Review of capital and operating expenditure plans for Aqwest

Report

3606-23

Prepared for
Economic Regulation Authority of Western Australia

16 August 2017

Cardno
Shaping the Future

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1 Introduction

1.1 Background

1.1.1 Overview

The Economic Regulation of Authority of Western Australia (ERAWA) was requested by the Treasurer of Western Australia in October 2016 to undertake an inquiry into the efficient costs and tariffs of the Water Corporation, Aqwest and Busselton Water. The inquiry is triggered by the Treasurer's referral under Section 32 of the Economic Regulation Authority Act 2003.

The ERAWA is to inquire into the efficient costs for the services of the Water Corporation, Aqwest and Busselton Water for the five year period commencing 2018-19. The ERAWA published an Issues Paper on 6 December 2016. The ERAWA will publish its draft recommendation report in June/July 2017.

1.1.2 Economic Regulation Authority of Western Australia

The Economic Regulation Authority of Western Australia (ERAWA) is responsible for regulating the economic frameworks for gas, electricity and rail in Western Australia. Its primary objective is to ensure the provision of a competitive and fair environment, particularly where businesses operate as natural monopolies.

The ERAWA has a range of regulatory/advisory functions related to water including:

- Issuing licences and monitoring performance against the water licences held by the three businesses under the Water Services Act 2012 (the Act)
- Administering the regulatory instrument for customer protection, the Water Services Code of Conduct (Customer Service Standards) 2013 (the Water Code) and undertaking five-yearly reviews of the Water Code
- Providing economic advice to the Government in relation to water issues including competition, water resources management and planning, recycled water pricing, and retail water pricing

1.1.3 Aqwest

Aqwest is a corporation established under the Water Corporations Act 1995 and is administered by a Board of Directors, owned by the WA Government, and is accountable to their sole shareholder, the Minister for Water, and their customers.

Aqwest holds an Operating Licence issued by the Economic Regulation Authority of Western Australia under the Water Services Act 2012 to provide quality drinking water to the Greater Bunbury Region. The current licence was awarded on 17 January 1997 and is valid to 17 January 2022.

Aqwest's predecessor the Bunbury Water Board was formed in 1905 some 25 years after the first bore was drilled to tap fresh water beneath the growing town. A corporate restructure in 1996/97 led to a new Constitution and Board of Management and in November 2013, Aqwest became the Bunbury Water Corporation, a government trading enterprise operating under the Water Corporations Act 1995.

1.2 Purpose

The purpose of this Review is to provide advice to ERAWA on the prudence and efficiency of Aqwest's proposed capital and operating expenditure and as well as the prudence and efficiency of historical capital expenditure.

1.3 Scope

There are four complementary elements of scope set by the ERAWA:

> Review of governance arrangements

> Detailed review of capital and operating expenditure forecasts

> Review of actual and forecast capital expenditure

> Review treatment of disposed assets.

1.3.1 Review of strategic management

The ERAWA requires that as an initial task, the systems and processes used by Aqwest to manage capital and operating expenditure are evaluated. The purpose of this review is to determine whether these systems and processes can be relied upon to generate expenditure that is prudent (or will be prudent for future expenditure).

This review is to consider expenditure management processes broadly and in particular:

1. Integration and consistency of procedures and policies across projects;
2. Adequacy of internal control structure or specific internal controls, to ensure due regard for effectiveness and efficiency;
3. Extent to which activities have been effective in achieving Aqwest's objectives;
4. Timeliness of projects and their implementation at least cost;
5. Effectiveness of internal audit processes in relation to the CAPEX and OPEX processes including planning and procurement.

1.3.2 Detailed review capital expenditure and operating expenditure forecasts

The ERAWA requires a detailed assessment of the capital and operating expenditure forecasts for Aqwest from 2018/19 to determine if the expenditure is consistent with that which a prudent service provider, acting efficiently, would incur – in line with good industry practice and to realise the lowest sustainable costs. The ERAWA identifies the following specific areas to be considered and commented on as appropriate:

1. Factors driving capital and operating expenditure efficiency, including:
    a. Key performance indicators that support the forecasts and comparisons with industry standards
    b. Comparison of service levels and operating performance with industry standards
    c. Forecast changes (if relevant) to operating performance and service levels
2. Methodology used to determine capacity and utilisation forecasts, and independent assessment, including:
    a. Key drivers
    b. How capacity and utilisation forecasts inform expenditure forecasts
3. Methods (and models) used to estimate expenditure including how needs are prioritised, including
    a. Cost estimating
    b. Cost estimating risk and benchmark comparison to determine if the level is acceptable
4. Overhead costs, including
    a. Appropriateness of included costs
    b. Allocation of overhead across other OPEX categories
    c. Criteria for allocating overheads between services and regions
    d. Benchmarking with other service providers.
5. Interaction between capital and operating expenditure and trade-offs
6. Extent to which future efficiencies have been factored into capital and operating expenditure forecasts
7. Proposed escalation factors and how they have been applied

8. Reasonableness of procurement practices and processes
9. Any additional matters.

ERAWA also requires that the review of OPEX should include:

10. Assessment of forecasts, accounting for historical and industry benchmark data, including:
    a. Assessment of the efficient level of base operating expenditure including the most recent actual operating expenditure. Undertake benchmarking with other service providers
    b. Justification and supporting evidence for any forecast increased costs
    c. Forecast operational and service level performance resulting from its forecast operating expenditure
    d. Operating expenditure arising from capital expenditure.
11. Evaluation of appropriate efficiency targets for overall operating expenditure given the growth scenarios expected over the forecast period, and accounting for benchmark comparisons with other Australian service providers.
12. Assessment of whether maintenance procedures meet best practice; including:
    a. Level and balance of maintenance costs (preventative v corrective) as a result of any changes in maintenance or replacement programs
    b. Assessment of whether Aqwest have adopted optimal solutions in terms of that balance.

1.3.3 Review of actual/forecast capital expenditure

The ERAWA requires details of actual capital expenditure in the current regulatory period to determine whether it is appropriate to include this expenditure in the Regulated Asset Base, a key input into the building blocks for pricing. The review is cover actual expenditure in 2011/12 to 2015/16 and forecast for 2016/17 and 2017/18. The review is to include:

1. Assessment of the overall prudency and efficiency of total capital expenditure in the period from 2011/12 to 2015/16, through reference to a representative sample of projects
2. Adequacy and reliability of information used as a basis for forecast capital expenditure for 2016/17 and 2017/18, through reference to a representative sample of projects
3. Review of the related depreciation schedules and depreciation criteria.

1.3.4 Review treatment of disposed assets

The Consultant is required to review a recent major asset disposal from between 2011/12 and 2015/16 to assess the efficacy of Aqwest's method for disposing of assets.

1.4 Regulatory environment

Aqwest's regulatory environment is shaped by a number of state-based legal instruments administered by state government departments and independent statutory authorities. Table 1-1 summarises the key elements of this regulatory framework.

Table 1-1 Regulatory Framework

Water Pricing and Economic Regulation			
Economic regulator	**Key responsibilities**	**Regulated services**	**Who sets water prices?**
Economic Regulation Authority (ERA).	Price recommendation. Oversight for urban & rural water pricing practices.	Not applicable.	Western Australia Cabinet – Urban bulk & retail. Irrigation Cooperatives (3) – Rural retail.
Metropolitan Water Planning and Management			

Organisation responsible	Key responsibilities	Key legislation and policy documents	Summary of planning strategy
Department of Water (DoW).	The Department's responsibilities include protecting water quality, preparing policies and plans critical to the state's future development, analysis of water resources information, issuing licenses and regulating water use. The Department is also responsible for the quantity, quality, use and availability of the state's water resources and ensures that all Western Australians have access to water services. It develops policies and processes to ensure sustainable water services are delivered to both the private and public sectors. The department administers a state-wide water planning framework. http://www.water.wa.gov.au/Managing+our+water/Water+planning/default.aspx	*South West Regional Water Plan (2010-2030)*	Integrates a range of water policy reforms at state and national levels. The plan sets out broad state-wide strategic directions and policies for water.

Drinking Water Management			
Organisation responsible	**Key responsibilities**	**Key instruments**	**Drinking Water Quality Standards**
Department of Health	Advise on the appropriate health standards for drinking water. Regulate Aqwest's drinking water quality.	*Country Areas Water Supply Act 1947* *Metropolitan Water Supply, Sewerage and Drainage Act 1909* State Planning Policy 2.7 - Public Drinking Water Source	The Department of Health has adopted the Australian Drinking Water Guidelines (2004). Additionally, a Memorandum of Understanding (2011) is in place between Aqwest and the Department of Health.
Economic Regulation Authority	Issue operational licences that specify drinking water quality standards to water supply providers.	*Water Services Licensing Act 2005* Operational licences	
Department of Water (DoW)	Identify and protect public drinking water source areas and prepare drinking water source protection assessments and drinking water source protection plans.	Operational licences	

1.5 Review Methodology

Our review and assessment of the efficient level of capital and operating expenditure is based on the hypothesis of an efficient organisation competing in an open market to deliver services to customers. We use this approach to compare the business processes and systems with current best practice. We review the decision-making processes for both operating and capital expenditure to test whether there is sufficient challenge and rigour to deliver total least cost solutions.

1.5.1 Governance arrangements

ERAWA requires us to assess the Aqwest's governance processes used for identifying and managing capital and operating expenditure.

Within this review we have considered the asset management practices, demand forecasting methodologies and capital investment appraisal and procurement processes insofar as they are used to identify investment

needs and timing, appraise solutions, prioritise projects within defined budgets and procure and manage timely delivery.

We comment in Section 3 on Aqwest's strategic management systems and processes.

1.5.2 Operating Expenditure

ERAWA requires us to:

- Compare projected and actual expenditure for the period from 1 July 2012 to 30 June 2018 and assess the efficient level of base operating expenditure.
- Assess the adequacy of the projected expenditure and make recommendations on the efficient level of the proposed operating expenditure for the period from 1 July 2018 up to 30 June 2023.

Our assessment is based on the actual operating expenditure provided by Aqwest and the robustness and confidence of these estimates taking into account the basis of the estimates and confidence in the need, timing and scope of the requirements. We also take into account whether additional expenditure proposals have been through the internal approval and challenge processes.

We have interviewed senior managers, reviewed supporting reports and documents and assessed the current position on the development and implementation of corporate systems used to set budgets, control and monitor costs and allocate expenditure.

We present our analysis of the future expenditure proposals and comment on each activity in terms of the potential for efficiencies to be achieved through the robustness of estimates and the need and timing of expenditure.

We present our review of operating expenditure and our present proposals for an efficient level of future expenditure in Section 4.

1.5.3 Capital Expenditure

ERAWA requires us to:

- Compare actual capital expenditure with that projected over the period from 1 July 2012 to 30 June 2018, investigate reasons for variances and identify any expenditure that was not appropriate.
- Examine projected expenditure for the period 1 July 2018 to 30 June 2023 and identify any expenditure that is not appropriate.
- Make recommendations on the efficient level of historical and proposed capital expenditure.

Our assessment of historical expenditure is based on a review of a representative sample of projects. We reviewed the need for each project, its timing and the difference between actual costs and outputs against planned. We considered the basis of costs and the procurement route for implementation of sample projects.

Our approach to the assessment of future expenditure is based on:

- a review of the asset management and capital expenditure processes, project appraisal and decision processes.
- a review of a representative sample of schemes in the program including confirmation of need for each project, the basis of cost estimates and the adequacy of planning study evaluation of options and proposed procurement methods.

We present our review of capital expenditure and our view on the efficient level of future capital expenditure in Section 5.

1.6 Assumptions

1.6.1 Price Base

The supporting information provided by Aqwest or ERAWA does not provide a clear indication of the price base or whether figures are real or nominal. However, the Ten Year Finance Plan 2017/18 to 2026/27

submitted by Aqwest shows expenditure with each projected figure including escalation for CPI and growth over the base year of 2017/18, therefore implying that the figures are in nominal dollars.

The price base used in our assessment, particularly base operating expenditure, is 2017/18 rather than the last year of reported actual expenditure, which is 2015/16. This has been done to provide a closer comparison to the projected expenditure from 2018/19 onwards.

1.6.2 Definitions

Reference is made in this document to the current price path and the next price path. These are made for ease of reference to historical and projected figures / scenarios. These two categories are defined below:

- Current price path – defined as the period from 2011/12 to 2015/16 as well as 2016/17 and 2017/18
- Next price path – defined as the period from 2018/19 to 2022/23

It is noted that the ERAWA recommended prices from 2011/12 to 2015/16 and that Aqwest has rolled over prices (accounting for inflation) in 2016/17 and 2017/18.

