MWH

BUILDING A BETTER WORLD

Final Report

Issues Related to Water Network Asset Funding

Prepared for Department of Internal Affairs

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QUALITY ASSURANCE STATEMENT

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Department of Internal Affairs

Issues Related to Water Network Asset Funding

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Executive Summary

The objective of this study for the Department of Internal Affairs was to investigate:

- the possible existence of an infrastructure 'gap' between the required maintenance and renewal requirements for water networks and the current level of investment in those networks.
- whether there is any evidence in New Zealand to indicate the scale of any infrastructure 'gap' and any associated funding issues.

For the purpose of this research, water network assets are taken to comprise the infrastructure and systems used by councils for the storage, transport and treatment of drinking water, wastewater and stormwater (collectively called the three waters). An infrastructure gap implies that the current level of investment is not sufficient to cover the required maintenance and renewal requirements. This is likely to lead to a situation where the asset is significantly run-down, resulting in possible asset failure and/or decline in current service levels.

To answer these questions, we selected a cross-section of ten councils, with representation across New Zealand and across three council categories of metropolitan, provincial and rural. We collected information from public documents, predominantly the councils' Long Term Council Community Plans (LTCCPs) 2009/2019 and three water Asset Management Plans. We evaluated available information on the scale, condition, performance, expenditure forecasts (renewal, maintenance and new capital) and funding sources for the three water assets. This study would not have been possible without the high level of support received in the report from participating councils.

Taking all of the above into consideration, we were not able to determine that there is an imminent "infrastructure deficit" or "infrastructure gap" for the three water networks of the case study councils. The signals we obtained from the existing data are that the networks are not, overall, nearing the end of their effective lives. In addition, the ten case study councils are, cumulatively, planning renewals at less than half their forecast depreciation expense over the next ten years which implies that there is not an infrastructure gap. However, this statement has to be considered with care. It may be that some councils are not planning to carry out the renewals work that they should be. Although the information on asset condition and risk do not point to any lurking crisis in the networks now or in the next 10 years, this observation is tempered by low confidence factors some councils have in the reliability or currency of their condition assessments.

Other matters that make it difficult to ascertain the situation include the lack of information about levels of forecast maintenance on network assets; the short term nature of the asset management plans (ten years); and how difficult it is to definitively interpret the forecast financial information of networks.

None of the AMPs indicated that the networks have, up to this point, substantive arrears of maintenance or renewals. No 'bow wave' of deferred maintenance or renewals was identified. However, the lack of transparent specificity in maintenance projections and the low level of projected renewals in the next ten years may suggest 'ripple waves' of additional maintenance and renewals from 2020 onwards.

There is a potential infrastructure gap in the medium to long term (20 to 50 years); however this will only become apparent with time and with more complete information on maintenance, asset condition and performance, and risk assessments. It is worth noting that other countries (for example Australia and Canada) prepare asset management plans for these assets over the long term (50 to 100 years).

The future operating environment for all three water network assets will also make management of services and the assets more complex. Influencing factors include more stringent environmental standards, issues related to climate change, and changing community demand for reticulated supplies and integrated services.

The implications from this study appear to be mainly in the rigour, transparency and specificity of information used to plan, manage, fund and provide accountability on the three water network assets. Specificity in relative proportions of funding sources was also lacking or difficult to interpret. This assertion

would undoubtedly apply to other asset-intensive activities of councils. Aside from the question of whether there are infrastructure gaps or not, better information appears to be needed for ongoing sound asset and financial management.

We suggest improving three water service related information including longer term planning (50 to 100 years), greater emphasis on defining and detailing maintenance forecasting, more transparent and understandable funding information, enhanced reporting of performance targets and measures in relation to asset condition and assessing and reporting reliability or precision factors for capital expenditure forecasts..

1 Introduction

1.1 Background Information

MWH has been engaged by the Department of Internal Affairs (DIA) to carry out a research project into:

- the possible existence of an infrastructure 'gap' between the required maintenance and renewal requirements for water networks and the current level of investment in those networks.
- whether there is any evidence in New Zealand to indicate the scale of any infrastructure 'gap' and any associated funding issues.

