by a lack of timely and accurate information.* *In our interviews with AECOM and the QCA, Sunwater outlined our DEBS program, and how it will improve the way we operate. There will be a range of benefits including:* • *streamlining business processes and functions* • *ensuring better information transparency for decision making* • *improving financial management* • *enabling transparent cost exposure to customers and the regulator* • *streamlining timesheet processing and procurement processing* • *simplified financial management* • *more accurate scheme reporting.* *While this project may generate small direct savings, it is primarily about improving the way Sunwater incorporates technology into our business, at all levels, and optimising efficiencies of scope and scale, so that the rest of the business can operate efficiently* *Many of AECOM's recommendations are linked to the changes that this program will deliver. AECOM's report mentions Sunwater's investment in this program and uses it as a justification of maintaining 0.2 per cent efficiency stretch targets in its forecast costs. Given AECOM has been so critical of current systems and processes, and has largely accepted the need and efficiency of our intended investment, we do not believe that it is reasonable for the QCA not to incorporate the cost of the DEBS program in its base year.* *Should the QCA decide not to include DEBS investment in corporate support costs, we recommend that the QCA remove any efficiency targets AECOM assumed could be partly addressed from these new capabilities and redact its qualitative recommendations for process and procedural improvements, as these will not be possible without the DEBS program."* • **Prudency:** We have noted that a component of the DEBS program involves bringing current legacy systems up to date (largely Sunwater's financial and asset management systems). Other initiatives in the program, such as those relating to operations, are intended to deliver efficiency gains. Given these two reasons, we consider the investment to be prudent. • **Efficiency:** We note that there has been a cost increase of $5.6 million from the P60 conceptual business case estimate of $13.3 million to a revised cost estimate of $18.9 million.[208] Sunwater have estimated a per annum. benefit of $990,000 and has indicated that the cost of the DEBS program outweighs the benefits, which we consider to be reasonable given that a core component of the investment is capital expenditure driven by end of life ICT systems.[209] Sunwater do however note that *"overall value for money [will be] captured as the program is delivered"*.[210]

[208] QCA Information Request FR51 Attachment 1 DEBS and ICT
[209] QCA Information Request A11_Attachment 5_Conceptual Business Case - DEBS.docx
[210] QCA Information Request A11_Attachment 5_Conceptual Business Case - DEBS.docx

	Sunwater has previously indicated that the DEBS cost (as based on the conceptual business case estimate) was included in their proposed baseline year.[211] Sunwater also stated that '*Sunwater does not intend to update our regulatory submission with the increased amount*'.[212] The cost adjustment proposed in Sunwater's November submission is based on the revised $18.9 million cost estimate. Sunwater has indicated that this proposed adjustment includes *'all actual costs and efficiency assumptions for DEBS and the ICT roadmap'* as the base year methodology '*did not recognise absorbed costs or identify how efficiency cuts should be applied*'.[213] We note that our proposed corporate overhead base year cost largely reflects Sunwater's proposed FY2020 cost (as outlined in Table 60). The only instance where our base year cost is lower than Sunwater's proposed FY2020 cost is for *Office of the CEO* and *People and Stakeholder Relations* costs, which we do not consider relevant to the DEBS cost. In particular, we note that for *273 – ICT Project Delivery* and *269 – Info & Comm Tech* (wherein DEBS and ICT Roadmap costs respectively sit) our proposed base year costs are the same as Sunwater's proposed FY2020 cost.[214] Considering this analysis, we believe that our base year already reflects the DEBS costs and consider the proposed cost adjustment to be not efficient. We recommend that the QCA do not accept this cost adjustment. Efficiency gains over the price path period are discussed in Section 9.3.
Additional rental costs—level six	Sunwater's submission states as justification for the cost adjustment that: *"Sunwater has needed to expand into additional floorspace to accommodate the Rookwood Weir project team, and the growing needs of ICT and meeting spaces (both internal and external). We considered a number of options, such as directly costed and resourced premises for the Rookwood Weir project team and accessing third-party spaces for meetings on an as-needs basis. However, after careful consideration, it has been decided that it is in all our customers best interests if Sunwater remains in a single location and draws on a single pool of corporate services and ICT support. Although the expansion is a modest increase in rent, it is still less than the premises we vacated at the beginning of 2019 and ensures that both rent and associated support costs are allocated across all directly charged labour."* • **Prudency:** We note that this expenditure is largely driven by the Rockwood project team and the FAMS project team (related to the DEBS project) and will be utilised by Sunwater's business more broadly. We acknowledge that the requirement is a reasonable driver for incurring additional head office rental cost. We consider that the proposed rental cost adjustment is prudent. • **Efficiency:** We note that Sunwater undertook a competitive procurement process and that the total rental cost ($2.7 million) is still lower than that of the prior Turbot street rent ($3.0 million). Considering this, we consider the additional rental cost to be efficient. We recommend that the QCA accept this cost increase of $400,000.

[211] QCA Information Request A11_ICT presentations
[212] QCA Information Request A11_ICT presentations
[213] QCA Information Request FR51 Non-direct opex - DEBS
[214] QCA Information Request FR51 Non-direct opex - DEBS

7.8.2 Corporate overhead allocator

In their November 2019 submission, Sunwater queried the calculation of the corporate overhead cost allocator.

The corporate overhead allocator is assumed to reduce from FY2020 as a result of Sunwater's projected increase in its unregulated business activity, which will reduce the proportion of these costs that would be recovered from irrigation service contracts. For the routine labour costs of the schemes in this review scope, we have applied the labour cost as determined in Section 4.5. For all other costs, Sunwater's proposed FY2020 costs have been applied in the calculation. All costs have been escalated/de-escalated to $FY2019 for this purpose.

7.9 Summary of Findings

Sunwater's budget projects corporate overhead costs to increase by about 5% in $FY2019 terms in FY2020 from FY2018.

We have relied on detailed evaluations of corporate costs carried out by Deloitte and others, and in general, compared current staffing and costs by corporate cost type to findings and recommendations made by the QCA in 2012.

Sunwater has undertaken similar reviews since 2012, and undertaken its own efficiency drives to eliminate unnecessary overhead costs. Staff numbers in FY2018 were 30% lower than they were in 2012. An increase of about 10 staff members has been budgeted for in FY2020, but this increase is in an area that does not affect irrigation customers.

We have examined all the cost pools in corporate overhead and made a number of adjustments to reflect the transfers between corporate, local and indirect cost categories, the changed policy regarding recovery of corporate overhead, the consolidation of rent to finance from other cost centres, and planned staff reductions. The net impact is an accepted corporate overhead cost before allocation in the base year that is 11% lower than FY2018.

The changed approach to corporate overhead cost allocation, however, has meant that all these costs will now be recovered via direct labour costs, so the value of the cost allocator used increases as a result from FY2020 (irrigation customers are assigned a higher proportion of the slightly smaller corporate overhead cost).

The direct labour cost used to recover corporate overhead includes labour costs in Sunwater's unregulated business activity. Sunwater's budget for FY2020 as provided in Sunwater's revised submission to the QCA in June 2019, provides for a significant increase in the unregulated business activity, so we have used this expectation to derive the overhead cost allocator to be used for recovery from irrigation direct labour from FY2020, which is lower as a result.

8.0 Base Year Costs

AECOM is required by the QCA to assess whether Sunwater's proposed base year reflects the most appropriate base year to establish an efficient level of recurring operational cost and, if not, recommend an alternative base year.

Typically, a base year will reflect actual costs incurred by the business. In this case Sunwater proposed to use the base year FY2019 (relying on a budget), noting that both FY2017 and FY2018 are abnormal years involving non-recurring costs, such as:

- The FY2018 and later corporate restructuring
- Exclusion of costs incurred or allocated to the St George and Theodore service contracts that were transitioned to local management at the end of FY2018
- New non-direct routine costs associated with implementing recommendations from IGEM.

The budget for FY2019 that Sunwater included in its original submission to the QCA in November 2018 was revised through an updated submission to the QCA in June 2019. Among other changes, the FY2020 budget was added to the revised submission in June 2019, just as this review was concluding. We have continued to use the original November 2018 submission[215] as the source for the FY2019 costs i.e. Sunwater's budget for FY2019, but have used Sunwater's June 2019 submission as the source for FY2020 budget costs since this year was not included in the original November 2018 submission.

Actual cost data from past years has been used, with normalised costs initially provided for FY2018 removed and actual costs used instead for that year. We have continued to include the budget data for FY2019, but we have not relied on that data in this review.

In this section we provide:

- A summary of the QCA's 2012 recommendations by scheme and cost category, showing the last year of the QCA's projected costs (FY2017), expressed in FY2019 dollars for comparison purposes
- A summary of Sunwater's original submission by scheme and cost category for its proposed base year (FY2019), expressed in FY2019 dollars
- A summary of Sunwater's updated submission by scheme and cost category for its proposed base year (FY2019), expressed in FY2019 dollars
- Our recommended base year costs, expressed in FY2019 dollars, incorporating the variety of cost changes that we have considered prudent and efficient in this report.