2 Aqwest

2.1 Overview

Aqwest is a corporation established under the Water Corporations Act 1995 and is administered by a Board of Directors, owned by the WA Government, and is accountable to their sole shareholder, the Minister for Water, and their customers.

Aqwest's predecessor the Bunbury Water Board was formed in 1905 some 25 years after the first bore was drilled to tap fresh water beneath the growing town. The move away from the historic Bunbury Water Board and the evolution of Aqwest occurred as part of a corporate restructuring process in 1996/97. The new Constitution, a new Board of Management structure, a separation from the City of Bunbury and the development of a corporate image were the first major changes in the business since its inception in 1905. In November 2013, Aqwest became the Bunbury Water Corporation, a government trading enterprise operating under the Water Corporations Act 1995 however it still operates under the Aqwest name.

Aqwest holds an Operating Licence issued by the Economic Regulation Authority of Western Australia under the Water Services Act 2012 to provide quality drinking water to the Bunbury-Wellington region.

The Water Corporation is responsible for wastewater collection and treatment, and water services (where Aqwest does not have a physical network) within Aqwest's operating licence area. The City of Bunbury is responsible for stormwater management. The Department of Water is responsible for water resource management and planning activities.

2.2 Asset Base

Aqwest provides water sourcing, treatment, distribution and retailing operations. Water is sourced from the Yarragadee aquifer through 12 production bores and is supplied to over 17,000 properties through 389 kilometres of water mains. In 2015/16, the total water consumption by Aqwest customers was around 5,730 ML, of which just over 71 per cent was to residential customers.

Table 2-1 Relevant Statistics (2015/16)

Number of Customers	Water	17,113
	Sewerage	-
	Recycled Water	-
	Irrigation	-
Assets	Total Population	40,000 (estimate)
	Total Service connections	17,113
	Total above ground storage (ML)	121
	Total water treatment capacity per day (ML)	31.8[~~1~~]
	Total bore capacity per day (ML)	31.8
	Total delivery capacity (L/s)	2046.7
	Length of Mains (km)	389
	Growth in properties connected to the supply network during 2015/16	1.2%
	No. of Production Bores	12
	No. of Water Treatment Plants	6
	Total Asset Replacement Cost (as of June 30 2016)	$88.4m

Reference: Aqwest Annual Report 2016, General Aqwest Water Quality Risk Assessment Report – HunterH2O May 2016

2.3 Service Level Performance and Cost Benchmarking

Benchmarking can provide a useful insight into the relative performance of regulated businesses. The most notable data set available is the National Performance Report for Urban Water Utilities which is prepared annually by the Bureau of Meteorology. However, there are difficulties in benchmarking performance and cost data relating to Australia's water utilities. These include differing business structures and scope of services, inconsistent interpretation of the National Performance Report definitions and a lack of rigour in the data submitted for the Report.

Aqwest provide data to the National Performance Report via the ERAWA and in the latest 2015/16 report were classified as a 'non-major utility' with a customer base of between 10,000 and 20,000. The measures assessed in the 2012 review of expenditure included:

- Water supplied – to understand demand.
- Water main breaks – which informs our assessment of asset performance.
- Water losses – another indicator of asset performance.
- Unplanned interruption frequency and duration – which relates to asset performance and customer service.
- Complaints – which inform our assessment of customer service
- Operating costs – which inform our assessment of efficiency.

Overall, Aqwest's performance to 2015/16 has remained relatively stable however performance in a number of areas has improved while some key measures have deteriorated since the last review in 2012. Brief comments and comparisons on each category reviewed in 2012 are presented below:

- Water supplied – decreased slightly from 266 kL/property to 261 kL/property
- Water main breaks – increased from just over 10 breaks per 100km of mains to 13.5 breaks per 100km of mains
- Water losses – improved from 110 L/ service connection/day to 95 L/ service connection/day
- Unplanned interruption frequency and duration – increased slightly from average of 150 interruptions per 1000 properties to an average, across the period 2011/12 to 2015/16 of 179 although the final year of the period 2015/16 showed a large fall from around 204 to 148 interruptions. The individual data points for this indicator are highly variable across the period given the largely unpredictable nature of pipe break events. As such short term trend analyses must be interpreted in this context. The average duration of interruptions in 2015/6 has increase from 50 minutes to 61 minutes due to a higher proportion of more complex failures.
- Complaints – decreased from more than four to only 0.3 complaints per 1000 properties.
- Operating costs – increased from $404 per property in 2010/11 to $488 per property in 2015/16 which at 21%, is a significant increase (only surpassed by Busselton and Kalgoorlie-Boulder region) and the increase in the average prices over the period (average price 2006-07 to 2010-11 compared to average price 2011-12 to 2015-16) was 14% (in the middle range of increases across similar utilities)

While benchmarking utilities provides some useful information, the comparison of results across similar utilities also highlights that there are still some problems with the consistency and quality of information submitted for this national benchmarking process and therefore that this type of benchmarking should be used carefully. In this context, two comparators are outlined below as examples.

Over the period from 2011/12 to 2015/16, Aqwest had an average of 11.4 water main breaks per 100km of water mains which is lower than the average rate across all similar utilities of 14.5 breaks per 100 km. Approximately 61% of utilities had a break rate lower than the average while 54% of similar category utilities had a rate of breaks that was lower than Aqwest.

Over the period from 2011/12 to 2015/16, Aqwest had an average operating cost (water) per property of $456.8 which is lower than the average rate across all similar utilities of $600.9 per property. Approximately

56% of utilities had an operating cost which was lower than the average while only 36% of utilities had an average operating cost lower than Aqwest.

Internally, Aqwest undertakes performance monitoring against a series of indicators grouped under six key result areas. Targets are set annually and reported in the Statement of Corporate Intent. Performance is measured on a monthly basis within the Corporate Reporting System and is publicly disclosed in the Annual Report and reported to the Minister on a quarterly basis.

3 Strategic Management Overview

3.1 Operating Environment

Aqwest is a corporation established under the Water Corporations Act 1995 and is administered by a Board of Directors, owned by the WA Government, and is accountable to their sole shareholder, the Minister for Water, and their customers. In November 2013, Aqwest became the Bunbury Water Corporation, a government trading enterprise operating under the Water Corporations Act 1995 however it still operates under the Aqwest name.

Aqwest's predecessor the Bunbury Water Board was formed in 1905 some 25 years after the first bore was drilled to tap fresh water beneath the growing town. The move away from the historic Bunbury Water Board and the evolution of Aqwest occurred as part of a corporate restructuring process in 1996/97. The new Constitution, a new Board of Management structure, a separation from the City of Bunbury and the development of a corporate image were the first major changes in the business since its inception in 1905.

3.2 Business Planning

Our review of processes and systems seeks to test whether Aqwest is a well-run business that is able to identify, plan for and deliver appropriate capital and operating expenditure, and do so efficiently.

Our review of processes and systems is informed considerably by the Operating Licence and Asset Management Review completed by PwC in December 2013. The scope of this PwC review considered 12 elements of asset management which are key parts of Aqwest's strategic business planning processes and systems. The PwC review awarded Aqwest the highest audit ratings for each of the categories against operating performance and for the asset management system review with no recommendations for improvement required. Since the previous pricing review in 2012 and the PwC review in 2013, Aqwest has undergone corporatisation (November 2013) and has restructured its business slightly to accommodate this new model.

Aqwest maintains a five year Strategic Development Plan which is updated annually. The current plan covers the period 2017/18 to 2021/2022. This document is prepared for internal use but an annual snapshot of the Plan is released publically each year as the Statement of Corporate Intent.

The Strategic Development Plan and Statement of Corporate Intent are endorsed by the Board and the executive team. These documents set out the strategic direction of the organisation and are intended to be the basis on which management decisions are made.

The Strategic Development Plan sets and outlines the values, guiding principles of the business along with the strategic risks to achieving these and the six key result areas that will be used to measure performance. The Statement of Corporate Intent reflects this and adds the specific indicators and targets against which performance will be measured.

Aqwest's Corporate Planning Framework represents the entire business planning process and is shown in Figure 3-1 below.

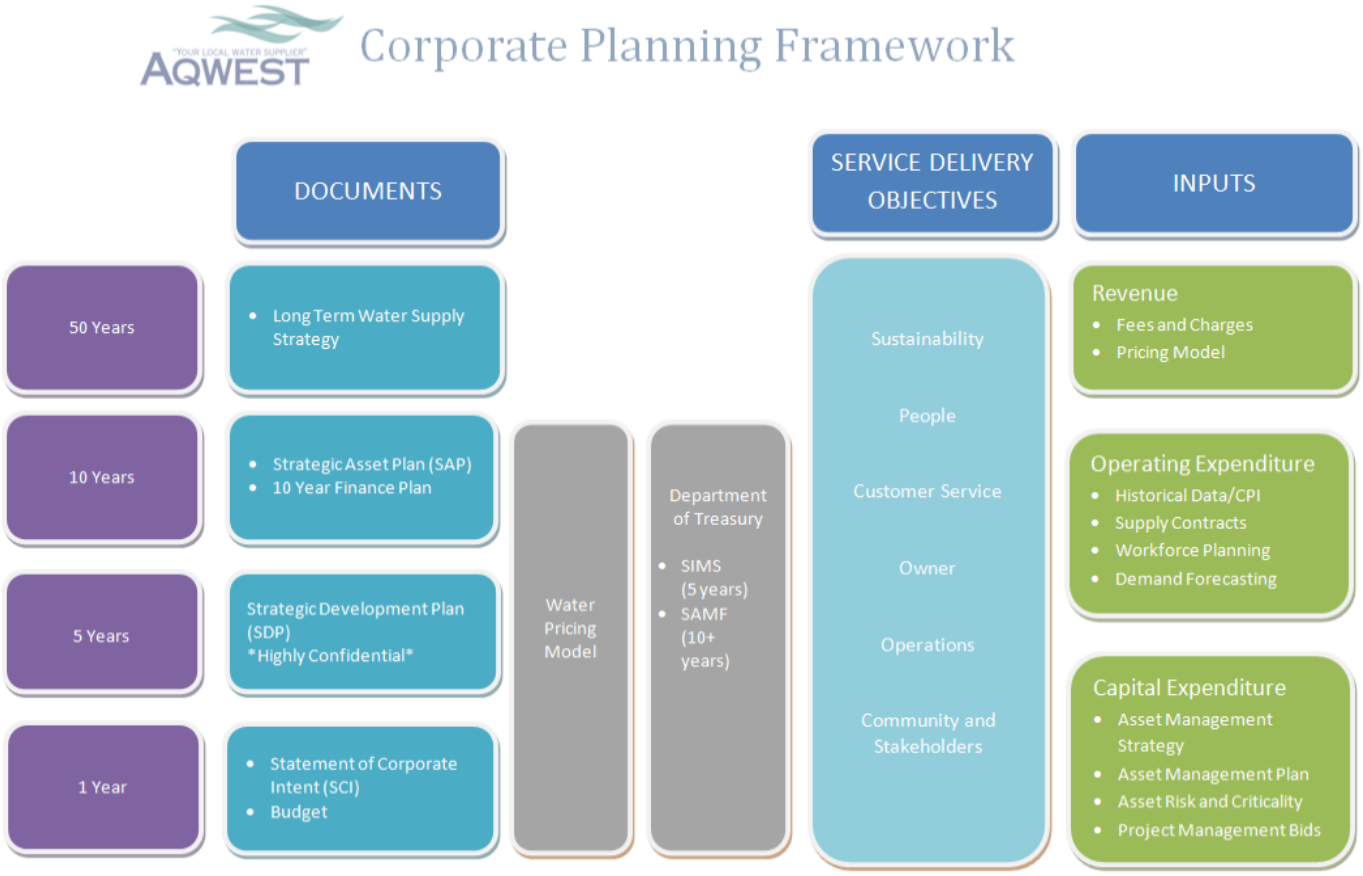

Figure 3-1 Aqwest Corporate Planning Framework (Source: Strategic Asset Plan 2017/18 to 2026/27

3.3 Governance Arrangements

Aqwest commit to adhering to Corporate Governance Principles in the Strategic Development Plan as part of their corporate objective to provide value to their owner.

Governance arrangements for projects are documented in the Asset Management Plan. Specific expenditure approval levels are documented in the Aqwest Financial Management Manual (last annual review conducted in January 2017) and are individually outlined for 25 specific roles within the business.

