Halcrow Pacific Pty Ltd

April 2009

Report on the Efficiency of Capital and Operating Expenditure by Water Corporation, AQWEST and Busselton Water Board

Final Report - AQWEST

Prepared for the Economic Regulation Authority

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Report on the Efficiency of Capital and Operating Expenditure by Water Corporation, AQWEST and Busselton Water Board

Final Report

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Prepared by	Checked by	Authorised by
1	0	Preliminary Draft Report	28/11/08	AD/AR DS/DF	DF	DF
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Contents

Executive Summary

Overview

The Economic Regulation Authority (the Authority) has engaged Halcrow as an expert engineering consultant to provide a report to the Authority, which establishes the efficiency of capital and operating expenditure by the Water Corporation, AQWEST and Busselton Water Board. The review will cover both historical capital and operating expenditure since the 2005 pricing inquiry, and projected capital and operating expenditure.

Background

The Economic Regulation Authority (the Authority) was established on 1 January 2004 and is the independent economic regulator for monopoly aspects of the gas, electricity and rail industries and licenses providers of gas, electricity and water services in Western Australia.

A previous inquiry by the Authority in 2005 examined the water and wastewater pricing of the Water Corporation and the water pricing of the Bunbury and Busselton Water Boards. This review focussed on the development of the regulatory frameworks for the three service providers.

The Authority has received a Terms of Reference from the Western Australian Government to conduct an inquiry into the tariffs of the Water Corporation, AQWEST (Bunbury Water Board) and Busselton Water Board.

Our Approach

The focus of the Report has been a high-level review of the capital and operating planning and delivery processes of Water Corporation, AQWEST and Busselton Water to gain an understanding of the adequacy, and robustness of these processes. Provided that the capital and operational processes are appropriate and robust, we can gain assurance over the appropriateness of the proposed capital and operating expenditure forecasts of each water authority.

As part of this Report, we have also conducted a high-level review of the historical capital and operating expenditure of Water Corporation, AQWEST and Busselton Water and compared it to the projected expenditure of each authority at the time of the 2005 pricing inquiry conducted by the Authority. A review of the proposed capital and operating over the next five year period of each authority has also been conducted for the purposes of this report.

Our Methodology

The process undertaken for our review of Water Corporation, AQWEST and Busselton Water involved the following steps:

- Inception meeting with the Authority
- Detailed Interviews with the agencies
- Detailed analysis
- Submission of Preliminary Draft Report
- Additional analysis
- Submission of Draft Report
- Submission of Final Report

Our Findings

Overview

Our review of AQWEST's capital and operation processes, and historical and proposed expenditure, has resulted in the following recommendations.

Corporate / strategic planning

Given the relative size of AQWEST, we are satisfied with the level of corporate and strategic planning The fact that AQWEST have developed a SCI that is updated regularly even though it is not obligated to by statute demonstrates the willingness of the business to continuously improve and embrace new initiatives.

We identified, however, that there is no overall process flow chart available that demonstrates how the three main corporate strategy documents (SDP, SCI & Board Charter) link to the rest of the corporate planning and policy documents. We suggest that this would be an improvement to improve the clarity of the linkages between the various levels of strategies and objectives.

We believe that AQWEST have developed a sound basis for risk management. The process is structured, provides accountability to the Board through the Executive Team, contributes transparency and objectivity to decision making and provides an audit trail to demonstrate that the obligations for managing risk have been fulfilled.

Capital processes

We have seen that AQWEST's capital processes are governed by their Corporate / Strategic Planning Framework. Investment decision making relates to KRAs from the SDP. Budgets are consistent with the SCI and are then detailed further within the Ten Year Capital Works Plan, the corresponding Ten Year Finance Plan and the Budgets for each individual Financial Year.

We have seen that the budget allocation decision-making process, is informed through planning studies undertaken by external consultants in key areas such as the need move source pumping stations inland to prevent saline intrusion into the aquifer.

AQWEST's business cases appear to go into a reasonable level of detail but could be improved for larger projects. We note that project reviews are undertaken for larger value projects, which are reported and followed up through a post-implementation review process. This is good business practice that provides a level of assurance of continuous improvement and that lessons are learnt.

Operations processes

AQWEST's current operational planning is based around a set of asset management guidelines (including asset creation and acquisition) within the Asset Management Plan. We expect that the asset renewals and maintenance will see a greater amount of planned works as a proportion of the maintenance program over time.

The results of the new maintenance strategy due to start development in 2009 will provide AQWEST with a more targeted risk-based approach to maintenance planning, scheduling. We commend the initiative, and in this way an improved and more focussed delivery program mix of planned and reactive works will maintain or improve levels of service at least cost with greatest benefit (risk reduction).

We are satisfied with operating efficiency targets set by AQWEST. However, it appears that operational costs are increasing despite efficiency initiatives employed. We note that the cost per megalitre of water supplied has increased significantly in 2008 as a result of the lower volume supplied to customers due to water restrictions in place.

With an improved application of best practice risk-based asset management principles to asset maintenance coupled with the decommissioning of production assets affected by saline intrusion and the creation of new assets with the same function further inland, we believe that AQWEST will in future be in a position to improve their operations and maintenance cost performance (per property) particularly as growth in the Bunbury area continues over the next ten to fifteen years.

Rather than setting an operating efficiency target, we would encourage AQWEST to continue to seek out and identify potential opportunities for efficiencies where appropriate. This could include future maintenance contracts, material supply contracts, energy procurement arrangements and capital planning processes.

Historical and Proposed Expenditure

We note that AQWEST implemented a relatively large capital programme in 2007-08 to within 10 per cent of their annual budget.

AQWEST have a relatively new management team in place that has overseen many changes to the internal processes and management of the organisation. Some learning points that have come out of their experience in capital delivery include:

- Ensuring that large projects are commenced early in the financial year to ensure projects can be completed by year end
- More controlled management of Consultants who are engaged from interstate may be required, for example limitation of scope to ensure the focus on producing achievable outcomes within the given timeframe.
- An increase in engineering staff (currently four people) and implementation of retention strategies for technical roles may be required to progress the increase in capital works and to ensure timely project delivery.

Providing that the lessons learnt are implemented, we believe that AQWEST can succeed in delivering larger capital works programmes in future years.

We note that AQWEST intend to form an Engineering Services Alliance for an extended period up to five years with a local reputable Engineering firm to provide consistent delivery, local understanding and continuity of design and specification tasks. AQWEST have indicated that this will address the problem of having to consistently orientate and familiarise outsourced design teams (through an open tender system) with their business.

AQWEST's performance against the 2005 forecast operational expenditure was arguably poor; however their performance in meeting the budgeted annual operational expenditure over recent years has been much closer to their revised budget forecasts.

By applying condition and performance and risk-based methodologies to water mains renewals in future, in this way such asset management actions should help to stabilise water main and service pipe leaks in the medium term and hence reduce corresponding operations and maintenance expenditure in this area to more predictable levels.

1 Introduction

1.1 General

The Economic Regulation Authority (the Authority) was established on 1 January 2004 and is the independent economic regulator for Western Australia. The Authority regulates monopoly aspects of the gas, electricity and rail industries and licenses providers of gas, electricity and water services.

The Authority also inquires into matters referred to it by the Western Australian Government. These matters can relate to regulated and non-regulated industries in the areas of pricing, quality, business practices and compliance costs.

A previous inquiry by the Authority in 2005 examined the water and wastewater pricing of the Water Corporation and the water pricing of the Bunbury and Busselton Water Boards. It is our understanding that this review focussed more on the development of the regulatory frameworks for the three service providers rather than the quantum of the capital and operating expenditure proposed.

The Authority's functions are designed to maintain a competitive, efficient and fair commercial environment for the benefit of the Western Australian community, particularly where businesses operate as natural monopolies.

The Authority has received a Terms of Reference from the Western Australian Government to conduct an inquiry into the tariffs of the Water Corporation, AQWEST (Bunbury Water Board) and Busselton Water Board.

To assist in addressing matters raised in the Terms of Reference, the Authority has engaged Halcrow as an expert engineering consultant to provide a report to the Authority, which establishes the efficiency of capital and operating expenditure by the Water Corporation, AQWEST and Busselton Water Board. The review will cover both historical capital and operating expenditure since the 2005 pricing inquiry, and projected capital and operating expenditure.

1.2 Scope of Services

1.2.1 *Objective*

The objective of the Consultancy project is to:

- Provide a report to the Economic Regulation Authority on the efficiency of capital and operating expenditure by the Water Corporation, AQWEST and Busselton Water Board.

1.2.2 *Project Tasks*

For each service provider, Halcrow has been engaged to undertake the following tasks:

Capital expenditure

- Compare actual capital expenditure over the period since the 2005 pricing inquiry to the projected capital expenditure for that period, and
    - Investigate the reasons for any substantial differences between projected and actual expenditures, and
    - Identify any capital expenditure that was not appropriate.
- Examine the processes used by the utilities to approve capital expenditures and determine whether, and how, those processes can be improved to ensure efficiency in capital investments, and
- Identify any planned capital expenditure that is not appropriate.

Operating expenditure

- Compare actual operating expenditure over the period since the 2005 pricing inquiry to the projected operating expenditure for that period, and to investigate the reasons for any substantial differences between projected and actual expenditures, and
- Examine projected operating expenditure, cost drivers and processes, and determine the scope for efficiency gains in comparison to past performance and other service providers.