The last year of full actual costs was FY2018, and our base year costs are largely drawn from those actual costs. We have made several adjustments to the base year. Step changes have been provided for as detailed in Section 9.0.

Please note that all costs are $FY2019. Indexation of these costs to nominal dollars is carried out in Section 9.4.

[215] Sunwater's financial model v1945

8.1 The QCA's Recommended FY2017 Costs

The QCA provided projections to FY2017 in its 2012 recommendations. These are presented for comparison purposes in Table 67, indexed to FY2019 dollars.

Table 67 The QCA's 2012 Recommendations for FY2017

QCA 2012 Recommended Costs by Service Contract	O&M	Electricity	Insurance	Indirect Allocated	Overhead Allocated (Local & Corporate)	QCA's Total Scheme Cost
BBR - Barker Barambah WS	$286	$22	$91	$182	$205	$787
KBB - Bowen Broken WS	$503	$160	$53	$209	$242	$1,169
BBY - Boyne WS	$147	$0	$61	$103	$113	$424
BBB - Bundaberg WS	$550	$13	$109	$299	$335	$1,306
ABB - Burdekin WS	$1,245	$132	$328	$933	$932	$3,571
LBC - Callide WS	$355	$9	$157	$251	$254	$1,026
IBH - Chinchilla Weir WS	$35	$0	$7	$18	$20	$80
IBN - Cunnamulla Weir WS	$27	$0	$3	$14	$16	$60
LBD - Dawson WS	$389	$46	$54	$276	$300	$1,065
KBE - Eton WS	$661	$318	$87	$326	$337	$1,728
LBF - Lower Fitzroy WS	$120	$2	$14	$83	$93	$311
BBL - Lower Mary WS	$112	$0	$10	$89	$98	$310
IBT - Macintyre Brook WS	$363	$2	$79	$292	$291	$1,027
IBM - Maranoa WS	$12	$0	$6	$8	$9	$35
MBM - Mareeba WS	$423	$8	$93	$285	$288	$1,097
LBN - Nogoa WS	$966	$18	$221	$684	$685	$2,574
KBP - Pioneer WS	$410	$5	$101	$259	$262	$1,038
ABP - Proserpine WS	$444	$7	$98	$191	$201	$941
IBS - St George WS	$462	$12	$46	$298	$298	$1,115
LBT - Three Moon WS	$133	$13	$42	$92	$103	$383
BBU - Upper Burnett WS	$299	$10	$74	$197	$219	$800
IBU - Upper Condamine WS	$398	$88	$77	$286	$282	$1,132
BIG - Bundaberg IS	$2,570	$4,076	$600	$803	$1,668	$9,718
AIE - Burdekin IS	$5,793	$6,309	$432	$1,282	$2,695	$16,512
KIA - Eton IS	$1,061	$643	$150	$260	$545	$2,659
BIC - Lower Mary IS	$312	$203	$48	$111	$230	$904
MIM - Mareeba IS	$2,051	$464	$320	$611	$1,253	$4,698
Total	**$20,129**	**$12,562**	**$3,361**	**$8,443**	**$11,974**	**$56,469**

8.2 The Base Year Costs Included in Sunwater's Submissions

This section includes two versions of Sunwater's proposed costs for its nominated base year (FY2019):

- The budget for FY2019 included in Sunwater's original submission to the QCA in November 2018[216] is summarised in Table 68
- The budget for FY2019 included in Sunwater's revised submission to the QCA in June 2019[217] is summarised in Table 69

The tables compare the QCA's total scheme cost as shown in Table 67 with Sunwater's base year budgeted costs (FY2019) as provided in the respective submissions and show the scale of variances between the two on a scheme by scheme basis.

The two submissions have considerable variations for some schemes. The cost projection for Boyne WS more than doubles from the QCA's 2012 recommendation, but there are significant variations between the submissions for schemes such as Bundaberg WS, Callide WS, Lower Fitzroy WS and Three Moon WS. No rationale has been provided for the budgeted scheme by scheme variations between the submissions.

[216] Source: Regulatory Model v1
[217] Source: Regulatory Model v3

Table 68 Sunwater's Base Year Costs (FY2019) by Scheme in Sunwater's Original Submission of November 2018

Original Submission Costs by Service Contract	O&M	Electricity	Insurance	Indirect Allocated	Local Overhead Allocated	Corporate Overhead Allocated	Sunwater Total Scheme Cost	QCA's Total Scheme Cost	% Change QCA / Original
BBR - Barker Barambah WS	$262	$40	$205	$291	$225	$114	$1,137	$787	45%
KBB - Bowen Broken WS	$689	$182	$143	$227	$286	$151	$1,679	$1,169	44%
BBY - Boyne WS	$194	$0	$298	$180	$127	$68	$868	$424	105%
BBB - Bundaberg WS	$567	$10	$254	$417	$497	$253	$1,998	$1,306	53%
ABB - Burdekin WS	$1,103	$110	$766	$471	$639	$332	$3,420	$3,571	-4%
LBC - Callide WS	$415	$5	$320	$442	$287	$146	$1,614	$1,026	57%
IBH - Chinchilla Weir WS	$38	$0	$13	$11	$23	$12	$97	$80	20%
IBN - Cunnamulla Weir WS	$13	$0	$5	$5	$12	$6	$40	$60	-33%
LBD - Dawson WS	$294	$45	$119	$185	$207	$105	$955	$1,065	-10%
KBE - Eton WS	$550	$400	$193	$296	$264	$140	$1,841	$1,728	7%
LBF - Lower Fitzroy WS	$87	$2	$22	$22	$48	$24	$206	$311	-34%
BBL - Lower Mary WS	$105	$0	$10	$50	$108	$55	$328	$310	6%
IBT - Macintyre Brook WS	$355	$4	$167	$322	$332	$169	$1,349	$1,027	31%
IBM - Maranoa WS	$15	$0	$12	$3	$6	$3	$38	$35	9%
MBM - Mareeba WS	$467	$3	$154	$318	$308	$164	$1,416	$1,097	29%
LBN - Nogoa WS	$902	$18	$490	$434	$536	$272	$2,653	$2,574	3%
KBP - Pioneer WS	$445	$4	$335	$225	$222	$118	$1,350	$1,038	30%
ABP - Proserpine WS	$406	$8	$177	$301	$239	$125	$1,256	$941	33%
IBS - St George WS	$361	$6	$108	$304	$277	$149	$1,204	$1,115	8%
LBT - Three Moon WS	$156	$22	$108	$176	$126	$64	$652	$383	70%
BBU - Upper Burnett WS	$379	$6	$105	$262	$313	$159	$1,225	$800	53%
IBU - Upper Condamine WS	$424	$90	$129	$335	$380	$193	$1,552	$1,132	37%
BIG - Bundaberg IS	$2,652	$4,528	$748	$714	$1,902	$966	$11,510	$9,718	18%
AIE - Burdekin IS	$6,062	$6,564	$482	$946	$3,289	$1,708	$19,051	$16,512	15%
KIA - Eton IS	$1,373	$650	$201	$244	$843	$441	$3,751	$2,659	41%
BIC - Lower Mary IS	$343	$300	$56	$83	$296	$151	$1,229	$904	36%
MIM - Mareeba IS	$2,148	$631	$365	$489	$1,693	$883	$6,210	$4,698	38%
Total	**$20,803**	**$13,629**	**$5,984**	**$7,755**	**$13,485**	**$6,971**	$68,628	**$56,469**	**22%**

Table 69 Sunwater's Base Year Costs (FY2019) by Scheme in Sunwater's Revised Submission of June 2019