Financial and capital expenditure planning (including governance arrangements) were assessed as part of the PwC review conducted in 2013, with both components receiving the highest audit ratings for adequacy and performance.

3.4 Organisation, Structure & Functions

Aqwest employs around 39 staff (including full-time, part-time and casual staff), down from 40 in 2014/15, and an executive team of only three staff – the Chief Executive Officer (CEO), and two Managers covering Corporate Services and Water Services.

Aqwest has three key categories within which staff are classified for financial purposes:

- Corporate Services
- Water services administration
- Distribution and treatment operations

The latter two categories are combined in the context of the management / divisional structure, which is shown in Figure 3-2 following, and which identifies 28 of the specific roles within the business. It is noted that at the time of writing this report, there is a new water Minister.

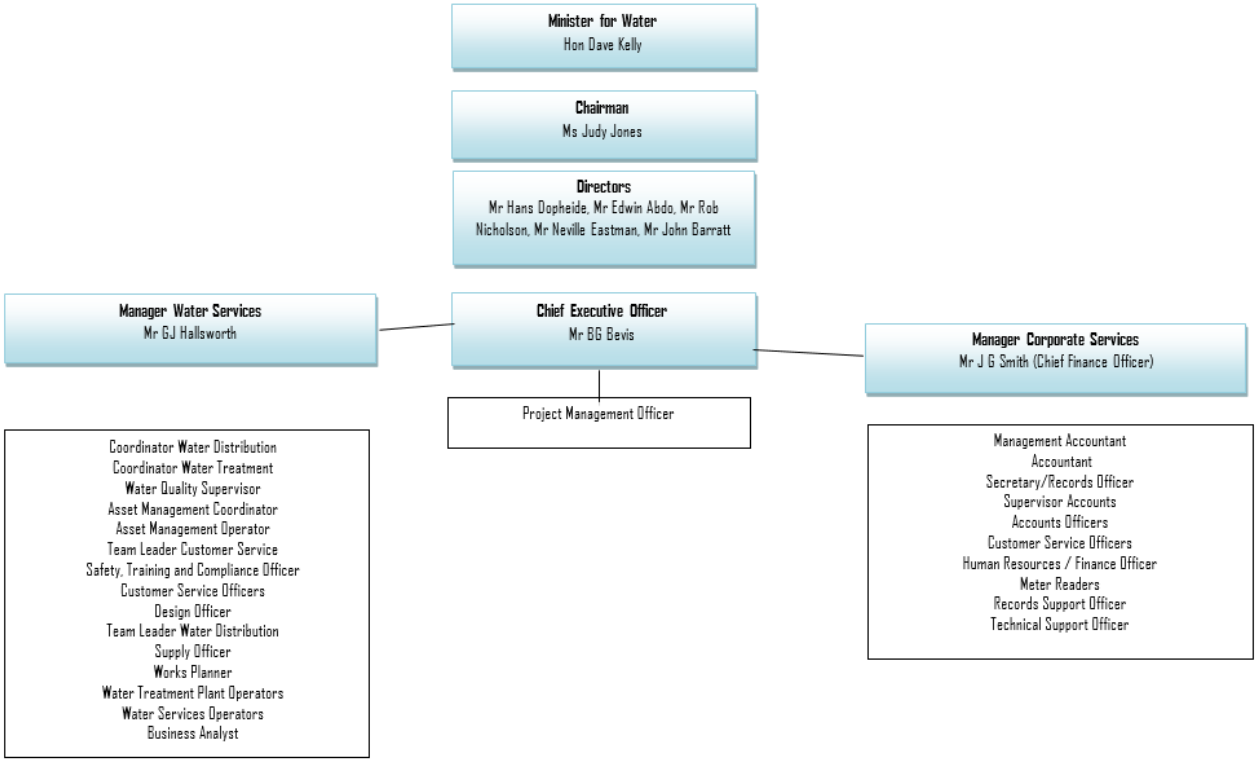

Figure 3-2 Organisational Chart as at 30 June 2016 (Source: Aqwest Annual Report 2015/16)

3.5 Overheads and Cost Allocation

Overhead cost allocation is subject to annual review with Aqwest's statutory accounts. We have limited our review of overhead allocation to sense check of the process employed. Aqwest allocates overheads to service tasks and capital works as a proportion of the direct labour charged to each service task and capital project. The allocated overheads are for the employment costs of water distribution and treatment plant operators only. The employment costs for administration staff are not included. The allocation is made fortnightly based on the ratio of direct hours to total hours at that point in time and a final reconciliation is performed at the end of the financial year.

This methodology was reviewed in the 2012 pricing review and the 2013 PwC review and was found to be sound. The allocation method for overheads was modified in 2015/16 so that the number of overheads directly attributed to works was reduced and remaining expenses previously allocated as overheads are separately identified in Other Costs of Services. We are therefore satisfied that Aqwest's methodology for allocation of overheads is sound.

3.6 Asset Management Framework

Aqwest have a comprehensive asset management framework which is embedded into their business planning framework, as demonstrated in Figure 3-1 (refer section 3.2 above). The various elements of the business planning and asset management frameworks mesh together well on the foundation of the common service delivery objectives defined within the corporate framework.

The introduction of an Asset Risk and Criticality Framework compliance with the new international asset management standard series ISO 55000 has further improved the asset management framework. The Asset Risk and Criticality Framework (ARC Framework) relates to asset condition, maintenance history and theoretical life and operates through the computerised maintenance management system which compares asset condition against its functional criticality and derives a risk based rating for prioritising and scheduling, asset rationalisation, renewal and refurbishment works as required. An online risk management portal then provides an easy to use interface for Aqwest to manage all its risks.

Our review of the asset management framework is informed considerably by the Operating Licence and Asset Management Review completed in December 2013. The scope of this review considers 12 elements of asset management with the overall outcome being that Aqwest have an effective asset management

system. The framework received the highest audit ratings No recommendations for improvement were made by the auditor with respect to the asset management framework. The ERAWA has determined to increase the period of time (from three years to four years) until the next Audit and Review with the next performance report due by 31 December 2017.

3.7 Cost Estimating Process

Aqwest does not have a formal cost estimation policy and relies mostly on cost estimates produced by consultants. Cost estimates developed by, or for, Aqwest come from a number of sources including:

- Aqwest's own experience, which is important for operating expenditure and mains renewals projects.
- Estimates from the ten year infrastructure and asset management plans.
- Estimates from engineering and cost estimating consultants engaged by Aqwest to undertake investigations, options assessments and design works.

Operating and capital expenditure is given good scrutiny through regular variance reports to the Board, the annual budgeting process, the use of mid year reviews to reassess expenditure proposals, and the use of historical activity costing data to inform proposed costs. Due to the relatively small size of Aqwest's capital and operating expenditure programs, cost estimating is undertaken on a case-by-case basis.

We believe that Aqwest's approach to cost estimating is sound given the size of its expenditure and the rigour it applies to larger one-off projects and programs.

3.8 Procurement

Aqwest's procurement approach generally follows the Government of Western Australia's, Department of Finance Government procurement practice guide. The capital delivery processes are structured around a 'Project Management Process' that aligns with the Project Management Body of Knowledge (PMBOK) approach. Under this Project Management Process, a series of management plans and pro-formas are required to be completed by project managers responsible for the capital expenditure.

A comprehensive Contract Management Manual is in place which requires that all assets acquired be done so according to Aqwest's tender policies, that they use a Capital Project Form, that lifecycle costs are considered and recorded over the life of the asset, that progress payments certificates are in place and approved, that assessments of actual costs against budgeted costs are reviewed quarterly by the Board and that commissioning processes are documented in the Operations & Maintenance Manual.

This system was under development at the time of the 2012 price review, however it was reviewed in detail in the PwC review of 2013, which found that the systems and processes related to asset procurement were robust and awarded them the highest audit rating for adequacy and performance.

We believe that Aqwest's arrangements are appropriate for the magnitude and type of goods and services that it procures.

3.9 Risk management

Aqwest introduced a new corporate Risk Management System in 2015/16 which better integrates information on risks, compliance obligations, strategies, controls, actions, incidents and hazards. It also has tools that improve the presentation and communication of risks to staff and in the reporting of risks. These improvements are designed to enable better decision making and have also allowed further integration of other key management frameworks, such as occupational safety and health, with the risk assessment framework.

Aqwest have a Risk Management Committee in place, which takes an organisation wide strategic approach to risk management, and maintain a Risk Management Charter, with effective oversight of the overall risk framework undertaken by the Board

Aqwest's risk management approach is guided by the following key sources

- Treasurer's Instruction 825,

- Public Sector Commissioner's Instruction 2009:19
- Australian Standard AS/NZS 31000:2009
- WA Government Risk Management Guidelines: Second Edition (2011)
- Asset Risk and Criticality Framework (ARC Framework) ISO 55000

Aqwest's overall risk approach is shown in Figure 3-3 and Figure 3-4 below:

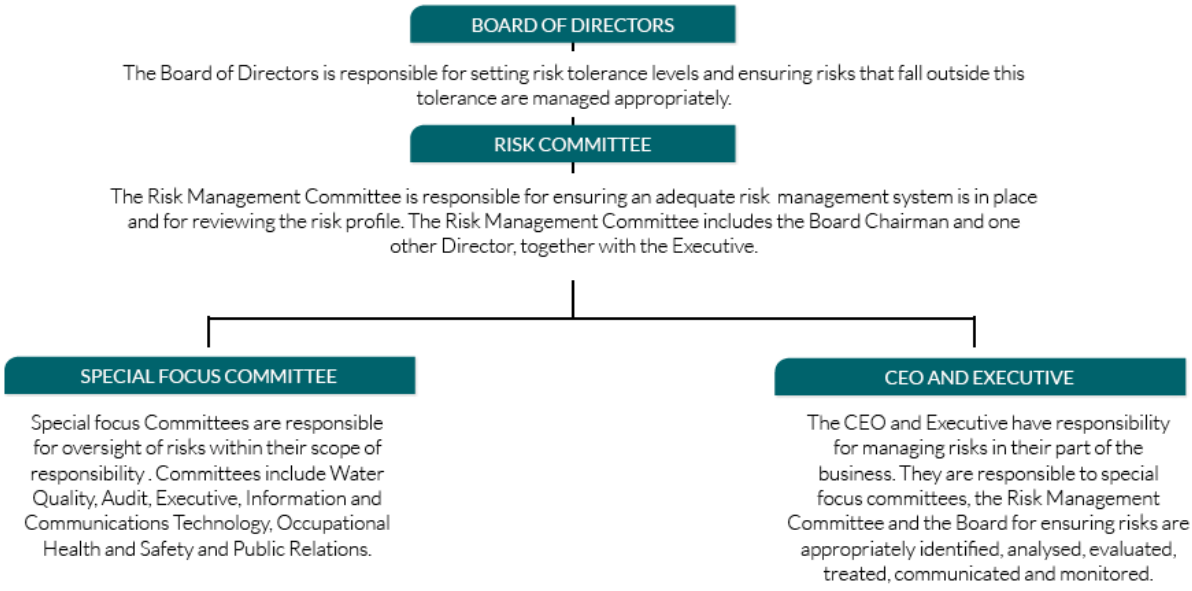

Figure 3-3 Corporate Risk responsibilities for Aqwest 2015/16 (*Aqwest Annual Report 2015/16*)

