

National Water Industry

2008 Report Card and Roadmap

September 2008

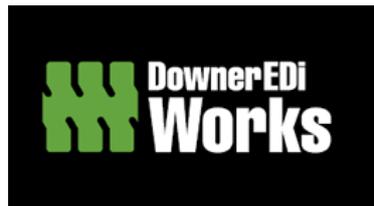


**A Report to the New Zealand
Council for Infrastructure
Development**



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We would like to thank the following project partners:



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Executive Summary

Background and Objectives

The New Zealand water industry plays a key role in ensuring the health and wellbeing of our people, the national economy and New Zealand's position as a developed nation. This study was commissioned by the New Zealand Council for Infrastructure Development in view of this critical role that water infrastructure plays.

This document provides an objective assessment of the state of the New Zealand water industry in order to identify opportunities for improved public policy from an infrastructure development perspective.

This investigation has focussed on urban utility water supply, wastewater and stormwater services. It has not attempted to address issues around rural water, water allocation and ownership, and associated impacts on agriculture.

The Research and Report Card

Research into the state of the industry comprised a review of existing published local and international literature, a survey of water industry suppliers and service providers nationally and a review of the 2006 Long Term Council Community Plans.

On the basis of the above research, a 'Report Card' grading approach, similar to that used in Australia and other countries to grade infrastructure was adopted. This was based on consideration of a range of performance criteria in relation to:

- » Financial;
- » Governance & Legislation;
- » Customer;
- » Security; and
- » Asset Management.

The Industry Scored a "C" grading meaning it is only adequate and that major change is required.

The overall state of the industry received a scorecard rating of "C", including a "C+" for water supply, a "C" for wastewater and a "C-" for stormwater. Under the grading criteria, this generally means that the infrastructure is considered "adequate" but **major changes are required in one or more of the infrastructure condition, committed investment, regulatory regime and planning processes to enable infrastructure to be fit for its anticipated purpose.**

Areas of Good Performance

The assessment identified a number of areas of good performance across the industry, which includes:

- » Confidence levels in the projections contained within the LTCCP process;
- » The community/customer consultation focus of the LTCCP process;

- » National consistency and clear targets afforded by the development of the Drinking Water Standards; and
- » Comprehensive risk management processes through Public Health Risk Management Plans (PHRMPs), water and sanitary service assessments and reported widespread development of risk registers and contingency plans.

Opportunities for Improvement

Table 1 summarises issues that the Report Card and its associated background research has identified as potential areas for general improvement across the industry.

Table 1 Opportunities for Improvement

Issue	Water Supply	Wastewater	Stormwater
Financial Sustainability Issues			
» The need for longer term capex projections beyond the first few years of the ten-year LTCCP period.	ü	ü	ü
» The need to address funding gaps.		ü	ü
» The need for pricing imperatives to better manage and value the resource.	ü	ü	
Governance, Configuration and Industry Consistency Issues			
» Inequities between cities and smaller towns relating to funding ability, technical and managerial resourcing ability, consent conditions and compliance levels.	ü	ü	ü
» Fragmentation of responsibility and accountability and duplication of effort within the industry.	ü	ü	ü
» The need to address the competing functions of Councils to better serve water industry interests	ü	ü	ü
» The need to address industry resourcing and skill gaps.	ü	ü	ü
» Differences in levels of service – wastewater overflows, discharge standards, etc.		ü	
» The need for improved implementation of asset management practices.			ü
Legislative Issues			
» The need to improve the application of the RMA process.	ü	ü	ü
Sustainability Issues			
» The need to address the implications of Climate Change.	ü	ü	ü

Key opportunities of improvement have been identified, as follows:

1. Financial Sustainability

\$21 billion is allocated in the current LTCCPs for expenditure across the Three Waters including \$9 billion capital expenditure and \$13 billion operating expenditure. This is expected to increase in the 2009 LTCCPs as the impacts of the new Drinking Water Standards and climate change effects are accounted for. While this is all theoretically funded through the combination of rates and user charges, there are questions about the affordability of the rates and price increases assumed within these "balanced" funding plans. Under current projections, capex spend declines significantly over the 10 years. This seems an unrealistic scenario given ongoing growth demands, increasing environmental expectations and qualitative standards, such as the new drinking water legislation. The decrease in capex, if understated through the lack of accurate future predictions, would require rate funding or price increases not anticipated in the LTCCPs which are already under rating increase pressure.

When considering financial sustainability on an individual entity basis, another key factor is expenditure distribution. Approximately 75% of the total Three Waters expenditure is attributable to 30% of the service providers comprising mainly the larger cities. By way of contrast, small councils face disproportionate costs on a per capita basis, particularly those affected by the impacts of tourism and agriculture, and suffer from diseconomies of scale.

Central Government recently introduced some targeted funding assistance to address some of these issues. However, research has shown that the funds allocated to these schemes such as the Sanitary Works Subsidy Scheme, the Tourism Demand Subsidy Scheme and the Drinking Water Assistance Programme are considerably lower than the forecast demand.

The ability to introduce innovative funding mechanisms commonly used internationally is also constrained. An example of this relates to Section 136 of the Local Government Act which specifically restricts water contracts to a maximum of 15 years. This period is too short to encourage appropriate private sector involvement in assets that have very long lives.

2. Industry Governance and Leadership

Central to the issues affecting the water infrastructure sector is the somewhat fragmented responsibilities and accountabilities relating to leadership and governance that exist within the industry compared to overseas practice. This has led to a lack of integration and duplication of effort. Central Government oversight of the water sector spans the Ministries for the Environment, Health, Local Government, Economic Development and Agriculture. The lack of Central Government oversight is matched by the wider industry which is characterised by highly decentralised institutional arrangements, ranging from extremely small to, in some cases, larger, more complex organisational structures.

3. Industry Configuration

In comparison with international practice, the local industry has far more entities managing the delivery of the Three Waters service, and in addition, water is only one of a number of competing demands and areas of responsibility for these entities. This results in a range of issues such as:

- » Small and often inadequate funding bases, particularly in more remote areas;
- » Inefficiencies in project procurement with large numbers of small projects;
- » Limited coordination of works programmes across jurisdictional boundaries;
- » Large administration costs; and
- » The reduced ability to attract and retain high quality management and technical resources in-house.

This has a resulting flow-on effect on resources across the consulting and contracting industries which are themselves under pressure from competing demands.

4. Industry Standards

There is a lack of an overarching standards framework across the industry. The application of the drinking water standards has had a positive benefit in terms of standardising national water quality albeit there is some question whether the level of the standard is justified. However, there remains a lack of national standards for other areas such as wastewater discharges, which are the responsibility of Regional Councils. In addition, it appears the enforcement of discharge standards that do exist is variable.

The industry would also benefit, as evidenced internationally, from national benchmarking of overall service standards. Some benchmarking has been initiated such as within the Auckland region and through the New Zealand Water and Waste Association, but only on a voluntary basis.

5. Sustainable Management of Water

Suppliers estimate that nearly 20% of water produced is lost through water losses. However, only two thirds of survey respondents have an active demand management and a water loss reduction programme in place. Allied to this is a lack of market mechanisms and pricing signals such as user pays charging to support the longer-term sustainable management of water services. Research has also shown that per capita demand can be reduced significantly through the introduction of volumetric charging. However, less than 30% of survey respondents meter their water supplies which creates a hurdle for sustainable demand management and the further adoption of utility pricing.

The first-in-first-served allocation of limited water resources as currently provided under the Resource Management Act and the absence of a market based allocation model allows continued uneconomic use of scarce water resources.

Finally, whilst some work has been done, the issue of the impact of climate change on Three Waters infrastructure is generally still to be addressed.

The Road Map for Sector Improvement

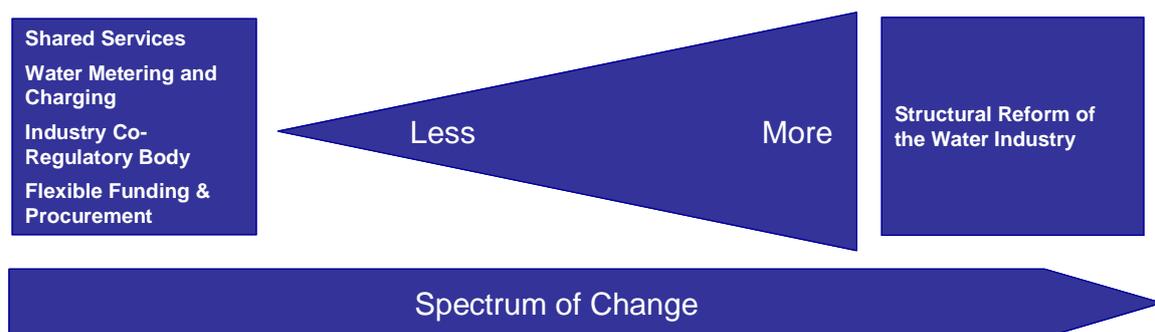
Given the improvement opportunities highlighted, there are a number of possible alternative ways of addressing these issues. These include more shared services by territorial local authorities, joint contracting which can overcome lack of scale issues, commercial models (CCTOs - council controlled trading organisations), joint CCTOs providing capacity, and franchising, or concessions.

In addition a number of specific techniques and options relevant to water industry procurement are worthy of further consideration. These include: procuring professional services in a manner which provides greater integration and end to end project delivery; developing a programme approach whereby small projects, renewals and maintenance requirements are bundled; direct materials sourcing for larger projects; and enhancing contractor performance management.

There is also a clear need to establish an overarching controlling/regulatory body across the industry. Such a body would need to be appropriately empowered to:

- » Lead the development of industry benchmarks and standards;
- » Develop and promote industry best practice;
- » Develop commercial drivers to support the sustainable management and delivery and lift overall financial sustainability;
- » Drive the application of improved procurement practices; and
- » Oversee and promote training and professional development across the industry.

A number of improvement opportunities have been identified. They are able to be progressively introduced so that their effects can be gauged before more complex improvement opportunities are committed to and implemented. These opportunities have been staged as a Spectrum of Change as follows:



The improvement opportunities have been scheduled so as to maximise their potential for “knock-on” improvement effects. For example, the early establishment of a co-regulatory body is seen to address a number of the identified areas of improvement. On this basis the following Road Map for the New Zealand Water Industry has been developed.

Roadmap

STEP 1

Institute structure and governance change designed to address inequities and differences in standards, compliance with requirements and funding across the industry. The key components of this change process include the following:

- » Establishment of a co-regulatory body that reduces the differences and inequalities that currently exist across the water industry nationally. It will achieve this if it:
 - Develops, administers and monitors compliance with common sets of standards;
 - Reviews and administers water industry-related components of AMPs and LTCCPs;
 - Develops, administers and manages a national benchmarking exercise, including related reporting requirements;
 - Develops and administers pricing controls on the provision of water and wastewater services to customers when these are billed on a volumetric basis; and
 - Administers and allocates resources available in any Central Government funding programmes.
- » Wider implementation of the introduction of metering and user-pays as the basis for charging of water supply and wastewater for both domestic and business/commercial consumers as a means of conserving the resource, reducing demand and deferring necessary investment on growth-related infrastructure;
- » Encouragement of the increased use of shared-services arrangements between Councils as a means of addressing “critical-mass” issues such as too thinly spreading appropriately qualified technical and management resources;
- » Permitting and encouraging more franchise agreements on a voluntary basis that implement sound asset management practices for the operation and maintenance of water supply and wastewater services in order to further address “critical-mass” issues such as too thinly spreading appropriately qualified technical and management resources;
- » Encouraging the use of a wider variety of procurement methods in order to further maximise the use of limited funding resources; and
- » Undertaking legislative reform, where required, to facilitate Step 1 changes.

STEP 2

Undertake supplementary legislative changes to:

- › Streamline the implementation processes of the Resource Management Act to make it easier for wastewater service providers to achieve their objectives, in particular reducing the ability for single minority objectors to slow and “derail” consenting processes; and
- › Progressing ownership and prioritisation issues between competing water users who are granted water rights under the Resource Management Act.

STEP 3

Reviewing the resulting improvements brought about by these measures after 2-3 years and after implementation of the findings of the Royal Commission into Governance in the Auckland region.

STEP 4

Based on the Step 3 review above, assess the need for further reform of the industry through the formation of water-focussed entities as either Council-Controlled Trading Organisations or independent publicly-owned water authorities with much larger customer bases serving regions and based in provincial cities in order to:

- › Further address “critical mass” issues;
- › Provide a core-business focus for the management and provision of water supply and wastewater services throughout New Zealand; and
- › Minimise administrative costs so as to free up funds for investment in industry infrastructure that can otherwise not be funded.

Legislative changes to enable these structural changes will be required.

STEP 5

Advocating for further Central Government funding for water and wastewater infrastructure only if the above reforms do not generate sufficient improvements and savings to address the current funding gaps identified during this study.

1. Introduction

1.1 Background

The New Zealand water industry plays a key role in ensuring the health and well-being of our people, the national economy and New Zealand's position as a developed nation.

A recent analysis ¹ suggests that significant investment within the water industry is required over the next decade. This not only includes expansions to cater for system growth and renewal of existing ageing infrastructure, but also investment to raise levels of service such as major new treatment facilities to comply with new drinking water legislation, providing reticulated wastewater systems to existing communities and addressing the issues associated with climate change.

Funding such investments is often challenging, and in particular Councils are under constant pressure to reduce increases in the rates and levies they charge. While some Central Government subsidy schemes exist, primarily for small / rural communities to fund upgrades required by legislation, these are greatly oversubscribed and insufficient.

This study is designed to provide an objective, independent and balanced perspective on how the country's future water industry needs could most appropriately be satisfied.

This investigation has focussed on urban utility water supply, wastewater and stormwater services. It has not attempted to address issues around rural water, water allocation and ownership, and associated impacts on agriculture.

1.2 Objectives

Given the future demands and the diverse institutional arrangements, NZCID agreed to take a leadership role to promote the advancement of the industry. This position is underpinned through the provision of focussed, research-based options for solutions to meeting New Zealand's water infrastructure future needs.

In doing so, this project aims to:

1. Consider the findings of existing published research on the local and international water industries;
2. Carry out further research on the local water industry for the specific needs of this study;
3. Grade, in a Report Card format, the state of New Zealand's current water industry infrastructure;
4. As a result of this Report Card, identify the areas where New Zealand's water industry is performing well;
5. As a result of this Report Card, identify the areas where improvements could be made to produce better outcomes for New Zealand's water industry;
6. Identify the impediments to water infrastructure provision and associated options for improvement to develop a forward-looking Roadmap for the New Zealand Water industry; and
7. In doing so, influence central, regional and local government action to address New Zealand's current and future water industry needs.

¹ NZWWA Journal, 'Water, Rates and the Local Body Elections', July 2007.

2. Water Industry Assessment Criteria

One of the aims of this project is to report on the overall state of the water industry infrastructure based on the findings of existing local and international research, and further research carried out for this project.

This report uses a “Report Card” format similar to that adopted for various infrastructure sectors in Australia², state by state and also federally. These Report Card projects have seen a Report Card grading for each of the Three Waters being water supply, wastewater and urban stormwater.

2.1 Key Indicators

Building on the learnings of the Engineers Australia Report Card projects², key indicators for the New Zealand water industry that were selected as the basis for the development of the Report Card were then evaluated using a rating scale.

The five indicators selected were:

- » Financial;
- » Customer;
- » Government & Legislation;
- » Security; and
- » Asset Management.

These indicators were then rated as follows:

Table 2 Ratings

A	Very Good	Infrastructure is fit for its current and anticipated purpose in terms of infrastructure condition, committed investment, regulatory regime and planning processes.
B	Good	Minor changes required in one or more of the infrastructure condition, committed investment, regulatory regime and planning processes to enable infrastructure to be fit for its current anticipated purpose.
C	Adequate	Major changes required in one or more of the infrastructure condition, committed investment, regulatory regime and planning processes to enable infrastructure to be fit for its current anticipated purpose.
D	Poor	Critical changes required in one or more of the infrastructure condition, committed investment, regulatory regime and planning processes to enable infrastructure to be fit for its current anticipated purpose.
F	Inadequate	Totally inadequate for all current and future needs.

² Engineers Australia Website,
<http://www.engineersaustralia.org.au/search.cfm?searchValue=report+card&runsearch=true&submit.x=6&submit.y=9>

For each of the key indicators, the following need to be considered to derive the overall grading:

Table 3 Grading Criteria

Financial	<ul style="list-style-type: none"> Return of investment (capital expenditure). Renewal expenditure. Operations and maintenance costs. Remaining effective life. Total expenditure on the infrastructure compared with the expected levels of degradation, based on current degradation rates of infrastructure. Funds available to provide the infrastructure to an appropriate level for today and the future. National spend compared to GDP. Debt levels. Charging.
Customer	<ul style="list-style-type: none"> Levels of service. Distribution of infrastructure. Equitable provision of infrastructure. Level of support to customer service obligations. Level of monitoring of the impact/benefits of the management of the asset on the community. Regional differences in the delivery of the assets (urban, rural and remote locations). Allowance for growth while maintaining or improving levels of service.
Government & Legislation	<ul style="list-style-type: none"> Compliance with legislation. Compliance with standards. Compliance with consents. Level of environmental assessment undertaken for infrastructure renewals and new construction. Current and future care of environment.
Security	<ul style="list-style-type: none"> Hazards, which can be a source of potential harm to infrastructure. These include natural hazards such as cyclones, floods and earthquakes, and man-made hazards such as vandalism, arson and terrorism. Risk management: systematic application of management policies, procedures and practices to the tasks of identifying, analysing, evaluating, treating and monitoring risk. Comprehensive approach: addresses all aspects of security. Internal and external integration. Continuous security improvement through identifying and implementing relevant global best practice.
Asset Management	<ul style="list-style-type: none"> Fit for purpose condition rating. Trends in asset condition. Level of active infrastructure strategic management undertaken to ensure that the infrastructure assets are maintained for today and future generations in an efficient manner. Impact and nature of regulation and legislation on the efficient management of the asset.

The Report Card assessment was completed on this basis for each of the Three Waters being water supply, wastewater and urban stormwater, collectively referred to herein as the “Three Waters”.

3. Existing Water Industry Research

As part of this study, a research review of existing relevant published information both in New Zealand and internationally was undertaken. In reviewing this research, understanding the perspectives contained in the research on each of the assessment criteria as outlined in Section 2 was a key objective.

3.1 New Zealand Water Industry

The following reports and documents were reviewed. Summaries of the findings and conclusions of each of these documents are shown in Appendix A.

Clearly, the extent of previous research and number of papers and articles that have been completed and referenced here is significant. It is considered to be indicative of the perceptions of the state of the industry and the desire by participants within the industry of the need for change to bring about improved performance.

1. Three Waters Draft Strategic Plan, Discussion Version (Watercare Services Ltd, April 2008).
2. Rates Inquiry Report on Drivers of Local Government Expenditure (Ministry of Economic Development, July 2007).
3. Auckland Water Industry Annual Performance Review 06/07.
4. Water Rates and the Local Body Elections (NZWWA Journal, July 2007).
5. Local Government: Results of the 2006/07 audits (Office of the Auditor General, 2007).
6. Annual Review of Drinking Water Quality in NZ 2005 (Ministry of Health, 2006).
7. Review of Sanitary Works Subsidy Scheme (GHD Report for Ministry of Health, September 2006).
8. Ministry of Economic Development Infrastructure Stocktake (PricewaterhouseCoopers, January 2004).
9. Submission to Ministry of Economic Development on Infrastructure Stocktake (Association of Consulting Engineers New Zealand Inc, July 2004).
10. Auckland Regional Stormwater Action Plan, A Co-ordinated Approach To Regional Management and the Delivery of Improved Stormwater Quality Outcomes (Auckland Regional Council, September 2004).
11. From the Sky to the Sea (The Auckland Water Management Plan, 2004).
12. Rationalisation Options Study, a Report for Auckland City and Metrowater (NERA, December 2003).
13. Attitudes and Barriers to Water Transfer (Prepared for the Ministry for the Environment, Lincoln Environmental, December 2001).
14. Beyond Ageing Pipes – Urban Water Systems for the 21st Century (Office of the Parliamentary Commissioner for the Environment, April 2001).
15. Ageing Pipes and Murky Waters – Urban water system issues for the 21st Century (Office of the Parliamentary Commissioner for the Environment, June 2000).
16. The Scottish Water Industry and its Relevance to New Zealand (Anthony Wilson, 1999).

17. Water, Wastewater and Stormwater Review - Analysis of the Nature of the Industry in New Zealand, Volume 1 (Opus International Consultants, May 1999).
18. Papakura District Council, Water and Wastewater Franchise, Report of the Office of the Auditor General, April 1998.
19. "Govt plan an 'insipid' affair" (Upton, S. The Press Newspaper, July 2008).
20. "It's Money Down the Drain" (Cumming, G. Weekend Herald, 9 June 2007).
21. 2005 NZ Environment Summit, Reforming Water Allocation and Supply in New Zealand (Kerr, R. April 2005).
22. Best Practice Water Efficiency Policy and Regulations (Beacon Pathway Ltd, May 2008).
23. The Best Use Solution for New Zealand's Water Problems (New Zealand Business Council for Sustainable Development, 2008).
24. Benchmarking as a Business Improvement Tool – New Zealand Experience and Approach (GHD and Manukau Water Limited, 2008).
25. Greater Wellington Water Strategy.
26. Canterbury Water Strategy.