Updated Submission Costs by Service Contract	O&M	Electricity	Insurance	Indirect Allocated	Local Overhead Allocated	Corporate Overhead Allocated	Sunwater Total Scheme Cost	QCA's Total Scheme Cost	% Change QCA / New
BBR - Barker Barambah WS	$357	$40	$225	$241	$83	$165	$1,111	$787	41%
KBB - Bowen Broken WS	$750	$183	$158	$279	$150	$218	$1,738	$1,169	49%
BBY - Boyne WS	$248	$0	$338	$153	$54	$90	$883	$424	108%
BBB - Bundaberg WS	$651	$10	$279	$347	$148	$292	$1,727	$1,306	32%
ABB - Burdekin WS	$1,156	$127	$845	$440	$305	$360	$3,233	$3,571	-9%
LBC - Callide WS	$548	$5	$352	$468	$154	$217	$1,744	$1,026	70%
IBH - Chinchilla Weir WS	$45	$0	$15	$15	$18	$17	$110	$80	37%
IBN - Cunnamulla Weir WS	$15	$0	$5	$7	$9	$8	$44	$60	-27%
LBD - Dawson WS	$304	$55	$131	$167	$77	$106	$840	$1,065	-21%
KBE - Eton WS	$590	$401	$208	$279	$122	$173	$1,773	$1,728	3%
LBF - Lower Fitzroy WS	$137	$2	$24	$47	$36	$51	$297	$311	-5%
BBL - Lower Mary WS	$116	$0	$11	$68	$36	$73	$304	$310	-2%
IBT - Macintyre Brook WS	$401	$4	$183	$328	$240	$202	$1,358	$1,027	32%
IBM - Maranoa WS	$15	$0	$13	$4	$4	$4	$40	$35	13%
MBM - Mareeba WS	$563	$1	$170	$329	$173	$209	$1,445	$1,097	32%
LBN - Nogoa WS	$948	$19	$536	$382	$234	$307	$2,426	$2,574	-6%
KBP - Pioneer WS	$505	$5	$360	$211	$101	$148	$1,330	$1,038	28%
ABP - Proserpine WS	$497	$8	$194	$259	$152	$178	$1,288	$941	37%
IBS - St George WS	$389	$7	$121	$270	$175	$160	$1,122	$1,115	1%
LBT - Three Moon WS	$197	$22	$118	$147	$42	$77	$603	$383	58%
BBU - Upper Burnett WS	$441	$6	$112	$250	$96	$192	$1,097	$800	37%
IBU - Upper Condamine WS	$489	$90	$142	$308	$271	$228	$1,528	$1,132	35%
BIG - Bundaberg IS	$3,001	$4,658	$829	$880	$556	$1,123	$11,047	$9,718	14%
AIE - Burdekin IS	$6,391	$5,656	$535	$1,317	$1,662	$1,959	$17,520	$16,512	6%
KIA - Eton IS	$1,597	$650	$225	$380	$380	$564	$3,796	$2,659	43%
BIC - Lower Mary IS	$363	$301	$62	$121	$87	$179	$1,113	$904	23%
MIM - Mareeba IS	$2,649	$634	$403	$741	$936	$1,102	$6,465	$4,698	38%
Total	**$23,363**	**$12,884**	**$6,594**	**$8,438**	**$6,301**	**$8,402**	**$65,982**	**$56,469**	**17%**

8.3 AECOM's Recommended Base Year

Our recommended base year based on detailed analysis of direct costs, electricity usage and costs, insurance premiums, indirect costs and local and corporate overhead costs is presented in Table 70.

To be consistent with Sunwater's current cost allocation manual, we have assigned local overhead costs to regional groupings of service contracts and included corporate local overhead with corporate overhead costs for allocation and recovery as a multiplier on direct labour costs.

Table 70 AECOM's Recommended Base Year Costs by Scheme

AECOM Adjusted Base Year Costs by Service Contract	O&M	Electricity	Insurance	Indirect Allocated	Local Overhead Allocated	Corporate Overhead Allocated	AECOM Total Scheme Cost	Sunwater Total Scheme Cost (v1)	QCA's Total Scheme Cost
BBR - Barker Barambah WS	$303	$86	$207	$220	$76	$135	$1,028	$1,137	$783
KBB - Bowen Broken WS	$677	$163	$145	$257	$123	$184	$1,549	$1,679	$1,163
BBY - Boyne WS	$228	$0	$301	$158	$51	$90	$828	$868	$422
BBB - Bundaberg WS	$532	$11	$257	$303	$131	$232	$1,467	$1,998	$1,300
ABB - Burdekin WS	$1,197	$83	$774	$459	$355	$360	$3,226	$3,420	$3,555
LBC - Callide WS	$518	$8	$323	$461	$132	$197	$1,638	$1,614	$1,022
IBH - Chinchilla Weir WS	$41	$0	$13	$17	$16	$17	$106	$97	$80
IBN - Cunnamulla Weir WS	$14	$0	$5	$8	$8	$8	$43	$40	$60
LBD - Dawson WS	$295	$52	$121	$214	$99	$148	$928	$955	$1,061
KBE - Eton WS	$566	$450	$195	$292	$118	$177	$1,798	$1,841	$1,719
LBF - Lower Fitzroy WS	$90	$2	$22	$38	$26	$39	$218	$206	$310
BBL - Lower Mary WS	$47	$0	$15	$25	$14	$25	$126	$328	$309
IBT - Macintyre Brook WS	$319	$4	$168	$292	$143	$155	$1,082	$1,349	$1,023
IBM - Maranoa WS	$10	$0	$12	$2	$2	$2	$28	$38	$35
MBM - Mareeba WS	$505	$4	$156	$312	$178	$180	$1,335	$1,416	$1,093
LBN - Nogoa WS	$913	$42	$495	$413	$215	$322	$2,401	$2,653	$2,563
KBP - Pioneer WS	$480	$6	$339	$219	$99	$149	$1,291	$1,350	$1,033
ABP - Proserpine WS	$494	$8	$178	$243	$150	$152	$1,225	$1,256	$936
IBS - St George WS	$404	$5	$110	$292	$160	$173	$1,144	$1,204	$1,110
LBT - Three Moon WS	$182	$10	$109	$149	$43	$75	$568	$652	$381
BBU - Upper Burnett WS	$366	$7	$106	$222	$86	$153	$940	$1,225	$796
IBU - Upper Condamine WS	$434	$50	$131	$292	$185	$200	$1,293	$1,552	$1,127
BIG - Bundaberg IS	$3,458	$4,631	$756	$1,047	$737	$1,301	$11,929	$11,510	$9,663
AIE - Burdekin IS	$6,505	$5,358	$488	$1,295	$1,801	$1,827	$17,273	$19,051	$16,417
KIA - Eton IS	$1,382	$607	$203	$307	$289	$433	$3,220	$3,751	$2,644
BIC - Lower Mary IS	$337	$247	$56	$111	$89	$157	$997	$1,229	$899
MIM - Mareeba IS	$2,529	$472	$369	$674	$938	$952	$5,934	$6,210	$4,675
Total	**$22,828**	**$12,305**	**$6,053**	**$8,322**	**$6,265**	**$7,843**	**$63,616**	**$68,628**	**$56,179**
QCA	*$19,989*	*$12,474*	*$3,338*	*$8,427*	*$11,951*		*$56,179*	*$56,179*	
	14%	*-1%*	*81%*	*-1%*	*18%*		*13.2%*	*22%*	

The differences from the QCA's recommendations for FY2017 are primarily:

- The increased cost of operations and maintenance and insurance
- Increased overhead costs
- Cost transfers as a result of Sunwater's policy changes and restructuring
- A significant increase in cost needed at Boyne WS and a significant decrease for Lower Mary WS compared to the QCA's 2012 recommendation, in both cases because the direct costs at these schemes are very different to the QCA's 2012 recommendation.

The transitions to local management arrangements have been made in the base year. The overall impact is an increase in the cost base by 13% from the QCA's recommendations, or a 7% reduction from Sunwater's proposed base year cost in its original submission to the QCA in November 2018.

While calculated using a long-term averaging approach, the base year operations and maintenance costs differ to those reported in Section 4.2 due to adjustments made to account for higher utilisation (through improved time-writing) and to account for the transfer of fleet costs from local overhead costs.

9.0 Step Changes and Trends

This section summarises the one-off step changes to operational costs claimed in the submission and assessed as being prudent and efficient, and the cost trends claimed in the submission.

9.1 Local Management Arrangements

In response to concerns raised by local irrigators, the Department of Natural Resources, Mines and Energy (DNRME) reviewed options to transition Sunwater's eight channel irrigation schemes to local management arrangements in line with the Water (Local Management Arrangements) Amendment Act 2017.

A detailed assessment was made of the benefits and support of a move to LMA, with interim boards established for each scheme putting forward a business case. As a result of this assessment:

- The St George scheme transitioned to local management on 30 June 2018
- The Theodore scheme transitioned to local management on 2 October 2018
- The customer consultation process for the Emerald scheme has been completed and, having achieved the necessary level of customer support, transitioned to local management in June 2019
- The Eton scheme is in the final stages of finalising the transfer terms. Customer support was provided for the transition of the Eton distribution system to local management arrangements in early December 2019. Subject to the completion of the transfer process, the Eton distribution system will transfer from Sunwater to the irrigator owned company Eton Irrigation Scheme Pty Ltd (Eton Irrigation) from 31 March 2020. We have not included Eton as a step change at this time

The remainder of the channel irrigation schemes are not currently expected to transition to local management. These changes reduce Sunwater’s direct costs from FY2019 onwards and result in a proportional reduction in overheads.

Although these are classified as step changes, we have included them in the base year since they are in place as of the beginning of FY2020.

9.2 Electricity

The impact of transition tariffs has also been calculated by finding the difference between the efficient base year electricity cost and the cost of using the future optimal tariff. The difference is then expressed as a step change.

A significant number of the current tariffs are legacy preferential tariffs and Sunwater is required to move off them by FY2022.

The future optimal tariff was identified by extending the current optimal tariff analysis performed in Section 4.4.3. The results are shown in Table 71.

We have noted that Sunwater's consultant applied the 'QCA Median'[218] where insufficient data is available to accurately estimate a step change due to transitioning tariffs. The information related to the 'QCA Median' was originally produced by Ergon Retail and shows a range of percentage cost impacts (or step changes) and the proportion of customers impacted at each increment.

It seems that Sunwater has used the median of these charts to show a step change notwithstanding the note by Ergon Retail that customer impacts must be calculated on an individual tariff basis rather than using the information from the charts for whole of operations using varying tariffs. We do not have sufficient detail to deduce the impact of the tariff on Sunwater's operations or any specific load. Where there is insufficient data to directly cost the impact of tariff changes, the use of a median step-change as calculated by Ergon Retail is a potential substitute, although we do not believe this was the intended purpose of the data produced by Ergon and the approach is likely to have a significant margin of error.