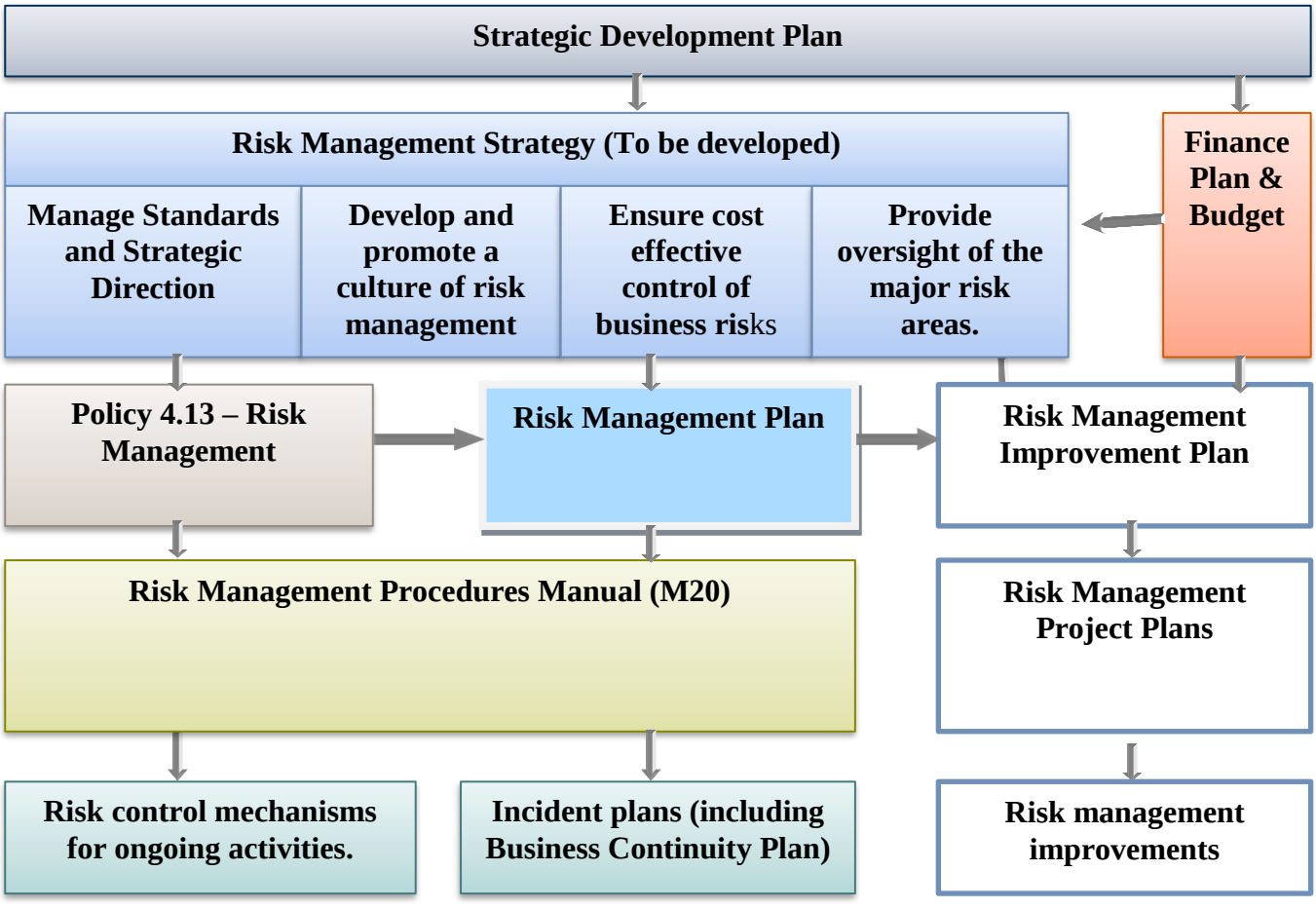

Figure 3-4 Key Components of the Overall Risk Management Framework

3.10 Summary

We have reviewed Aqwest's systems and processes for managing capital and operating expenditure in order to determine if these systems and processes are likely to reliably result in expenditure that is prudent. Our review was based on interviews with senior staff at Aqwest and the review of referenced and supporting documentation submitted as part of our information requests during the interviews. We were also greatly informed and assisted by the Operational Audit and Asset Management System Review conducted by PwC in 2013, which reviewed, in some detail, the systems and processes for managing assets, and hence capital and operating expenditure.

Our review found that Aqwest has been continually improving its systems and processes since the previous price review in 2012 such that the PwC audit in 2013 found that all twelve elements of the asset management system reviewed were at the highest audit rating in relation to their adequacy and performance.

Since this 2013 review, Aqwest have introduced a comprehensive risk management approach including the Asset Risk and Criticality Framework relating to asset condition, maintenance history and theoretical life and can schedule replacement and upgrades accordingly. The development of an online portal for risk management has also ensured the risk management approach is more accessible to staff and more easily implemented in the normal operations of the business.

The improvements made to the strategic business planning framework since the 2012 price review and specifically assessments and improvements made after the 2013 Operational Audit and Asset Management System Review have led to a strategic management framework that:

- Sets strategic priorities / objectives and outlines the policies, procedures and work instructions required to achieve these objectives
- Provides integration and consistency of procedures and policies as linked to the strategic priorities
- Provides an internal control and review structure that should generate expenditure that is prudent, delivered in a timely fashion, and at an efficient cost
- Provides clear processes that can be internally and externally audited

4 Operating Expenditure

In this section, we present the results of our review of the efficiency of Aqwest's operating expenditure. We review:

> the efficient level of base operating expenditure; and

> the adequacy of projected operating expenditure and we make recommendations on the efficient level of the proposed operating expenditure for the period up to 30 June 2023.

Our assessment is based on actual operating expenditure details provided by Aqwest and the robustness and confidence of the projected estimates, taking into account the basis of the estimates and confidence in the need, timing and scope of the requirements. We also consider the major cost drivers that Aqwest is facing and the organisation's operating environment.

We have interviewed senior managers, reviewed available supporting reports and documents and assessed the current position on the development and implementation of corporate systems used to set budgets, control and monitor costs and allocate expenditure. The findings of our review of systems and processes is set out in Section 3.

The predominant references for costs quoted in this section are the *ERA-Aqwest-Capex and Opex Data Requirement – 20170412* (Aqwest expenditure report), the *DRAFT Pre Budget 2017-18 and Ten Year Plan WATER TARIFF UPDATES*, covering the period 2017/18 to 2026/27, (the Ten Year Finance Plan) and the Strategic Asset Plan 2017-18 ERA request as provided by the ERAWA (first reference) and Aqwest (latter two files). Other references are quoted specifically as required in the discussion.

4.1 Overview

Aqwest categorises operating expenditure into the following areas:

- Cost of services (ongoing works) – including water distribution (mains/service maintenance, analysis, investigations, asset replacements), chargeable works (work not capitalised / under $5,000), water treatment (bore/reservoir operations and maintenance, survey and inspections, monitoring / testing, operations, specialist advice/engineering, chemical treatment), wages (operations staff).
- Cost of service (non-recurrent works) – one off or irregular projects such as the reservoir integrity analysis project.
- Cost of services (allocated on costs) – included for historical reporting but no longer used. Costs are transferred to wages.
- Cost of services (electricity)
- Cost of services (Other service expenses) – covering operations / safety related audits, engineering analysis, training, plant and vehicle operation, remote metering and gifted assets (not included in regulatory analysis).
- Depreciation (not included in regulatory analysis)
- Administration costs (Human Resources) – salaries and wages, superannuation, staff expenses and Board expenses
- Administration (ICT) – maintenance, replacement, strategic plan, telephone expenses
- Administration (Finance) – interest and bank charges (not included in regulatory analysis)
- Administration (Buildings) – Water service centre and Water quality Centre, local rates/taxes, minor assets acquisition and maintenance
- Administration (Customers) – advertising, survey, public relations, financial hardship, valuations
- Administration (Compliance) – annual auditing, revaluations, business development, regulation costs, legal and records management

- Administration (All other expenses) – membership fees, copyright, postage, printing/stationary and miscellaneous expenses

Aqwest's operating budget for 2017/18 is shown in Figure 4-1 below as taken from the Ten Year Plan. Total budgeted expenditure is just over $12.3 M. Human Resources and Ongoing works are the largest expenditure categories, accounting for around 70% of the total, followed by electricity and other service expenses (6%) and two items at (5%). The remaining expenses make up a small proportion of the total expenditure (8%).

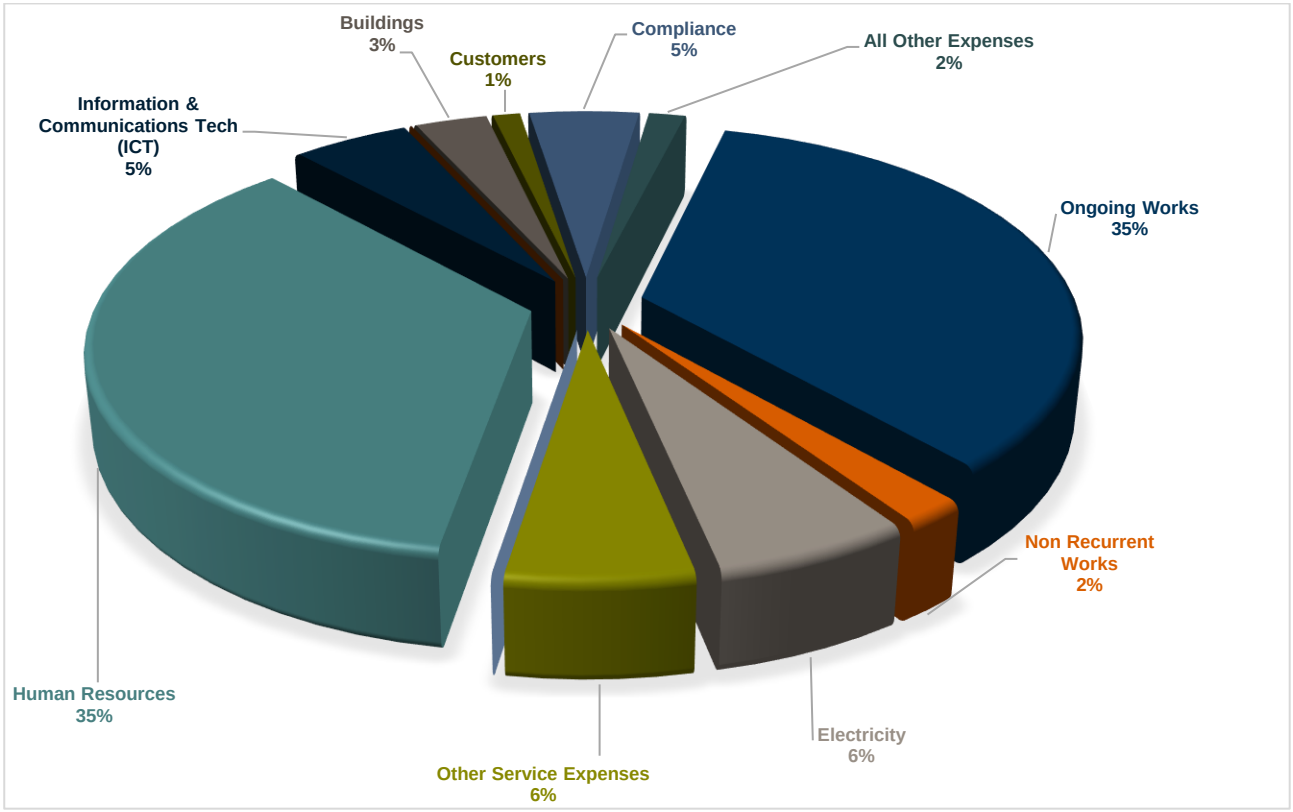

Figure 4-1 Breakdown of Budget Operating Expenditure for 2017/18

Aqwest's actual and forecast operating expenditure between 2016/17 and 2026/27 is shown in Figure 4-2, as taken from the Ten Year Plan. These figures exclude depreciation, interest and gifted assets. The trend in data for the next regulatory period is skewed by the large expenditure planned beyond 2023/24 and particularly in in 2026/27.

Figure 4-3 below shows the drivers for changes in operating expenditure over the period from 2016/17 to 2026/27 as taken from the Ten Year Plan. The key drivers are human resources (wages and salaries) and ongoing works (water distribution and treatment operations and maintenance), with these two items plotted on the secondary (right hand side) axis to provide some clarity around the smaller items.