3.2 International Papers / Research

The following international papers and research were also reviewed. These are also summarised in Appendix A.

1. Water Supply & Sanitation Working Notes: Characteristics of Well-Performing Public Water Utilities (Note No. 9, Water Supply and Sanitation Board of the Infrastructure Network of the World Bank Group, May 2006).
2. Designing Incentives in Local Public Utilities, an international comparison of the drinking water sector, Preliminary Draft (De Witte, K., Marques, R. January 2007).
3. Research Report – Privatisation of the Public Water Supply and the Resulting Competitive Effects (Wackerbauer, J. CESifo DICE Report, April 2006).

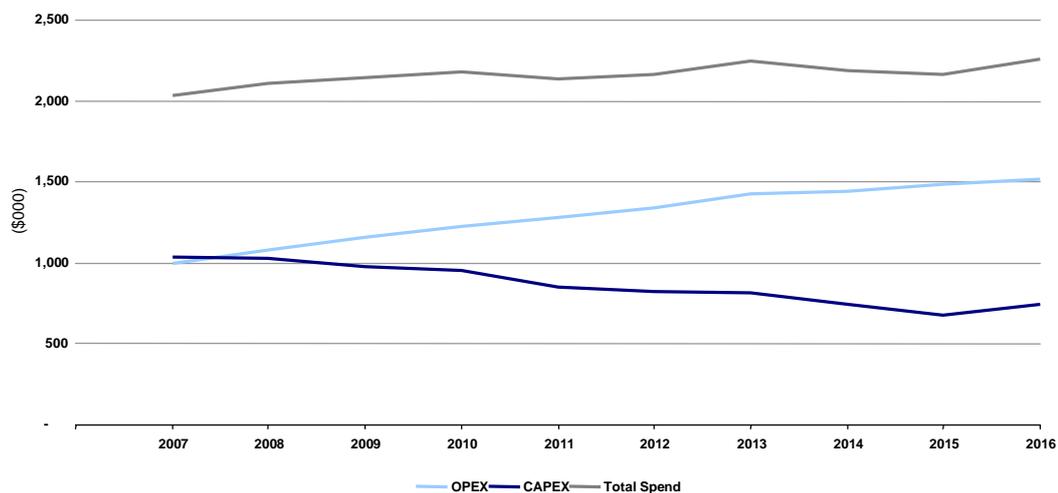
4. Project Research

4.1 2006 Long-Term Council Community Plans

During the period 2007-2016, Councils have projected over \$21 billion worth of operating (opex) and capital (capex) expenditure on water infrastructure within their LTCCPs. This is made up of approximately \$13 billion in opex and approximately \$8.5 billion in capex. The infrastructure covers water supply, wastewater and stormwater.

Figure 1 demonstrates the total spend for the Three Waters over the 2007-2016 period according to LTCCP data.

Figure 1 Total Spend All Waters – Councils



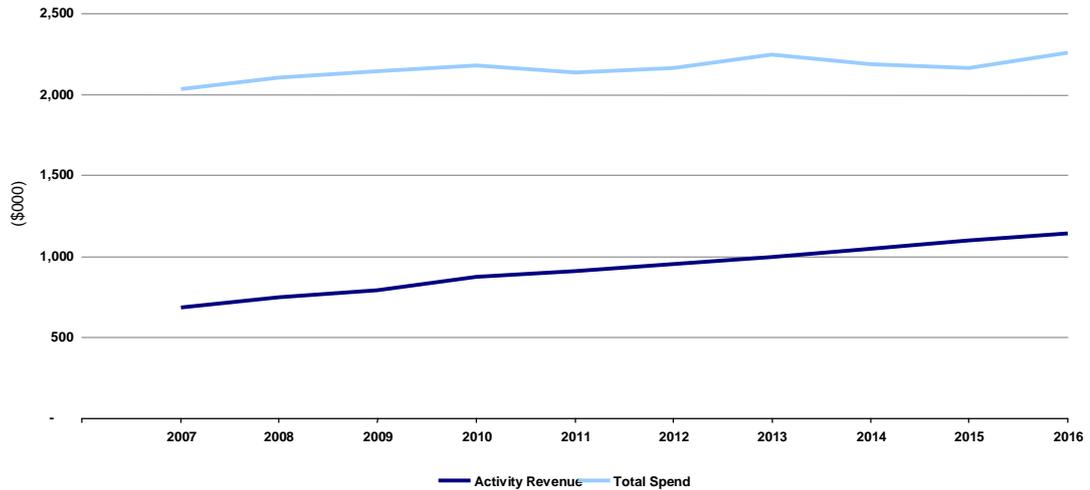
The graph illustrates an inverse trend of opex to capex over time, and a flattening of opex as capex decreases. Opex figures are typically a function of capex particularly for water assets, as capex is lumpy and often large, and can trigger immediate operating costs. However opex data is more readily available and easier to predict than capex once projects are complete.

Traditionally capex data declines over time as less information is available for projects in 7 to 10 years as opposed to projects that are short term. This acts to balance overall expenditure with revenue for Councils in their LTCCPs but may underestimate actual expenditure in the latter years. A criticism of the LTCCP process arises because it represents a shorter term view of capex than will likely be the case over the full ten year period.

If the actual capital expenditure requirements are in fact greater than the trend line, this will require additional funding streams not reflected in LTCCP revenues. Given the pressure Councils are already under with existing LTCCP predicted rates increases as highlighted by the 2007 Local Government Rating Inquiry, this would be a problematic scenario.

Figure 2 below highlights the relationship between activity revenue and total spend over the period 2007-2016. The activity revenue represents the user fees and charges for each of the three water infrastructure services.

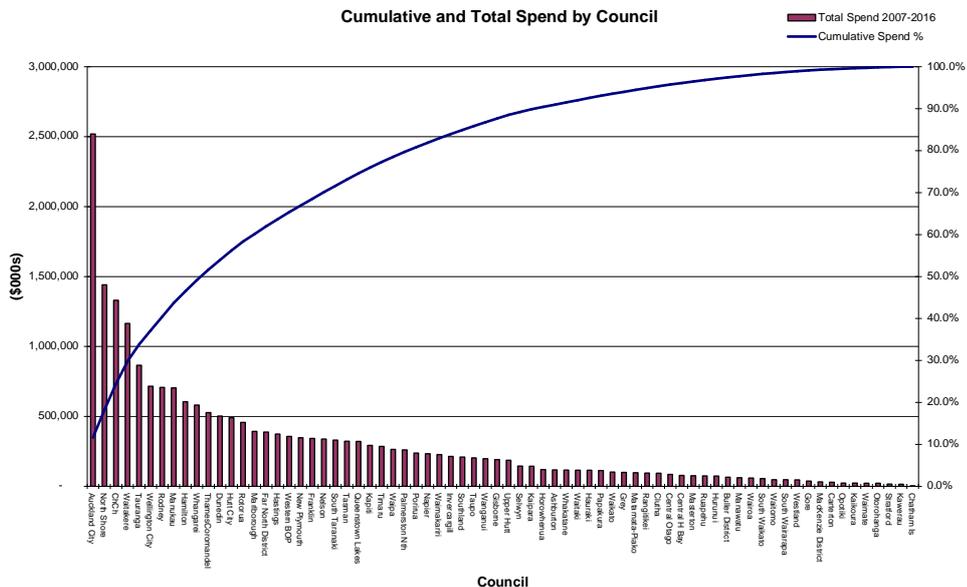
Figure 2 Total Spend and Activity Revenue Councils – All Waters



The graph clearly demonstrates the gap between the activity revenue and the total spend, an amount which will have to be covered through a combination of sources including rating revenue, debt and development contributions.

Figure 3 displays the total spend per Council and the resultant cumulative spend of expenditure. It is interesting to note that approximately 75% of the total spend is undertaken by approximately 30% of the Councils. This trend is even more stark for the capex data.

Figure 3 Cumulative and Total Spend by Council



4.1.1 Differences with 2009 LTCCPs

The industry generally expects the 2009 LTCCP data to be considerably different to the 2006 LTCCP data due to the revised New Zealand Drinking Water Standards 2005. This could trigger significant upgrade requirements to some Councils, along with the impacts of climate change which were relatively unknown and difficult to measure during the 2006 preparation of LTCCPs.

Given the lack of capacity for additional capex within current LTCCP's, it is not clear how this will be funded. Combined with existing pressure to hold rates increases, those affected councils may have no option but to utilise a combination of debt and direct charging to fund these requirements.

4.2 Industry Survey – Councils and Water Companies

In order to obtain up to date information and statistics on the industry as well as giving key water authorities a chance to have input into this study, two industry surveys were developed and issued.

1. A survey that was sent to Councils and Water Companies.
2. A survey that was sent to the private sector, mainly contractors and consultants working in the water industry.

Both surveys were modelled around the five key indicators discussed in Section 2.

The first survey was sent to 76 Councils and Water Companies around New Zealand. Either full or part responses were received from 25 respondents or approximately 33% of the sample. These Councils are responsible for the provision of the Three Waters service to approximately 2.1 million people or approximately 50% of the New Zealand population.

The private sector survey was sent to 63 contractors and consultants nationwide. 10 fully completed private sector surveys were received.

4.3 Survey Results

Results of the survey are summarised in Appendix B. The key results arising from the survey are referred to throughout the report.

4.4 Benchmarking

4.4.1 Auckland

The Auckland Water Industry Annual Performance Review³ involves a benchmarking exercise across the seven entities in the Auckland region that are responsible for the provision of the Three Waters services. The 2006/07 report presents reported data for approximately 134 performance indicators presented in a series of comparative tables and figures supported by explanatory comments. In addition, each organization provides a summary overview of its activities during the reporting period including highlights, achievements and key projects.

³ Auckland Water Group, Auckland Water Industry Annual Performance Review, 2006/07, December 2007

4.4.2 National

The New Zealand Water and Wastes Association has recently completed a benchmarking exercise based on the Auckland Water Industry Annual Performance Review criteria. In addition to the Auckland grouping, other participants in this exercise included – Whangarei District Council, Hamilton City Council, Tauranga City Council, New Plymouth District Council, Capacity – Wellington Water Management, Christchurch City Council and Dunedin City Council.

Results of this benchmarking exercise are yet to be published.

4.4.3 International

Benchmarking the New Zealand water industry against other countries requires comparable parameters to be evaluated and reported using a consistent format. In undertaking this study, while there is plenty of international information available, particularly from Australia and the UK, it was difficult to find useful comparisons to gauge the New Zealand Water Industry against the Water Industry worldwide. Generally comparisons can be drawn in the areas of water losses, water main breaks and sewer breaks and overflows. Other, more customer-focussed parameters include operator connect times, customer satisfaction surveys, interruptions to supply and low pressure areas. However the wide variety of ways that this data is reported makes it difficult to draw direct comparisons.

WSAA Benchmarking

The Water Services Association of Australia (WSAA) undertakes international benchmarking of the Water Industry on an annual basis, alternately comparing civil maintenance, mechanical and electrical maintenance, customer service and asset management processes on a four yearly rotation. WSAA has recognised the need to help identify best practice in operational and business performance and effectively facilitates this through its benchmarking programmes.

The second Asset Management Benchmarking project is currently underway involving 41 participants (6 of which are New Zealand organisations). This process essentially identifies the processes and practices that are in place within an organisation and compares these internationally. The key outputs of this project are improvement road maps for each participant utility and a best practice workshop where best practice practitioners can share their expertise with other participants and ultimately an industry report. This report outlines the key areas for improvement, key challenges for the industry internationally and makes commentary on the water industry as a whole using comparisons with the 2004 project.

The key areas that are investigated include:

- » Corporate Policy and Business Planning;
- » Asset Capability Planning;
- » Asset Acquisition;
- » Asset Operation;
- » Asset Maintenance;
- » Asset Replacement/Rehabilitation; and
- » Business Support Systems.

At the time of writing, the results of the 2008 project are not yet available. Some of the key opportunities for improvement from the 2004 project include:

- » Triple Bottom Line Management;
- » Configuration Management;
- » Quality Management;
- » Risk Management;
- » Levels of Service Projection;
- » Asset Handover Process Improvement;
- » Post Completion Reviews (Lessons Learnt);
- » Maintenance Strategy Development;
- » Understanding the relationships between Capital Expenditure and Maintenance Funding;
- » Understanding the relationship between Maintenance Cost and Asset Condition;
- » Failure Mode Identification;
- » Improve the understanding of Condition and its impact on Probability of Failure;
- » Improve understanding of Economic Life; and
- » Business Support Systems.

4.4.4 Metric Benchmarking Comparisons

There are some comparisons that can be drawn between some of the Australian benchmarking and the Auckland Region Annual Performance Review where similar parameters are measured and reported. Two benchmarks in particular that have comparability include water losses and water asset age as measured by depreciation.

In the survey of the industry in New Zealand carried out in this study, water losses were reported around 18%. However with the limited water metering that takes place in New Zealand (outside the Auckland Region) this would be harder to quantify, while in the Auckland Region⁴ this is reported to be about 11%.

For the Auckland Region water losses are approximately 100 litres per property per day. By comparison, in Australia, for water suppliers of comparable sizes (20,000 – 50,000 connections) for 2006-07 real water losses varied from less than 50 litres per property per day to over 300 litres per property per day⁵ (with the majority being less than 100 litres per property per day). If the actual New Zealand water losses were at the reported 18%⁶, this comparison would be significantly more unfavourable compared to the Auckland comparison (being in the order of 11%).

In the report card prepared for the Australian Water Industry⁷ the replacement value for water and wastewater assets was compared to the written down value for each of the states, being on average 73% for both water and wastewater as an indication of asset condition. This is not necessarily a correct

⁴ Auckland Region Annual Performance Review 06-07

⁵ Australian Government National Water Commission, National Performance Report 2006-2007 Urban Water Utilities, 2008

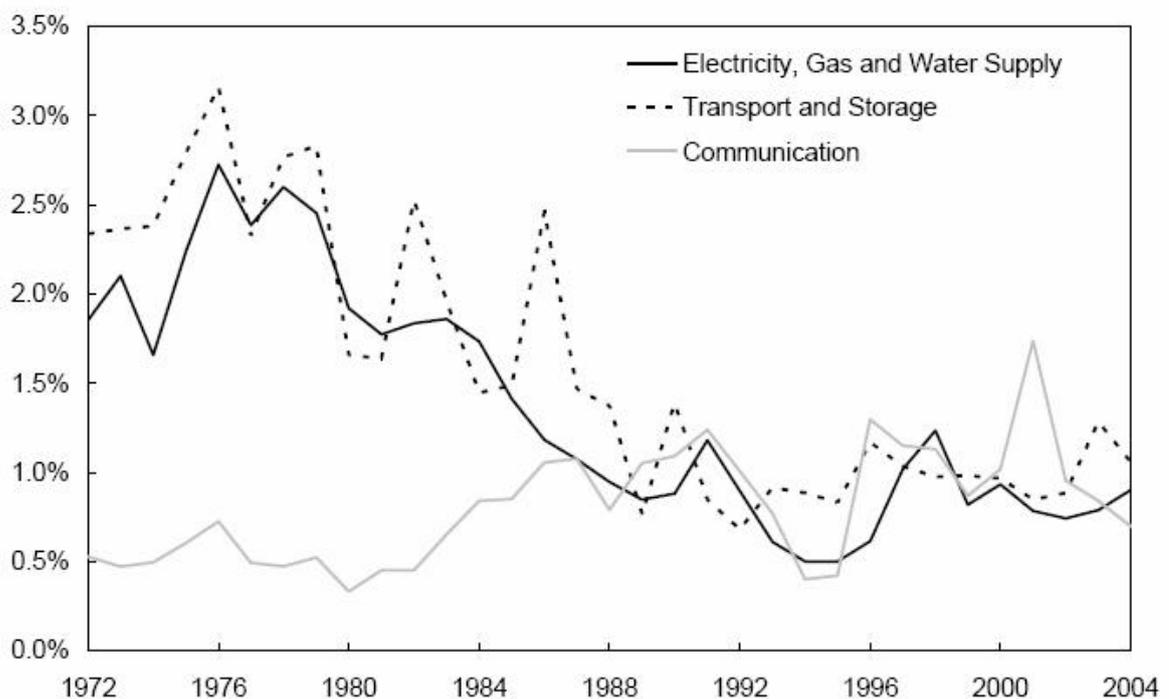
⁶ Water Industry Survey Results, Appendix B, 2008

⁷ The Institution of Engineers, Australia, '2001 Australian Infrastructure Report Card', 2001.

assumption but just provides an indication of age of the assets and potential requirement for renewals, not necessarily condition based. This value was high mainly in the growth areas of Queensland and Western Australia, where assets are relatively young. By comparison, the survey completed in this study found that these figures for New Zealand ranged from 62% for water supply to 70% for stormwater⁸. These are only marginally lower than the averages for Australia, indicating a comparable level of depreciation and potential need for increased renewal.

From a wider perspective, on a global ranking of infrastructure quality⁹, New Zealand ranked 20th out of 29, being considerably behind most of Continental Europe, the UK, Australia and Canada. Looking at capital investment as a percentage of GDP in New Zealand, the New Zealand Institute of Economic Research, as shown in Figure 4, from 1988 to 2004 there was a much lower GDP percentage investment in water supply than in the years previously. This is in spite of significant growth in the New Zealand population and increases in required standards over this period.

Figure 4 Gross fixed capital formation in NZ infrastructure Industries 1972-2004 as a percentage of GDP



Source: NZIER

⁸ Water Industry Survey Results, Appendix B, 2008

⁹ World Economic Forum 2005

5. Summary of Research

5.1 Previous Studies and Reports

The previous studies and reports that have been undertaken within New Zealand and overseas, although completed at different times and with a different context, draw a number of similar conclusions and outcomes. These can be broadly summarised as follows:

Governance and Institutional Structures

The current governance and institutional structure arrangements within New Zealand's water industry are complex. Although local government generally owns and operate the infrastructure, they do this through a variety of mechanisms. In addition the responsibility for standards and approvals are spread through both the sector, regional councils and government agencies. There is also no body with a national industry overview.

The following findings from the research are considered to be due mainly to these current governance and institutional structure arrangements within the industry;

- » Fragmentation of responsibility and accountability in the water industry with responsibility split across a number of government Ministries and agencies;
- » Lack of integration and duplication of effort between Councils; and
- » The absence in New Zealand compared to other countries of a national controlling body that would address current inequalities that exist, particularly between small towns and large cities.

Legislation

The need for an improved water allocation processes is evident as is progress towards settlement of the water ownership issue.

Whilst there are now national standards for drinking water, the effects-based approach of the Resource Management Act means that there are no national standards for wastewater discharge consents. This sees significant differences in standards and hence inequities across the country.

Funding and Procurement

The relative lack of market mechanisms and pricing signals such as users pays charging across New Zealand compared to other markets was noted. Whilst domestic water supply is metered and charged in Auckland and a few other locations, this is not the case throughout New Zealand. Charging for wastewater on a volumetric basis is even less common.

The use of alternative procurement and funding methods is very limited in New Zealand when compared to Australia and the UK.

The ongoing inability of small communities with small, community-based rating bases to fund necessary upgrades and ongoing operations and maintenance of the upgraded facilities is also seen as an issue. Current different approaches in rating bases (e.g. community vs area vs district-wide) amongst Councils across New Zealand is considered to contribute to this process. This funding inability was evident in the survey responses. It has also been acknowledged as an impediment to the uptake of the Sanitary Works Subsidy Scheme¹⁰ and the Drinking Water Assistance Programme.

The Government's response to the Rates Inquiry¹¹ indicates potential further assistance to smaller communities to meet upgrade requirements may be considered.

The need to ensure water businesses are financially viable so to not be a drain on ratepayers is also a key issue.

Sustainability

There is growing awareness and demand of the need for conservation of the water resource. The Three Waters Project¹² in Auckland Research seeks a 15% reduction in demand on per capita water consumption and a 10% supply from reuse of treated effluent or stormwater. Research undertaken attempts to identify means by which household demand can be reduced by 40%¹³. This work has shown how effective charging for water by metered volume is in achieving much lower per capita demand rates.

Benchmarking

Up until recently, there has been a significant lack of national benchmarking. Organisations who have adopted benchmarking have been shown to achieve significant improvements in the delivery of the water supply and wastewater service to customers¹⁴.

Technical

Skill shortages and consideration of Climate Change impacts on Three Waters infrastructure are considered to be the major technical challenges facing the industry.

Customer

The importance of customer involvement and awareness has been recognised in the local industry. This has been facilitated more recently through the community consultation requirements of the Long Term Council Community Plans required by the Local Government Act. Conversely, it is also becoming clear that in this consultative environment, some decisions need to remain with the water service providers.

This consultation has led to an increase in customer driven improvements in the water industry through raised awareness and a desire and drive to increase Levels of Service.

¹⁰ Ministry of Health. Review of Sanitary Works Subsidy Scheme, 2006.