We have instead used the assumptions outlined in Section 4.4.3 have been used to estimate tariff costs and hence calculate a step change from the efficient cost to the cost of using the optimal transition tariff.

The escalations due to tariff transition have been combined with the electricity escalation rate in Table 76 to forecast electricity cost escalations over the coming five-year period. To calculate the yearly escalation rate for each scheme, the FY2014-18 average consumption of each site, along with the corresponding escalation rate of the site has been used to find a weighted average.

Table 71 Future Optimal Tariffs ($FY2019)

[redacted]

[218] Refer to RfI 11, Attachment 11. The QCA Median is derived from QCA Regulated retail electricity prices for FY2019, May 2018, Appendix E: Transitional and Obsolete Tariffs – Customer Impacts'

For meters with no or insufficient consumption data we have assumed that costs will escalate at the general forecast rate with no change due to tariff transition.

The tariffs used are subject to review in FY2022. They therefore represent step changes for price path purposes. These step changes are shown in Table 72.

Table 72 Step Changes in Electricity Costs

Service Contract	Base Year	Step Changes				
		FY2020	FY2021	FY2022	FY2023	FY2024
BBR - Barker Barambah WS	$0.09			$0.02	$0.02	$0.02
KBB - Bowen Broken WS	$0.16			$0.19	$0.19	$0.19
BBY - Boyne WS						
BBB - Bundaberg WS	$0.01			$0.00	$0.00	$0.00
ABB - Burdekin WS	$0.08			-$0.03	-$0.03	-$0.03
LBC - Callide WS	$0.01					
IBH - Chinchilla Weir WS						
IBN - Cunnamulla Weir WS						
LBD - Dawson WS	$0.05			$0.01	$0.01	$0.01
KBE - Eton WS	$0.45			$0.03	$0.03	$0.03
LBF - Lower Fitzroy WS	$0.00					
BBL - Lower Mary WS						
IBT - Macintyre Brook WS	$0.00					
IBM - Maranoa WS						
MBM - Mareeba WS	$0.00					
LBN - Nogoa WS	$0.04					
KBP - Pioneer WS	$0.01			$0.00	$0.00	$0.00
ABP - Proserpine WS	$0.01					
IBS - St George WS	$0.01					
LBT - Three Moon WS	$0.01					
BBU - Upper Burnett WS	$0.01					
IBU - Upper Condamine WS	$0.06			-$0.02	-$0.02	-$0.02
BIG - Bundaberg IS	$4.63			$1.70	$1.70	$1.70
AIE - Burdekin IS	$5.36			-$0.14	-$0.14	-$0.14
KIA - Eton IS	$0.61			$0.13	$0.13	$0.13
BIC - Lower Mary IS	$0.25			$0.26	$0.26	$0.26
MIM - Mareeba IS	$0.47			$0.05	$0.05	$0.05

9.3 Efficiency Gains

In Section 3.6 of its original submission to the QCA, Sunwater noted that it had provided for efficiency gains, including one-off reductions in routine non-direct expenditure in FY2020. We have treated these base year reductions as step changes. They include:

- An 8% reduction in corporate support costs
- A 1% reduction in local area support costs
- Service contract specific reductions in indirect costs ranging from 0.9% to 3.1%.

Sunwater also proposed a global cumulative 0.2% reduction to all routine costs for each year between FY2020 and FY2024, applied to all direct and non-direct routine costs in service contract areas.

We note that the targets largely represent stretch targets and were not the result of current initiatives. They were expected to be achieved through future reductions in office costs and administration, leveraging of new technologies to streamline services, and initiatives to reduce costs in specific indirect cost pools such as asset planning and support and operations.

It has become common for regulators to suggest or recommend continuous improvement measures. The annual cost reductions as a result of the initiatives initially offered would be small, however, and would not have a material impact on prices.

Sunwater's investment in DEBS ($19 million) is expected to deliver efficiency gains commensurate with the scale of the investment, and although these will accrue to all Sunwater's service contracts, the impact on irrigation customers should be expected to be substantially higher than the efficiency gain offered ($0.06 million per annum, accumulative).

Since the principle of continuous improvement is a good one, we have included the stretch efficiency targets originally offered as a trend. However, we do believe there is further room for efficiency gains

based on the suggested improvements discussed throughout the report and summarised in our conclusions.

In its November submission on the QCA's draft report, Sunwater proposes to withdraw its efficiency improvement proposal if the costs it considers necessary to achieve them are not accepted. We understand the sentiment but note that while cost neutrality is acceptable (for efficiency improvement initiatives), they should in fact be expected to reduce costs. We believe a small stretch target as suggested originally by Sunwater will help to incentivise ongoing efficiency improvements and recommend that it be retained for that purpose.

9.4 Cost Escalation

In this section we review each of the cost escalators proposed by Sunwater and provide reasoning in support of an alternative, if we recommend an alternative escalator.

Inflation

Sunwater has adopted the QCA's preferred approach for inflation cost escalation, which is based on the Reserve Bank of Australia's (RBA) latest short-term inflation forecast (currently available to June 2021) and the mid-point of the RBA's target range for the later years (FY2022 onward).

Use of the RBA's inflation forecasts for escalation purposes is common practice. Sunwater's submission used the RBA's Statement of Monetary Policy current at the time.

We show RBA's November 2019 forecast[219] in Table 73, together with the forecast currently being used by Sunwater. As have Sunwater, we have adopted the mid-point of the RBA's target range for the later years (FY2022 onward).

Table 73 Inflation Forecasts

	FY2020	FY2021	FY2022	FY2023	FY2024
Sunwater's CPI	**2.25%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**
RBA (November 2019)	2.00%	1.75%	2.50%	2.50%	2.50%

Labour Cost Escalation

Labour cost escalation has been applied following the QCA's recent decision in relation to Seqwater.

This labour cost escalation applies to all FTE employees of Sunwater (including those who are on Enterprise Bargaining Agreements). The labour cost escalation is forecast to be in line with the WPI put forward in Queensland Government's Annual Budget[220] for the short term (through to FY2023). The long-term labour cost escalator of 2.73% for FY24 was calculated using the same method that QCA used for the Seqwater Bulk Water Price Review in March 2018. This method involves averaging the WPI for all sectors in Queensland over the course of the last 10 financial years (FY2009–19). [221]

Sunwater's current labour cost escalator is shown in Table 74.

Table 74 Labour Cost Escalators

	FY2020	FY2021	FY2022	FY2023	FY2024
Sunwater's Labour Cost Escalator	**3.00%**	**3.00%**	**3.00%**	**2.91%**	**2.91%**
QLD Budget (FY2020)	2.25%	2.50%	2.50%	2.75%	
ABS WPI					2.73%
Recommendation	2.25%	2.50%	2.50%	2.75%	2.73%

[219] Reserve Bank of Australia (RBA), Statement on Monetary Policy May 2019, Section 5: Economic Outlook https://www.rba.gov.au/publications/smp/2019/may/pdf/economic-outlook.pdf
[220] Queensland Government, Queensland Budget 2019 – 20, Budget Strategy and Outlook, Budget Paper No. 2, Table 2.2, https://budget.qld.gov.au/files/BP2.pdf
[221] Australian Bureau of Statistics (ABS), 6345.0 – Wage Price Index December 2018, All Sectors by State – Table 2A

In its November 2019 submission on the QCA's draft determination Sunwater proposed that labour costs should be escalated using its enterprise bargaining agreement. It is not clear why Sunwater's staff should consistently receive wage adjustments higher than available to other government employees. For this to be acceptable, we would expect the award to include an ongoing provision for efficiency improvements. Some of the efficiency improvements identified by Sunwater include; improved employee utilisation, rationalisation of office space, utilisation of a new travel provider and reductions in licences/premiums.[222] We consider that the efficiency improvements should offset the cost of Sunwater's Enterprise Agreement, and consider the proposed cost adjustment to be not efficient. We consider that an incentive be provided to achieve these. We therefore recommend that escalation continue to be calculated using the QCA's current policy (the Queensland WPI). This will incentivise Sunwater to either negotiate for an agreement in line with State expectations or develop efficiency gains to cover the difference (0.5% in FY2021-22, and 0.16% in FY2023.

Materials Cost Escalation

The cost of materials used for routine works (except for some chemicals) has been escalated using CPI.

As inflation causes an increase in the overall price level within an economy we agree with the use of CPI as a means of escalating material. The recommended inflation forecast is shown in Table 73.

Contracted Services Cost Escalation

Contracted services incorporate both labour and materials cost elements. The QCA recommended an escalator for contracted services to Seqwater that is an aggregation of their labour and materials cost escalators, weighted by the relative contribution of these costs. Sunwater has applied this recommendation to its contract cost projections.

We note that any changes to labour and materials costs as a result of efficiency recommendations may alter the calculation of this index.

Sunwater's contracted services escalator is shown in Table 75.