For the purpose of this research, water network assets are taken to comprise the infrastructure and systems used by councils for the storage, transport and treatment of drinking water, wastewater and stormwater. In this report, we have used "water supply" to refer to drinking water assets and "water network" or "three waters" to refer to all three water networks for drinking water, wastewater and stormwater.

This research project will:

1. build on the Department's previous research publication "Information on Local Government Water Network Infrastructure".
2. be complementary to the recent Auditor-General publication "Local Authorities: Planning to meet the forecast demand for drinking water".
3. identify information on the condition and levels of current and future investment in local government water network infrastructure assets by answering a range of questions around asset quality and condition measures, levels of service, and funding for maintenance, renewals and depreciation.

There are a range of approaches and practices councils use to manage their water network assets. Overseas there has been comment over the last five to ten years about the possible existence of an infrastructure gap or deficit. An infrastructure gap implies that the current level of investment is not sufficient to cover the required maintenance and renewal requirements into the future. This is likely to lead to a situation where the asset is significantly run-down, resulting in possible asset failure and/or decline in current service levels. Some of this previous research, (particularly that from the USA and Canada) has focused on water and wastewater networks which by their very nature tend to be hidden from sight. In the USA and Canada, government has found that significant infrastructure deficits exist in the water, wastewater and stormwater networks.

The situation regarding infrastructure gaps in New Zealand is not clear. To date there is little actual evidence to indicate the scale of any issue, particularly in relation to water network assets.

No single government department has an overarching interest in the state of water network assets. This means that, looking at the national picture, the current level of understanding regarding the most appropriate level of public investment in water networks may be uncertain.

To ensure that current and future investment decisions are prudent and transparent, the Department of Internal Affairs has commissioned this research into the condition and levels of current and future investment in local government water network infrastructure assets. The research framework is based on answering a range of questions around asset quality and condition measures, levels of service, and funding for maintenance, renewals and depreciation.

1.2 Methodology

New Zealand councils were categorised into three categories as per the Local Government New Zealand membership:

1. Metropolitan (typically city councils with >40% urban and generally high population growth)
2. Provincial (district councils with small urban centres, 30% to 80% urban with generally positive population growth)

3. Rural (district councils with very small urban areas and a wide variation in population growth).

The categorisation of all New Zealand councils is shown on the map in Figure 1-1.