¹¹ Ministry of Economic Development, 'Rates Inquiry Report on Drivers of Local Government Expenditure', July 2007.

¹² Watercare Services Limited, Three Water Draft Strategic Plan, Discussion Version, April 2008

¹³ Beacon Pathway Limited, Best Practice Water Efficiency Policy & Regulations, May 2008.

¹⁴ Halabi, B. Stewart, G. Allen C. Benchmarking as a Business Improvement Tool – New Zealand Experience and Approach, 2008, and De Witte, K., Marques, R. Designing incentives in local public utilities, an international comparison of the drinking water sector, January 2007.

5.2 2006 LTCCP Results

Key findings of a review of the 2006 LTCCPs are:

- » Councils have projected over \$21 billion worth of expenditure on water infrastructure over the period 2006 to 2016;
- » Approximately 75% of the total expenditure is attributable to 30% of the water providers;
- » The opex expenditure tends to increase with capex. This is anticipated as new infrastructure requires increased ongoing operational funding;
- » The opex expenditure appears to level off towards the end of the forecast period, particularly after the 3-5 year period. This suggests either long-term planning that is being done is in fact short-medium term planning. Such a period also coincides with the election cycle of local government;
- » There is a significant shortfall between the LTCCP predicted spend and the activity revenue; and
- » The 2009 LTCCPs are likely to have significant changes in them as the legislated requirements to achieve compliance with the Drinking Water Standards for New Zealand 2005 and also climate change impacts are taken into the funding requirements.

5.3 Industry Survey of Councils and Water Companies

Summaries of the surveys undertaken in this investigation are as follows:

Governance & Legislation

Over half the respondents suggested that the RMA had only a medium-low or medium ability to assist them in the provision of their wastewater objectives. This was not evident in relation to water supply.

Across the Three Waters only just over 50% of water respondents and 65% of wastewater respondents feel that current governance arrangements are effective (medium-high, high responses) in enabling them to achieve their objectives.

Comments received include:

- » The need to reduce the chance of a small number of objectors holding up the RMA consenting process;
- » Recognition of the cost to small communities in meeting ever increasing standards;
- » Desirability of the move to user pays funding for water i.e. universal metering. Rates are not an appropriate tool for funding water infrastructure;
- » The need for industry guidelines on governance reporting, including common benchmarking; and
- » That the industry may be better served by water-focussed organisations e.g. CCOs or water authorities/companies.

Funding and Financial

Generally the industry is anticipating a high level of confidence in the predictions and estimates within the 2009 LTCCP round.

Suggested options to address funding issues include:

- » Further Central Government funding assistance needed for all waters;
- » Introducing user charges for wastewater based on user charges for water use; and
- » Larger rate increases.

Approximately 30% of respondents meter their water supplies.

Generally there is more growth-related investment in stormwater and the least in water.

Issues identified as impediments to completing capital works programmes include:

- » Poor planning brought on by lack of resource (time); and
- » Delays due to resource consents, construction (weather) delays.

Resourcing

Generally the respondents felt that the industry was 10%-30% under resourced while their organisations did not have significant vacancies. There was a feeling that the contracting industry is more under-resourced than the consulting industry and that in the consultancy industry there was a shortage of sufficiently qualified resources available.

Customers

Nearly 20% of water is lost through water losses with two thirds of respondents having an active demand management and a water loss reduction programme in place. Nearly 15% of wastewater is through inflow and infiltration with nearly 90% having a programme for inflow and infiltration reduction.

Two thirds of respondents undertake customer satisfaction surveys.

Risk and Security

Measures to manage security of the Three Waters functions are generally well regarded with high uptake and use of Public Health Risk Management Plans, Water and Sanitary Service Assessments, risk registers and contingency plans.

Sustainability

Whilst active leakage and pressure management programmes are commonly in place for water supply and inflow and infiltration reduction programmes are common for wastewater systems, development and implementation of formal energy minimisation use strategies was not seen as widespread currently within the industry. Where domestic metering has been adopted, per capita demand for both water supply and wastewater is reduced.

Asset Management

Asset Management and Asset Information for water supply and wastewater is generally considered by respondents to be accurate and reliable but this is less the case for stormwater. However, declining capex spends in latter years of the 2006 LTCCP programme suggests improvement in asset management planning practices are still required.

5.4 Contractors and Consultants

All respondents believed that there are opportunities to improve delivery of water infrastructure and most believed other means of procuring and funding such as PPPs were an option to be explored further. Most believed that too much time and resource is spent on contractual transactions given the number of Councils.

Some other specific comments include:

- » The large number of Councils within most regional areas affects the quality of region-wide long term planning;
- » A lack of economies of scale;
- » A lack of early contractor / operator involvement in design and procurement; and
- » The quality of forward planning is often driven by a lack of resources.

Three quarters of the respondents believe that the supply chain was adequate to service industry needs, but that it could be improved with greater integration of design with construction.

6. Report Card

Based on the findings of the research outlined in Sections 3 and 4, a Report Card using the structure and format as outlined in Section 2 has been developed:

Table 4 Ratings

A	Very Good	Infrastructure is fit for its current and anticipated purpose in terms of infrastructure condition, committed investment, regulatory regime and planning processes.
B	Good	Minor changes required in one or more of the infrastructure condition, committed investment, regulatory regime and planning processes to enable infrastructure to be fit for its current anticipated purpose.
C	Adequate	Major changes required in one or more of the infrastructure condition, committed investment, regulatory regime and planning processes to enable infrastructure to be fit for its current anticipated purpose.
D	Poor	Critical changes required in one or more of the infrastructure condition, committed investment, regulatory regime and planning processes to enable infrastructure to be fit for its current anticipated purpose.
F	Inadequate	Totally inadequate for all current and future needs.

The outcomes of this exercise are summarised in Table 5, Table 6 and Table 7.

Key factors which have influenced and determined the resultant gradings are listed in the Tables. The allocation of a grading to each assessment criteria is somewhat subjective but has been reviewed and supported by a number of project participants. The allocation of the overall grading has been completed upon consideration of the gradings for each of the assessment criteria, with equal consideration given to each criterion.

Table 5 Water Report Card

Criteria	Factors	Grading
Financial	<ul style="list-style-type: none"> » Generally a high (50-80%) confidence in 2009 LTCCP estimates. » LTCCP funding meets legislative requirements. » Shorter (3-5 years) nature of LTCCP capex spends. » Lack of price imperatives. » Need for procurement practice diversity. » Large extent of unmetered domestic supplies. 	C+
Customer	<ul style="list-style-type: none"> » ~ 73% of population have DWSNZ compliant water, 27% don't. » Customer surveys very common, with majority satisfied. » LTCCP consultation gives customer input to target levels of service. » Extent of losses difficult to estimate without universal metering. 	C+
Governance and Legislation	<ul style="list-style-type: none"> » RMA seen as adequate for water. » Inequities in consent compliance and monitoring, funding and resourcing between larger centres and smaller towns. » Limit on the contract length in the LGA seen as an impediment. » Approx only 15% of Council's spend is on Three Waters – not seen as core business and focus. » Lack of a regulator to set and monitor standards. » Increasing number of reporting and monitoring initiatives. 	C-
Security	<ul style="list-style-type: none"> » Public Health Risk Management Plans identify risks. » Water and Sanitary Service assessments also identify risks. » Drinking Water gradings benchmark supplies. » Wide use of contingency plans. » Wide use of asset registers. » Understanding of climate change impacts low at present. 	B-
Asset Management	<ul style="list-style-type: none"> » Good levels of confidence in AMP projections and use. » Assets generally half way through lives. » Planned maintenance is only approx 50% of total maintenance. 	C+
Overall		C+

Table 6 Wastewater Report Card

Criteria	Factors	Grading
Financial	<ul style="list-style-type: none"> » SWSS scheme oversubscribed. » Generally a high (50-80%) confidence in 2009 LTCCP estimates. » LTCCP funding meets legislative requirements. » Shorter (3-5 years) nature of LTCCP capex spends. » Lack of price imperatives. 	C-
Customer	<ul style="list-style-type: none"> » High levels of system inflow and infiltration. » Managing overflows a significant challenge nationwide. » Challenge of increasing discharge standards mean compliance becoming more difficult. » Customer surveys very common, with majority satisfied. » LTCCP consultation gives customer input to target levels of service. 	C
Governance and Legislation	<ul style="list-style-type: none"> » RMA seen as difficult with potential power given to small numbers of objectors. » Disparities in discharge standards. » Inequities in consent compliance and monitoring, funding and resourcing between locations, larger centres and smaller towns. » Inability to charge by volume unless a Council controlled organisation (CCO). 	D+
Security	<ul style="list-style-type: none"> » Water and sanitary service assessments identify risks. » Wide use of contingency plans and asset registers. » Understanding of climate change impacts low at present. 	B-
Asset Management	<ul style="list-style-type: none"> » Good levels of confidence in AMP projections and use. » Assets generally half way through lives. » Planned maintenance is generally less than 50% of total maintenance. 	C
Overall		C

Table 7 Stormwater Report Card

Criteria	Factors	Grading
Financial	<ul style="list-style-type: none"> » Generally a high (50-80%) confidence in 2009 LTCCP estimates. » LTCCP funding meets legislative requirements. » Shorter (3-5 years) nature of LTCCP capex spends. » Often funded with roading budgets, but not given focus. 	C
Customer	<ul style="list-style-type: none"> » Increasing number of flooding incidents. » Stormwater discharge quality generally not being addressed. » LTCCP consultation gives customer input to target levels of service. 	C-
Governance and Legislation	<ul style="list-style-type: none"> » Inequities in consent compliance and monitoring, funding and resourcing between larger centres and smaller towns. » Lack of consistency in levels of service and discharge standards. » Responsibilities linked with roading. 	C-
Security	<ul style="list-style-type: none"> » Wide use of contingency plans. » Asset registers seen as less reliable. » Understanding of climate change impacts low at present. 	D+
Asset Management	<ul style="list-style-type: none"> » Reduced levels of confidence in AMP projections and use. » Assets generally half way through lives. » Planned maintenance is only approx 50% of total maintenance. 	D+
Overall		C-

7. Where Do We Want To Be?

7.1 Areas of Current Good Performance

Based on the assessment outlined above, the following have been identified as areas of current good performance across the industry:

- » Confidence levels in the projections contained within the LTCCP process;
- » The community/customer consultation focus of the Local Government Act and the LTCCP process;
- » National consistency and clear targets afforded by the development of the Drinking Water Standards; and
- » Comprehensive risk management processes through Public Health Risk Management Plans (PHRMPs), water and sanitary service assessments and reported widespread development of risk registers and contingency plans.

7.2 Improvement Areas

Table 8 summarises issues that the Report Card has identified are potential areas for general improvement across the industry.

Table 8 Areas for improvement across the industry

Issue	Water Supply	Wastewater	Stormwater
1. Inequities between cities and smaller towns relating to funding ability, technical and managerial resourcing ability, consent conditions and compliance levels	ü	ü	ü
2. Fragmentation of responsibility and accountability and duplication of effort within the industry	ü	ü	ü
3. The need to address the competing functions of Councils to better serve water industry interests	ü	ü	ü
4. The need to address industry resourcing and skill gaps	ü	ü	ü
5. Differences in levels of service – wastewater overflows, discharge standards, etc.		ü	
6. The need for improved implementation of asset management practices			ü
7. The need for longer term capex projections beyond the first few years of the ten-year LTCCP period	ü	ü	ü
8. The need to address funding gaps		ü	ü
9. The need for pricing imperatives to better manage and value the resource	ü	ü	
10. The need to improve the application of the RMA process	ü	ü	ü
11. The need to address the implications of Climate Change	ü	ü	ü

7.3 Governance and Institutional Structures

Governance and structural issues are considered to have contributed significantly to the outcomes noted in items 1 to 6 in Table 8.

Fragmentation of the industry with its associated responsibilities and duplication of effort was seen as a major issue which manifests itself in a number of ways leading to reduced efficiency and effectiveness.

These include:

- » Lack of commonality in approaches;
- » Competitive tensions between local authorities, Regional Councils and Council Controlled Organisations;
- » Competing demands within Councils, with the provision of the Three Waters service being just one of a number of demands;
- » Lack of the benefits that can be derived through economies of scale;
- » Some but generally fairly limited co-operation between Councils and hence duplication of effort;
- » Limitations on scale to access or implement funding tools;
- » Limitations on the ability for the industry to improve its capability due to the way its capability is spread thinly across the country, impacting on a range of areas including procurement, operational management and asset management;
- » Limitations on integrated planning within regional areas made up of many Councils; and
- » Insufficient information within the industry for the customer to better understand the link between the Level of Service and product delivery costs.

International experience outlined in the report indicates that it is common practice to have some form of industry body to advocate, monitor and enforce common industry practices and standards. It is evident from the research that the absence of such a body in New Zealand has led to a very diverse delivery in terms of both services and standards. Where such bodies do exist, such as in Victoria through the Essential Services Commission or in the UK through the Water Services Regulation Authority, such outcomes are much less likely to exist.

The efforts by the Ministry of Health in New Zealand with the enactment of the Health (Drinking Water) Act 2007¹⁵ represents an initiative to unify standards across New Zealand. The efforts have been a major contributor to the better Report Card outcomes relating to water supply.

7.4 Funding and Procurement

Funding and procurement mechanisms are at the core of the outcomes related to items 7, 8 and 9 in Table 8.

¹⁵ Ministry of Health, 'The Health (Drinking Water) Amendment Act 2007', October 2007.

7.4.1 Funding

Many of the studies and also comments received in the survey have identified funding of industry infrastructure to be an issue. This has manifested itself in a number of ways including:

- » The identification of problems with small communities being able to fund water and wastewater upgrades;
- » Growing awareness that stormwater contamination is significant, particularly in the Auckland area with an associated funding gap;
- » Capital expenditure in water and wastewater that tails off over a ten year period as evidenced by the analysis of all Council LTCCPs, despite ongoing growth demands in most regions;
- » The survey of Councils where 25% of respondents indicated funding was insufficient to maintain or improve service levels. Approximately half of the 25% also believed their Council did not have the ability to fund the additional investment required;
- » Significant over subscription of the Sanitary Works Subsidy Scheme established by the government earlier this decade;
- » The over subscription of the Tourism Demand Subsidy Scheme for upgrading of water and wastewater schemes;
- » The allocation of funds in the Drinking Water Assistance Programme (DWAP) being far less than the estimates of what is required to achieve the outcomes of the programme, aimed mainly at the 27% of the population that do not enjoy DWSNZ-compliant drinking water;
- » Recommendations from the 2007 Rates Review¹⁶ to improve funding flexibility for the water industry including a substantially increased infrastructure equalisation fund;
- » The difficulties associated with being able to charge by volume for wastewater services; and
- » Governance factors discussed in Section 7.3 such as lack of economies of scale, industry fragmentation etc, are in some ways contributing to these funding issue outcomes.

Looking at the transport industry in New Zealand, the Ministry of Transport is in charge of policy and governance while the new amalgamation of Transit and Land Transport New Zealand will form the NZ Transport Agency (effective from 1 August 2008) to manage the State Highway networks and distribute funding. Transport enjoys an ongoing funding allocation process, however the water industry does not enjoy the same benefits. Consideration needs to be given to establishing such a scheme for the water industry. Management and regulation of such a scheme could potentially be the function of the national water body discussed in Section 7.3 and subsequently in Section 8.1.1.

However, its important to realise that increases in funding by Central Government of the water industry through subsidy scheme extensions, equalisation funds etc should not be considered until these governance-related issues are addressed first as their resolution is likely to alleviate some of the resulting funding issues.

¹⁶ Ministry of Economic Development, Rates Inquiry Report on Drivers of Local Government Expenditure, July 2007

7.4.2 Procurement

A strategic, whole-of-organisation, approach to procurement management enables organisations to position themselves to lead their supply market in securing capacity and capability against forward demand, increase the contribution of key suppliers, mitigate risk, and lower the operational cost of their business. Taking a lead in procurement management also has the capability to avoid clients being a 'price taker' and to meet the demands of stakeholders in terms of 'best for network' value-for-money and sustainability.

There is no single form of contract or delivery system that suits every project. Traditional forms of contracts have typically sought to transfer risk to another party but the project becomes exposed where that party is not in a position to control and therefore manage that risk.

An adversarial approach also works against innovation and introduces inefficiencies into the project.

7.5 Legislation

Outcomes related to items 9 and 10 in Table 8 are contributed to by the current legislative framework.

Although there are a multitude of statutes which the national water industry has to take into account, there are four principal Acts which shape the form and function of the industry. These Acts include:

- » Local Government Act 2002;
- » Local Government (Rating) Act 2002;
- » Resource Management Act 1991; and
- » Health (Drinking Water) Act 2007.

Within the Auckland region there is also a significant supplementary statute being the Metropolitan Drainage Act 1960, which defines trade waste responsibilities. Leaving aside the question of governance which is dealt with in Section 8.1, the existing legislation contains a number of prominent issues. Many of these issues were canvassed in the Local Government Rates Inquiry 2007¹⁷, along with recommendations to address them. These issues include:

- » Restrictions on the ability of local authorities to enter into contracts with the private sector for any aspect of the operation of water services for a term longer than 15 years, as specified in the Local Government Act 2002;
- » Restrictions in the Local Government (Rating) Act 2002 around the ability of local authorities to undertake a volumetric charging of wastewater. Volumetric charging of water is allowable but for Councils to undertake the former they have to establish a separate Council controlled organisation (CCO). This has been an impediment for those Councils who have water metering already in place, given the significant CCO establishment process; and
- » Application of national drinking water standards, driving the need for increased capital expenditures for those Councils which are in a deficit position regarding water quality.

¹⁷ Report of the Local Government Rates Inquiry, July 2007.



With regard to the Resource Management Act specifically, there are a number of aspects which should be highlighted including:

- » Impact on the efficient delivery of works albeit less problematical for the water industry compared to some of the other sectors. This is due to a combination of the majority of works being maintenance and renewals, as opposed to new major construction and the lesser impact generally of underground land use compared to above ground;
- » Prioritisation between competing water users who are granted water rights under the Resource Management Act, has been noted as a limitation given the Act has limited prioritisation mechanisms; and
- » Monitoring of the conditions associated with discharge consents by regional Councils has been reported as variable and there is no national discharge standards regime.

8. Options for Improvement Areas

8.1 Institutional Structure and Governance Options

The research¹⁸ suggests that there is a trend towards achieving simplicity in water governance and institutional structures around the world and also in increasing the customer base of individual water suppliers. The aim of such reform is typically to reduce or remove many of the problems listed in Section 7.3 that are apparent in the New Zealand water industry.

A detailed analysis of governance and institutional structure arrangements in Australia, the UK and in some European countries has been carried out and is summarised in Appendix C.

Many of these have involved both of the following which, with some noted exceptions, are largely absent in the New Zealand water industry:

- » Management of the water supply and wastewater functions by water-focussed entities, be they either Council-owned companies (similar to the Watercare, Metrowater and Manukau water models in Auckland) or water authorities or companies completely independent of Councils; and
- » Establishment of a body to advocate, monitor and enforce common industry practices and standards. In looking at alternative governance models around the world, large or small countries, private or public, many have a single governing or regulating body of some form. Within New Zealand, where this function exists, it is spread across a number of different agencies.

Drivers for introduction of reforms particularly in the Victorian, Scottish and Welsh water industries were similar in many ways to issues currently facing the New Zealand industry as listed in Section 7. The research and in particular, the results of the WSAA benchmarking exercises¹⁹, indicates that these reforms have been successful in lifting the performance of the water industry to address these sorts of needs. A focus on the provision of the water supply and wastewater as a core business of the organisation and removal of distractions and internal competing interests from within the organisation is likely to have contributed to this outcome.

8.1.1 Institutional Structure Options

The research and also the WSAA benchmarking has shown that retaining public ownership of the Three Waters infrastructure is a common feature of the best performing water entities. Furthermore there is no public appetite for a change of this situation in New Zealand. Consideration of privatisation models is therefore not considered as part of this investigation.

The outcomes from the current Auckland Royal Commission are due to be handed down in late 2008. Whilst this Commission is focussing on the broader field of local government, the water industry is a key part of this. It is assumed that the water industry will be given due consideration in its findings.

It is likely that if recommendations for change are part of the findings of the Commission, then at some point in the subsequent period, effort will be made to implement these findings. Once implemented, it is not unreasonable to expect that given the awareness within the industry of the need for change indicated

¹⁸ De Witte, K., Marques, R. Designing incentives in local public utilities, an international comparison of the drinking water sector, January 2007 and Water Supply and Sanitation Board of the Infrastructure Network of the World Bank Group. Water Supply & Sanitation Working Notes: Characteristics of Well-Performing Public Water Utilities. Note No. 9, May 2006

¹⁹ Halabi, B. Stewart, G. Allen C. Benchmarking as a Business Improvement Tool – New Zealand Experience and Approach, 2008

by the research, this would then have a “knock-on” effect throughout the rest of the country over some further subsequent timeframe.

On this basis, the following options have been developed for the water industry debate.

Continuation of the arrangements associated with the current status is not considered a viable long-term option, given the existing issues identified in this investigation.