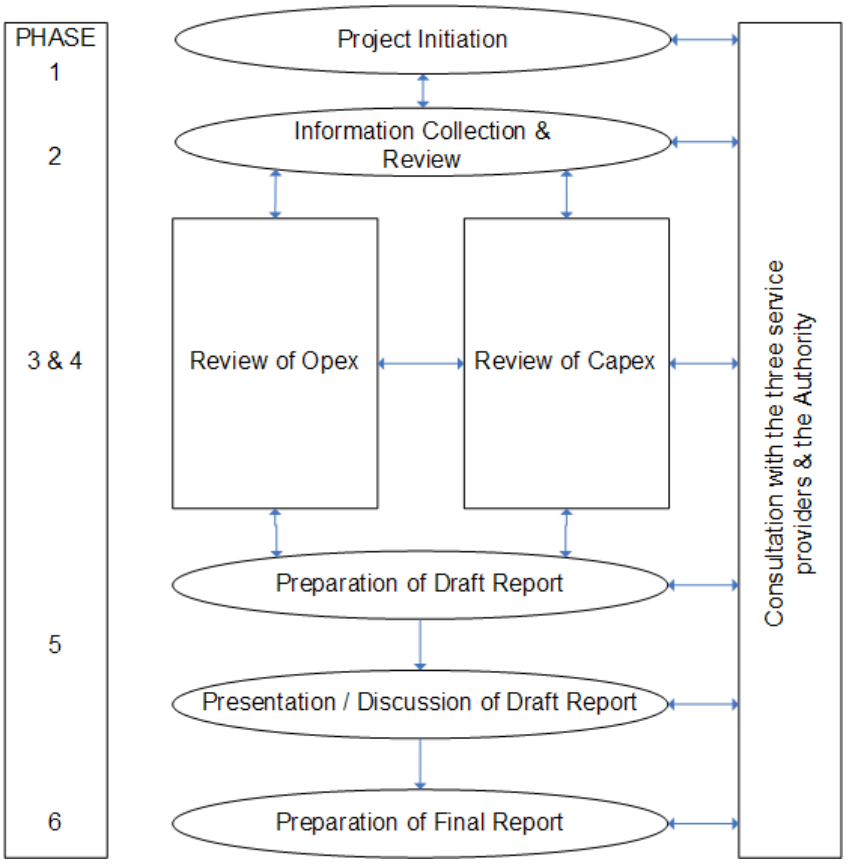
The Consultant shall provide a Final Report that comprehensively documents the findings of the review conducted, addressing the project tasks listed in above.

1.3 *Our Approach*

Our overall approach to the Review is summarised in the Figure 1.1 below. Our approach to the review will essentially involve six stages or phases.

The focus of the Review to date has been the capital planning and delivery processes of Water Corporation, AQWEST and Busselton Water. By reviewing the capital planning and delivery processes of an organisation, it is hoped we will gain a level of understanding of the adequacy, appropriateness, robustness and rigour of those processes. Should we, upon analysis and review, be confident with the level of adequacy, appropriateness, robustness and rigour of an organisation's capital processes, then we can also be reasonably confident in the appropriateness of any resulting capital and related operating expenditure.

Figure 1.1: Halcrow's approach to the Review



1.4 Review Process

The process undertaken for our review of Water Corporation, AQWEST and Busselton Water involved the following steps:

Inception meeting with the Authority

- Inception meeting with the Authority held on 29 October 2008.

Detailed Interviews with the agencies

- Interview with Water Corporation held on 6 and 7 November 2008.
- Interview with AQWEST held on 5 November 2008, and
- Interview with Busselton Water held on 5 November 2008.

Detailed analysis

- The detailed analysis on the efficiency of capital and operating expenditure by the Water Corporation, AQWEST and Busselton Water Board took place between 10 November 2008 and 21 November 2008.

Submission of Preliminary Draft Report

- A preliminary Draft Report was prepared between 24 November 2008 and 28 November 2008, as insufficient information was available to complete our analysis. This report was submitted to the Authority on Friday 28 November 2008.

Additional analysis

- We requested additional information from the agencies and undertook additional review to complete our analysis.

Submission of Draft Report

- We submitted our Draft Report on 24 December 2008 for comment from the Authority and the agencies.

Submission of Final Report

- We expect to submit our final report by mid January 2009.

1.5 Operational Frameworks

1.5.1 General

The water industry in Western Australia is dominated by the Water Corporation, as the largest utility in the state however a total of 29 water services licences are currently registered with the Economic Regulation Authority including:

- The Water Corporation – water supply, sewerage, irrigation and drainage supply
- AQWEST – Bunbury Water Board – water supply
- Busselton Water Board – water supply
- Hamersley Iron – sewerage and non-potable water supply
- Rottnest Island Authority – water supply, sewerage and drainage
- The Shire of Denmark – non-potable water
- 20 local government authorities – sewerage and non-potable water, and
- Gascoyne Water Cooperative, Harvey Water (SWIMCO), Ord Irrigation Cooperative and Preston Valley Irrigation Cooperative – irrigation and non-potable water.

1.5.2 *Overview of Framework*

The operation of the Bunbury Water Board was instituted in the *Water Board Act 1904* governing the operation of the company whereby its purpose is to supply drinking water only to customers in the Bunbury area. In 1996 the control of the Water Board was changed from the local government to an independent authority under the *Water Services Coordination Act 1995*. AQWEST was formed and it is one of two independent water supply authorities (including Busselton Water Board) operating in Western Australia. The Board of AQWEST is made up of members from the local community.

AQWEST delivers potable water to a population of approximately 32,000 people in Bunbury covering an area of approximately 101km^2 and is located 170km south of Perth. The water is currently supplied from the Yarragadee aquifer abstracted by 13 boreholes and treated by six water treatment plants for delivery through 357km of pipes, six pumping stations, four service reservoirs and one water tower to 15,522 service connections. The annual groundwater license allocation from the aquifer is 9.2GL.

In delivering quality potable water to its customers, AQWEST employs a total of 34 full time staff. The Authority operates under an Operating Licence and is self-funded with no additional revenue from Community Service Obligations (CSOs).

AQWEST accrues reserve funds from net revenue (water usage charges) and developer (headworks) contributions to fund capital works and operational and maintenance expenditure without needing to borrow funds. It is part of AQWEST's vision within the SDP that they will remain debt free and that all expenditure for asset expenditure and replacements is funded from reserve funds and not from debt. AQWEST pays an annual tax equivalent dividend to the Western Australian Government.

Upon recommendation to the Minister for Water from the Department of Treasury and Finance, water prices for AQWEST have been capped to the Consumer Price Index (CPI). This is despite AQWEST informing the Government of the decrease in revenues that they have experienced due to the recent implementation of water restrictions. AQWEST states that its customers have indicated that the price they pay for water is low and that the cost of water should in the future reflect its true value, that is, the value to the community, its scarcity and the environment.

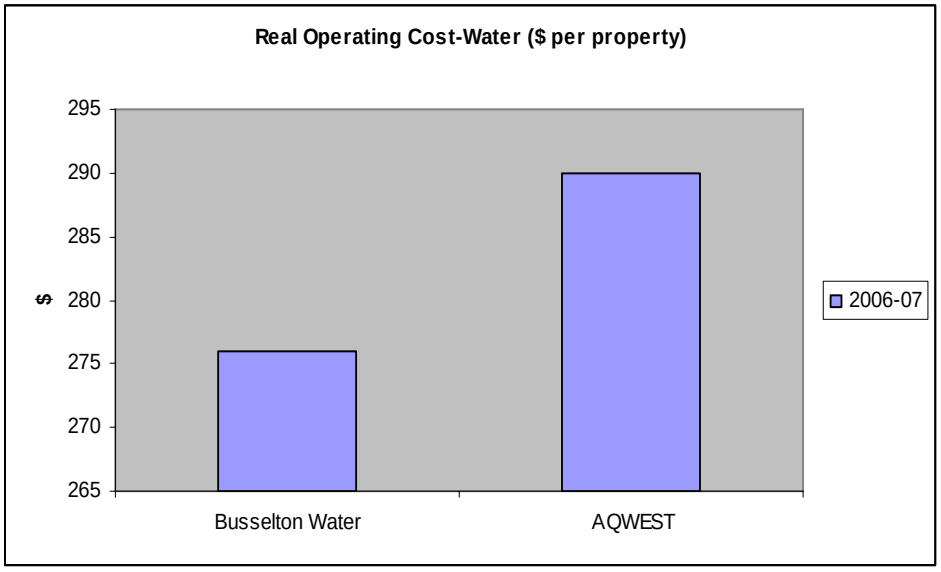
1.6 Benchmarking

As part of this review, we have attempted to gain a better understanding of the performance of Busselton Water and AQWEST against other comparable Australian water utilities by undertaking a high-level desktop review of the available performance data and benchmarking studies.

However, only limited conclusions may be drawn from these high level benchmarking studies. This is because both Busselton Water and AQWEST are unique water utilities. In the National Performance Report 2006-07 for urban water utilities conducted by the Water Services Association of Australia, Busselton Water and AQWEST were the only urban utilities identified as sole-service providers with a customer base of between 10,000 and 20,000 in Australia. As such, we do not believe it is appropriate to draw comparisons with AQWEST and Busselton Water against other small urban water utilities.

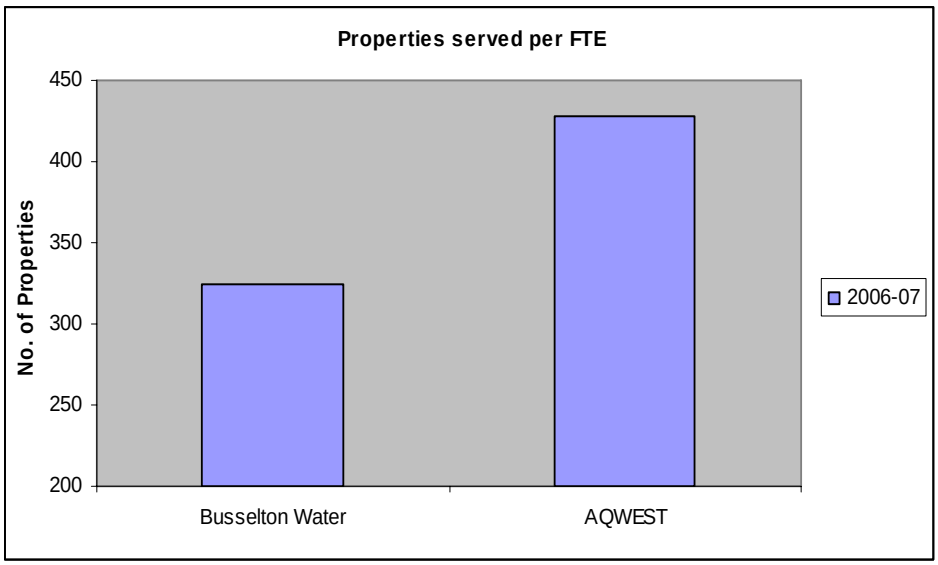
However, for this review we have briefly compared Busselton and AQWEST with each other to gain an understanding of each utility's relative performance.