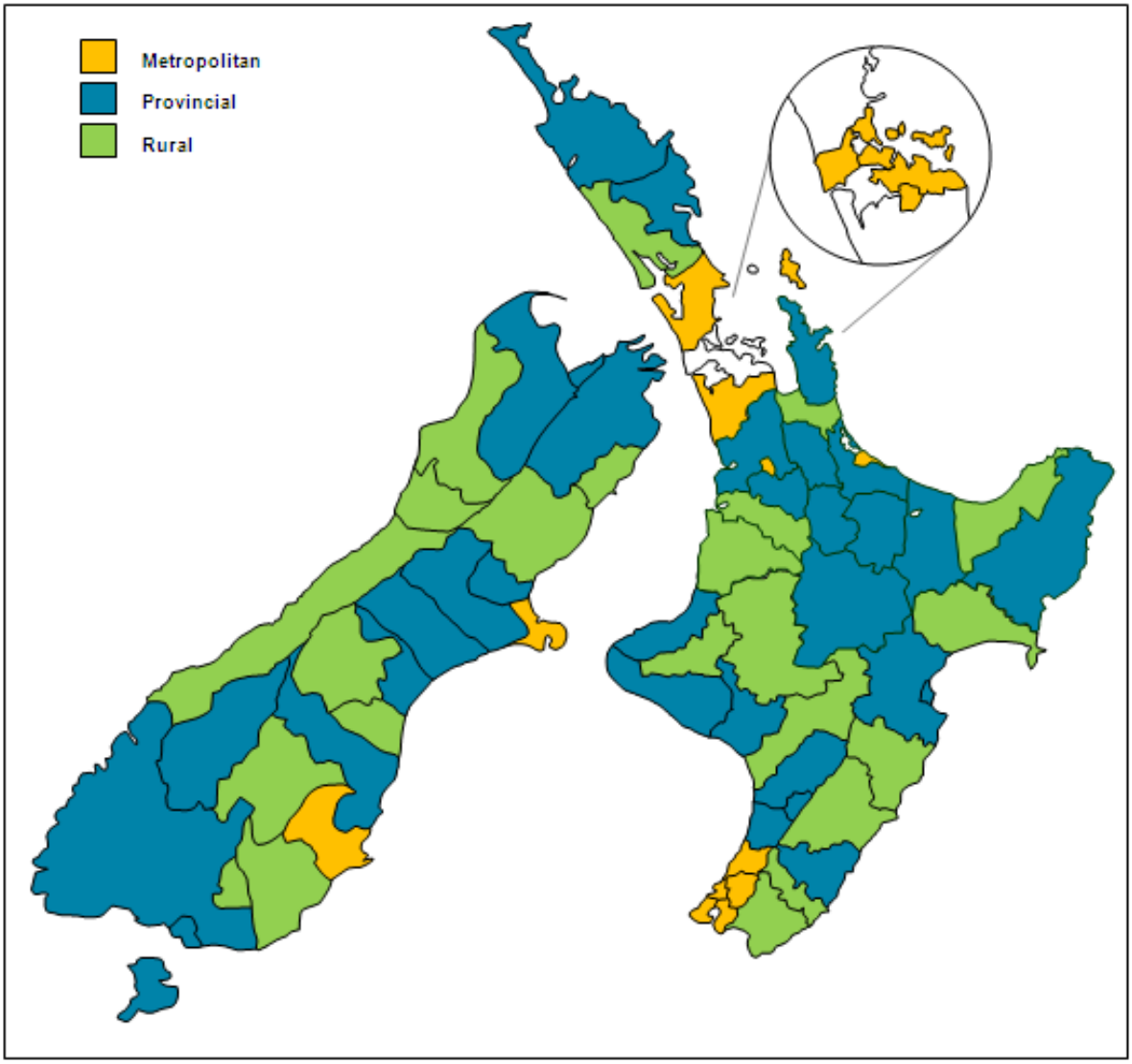

Figure 1-1: Map of New Zealand Councils with Categorisation into Metropolitan, Provincial and Rural

A cross-section of ten councils out of the current 73 (soon to be 66) territorial authority councils were selected to participate in this research study, with representation across New Zealand and across the three council categories. The ten selected councils are shown graphically in Figure 1-2.