The options developed represent a spectrum of change from the current arrangements, ranging from some to significant change.

Legislative change will be required to enable most of these options to occur.

- » **Option 1:** Maintain current status with increased universal metering for water and wastewater and a stronger emphasis and encouragement of shared services between Councils. This is the minimum change option. Universal metering is aimed at getting a price imperative into the supply of water and wastewater services which is likely to reduce demand, encourage conservation and defer demand-growth related upgrades. This should free up capital to reinvest in system improvements which otherwise may not have been funded. Emphasis on and encouragement of increased levels of shared services arrangements is aimed at addressing the identified “critical-mass” issues such as thinly-spread nature of technical and financial resources identified in the investigation.
- » **Option 2:** As per Option 1 but with the addition of the role of a regulatory body. The main aims of the establishment of the regulatory body in this instance would be to set and require achievement of common standards and objectives across the industry in order to remove inequalities that the research has identified exist, to rationalise reporting arrangements to a single entity and as part of this to administer a national benchmarking protocol aimed at achieving an overall lift in industry performance. Types of regulatory body models are discussed further in Section 8.1.3.
- » **Option 3:** As per Option 2 but with increased flexibility, support and ability to permit adoption of franchise models similar to the Papakura model on a voluntary basis. Such a model would need to be underpinned by good long-term asset management practices.
- » **Option 4:** involves significant structural reform of the industry. In addition to the establishment of the regulatory body, this option involves the establishment of separate water-focused entities across the country. The establishment of such entities is aimed at placing responsibilities for the provision of at least the water supply and wastewater components of the Three Waters service with water focused entities, thereby removing the potential internal conflicts of responsibilities, priorities and decision-making that the research has shown currently exists in Councils within New Zealand. Establishment of such entities is considered worthwhile only if the populations they serve are large enough to permit improved access for managers of small systems in rural towns to improved funding options, technical skills and resources that the research has shown are currently not available to such areas. In addition, it is considered that the potential reduction in administrative costs associated with the number of separate entities could free up additional capital that could be invested to reduce funding shortages that the research has shown exist. The minimum critical mass of such entities is considered to be specific to the individual needs and demographics of different regions across New Zealand. Across the country it is considered to be of the order of at least 60,000-100,000 people.

Two models within Option 4 exist. Option 4a involves the establishment nationally of water-focused council-controlled trading organisations (CCTOs). Existing New Zealand examples are Manukau Water, Metrowater and Capacity – Wellington Water Management. Under this arrangement, each entity would

have its own Board of Directors and management teams. Ownership of the infrastructure assets associated with at least the water supply and wastewater components of the Three Waters infrastructure would remain with Councils either directly or through the new entities but the responsibility for their development and management would be vested in the new entities. The association of stormwater assets with roads means the allocation of responsibility for stormwater assets would need to be considered further. Considering the three existing CCTOs mentioned, precedents currently exist for either case. With the proposed larger population bases, in many instances such entities would cross over existing Council boundaries. This sort of arrangement already has a local cross-council precedent in the case of Capacity – Wellington Water Management.

Option 4b would see the establishment of publicly-owned water companies or authorities that are totally independent of the Councils that cover the area they serve. Ownership of and responsibility for the management and development of the water supply and wastewater assets would rest entirely with the new entities. In the Victorian model, because of the link with roading, such ownership and responsibility of stormwater assets sits with the Councils. As with Option 4a, this sort of arrangement is already managed in Victoria.

It is worthy to note that under either Options 4a or 4b, without at least two of the Three Waters functions, a significant amount of Councils' business (generally considered in the order of 80% with small district councils) would be related to roading. The on-going viability of current small district Councils with such a limited responsibility focus would need to be further investigated understood. In setting up water authorities in Victoria, the state government coincidentally rationalised Councils.

Given this criteria, the geographical jurisdictions of such entities under either Option 4b could be similar to the current regional council boundaries. Outside of Auckland such an arrangement would see entities headquartered in provincial cities with jurisdictions across regions and approximate populations as shown in Table 9.

Table 9 Geographical Jurisdictions

Regions, Districts	Headquarters	Estimated Population (000's)
Northland, (incl. Kaipara)	Whangarei	145
Waikato (incl. Rotorua and Taupo)	Hamilton	330
Bay of Plenty	Tauranga	295
Taranaki	New Plymouth	105
Hawkes Bay, East Cape	Napier/Hastings	205
Manawatu, (incl. Wanganui, Rangitikei, Horowhenua and northern Wairarapa)	Palmerston North	210
Greater Wellington (incl. Kapiti & Sth Wairarapa)	Wellington	455
Nelson, Marlborough, West Coast	Nelson	165
Canterbury, (incl. northern and southern Canterbury)	Christchurch	535
Otago	Dunedin	210
Southland, (incl. Queenstown Lakes)	Invercargill	115

8.1.2 Comparison of Options

A brief summary of some advantages and disadvantages of each of these options is presented in Table 10.

Table 10 Comparison of Options

Option	Advantages	Disadvantages
1. Existing but with universal metering and more shared services	<ul style="list-style-type: none"> » Pricing imperatives to value and conserve resource, reduce demand, defer growth related upgrades to fund other projects. » Some anticipated progress towards addressing critical mass-related issues. » Some potential for reduction in administration costs. » Minimal change. » Minimal legislative impact. 	<ul style="list-style-type: none"> » Least potential for industry improvement. » Does not address inconsistency issue. » Does not address competing priorities in responsibilities across Councils.
2. As per option 1 but with regulatory body	<ul style="list-style-type: none"> » Pricing imperatives to value and conserve resource, reduce demand, defer growth related upgrades to fund other projects. » Some anticipated progress towards addressing critical mass-related issues. » Some potential for reduction in administration costs. » Rationalisation of reporting requirements. » Commonality in standards, reporting and improvement objectives across the industry. 	<ul style="list-style-type: none"> » Some legislative change impact. » Limited potential for industry improvement. » Does not address competing priorities in responsibilities across Councils.
3. As per Option 2 but with more options for franchise arrangements	<ul style="list-style-type: none"> » Pricing imperatives to value and conserve resource, reduce demand, defer growth related upgrades to fund other projects. » Increased anticipated progress towards addressing critical mass-related issues. » Rationalisation of reporting requirements. » Increased potential for reduction in administration costs. » Commonality in standards, reporting and improvement objectives across the industry. » Better addresses competing priorities across Councils. 	<ul style="list-style-type: none"> » Increased legislative change.
4a. Larger water focussed CCTOs and regulatory body	<ul style="list-style-type: none"> » Pricing imperatives to value and conserve resource, reduce demand, defer growth related upgrades to fund other projects. » Maximised increased anticipated progress towards addressing critical mass-related issues. » Rationalisation of reporting requirements. » Maximised potential for reduction in administration costs. » Commonality in standards, reporting and improvement objectives across the industry. » Addresses competing priorities across Councils. 	<ul style="list-style-type: none"> » Further increased legislative change. » Need to be able to access provision of all services in remote areas. » Need to consider viability of remaining small council functions.
4b. Larger regionally based water companies and regulator	<ul style="list-style-type: none"> » Maximised increased anticipated progress towards addressing critical mass-related issues. » Rationalisation of reporting requirements. » Maximised potential for reduction in administration costs. » Commonality in standards, reporting and improvement objectives across the industry. » Fully independent of Councils and the associated political influence on decision-making processes. 	<ul style="list-style-type: none"> » Maximum legislative change. » Need to be able to access provision of all services in remote areas. » Need to consider viability of remaining small council functions.

Potential benefits and improvements in outcomes of the water industry progressively accrue with each option.

Options 4a and 4b clearly offer the maximum potential for progress towards addressing critical mass related issues, and for reductions in administrative costs, thereby making additional funding available to address current funding gaps. Option 4b would result in complete independence of the water industry from the local government political processes.

Far more detailed analysis needs to be undertaken to determine the most appropriate model with which to move the New Zealand water industry forward. However, the options put forward above involve varying degree of change. Options 1 and 2 are considered to represent significant potential improvements on the current arrangements and outcomes. Their implementation in the short term is seen as a necessary first step in order to improve New Zealand's water industry performance in the areas identified in this study. Voluntary implementation of Option 3 could be seen as a further enhancement of the current arrangements.

Implementation of Options 4a and 4b involve progressively more reform and major restructure to achieve what are likely to be potential significant further benefits. A further level of detail relating to these models needs to be established before their implementation can be further considered. Furthermore, the public's and Government's political willingness to move to such a level of reforms would need to be assessed.

In view of this, adoption of all reforms included up to Option 3 could be implemented in the short term. Resulting performance could be monitored over a period of 2-3 years to assess how effective they had been in improving industry performance. A review could be undertaken at the completion of that time to assess if the further reforms involved in Options 4a and 4b are required to achieve further improved performance.

If the reforms included in Option 3 were to be implemented in the short term and improvement progress monitored after 2-3 years, this timeframe would coincide with the likely period of implementation of the findings of the Royal Commission into Governance in the Auckland region. Outcomes and learnings from this process could also feed into this review.

8.1.3 Governance Options

The research indicates that potential benefits exist if some form of regulatory body were able to monitor water supply/wastewater suppliers' practices and performance and administer and enforce common standards across the industry.

In the UK, OFWAT was established to achieve not only these objectives but also to protect consumers by regulating the price of water and wastewater services in a fully-privatised industry. In Victoria, the Essential Services Commission administers regulated benchmarking and so thereby creates a "competition by comparison" environment.

Currently within New Zealand, a number of bodies perform regulatory functions across the water industry.

- » It is Regional Councils' responsibility to monitor and enforce compliance with RMA-driven consent conditions. The results of the survey conducted as part of this study in particular indicates that the extent to which this is done is highly variable throughout New Zealand, creating inequities amongst Councils;
- » It is the Ministry of Health's responsibility through the Public Health Organisations and Drinking Water assessors to monitor compliance with legislated requirements relating to drinking water. Whilst the DWSNZ represent a single national standard, recent experiences with the development of Public Health Risk Management Plans required under related legislation suggests that outcomes and approaches still vary widely;
- » The office of the Auditor General reviews Asset Management plans and Long Term Council Community Plans; and
- » Benchmarking is done voluntarily through a number of forums – the Auckland Water Industry Performance Review, the WSAA Benchmarking project, and more recently, the benchmarking exercise undertaken by NZWWA.

A national regulatory body in New Zealand could therefore serve the following functions:

- » Develop consent conditions in conjunction with Regional Councils to achieve a better level of consistency nationally and then administer and monitor compliance with these conditions;
- » Administer and monitor compliance with legislated requirements relating to drinking water;
- » Review and administer water industry-related components of AMPs and LTCCPs;
- » Develop, administer and manage a national benchmarking exercise, including related common reporting requirements;
- » Develop and administer pricing controls on the provision of water and wastewater services to customers when these are billed on a volumetric basis; and
- » Administer and allocate resources available in any future Central Government funding programmes.

Whilst the ideas above have been presented as possible roles and scope for such a regulatory body, the actual role and scope of such an entity needs to be investigated much further. The on-going roles of and relationships with other entities currently responsible for monitoring various aspects of performance would also need to be considered.

Active participation in the development and on-going operation of the regulator's objectives and role by water supply and wastewater service providers is seen as a more viable model for the regulator rather than a separate "policing" type regulator as exists with OFWAT and to some lesser extent the ESC in Victoria.

The gas industry in New Zealand has recently developed such a "co-regulatory" model which is worthy of consideration for the local water industry as its formation and objectives present a number of parallels with the water industry. It is governed by a Board of Directors comprising both independent directors and also representatives of the gas industry to ensure the role of the regulator is not balanced between the customer and the supplier.

The Gas Industry Company Limited is an industry owned entity established to fulfil the role of the industry body under the Gas Act 1992. The Gas Industry Company, as the industry body, is the co-regulator of the gas industry, working with both the Government and the gas industry to develop outcomes that meet the Government's policy objectives as stated in the Government's April 2008 Policy Statement on Gas Governance.

In its Policy Statement released in March 2003, the Government invited the gas industry to establish a governance structure and work programme to deliver on the expectations set by the Government in that statement. The Policy Statement stated that the Government favoured industry-led solutions where possible, but that it was prepared to use regulatory solutions where necessary. This arrangement was consistent with a regime based on self-regulation. The changes to the Gas Act made in late 2004 that enabled the establishment of an industry body were as a result of a comprehensive review of the gas sector undertaken by the Government during 2001 and 2002. The objective of that review was to ensure the gas sector could meet the Government's overall energy policy objective, which is to ensure that energy is delivered to all classes of consumers in an efficient, fair, reliable, and environmentally sustainable manner.

As a co-regulatory body, the Gas Industry Co is able to make recommendations to the Minister of Energy on a wide range of industry matters, including the making of rules and regulations in relation to the wholesaling, processing, transmission, distribution and retailing of gas.

8.2 Legislation

In addition to the legislative changes that would be required to enable the changes in governance and institutional structure arrangements outlined in Section 8.1, the following considerations in respect of legislation are put forward:

- » The recommendations of the Local Government Rates Inquiry relating to water be supported including:
 - Allowance of volumetric charging of wastewater to supplement water under the Local Government (Rating) Act 2002; and
 - Extension of the 15-year time limit for contracts in Section 136 of the Local Government Act 2002.
- » Consideration be given to the development of national standards for the water industry including:
 - Wastewater and stormwater discharge quality; and
 - Water extraction prioritisation.
- » Streamlining the implementation measures of the Resource Management Act to make it easier for wastewater service providers to achieve their objectives, in particular reduce the ability for single objectors to slow and "derail" consenting processes.

8.3 Funding and Procurement

The options for funding and procurement solutions have been considered in some details and these are summarised in Appendix D.

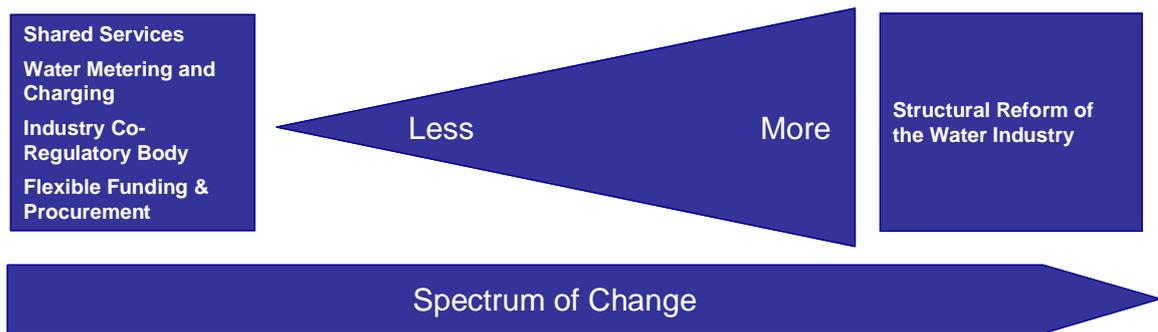
However, it is important to realise that changes to funding arrangements through greater Central Government contributions to the water industry through subsidy scheme extensions and equalisation funds should not be considered until these institutional structure and governance-related issues are addressed first. This is because their resolution is likely to remove some of the inefficiencies that exist and hence alleviate some of the current funding issues.

Key funding and procurement issues recommended for further consideration are as follows:

- » Increased use of water metering to properly capture water usage and allocate costs fairly;
- » Enhanced flexibility for volumetric charging of wastewater;
- » Consideration and adoption of procurement strategies a wider variety of contract forms, including bundled arrangements, term contracts, collaboration, early contractor involvement, alliances, Public Private Partnerships;
- » Bundling or aggregation of jobs by works skills category over an extended time period (e.g. three years);
- » Taking an integrated, programme approach to the management of works for all of asset creation, renewals, upgrades, and maintenance;
- » Developing more non-price evaluation attributes that, over time, will support closer alignment of contractor skills to the client's requirements, incentivised performance measures, and improvement implementation;
- » Consideration of funding processes similar to that currently available for transport; and
- » Increasing government infrastructure contributions.

9. Roadmap

A number of improvement opportunities have been identified. These are able to be progressively introduced so that their effects can be gauged before more complex improvement opportunities are committed to and implemented. These opportunities have been staged as a Spectrum of Change as follows:



The improvement opportunities have been scheduled so as to maximise their potential for “knock-on” improvement effects. For example, the early establishment of a co-regulatory body is seen to address a number of the identified areas of improvement. A review of the results and improvements following Steps 1 and 2 has been included. Depending on the outcomes of this review and the improvements achieved, Steps 4 and 5 may or may not be required.

On this basis the following Road Map for the New Zealand Water Industry has been developed.

Roadmap
<u>STEP 1</u>
<p>Institute structure and governance change designed to address inequities and differences in standards, compliance with requirements and funding across the industry. The key components of this change process include the following:</p> <ul style="list-style-type: none"> » Establishment of a co-regulatory body that reduces the differences and inequalities that currently exist across the water industry nationally. It will achieve this if it: <ul style="list-style-type: none"> ○ Develops, administers and monitors compliance with common sets of standards; ○ Reviews and administers water industry-related components of AMPs and LTCCPs; ○ Develops, administers and manages a national benchmarking exercise, including related reporting requirements; ○ Develops and administers pricing controls on the provision of water and wastewater services to customers when these are billed on a volumetric basis; and ○ Administers and allocates resources available in any Central Government funding programmes. » Wider implementation of the introduction of metering and user-pays as the basis for charging of water supply and wastewater for both domestic and business/commercial consumers as a

means of conserving the resource, reducing demand and deferring necessary investment on growth-related infrastructure;

- » Encouragement of the increased use of shared-services arrangements between Councils as a means of addressing “critical-mass” issues such as too thinly spreading appropriately qualified technical and management resources;
- » Permitting and encouraging more franchise agreements on a voluntary basis that implement sound asset management practices for the operation and maintenance of water supply and wastewater services in order to further address “critical-mass” issues such as too thinly spreading appropriately qualified technical and management resources;
- » Encouraging the use of a wider variety of procurement methods in order to further maximise the use of limited funding resources; and
- » Undertaking legislative reform, where required, to facilitate Step 1 changes.

STEP 2

Undertake supplementary legislative changes to:

- » Streamline the implementation processes of the Resource Management Act to make it easier for wastewater service providers to achieve their objectives, in particular reducing the ability for single minority objectors to slow and “derail” consenting processes; and
- » Progressing ownership and prioritisation issues between competing water users who are granted water rights under the Resource Management Act.

STEP 3

Reviewing the resulting improvements brought about by these measures after 2-3 years and after implementation of the findings of the Royal Commission into Governance in the Auckland region.

STEP 4

Based on the Step 3 review above, assess the need for further reform of the industry through the formation of water-focussed entities as either Council-Controlled Trading Organisations or independent publicly-owned water authorities with much larger customer bases serving regions and based in provincial cities in order to:

- » Further address “critical mass” issues;
- » Provide a core-business focus for the management and provision of water supply and wastewater services throughout New Zealand; and
- » Minimise administrative costs so as to free up funds for investment in industry infrastructure that can otherwise not be funded.

Legislative changes to enable these structural changes will be required.

STEP 5

Advocating for further Central Government funding for water and wastewater infrastructure only if the above reforms do not generate sufficient savings to address the current funding gaps identified during this study.

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World Economic Forum 2005.



Appendix A

Summaries of Research Reviews

New Zealand Water Industry

1. Greater Wellington Water Strategy

The Wellington Regional Council is leading and facilitating the development of a Water Strategy for greater Wellington. This is in the initial stages and to date meetings with all the councils in the region have been held. It is likely that the strategy will address:

- » Demand Management;
- » Security of Supply; and
- » Environmental Water Quality.

The timetable for this work is yet to be agreed.

2. Canterbury Water Strategy²⁰

The Canterbury Water Management Study was initiated by the Ministry of Agriculture and Forestry (MAF), Ministry for the Environment (MfE) and Environment Canterbury (ECan) following the severe droughts of the late 1990s. The droughts raised concerns about whether Canterbury would be increasingly at risk from the effects of water shortages.

The Canterbury Strategic Water Study involves a number of stages (many of which have now been completed).

- » **Stage 1** involved a study by Lincoln Environmental (published in 2002) evaluating current and future water supply and demand in the region. This concluded that on an annual basis there is sufficient water in Canterbury, however, in some catchments peak demands could not be met on a weekly basis. Water storage should be considered to partly meet future water demands to supplement supply in times of low natural flows.
- » **Stage 2** began in 2004 and identified potential water storages in Canterbury and their feasibility. The summary report has been published with the full report to be published when it is ready.
- » **Stage 3** began in 2006 and involved the preliminary evaluation by multi-stakeholder groups. The two over-arching issues identified were land use intensification effects on water quality and maintaining or improving flow variability in rivers and streams.
- » **Stage 4** entails public consultation to be undertaken in 2008. "The objective is to create a water management strategy for Canterbury".

3. Three Waters Draft Strategic Plan , Discussion Version (Watercare Services Ltd, April 2008)

The development of this document is led and co-ordinated by Watercare Services Limited with participation from Auckland Water Services Providers.

The purpose of this plan is to *"guide the delivery of wastewater, water supply and stormwater services in the region through 2100 and beyond"*.