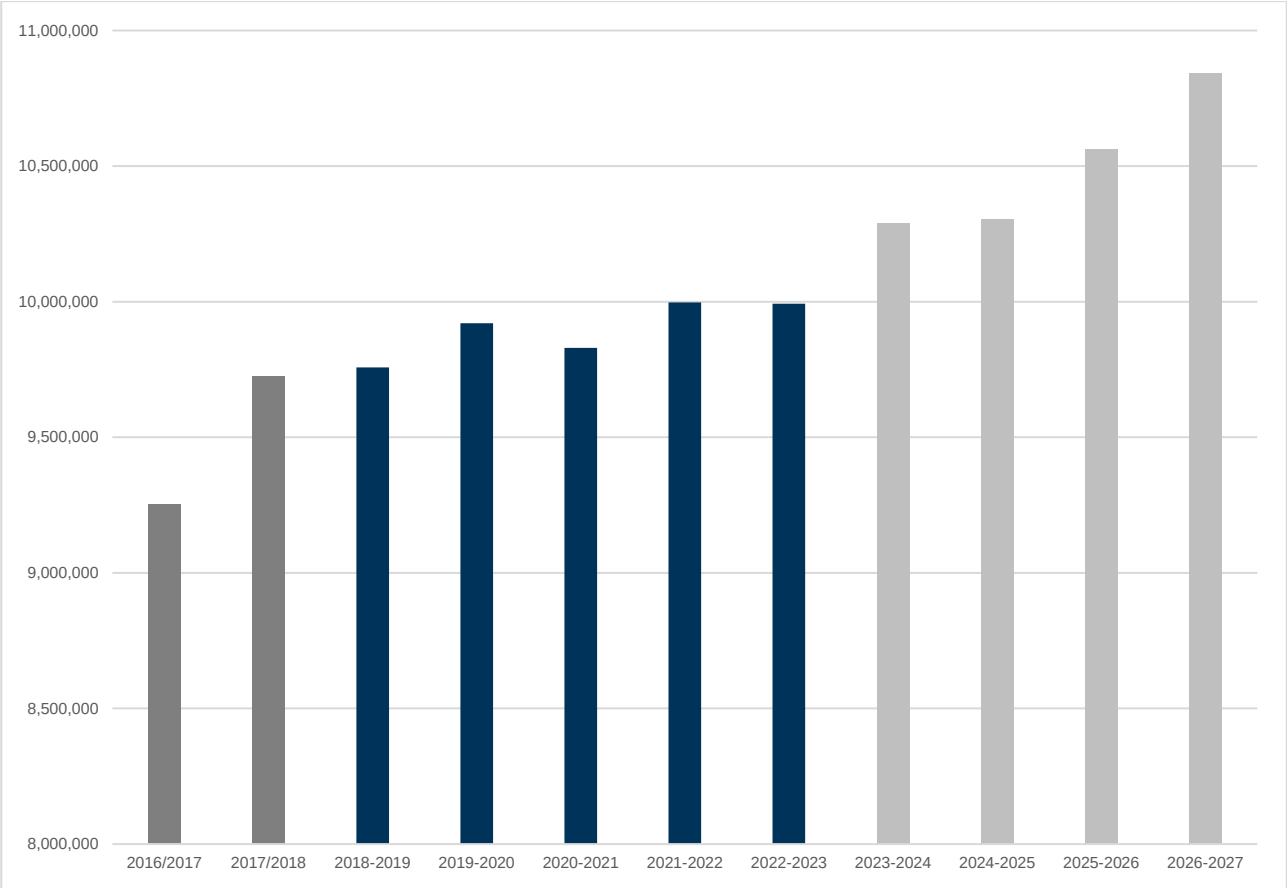

Figure 4-2 Budget and Forecast Operating Expenditure for 2016/17 to 2026/27

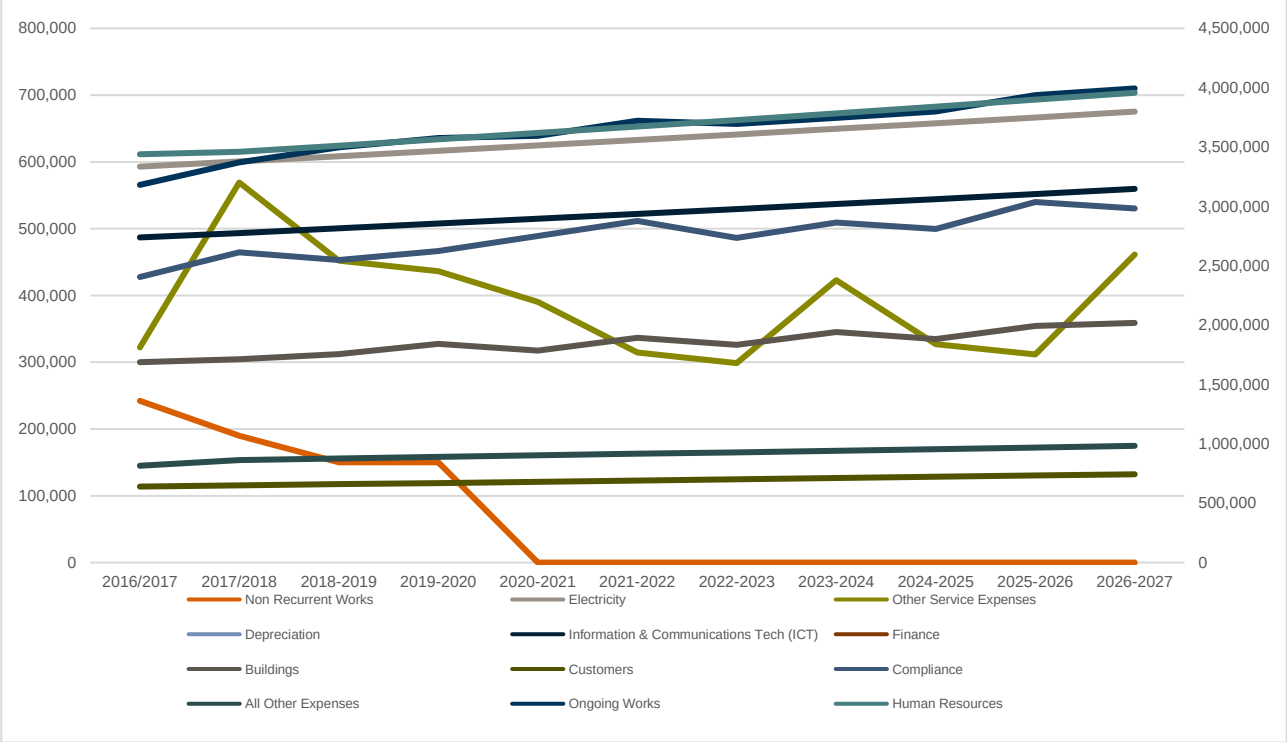

Figure 4-3 Breakdown of Key Drivers of Operating Expenditure 2016/17 to 2026/27

4.2 Base Opex

4.2.1 Overview

A base operating expenditure level allows us to set a foundation for the assessment of proposed expenditure against new or increasing obligations on Aqwest. The base operating expenditure is derived from a recent year of actual expenditure so that the major components of the expenditure can be assessed for prudency and efficiency.

Specific historical expenditure details were not provided in our key reference file, the Pre Budget 2017-18 and Ten Year Plan apart from the inclusion of budget and projected figures for 2016/17 so from this source alone we were unable to assess actual operating expenditure in the period from 2012/13 to 2017/18.

The ERAWA has provided a summary of Aqwest's capital and operating expenditure data submission which reports historical expenditure but does not include details of why the expenditure was required, what specifically it was spent on, or whether the actual expenditure was different to the expenditure recommended in the 2012 price review.

Aqwest's historical expenditure from 2012/13 to 2017/18 is shown in Figure 4-4 below. Expenditure shown, in order of appearance, is Aqwest 2012 forecast expenditure and recommended expenditure for 2012/13 to 2015/16 from the 2012 pricing review (both escalated from $2012), and Aqwest's reported actual expenditure.

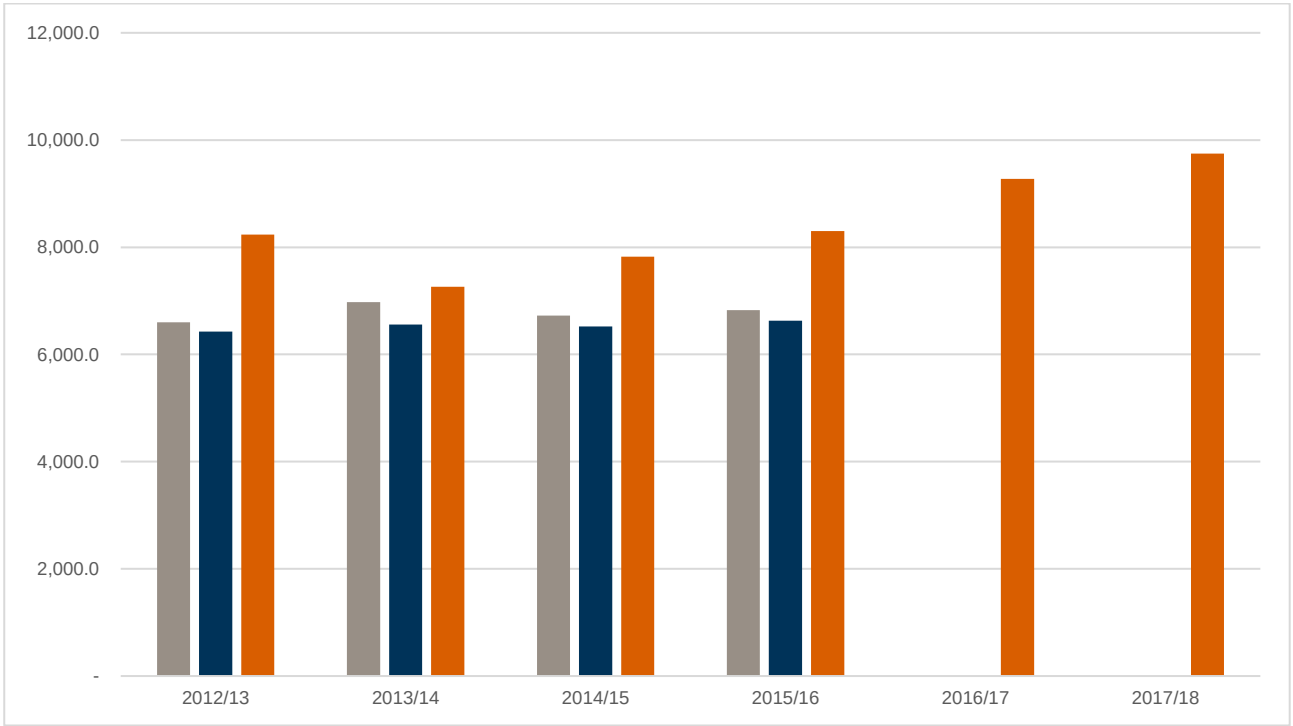

Figure 4-4 Actual Operating Expenditure from 2011/12 to 2017/18

Expenditure varies across the period shown with a generally increasing trend to 2017/18. The first year of the current regulatory period was the exception with a significant increase in expenditure, possibly influenced by carry over expenditure from 2011/12. Actual expenditure is higher than recommended in the 2012 pricing review. In the 2012/13 Annual Report, commentary provided on actual expenditure indicate it was impacted by operational activities related to significant water storage asset repairs which were not expected. Other impactors identified included changes to capitalisation limits which affected the business' operating loss by approximately $580,000, and a larger than expected increase in electricity costs associated with a new contract. Some of these costs are ongoing but without the storage asset costs, actual expenditure in 2013/14 dropped. Commentary on actuals vs budgeted operating expenditure was not provided in the 2014/15 or 2015/16 Annual Reports.

Our review of the systems and processes Aqwest uses for developing and assessing operating expenditure identified that they were robust and likely to produce expenditure that is prudent (that is, the expenditure is

supported by an appropriate obligation on Aqwest) and likely efficient (that is, the expenditure is the least overall cost option to fulfil the obligation).

4.2.2 Summary

While the historical expenditure is at times variable, in general, it is needed to respond to the operational needs of the business. In particular, historical operating expenditure was dominated by unexpected activities related to water storage asset maintenance, increases in electricity costs, and changes to capitalisation rules. Improvements and refinements are continually being made to the operating expenditure programs to ensure they remain efficient through the use of operational performance targets and regular reporting, internal and external.

Our review of the systems and processes used to develop expenditure did not give us any cause for concern in relation to the historical operating expenditure levels.

As such we recommend no adjustments to the base level of operating expenditure, 2017/18, used to forecast Aqwest's operating expenditure for the next regulatory period.

4.3 Forecast Operating Expenditure

4.3.1 Overview

Aqwest's proposed operating expenditure for the next regulatory period 2018/19 to 2022/23 is presented in Figure 4-5 and Table 4-1 below. The proposed expenditure for both excludes depreciation, interest expenses and gifted assets.

Table 4-1 shows the key drivers of changes in proposed operating expenditure while each of the drivers is discussed in more detail in the following sections. The four drivers in Table 4-1 represent approximately 85% of total forecast operating expenditure for the period presenting a good sample of expenditure.