Figure 1.2: Real operating cost – water ($/property)



As the above figure illustrates, AQWEST have a higher real operating cost per property than Busselton Water. While this is a snap shot of 2006-07 only, this suggests that there may be scope for some operating improvements on the part of AQWEST.

Figure 1.3: Properties served per full-time equivalent



The above figure compares the number of properties served per full-time equivalents (FTE) by each utility. This figure illustrates that AQWEST serve more properties per FTE than Busselton Water. This suggests that there may be scope for Busselton Water to improve operating efficiency by consolidating some full-time positions.

1.7 Issues Arising from Previous Reviews

1.7.1 ERA Pricing Review 2005

On 4 November 2005, the Authority published its Final Report: Inquiry on Urban Water and Wastewater Pricing in relation to Water Corporation, AQWEST and Busselton Water. The Authority, as part of this report, made 38 recommendations. While the majority of these recommendations related to the setting of water and wastewater prices, we have identified the following recommendations that relate to our report:

- Recommendation 1: Information systems be further developed including market intelligence to support the introduction of cost based systems to govern the revenue requirement of each water business for this and future periods
- Recommendation 5: A "building block" methodology should be applied to determine revenue requirements for each water business
- Recommendation 8: Cost forecasts used in the determination of revenue requirements for each service provider should incorporate efficiency gains reasonably envisaged to be achievable over the period of the forecast

- Recommendation 16: The Authority is satisfied that the Corporation is providing its services in accordance with standards and requirements imposed by the terms and conditions of its licence. The Authority does not consider that the Corporation requires additional financial resources – and hence higher prices and revenues – to meet these standards and requirements
- Recommendation 17: While the Corporation has assessed its customers' willingness to pay for improvements to unregulated services, the Authority considers that additional work using more reliable methods may be warranted.
- Recommendation 22: For the purpose of determining the revenue requirement of the Corporation, the Corporation's forecast of operating costs should be adjusted to reflect an efficiency gain in real operating costs per connection of 1.25 per cent per annum.

2 Corporate / Strategic Planning

2.1 General

This section provides an overview of the Corporate and Strategic Planning frameworks of the three service providers as they relate to the delivery of capital and operating expenditure.

An effective corporate/strategic framework enables an organisation's vision and mission to be reflected in its objectives. For the purpose of clarity, objectives set at this level are the results the organisation seeks, to maximise the expectations of stakeholders in the medium term.

Once objectives are in place, strategies to deliver these objectives can be developed. Strategies are the broad direction in which the organisation needs to move, in order to achieve its objectives. It is at this point that corporate planning typically ends and operational plans to deliver the strategies are developed. Hence strategies form the link between objectives and actionable plans.

It is this link between objectives and actionable plans that makes examination of the corporate planning process an important element in this review. For actionable plans to be 'effective', a clear link to objectives and strategies is essential. Without this link a plan may still deliver reasonable outcomes, however whether these outcomes are fully consistent with the agreed direction of the organisation is less clear.

There is no one 'correct' framework for corporate planning, but a framework should establish:

- Stakeholder expectations
- Clear linkages as each process breaks down to a greater level of detail
- Defined roles and responsibilities
- Review mechanisms

2.2 *Overview of the framework*

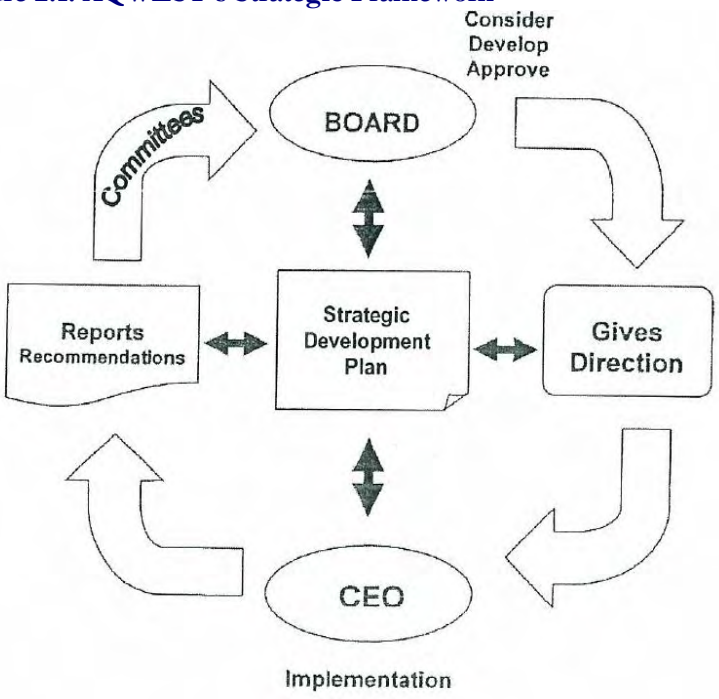
AQWEST have developed three main Corporate Strategy documents including:

- Statement of Corporate Intent (SCI)
- Strategic Development Plan (SDP), and
- Board Charter

The SDP, formerly called the Corporate Plan, outlines the Authority's aim, role and guiding values, and identifies the objectives it wishes to achieve through each of the eight Key Result Areas (KRAs). The SDP is developed with significant contributions from the SCI and the Ten Year Finance and Capital Works Plans, which in combination provide the basis for setting the Customer (Services) Charter.

Figure 2.1 shows the relationship between the SDP, the Board, various committees that report to the Board and the Chief Executive Officer (CEO) who is responsible for implementing the SDP objectives.

Figure 2.1: AQWEST's Strategic Framework



Source: AQWEST

The eight KRAs in the SDP are as follows: Sustainability, Water Quality, Customer Service, Community Engagement, Forward Planning, Human Resources, Independence and Regulatory Performance. Each KRA has an annual allocated budget.

AQWEST has no formal responsibilities under the current *Water Corporation Act 1995* to prepare a SCI or SDP. However, AQWEST has taken the proactive approach of preparing both a SCI and SDP that are consistent with the requirements of Section 50 of the *Water Corporation Act 1995*. Both documents are presented annually to the Minister for Water.

AQWEST has made the decision to prepare both documents in anticipation of this requirement becoming mandatory under a replacement Act for the *Water Corporation Act 1995*. In any case, we would expect that documents of this form should be present as a matter of course.

Supporting the SDP and SCI is the Board Charter, which details the relationship set out in Figure 2.1 above and outlines the governance requirements of the Board, the election of its members, its role and responsibilities and the role of the CEO and various committees.

Other important Corporate Planning and Policy documents that AQWEST uses to manage their business and implement their SDP and SCI objectives include:

- Ten Year Finance Plan
- Ten Year Capital Works Plan
- Annual Budget
- Policy Manual
- Customer Charter
- Asset Management Plan (supported by various manuals and policy docs)
- Risk Management Plan
- Business Continuity Plan

We note that there is no overall process flow chart available that demonstrates how the three main corporate strategy documents (SDP, SCI & Board Charter) link to the rest of the corporate planning and policy documents. We believe that such a chart would improve the clarity of the linkages between the corporate vision and how that translates through to the KRAs and the corresponding objectives. The further relationship/interaction with the Asset Management Plan and the Ten Year Capital Works & Finance Plans would also be beneficial to demonstrate the link between the strategy, related objectives and actionable plans.

2.3 Key business drivers

We note from the review that AQWEST believe in utilising sound and robust asset management principles and have been using these to influence their culture and to drive the operation and maintenance of their business over the past 10 years.

AQWEST's eight drivers can be thought of in terms those common to most water/wastewater companies which are outlined in Table 2.1 as follows.

Table 2.1: General Water Authority Drivers compared with AQWEST KRAs

Water Authority Driver	Definition	Related AQWEST Drivers (KRAs)
Renewals/replacements	Asset renewals or replacements based on condition and asset lives	Customer Service
Levels of Service	Efficiency, risk mitigation, regulatory and standards compliance	Water Quality, Regulatory Performance, Sustainability
Growth	New demand usually necessitating new assets	Forward Planning
Corporate	Drivers specific to Corporate goals	Human Resources, Independence & Community Engagement

Given the size of the business, we believe that the drivers chosen for AQWEST as outlined in their SDP and SCI seem appropriate and reasonable.

2.4 *Risk management approach*

AQWEST have developed a Risk Management Manual using the RiskCover Risk Management Guidelines (2007) and the AS/NZS 4360:2004 Risk Management Guidelines as a template, and customised it to suit AQWEST'S business activities.

AQWEST see the management of risk as an integral part of good management practice in that they need to be able to identify, measure (in terms of likelihood and consequence) and manage their risks in order to capitalise on opportunities and achieve their goals and objectives.

The Risk Management Manual has been designed to incorporate all relevant Risk Management compliance requirements for AQWEST, including documentation and templates in a single location. A controlled document process is in place enabling individual components of the manual to be amended as required to keep the content up to date. AQWEST have also instituted a Risk Register as outlined below, which they see as a key compliance requirement.

Appropriate references to inter-related documents such as Emergency Plans, Operations and Maintenance Manuals, and Asset Management Manuals are also included within the Risk Management Manual and such documents are intended to support the manual to ensure that all aspects of the AQWEST Risk Management Framework are understood.

AQWEST have developed a Risk Management Implementation Strategy covering their overall planning, reporting, decision-making and management practices. The Risk Management process is structured and provides accountability to the Board through the Executive Team with respect to the risks and their control measures associated with AQWEST's activities. The process in place contributes transparency and objectivity to decision making and provides an audit trail to demonstrate that the obligations for managing risk have been fulfilled.

The Risk Management Process comprises seven steps common to the Risk Management Standard but some of them have been customised to suit the environment, functions and activities of AQWEST:

i) Communicate and Consult,
ii) Establish the Context,
iii) Identify the Risk,
iv) Analyse the Risk,
v) Evaluate the Risk,
vi) Treat the Risk, and
vii) Monitor and Review

For a detailed discussion of AQWEST's risk management approach, risk identification and analysis processes and risk evaluation, please refer to Appendix A.