²⁰ Website: www.canterburywater.org.nz

“The main focus of this draft Strategic Plan is wastewater followed by water supply ... Stormwater management is already highly developed within councils, so the main outstanding issue is more integrated policy.”

Demand Management

A strong emphasis on water demand management is proposed with a per person demand reduction of 15% of 2004 levels by 2025 and meeting 10% of total demand by beneficially using treated wastewater and stormwater. Proposed initiatives included pressure management, water conservation, leakage reduction, pricing mechanisms, beneficial use of stormwater using rain tanks and aquifer recharge, beneficial use of treated wastewater for non-potable industrial purposes, and promotion of water efficient appliances and systems.

Water Supply

If regional water demand continues to grow in accordance with forecasts, Auckland will require a new water source by 2026, which if this can be deferred through successful water demand management measures, will defer an estimated \$300m expenditure on a new water sources.

Wastewater

Significant upgrades to the Mangere Wastewater Treatment Plant have resulted in major improvements in water quality in the Manukau Harbour.

The most immediate need is to provide trunk sewer capacity in central Auckland to avoid dry weather wastewater overflows. A new central interceptor will augment the trunk sewer capacity to Mangere. Benefits will include a reduction in the risk of trunk sewer breakages, a more than 80% reduction in untreated wastewater discharges to the environment, and provision of on-line storage in the new trunk sewer. It is anticipated that some wastewater flows will need to be diverted to other treatment facilities within the current planning period. While some will likely be met by small local treatment plants there will need to be a site secured for an new regional facility.

Stormwater

This is generally managed locally but *“there would be considerable merit in developing regionally consistent policy and infrastructure design and implementation standards for a range of issued that affect the delivery of both stormwater and wastewater services.”*

“The joint planning and implementation of integrated solution for the delivery of water supply, wastewater and stormwater will offer significant opportunities for efficiencies in resource use and cost savings.”

4. Rates Inquiry Report on Drivers of Local Government Expenditure (Ministry of Economic Development, July 2007)

This report is a critical review of the current and future drivers of local government capital expenditure and provides advice on whether the funding requirement identified by local government LTCCPs is broadly accurate. The proportions of Councils' annual spend across its different functions were documented in this report as shown in Table 11 below:

Table 11 Summary of Average Expenditure (Rates Inquiry Report on Drivers of Local Government Expenditure)

Categories	All Councils
Transport (growth & higher level of service)	33%
Renewals	33%
Growth community facilities	10%
Higher level of service Infrastructure	9%
Three Waters growth/higher level of service	15%*

*The range of expenditure on Three Waters at an individual Council level was noted as 8%-37%.

This report suggests that provision of the Three Waters typically makes up less than 14% of total capital expenditure for Councils with approximately one third being related to drinking water standards while wastewater typically makes up 18%. The trend in capital expenditure falls towards the end of the 10 year period while there is an increase in operating expenditure. It was also noted that many Councils had not allowed for government subsidies for water and wastewater.

5. Auckland Water Industry Annual Performance Review 06/07

The Auckland Water Group (made up of Auckland Water Services providers) undertake a performance review of the Auckland Water Industry annually.

This group serves a population of nearly 1.4 million. In 2006/07 a total of 140 million m³ of potable water was supplied, equating to 178 litres per person per day, and 133 million m³ of wastewater treated (including trade waste).

The industry drivers and challenges are summarised as follows:

Drivers	Challenges
Providing for Growth	Asset Life Cycles
Meeting wide-ranging legal requirements	Security of Supply
Delivering service levels in a sustainable and resilient manner	Skill Shortages
	Cost and Affordability
	Climate Change

6. Water Rates and the Local Body Elections (NZWWA Journal, July 2007)

This report highlights and contains the submission that NZWWA made to the Shand Inquiry. The NZWWA's review of the 2006-2017 Long-term Council Community Plans (LTCCPs) is summarised in the submission as follows:

Table 12 2006 LTCCP Summary (\$m) (NZWWA Journal)

	Water Supply	Wastewater	Stormwater	Total
Capex	\$2,748	\$3,890	\$2,149	\$8,787
Opex	\$5,398	\$5,785	\$2,496	\$13,679
Totals	\$8,146	\$9,675	\$4,645	\$22,466

It is stated that this \$22.5 billion projected expenditure will likely require alternative funding methods such as user pays, department funding and consideration of institutional arrangements.

Recommendations

Recommendations arising included:

- » Investigation of a national funding pool;
- » Introduction of user pays;
- » Consideration of rationalising water service providers; and
- » Better utilisation of debt funding mechanisms.

7. Local Government: Results of the 2006/07 Audit (Office of the Auditor General, 2007)

This report is of audits of the local government sectors commenting on financial, governance and administration issues and highlighting some matter on development contributions.

The three matters particularly affecting the sector were found to be as follows:

1. Timeliness in reporting on performance – a negative trend in completing reporting obligations was found with 19% of local authorities unable to complete this on time.
2. Amendments to the LTCCP's
3. Local authorities continuing to pursue a substantial number of amendments to their 2006-16 LTCCP's
4. The Office of the Auditor General receiving about 180 ratepayer enquiries annually.
5. New Zealand's equivalents to International Financial Reporting Standards – the concern around the complexity having doubled the size of financial statements and the significant concern this could raise in preparing 2009-19 LTCCP's.

Conclusions

While many of the authorities meet the various requirements "... we remain concerned that some local authorities are not dealing well with meeting the Act's requirements. Their inability to meet normal accountability requirements, combined with newly elected local authorities and the move into the next phase of LTCCP planning, means that these local authorities are already "on the back foot" in meeting the challenges of 2008/09".

8. Annual Review of Drinking Water Quality in NZ 2005 (Ministry of Health, 2006)

The Ministry of Health has assessed the microbiological and chemical quality of drinking water in New Zealand using the Drinking Water Standards for New Zealand: 2000 (DWSNZ:2000). The last of these reviews was completed for 2005.

The key findings of this review were that 71% - 76% of the population were served water complying with the DWSNZ 2000, 13% - 17% were supplied with water not compliant with the DWSNZ 2000, while 11% were not supplied by a registered reticulated drinking water supply.

Most of the large communities complied while many of the smaller ones did not. This highlighted that while the larger supplies, that serve most of the population, tend to comply with the drinking water standards, smaller and private supplies are where the problems tend to occur.

9. Review of Sanitary Works Subsidy Scheme (Ministry of Health, September 2006)

The Sanitary Works Subsidy Scheme was introduced in 2001. The Government's intention for this scheme was to provide assistance to small and medium sized communities, having an insufficient rating base to fund their own upgrades and face significant health and environment risks from inadequate sewage treatment.

This report was to evaluate the effectiveness and success of this scheme.

In 2006 of the \$150m, \$106.6m had received final or provisional approval and the report found that there were a considerable number of eligible communities had not yet applied for the SWSS, with schemes that had not yet applied being on average more deprived than those that had already applied.

The report found that additional funding of \$203m (2006 dollars) was required to address communities targeted by the government. It also found that one of the concerns that councils had were to ongoing costs which are not addressed by the scheme.

10. Ministry of Economic Development Infrastructure Stocktake (PricewaterhouseCoopers, January 2004)

This study found New Zealand's infrastructure to be in reasonable condition and that, subject to ongoing appropriate funding, this should not pose a barrier to growth and sustainable development.

Policy issues associated with infrastructure related to pricing, funding and procurement mechanisms. Some of the key issues for water supply were found to be related to:

- » Water allocation processes and prioritisation (via the Resource Management Act);
- » Lack of market mechanisms and pricing signals (direct charging of the end user); and
- » The inability of small communities (particularly ones with seasonal tourism influxes), with small rating bases, to fund necessary water supply and network upgrades.

For wastewater, key issues that were identified included:

- » The lack of national standards/benchmarking on wastewater discharges;
- » Breaches of discharge consent limits; and
- » The impact of tourism influx and effluent outputs on small communities, lacking the rating base to support necessary investments.

11. Submission to Ministry of Economic Development on Infrastructure Stocktake (Association of Consulting Engineers New Zealand Inc, July 2004)

This is a submission that was made on the Infrastructure Stocktake undertaken by PWC for the Ministry of Economic Development in 2004. This highlighted a number of issues and concerns by the Association of Consulting Engineers New Zealand (ACENZ) on this report, including consideration of the technical input to the industry since the late 1980s by consulting engineers, the fundamental risks inherent to current strategies and current management/governance models where technical input is lacking.

A Report Card approach was recommended with an example. The report included the following ratings for water:

Drinking water - C: “\$200m investment required to bring existing infrastructure up to scratch, water restrictions common in many areas (threat to security of supply), 22% of population have uncertain quality of water supplies available (4% contaminated).”

Wastewater & Stormwater - D: “Number of waste water schemes requiring subsidies to meet resource consents, poor quality treatment and discharge, many non compliances around the country with respect to consent conditions.”

12. Auckland Regional Stormwater Action Plan, A Co-ordinated Approach To Regional Management and the Delivery of Improved Stormwater Quality Outcomes (Auckland Regional Council, September 2004)

One of the key points coming out of this study is that the Auckland region has significant stormwater quality issues that could cost the region billion of dollars over the next 20 years, with a preliminary estimated average of \$4.5 million per year for the next ten years. The report highlights that efforts and funding in excess of what is currently being undertaken is required to arrest the contamination caused by stormwater management problems.

13. From the Sky to the Sea (The Auckland Water Management Plan, 2004)

The participants on this Plan are Watercare Services Ltd and six network operators: Ecowater Waitakere City Council, Manukau Water, Metrowater, North Shore City Council, Rodney District Council and United Water.

The objectives of this plan which was driven by regional integration requirements included the management of water demands, protection of the environment, working with national, regional and local government, community decision making and education and working with industry to improve efficiency.

14. Rationalisation Options Study, a Report for Auckland City and Metrowater (NERA, December 2003)

This study explored alternative business models for Metrowater based on international experience.

Leaving aside the debate on amalgamating the Auckland water utility operators it recommended the assessment of the following options:

1. Strengthen joint planning provisions;
2. Restructuring capital financing;
3. Improving governance arrangements;
4. Potential shared service agreements.

15. Attitudes and Barriers to Water Transfer (Prepared for the Ministry for the Environment, Lincoln Environmental, December 2001)

This report was prepared as part of the Ministry for the Environment's Water Allocation Programme and was based on interviews with both regional Council staff and water users to assess attitudes towards water transfer.

This study found that regional Council were generally supportive of the concept but saw a number of potential barriers. While water users were found to be 75% in support of the concept, it noted there are some "...deep-rooted attitudes among water users that will pose barriers to water transfer."

The report went on to conclude that *"While we believe that water transfer has a valuable place in increasing the economic efficiency of water use, ... we are dubious that it will be widely used under the current water allocation framework. Unless it is accompanied by more fundamental changes in the regulatory framework, such as examining charging for water, it does not appear that water transfer should be a high priority issue for policy makers."*

16. Beyond Ageing Pipes – Urban Water Systems for the 21st Century (Office of the Parliamentary Commissioner for the Environment, April 2001)

This report followed on from “Ageing Pipes and Murky Waters” and contains the findings of the Parliamentary Commissioner for the Environment’s investigation.

Challenges identified in the report included the fragmented nature of the water industry and lack of a Central Government ‘home’ for policy and legislation, lack of stakeholder awareness, political and community tension around management, pricing and ownership and lack of integrated management.

The recommendations were to establish a series of task forces to address each of these areas and for all water services providers to prepare overarching water services strategic plans with the involvement and participation of tangata whenua, the community and other stakeholders.

17. Ageing Pipes and Murky Waters – Urban water system issues for the 21st Century (Office of the Parliamentary Commissioner for the Environment, June 2000)

This study looked at the role of local authorities in water services, the challenges that are being faced for urban water systems, where the opportunities for progress are and what is being done.

It stated that one of the biggest challenges is reaching a consensus between the stakeholders “... *on the environmental, social and economic goals and values of urban water systems.*” stating that without this and more extensive community input, improvement of the sustainability of the current systems will be difficult and slow.

Other major challenges that are listed include inadequate water flows, contamination of surface and groundwater, increasing public expectations, lack of public awareness of costs of infrastructure, lack of investment and deferred maintenance and institutional and regulatory barriers.

The opportunities for progress in the management of urban water systems are reported to include demand management, least-cost planning, catchment management planning and more integrated management of water services, including efficient water use and reuse.

18. The Scottish Water Industry and its Relevance to New Zealand (Anthony Wilson, 1999)

This study looked at the reform of the Scottish water industry, whereby in 1996 the responsibilities for water and sewerage were passed from 12 local government organisations to three newly created government-owned businesses.

The Scottish water industry is compared to New Zealand as Scotland has many similarities in terms of terrain, population, isolation and climate (Wilson, 1999).

Wilson concluded that the restructured Scottish water industry has significant relevance to any debate for the best future structure for the water services in New Zealand.

19. Water, Wastewater and Stormwater Review - Analysis of the Nature of the Industry in New Zealand, Volume 1 (Opus International Consultants, May 1999)

This study looked at institutional arrangements and industry structure and identified services that could be provided on a “*contestable basis*”.

The conclusions on the economic analysis were:

1. “The lack of accountability, transparency and the inconsistent quality of data used for decisions, reinforces the need for reform to ensure these issues are addressed;
2. Although sound business decision are being made by some Public Water Utilities (PWU’s), deficiencies in the data uncovered in this study raise doubts about the likelihood that all PWU’s have reliable information on which to make sound business decisions;
3. There is no evidence of economies of scale in the water, wastewater and stormwater industries;
4. Reticulation networks come closest to having the characteristics of natural monopolies;
5. Treatment is contestable, subject to fair access arrangements;
6. Water sources (and receiving environments for waste discharge) are contestable but constrained by geographical characteristics;
7. Vertical integration tendencies between sources, bulk distribution and treatment are strong, but less so between treatment and reticulation; and
8. Retailing of water services is contestable, subject to fair access arrangements.”

20. Papakura District Council, Water and Wastewater Franchise, Report of the Office of the Auditor General, April 1998

This report reviewed the franchise agreement that Papakura District Council had set up at that time. It concluded the following –

The Council’s franchise agreement is essentially a facilities maintenance and operations contract under which the franchisee is responsible for all aspects of the water and wastewater services for consumers within the Papakura District.

The agreement:

1. Resulted in payment to the Council of a \$13 million franchise fee.
2. Fixes the retail price of water until July 1999, after which charges are restricted to being at or below the Auckland Average prices for water and wastewater services. This means that the price to the consumer could move from the lowest in the region¹ to the Auckland Average Price.
3. Provides for wastewater charges to be based on 80% of metered water consumption, rather than based on land value.
4. Retains the water and wastewater assets in public ownership.
5. Passes responsibility for maintenance and development of the water and wastewater systems to the franchisee.

The authors are not aware of any performance review of this franchise arrangement. One particular concern was the level of funding of depreciation that was incorporated into the charges. If it is to be

considered for implementation elsewhere, it may be appropriate that the industry undertake a review of the performance of this franchise arrangement prior to such implementation.

21. Simon Upton, The Press, July 2007, Govt plan an 'insipid' affair

In this article the recently released National Policy Statement (NPS) for freshwater management is labelled as *"the most insipid and evasive attempts to grabble with a major environmental policy issue.."* and that it is riddled with equivocations and avoids the hard issues, palming it off to Local and Regional Councils. It states that *"if national policies are to stick they have to be clear and have a good chance of commending a real and enduring consensus."* Recognition of water being not an easy task to tackle is given, and that there will need to be trade offs and not all will be satisfied, but makes the case that robust policy leadership is required. Concluding that water quality issues will not go away and it is better to have a high-level debate than to leave the challenge to founder in local policy squabbles.

22. Best Practice Water Efficiency Policy and Regulations (Beacon Pathway Ltd, May 2008)

This report documents the second stage research findings of a project to identify best practise for water management and reduce the centralised reticulated water demand by 40% for all homes. This study included both local and considerable international research.

Recommendations for both national and local interventions were recommended as an outcome of this research.

National recommendations include:

- » Development of a national agency to develop and overview water and influence legislation;
- » Requiring national water metering through legislation, ensuring pricing structures to send clear signals on the value of water, and setting national leak reduction and water efficiency standards;
- » Clarification of and amendments to legislation inhibiting appropriate level of resource use efficiency if required and/or creation of a Water Services Act; and
- » Clarification around grey water re-use and giving people opportunities to utilise water sources other than mains, if available.

Local recommendations include:

- » Water metering and setting pricing policies to encourage water efficiency;
- » Demand management and targeted education; and
- » Regulatory setting of requirements for new homes and encouragement of retrofitting.

From a survey undertaken in July and August 2007 (receiving a response rate of 55%), the following data on water use was collected:

Table 13 Daily Per Capita Water Use

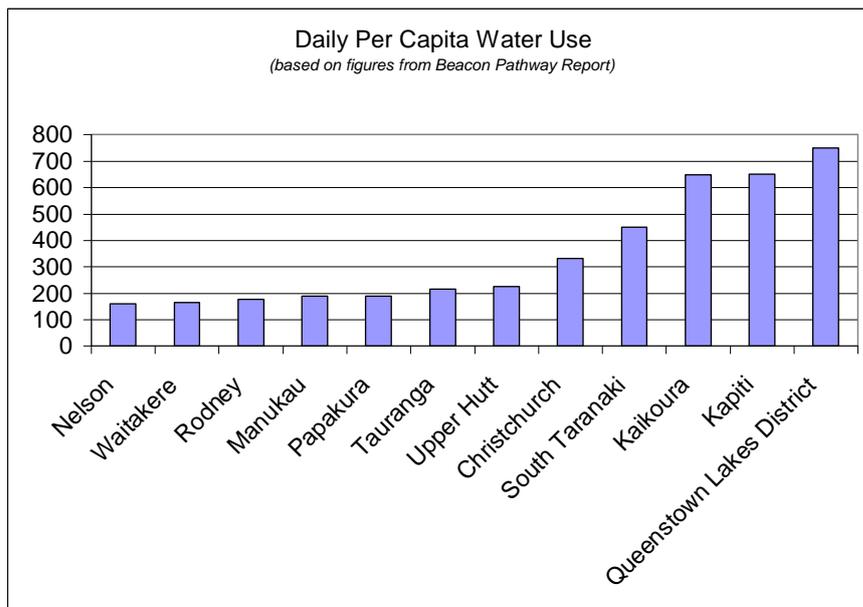
Council	Daily Per Capita Water Use Figure
Nelson	160*
Waitakere	167*
Rodney	179*
Manukau	189*
Papakura	190*
Tauranga	216*
Upper Hutt	227
Christchurch	333
South Taranaki	450
Kaikoura	648
Kapiti	650
Queenstown Lakes District	750

*Metering with volumetric charging

(Reproduced from Best Practice Water Efficiency Policy and Regulations, Beacon Pathway Ltd, May 2008)

This is graphed as follows:

Figure 5 Daily Per Capita Water Use



Another interesting observation that was made was that Metrowater indicated that the most significant impact on reduced waster usage was the charging for wastewater, with a reduction of approximately 5% in the per capita consumption between 1997 and 2006.

23. The Best Use Solution for New Zealand's Water Problems (New Zealand Business Council for Sustainable Development, 2008)

The New Zealand Business Council for Sustainable Development is about to release a report on Water Allocation in New Zealand.

Water allocation using the tools for the Resource Management Act could lead to most of the water in New Zealand's freshwater resources, in the economically most significant areas, being fully allocated by 2012 on a first-in basis.

The Business Council proposes a "Best Use Solution" through management of "*surface and ground water resources with a mixed statutory-planning and market-based system.*" This Best Use Solution will involve:

- » Integrated Catchment Management Planning at regional level with central government guidance;
- » Measuring Community Needs and Values – setting flow and quality limits; and
- » Allocation of the water available for commercial used and managing quality. This will include extending the use of the current RMA tools, enabling sharing between water users based on water available and introduction of mechanisms enabling re-allocation of surplus water on a voluntary basis.

International Research

1. Water Supply & Sanitation Working Notes: Characteristics of Well-Performing Public Water Utilities (Note No. 9, Water Supply and Sanitation Board of the Infrastructure Network of the World Bank Group, May 2006)

This report is based on a number of case studies as well as literature research. Eleven case studies present a mixture of institutional models and level of decentralisation. Case studies are based in Poland, Vietnam, South Africa, Uganda, Burkina Faso, Singapore, USA, Brazil, UK, Mexico and Tunisia.

Conclusions

The lessons learned in instilling good performance among public utilities are summarised as follows:

- » "The reform process is inherently political and requires the full commitment of its policy makers to correctly balance financial and political objectives";
- » "Fundamental reforms are not a quick fix and cannot be substituted by private sector participation."
- » "There must be an adherence to financial sustainability objectives";
- » "Success is often unattainable without reforming the external environment, with emphasis on the role of the owner";
- » "Other external stakeholders may be important to balance potentially conflicting objectives of politicians";
- » "Separating functions and arm's length transactions are important elements of the institutional setup";
- » "Certain decisions must be left to Utility Managers"; and
- » "Customers can be an important voice for improving performance".