Table 75 Contracted Services Escalators

	FY2020	FY2021	FY2022	FY2023	FY2024
Sunwater's Contracted Services Escalator	**2.38%**	**2.59%**	**2.59%**	**2.57%**	**2.57%**
Recommendation	2.04%	1.88%	2.50%	2.54%	2.54%

Electricity Cost Escalation

Electricity represents 20% of AECOM's recommended base year operating costs for the service contracts under review (refer to Section 8.3).

Sunwater is in the process of transitioning away from transitional and obsolete regulated retail tariffs in compliance with State policy, but several of the bulk water schemes under review are currently still on legacy retail electricity tariffs, due to transition to the Uniform Tariff Policy (UTP) at the end of FY2021.

The escalation schedule from FY2020-24 has been previously derived by Sunwater's consultant, using methodology described by AEMO in its 2019 Electricity Statement of Opportunities (ESOO). [223] These ESOO 2019 escalation rates are publicly available from AEMO's website.[224]

We agree that this is the optimal escalation rate for commercial retail electricity prices in Queensland, except with the use of RBA CPI escalation as opposed to the 'regulatory model' escalation used by Sunwater. The escalation rates are shown in Table 76.

[222] QCA Information Request FR4_Attachment 3_EA productivity initiatives report
[223] AEMO Statement of Opportunities, August 2010 (https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/NEM_ESOO/2019/2019-Electricity-Statement-of-Opportunities.pdf)
[224] AEMO Statement of Opportunities, August 2019 (http://forecasting.aemo.com.au/Electricity/AnnualConsumption/Operational)

Table 76 Electricity Escalation Rates

	FY2020	FY2021	FY2022	FY2023	FY2024
Real annual escalator (AEMO)	-5.95%	0.38%	-0.62%	-0.87%	-1.09%
Assumed CPI (RBA)	2.00%	1.75%	2.50%	2.50%	2.50%
Nominal escalator (regulatory model)	-7.63%	-2.21%	3.57%	8.90%	-0.57%

The nominal AEMO escalation rates as shown in Table 77 will be used. [225] It is common for Australian businesses to use AEMO escalation rates, and we agree with this method. These changes have been applied to the base year costs and any step changes identified in Section 9.2 on a cumulative basis to derive nominal electricity costs.

Table 77 Electricity Escalators

	FY2020	FY2021	FY2022	FY2023	FY2024
AEMO 2019 retail electricity price assumptions	(4.07%)	2.14%	1.87%	1.60%	1.38%

Insurance Escalation

The Queensland flood events of 2011 and 2013 (major flooding in the Fitzroy, Condamine/Balonne, Weir, Mary and Burnett Rivers and Lockyer Creek) placed considerable upward pressure on the pricing of insurance policies signed during the following years amongst bulk water supply businesses.

Competition in the Australian market soon saw premiums fall, but volatility continued through FY2015-19 as shown in Figure 73.

Insurance premiums are difficult to forecast because they are affected by global claims that Sunwater has no influence over and that are likely to be based on disasters, that themselves are generally difficult to forecast ahead of time. Sunwater is re-insured on the global market, so Australia's future exchange rate may also affect the value of premiums charged.

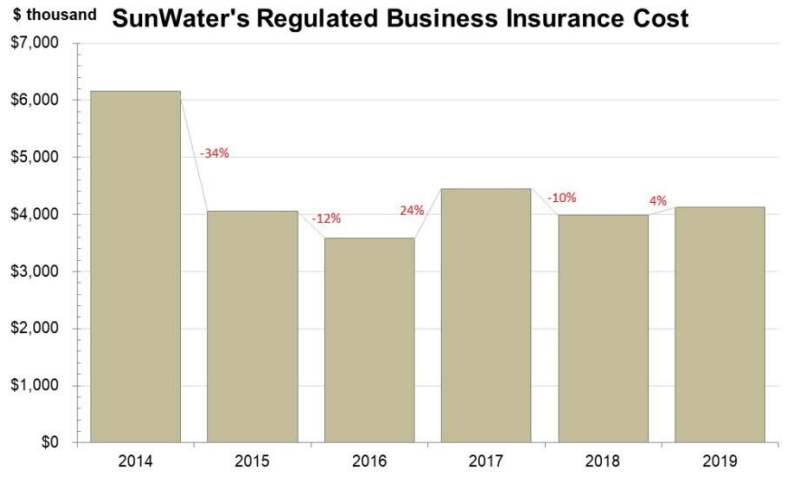


Figure 73 Trends in Insurance Premiums

Sunwater has signed the contract for FY2020 insurance. As this was obtained competitively, we recommend that this cost increase be accepted. Sunwater has suggested a substantial increase be assumed for FY2021. Sunwater has suggested 10%,

[225] AEMO Statement of Opportunities, August 2019 (http://forecasting.aemo.com.au/Electricity/AnnualConsumption/Operational)

and we recommend this be accepted (although it is lower than the current rate increases advised by Marsh).

In light of any documented evidence beyond FY2021, it is our opinion that there is no compelling case that suggests that premiums will rise or fall compared to inflation, so we suggest that costs beyond FY2021 be escalated at assumed CPI (Table 78).

Table 78 Insurance Escalator

	FY2020	FY2021	FY2022	FY2023	FY2024
Assumed CPI (RBA)	2.00%	1.75%	2.50%	2.50%	2.50%
Insurance Escalator	14.71%	10.00%	2.50%	2.50%	2.50%

Non-direct Costs Escalation

Sunwater has estimated non-direct cost escalation assuming that 50% of the non-direct costs are labour, which would escalate using the WPI, and the remainder relates to materials, which would escalate using CPI. It should be noted that the combined overhead cost is allocated using labour costs – this is distinct from how the overhead costs should be escalated in value.

Sunwater uses an aggregated rate for escalation of non-direct costs, derived from the two escalators weighted by their share of the cost base (currently 50%). The resulting escalation rates are shown in the first row of Table 80.

The nature of the non-labour costs involved should have a bearing on the escalation rates applied. The summary of corporate overhead costs by type of cost in Table 79 shows that labour costs are in fact approximately 75% labour, and in practice the next largest category of cost (insurance, legal & admin) is likely to include contracted labour.

Table 79 Labour and Non-labour Corporate Costs

Corporate Costs ($ million SFM1999)

	FY2020	
Employee costs		
Salaries & wages	$6.39	
Employee related expenses - statutory	$2.09	
Employee related expenses - non-statutory	$0.13	
Staff contractors		
Total Labour	$8.61	*26%*
Direct costs		
Accommodation & travel	$0.08	
Contractors	$16.38	*49%*
Depreciation - infrastructure		
Electricity	$0.10	
Materials		
Plant, equipment & vehicles		
Total Direct Costs	$16.57	*49%*
Corporate & administration costs		
Insurance, legal & administration costs	$3.86	*11%*
Depreciation - non infrastructure	$1.47	*4%*
Occupancy costs	$3.10	*9%*
Other asset costs	$0.03	
Total Corporate & Admin	$8.47	*25%*
Total Corporate costs	**$33.64**	

Approximately 50% of these costs are contractors, so it seems reasonable to use the combined escalators.

Table 80 Non-direct Cost Escalators

	FY2020	FY2021	FY2022	FY2023	FY2024
Non-direct costs escalation	**2.63%**	**2.75%**	**2.75%**	**2.71%**	**2.71%**
CPI	2.00%	1.75%	2.50%	2.50%	2.50%
QLD WPI	2.25%	2.50%	2.50%	2.75%	2.73%
Combined	2.13%	2.13%	2.50%	2.63%	2.62%

10.0 Prudent and Efficient Costs During the Price Path Period

The prudent and efficient costs by scheme during the price path period rely on establishing a base year, identifying step changes, and applying escalators to derive future costs in nominal terms.

The assessed efficient base year cost by scheme was presented in Section 8.3, and the step changes proposed and accepted as prudent and efficient were reviewed in Section 9.0. These include:

- Reductions in some electricity tariffs in FY2020
- An increase in indirect costs as a result of Sunwater's IGEM implementation
- The efficiency gains proposed by Sunwater in its submission to the QCA.

These form the basis for establishing the efficient costs through the price path period, and these are shown in Table 81 ($FY2019).