2.5 Key Findings

Given the relative size of AQWEST, we are satisfied with the level of corporate and strategic planning The fact that AQWEST have developed a SCI that is updated regularly even though it is not obligated to by statute demonstrates the willingness of the business to continuously improve and embrace new initiatives.

We identified, however, that there is no overall process flow chart available that demonstrates how the three main corporate strategy documents (SDP, SCI & Board Charter) link to the rest of the corporate planning and policy documents. We suggest that this would be an improvement to improve the clarity of the linkages between the various levels of strategies and objectives.

We believe that AQWEST have developed a sound basis for risk management. The process is structured, provides accountability to the Board through the Executive Team, contributes transparency and objectivity to decision making and provides an audit trail to demonstrate that the obligations for managing risk have been fulfilled.

3 Capital Processes

3.1 Overview

This section seeks to provide an overview and analysis of the capital planning and delivery processes of AQWEST. It will review the service provider's processes for adequacy, appropriateness, robustness and rigor.

If we can gain a level of understanding of the adequacy, appropriateness, robustness and rigour of its processes then we may gain assurance over the appropriateness of its resulting capital and related operating expenditure.

3.2 Capital Planning

3.2.1 *General*

The following section reviews the critical elements of AQWEST's capital planning processes, including capital planning studies & investigations, project options analysis, and project prioritisation.

Investment decision making is governed by the Key Result Areas (KRAs) from the Strategic Development Plan (SDP), which translate into the Budget Commitments, as outlined in the Statement of Corporate Intent (SCI), and detailed further within the Ten Year Capital Works Plan, the corresponding Ten Year Finance Plan and the Budgets for a given Financial Year.

To inform the budget allocation decision-making process, AQWEST have engaged external consultants to undertake planning studies in a number of key areas. Some examples of these studies include:

- *Groundwater Modelling* – investigation of the increasing risk of saline intrusion into the Yarragadee Aquifer, Bunbury's single most viable natural water source.
- *Network Modelling* – a risk assessment of the water pipe network was conducted to produce a systematic approach to asset planning for water mains renewals.
- *Water Quality Framework* – a review was conducted due to the change in the Australian Drinking Water Guidelines.
- *Drinking Water Quality Monitoring Programme Review* – following the Water Quality Framework review, a whole-of-system analysis review was conducted.

- *Mains Renewals Ten Year replacement plan (currently underway)* – a comprehensive second phase study of AQWEST's water mains assets has been undertaken.
- *Other studies* – a number of other studies have been undertaken by consultants in relation to planning and asset renewals, including:
  - Water Supply Planning and hydraulic analysis 2004-2007 (Feb 2007)
  - Update AQWEST Water Supply Network Model (Jan 2008
  - Valve Maintenance Strategy (Feb 2007)
  - Forest Avenue Mains Replacement Feasibility Study (Mar 2008)
  - Tech Reservoir Refurbishment Report (Jan 2007)
  - Corrosion Control Strategy (Mar 2007)

3.2.2 Capital prioritisation

As discussed previously in Section 1.5.2, AQWEST funds their capital works program from either Revenue or their Headworks, EDP (IT Upgrade), Mains Subdivision or Asset Replacement reserve funds.

Investment prioritisation is based on the timing of investment needs resulting from forward planning and feasibility studies for existing or new assets (renewals/refurbishment/growth/ security of supply) as outlined in the Ten Year Capital Works Plan. A staged approach to investment is adopted in line with their Asset Management Plan guidelines for asset creation, maintenance, renewal/refurbishment and disposal.

The decision to spend from the reserve is ultimately governed by the Board, however the Audit Committee receives quarterly progress reports on the financial position of the authority with respect to incoming revenue and outgoing expenditure comparing budget to actual spend.

3.2.3 Business cases

AQWEST use a Capital Project Form to justify projects. The form details information about the project including the budget proposed for inclusion in the Ten Year Capital Works Plan; a background introduction; details of benefits from project implementation; cost/benefit analysis (discounted cash flow NPV or IRR or pay back analysis) for high risk, large value projects; environmental / sustainability considerations; risk analysis and risk register information.

Further details on critical success factors, an implementation plan with milestones and tender details are included; project status and evaluation (design quality and contractor performance) are also provided along with an intended completion date.

3.3 Capital Delivery

AQWEST have four staff employed currently for project delivery out of a total of 34 staff.

3.3.1 *Procurement and delegation limits*

AQWEST have a relatively straight forward purchasing policy as follows:

- Three verbal quotes are required for purchases greater than $1000 but less than $5000. The benefit must be clearly identified where only one quote is obtained.
- For purchases of goods and services or contracts greater than $5,000, but less than $70,000, three written quotes must be obtained.
- Public tenders shall be invited for all goods and services in excess of $70,000 in accordance with the Tender procedure (corporate Policy 4.2), and may be invited for goods and services less than $70,000 where considered appropriate by the Chief Executive Officer.

The Chief Executive Office, Manager Water Services, or the Manager Finance and Administration can sign off on the value of Tender & Non-Tender Contracts for materials/services, equipment purchases, consumables and stores issues where they fall within budget limits that have been reviewed by the Audit Committee and other Workshop-based meetings have been approved by the Board.

We feel that this seems a reasonable compromise for such a small organisation, the decisions for which are scrutinised at the next weekly/fortnightly project meeting, or quarterly Audit Committee Review meeting and ultimately by the Board as appropriate.

Most works are procured under a standard contract arrangement for AQWEST. However, an Expression of Interest (EOI) process is nearing completion for the formation of an Engineering Services Alliance. This is designed to allow AQWEST to deliver capital works projects in a timelier and efficient manner by having design works completed up to 12 months ahead of the construction requirement.

AQWEST expects that this alliance initiative will deliver a [redacted] per cent efficiency saving (due to the local base, lower overheads, less contract administration, consultant availability for weekly/fortnightly project or strategy meetings) for design, investigations, surveys, feasibility studies and delivery resources. The driver for the initiative though was more focussed on retaining knowledge through building relationships and providing secondment opportunities for staff between both organisations.

This approach will compliment the existing relationships that AQWEST has with other consultants such as Hunter Water Corporation (Asset Management & Drinking Water Quality Management Plans); MWH (Network Modelling and Mains Renewals Risk Assessment Methodology and Planning) and other smaller consultants used for specialist expertise.

We support the Engineering Alliance Initiative as it is a sensible approach to take for small authority such as AQWEST by bundling similar types of work over a longer period of time to save both money and time, with the benefit that staff relationships can develop and information and knowledge transfer can be effective.

3.3.2 *Project Delivery*

AQWEST reported to us that their delivery performance has improved greatly recently with approximately 91 per cent of the capital programme being delivered last year (2007-08).

One of the more recent capital projects undertaken was the City Water Link Project. The project required design and delivery of an 8.5km 600mm diameter water main and a pumping station. Comprehensive route selection was undertaken within the design phase. At concept design stage, the budget was considered to be accurate within plus/minus 30 per cent and once the results of the detailed design study were available, the forecast cost for the budget could be projected with some certainty. The project was delivered by tender by way of a fixed design and then delivery. The project was close to budget (within 10%) upon completion and delivery timing was only delayed by 7 days.

The project design and delivery met the project objectives in line with the business drivers. The expenditure for the City Link project appears to be reasonable, utilising an efficient competitively tendered contract delivery process. The contractor implemented the City Link assets for AQWEST over a relatively short duration at an acceptable out-turn cost for such a high value and high risk project.

3.3.3 *Project reviews, Reporting and Post-Implementation Reviews*

AQWEST undertakes project reviews, reporting and post-implementation reviews by combining them with their Quarterly Audit Committee Budget Reviews which are reported to the Board accordingly. Annual reviews are undertaken in the last quarter of the financial year as part of the Budget Review cycle. Lessons learned from project delivery and implementation are identified through the weekly/fortnightly project meetings or through the Budget Review process. Lessons learned can be placed on action lists in either forum and passed on to the responsible Committee or Business unit through the CATS system or for direct action to the responsible Executive Team Manager.

Capital works progress and updates of status and expenditure to date compared with the budget are also an important consideration for the Audit Committee. The Manager Finance and Administration can approve up to a five per cent escalation in project costs before the Board must approve it. Notes from the Audit Committee are provided to the Board for their consideration at their next meeting. The fourth quarterly budget review in June of every year is a review of financial performance for the whole year with commentary provided against every line in the budget for the respective financial year.

Project benefits are monitored and reported in the quarterly project reviews and also in the Annual Report. An example provided by AQWEST is the off-peak power efficiency initiative which was made possible by the automation of the water treatment works. The target was a 65 per cent efficiency gain, which AQWEST is meeting, and in some instances 90 per cent efficiency is being achieved.

The Triple Bottom Line assessment of the City Water Link project is an example of how intangible benefits are considered with respect to achieving the overall desired level of service for the Authority within the options appraisal process for large projects such as this.

3.4 Key Findings

We have seen that AQWEST's capital processes are governed by their Corporate / Strategic Planning Framework. Investment decision making relates to KRAs from the SDP. Budgets are consistent with the SCI and are then detailed further within the Ten Year Capital Works Plan, the corresponding Ten Year Finance Plan and the Budgets for each individual Financial Year.

We have seen that the budget allocation decision-making process, is informed through planning studies undertaken by external consultants in key areas such as the need move source pumping stations inland to prevent saline intrusion into the aquifer.

Given the size of AQWEST, we would not expect the level of sophistication in their capital investment prioritisation as Water Corporation. However, the further refinement, development and improved application of Risk Management principles should provide a way of deciding between investment options to provide the greatest level of risk reduction at least cost.

We are satisfied with the Engineering Alliance Initiative AQWEST is currently pursuing. It is a sensible approach to bundle similar types of work over a longer period of time to facilitate potential efficiencies.

We note the delivery of the fixed design and delivery contract for the City Water Link project to within 10% of the budget and with a delay of only 7 days.

AQWEST's business cases appear to go into a reasonable level of detail but could be improved for larger projects. We note that project reviews are undertaken for larger value projects, which are reported and followed up through a post-implementation review process. This is good business practice that provides a level of assurance of continuous improvement and that lessons are learnt.