2. Designing Incentives in Local Public Utilities, an international comparison of the drinking water sector, Preliminary Draft (De Witte, K., Marques, R. January 2007)

This paper uses Envelopment Data Analysis to compare the efficiency of the drinking water industries in the Netherlands, England and Wales, Australia, Portugal and Belgium.

It concluded:

“On average, the benchmarked Dutch drinking water companies are performing better than the privatized English and Welsh utilities. However, the strict regulatory model of Australia, the municipal provision in Belgium and especially the Portuguese municipal provision with private sector participation are lagging behind.”

3. Research Report – Privatisation of the Public Water Supply and the Resulting Competitive Effects (Wackerbauer, J. CESifo DICE Report, April 2006).

This paper compares the water industry governance structures of the UK, France and Germany.

The report concludes that “... *the delineation between supervisory bodies and operations in water is strongest ...* “in the UK model and “... *weakest ...* “in the German model.

“The international markets for the operation of water supply systems and complete solutions are dominated by French and British companies ... This disadvantage is, however, compensated by the worldwide leading role of German water and wastewater technology. In order for German companies also to be present on the market for complete solutions it would be necessary to make up for a large competitive backlog compared with foreign water companies ... However, the structures of German water supply, proven with regard to the safety of supply and drinking water quality, would have to be sacrificed to achieve this level of competition.”

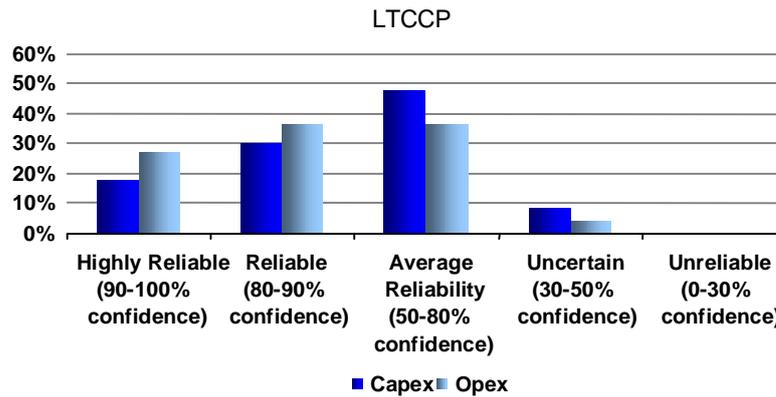


Appendix B
Survey Results – Council and Water
Company Respondents

General

As shown in Figure 6, the majority of respondents had an average reliability level of confidence in the accuracy of their capex and opex forecasts in their LTCCP.

Figure 6 Level of Confidence in the Accuracy of Forecasts in LTCCP



Looking forward, Figure 7 shows that a higher number of respondents felt that they had a higher level of confidence in the reliability of their LTCCP data. This may be due to improved preparation for and familiarity with the LTCCP process, improved understanding of the impacts of climate change and regulatory changes such as the Drinking Water Standards that possibly were not factored into the 2006 LTCCP data.

Figure 7 Level of confidence in the accuracy of forecasts in upcoming LTCCP

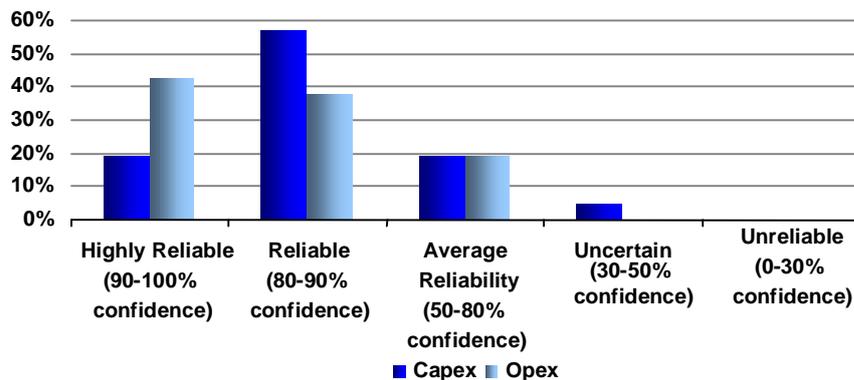
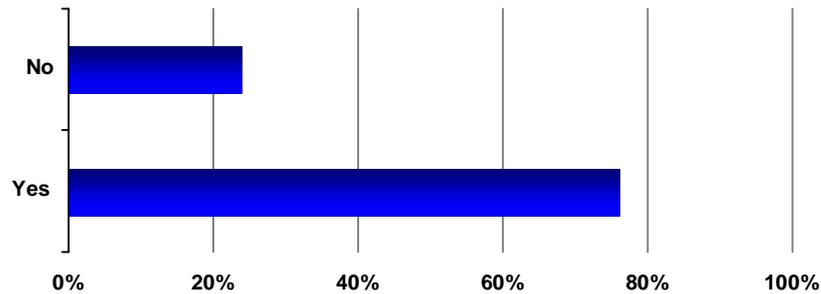


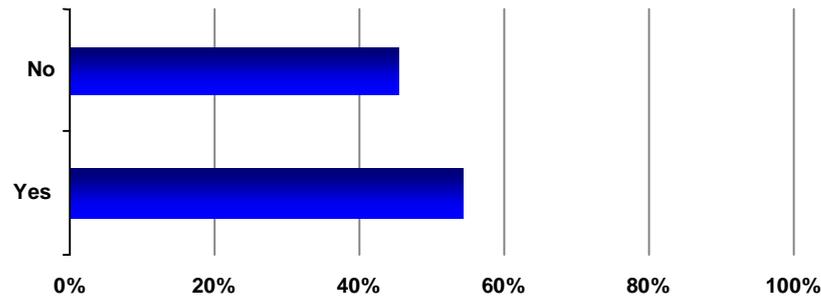
Figure 8 demonstrates that the majority of respondents believed their capex and opex spend was sufficient to maintain or improve their level of service while meeting legislative requirements.

Figure 8 Is your Opex and Capex spend sufficient to maintain or improve your level of service?



However, for those respondents that said funding was insufficient, only slightly more than half of those respondents believed they had the ability to fund additional investment requirements. Figure 9 illustrates this.

Figure 9 Does your organisation have the ability to fund additional investment requirements?



Issues that were apparent in the associated comments included:

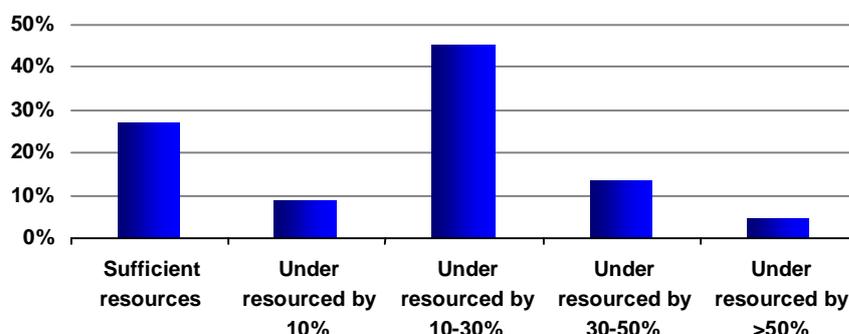
- » A significant increase in rates would be required to meet the gap in funding requirements; and
- » The willingness of Council/community to approve spending halts the process.

The options to address funding issues as proposed in the responses include:

- » Increased Central Government funding needed for all waters;
- » Introducing user charges for wastewater based on water use;
- » Larger rate increases; and
- » Better financial management and understanding of mechanisms including depreciation.

Figure 10 shows how the majority of respondents believed the industry was under resourced by 10%-30%, however responses were varied. The graph below illustrated the distribution of the responses.

Figure 10 Are there sufficient consulting/contracting staff in your industry to fulfil your needs?



Comments include:

- » The technical consulting and contracting staff available are not sufficiently qualified;
- » The industry is under resourced in terms of the quality of the resource, not necessarily the quantity; and
- » A strong theme that there are sufficient consulting resources, but the contracting industry is under resourced.

Financial

Table 14 below shows the value of the assets of those who responded to the survey.

Table 14 Value of Assets

	Replacement Value (\$M)	ODRC* (\$M)	ODRC as % of Replacement Value
Water Supply	2,810	1,736	62
Wastewater	3,619	2,355	65
Stormwater	1,452	1,010	70

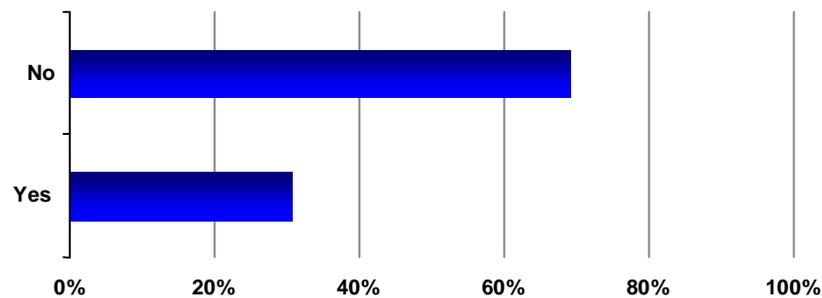
* Optimised Depreciated Replacement Cost

The Optimised Depreciated Replacement Cost (ODRC) is calculated as the depreciated replacement cost (calculated as the replacement cost multiplied by the remaining life divided by the total life) with the assets optimised in a way that would use the most cost-efficient design that would provide the required service potential.

The information contained in the table indicates that stormwater assets appear to reflect a younger asset base compared to water supply and wastewater. However all water assets have an ODRC of 70% or below replacement cost, which indicates a significant level of depreciation and the potential need for increased renewals expenditure. This is potentially reflected by the increasing opex line highlighted in Figure 1, reflected ten year LTCCP spend.

Figure 11 shows that approximately 30% of respondents metered their water supply. This is in line with the NZWWA analysis that 27% of water authorities employed metering with at least some of their customers. Metering water use provides effective asset management and allows authorities to have a clearer idea of the volume of consumption and hence the ability to charge for consumption.

Figure 11 Do you meter domestic water supply?



Across the three water infrastructure assets, there was a diverse range of results regarding the proportion of growth related investment which are undertaken by developers rather than the Councils/water authorities. Figure 12 displays an inverse trend between stormwater and water supply assets.

Figure 12 What proportion of growth-related investments are undertaken by developers rather than your entity

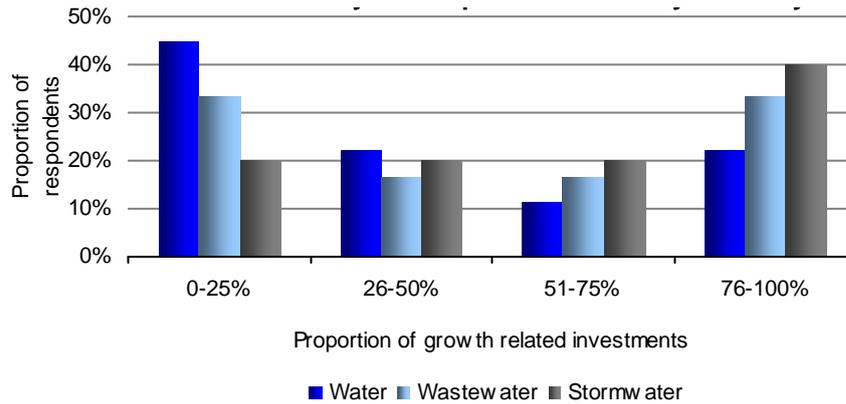
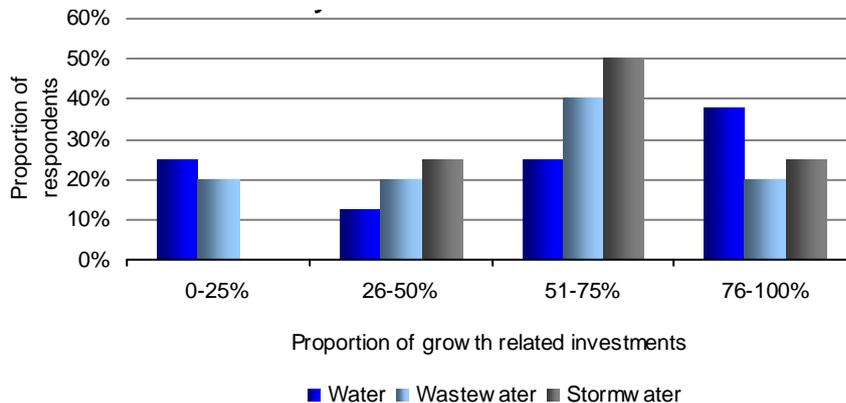


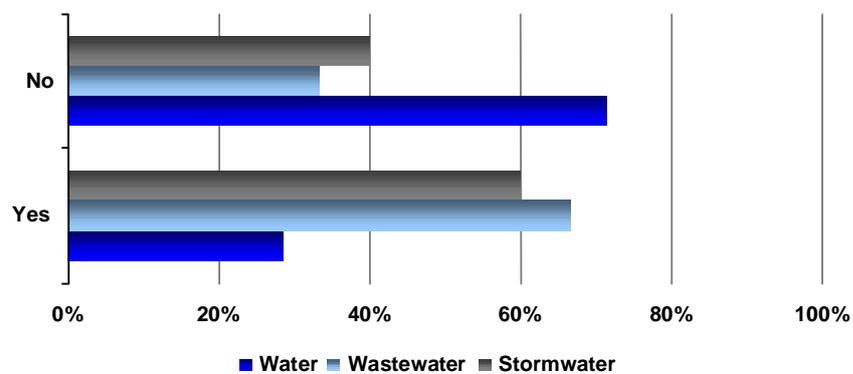
Figure 13 shows that the majority of respondents to the survey stated that the greater proportion of growth related investments are funded by those who create the need for them (developers).

Figure 13 What proportion of growth-related investments are funded by those who create the need for them



Mixed results were attained from the respondents across the Three Waters regarding the trend of capex dropping off in later years of the forecasts. As shown in Figure 14, water supply respondents did not believe that this trend is an accurate picture, whereas the majority for wastewater and stormwater believed that it was an accurate picture based on the available information around future capex requirements.

Figure 14 Do you believe the capex trend of dropping off in later years is an accurate picture of future expenditure?



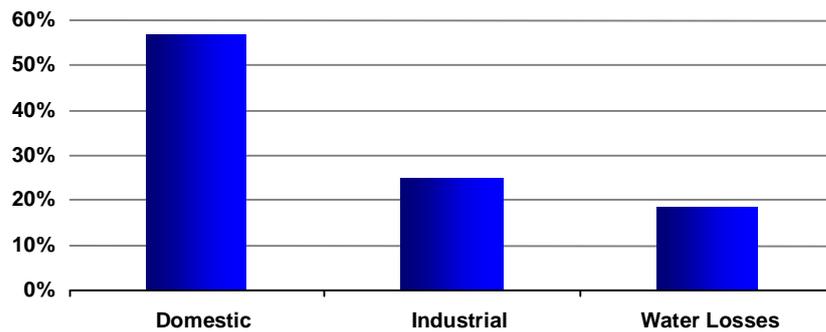
Issues highlighted in the comments received also regarded the ability to complete capital works programmes including:

- » Poor planning brought on by lack of resource (time);
- » Delays in consents; and
- » Delays due to resource consents, construction (weather) delays.

Customer

As expected, Figure 15 shows that the majority of water demand from the respondents is attributable to domestic use.

Figure 15 Percentage of water demand breakdown



An average value of 18% was received for water losses. In the absence of large-scale universal metering, the accuracy of this figure needs to be considered further.

Figure 16 Percentage of wastewater demand breakdown

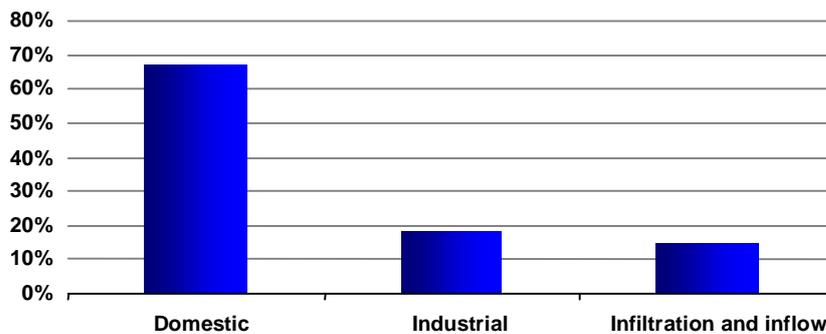
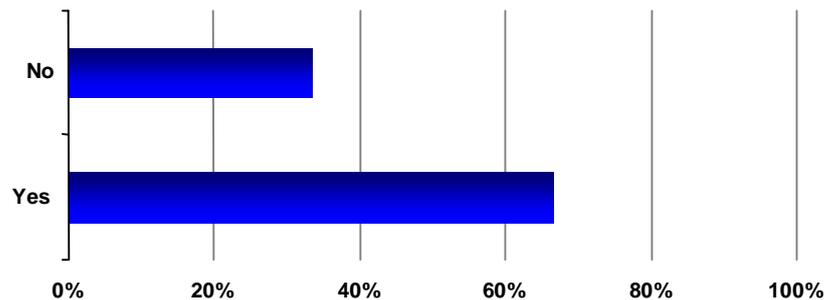


Figure 16 shows that the average assessed levels of inflow and infiltration (I/I) systems was approximately 15%. This is significant and reiterates why management of system overflows and inflow and infiltration is required.

Figure 17 shows how two thirds of the respondents, as illustrated below, have an active and documented programme for water demand management.

Figure 17 Percentage of respondents who have an active and documented programme for water demand management



Comments returned during the survey include:

- » Water demand is actively managed only in crisis; and
- » Water demand management has reduced the average daily demand/consumption.

For wastewater assets, again the majority of the respondents had effective asset management with nearly 90% having a programme in place for reducing inflow and infiltration.

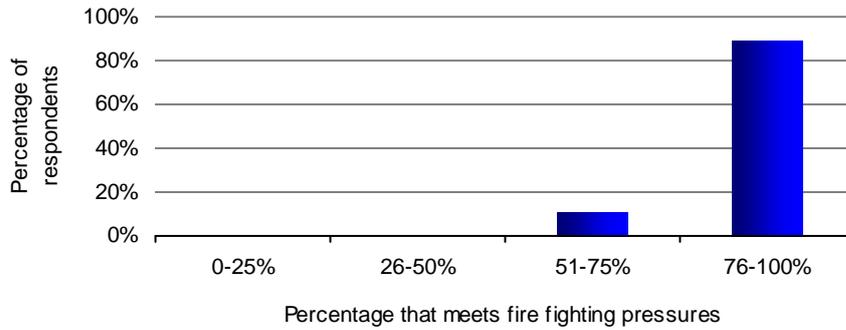
Similarly, approximately 65% of the respondents have in place an active and documented programme for water loss reduction.

However, comments received include:

- » Water loss reduction is only a very recent initiative, which has quickly reduced losses from 20% to under 10%; and
- » Work is carried out but not well documented.

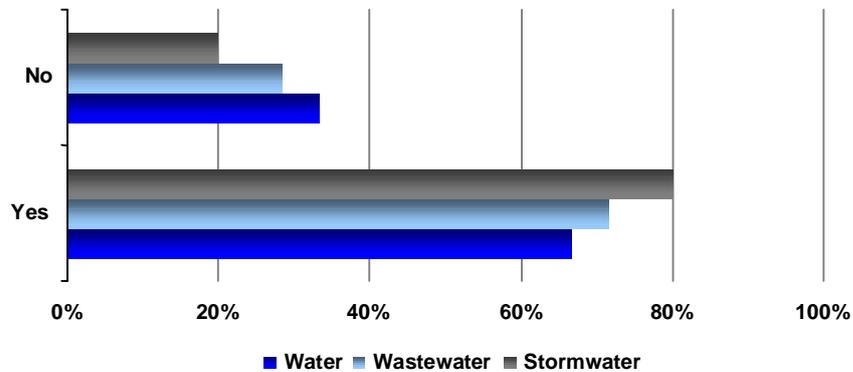
Figure 18 shows that the greater proportion of respondents' water supply met minimum fire fighting pressures as illustrated by the following graph.

Figure 18 Percentage of respondents' water supply that meets minimum fire fighting pressures



Across all of the three water infrastructure assets, Figure 19 shows how the greater proportion of respondents undertake customer satisfaction surveys. A further outcome of the survey was that the majority of complaints were responded to within ten days.

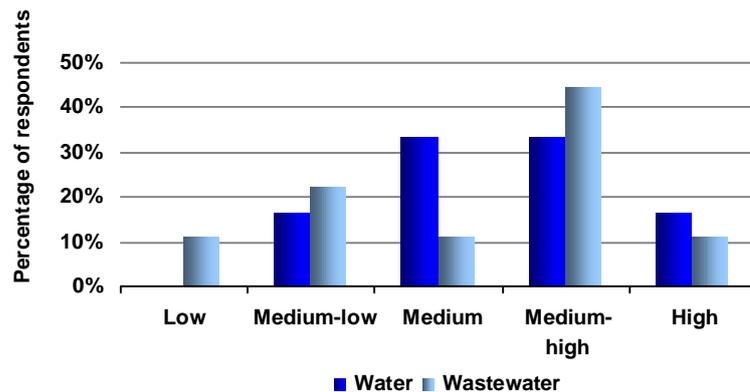
Figure 19 Percentage of respondents who undertake customer satisfaction surveys



Government and Legislation

Figure 20 shows that over half the respondents suggested that the RMA had only a medium-low or medium ability to assist them in the provision of their wastewater objectives. This was not evident in relation to water supply.