Table 81 Prudent and Efficient Costs by Scheme During the Price Path, $FY2019

Service Contract	Base Year	Step Changes					Price Path ($FY2019)				
		FY2020	FY2021	FY2022	FY2023	FY2024	FY2020	FY2021	FY2022	FY2023	FY2024
BBR - Barker Barambah WS	$1.03	-$0.01		$0.02	$0.02	$0.02	$1.02	$1.03	$1.05	$1.05	$1.05
KBB - Bowen Broken WS	$1.55	-$0.02		$0.19	$0.19	$0.19	$1.53	$1.55	$1.74	$1.74	$1.74
BBY - Boyne WS	$0.83	-$0.01					$0.82	$0.83	$0.83	$0.83	$0.83
BBB - Bundaberg WS	$1.47	-$0.02		$0.00	$0.00	$0.00	$1.45	$1.47	$1.47	$1.47	$1.47
ABB - Burdekin WS	$3.23	-$0.03		-$0.03	-$0.03	-$0.03	$3.19	$3.22	$3.20	$3.20	$3.20
LBC - Callide WS	$1.64	-$0.02					$1.62	$1.64	$1.64	$1.64	$1.64
IBH - Chinchilla Weir WS	$0.11	$0.00					$0.10	$0.11	$0.11	$0.11	$0.11
IBN - Cunnamulla Weir WS	$0.04	$0.00					$0.04	$0.04	$0.04	$0.04	$0.04
LBD - Dawson WS	$0.93	-$0.01		$0.01	$0.01	$0.01	$0.91	$0.93	$0.94	$0.94	$0.94
KBE - Eton WS	$1.80	-$0.02		$0.03	$0.03	$0.03	$1.78	$1.80	$1.82	$1.82	$1.82
LBF - Lower Fitzroy WS	$0.22	$0.00					$0.21	$0.22	$0.22	$0.22	$0.22
BBL - Lower Mary WS	$0.13	$0.00					$0.12	$0.13	$0.13	$0.13	$0.13
IBT - Macintyre Brook WS	$1.08	-$0.01					$1.07	$1.08	$1.08	$1.08	$1.08
IBM - Maranoa WS	$0.03	$0.00					$0.03	$0.03	$0.03	$0.03	$0.03
MBM - Mareeba WS	$1.33	-$0.02					$1.32	$1.33	$1.33	$1.33	$1.33
LBN - Nogoa WS	$2.40	-$0.03					$2.37	$2.40	$2.40	$2.40	$2.40
KBP - Pioneer WS	$1.29	-$0.01		$0.00	$0.00	$0.00	$1.28	$1.29	$1.29	$1.29	$1.29
ABP - Proserpine WS	$1.23	-$0.01					$1.21	$1.22	$1.22	$1.22	$1.22
IBS - St George WS	$1.14	-$0.02					$1.13	$1.14	$1.14	$1.14	$1.14
LBT - Three Moon WS	$0.57	-$0.01					$0.56	$0.57	$0.57	$0.57	$0.57
BBU - Upper Burnett WS	$0.94	-$0.01					$0.93	$0.94	$0.94	$0.94	$0.94
IBU - Upper Condamine WS	$1.29	-$0.02		-$0.02	-$0.02	-$0.02	$1.27	$1.29	$1.28	$1.28	$1.28
BIG - Bundaberg IS	$11.93	-$0.11		$1.70	$1.70	$1.70	$11.81	$11.92	$13.62	$13.62	$13.62
AIE - Burdekin IS	$17.27	-$0.16		-$0.14	-$0.14	-$0.14	$17.10	$17.26	$17.12	$17.12	$17.12
KIA - Eton IS	$3.22	-$0.04		$0.13	$0.13	$0.13	$3.18	$3.22	$3.35	$3.35	$3.35
BIC - Lower Mary IS	$1.00	-$0.01		$0.26	$0.26	$0.26	$0.98	$1.00	$1.25	$1.25	$1.25
MIM - Mareeba IS	$5.93	-$0.09		$0.05	$0.05	$0.05	$5.84	$5.93	$5.98	$5.98	$5.98
Total	$63.62	-$0.69		$2.20	$2.20	$2.20	$62.88	$63.57	$65.77	$65.77	$65.77

Application of the escalators as discussed in Section 9.4 enables the same costs to be determined in nominal dollars which is shown in Table 82.

The impact of Sunwater's proposed efficiency gains is a one-off cost reduction across all schemes of **$0.69 million** in FY2020, and an ongoing annual reduction of approximately **$0.05 million**.

Table 82 Prudent and Efficient Costs by Scheme During the Price Path in Nominal Dollars

Service Contract		Price Path ($ nominal)			
	FY2020	FY2021	FY2022	FY2023	FY2024
BBR - Barker Barambah WS	$1.06	$1.11	$1.16	$1.19	$1.22
KBB - Bowen Broken WS	$1.57	$1.64	$1.87	$1.92	$1.96
BBY - Boyne WS	$0.88	$0.93	$0.95	$0.98	$1.00
BBB - Bundaberg WS	$1.51	$1.59	$1.63	$1.67	$1.72
ABB - Burdekin WS	$3.35	$3.53	$3.59	$3.69	$3.78
LBC - Callide WS	$1.70	$1.78	$1.83	$1.87	$1.92
IBH - Chinchilla Weir WS	$0.11	$0.11	$0.12	$0.12	$0.12
IBN - Cunnamulla Weir WS	$0.04	$0.05	$0.05	$0.05	$0.05
LBD - Dawson WS	$0.95	$0.99	$1.03	$1.05	$1.08
KBE - Eton WS	$1.82	$1.89	$1.96	$2.01	$2.06
LBF - Lower Fitzroy WS	$0.22	$0.23	$0.24	$0.24	$0.25
BBL - Lower Mary WS	$0.13	$0.13	$0.14	$0.14	$0.15
IBT - Macintyre Brook WS	$1.11	$1.17	$1.20	$1.23	$1.26
IBM - Maranoa WS	$0.03	$0.03	$0.03	$0.03	$0.03
MBM - Mareeba WS	$1.37	$1.43	$1.46	$1.50	$1.54
LBN - Nogoa WS	$2.48	$2.61	$2.68	$2.75	$2.82
KBP - Pioneer WS	$1.35	$1.42	$1.46	$1.50	$1.53
ABP - Proserpine WS	$1.26	$1.32	$1.35	$1.39	$1.42
IBS - St George WS	$1.17	$1.22	$1.25	$1.28	$1.32
LBT - Three Moon WS	$0.59	$0.62	$0.63	$0.65	$0.67
BBU - Upper Burnett WS	$0.96	$1.01	$1.03	$1.06	$1.09
IBU - Upper Condamine WS	$1.32	$1.38	$1.40	$1.43	$1.47
BIG - Bundaberg IS	$11.87	$12.32	$14.30	$14.61	$14.92
AIE - Burdekin IS	$17.19	$17.79	$18.06	$18.49	$18.91
KIA - Eton IS	$3.24	$3.37	$3.58	$3.67	$3.75
BIC - Lower Mary IS	$1.00	$1.04	$1.32	$1.35	$1.38
MIM - Mareeba IS	$5.99	$6.25	$6.45	$6.62	$6.79
Total	$64.24	$66.96	$70.76	$72.49	$74.22

11.0 Conclusion

We have commented extensively throughout this report on Sunwater's policies and procedures and the cost elements of its irrigation business as we develop a view of a prudent and efficient base year, together with the step changes or cost trends to derive the costs that are reasonable to include in the price path period.

We summarise the key points from our review in this section.

The submission

Sunwater's submissions are based on budget data taken from its financial model, and its nominated Base Year is the FY2019 budget. The data provided in its original submission to the QCA in November 2018 was difficult to assess because:

- The submission included a copy of a part of its financial model, provided with hard-coded data which made it very difficult to assess, and the various means of cost allocation used by Sunwater were particularly difficult to trace and understand as presented
- The data was provided in nominal format only, which makes annual comparisons difficult. We converted the data provided to current (FY2019 costs) for evaluation
- The details, including the reasoning and methodology employed, for the fact that the FY2018 data provided had been normalised was only obtained late in the review
- Sunwater has a particularly complex financial model
- The organisation structure has changed several times over the last few years, and the cost structure was revised accordingly, transferring costs between categories and between cost pools. This made it difficult to trace and explain overhead cost changes in particular.

Sunwater tracked reasonably close to the QCA's 2012 cost recommendations until FY2018, but data presented in the submission indicated a 21% increase in costs (in FY2019 dollars) from then despite the transfer of two schemes to local management arrangements. Local overhead costs were 78% higher in the FY2019 budget and corporate overhead costs 56% higher.

Sunwater's revised submission to the QCA in June 2019, provided a budget for FY2020 that was 16% higher than FY2018, with local overheads much lower but corporate overheads even higher.

This submission was made very late in the review, and there was not enough time to fully evaluate it especially given the scale of transfers of costs between cost pools and non-direct categories. The submissions had not been prepared as previously agreed with the QCA, which meant that considerable re-modelling had to be done on the data provided. The data provided initially did not allow comprehensive analysis.

We recommend that in future submissions Sunwater:

- Revert to the methods of cost projection that it had previously agreed with the QCA
- Simplify its financial modelling further by allocating local overheads as required by its CAM (removing the loading of local overhead allocated to indirect costs on regional local overheads
- Provide a complete copy of its financial models, with unadjusted actual costs
- Provide comprehensive supporting information to indicate the basis for its projections of all cost types.

Policies and procedures

Sunwater has acted on the majority of the QCA's 2012 recommendations for performance improvement, and most of the recommendations made by external consultants. We found that its policies, procedures and frameworks generally include the prudency and efficiency considerations needed within all aspects of routine operations and maintenance:

- Sunwater's asset management activity, work planning and scheduling, and work execution were found to be prudent and efficient, and in many cases independent reviews had been obtained in an attempt to further optimise maintenance activity.
- There is clear evidence of an ongoing focus on cost control in relation to direct (maintenance) activity. Sunwater applies State-mandated procurement policies but does engage in a level of sole-sourced procurement from contractors in remote regional areas (where options may be limited).
- Sunwater publishes Network Service Plans (NSPs) and consults with its customers during the annual reviews. Cost projections are provided and compared to the QCA's 2012 recommendations. Capital projects being planned are listed in schedules.