4 Operations Processes

4.1 Overview

This section seeks to provide an overview of operations and maintenance planning of AQWEST. It includes a review of the service provider's operation planning and delivery processes and cost drivers, and discusses the scope for operating efficiency gains.

If we can gain a level of understanding of the adequacy, appropriateness, robustness and rigour of its processes then we may gain assurance over the appropriateness of its resulting operating expenditure.

4.2 Operational Planning

4.2.1 *Overview*

AQWEST base their operational planning on a combination of asset utilisation and a mix of preventative and reactive maintenance in view of the operational expenditure in the previous year, the historical average and accounting for any operational changes in future. For example, power usage is determined by an historical analysis of the utilisation of source pumping, water treatment, transfer and distribution assets with a focus on any new efficiency initiatives implemented such as the WTW automation project. Future demand forecasts in the context of the current water restrictions are also accounted for in the forward projected operational expenditure profile.

Budgets are set and forecast within the annual Ten Year Financial Plan and reviewed by the Management Team and the Audit Committee on behalf of the Board that ultimately approves the budgets. Once approved, the CEO, Manager of Finance and Administration and the General Manager of Water Services can sign off on expenditure to the budget allocations and specific project/activity areas as planned. Material variances that are greater than 5 per cent must be approved by the Board.

According to AQWEST's Asset management Plan, four main Asset Maintenance strategies involving planned and reactive maintenance approaches are employed, including:

- Condition based maintenance
- Interval based maintenance
- Run to failure (RTF)

- Redesign and modify

The strategies employed are designed to achieve AQWEST's Business Objectives, namely:

- Aim - to achieve on-going success in the water industry based on service excellence and compliance to statutory requirements.
- Role - provide sustainable, high quality water services at minimum long term costs.

According to AQWEST's Asset Management Plan, any asset that requires maintenance or refurbishment should be considered being replaced if the maintenance costs are 60 per cent or greater than the asset replacement cost. The decision to replace is based on minimising the overall whole-life cost of the asset without compromising asset performance. Non-asset based solutions should also be considered at the time.

The maintenance approach also considers multiple failure scenarios involving single or groups of assets that may require a modified preventative maintenance plan to be implemented. The Geographic Information System (GIS) supports the spatial clustering analysis and relates the asset data to a number of geographical locations. Alternatively, refurbishment or replacement may be required, whichever provides the greatest risk mitigation and benefit at the lowest whole life cost.

The life cycle of an asset can be tracked from installation, through operational lifetime to disposal through the MAINPAC Maintenance Management System. MAINPAC provides a comprehensive register of assets down to component level; it also manages work order scheduling, and holds data on maintenance history and can report all such information. The core feature of MAINPAC is that it can plan maintenance through a module that enables AQWEST to schedule preventive maintenance ahead of time or, alternately, enter reactive work once the job has been done.

We can see from the Water Treatment Plant – Operations and Maintenance Manual that AQWEST have the telemetry and monitoring systems in place to understand their current and historical asset performance both with respect to above and below-ground assets in terms of production (output, run times etc), and flow in particular. A number of maintenance and operational tasks are undertaken at the water treatment plants which are essential for the continued operation of the plants so that AQWEST can meet its business objectives. The Operating and Maintenance Manual details the routine general tasks and how to undertake them, including other relevant information to ensure the correct frequency of the activity, a contextual understanding and quality control. A similar operating and maintenance document exists for the reticulation system.

Compliance with service standards is also an important element within the reporting function for AQWEST according to the performance indicators set out in the Corporate Plan which relate to the conditions of the Operating Licence, Groundwater Licence and the health objectives of the Drinking Water Guidelines.

In future, the forward planning capability will be enhanced through the development of a maintenance strategy, for which the tender specification is now complete and the project is due to start in 2009. We expect that this project will provide AQWEST with an approach to better maintenance planning, scheduling and targeting of delivery that will maintain or improve levels of service at least cost.

4.2.2 *Operating KPIs*

AQWEST sets internal efficiency KPIs which are reported in the Annual Report. While they are largely historical in nature, they do encourage a culture of continuous business improvement, however it appears that operational costs are increasing despite efficiency initiatives employed. We note that the cost per megalitre (ML) of water supplied has increased significantly in 2008 as a result of the lower volume supplied to customers due to water restrictions in place. The table below details the measures and results from 2004 to 2008 below:

Table 4.1: Efficiency targets and recent performance 2004 to 2008

Efficiency Category	Target	2008	2007	2006	2005	2004
Unaccounted for Water (UFW)[1]	< 10%	12.1%	10.8%	10.5%	10.5%	13.6%
Energy Consumption (kWh/kl)	<0.45	0.48	0.48	0.45	0.38	0.45
Off peak Power Usage	>65%	70%	68%	65%	66%	69%
Operating cost per property[2]	<4% increase	$499.84 [10%]	$454.42 [10%]	$411.97 [1%]	$407.59 [12%]	$363.14
Operating cost per ML[2]	<6% increase	$1234.22 [24%]	$999.30 [9%]	$917.34 [5%]	$876.85 [14%]	$770.17

Source: AQWEST

[1] Industry Best Practice target

[2] Target based on historical cost data

AQWEST have implemented a number of initiatives to drive efficiency within their business. One major contributor to operational savings is the Water Treatment Plant Automation project which enables the treatment plants to be run remotely, providing the opportunity to optimise energy costs during the off-peak power tariff period between 10pm and 8am. Automation of backwashes which previously required operations staff to attend site is one example where energy costs can be minimised by changing energy intensive plant operations to the cheaper off-peak period. AQWEST have managed to utilise off-peak energy up to 70 per cent of their energy requirements in 2008.

Coupled with the treatment plant automation project was the drive to improve operational efficiency by first operating the most efficient production assets to supply water demand. While such an approach has been slow to be taken up by operation staff, the benefits will be realised as operational practices adapt to the new way of operating.

Approximately two years prior to 2004, unaccounted for water (UFW) was running at approximately 17 per cent. AQWEST drove this result down to 13.6 per cent in two years (2004), resulting in an equivalent $14,000 saving in lost revenue. The work was undertaken through using a contractor on a rolling leak detection programme, which is still continuing on a 3 year contract. Initially, the network required a survey and some network analysis which cost approximately $150,000 up front, while leak detection has since cost $26,000 per annum to maintain the programme.

In the past, AQWEST have commissioned a number of energy management reviews with consultants in line with the two main SCADA automation projects in 1999 and 2007. Looking to the future, AQWEST have issued a tender for a Solar Power Feasibility Investigation, for which design tenders have been received.

4.3 Operational Delivery

While AQWEST have a small team of 34 staff in total, the operation of their assets is generally delivered in-house. Planned maintenance such as water main renewals and the rolling meter replacement programme are delivered by an in-house team. It is expected that future planned renewals based on the new renewals risk based methodology will most likely be outsourced for a five year period providing that the scale and frequency of the work satisfies that form of delivery. Electrical planed preventative maintenance is conducted under contract with a company called Jandco Electrics. Large single asset renewals such as a process unit at a treatment works are generally contracted out in accordance with finance policy guidelines.

Reactive maintenance is generally managed by relationships with contractors who undertake the work and project manage it in consultation with relevant AQWEST operations staff.

4.4 Operational Efficiency

Given the size and scope of AQWEST, we believe that setting a defined operating efficiency target for AQWEST is not appropriate due to the limited opportunities for economies of scale. While an efficiency target could be imposed, given AQWEST's proposed operating budget over the next five year period (see Section 5.3), an efficiency target of one per cent (for example) will result in saving of between approximately $70,000 and $78,000 per annum. Developing, implementing and monitoring efficiency targets can often be resource intensive, particularly for small organisations, as such the net benefit of imposing an efficiency target on a small water utility such as AQWEST is likely to be negligible.

Rather than setting an operating efficiency target, we would encourage AQWEST to continue to seek out and identify potential opportunities for efficiencies where appropriate. This could include future maintenance contracts, material supply contracts, energy procurement arrangements and capital planning processes.

4.5 Key Findings

AQWEST's current operational planning is based around a set of asset management guidelines (including asset creation and acquisition) within the Asset Management Plan. We expect that the asset renewals and maintenance will see a greater amount of planned works as a proportion of the maintenance program over time.

The results of the new maintenance strategy due to start development in 2009 will provide AQWEST with a more targeted risk-based approach to maintenance planning, scheduling. We commend the initiative, and in this way an improved and more focussed delivery program mix of planned and reactive works will maintain or improve levels of service at least cost with greatest benefit (risk reduction).

We believe that AQWEST has a good Maintenance management system in place and the data and telemetry systems in place to monitor system performance. We expect that the investment in such systems will also provide the necessary historical data to predict the timing and extent of future asset renewals and growth related capital expenditure.

In terms of delivery, we expect that AQWEST will continue to deliver more specialist tasks, reactive and large renewals works through contractors, but that they will continue to provide in-house maintenance capability where such skills are deemed to be critical to the business.

We are satisfied with operating efficiency targets set by AQWEST. However, it appears that operational costs are increasing despite efficiency initiatives employed. We note that the cost per megalitre of water supplied has increased significantly in 2008 as a result of the lower volume supplied to customers due to water restrictions in place.

With an improved application of best practice risk-based asset management principles to asset maintenance coupled with the decommissioning of production assets affected by saline intrusion and the creation of new assets with the same function further inland, we believe that AQWEST will in future be in a position to improve their operations and maintenance cost performance (per property) particularly as growth in the Bunbury area continues over the next ten to fifteen years.

Rather than setting an operating efficiency target, we would encourage AQWEST to continue to seek out and identify potential opportunities for efficiencies where appropriate. This could include future maintenance contracts, material supply contracts, energy procurement arrangements and capital planning processes.

5 Historical and Proposed Expenditure

5.1 Overview

The following section provides a review of the historical and proposed expenditure of AQWEST, and investigates the reasons for any substantial differences between forecast and actual expenditure.

5.2 Capital Projects

5.2.1 *Overview*

We have reviewed the proposed expenditure within the Ten Year Financial Plan from 2008 to 2017 which details the values of annual income (increases by CPI), interest (assumed interest rate of 7.5 per cent), planned expenditure, tax transfers on both interest income and developer contributions.