Figure 20 How do you regard the provisions of the RMA in its ability to assist you in achieving your objectives

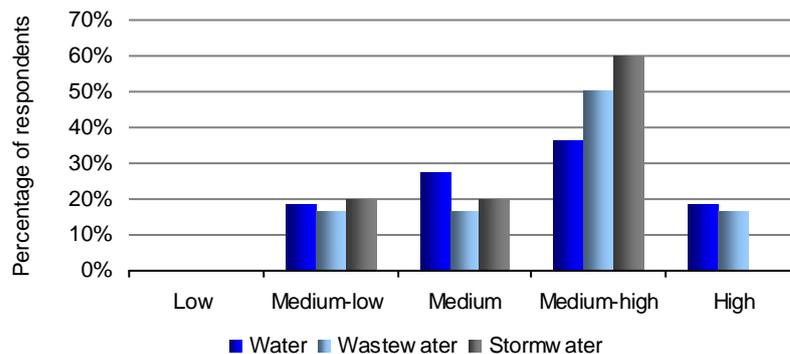


Comments submitted concerning the RMA included:

- » There is nothing wrong with the RMA, more the implementation that is the problem;
- » Committees need to make tougher calls on certain objections, and more sensible interpretation of 'consultation' requirements;
- » Cost of consent processes are high;
- » The need to reduce the chance of ill-informed, small numbers of objectors holding up the process; and
- » The apparent lack of consistency of consent conditions and the scrutiny which Regional Councils monitor these between small towns and larger cities.

Across the Three Waters, Figure 21 shows that only just over 50% of water respondents and 65% of wastewater respondents feel that current governance arrangements are effective (medium-high, high responses) in enabling them to achieve their objectives.

Figure 21 How do you regard the effectiveness of the current governance arrangements



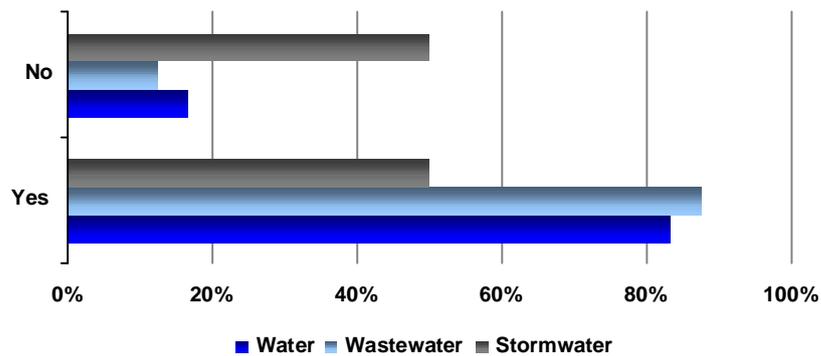
Issues of improvements to legislation and governance that came through the responses included:

- » The funding of initiatives like the TAP/CAP scheme is a good move but needs to be expanded. An appropriate level of supply for each community should be determined and perhaps some Central Government funding (along the lines of the road funding regime) should be allocated to even out the burden on remote and low socio-economic groups. Often it is not the capital cost that is the killer - it is the ongoing maintenance costs;
- » Recognition of the cost to small communities in meeting ever increasing standards;
- » Move to user pays funding for water i.e. universal metering. Rates are not an appropriate tool for funding water infrastructure;
- » Industry guidelines on governance reporting;
- » The industry is better served by water focussed organisations eg CCOs or water authorities/companies;
- » More funding into the Sanitary Works Subsidy Scheme (SWSS) administered by the Ministry of Health. SWSS to be expanded to allow for contribution to ongoing opex. This is one of the key obstacles to uptake of the subsidy in remote and low socio-economic locations; and
- » The lack of direction and/or community acceptance for biosolids application to land is very restrictive making biosolids management costly with a low efficiency.

Security

In Figure 22 the majority of respondents for water supply and wastewater had an up to date register of assets. This was not the case for stormwater however with only half of the respondents having an up to date register. The graph below demonstrates the outcomes.

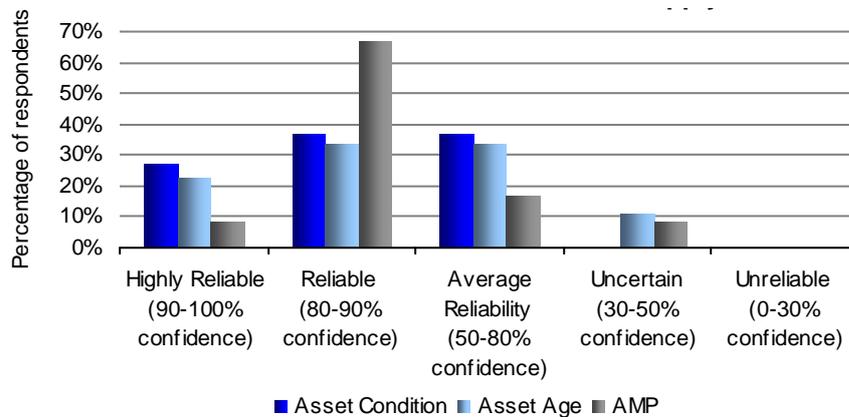
Figure 22 Percentage of respondents who have an up to date register of assets



Asset Management

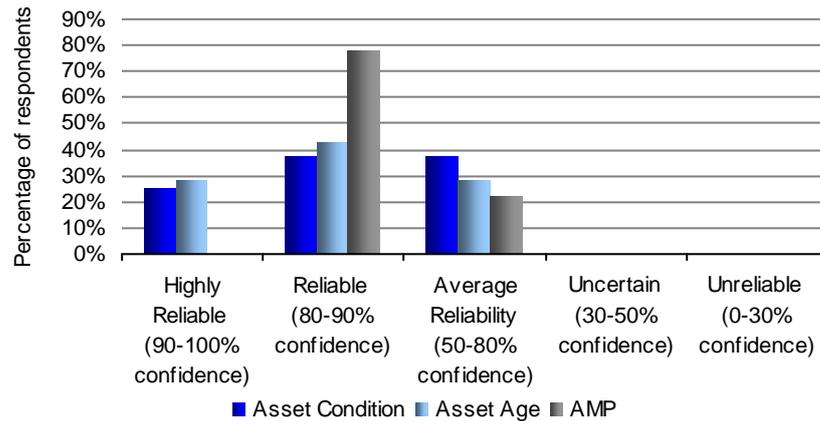
As shown in Figure 23, the majority of respondents for water supply rated their AMP as being reliable, and a relatively effective daily operational tool. The ratings for information regarding asset age and condition within the AMP were also reliable, more so for asset condition.

Figure 23 Ratings of AMP and the information on asset age and condition contained in it – Water Supply



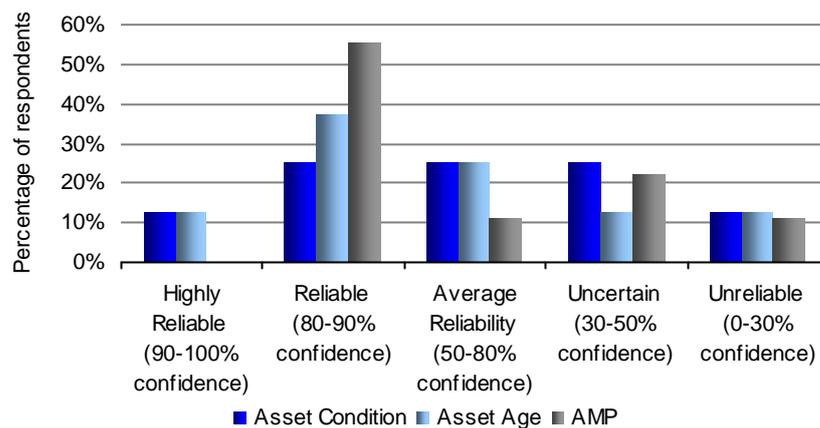
Again, for wastewater, the rating of the respondent's effectiveness on their AMP was strong, with respondents believing it to be a relatively effective daily operational tool. Figure 24 shows that asset age data was typically more reliable than asset condition data.

Figure 24 Ratings of AMP and the information on asset age and condition contained in it - Wastewater



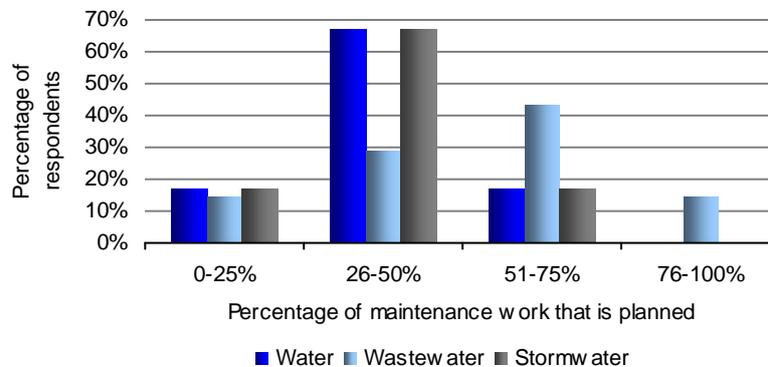
The respondent's ratings for stormwater across the three categories was more skewed however. Overall the AMP was rated as being a reliable tool for daily operational performance. The results were more varied for asset age and condition, inferring somewhat less reliability on their asset management processes.

Figure 25 Ratings of AMP and the information on asset age and condition contained in it - Stormwater



A greater proportion of respondents scored water and stormwater as having their planned maintenance work only within the 26%-50% bracket. The proportion of planned maintenance work for wastewater was higher, scoring in the 51-75% bracket. The graph below shows the distribution across the Three Waters.

Figure 26 Percentage of respondents' maintenance work that is planned



Survey Results - Contractors and Consultants

All of the applicants who responded to the survey believed that there were opportunities to improve delivery of water infrastructure services to Councils through a mix of;

- » Economies of scale;
- » Integrated project planning;
- » Longer term planning, creating alliances; and
- » Programme bundling.

Specific comments include:

- » Rationalisation of the fragmented industry;
- » Use of the 'alliancing' model;
- » Longer term contracts;
- » Program bundling;
- » Commonality of Council systems; and
- » Use of funding schemes, such as PPP and charging for water and wastewater on a usage basis.

The majority of respondents believed that PPPs were an option to be explored in the development of water infrastructure.

The results indicated that PPPs should be looked at as a funding option, however issues remain around:

- » Small project size, and hence the potential to bundle projects together;
- » Restriction in the Local Government Act 2002 (LGA) of contractual duration of 15 years, which is too short for effective infrastructure development;
- » Changing from the strongly embedded practice of dividing projects up, i.e. separation of design and build;
- » The lack of understanding of the wider PPP regime; and
- » Adequacy of long term planning.

All of the respondents of the survey believed there are opportunities for improved efficiency within water infrastructure delivery.

Comments around the opportunities for improved efficiency included:

- » Councils need to embrace improved methods of delivery;
- » Traditional design and then offering of all work through the lowest cost tendering brings industry wastage, stifles innovation that design builds and better collaborative contracts;
- » There is a need for longer term and consolidation of contracts; and
- » Utilisation of common plants where opportunity exists to do so.

The vast majority (~90%) of the respondents suggested that too much time and resource is spent on the number of transactions given the large number of Councils across the country.

The rationale behind these results is as follows:

- » It is difficult to establish professional industry capability because the experts are spread too thinly across the country;
- » Modern procurement processes are difficult to develop and maintain;
- » The quantum of minor transactions is large;
- » The traditional risk averse nature of Councils doesn't encourage innovation;
- » The large number of Councils within most regional areas affects the quality of region-wide long term planning;
- » There is a lack of economies of scale;
- » Early contractor/operator involvement in design and procurement is not the norm;
- » The quality of forward planning – often driven by a lack of resources; and
- » Duplication of consenting.

The majority of respondents believed that there is sufficient access to global technology and trends. Comments indicated that because many of the contractors are international companies there is widespread sharing of knowledge and resources. Combined with efficient information flows this means that global technology and trends are transferred around the world.



Appendix C
Governance and Institutional Structure
Research

Australia

While Three Waters functions are mainly state-based, an independent regulatory authority regulates all industry in Australia.

A report on water was prepared by the Working Group on Climate Change and Water in March 2008²¹. This report highlights where the country is at in terms of water and the urgent water issues facing the country based around the National Water Initiative. Some of the physical and policy/institutional challenges in urban water reforms include managing drought and climate change, responding to population growth, sourcing new water, implementing best practice planning, clarification of roles and responsibilities, water pricing and skills shortages. The report also includes discussion on irrigation.

Table 15 is an extract taken from the National Water Commission²² which summarises Australia's water industry. It should be noted that there are currently reorganisations being undertaken to some of the states (specifically Queensland and Tasmania).

Whilst differences in approaches exist across the states, in all states except Queensland and New South Wales, the water supply and wastewater functions are carried out by entities focussed solely on this purpose, with the functions for stormwater carried out by Local Government Councils.

²¹ Council of Australian Governments (COAG), 'Water Report to COAG from the Working Group on Climate Change and Water', March 2008.

²² Australian Government National Water Commission, 'National Performance Report 2006-2007 Urban Water Utilities', 2008.

Table 15 Australia's Water Supply & Services Governance at a Glance

Area	Urban and rural bulk water businesses	Urban retail water businesses	Rural retail water businesses	Stormwater & drainage
Australian Capital Territory	ACTEW	ACTEW	Not applicable	Not applicable
New South Wales	Sydney Catchment Authority – Sydney (inc. Blue Mountains, Illawarra) StateWater – remainder of NSW	Sydney Water Corporation Hunter Water Corporation Gosford Wyong Local Government suppliers (95)	StateWater Private irrigation companies (5) Private irrigation schemes (3)	Sydney Water & regional water authorities Local Governments
Northern Territory	Power & Water Corporation	Power & Water Corporation	Power and Water Corporation (small number of irrigation customers)	Department of Planning & Infrastructure (Transport Division) Local Government
Queensland	SEO Water – South-east Queensland Gladstone Area Water Board Mount Isa Water Board NQ Water Caloundra Maroochy Water Supply Board Fitzroy River Water Wide Bay Water Corporation SunWater -38 local governments. Rural supply to all regions of Queensland.	Local Government Suppliers (110)	SunWater Water Supply Schemes (27)	Local Government
South Australia	SA Water	SA Water	Private irrigation trusts (27)	Local Government Natural Resource Management Boards
Tasmania	Hobart Water Cradle Coast Water Esk Water Authority	Local Council suppliers (28)	Rural water entities (5)	Local Government
Victoria	Melbourne Water – Metropolitan Melbourne Southern Rural Water – Southern Regional Victoria Goulburn Murray Water – Northern Regional Victoria	Metropolitan urban retail water businesses (3) Regional urban retail water businesses (13)	Rural retail water businesses (5) (includes 2 rural wholesale water businesses)	Melbourne Water Local Governments
Western Australia	Water Corporation	Water Corporation Busselton Water AQWEST Water	Private Irrigation Corporations (3)	Water Corporation Local Government

Data for the states most comparable to New Zealand is summarised below:

Table 16 Populations per Water Provider

Population per Water Provider (000)	Bulk Water Providers	Urban Retail Providers	Rural Retail Providers
Victoria	1,653	310	992
Queensland*	486	35	108
New South Wales	3,360	69	840
Tasmania*	163	18	98

*Note that the water industries in both South East Queensland and Tasmania are currently being restructured.

Each of these states is discussed further below.

Victoria

Like New Zealand, Victoria has a population of nearly 4.2 million people with a number of provincial or regional cities based on major river catchments.

Structure

The Victorian water industry comprises:

- » The metropolitan sector made up of Melbourne Water, City West Water, South East Water and Yarra Valley Water. Melbourne Water is the bulk water supplier responsible for harvesting, storage and bulk water transmission as well as operation of the bulk sewerage service and treatment of the majority of all sewerage;
- » Thirteen regional urban water businesses; and
- » Three rural water businesses and two of the regional water businesses that also provide rural water services.

The three metropolitan suppliers supply water and sewerage services to over 3 million customers across greater Melbourne (approximately 70% of the population). The other thirteen service over 500,000 customers.

Of particular interest to New Zealand is the population of each of the regional urban water businesses. This is shown in Figure 27.

Regulation

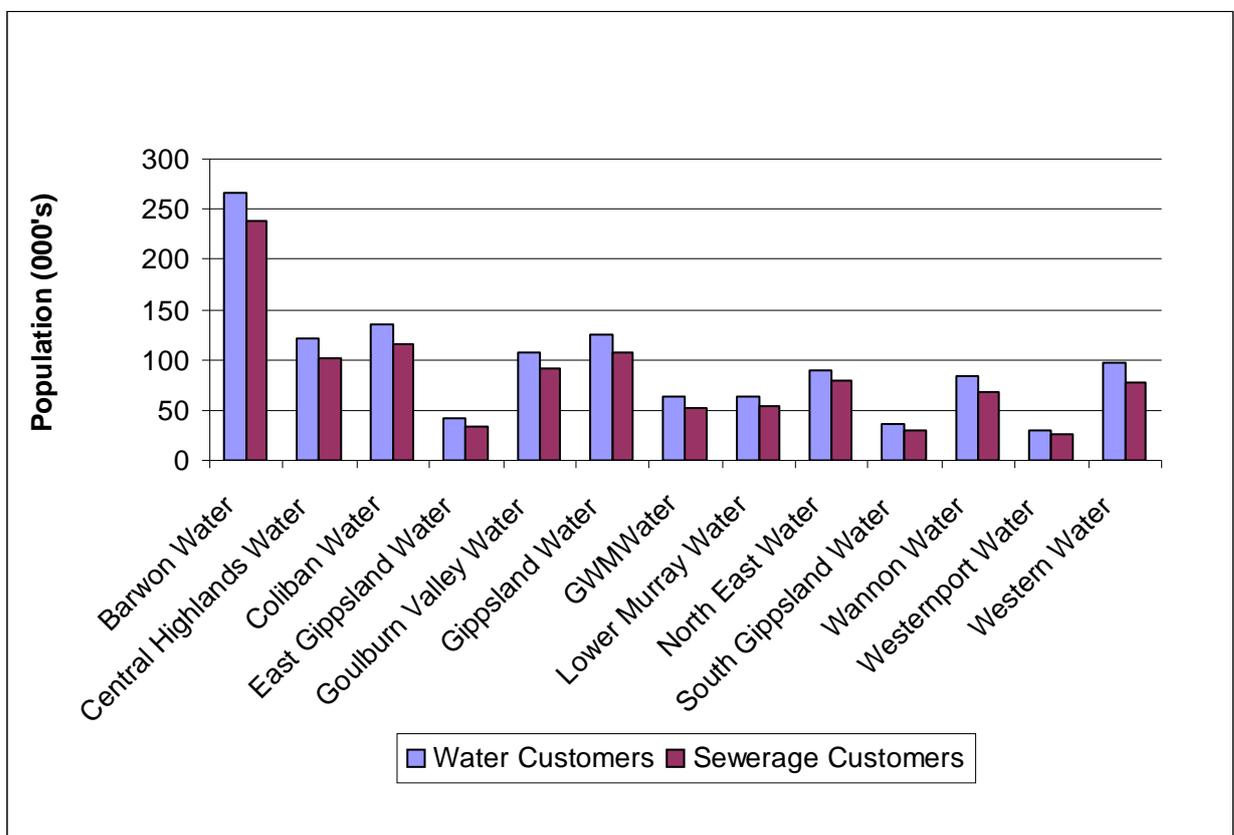
In Victoria, the Essential Services Commission (ESC)²³ regulates the businesses supplying water and sewerage services. These regulatory powers are set out in the Essential Services Commission Act 2001 and the Water Industry Act 1994. There are 20 companies that supply water and sewerage services in Victoria.

²³ <http://www.esc.vic.gov.au/public>

“The legislative framework provides the Commission with powers and functions to:

- » Make price determinations (section 33 of the ESC Act), also imposing consultation obligations in relation to determinations (section 35 of the ESC Act);
- » Regulate standards and conditions of service (section 4E of the Water Industry Act);
- » Develop Codes in relation to its functions and powers (section 4F of the Water Industry Act); and
- » Require regulated businesses to provide information (section 4G of the Water Industry Act).”

Figure 27 Victorian Water Businesses (excluding Metropolitan providers)



Produced from data contained in Essential Services Commission Report.²⁴

As one of its regulatory functions, the ESC monitors and reports the performance of Victorian Water Businesses. Key performance indicators monitored and reported include:

- » Affordability;
- » Customer Responsiveness and Service;
- » Network Reliability and Efficiency;
- » Water Quality;

²⁴ Essential Services Commission, 'Water Performance Report, Performance of Urban Water and Sewerage Businesses 2006-07', April 2008.