  We note, however, that the supporting text is generic and repetitive from scheme to scheme and provides very little specific information to the reader on reasons for operational cost changes. Comments along these lines were made by customer representatives in their submissions to the QCA (refer to Section 3.4).
- Sunwater proposed an approach to improve the accuracy and management of labour costs during the 2012 pricing review, and this was accepted by the QCA. It appears that this approach was revised in or around 2015 and time recording (for costing purposes) became less accurate from then until the beginning of the current pricing round (the 'time-writing' issue discussed in this report).

  The result is that Sunwater felt obliged to 'normalise' actual FY2018 costs , and that reliable (actual) staff utilisation data is only available for FY2019. This means that labour costs cannot be assessed and performance trends established using actual data.
- Sunwater's complex financial model and the frequency, extent and range of changes made to non-direct cost pools and cost allocation make it difficult to differentiate and explain cost transfers and cost increases. We do, however, accept the most recent policy changes made to local overhead cost allocation where regional local overhead is allocated to local schemes only, because the change should enable better scrutiny and cost management by regional managers.

We recommend that Sunwater:

- Improve its NSPs by adding scheme-specific information on operational cost drivers as well as the information currently provided on non-routine works
- Strongly emphasise its commitment to accurate recording of time and costs and institute monitoring systems to ensure that its policies are implemented

Direct costs - routine operations and maintenance costs

We have reviewed the way in which Sunwater specifies, schedules and dispatches its operational and maintenance work, and concluded that these activities are efficient.

We have noted that travel (to and from site) is a significant cost for some schemes, and that some attempt has been made to engage local resources in place of Sunwater staff in order to optimise costs. Sunwater has an extensive SCADA system to record and transmit control and asset-related data, which serves to reduce travel needed for some inspections and operational activity. However, limited use is being made of mobility solutions.

Direct costs are variable in most schemes because they are subject to weather events, and most have been affected by at least one cyclone and / or flood event since 2012, experiencing damage and operational constraints as a result. Events like these are likely to re-occur during the price path period but are inherently unpredictable in terms of timing and impact. They are, however, the main driver of variability in direct costs on the schemes.

In our view, establishment of the base year direct costs should use a simple and transparent approach. We have therefore chosen to address this event-dependent variability by taking the average of direct costs incurred during the years of actual data available to us (a six-year period) and recommending that average as the base year direct cost on a scheme-by-scheme basis. We looked for one-off routine costs that could potentially be excluded from any year before averaging, but concluded that, while there are irregular routine costs, these were the result of a weather event and could therefore occur again.

These costs remained very similar in total to the QCA's 2012 recommendations through to FY2018 (if all costs are expressed in FY2019 dollars), although there has been more significant variation from the recommendations in a small number of schemes, for justifiable reasons. We recommend that Sunwater:

- Specifically track cost drivers including weather events over as long a period as possible, estimate event frequency and continually monitor those estimates, and use them in its work planning
- Evaluate and implement time-saving mobility solutions and extend its SCADA systems where feasible to further reduce operational costs

Direct Costs - electricity costs

Several schemes will benefit from legacy tariffs until FY2022. We have reviewed the tariffs available and identified the most cost-effective one for each pumping station, but in general this will result in an increase in electricity costs for many schemes. The new tariffs allow separation of fixed and variable costs, so we have identified both elements and derived fixed and variable costs by scheme.

Electricity demand is also subject to weather variability, and since we have power demand over a longer period (20 years) we have established a 20-year average demand in order to develop a total cost per scheme. The tariff changes are included as step changes.

We established that the pump stations that could be operated primarily to make use of off-peak tariffs are being operated that way, and there is very limited ability to optimise costs by avoiding pumping during peak periods. There are potential opportunities to increase the generation of renewable energy, subject to future investigation (as noted in Section 4.4.7).

We recommend that Sunwater:

- Continue review of its energy procurement strategies to optimise tariff arrangements
- Continue energy audits and studies into renewable generation technologies, and implement cost effective renewal energy solutions.

Insurance

Sunwater treats scheme insurance premiums as a direct cost, but we consider that this cost meets Sunwater's definition of indirect costs and have therefore reviewed this cost category on that basis.

Insurance costs reached 91% above the QCA's 2012 recommendations in FY2017.

We have reviewed Sunwater's procurement process for its insurance, and also reviewed the global market to assess the likelihood of substantial insurance premium increases during the next price path.

We concluded that Sunwater's sourcing of insurance is competitive and efficient, and therefore that the increase is largely because of global factors beyond its control. Our assessment of trends and cost drivers in the global market did not, however, lead us to conclude that there will be significant increases in premiums in the next price path period. We have therefore assumed that these costs will increase along with inflation in Australia.

We also reviewed the de-facto self-insurance position adopted by Sunwater and noted that claims were lodged for two years since 2010 for amounts of $50 million or more, while insurable damage in the other years did not exceed about $2 million. There may therefore be room to increase Sunwater's current deductible (which is $4 million) and that could result in a lower premium.

Sunwater's current allocation of insurance premium to schemes is based on asset value. In our view the allocation method should also account for the risk of a claimable event occurring in each scheme, and we have recommended that an alternative approach be evaluated (but we have not included an alternative approach in our assessment of costs).

We recommend that Sunwater:

- Review the level of its deductible to assess the cost reductions available
- Develop a risk-based method for allocation of insurance costs.

Local overhead costs

Local overhead costs include non-labour costs in the regions and residual labour (the cost of staff time not booked to work on the schemes).

There have been many changes to local overhead costs, but in general these have transferred cost to either direct cost categories (fleet costs) or to corporate overhead (removal of alternative forms of overhead cost recovery, and transfer of some work functions). Sunwater expects improved time-writing to reduce labour residual costs, which also reduces local overhead to be allocated to the schemes.

The limited data available on staff utilisation indicates that Sunwater's operational and maintenance (field) workforce is operating at close to industry best practice levels of utilisation. The time-writing issue is thought to affect senior staff primarily, and if the issue is resolved successfully residual local overheads will reduce further.

Sunwater's budget for FY2019 included a large increase in local overhead costs compared to other years, which we have concluded is the result of trying to recover losses made in earlier years as a result of poor time-writing practices.

We have accepted the non-labour local overhead costs as efficient, and the proposed increase in staff utilisation (via improved time-writing) would make the residual costs efficient.

Indirect costs

Indirect costs are costs that cannot be booked to a single scheme, but since the cost only applies to a specific set of service contracts it cannot be treated as an overhead. The work involved is specified, planned and managed in the same way as direct work is, and our assessment of the efficiency of direct work applies to indirect work as well (aside from IGEM, which we have assessed separately).

Indirect costs are substantially lower than previously (other than the IGEM cost), due largely to consolidation of indirect work functions and transfer to either local or

corporate overhead cost pools. Indirect costs had corporate overhead and rent allocated to them until after FY2018, so with these removed according to Sunwater's new CAM (in order to eliminate cascading of overhead) the remainder of the indirect costs are now lower than previously.

A new indirect cost category has been created for IGEM. We have assessed Sunwater's strategy, approach and cost structure for implementation of IGEM, and concluded that they are reasonable in terms of Sunwater's obligation.

Costs to date have largely been capitalised as Sunwater re-establishes a flood control room, improves and adds hydrographic infrastructure to enable it to provide advance notice of flood events as required.

Sunwater has developed a stakeholder and community engagement program and assigned staff to new roles for ongoing liaison with stakeholders and delivery of community education programs. There may be opportunities to persuade local government to take a more extensive role on behalf of their communities, but we are satisfied that this work is required to fulfil Sunwater's obligations in this area.

Sunwater proposes to allocate IGEM costs to irrigators using relative risk, modified by the size of the downstream population. Assuming that irrigation customers are required to pay for this service, the cost allocation mechanism seems prudent.

Corporate overhead

Sunwater's budget projects corporate overhead costs to increase by about 5% in FY2019 dollar terms in FY2020 from FY2018.

We have relied on detailed evaluations of corporate costs carried out by Deloitte and others, and in general compared current staffing and costs by corporate cost type to findings and recommendations made by the QCA in 2012, based at the time on the findings of its consultants.

Sunwater has undertaken similar reviews since 2012, and undertaken its own efficiency drives to eliminate unnecessary overhead costs.

Staff numbers in FY2018 were 30% lower than they were in FY2012. An increase of about 10 staff members has been budgeted for in FY2020, but this increase is in an area that does not affect irrigation customers.

We have examined all the cost pools in corporate overhead and made a number of adjustments to reflect the transfers between corporate, local and indirect cost categories, the changed policy regarding recovery of corporate overhead, the consolidation of rent to finance from other cost centres, and planned staff reductions. The net impact is an accepted corporate overhead cost before allocation in the base year that is 11% lower than FY2018.