AQWEST delivered a relatively large capital program in 2007-08 to within 10 per cent of their annual budget. This achievement is to be commended, although we note that the large expenditure profile in 2008 was not forecast in 2005 due to new study information becoming available since then. Groundwater modelling of saline intrusion into the coastal boreholes and security of supply in the context of prevailing drought conditions and future impacts from climate change has meant that source protection is required through moving abstraction points inland. Hence the City Water Link Project was required to be built to facilitate this major shift in water supply operations that will impact further in future years (Section 5.2.2).

5.2.2 *Historical expenditure*

Table 5.1 (below) outlines the forecast (budgeted) and actual capital works program of each year over the past three years, and highlights the relative size of AQWEST's capital works program.

As Table 5.1 illustrates, AQWEST has a relatively low annual capital works budget when compared to the likes of Water Corporation. Table 5.1 also clearly illustrates that AQWEST's performance against meeting both the 2005 forecast expenditure and the budgeted expenditure over recent years could be seen as being poor. In 2005-06, actual expenditure was 27.5 per cent below both the forecasts expected in 2005 and the annual budget. In 2006-07 actual expenditure was below the 2005 and budgeted forecasts by 30.2 per cent and 55.1 per cent respectively. In 2007-08 actual expenditure exceeded the 2005 projection by 592 per cent, yet was below the budgeted forecast by 8.7 per cent.

Table 5.1: Forecast and Actual Capital works program for AQWEST ($'000s)

	2005-06	2006-07	2007-08
AQWEST's proposed capex (2005 Pricing Inquiry)	4,686	5,447	1,810
Annual Capital Budget	4,686	8,468	13,729
Actual Capital Expenditure	3,399	3,803	12,532
Variance - Actual to 2005 Forecast (%)	-27.5	-30.2	+592
Variance - Actual to Annual Budget (%)	-27.5	-55.1	-8.7

Source: Economic Regulation Authority, AQWEST

The reasons for the differences in the forecast and the actual expenditure amounts may be explained by AQWEST's Annual Budget Reviews that provide the annual actual expenditure figures.

In 2005-06, reasons for the underspent in capital expenditure were mainly due to changes in the direction of the organisation and a better understanding of the Board's needs being developed by the Executive Team. However, some capital project out-turn costs also out-performed their budgets.

There was also a deferral of capital projects from 2005-06 into the 2006-07 financial year due to completion dates running over into the next year. The three main reasons for this were: high engineering staff turn-over during that time; some projects not starting early enough to be completed before financial year end; and scaling back of the mains replacement program due to lack of internal resources.

In 2006-07, AQWEST found through their budget review of the 2006-07 financial year that they had reasonable success with the implementation of their Capital Works Program. Several large key projects were completed, however a number failed to be progressed adequately. AQWEST attributed the lack of progression of projects in general either due to delayed commencement or poor performance (project delivery) by consultants.

Excluding the Purchase of City of Bunbury Land, IT Equipment, Furniture and Equipment, Plant Purchases and Tools (given that they are largely administrative tasks) the total expenditure achieved to the budget (at the time of the Audit review) was 70 per cent. AQWEST felt that this was an excellent result given the staff turnover during the year and the relative inexperience of new staff responsible for managing the Capital Program.

In 2007-08, although the Capital Works program for 2007-2008 was upwards of 90 per cent overspent when compared with the 2005 capital expenditure forecast, the actual capital spend to the annual budget was within 10 per cent of the annual forecast budget.

City Water Link Project

Capital expenditure was dominated by the City Water Link Project, which is required due to the need to cater for growth (hydraulic capability) of the city within the north-western zone supplied by treated water from the Yarragadee aquifer. In the context of climate change and the diminishing flow into Perth's dams experienced by Water Corporation, a consultant study of the Yarragadee aquifer, its operations and future sustainability was completed. The report indicated that AQWEST needed to review its pumping operations along the coastal regions of the Yarragadee aquifer to reduce the likelihood of saline intrusion in to existing coastal bores. The project design involved a large-diameter water main to transfer water by pumping from the inland storage [Tech] reservoir ([redacted] ML capacity) and transporting large volumes along the coast to fill the Hastie, Mangles and Roberts service reservoirs.

The City Waterlink initiative has achieved the following benefits for AQWEST:

- Reduced the need for AQWEST to produce water from its coastal bores and treatment plants, providing environmental benefits for the Yarragadee aquifer, and
- Made provision for future high-volume demand from development in Bunbury in an efficient and sustainable manner.

Importantly, construction of the 8.4km City Water Link MDPE pipeline (560mm/600mm diameter) was almost within the budget of $4.1 million whereby the out-turn cost exceeded the budgeted amount by $520,000 due to various latent conditions mostly related to road reinstatement and dewatering. Encouragingly, the pump station construction was budgeted at $2.38 million and was completed slightly under budget by $41,000. Further variances in the final out-turn cost may occur in the order of up to approximately $180,000 due to further variation claims to be negotiated.

Another expenditure item that resulted in a divergence from the 2005 proposed expenditure estimates in the 2007-08 financial year was the strategic purchase of land totalling $3.7 million.

5.2.3 *Proposed expenditure*

AQWEST has outlined its expected capital expenditure program in the 2008-09 Strategic Development Plan. Overall, capital expenditure is expected to gradually fall over the next five years from $6.21 million in 2008-09 to $2.65 million in 2012-13. The following table outlines the expected capital expenditure by AQWEST for the period of 2008-09 to 2012-13.

Table 5.2: Capital Expenditure – 2008-09 to 2012-13 ($'000s nominal)

Description	2008-09	2009-10	2010-11	2011-12	2012-13
Water Treatment Plants	1,951.4	2,007.1	436.3	1,320.7	659.2
Bores & Pumps	162	-	50	500	-
Reservoirs	1,820	450	250	-	-
Mains	1,454.2	1,032.3	1,893.2	314.2	321.8
Meters	216.6	181.6	181.1	109.2	100
Office Equipment	55.3	56.6	58	59.4	60.9
Land	-	-	-	-	1,400
Building	120	30	30	-	-
Business Development	240	60	-	-	-
Motor Vehicles	119	230	97.8	239.2	101.8
Tools	5.5	5.7	5.9	6.1	6.4
Expense	70	50	-	-	-
Proposed Capital Investment Program[3]	6,213.9	4,103.3	3,002.3	2,548.8	2,650

Source: AQWEST SDP 2008-09 to 2017-18

After 2009, the balance of reserve funds steadily increases from $4 million to over $7 million in 2013, including a $1 million upgrade to the obsolete SCADA system and a greater than threefold increase in mains replacement for two years in 2010 to 2011. After 2013 the next large capital investment of $12 million is required over the years 2014 to 2015 for the new water treatment plant (land to be purchased in 2013 for $1.4 million) which will be needed for the new aquifer water resource abstraction to be located further inland to mitigate the saline intrusion problem affecting the existing coastal boreholes. It is forecast at this point that the balance of reserve funds will be below $2 million, but the projection after this to 2018 shows that the reserve balance will steadily recover again over 3 years up to a balance of $12 million by 2018.

[3] Discrepancies between totals and sums of components are due to rounding. Totals are based on the underlying unrounded amounts.

We suggest that as AQWEST improve their data on these water mains assets and the results of their analysis of condition and performance become more certain, we would expect that the authority would be in a position to defer and manage the spread of renewals on a risk basis over this next ten year period in particular to more appropriately distribute the necessary expenditure over time.

5.3 Operational Projects – AQWEST

5.3.1 *Overview*

The following section reviews AQWEST's historical operating expenditure since the 2005 pricing inquiry conducted by the Authority, and AQWEST's expected operating expenditure over the next five year period from 2008-09 to 2012-13.

5.3.2 *Historical expenditure*

Table 5.3 (below) outlines the forecast (budgeted) and actual operations and maintenance expenditure each year over the past four years, and highlights the relative size of AQWEST's operational program.

Table 5.3 clearly illustrates that AQWEST's performance against meeting the 2005 forecast operational expenditure could be seen as poor but the performance in meeting the budgeted annual operational expenditure over recent years has been very good.

Table 5.3: Forecast and Actual Operational Expenditure for AQWEST ($'000s)

	2005-06	2006-07	2007-08
AQWEST's proposed opex (2005 Pricing Inquiry)	4,057	4,135	4,306
Annual Operating Budget	5,826	6,269	6,723
Actual	5,350	6,078	6,744
Variance - Actual to 2005 Forecast (%)	31.8	47.0	56.6
Variance - Actual to Annual Budget (%)	-8.2	-3.0	0.3

Source: Economic Regulation Authority, AQWEST

In 2005-06 actual expenditure was above the 2005 forecast by 31.8 per cent but approximately 8.2 per cent below the revised annual budget value for the year. In 2006-07 and 2007-08 actual expenditure exceeded the 2005 forecast by 47 per cent and 56.6 per cent respectively. However, actual expenditure was only 3.1 per cent below and 0.3 per cent above the budgeted annual operational expenditure in 2006-07 and 2007-08 respectively.

AQWEST view the 2007-2008 financial year as being one in which many significant changes occurred and that the year was extraordinary in terms of the Operations and Maintenance budgets expended. However, despite the many notable achievements in the year, AQWEST believe that there were areas of budgeting and expenditure performance that were less than satisfactory.

The performance result of operational expenditure to budget was partly due to the demand driven nature of operations and maintenance budgets and rising costs, however the Management team feel that there must improvements made in time and cost allocation in these areas in future.

The disappointing result for meter replacement and the metering of fire services was attributed to staffing instability within the water distribution team. Consequently, the program of work has been reviewed and will be carried out by contractor engagement in the 2008-09 financial year.

Operations and maintenance budgets in the 2007-08 financial year finished with higher than expected levels of expenditure, however the major cause of the overall minor budget over-run was for the most part due to increase in new service and service maintenance activities costing an additional $128,000 and $126,000 respectively.

The considerable focus on improving the revenue and expenditure balance for new servicing activities during 2007-08 resulted in additional charges being levied in 2008-2009 to improve the cost recovery in this area.