- » Conservation and the Environment; and
- » Historical Performance.

New South Wales

Structure

In New South Wales, Sydney Water provides the bulk and retail water and wastewater services for greater Sydney, a population of approximately 4.5 million. Hunter Water has a similar function in the Hunter Valley. Councils provide the stormwater service in both locations.

In the rest of the state, Councils provide the Three Waters service.

Regulator

The Independent Pricing and Regulatory Tribunal (IPART), created in 1992, regulates water, wastewater and stormwater services.²⁵

"IPART's role in regulating ... includes:

- » setting maximum prices for metropolitan Water Sewerage and Stormwater Services;
- » regulating prices for the Bulk Water supplied by the Sydney Catchment Authority;
- » administering operating licences for Water Service Providers, and
- » regulating the charges that State Water and the Department of Natural Resources may levy for delivering Bulk Water."

South Australia and Western Australia

Structure

In South Australia (population 1.3 million) and Western Australia (population 1.5 million), South Australian Water Corporation (SA Water) and The Water Corporation of Western Australia respectively carry out the bulk and retail water and wastewater functions across each state. The stormwater functions are carried out by Local Government Councils.

Regulator

The Essential Services Commission of South Australia (ESCOSA)²⁶ was established under the Essential Services Commission Act 2002, which came into effect 2002 to replace the former South Australian Independent Industry Regulator (SAIIR).

²⁵ <http://www.ipart.nsw.gov.au/water/water.asp>

²⁶ <http://www.escosa.sa.gov.au>

“The Commission has, at the direction of the Treasurer, undertaken inquiries since 2004 into Government processes for setting SA Water’s water and wastewater (sewerage) charges.

However, water and wastewater services are not, at this time, Regulated Services. Therefore, the Commission has no other regulatory role in relation to them.”

Queensland

In Queensland the Department of Natural Resources and Water (NRW)²⁷ under the Water Act 2000, regulates and oversees the water and sewerage functions carried out by:

- » Local governments;
- » Aboriginal and Torres Strait Island communities; and
- » Water authorities.

“The Water Industry Regulation Unit has certain responsibilities relating to the regulation, management, operation and efficiency of the State’s water industry.

Water industry regulation works closely with the water industry in general but particularly with local governments in terms of all their water related activities. This includes regulating service provider activities required under legislation and overseeing planning activities relating to state government funding schemes.”

The institutional arrangements in South Queensland are in the process of a major re-structure that mirrors the institutional arrangements of the energy sector in Australia. Under the new arrangements there will be two bulk water agencies (one managing all existing surface and groundwater sources and one managing the manufactured water (i.e. desalination and recycled water)). There will be one bulk water transportation agency and one water supply distribution, sewerage collection and treatment agency. There will be three retailers and one grid operator that will determine how water is distributed around the system."

The drivers for this reorganisation include confused accountabilities under the current scheme, fragmented ownership arrangements, lack of integration, cost equity, inconsistent price management, growth and drought pressures²⁸.

A simplified approach is sought, although there is some debate whether the proposed approach will actually achieve this.

Tasmania

In Tasmania (population 500,000) the Department of Primary Industries and Water (DPIW)²⁹ is responsible for the regulation and management of all freshwater resources in the State.

The water division *“is responsible for a diverse range of water related functions including: the implementation of the Water Management Act 1999 and the Water Development Plan for Tasmania; designing policy and regulatory frameworks to ensure the equitable, efficient and sustainable provision*

²⁷ <http://www.nrw.qld.gov.au/>

²⁸ Queensland Water Commission, ‘Our urban water supply arrangements in South East Queensland, Final Report’, May 2007

²⁹ <http://www.dpiw.tas.gov.au> and <http://www.iris.tas.gov.au>

and use of surface and ground water resources; facilitating water infrastructure development projects; and monitoring and assessing the condition of Tasmania's freshwater resources.”

Similarly to Queensland, the water industry in Tasmania is currently undergoing a reorganisation.

It is moving to a system where three regional authorities will be appointed to manage water services provisions. These organisations will have shared board members to ensure integration between them. Again, the driver for this reorganisation is to simplify the water industry structure.

UK and Wales

Water and Sewerage companies in the UK and Wales were privatised in 1989-90, through the Water Act 1989, promoting a change in the ownership, financing and regulatory structure of the industry. Since April 2006 the water and sewerage industry that serves most of England and Wales is regulated by The Water Services Regulation Authority (OFWAT)³⁰ as outlined in the Water Act 2003.

OFWAT regulates ten water and sewerage companies and twelve water only companies. UK and Wales has a combined population of over 50 million.

In contrast to this, water and sewerage services in Northern Ireland and Scotland are still maintained by public authorities, although a regulatory model has been applied to both. Scotland is discussed in further detail below.

Since its privatisation, adverse financial conditions rendered this model non-viable for Wales, as a result of which this was restructured in 2002³¹ to a non profit organisation but still subject to regulatory framework of OFWAT.

OFWAT undertake the following:

- » Set price limits on what water companies charge;
- » Promote and protect levels of service;
- » Promote efficiency;
- » Promote principles of sustainable development;
- » Encourage competition where appropriate;
- » Work with the Environment Agency and the Drinking Water Inspectorate to ensure that water companies meet environmental and drinking water quality standards; and
- » Undertake benchmarking to improve and raise standards.

Under current legislation, water customers are not able to change their water supplier (like gas and electricity) as “the water industry is made up of local and regional monopolies and there is no national grid to transfer water between networks.”

Water industry facts and figures, published by OFWAT in July 2008³², show bills, price limits, capital investment, customer service, environmental and leakage improvements for the water industry.

³⁰ <http://www.ofwat.gov.uk>

³¹ Reference material supplied by Anthony Wilson, New Plymouth District Council, 2008.

³² Ofwat, 'Levels of service for the water industry in England and Wales 2006-07 Report', 2008.

Ireland

In The Republic of Ireland, local authorities, City and County Councils are responsible for the provision of water supply and sewerage services around the country serving a population of approximately 4.5 million. There are 88 local authorities and approximately 30 County Councils. This is potentially comparable to the present situation in New Zealand in that a similar population is served by a similar number of local authorities.

Water charges for domestic water supply were abolished in 1997, however commercial water charges do apply and all funds are via the general rating system. Water supply upgrades and maintenance is funded by the Department of Environment, which has responsibility for developing Government Policy in the water area, ensuring necessary funding is made available to finance the programme and monitor physical and financial progress on schemes.

The Department of Environment sets and distributes the budgets based on the Water Services Investment Programme which is a three year rolling plan for the provision of major water and sewerage schemes (costing over €1M presently).

While there are 88 local authorities, it was found that often these did not have the resources for the provision of water services,³³ hence much of this has been taken over by the 30 counties.

Procurement methods are set out by the Department of Finance. A new model of procurement for the construction and consulting industry based on fixed price methods had become effective as of March 2008³³. PPPs have been a favoured procurement method since the 1990s with set operation periods. As part of undertaking capital projects the cost effectiveness of projects needs to be considered using a "Public Sector Benchmarking" approach to determine the preferred and most cost effective procurement method and operation, be this public or private³³.

Scotland

A study of the Scottish water industry and its relevance to New Zealand was undertaken by Anthony Wilson.³⁴

This study looked at the reform of the Scottish water industry, whereby in 1996 the responsibilities for water and sewerage were passed from 12 local government organisations to three newly created Government owned businesses.

The Scottish water industry is compared to New Zealand as Scotland (having a population of about 6 million) has many similarities in terms of terrain, population densities, isolation and climate.³⁴

Some of the drivers for this change included:

- » Inefficiencies in the existing structures;
- » Required investment in the water and sewerage industry inadequately addressed;
- » EU water quality and effluent standards;
- » Levels of debt in the water industry; and
- » Unsuccessful attempts by the Central Government to attract private funding.

³³ Fitzgerald, E., Director, TJ O'Connor & Associates, Dublin, Ireland, 2008.

³⁴ Wilson, A., 'The Scottish Water Industry and its Relevance to New Zealand: Study Tour Report', June 1999.

A consultation paper on detailing 8 options was produced and consulted on in response to which the government announced the future structure in July 1993.³⁴

Wilson found that even by mid 1997, there had been substantial efficiency gains in a number of areas including:

- » Staffing levels;
- » Billing and customer call centres;
- » Improvements in customer focus;
- » Purchasing;
- » Technology opportunities; and
- » Training.

The paper concludes that the restructured water industry has significant relevance to any debate for the best future structure for the water services in New Zealand but does need to be put in perspective. He highlights a number of importance factors in the reform as follows:

- » Sole purpose entities provide better customer service and risk management;
- » Effective governance and regulatory regime based on Code of Practice and published benchmarking produces better results to the customer;
- » A strong public health focus is not incompatible with a corporate management environment;
- » Water and sewerage are best managed in a single entity;
- » Significant efficiencies can be achieved through economies of scale; and
- » Networks do not need to be interconnected to be collectively managed.

Since the above study was undertaken, the Scottish water industry has undergone further changes, whereby the three water industries were merged into one entity, Scottish Water. This is being regulated by the Water Industry Commissioner Scotland.³¹

France

Under the French model, the ownership and responsibility for water and wastewater provision lies with the local authorities. This is however then contracted to private companies in franchise, lease or operating agreements lasting from between 6-30 years. Within New Zealand, this is similar to the model adopted by Papakura District Council.

Similar arrangements exist in South and Central American countries.

The operation and construction of new systems can be transferred to private companies for a period of time, at the end of which the ownership is transferred back to the municipality. The first private water supply companies were established in France as early as 1853.

Local government can either choose direct management or contract management. “*In the French regulation model, an element of competition at regular intervals has arisen instead of a continuous, regulating supervision.*”³⁵

Germany

The model of municipal self-government applies in Germany. Under this model municipalities possess the right to regulate all matters relevant to local communities. Legislation and policy making is generally the role of federal government and therefore more centralised, while administration and implementation of policies and legislation is at a local government level and much more decentralised.

In comparative analysis, the German model can be categorised alongside Scandinavian models, particularly Norway.³⁶ (Wollmann, H., 2002)

Under the German Model there are 3 forms of “Partial Privatisation with regulation by the supervisory bodies”.³⁵

- » Formal or organisational privatisation;
- » Material or Functional Privatisation;
- » Mixed privatisation.

Other Comparisons

A paper using Envelopment Data Analysis undertook a comparison of drinking water sections in the Netherlands, English, Welsh, Australian, Portuguese and Belgium. This concluded that voluntarily benchmarked Dutch drinking water companies are outperforming the privatised English and Wales utilities with Australia, Belgium and especially Portugal lagging behind.

In a comparison of water industry governance structures between the England and Wales, French and German models,³⁵ found that the delineation between supervisory and operation functions is the strongest in England and Wales and weakest in Germany. This found that international markets are dominated by the French and British companies. Germany’s disadvantage in this area however, was found to be compensated by Germany’s worldwide leading role in water and wastewater technology.

Performance of local authorities in the United States, France and Germany comparing four German, three U.S. and three French cities,³⁷ found that German cities fared considerably better than French and very much better than American cities.

³⁵ Wackerbauer, J., ‘Research Report – Privatisation of the Public Water Supply and the Resulting Competitive Effects’, April 2006.

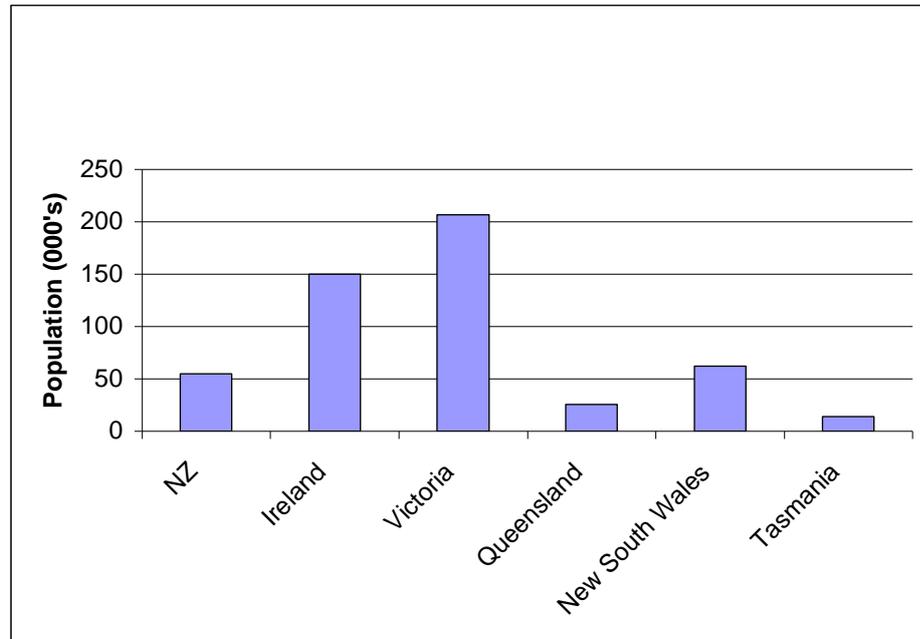
³⁶ Wollmann, H., ‘Is Germany’s traditional type of local self-government going phased out?’, 2002.

³⁷ Sellers, J.M., ‘Governing from below’, 2002a and Cambridge, and Sellers, J.M., ‘The nation-state and urban governance. Toward multilevel analysis’, 2002b.

Comparison of Population per Water Service Provider

Based on the information above a table was compiled showing the population per water service provider.

Figure 28 Population per Water Service Provider Comparison



The two providers that have the lowest population per water service provider (Queensland and Tasmania) are currently undergoing reorganisations. Similarly, in Ireland, the move from the 88 local authorities administering water and sewerage services to a county level model has been made.

In 2002 Ofwat commissioned a report on the optimum entity size in the water industry in England and Wales.³⁸ While this report was written for the English and Welsh privatised water industry and its relevance to New Zealand may be debated, there are some conclusions which are applicable here.

These include:

- » Modelling showed a rapid reduction in cost to customer with size which diminishes to a stable relationship once approximately 400,000 billed properties (about 1,000,000 population) is reached;
- » The size of water supply entities worldwide tends to be related to the size of the 'local government' administrative unit; and
- » Minimum efficient scale (MES) on other industries suggests that plant level MES for surface water treatment plans in the range of 35,000 – 45,000 (about 100,000 population) households and appraisal of idealised distribution systems also suggests limiting surface water treatment to about this level. The companies with the lowest cost in the water industry operate at about 10 times this level, but no conclusions can be drawn from this.

³⁸ Ofwat, 'Optimum entity size in the water industry of England and Wales: a review of factors which influence the size of companies', 2002.



Appendix D

Funding and Procurement Analysis

Contract Forms

Contract model forms and their characteristics, include:

- » Traditional “hard money” contracts: Highly specified, known budgets and asset condition with penalties for non-performance. KPIs often not given context of KRAs;
- » Performance based contracting: Based on delivering outcomes to agreed budgets with degrees of openness on rates and costs. Strong KPIs/KRAs on all parties with flexibility to review;
- » Capability and capacity framework agreements: Scope and service levels are unknown or dynamic; core activity pricing agreed with collaboration on standards as required; possibly some open book or declared margins and usually performance based; reward / penalties around more/less work; price competition on schedules and/or margins. Strong KPIs/KRAs on all parties with flexibility to review;
- » Aggregation: In order to reserve the skills and resources required to establish a client-focussed team, and to plan their own operations for increased efficiency, suppliers require thresholds of work content that provide economic payback and support resource allocation through plan stability;
- » Syndication: Organisations in the same industry sector operating in a similar geographic region will be interfacing with a common supply market;
- » A recent example of this in the industry is the shared services arrangements that the Manawatu and Rangitikei District Councils have undertaken;
- » Programme Procurement: Managing holistically across whole capex and opex forward programmes rather than as individual projects or works orders. This can achieve increased predictability of both on-time (40%) and on-cost (15%)³⁹ delivery through taking a more holistic, whole-of-life approach to the programme and collaborative relationship with the supplier;
- » Within New Zealand, Queenstown Lakes District Council are currently using this model to meet the challenges posed by delivery of a large capital works programme;
- » Alliancing: Relationship based alliance contracts recognise that risk is the responsibility of all. The alliance is established with the intention of aligning the goals of all parties such that activity and method delivers a ‘best for project’ outcome; and
- » Metrowater’s Clear Harbour Alliance, aimed at providing a separate wastewater system to approximately 1,000 houses in suburban Kingsland in Auckland is the first true project alliance example in New Zealand.

³⁹ Constructing Excellence UK, 2006

Collaboration

Although relatively new to New Zealand, there are many examples of collaborative work practices that give confidence that the implementation of strategic collaborative relationships for programme and project delivery yield value.

Collaborative working agreements generally exhibit many unknowns and / or changing work priorities and funding, open sharing of risk and cost information, core cost protection, and benefit sharing. They work well where capex and opex programmes need to be integrated for 'best for lifecycle' outcomes. KPIs / KRAs are strong on all parties and with the flexibility to review.

Public Private Partnerships (PPPs)

PPPs are a way for the public sector to implement capital infrastructure projects sooner through the securing of finance from the private sector. NZCID reported (4th October 2007) “... internationally PPPs have been highly successful in the development and renewal of [infrastructure development for] ... water services ... ” It is important that the overall package of cost, risk, revenue and value is taken into account in order to determine whether a PPP is an appropriate method for a given procurement.

Because such projects are typically high value acquisitions of long life assets lifecycle value-for-money and risk are particularly important considerations. An effective PPP project has risk properly aligned to the party best able to manage it. The risk of the individual project determines the actual cost of credit.

Some additional broad advantages of PPPs are:

- » Water infrastructure companies can focus on their core service skills;
- » Incentivised private sector company designs, builds and maintains to highest standards; and
- » Can increase innovation and generate extra revenue.

New Zealand Example of a PPP and Collaboration

Although not specific to the water industry, in New Zealand, a good and very successful example of a PPP is the one that has been set up in Canterbury for the Kate Valley Landfill. For this project, the 6 local Councils got together in a collaborative approach and formed a PPP with Canterbury Waste Services Ltd to form Transwaste Canterbury Ltd (Transwaste) to develop and operate the Kate Valley Landfill. This is a good example of local authorities collaborating and working with the private sector to draw on the strength of both sectors to deliver a world class outcome. Transwaste is owned 50% by the participating Councils and 50% by Canterbury Waste Services Ltd. The intention is that Transwaste will be run commercially with the prime objective to operate a successful business to support the company's growth.

In this example, it would not have been economic or viable for each of the Councils to operate individual landfills.

While being committed to waste minimisation, there is now guaranteed disposal capacity for participating Councils for 30 years minimum.

Procurement

A number of specific techniques and options relevant to water industry procurement are worthy of further consideration beyond the 'lowest' price confirming approach.

Procurement of Professional Services

- » Building a process that allows for greater consultation on the initial job design including opportunity for contractor input to design-for-construction;
- » Examination of ways in which a level of standardisation of information and process could be achieved between individual designers and the contractor market to achieve job clarity; and
- » Engaging designers from scoping through to handover and providing greater commitment to forward design opportunities across a 3-5 year horizon, allowing designers to feed work to the contractor market flexibly as priorities or works requirements change and so maximise the resource utilisation.

Procurement of Physical Works

- » Bundle (aggregate) jobs by works skills category over an extended time period (e.g. three years);
- » Take an integrated, programme approach to the management of works for all of asset creation, renewals, upgrades, and maintenance;
- » Provide a regular long-term forward view of the programme that provides the contractor market with an understanding of the overall resource requirements to support their tender response and works management planning; and
- » Early Contractor Involvement (ECI): Engage a limited number of preferred contractors who can advise on the most efficient programme sequencing, bundling and projects suitable for ECI under a competitive term framework agreement.

Direct Sourcing (Larger Projects)

Performing category spend analysis determines scope for materials standardisation, supports leveraging scale economies, and helps assess the levels of supply market risk and dependency.

There may be value in securing certain key materials directly. For example steel pipe and valves / fittings. Each of the main determinants of price – i.e. supplier's inherent efficiency and productivity, market profile, input costs, and logistics (including shipping and storage options) - could be examined in parallel to identify the optimum outcome against goals along with cost benefit analyses for the different options, such as savings from bulk buying versus increased cost of storage.



Performance Management

- » Develop more non-price evaluation attributes that, over time, will support closer alignment of contractor skills to the client's requirements, incentivised performance measures, and improvement implementation. Such attributes include:
 - Local knowledge / previous experience (understanding of pitfalls);
 - Contractor flexibility and commitment (including ability to handle jobs where there is a level of sensitivity in the community);
 - Job legacy factors (e.g. community complaints; an unplanned need for rework), and
 - Health & Safety record.
- » Establish a 'one organisation' view of the supply market to avoid any adverse implications from provider performance being administered differently by each individual involved within the client's organisation;
- » Performance Incentives: Continuity and predictability of work is the strongest incentive for suppliers therefore offer direct negotiation for some work as a reward for good performance or engage with fewer suppliers within a framework that maintains incentives. This is particularly relevant with multiple small jobs and a tentative forward programme where the nature of the works can be forecasted and the approximate overall level of activity in a given period is stable