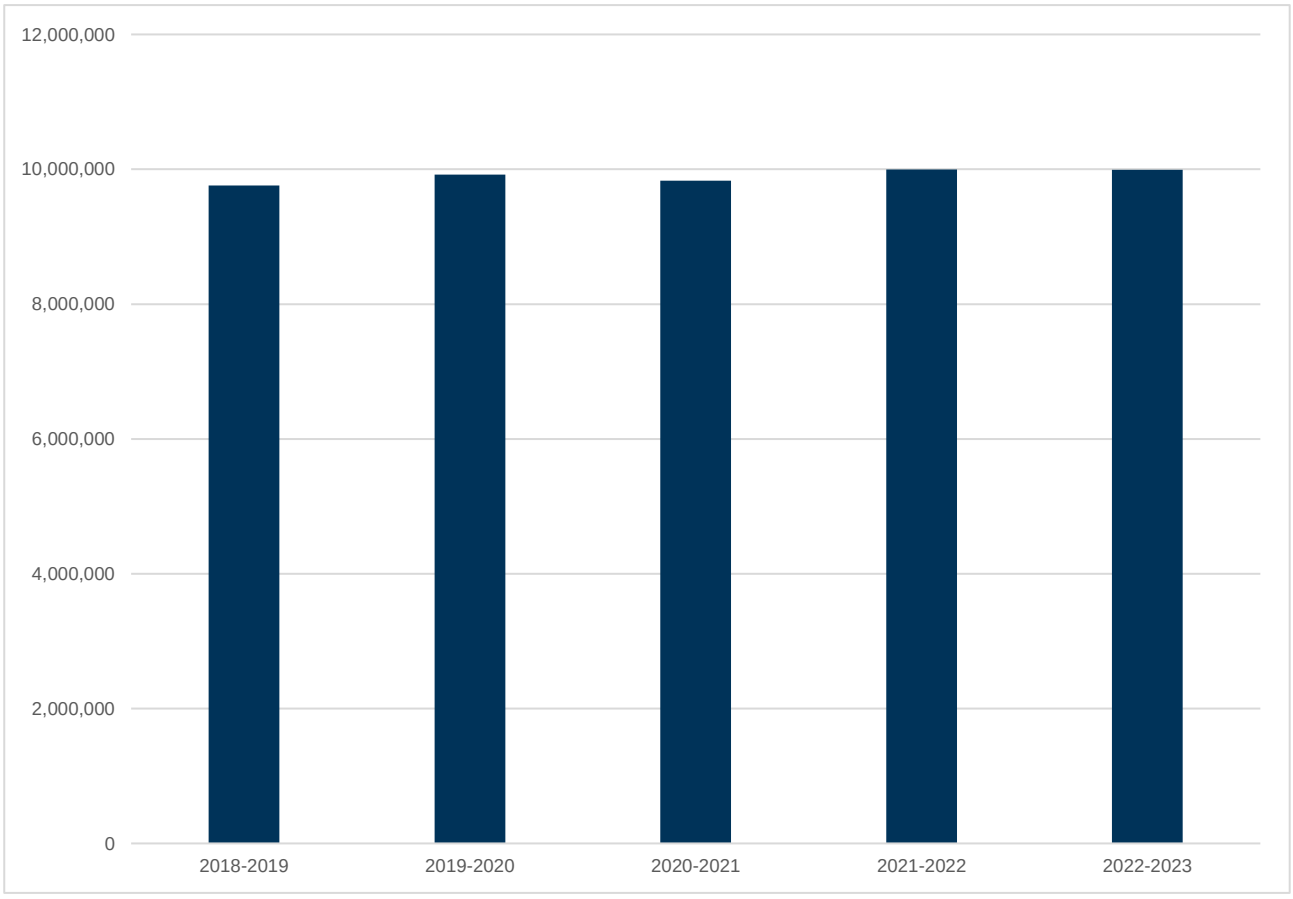

Figure 4-5 Proposed Operating Expenditure for 2018/19 to 2022/23

Table 4-1 Breakdown of Proposed Operating Expenditure 2018/19 to 2022/23 for the largest components of expenditure

	2018/19	2019/20	2020/21	2021/22	2022/23	Net Change 18/19-22/23
Proposed Expenditure						
Ongoing Works	3,496,500	3,574,900	3,594,100	3,722,100	3,694,000	
Human Resources	3,511,300	3,564,300	3,618,100	3,672,600	3,727,900	
Electricity	608,500	616,500	624,600	632,800	641,100	
ICT Program	500,400	507,500	514,700	522,000	529,400	
% Year on Year Change in expenditure						
Ongoing Works	4%	2%	1%	4%	-1%	6%
Human Resources	2%	2%	2%	2%	2%	6%
Electricity	1%	1%	1%	1%	1%	5%
ICT Program	1%	1%	1%	1%	1%	5%
$ Year on Year Change						
Ongoing Works	124,400	78,400	19,200	128,000	-28,100	197,500
Human Resources	52,000	53,000	53,800	54,500	55,300	216,600
Electricity	7,900	8,000	8,100	8,200	8,300	32,600
ICT Program	6,900	7,100	7,200	7,300	7,400	29,000

Note: The year on year changes represent changes from the previous year. The Net change represents the change from 2018/19 to 2022/23. These two do not sum to the same amount as the year on year change includes 2017/18.

4.3.2 Ongoing Works

Ongoing works expenditure comprises mostly Water Distribution and Water Treatment related operational costs, which combined represent over 78% of the proposed expenditure. Wages for operations administration staff make up approximately 20% of the expenditure while chargeable works makes up the remaining 2%.

Expenditure across the next regulatory period for all three key components is relatively flat reflecting stable operating conditions with no major changes of focus in this area or adjustments to Aqwest's obligations.

4.3.3 Human Resources

Human resources related expenditure includes wages and salaries related costs for administration staff. All other staff have related costs allocated to other accounts. This cost category also includes staff and Board related expenses although these two items only represent a small proportion of the cost.

Operating costs for this category increase steadily at the rate of wages indexation set by Aqwest (refer section 4.3.5). Up to the 1 Feb 2017, all general (non common law contract) employees were covered by an Enterprise Agreement which commenced in 2014. The Agreement included three wage increases of 3.75% on the 1st February each year from 2014 to 2016. A new Enterprise Agreement was being negotiated with staff at the time of undertaking this review and as such it is unclear what wage increases are likely to be agree upon. However, given Aqwest is forecasting a 1.5% indexation of wages, the final agreed rates would likely be around this level. Further discussion on wage indexation can be found in section 4.3.5 below.

4.3.4 Electricity

The operating costs for this category have historically been variable with a 54% increase in 2012/13 (associated with a major price rise due to a new contract), a 3% reduction in 2014/15 and a 10% increase projected in 2016/17. Variability in electricity costs are predominantly influenced by water extraction and usage rates as pumping is the most significant component of costs. Variable water demand influences pumping rates and demands have been variable over the current regulatory period. Proposed costs, however, have been forecast with only a CPI increase. This is reflective of a business as usual operating environment with only minor adjustments to production rates.

4.3.5 Operating cost escalation

Aqwest's Ten Year Finance Plan 2017/18 to 2026/27 outlines the key factors used in the forecasting and specifically which escalation method applies to each item of operating expenditure. The methods applied include:

- Annual CPI index rate = 1.3%
- Wages index = 1.5%

The Ten Year Finance Plan clearly outlines which indexation factor has been used and a review of the figures coming into the Plan from the September 2016 Budget Review does not give cause for concern regarding any double counting of indexation factors.

The annual CPI index rate of 1.3% is also reasonable given figures from the latest WATC Economic Analysis CPI March Quarter 2017 which reports that Headline CPI rose 0.5% in Q1 2017 with annual inflation rising to 2.1% from 1.5% in Q4 2016. The WA Government's 2016-17 Budget forecast the Perth Consumer Price Index to rise from 2.25% in 2017-18 to 2.5% in 2018-19 and remain at this level in 2019-20. These figures suggest the CPI index rate used by Aqwest might be a little conservative however it is not unreasonable.

The Wages Index of 1.5% compares favourably to actual wages growth in Western Australia with the latest Western Australian Economic Notes Wage Price Index March 2017 showing that the Western Australia index rose by 1.5% in annual average terms to March 2017. The Public Sector index rose by 2.3% in annual average terms to March 2017 while the Private Sector index rose by 1.3%. The general trend over the past four years has been down, reducing from a high of around 4.5% in March 2013. Forward forecasts of the Wage Price Index from the 2016-17 WA Budget show the index rising to 2.75% in 2018-19 and 3.25% in 2019-20. Given these Government forecasts and the higher index rate for the Public Sector, tempered by a medium term downward trend, then the assumed 1.5% wages index appears reasonable, if a little conservative.

4.4 Efficiency

Aqwest has not proposed any efficiency targets to apply to its proposed operating expenditure for the next regulatory period and notes that it is amongst the lowest operating cost service providers (in their class) in Australia.

Our review of Aqwest's strategic management framework including business planning and asset management / maintenance processes found these processes to be sound and appropriate for the organisation, and therefore likely to lead to expenditure that is prudent and efficient. We noted in this review that expenditure is given regular scrutiny through internal and external reporting mechanisms.

Our review of Aqwest's historical and proposed operating expenditure at an aggregate level and for specific items of importance did not identify any project level opportunities for ongoing efficiency gains.

However, there is an opportunity to develop an efficiency target that can be used as a benchmark for improving efficiency of operating costs. Regulators usually apply a frontier approach to assess the level of efficiency that water businesses may achieve in the next regulatory period. Under this approach, there are two components of efficiency gains that may be realised:

> Continuing efficiency is the gains that may be made all participants in an industry, for example through new technology

> Catch-up efficiency is that ability of a business to move towards the efficiency frontier. At the efficiency frontier, a business is achieving both technical and allocative efficiency and overall, providing its output for the lowest possible total cost.

Aqwest is operating at a relatively low cost already so a catch up efficiency target is not warranted, however work needs to be done to ensure that this low cost environment continues particularly when significant changes are proposed for the business.

A continuing efficiency factor can be used to ensure that continued effort is placed on tight management of ongoing operating costs. The levels of continuing efficiency factors applied by Regulators to water

businesses varies around Australia from 0.25% to 2.48% depending on the size of the business and the specific view on the ability of the business to achieve such a target.

We are of the opinion that Aqwest can achieve an ongoing efficiency target and we therefore recommend the application of a 0.25% continuing efficiency factor to Aqwest's operating expenditure to ensure tighter controls on operating expenditure growth in the next regulatory period.

4.5 Recommendations

We have reviewed Aqwest's proposed operating expenditure and have identified the sources of changes to expenditure over the current regulatory period. Overall the proposed expenditure reflects a fairly stable operating environment with a focus on maintaining services and asset condition.

We did not find any specific inefficiencies in the proposed operating expenditure.

We therefore recommend no specific changes to the proposed operating expenditure. The recommended operating expenditure for the next regulatory period is shown in Table 4-2 below.

Table 4-2 Recommended efficient operating expenditure for Aqwest

$ '000	2018/19	2019/20	2020/21	2021/22	2022/23
Operating expenditure forecast by Aqwest	9,783.9	9,947.5	9,856.4	10,024.9	10,020.6
Recommended adjustments	0	0	0	0	0
Continuing efficiency factor applied (0.25%) each year	24.46	24.87	24.64	25.06	25.05
Recommended efficient level of operating expenditure	9,759.41	9,922.63	9,831.76	9,999.84	9,995.55

5 Capital Expenditure

In this section, we present the results of our review of the efficiency of Aqwest's capital expenditure. We identify the major cost drivers and explain the variances in the current price path expenditure against the 2012 Determination. We comment on the efficiency of capital expenditure in the 2012 Determination period which is used to inform our view of future efficiency.

We comment in Section 3 on the main asset management systems and processes used to budget, track, monitor and report capital expenditure.

The methodology for evaluating capital expenditure relies on the information provided to us by Aqwest for historic and future expenditure which is mainly sourced from its annually updated ten year capital works program and annual budgets. As these documents are routinely revised, making direct comparisons with the previous determination is, at times, difficult due to changes in classifications, naming and price base along with updates to cost estimates, particularly where a project is at an early stage of development.

The methodology also relies on our understanding of Aqwest's internal and external operating environment and the cost drivers which it faces. Our views are guided by the evaluation of asset management and capital investment processes through interviews with Aqwest staff and from the Operating Licence and Asset Management Review completed by PwC in December 2013.

We have selected a representative sample of historical and proposed projects to gain an understanding of the efficiency and appropriateness of the investment against the criteria defined by the ERAWA:

- the justification for the expenditure
- the adequacy of the information and documents from a technical perspective
- whether Aqwest fully identified and considered all viable options and selected the best option
- the technical aspects of the project or program
- whether the procedures of planning, contracting and cost control are consistent with minimising costs
- unit rates of construction on past projects, compared to historical unit rates and benchmarked comparisons of unit rates for other service providers

We present our analysis of the future expenditure proposals and comment for each driver on the potential for efficiencies through the robustness of estimates, the need and timing of expenditure and the impact of internal challenge and budget control.