Service pipe maintenance is regarded as demand driven, however the cost increase in this area, while of concern to management, showed some correlation with the increase in the number of service failures and could be marginally attributed to a rise in materials and wages costs. It was deemed that the under-spending of the mains renewals budget may have in part contributed to exacerbating the problem.

Analysis by AQWEST of the overall budget versus expenditure for operations and maintenance over the past five years indicates that rising maintenance costs have not been adequately reflected in budget allocations in recent years. However, electricity costs have been almost to budget over the past four years and annual budgets have decreased to reflect the greater efficiency achieved through the implementation of the water treatment plant automation project that has sought to optimise the use of off-peak power tariffs. Power costs are more easily predicted though, being linked to water supply ad treatment volumes.

5.3.3 *Proposed expenditure*

As the following table illustrates, AQWEST's projected operating expenditure is expected to grow steadily over the next five years from 2008-09 to 2012-13, from $7.127 million to $7.806 million. This represents a projected increase of 9.5 per cent over the five year period.

Table 5.4: Operating Expenditure – 2008-09 to 2012-13 ($'000s nominal)

Description	2008-09	2009-10	2010-11	2011-12	2012-13
Salaries, Wages, Overheads & Maintenance	1,634.1	1,869.0	1,840.3	1,914.3	1,991.5
Other Expenses	109.2	54.2	106.5	58.8	61.3
Electricity	300.5	312.5	325	338	351.6
Bad debts	2.1	2.2	2.3	2.4	2.5
IT Maintenance & software	414.3	284.3	292.8	301.6	233.7
Depreciation	2,139.5	2,331.6	2,458.3	2,513.1	2,576.5
Insurance	237.5	22.1	161.9	168.7	175.6
Legal expenses	30	30	30	30	30
Salaries and wages	1,171.1	1,229.7	1,291.2	1,355.7	1,423.5
Superannuation	122.5	128.7	135.1	141.8	148.8
All other expenses	966.3	876.9	746.3	777.9	810.7
Proposed Operating Budget[4]	7,127.0	7,141.3	7,389.7	7,602.4	7,805.7

Source: AQWEST SDP 2008-09 to 2017-18

As Table 5.4 above outlines, the major sources for the increase in operating expenditure over the five year period appear to be salaries, wages, overheards and materials, depreciation and salaries and wages. It is not clear why AQWEST have included two 'salaries and wages' in their operating expenditure forecasts, or what the difference in these two items is.

As mentioned in Section 5, we suggest that as AQWEST's data on water mains assets and the results of condition and performance analysis provides greater certainty in predictions, we would expect that the renewals expenditure would be managed on a risk basis over time. Such application of asset management principles should help to stabilise water main and service pipe leaks in the medium term and hence reduce corresponding operations and maintenance expenditure in this area to more predictable levels.

[4] Discrepancies between totals and sums of components are due to rounding. Totals are based on the underlying unrounded amounts.

5.4 Key Findings

We note that AQWEST implemented a relatively large capital programme in 2007-08 to within 10 per cent of their annual budget.

AQWEST have a relatively new management team in place that has overseen many changes to the internal processes and management of the organisation. Some learning points that have come out of their experience in capital delivery include:

- Ensuring that large projects are commenced early in the financial year to ensure projects can be completed by year end
- More controlled management of Consultants who are engaged from interstate may be required, for example limitation of scope to ensure the focus on producing achievable outcomes within the given timeframe.
- An increase in engineering staff (currently four people) and implementation of retention strategies for technical roles may be required to progress the increase in capital works and to ensure timely project delivery.

Providing that the lessons learnt are implemented, we believe that AQWEST can succeed in delivering larger capital works programmes in future years.

We note that AQWEST intend to form an Engineering Services Alliance for an extended period up to five years with a local reputable Engineering firm to provide consistent delivery, local understanding and continuity of design and specification tasks. AQWEST have indicated that this will address the problem of having to consistently orientate and familiarise outsourced design teams (through an open tender system) with their business.

Given the level of reserves projected by 2018 and beyond, it is possible that AQWEST will be able to fund such expenditure in this way. However, this assumes that no significant proportion of the renewals forecast for 2018 are required earlier than that and no other pumping stations, trunk mains or water treatment works process units (which aren't included in the renewals forecast) require major upgrades around this time. Given the significant amount of works completed (City Water Link Main) as well as those planned to abstract water further inland and decommission existing bores, it seems unlikely that there will be any surprises for renewals of these assets over the next ten years.

AQWEST's performance against the 2005 forecast operational expenditure was arguably poor, however their performance in meeting the budgeted annual operational expenditure over recent years has been much closer to their revised budget forecasts.

We note that AQWEST view the 2007-2008 financial year as being one in which there were areas of budgeting and expenditure performance that were less than satisfactory, due in part to the demand driven nature of operations and maintenance budgets and rising costs. The Management team feel that there must be improvements made in time and cost allocation in the areas of meter replacement, new services and service maintenance activities in future.

A positive efficiency to note is that annual budgets for electricity costs have decreased to reflect the greater efficiency achieved over recent years through the implementation of the water treatment plant automation project that has sought to optimise the use of off-peak power tariffs.

By applying condition and performance and risk-based methodologies to water mains renewals in future, in this way such asset management actions should help to stabilise water main and service pipe leaks in the medium term and hence reduce corresponding operations and maintenance expenditure in this area to more predictable levels.

6 Summary Findings / Recommendations

6.1 Overview

This section provides a summary of our key findings in each of the areas covered by the review for AQWEST.

6.2 Corporate / Strategic Planning

Given the relative size of AQWEST, we are satisfied with the level of corporate and strategic planning The fact that AQWEST have developed a SCI that is updated regularly even though it is not obligated to by statute demonstrates the willingness of the business to continuously improve and embrace new initiatives.

We identified, however, that there is no overall process flow chart available that demonstrates how the three main corporate strategy documents (SDP, SCI & Board Charter) link to the rest of the corporate planning and policy documents. We suggest that this would be an improvement to improve the clarity of the linkages between the various levels of strategies an objectives.

We believe that AQWEST have developed a sound basis for risk management. The process is structured, provides accountability to the Board through the Executive Team, contributes transparency and objectivity to decision making and provides an audit trail to demonstrate that the obligations for managing risk have been fulfilled.

6.3 Capital Processes

We have seen that AQWEST's capital processes are governed by their Corporate / Strategic Planning Framework. Investment decision making relates to KRAs from the SDP. Budgets are consistent with the SCI and are then detailed further within the Ten Year Capital Works Plan, the corresponding Ten Year Finance Plan and the Budgets for each individual Financial Year.

We have seen that the budget allocation decision-making process, is informed through planning studies undertaken by external consultants in key areas such as the need move source pumping stations inland to prevent saline intrusion into the aquifer.

Given the size of AQWEST, we would not expect the level of sophistication in their capital investment prioritisation as Water Corporation. However, the further refinement, development and improved application of Risk Management principles should provide a way of deciding between investment options to provide the greatest level of risk reduction at least cost.

We are satisfied with the Engineering Alliance Initiative AQWEST is currently pursuing. It is a sensible approach to bundle similar types of work over a longer period of time to facilitate potential efficiencies.

We note the delivery of the fixed design and delivery contract for the City Water Link project to within 10% of the budget and with a delay of only 7 days.

AQWEST's business cases appear to go into a reasonable level of detail but could be improved for larger projects. We note that project reviews are undertaken for larger value projects, which are reported and followed up through a post-implementation review process. This is good business practice that provides a level of assurance of continuous improvement and that lessons are learnt.

6.4 Operations Processes

AQWEST's current operational planning is based around a set of asset management guidelines (including asset creation and acquisition) within the Asset Management Plan. We expect that the asset renewals and maintenance will see a greater amount of planned works as a proportion of the maintenance program over time.

The results of the new maintenance strategy due to start development in 2009 will provide AQWEST with a more targeted risk-based approach to maintenance planning, scheduling. We commend the initiative, and in this way an improved and more focussed delivery program mix of planned and reactive works will maintain or improve levels of service at least cost with greatest benefit (risk reduction).

We believe that AQWEST has a good Maintenance management system in place and the data and telemetry systems in place to monitor system performance. We expect that the investment in such systems will also provide the necessary historical data to predict the timing and extent of future asset renewals and growth related capital expenditure.

In terms of delivery, we expect that AQWEST will continue to deliver more specialist tasks, reactive and large renewals works through contractors, but that they will continue to provide in-house maintenance capability where such skills are deemed to be critical to the business.

We are satisfied with operating efficiency targets set by AQWEST. However, it appears that operational costs are increasing despite efficiency initiatives employed. We note that the cost per megalitre of water supplied has increased significantly in 2008 as a result of the lower volume supplied to customers due to water restrictions in place.

With an improved application of best practice risk-based asset management principles to asset maintenance coupled with the decommissioning of production assets affected by saline intrusion and the creation of new assets with the same function further inland, we believe that AQWEST will be in a position to improve their operations and maintenance cost performance (per property) particularly as growth in the Bunbury area continues over the next ten to fifteen years.

Rather than setting an operating efficiency target, we would encourage AQWEST to continue to seek out and identify potential opportunities for efficiencies where appropriate. This could include future maintenance contracts, material supply contracts, energy procurement arrangements and capital planning processes.

6.5 Historical and Proposed Expenditure

We note that AQWEST implemented a relatively large capital programme in 2007-08 to within 10 per cent of their annual budget.

AQWEST have a relatively new management team in place that has overseen many changes to the internal processes and management of the organisation. Some learning points that have come out of their experience in capital delivery include:

- Ensuring that large projects are commenced early in the financial year to ensure projects can be completed by year end
- More controlled management of Consultants who are engaged from interstate may be required, for example limitation of scope to ensure the focus on producing achievable outcomes within the given timeframe.
- An increase in engineering staff (currently four people) and implementation of retention strategies for technical roles may be required to progress the increase in capital works and to ensure timely project delivery.

Providing that the lessons learnt are implemented, we believe that AQWEST can succeed in delivering larger capital works programmes in future years.

We note that AQWEST intend to form an Engineering Services Alliance for an extended period up to five years with a local reputable Engineering firm to provide consistent delivery, local understanding and continuity of design and specification tasks. AQWEST have indicated that this will address the problem of having to consistently orientate and familiarise outsourced design teams (through an open tender system) with their business.