The changed approach to corporate overhead cost allocation, however, has meant that all these costs will now be recovered via direct labour costs, so the cost allocator used increases as a result from FY2020 (irrigation customers are assigned a higher proportion of the slightly smaller corporate overhead cost).

The direct labour cost used to recover corporate overhead includes labour costs in Sunwater's unregulated business activity. Sunwater's budget for FY2020 included in its' revised submission to the QCA in June 2019 provides for a significant increase in this activity, so we have used this expectation to derive the overhead cost allocator to be used for recovery from irrigation direct labour from FY2020 (the allocator is lower as a result).

The corporate cost allocator used reflects Sunwater's budgeted level of unregulated business activity in FY2020. This has had the effect of reducing corporate overhead costs to be recovered from irrigation customers by $1.66 million in each year from FY2020 (compared to the allocator used in FY2018).

The result of our review of Sunwater's prudent and efficient costs is a total cost difference for all irrigation schemes in the base year that in $FY2019 terms is shown in Table 83 and summarised as being:

- 13% higher than the QCA's 2012 recommendations
- 7% lower than Sunwater's original submission to the QCA in November 2018
- 4% lower than Sunwater's revised submission to the QCA in June 2019

Table 83 Summary of Proposed Efficient Costs Differences - % Average of all Schemes ($FY2019)

Cost Category	Difference from the QCA's 2012 Recommendation ($FY2019)	Difference from Sunwater's Original Submission of November 2018 ($FY2019)	Difference from Sunwater's Resubmission of June 2019 ($FY2019)
Operations and Maintenance costs	+14%	9%	-3%
Electricity	-1%	-10%	-4%
Insurance	+81%	1%	-8%
Indirect costs allocated (including IGEM)	-1%	7%	-1%
Local overhead allocated	+18%	-54%	-1%
Corporate cost allocated		13%	-12%
Total cost	**+13%**	**-7%**	**-4%**

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Appendix A

Electricity Use by Pump Stations

Appendix A Electricity Use by Pump Stations

This Appendix provides detailed analysis of pump usage for major sites on Time of Use Tariffs as well as comparing the tariff currently in place to tariffs available. FY2020 Ergon Energy retail tariffs have been applied in our calculations.

1. Pump Usage

This section includes an analysis of average electricity use over the past 5 years at selected pump stations, to derive a view of the efficiency with which Sunwater manages its pumps.

- **Bowen Broken Bulk Supply**

  The Gattonvale pump station uses 96% of the average annual consumption of this scheme. 45% of this consumption occurred during peak tariff periods (Figure 74) AECOM believes the Gattonvale pump station's supply requirements prevent further optimisation of pumping to decrease peak period pumping.

Figure 74 Gattonvale Pump Station Consumption

- **Eton Bulk Supply**

  The Mirani Weir pump station uses almost 60% of the average annual consumption of this scheme. 43% of this consumption occurred during peak tariff periods (Figure 75). The Mirani Weir pump station's supply requirements would prevent further optimisation of pumping to decrease peak period pumping.

Figure 75 Mirani Weir Pump Station Consumption

- **Bundaberg Distribution Scheme**

  Four pump stations account for almost 55% of the average annual consumption of this scheme:

  - 49% of the consumption of Quart Pot Creek Pump Station occurred during peak tariff periods (Figure 76). The Quart Pot Creek pump station's supply requirements would prevent further optimisation of pumping to decrease peak period pumping.
  - 18% of the consumption at Woongarra Pump Station occurred during peak tariff periods (Figure 77)
  - 10% of the consumption at Monduran Dam Pump Station occurred during peak tariff periods (Figure 78)
  - 5% of the consumption at Gooburrum Pump Station occurred during peak tariff periods (Figure 79).

Figure 76 Quart Pot Creek Pump Station Consumption

Figure 77 Woongarra Pump Station Consumption

Figure 78 Monduran Dam Pump Station Consumption

Figure 79 Gooburrum Pump Station Consumption

- **Burdekin-Haughton Distribution Scheme**

  The Elliot Pump Station uses 5% of the average annual consumption of this scheme. 37% of this consumption occurred during peak tariff periods (Figure 80).

Figure 80 Elliot Pump Station Consumption

- **Eton Distribution Scheme**

  Two pump stations use 56% of the average annual consumption of this scheme:

  - 47% of the consumption at the Victoria Plains Pump Station occurred during peak tariff periods (Figure 81).
  - 39% of the consumption at the Mt Alice Pump Station occurred during peak hours (Figure 82).

Figure 81 Victoria Plains Pump Station Consumption

Figure 82 MT Alice Pump Station Consumption

The Victoria Plains and Mt Alice pump stations' supply requirements prevent further optimisation of pumping to decrease peak period pumping.

- **Lower Mary Distribution Scheme**

  The Owanyilla Pump Station uses 41% of the average annual consumption of this scheme. 41% of this consumption occurred during peak tariff periods (Figure 83). The Quart Pot Creek pump station's supply requirements would prevent further optimisation of pumping to decrease peak period pumping.

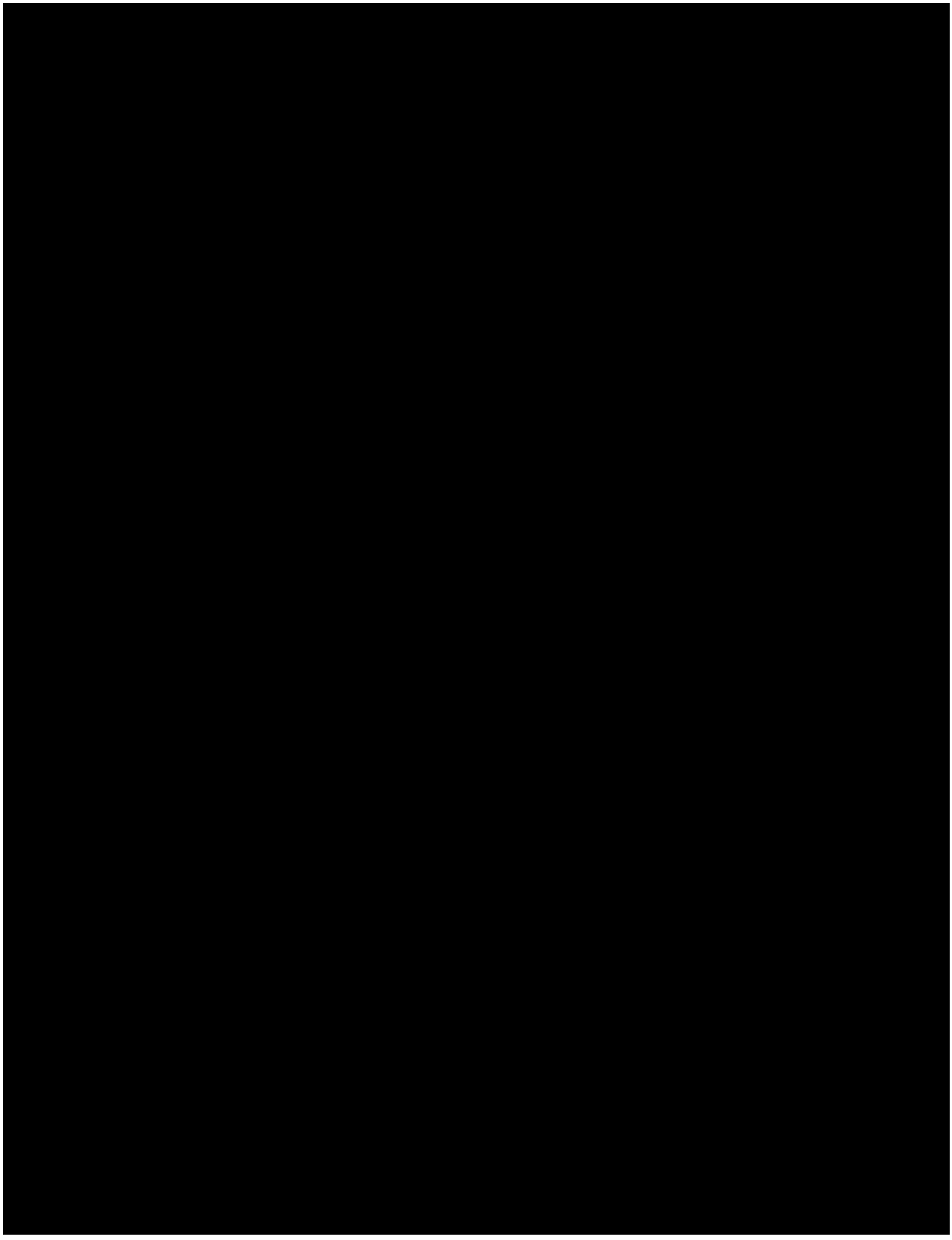
Figure 83 Owanyilla Pump Station Consumption

- **Mareeba-Dimbulah Distribution Scheme**

  Mareeba-Dimbulah Distribution Scheme pumping stations are currently connected to usage based, not time-of-use based tariffs, with the cost comparison showing no benefit of moving to time of use tariffs under the current regime.

2. Comparison of Tariffs

Table 84 AECOM's Analysis of Future Optimal Tariffs ($FY2019)



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