The predominant references for costs quoted in this section are the *ERA-Aqwest-Capex and Opex Data Requirement – 20170412* (Aqwest expenditure report), the *DRAFT Pre Budget 2017-18 and Ten Year Plan WATER TARIFF UPDATES*, covering the period 2017/18 to 2026/27, (the Ten Year Finance Plan) and the Strategic Asset Plan 2017-18 ERA request as provided by the ERAWA (first reference) and Aqwest (latter two files). Other references are quoted specifically as required in the discussion.

5.1 Overview

Aqwest has a relatively small total capital works program that is significantly affected by individual projects and large programs of work. The total program presented in the Ten Year Plan comprises only three key programs which, in 2017/18, comprised of water distribution (9%), water treatment (88%) and administration (3%). However, the water treatment category expenditure is heavily skewed by one large project, the Glen Iris Water Treatment Plant[1] which represents approximately 80% of the budgeted water treatment expenditure in 2017/18 and over 71% of the total capital program expenditure for 2017/18.

[1] Note that at the date of release of this report formal approval for the construction of the Glen Iris Water Treatment Plant has not been obtained

The budgeted total capital expenditure program averages around $6.1m per annum for the period 2016/17 to 2022/23 but is highly variable with a high of $11.8m (2018/19) and a low of $2.4m (2022/23).

Aqwest's mid year review process reassesses proposed expenditure in the light of any updated information including historical performance against budget, the availability of new data, or changes to priorities / objectives for the business. The 2016/17 mid year review (conducted in September 2016) had average expenditure of $5.2m for the period 2016/17-2022/23 with a high of $16.9m (2021/22) and a low of $1.4m (2019/20).

Figure 5-1 following shows the 2017/18 budget expenditure compared to the 2016/17 mid year review expenditure for the period from 2016/17 to 2027/28 as presented in the Ten Year Plan.

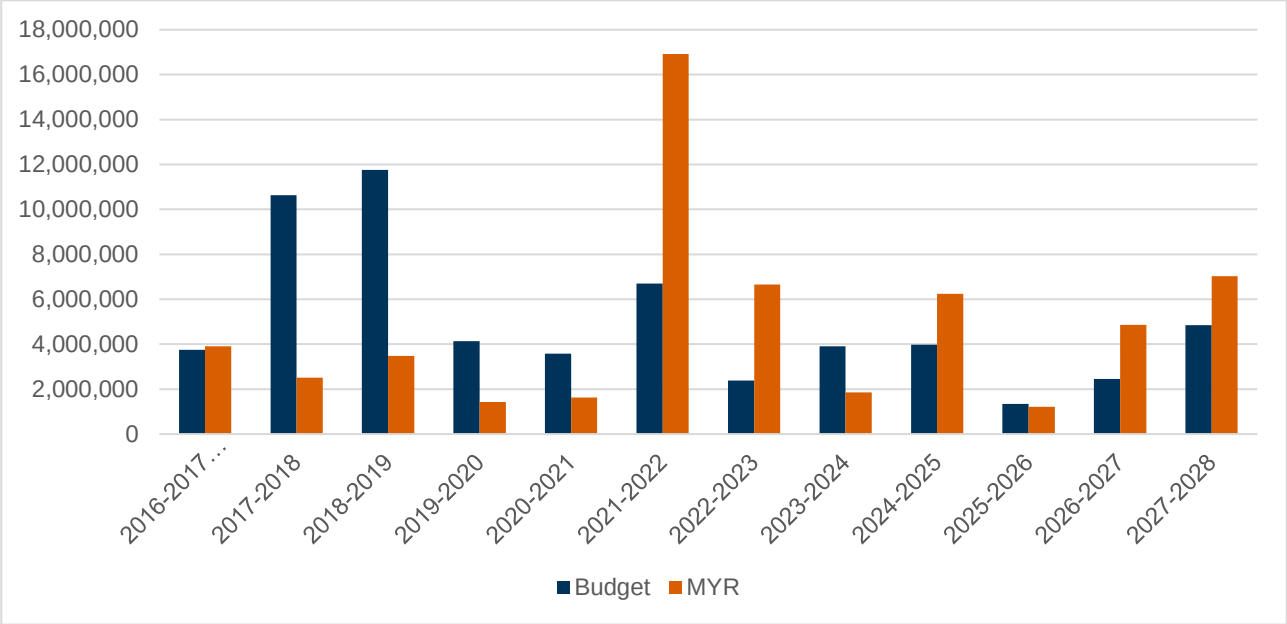

Figure 5-1 Budgeted Vs Mid Year Review Capital Expenditure for 2016/17 to 2027/28

The effect of the single Glen Iris WTP project can easily be seen in the mid year review adjusted figure for 2021/22 and in the budget figures for 2017/18 and 2018/19 which show the project brought forward by four years. This adjustment splits the expenditure required for the Glen Iris project over the current regulatory period and the next regulatory period. Further discussion on this project is presented in section 5.3.2.

In responding to a request from the ERAWA, Aqwest provided a summary of pre-budget expenditure consistent with the Strategic Asset Plan 2017/18. This reference included historical actual expenditure figures from 2011/12 onwards for each of the categories of expenditure as in the Ten Year Finance Plan as well as projections from the Strategic Asset Plan out to 2013/32. Figure 5-2 below shows historical actual expenditure and projected expenditure from 2011/12 to 2026/27, as presented in the Strategic Asset Plan 2017-18.

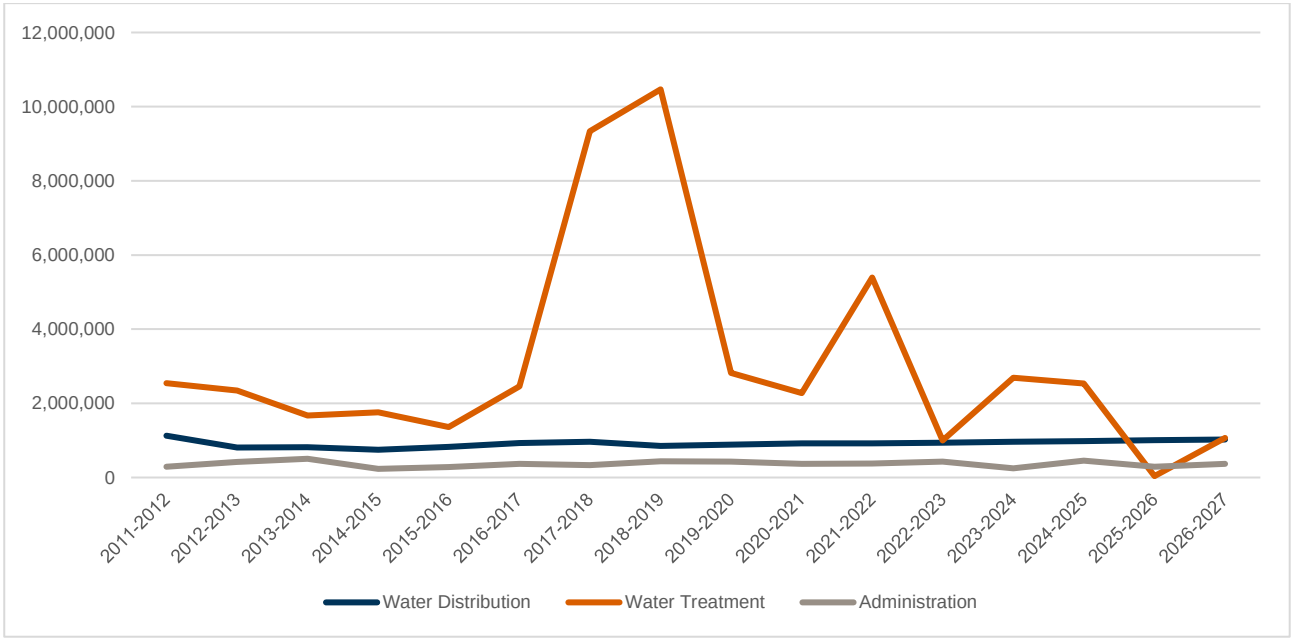

Figure 5-2 Historical and Projected Capital Expenditure 2011/12 to 2026/27

Figure 5-2 above shows the significant effect of major projects on the capital program with the spikes in 2017/18 and 2018/19 reflecting the Glen Iris WTP project and the secondary spike in 2021/22 reflecting the production upgrade at Robertson WTP. Figure 5-3 below shows the capital program (as outlined in the Strategic Asset Plan 2017-18) excluding these two projects and while still variable, the variation is within a much smaller range that better reflects historical levels of expenditure.

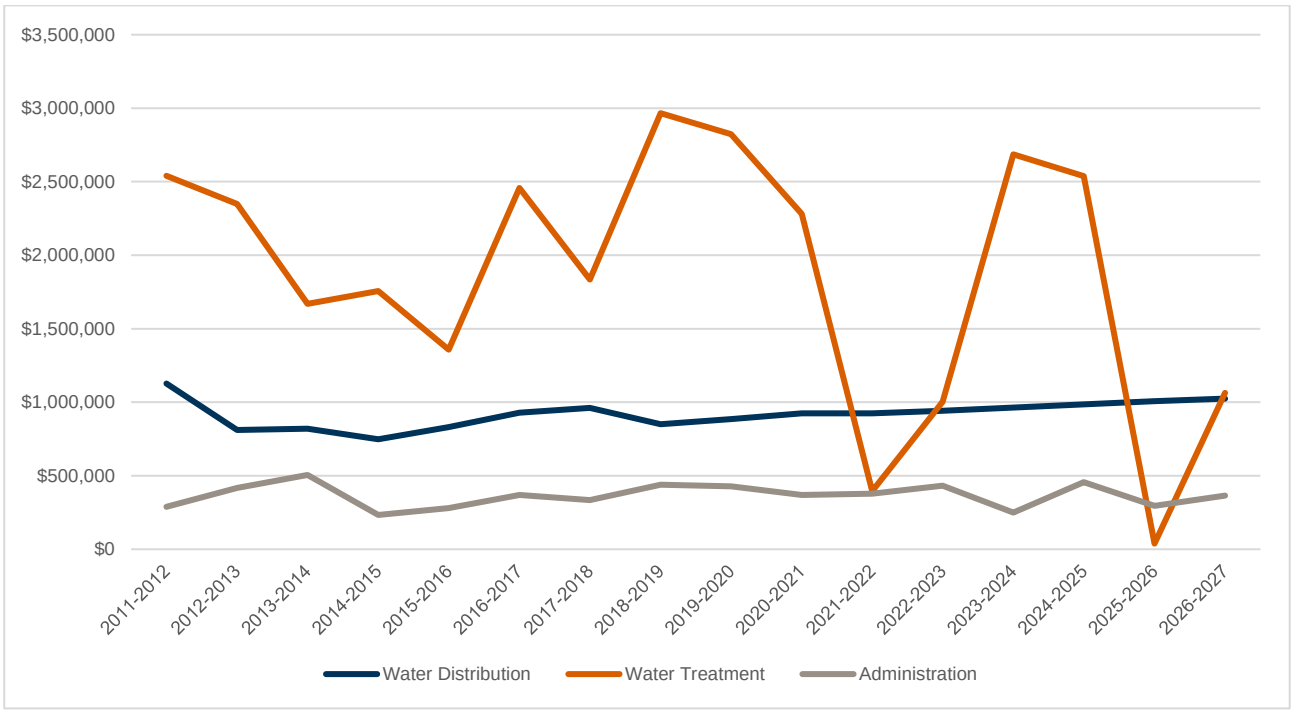

Figure 5-3 Historical and Projected Capital Expenditure (excluding major projects) 2011/12 to 2026/27

5.2 Historical Expenditure

5.2.1 Overview

Details on Aqwest's historical performance against budgeted expenditure and specifically details of variances from budget figures, have not been provided, however details of actual expenditure reported to the ERAWA for the purpose of developing and maintaining a regulatory tariff model, were provided by the ERAWA. Only the total capital expenditure could be compared adequately across the current regulatory period, as the method for categorising the capital expenditure is different in the tariff model compared to the Ten Year Finance Plan provided by Aqwest. Details in the Strategic Asset Plan did include a breakdown of historical expenditure in a similar manner to that included in the finance plan and these have been used to assess historical expenditure.

5.2.2 Findings from review of sample of historical capital expenditure projects

The projects listed in Table 5-1 below were nominated for detailed review as they incurred expenditure during the current regulatory period which was large enough to be identified in a list of major projects. Some projects also have projected expenditure in the next regulatory period and these projects are discussed in the assessment of proposed expenditure in section 5.3.2.