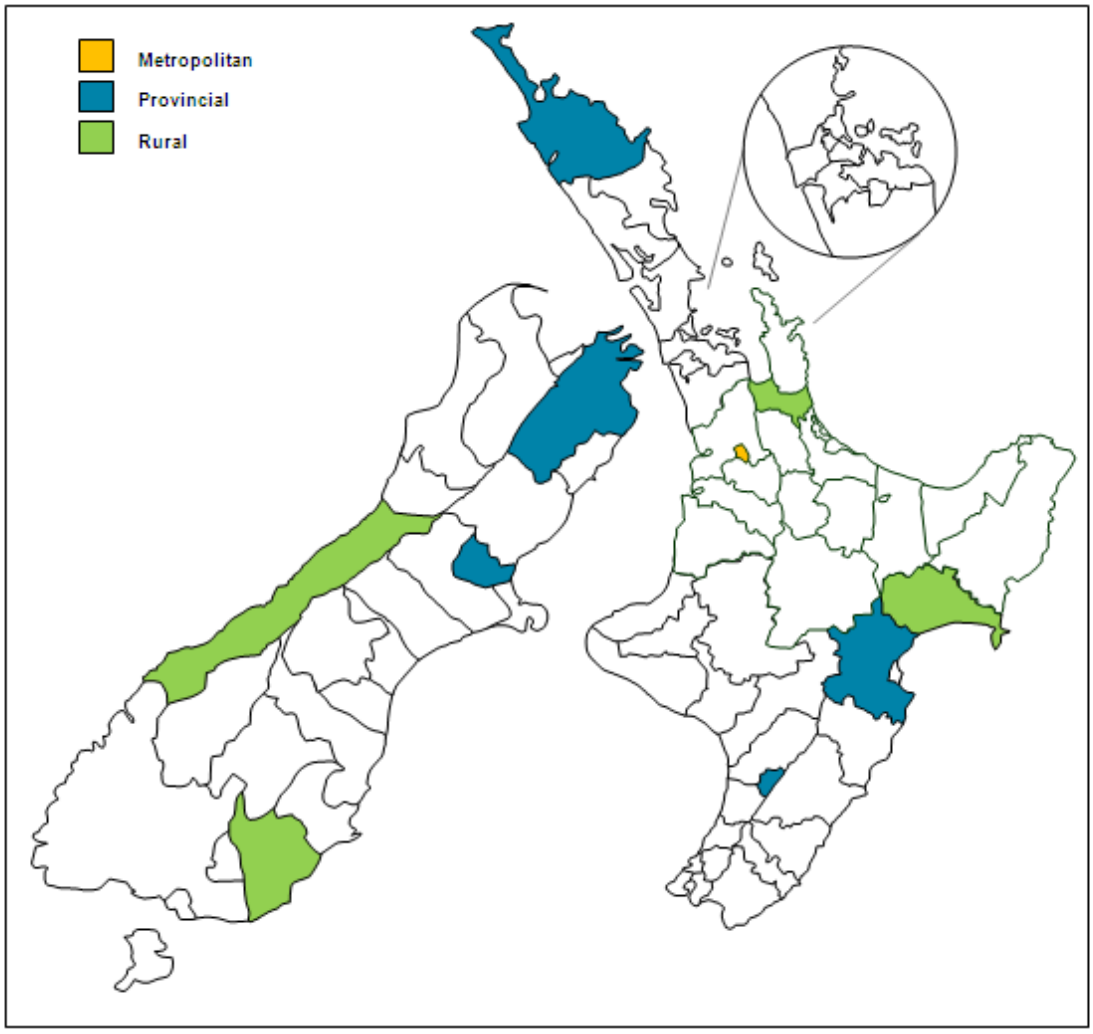

Figure 1-2: Map of 10 Selected New Zealand Councils

The ten selected councils, their corresponding council category and the five letter acronym used for the graphs are listed in Table 1-1.

Table 1-1: List of Ten Selected Councils

Council Name	Category	Acronym
Hamilton City Council	Metropolitan	HAMIL
Waimakariri District Council	Provincial	WAIMA
Far North District Council	Provincial	FARNO
Hastings District Council	Provincial	HASTI
Marlborough District Council	Provincial	MARLB
Palmerston North City Council	Provincial	PALME
Clutha District Council	Rural	CLUTH
Hauraki District Council	Rural	HAURA
Wairoa District Council	Rural	WAIRO
Westland District Council	Rural	WESTL

The framework for this study was set by sixteen questions identified by the DIA under three topic headings, as follows:

Asset description and condition

1. What is the scale of water supply, wastewater and stormwater infrastructure (reticulation and treatment) assets (ie. length of pipe, number treatment stations, pumps etc.)?
2. What is the current value and replacement value of the water network infrastructure assets?
3. Condition
    a. What is the condition of water network infrastructure assets?
    b. Are there any identified areas of unacceptable risk?
4. How does the condition assessment relate to the observed state of the assets in terms of breakages, losses, ingress or overflows?
5. Performance
    a. What performance measures does the council use for its water network assets?
    b. How are they measured?
    c. How does actual performance relate to projected performance?
    d. How are these results reported to customers?
6. Future renewals and maintenance
    a. What level of future renewals and maintenance work has been identified in relation to the various water network infrastructure assets?
    b. How does this compare with the remaining useful lives and asset values?
7. What is the overall level of capital expenditure identified for water network infrastructure? What major capital projects are being planned in relation these types of assets?