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7 Appendices

7.1 List of Appendices

Appendix A – Aqwest's risk management approach

Appendix A Risk Management

A.1 AQWEST Risk Management Approach

Risk Identification

The risks are initially categorized according to their context (Strategic, Operational and Project) and the identification process considers each of the Key Result Areas and specific achievable objectives for both Strategic and Operational risks. Consideration is also given to what is critical to the success of that activity and then what may go wrong. At the Project level, generic risks have been identified and considered in relation to Project Definition, Contract Management, Contracting, and Project Management.

Risks and events that have been identified are recorded in the AQWEST Risk Register so that the Strategic, Operational, and Project risks may be assessed, evaluated and reviewed more effectively by key stakeholder groups as appropriate.

Specific Project risks are identified by Project Managers during each particular project phase, however; these are constantly assessed and evaluated during each phase as part of normal Project Management practice, and in accordance with the AQWEST Risk Management process.

Risks may also be identified by employees during the conduct of their tasks and activities and this information may be captured through Job Safety Analysis (JSA), Loss Management Cards or Maintenance Work Orders and are referred for review and assessment by their respective Line Manager.

If the risk is assessed as having a Level of Risk (LOR) ranking within the range of 10 - 25 (Urgent Management Attention or Unacceptable on the AQWEST Risk Acceptance Criteria table), it must be escalated to the Risk Management Committee for further investigation and action.

Risk Analysis

The analysis of risks identified involves: i) the identification and evaluation of any existing controls; ii) analysis of the consequences and likelihood of the risks; and iii) the evaluation of the risk level against pre-defined Acceptance Criteria.

Control measures reduce the likelihood and/or consequences of the risk and are assessed on the basis of reasonableness in respect of preventing or minimising the impacts of the risk given the circumstances.

Existing Controls are rated at three levels: E – Excellent, A – Adequate and I – Inadequate. As part of their quality control, we note that AQWEST have implemented an Annual Risk Management Framework Review Process to assess accuracy, effectiveness and appropriateness of the Controls and to verify that they are actually in use.

Where they are found to be ineffective, then necessary amendments and/or improvements to the Existing Controls are incorporated into a Risk Treatment Action Plan which are reviewed and authorised for implementation by the responsible Risk Owners (Executive Team).

The likelihood that the risk will occur is defined by the probability or frequency of defined consequence(s) eventuating. Likelihood is quantified in five levels ranging from the lowest score of 1 (Rare: < once every 10 years) to the highest frequency rating of 5 (Almost Certain: > once per year).

Both quantitative and qualitative methods are used to determine the consequence of a defined risk scenario to determine the level of risk. Risk consequences that eventuate may impact across a number of different areas and therefore the level of impact (1 - insignificant to 5 - catastrophic) needs to be considered in relation to each of the categories defined in the Consequence matrix (including six categories: Injuries, Financial Loss to Operational Budget, Interruption to Services, Reputation & Image, Operational Efficiency, and; Performance), however the overall level of risk calculation is based on the highest value applicable to one of the categories assessed.

Risk Evaluation

Risk Reference Tables have been developed to assist in assessing the Risk Level or Risk Rating resulting from the multiplication of the consequence and likelihood ratings. The Risk Level score from 1 to 25 is evaluated using Risk Acceptance criteria as a guide as to the acceptability of the risk and the level of signoff required.

The AQWEST ranges for the Management and Acceptance of risk are listed in Table B.1 as follows:

Level of Risk	Criteria for Management of Risk		Responsible Officer
1 - 3	Acceptable	With adequate controls	Operational Manager
4 – 5	Monitor	With adequate controls	Operational Manager
6 – 9	Management Control Required	With adequate controls	Operational Manager
10 - 14	Urgent Management Attention	Only acceptable with excellent controls	Chief Executive Officer
15 – 25	Unacceptable	Only acceptable with excellent controls	Chairman of the Board

Table B.1 - Risk Management & Acceptance Range Criteria

Based on the Level and Criteria for the Management of the Risk, the Acceptance Levels for the Risk have been derived by AQWEST ranging from 'Acceptable' to 'Unacceptable' (including other actions for Management such as Monitor, Management Control Required or Urgent Management Attention) as follows (Figure B.1):

Consequence		Likelihood				
		1 Rare	2 Unlikely	3 Moderate	4 Likely	5 Almost Certain
1	Insignificant	A - 1	A - 2	A - 3	M - 4	M - 5
2	Minor	A - 2	M - 4	MCR - 6	MCR - 8	UMA - 10
3	Moderate	A - 3	MCR - 6	MCR - 9	UMA - 12	H - 15
4	Major	M - 4	MCR - 8	UMA - 12	H - 16	H - 20
5	Catastrophic	M - 5	UMA - 10	H - 15	H - 20	H - 25

Legend:

Acceptable	Monitor	Management Control Required	Urgent Management Attention	Unacceptable

The Risk Management Manual outlines what the Risk Owner is responsible for following the evaluation of the Risk Level and the decision to be made must be one of the three actions in response:

- Accept the risk
- Avoid the risk; or
- Treat the risk

We note that in certain circumstances AQWEST may be required to accept a higher level of risk on the basis that everything reasonable is being and has been done to minimise the risk eventuating.

Risk Treatment

Risks identified by AQWEST as being within the 'Urgent Management Attention' to 'Unacceptable' range need to be evaluated further and managed effectively to ensure to minimise potential impacts and increase the controls rating to 'Adequate' or 'Excellent'.

Risk Treatment involves identifying a range of options to reduce the consequences and/or likelihood of a risk, evaluating those options and preparing Treatment Plans for implementation.

Risk Treatment Plans are then developed and must include the following detail:

a) Proposed Actions of selected treatment;

b) Resource Requirement(s) to implement the treatment;

c) Responsible Officers for implementing the treatment;

d) Timing for treatment [action plan] implementation;

e) Performance Measures for demonstrating the progress of implementation and the effectiveness of the treatment option; and

f) Reporting and monitoring requirements during and at completion of the implementation of the treatment

Following the implementation of the treatment options, the Level of Risk will require re-evaluation and the Risk Register updated accordingly, thereby determining whether the treatment has brought the risk to an acceptable level.

A treatment becomes a control only once it has been fully implemented and signed off by the Treatment Owner and it is then subject to subsequent regular monitoring and reviews.

Risk Monitoring & Review

AQWEST have a monitoring and review step within their Risk Management Framework and they see this as an ongoing periodic review process of routine surveillance that looks at the current status or situation (detection of both gradual and sudden changes), usually with a specific focus, that is primarily the responsibility of Risk Owners.

The Responsibility for Risk Management lies with everyone working for the Authority including the Board, the Risk Management Committee, the CEO, the Executive Team (Risk Owners), Line Managers, Employees and the Risk Management Coordinator/Safety Officer and the roles and responsibilities for each are detailed within the Risk Manual.

Business Continuity Planning

We were informed during the interviews that AQWEST are leading the State (WA) in terms of operational preparedness for disasters in terms of risk management and contingency [business continuity] planning. AQWEST's approach to major asset and/or systems failure is uses criticality/risk-based methodology according to the followings steps:

1. Assess the Damage
2. Plan
3. Act
4. Restore

Figure B.2 shows the process by which business continuity planning is undertaken in the event of a critical service interruption over the course of the maximum acceptable outage (MAO) time.

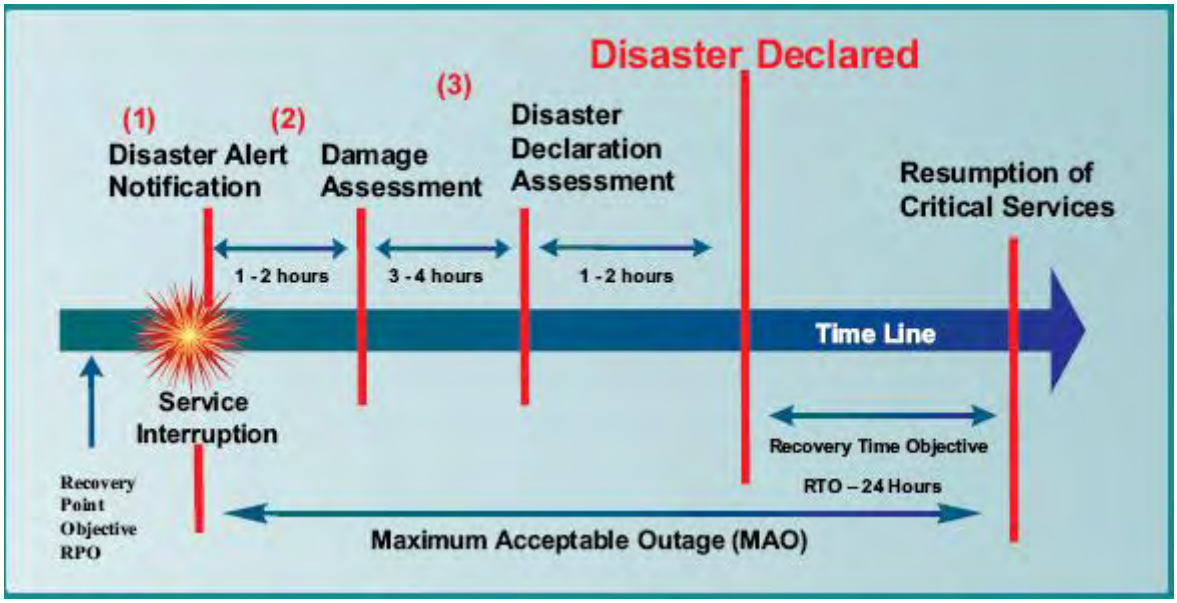

Figure B.2- AQWEST Business Continuity Planning timeline for Critical Service Interruption for duration of Maximum Allowable Outage

There is also a process flow diagram outlining the tasks required from responsible staff including the CEO and the Crisis Management and Recovery Teams. The development of action plans is a key activity for co-ordinating and implementing the recovery effort.

We can see that AQWEST's process for Business Continuity is simple and transparent and is well suited for implementing in times of crisis as required for asset/systems recovery in the event of a critical service interruption.

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