Table 5-1 Sample of Historical Expenditure for Review

Project	Title	Total Cost
3691	Tech School Reservoir Remediation	$5,134,337
3650	Water Quality Centre and Storage Facility	$1,751,327

Tech School Reservoir Remediation

The Tech School Reservoir is Aqwest's largest reservoir and has previously had significant works completed to resolves issues relating to structural deterioration as well as leaks in the reservoir liner. Inspections at the site are conducted under a broad reservoir inspection program and identified the structural issues. Expenditure was allocated for the current regulatory period for repair of the liner and support columns however detailed investigations undertaken as part of the work revealed more serious structural issues.

Ground Penetrating Radar was being tested as part of the inspection program and after being used at the Tech School Reservoir site, some anomalies were identified. The anomalies were tested onsite with parts of the liner removed for further inspection. The inspections identified significant loss of foundations in areas under the reservoir base with large cavities and channels, indicating that the scale of leakage from the reservoir was much greater than initially expected. Major emergency works were required to be completed to ensure the structural safety of the reservoir, requiring expenditure levels not anticipated in the submissions for the current regulatory period.

Our review of the works completed, and to be completed to June 2017, clearly identified that the works were required to ensure the structural condition of the reservoir, and were required to be implemented quickly.

Water Quality Centre and Storage Facility

This project was reviewed as part of submissions for the current regulatory period and was initially challenged given the level of expenditure proposed. The 2012 review, however, found that the need for the Facility was well established and had longer term benefits including multiple uses for the site including business continuity, laboratory, materials storage, emergency operations centre, and for ICT backup systems and data.

The 2012 review identified that total projected expenditure for the project was around $1.6m ($ 2011/12 base). The actual expenditure reported totals over $1.9m ($ 2017/18 base). These estimates are relatively similar with the variation reflecting more detailed tender estimates, minor scope adjustments and for the expenditure into current dollars.

5.2.3 Summary of historical expenditure assessment

Our assessment of Aqwest's expenditure over the current regulatory period highlights that the capital program is relatively small with one or two larger projects comprising the majority of the program.

Our review has not identified any issues of concern related to the projects identified.

For this review, no specific adjustments are recommended to the expenditure incurred in the current regulatory period.

5.3 Proposed Capital Expenditure

5.3.1 Overview

As discussed previously, Aqwest's capital expenditure is significantly affected by individual major projects and Figure 5-2 and Figure 5-3 above clearly demonstrated this. Excluding the impact of major projects, which are separately assessed below, Aqwest's capital program is relatively small and relatively stable with expenditure remaining well within the bounds of previous actual expenditure.

5.3.2 Findings from review of sample of proposed capital expenditure projects

The following projects were selected as they clearly had the largest expenditure allowances in the next regulatory period compared to the average expenditure and to the other capital projects. Table 5-2 shows the projects selected for specific assessment and each of the projects is discussed in the points following the table.

Table 5-2 Sample of Proposed Expenditure for Review

Project	Title	Total Cost
3161	Mains replacement	$2,719,700
3659	Design/Construct Glen Iris WTP	$15,197,854
3021	Plant and Motor Vehicles	$1,644,804

Mains Replacement

Mains and valves account for approximately 60% of the total asset value and are important assets. A large majority of the assets were set an artificial installation date of 1 January 1960 to coincide with the installation of the Mainpac asset management system. This category covers all mains replacements including large and small reactive maintenance and preventative replacements.

Expenditure over the historical period was relatively stable to 2015/16, experienced a large spike in 2016/17 and is then projected to increase steadily for the remain of the next regulatory period and beyond.

This program of works was reviewed in detail for the current regulatory period and was part of the review process for the 2013 PwC review of operational performance and asset management. In both cases, the program was found to be robust and supported adequately within the asset management framework. While projected expenditure has increased since these reviews took place, the increases reflect changes in the asset age profiles which are requiring increasing levels of replacement to ensure service levels are met.

Design/Construct Glen Iris WTP

This project was previously assessed in submissions for the current regulatory period and was found to be sound particularly as it is a key part of Aqwest's strategy to move abstraction assets inland away from the seawater interface.

The project was initially scheduled for substantial completion in 2012/13 and 2013/14, but was deferred (to 2021/22 in the September 2016 mid year review) due to Treasury imposed debt level restrictions. A comprehensive Business Case was submitted to Treasury in mid November 2015 for consideration in the 2016/17 State Budget, however it was deferred to the 2017/18 Budget.

The project was then brought forward to 2017/18 and 2018/19 in the Strategic Asset Plan 2017/18 as part of pre-budget assessments, which is consistent with the schedule outlined in the Aqwest expenditure report.

The 2015/16 Aqwest Annual Report states that the full business case for the project was submitted to Treasury for consideration in the 2017/18 State Budget[2].

Project estimates for the Glen Iris WTP project were reviewed in 2012 and was found to be appropriate with an estimated capital cost of $6m at the time ($6.5m in $2017/18) with construction to occur over 2012/13 and 2013/14. At the time, it was noted that the detailed design of the project had just commenced and that the capital cost estimate may be too low. A number of aspects of the project were to be confirmed through the detailed design process including the treatment options required.

A revision to project estimates, likely in 2013/14, was noted in comments of the 2016/17 Strategic Asset Plan that had expenditure of $5.5m in 2017/18, $5.5m in 2018/19 and $0.5m in 2019/20, a total of $11.5m. The 2015/16 Statement of Corporate Intent (developed over December 2014 to July 2015) indicated that the total capital cost of the project was now estimated at $15m and this is consistent with the mid year review conducted in September 2016 and the current Ten Year Plan.

The increase in expenditure is significant – from $6.5m (2017/18) to $15m, which is a 130% increase over the original funding allowed in 2012. No specific details on the reasons for the increase were provided by Aqwest however it is noted that the Strategic Asset Plan for 2017-2018 highlights the importance of the project to the move to relocate water production infrastructure to more confined inland sources. The Strategic Asset Plan also highlights the strong support for the project from Treasury and the Minister for Water's Office.

We also noted during interviews that the project documents are being updated to account for recent, more detailed, investigations and more detailed estimates of expenditure although it is unclear whether the current estimate of $15m is likely to change as a result of these more detailed estimates.

The bring forward of expenditure has the effect of splitting the project across the current regulatory period and the next regulatory period. The expenditure in 2017/18 can be reviewed again in the annual process of reconciling actual 2017/18 expenditure and rolling this expenditure into the regulatory asset base. The expenditure proposed in 2018/19 can also be assessed again as part of the same process and can also be considered at the conclusion of the next regulatory period.

The appropriate processes are being followed in relation to this project to ensure that the expenditure for the project is efficient, particularly in the form of a major project business case submission to Treasury, and we note the strong support for the project from Treasury and the Minister for Water's Office. As a result, we are not proposing any expenditure adjustments to this project.

Plant and Motor Vehicles

This project is an ongoing program of asset replacements that is well supported by Aqwest's Corporate Manual M50 Fleet Management Manual (last updated in February 2015). The Manual provides specific details on:

- Roles and responsibilities, operational controls and training requirements
- Vehicle use, safe and compliance operation, emergency response processes, and maintenance requirements
- Vehicle selection and functional requirements analysis

All new vehicle requests must be tendered to the external market using a standard template Request for Proposal for Supply of Aqwest Operational Vehicle (last updated February 2016). This process is similar to other utilities, particularly Busselton Water, and is considered reasonable.

5.4 Capital Cost Escalation

Aqwest escalates capital expenditure figures included in the Ten Year Finance Plan / Strategic Asset Plan for ongoing programs in a varying manner over the different programs. The most common escalation used is a CPI like escalation of around 2.5%. Other programs, such as the mains replacement program, are

[2] Note that at the date of release of this report formal approval for the construction of the Glen Iris Water Treatment Plant has not been obtained

escalated by factors varying from 1.67 to 2.40, making it unclear whether the programs are simply escalated each year or developed from a long term model.

The exact figures used for each program are not clear as the expenditure values are hard-entered in the Plans rather than using a formula, and as such must be reverse engineered. The calculated figure of 2.5%, however, is similar to the long term capital expenditure CPI figure of 2.4% identified in the Strategic Asset Plan 2017-18 but different to the Capex CPI Budget and Capex CPI 10 Years figures defined in the 10 Year Plan which are both 1.75%.

5.5 Efficiency

We have found no evidence that specific efficiency adjustments have been made to capital projects assessed as part of this review process.

We have assessed Aqwest's processes for capital expenditure planning and delivery and in particular processes relating to:

- Investment planning
- The method of cost estimating
- The procurement processes.

We believe that there are clear opportunities for Aqwest to improve its practices and thereby gain efficiencies in future expenditure delivery. We recognise that Aqwest has a relatively small size capital works program to be managed. The size of the program and the fact that it will be dominated by a very small number of projects in one year mean that can be difficult to realise efficiencies due to process improvements which typically accrue incrementally across a large program of works.

Nevertheless, we feel there are some areas where Aqwest can improve processes and implement some tighter control over expenditure through the use of innovation and continuous improvement processes. We are therefore recommending that a relatively small continuing efficiency factor or 0.25% be set across each year of the proposed capital program for the next regulatory period. These factors are typical in the regulated water industry and our recommended figure of 0.25% is at the lower end of factors recommended, accounting for Aqwest's size and ability to achieve efficiency targets.

5.6 Recommendation

We have reviewed Aqwest's actual and proposed expenditure in the context of their strategic planning systems and procedures and we have reviewed a sample of capital projects and ongoing replacement programs. We found that Aqwest's systems and procedures are well developed with significant improvements made since the 2012 review associated with the current regulatory period and further improvements made on the basis of recommendations from the operating licence performance audits and asset management system review conducted in 2013.

Whilst we have some general concerns over the lack of documentation provided to support the actual and proposed expenditure, we note that discussions with staff and our review of higher level strategies and plans have given us no reason to recommend adjustments to individual projects or programs.

We have, however, recommended that a relatively small continuing efficiency target of 0.25% be set on each year of the capital proposed for the next regulatory period. This target is achievable for Aqwest as they continue to improve in the delivery of their services and implement innovate ideas and practices. The derivation of our recommended level of capital expenditure for Aqwest in the next regulatory period is shown in Table 5-3 below.

Table 5-3 Recommended efficient capital expenditure for Aqwest for 2018/19 to 2022/23

	Proposed Expenditure				
	2018/19	**2019/20**	**2020/21**	**2021/22**	**2022/23**
Capital expenditure forecast by Aqwest	11,754,967	4,136,100	3,575,367	6,696,900	2,377,367
Recommended efficiency adjustment (0.25%)	29,387	10,340	8,938	16,742	5,943
Recommended efficient level of capital expenditure	11,725,579	4,125,760	3,566,428	6,680,158	2,371,423

Note: Capital expenditure sourced from Ten Year Finance Plan (Sheet: Strategic Asset Plan).

6 Special Items

6.1 Asset Disposal

Aqwest disposes of lower value assets regularly through its plant and motor vehicles program with the annual value of the program averaging approximately $275,000. The disposal process is governed by a robust procedure M50 Fleet Management Manual, which outlines in some detail the processes for disposal, the reasons for, and the procedures for accounting for the asset value recovered from the disposal.

We have reviewed the disposal procedure and examples of the process, and find them to be well implemented. Vehicles identified for disposal are offered as trade-in vehicles to indirectly offset the cost of new vehicles. The full trade-in value is counted as capital revenue while the full vehicle cost is counted as expenditure.

We have no recommended variations or improvements to the procedure at this time. If Aqwest was to dispose of larger value assets, then it is recommended that the process of disposal be reviewed in detail at this time.

6.2 Depreciation Schedules & Criteria

Depreciation schedules are determined on the basis of asset lives for different classes of assets using a straight line depreciation approach. This approach is relatively consistent across the water industry.

Aqwest use a weighted average asset life for each class of asset to reflect that there may be a number of different individual assets that make up a whole asset under the classification. For example, the class reservoirs might include valves, pits, instrumentation – physical and electronic, pipes and minor treatment assets which as a whole are categorised as a reservoir. This approach is also quite common across the water industry as to determine and apply asset lives and depreciation schedules for smaller components of a larger asset is likely to be difficult and may not achieve the level of refinement of depreciation as befits the level of effort required to analyse the results.

The specific asset lives used for the categories (as outlined in the Aqwest expenditure report) have been reviewed at a high level and are not dissimilar to those used in other jurisdictions. The difficulties in comparing asset lives across water businesses include the availability of data on asset classes (date of construction, material type and quality, etc.), the combinations of individual assets used to make up classes (as in the reservoir description above), and the method by which the asset life is determined.