Funding

8. Funding for depreciation, renewals and maintenance
    a. What is the agreed level of funding for asset renewal?
    b. What is the agreed level of funding for asset maintenance?
    c. What rationale is given for the levels of funding observed? How does this vary across the water supply, wastewater and stormwater asset groups?
9. What is the relationship (if any) between depreciation funding and renewals? How does this impact on council budgets?
10. What (if any) is the difference between levels of actual funding allocated, depreciation and the levels of funding identified through the asset management planning? What criteria does council use to balance or allocate these funding decisions?
11. When accounting for asset condition, what do the observed levels of funding say about the adequacy of infrastructure planning and funding at present? In the future?
12. Funding sources
    a. How are funds raised to cover renewals of water network infrastructure?
    b. How are funds raised to cover new water network infrastructure?
    c. Is this likely to change in the future, if so, how?
13. What factors might change the observed situation? If so to what extent? What might the drivers for change be?

Other Factors

14. How does the council measure and account for prospective changes to population (increase of decrease) in terms of asset management and funding for water network assets?
15. What analysis has the council carried out to determine the relationship between forecast population and future assets? What actions has the council taken on the basis of this analysis?
16. What impact might any identified demand management strategies have on future funding requirements and distribution by the council?

In addition, the DIA wanted three overall questions to be answered through the analysis, as follows:

- Is there an adequacy of planning and funding with regard to water network infrastructure (eg. a potential “deficit”)? If so what is the extent now, and into the future? How do the observations of a potential variation differ between the case study councils?
- What is the relationship between any “deficit” or variation observed and the situation a council is (or is likely to be) operating in (eg. considering population growth or population decline or any other factors)?

- Given the attributes of the case study councils, what are the possible implications of this research for water networks and the local government sector as a whole?

To answer these questions, we collected information through public documents including:

- Long Term Council Community Plan (LTCCP) 2009/2019
- Draft Annual Plan 2010/2011
- Annual Report 2008/2009
- Water Supply Asset Management Plan
- Wastewater Asset Management Plan
- Stormwater Asset Management Plan

Where information was not available or unclear in the public documents, follow-up questionnaires were sent to relevant council staff. We acknowledge the significant support received from the participating councils.

The findings of this study are based on the assumption that councils accurately describe their water network renewal needs in their public documents. This study did not have sufficient time to interrogate this assumption in detail with each council, however it is our view that, while there are some exceptions, overall the findings are representative.

1.3 Definitions

Definitions are provided throughout the text under each relevant sub-section.

An additional definition is provided below:

Infrastructure gap for maintenance and renewals
Equal to the difference between the needed investment in renewals and maintenance and the funds available for renewals and maintenance over the 10 year LTCCP period to meet the current levels of service. Excludes expenditure on new works for growth or increased level of service.

2 Summary of Survey Results

2.1 Introduction

The following sub-sections address the sixteen questions asked by the DIA (the relevant question numbers are included in the sub-section title). The raw data is provided in Appendix A in the form of summary tables. The results are also presented in a series of graphs. The ten case study councils are shown in the same order in every graph, with the exception of Figure 2-1, Figure 2-2 and Figure 2-3 where the councils are listed in ascending order by population served. The council order is by council category as shown in Table 1-1.

A number of discussion points are addressed in each sub-section:

- How is the parameter of interest defined?
- Why is this parameter important?
- How is the parameter assessed?
- What did we learn from the ten case study councils?

Network specific conclusions are presented in the order of Water Supply, Wastewater and Stormwater.

2.2 Scale of Water Networks (Question 1)

How is the scale of the water networks defined?
We defined the scale of the water networks through the following key factors:

- # of schemes
- Population served
- # of treated water supply reservoirs
- Length of pipes (km)
- # of pump stations

In addition, we collected data on additional factors specific to each of the water networks:
Stormwater:

- Length of open channel (km)

Water Supply:

- # of raw water reservoirs/dams
- # of bores
- # of river intakes
- # of treatment stations

The full tables of data are provided in Appendix A with data for the most recent year (typically 2008 or 2009). The graphs below show the population served and pipe length for the ten case study councils in ascending order by population served.

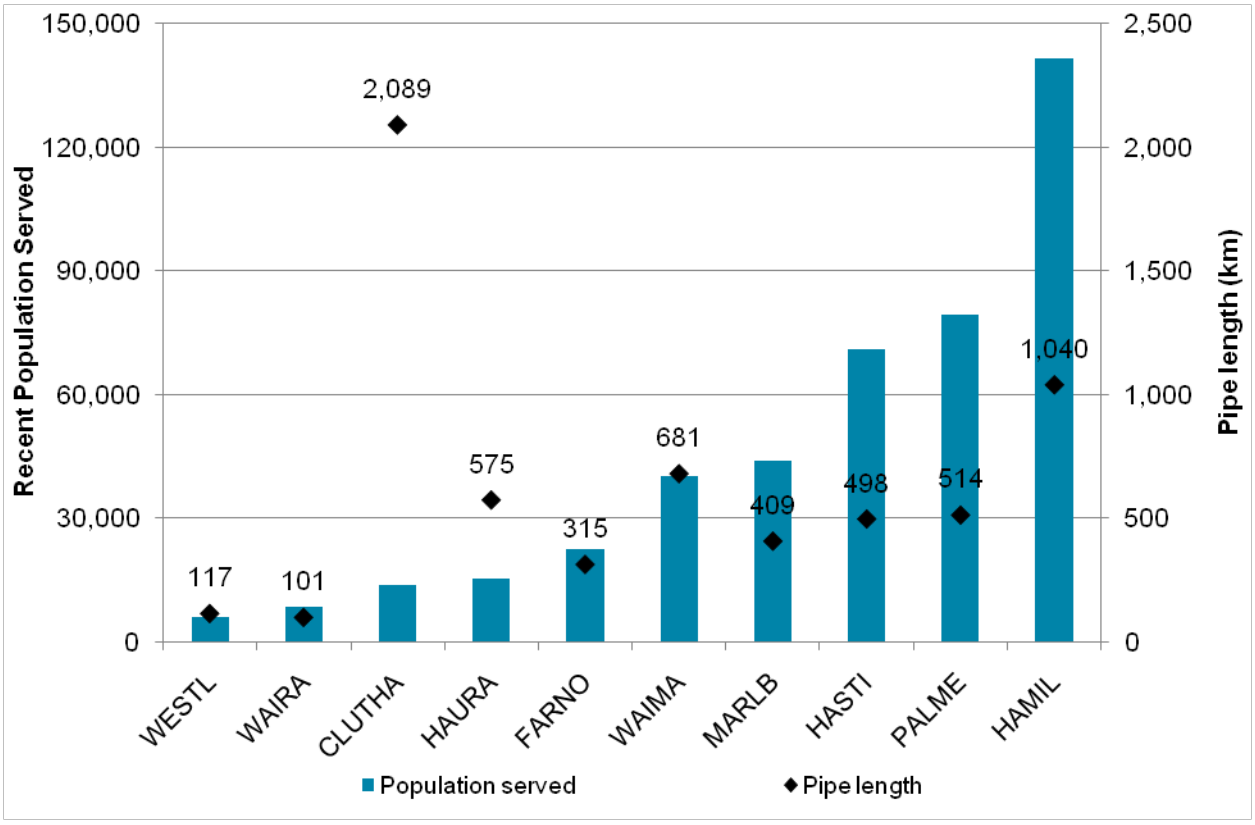

Figure 2-1: Population Served and Pipe Length for Water Supply Networks

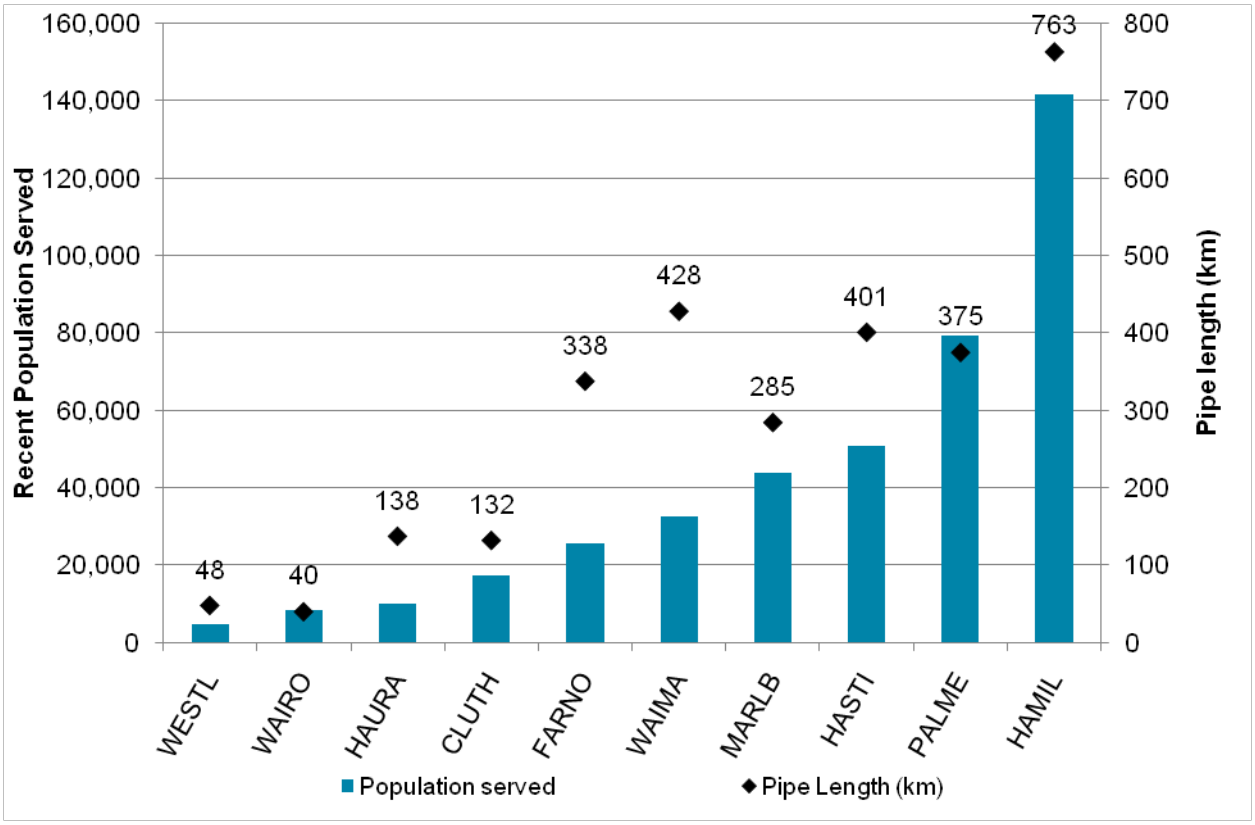

Figure 2-2: Population Served and Pipe Length for Wastewater Networks

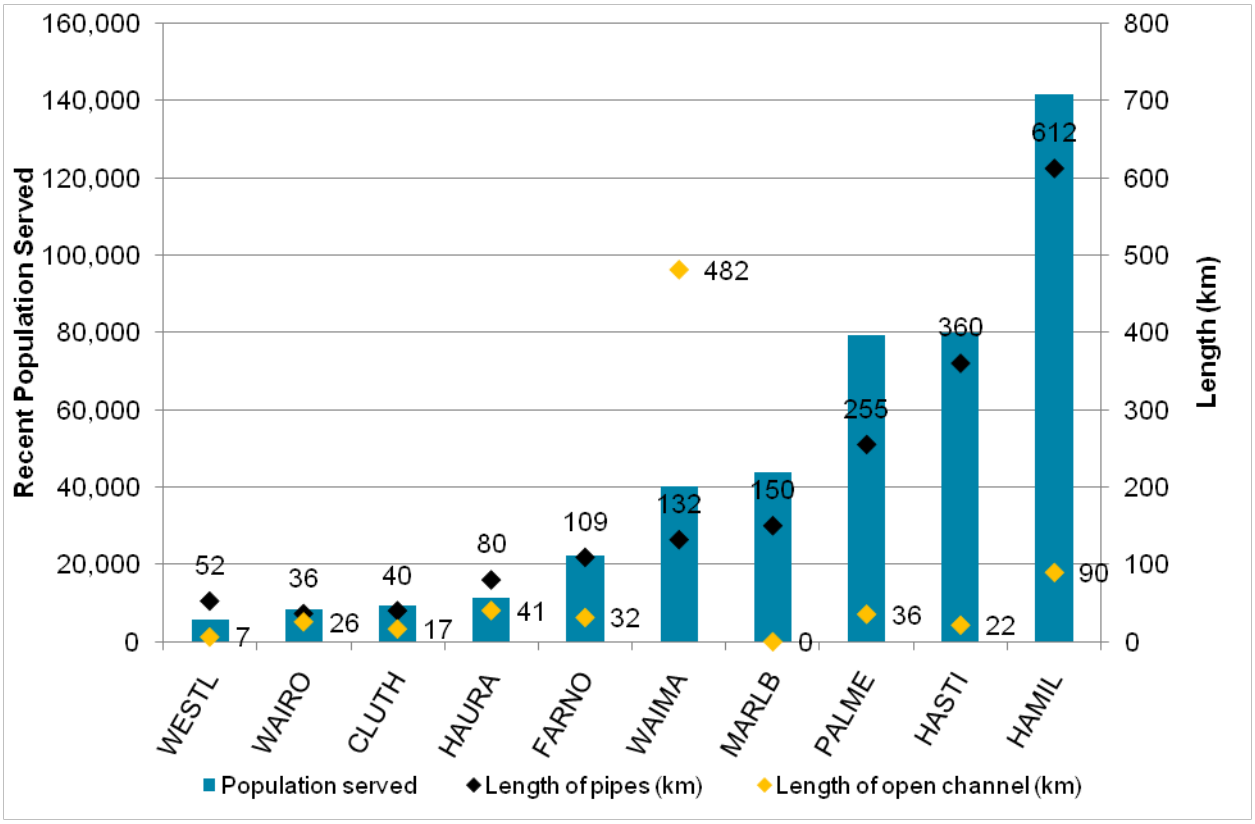

Figure 2-3: Population Served and Pipe Length for Stormwater Networks

Why is the scale important?
The scale of the water networks is important as it allows us to gain an impression of the magnitude of the water networks that the council has to manage.

What did we learn from the ten case study councils?

The graphs above show that most of the ten case study councils are small to medium in size by population served. Typically the length of pipes is proportionate to the population served but there are several notable exceptions:

- Clutha District Council has the greatest length of water supply pipes, due to a number of rural schemes with small diameter pipes.
- Hauraki and Waimakariri District Councils have a disproportionate length of water supply pipes compared to their population served which is likely to be due to rural schemes with low connection density.
- Far North, Waimakariri, Hastings and Hauraki District Councils have a disproportionate length of wastewater sewer pipes compared to their population served which is likely to be due to low connection density.
- The stormwater networks generally have proportionate pipe lengths compared to their population served. Waimakariri District Council has a significantly greater length of open channel compared to other councils.

2.3 Valuation of Water Networks (Question 2)

What is the importance of valuation information?

Valuations of water assets provide vital information about the water networks and their context within a council's overall service framework. There are three elements to the valuations:

- The replacement cost (RC) of the existing asset networks. This, as the name suggests, is the up-to-date cost of replacing the existing water networks owned by council. It includes all design, construction and engineering on-costs. The replacement cost of a network also gives a picture of the degree of the cumulative investment by the council as well as the assets which have been vested to council by sub-dividers.
- The Depreciated Replacement Cost (DRC) of the existing networks. This provides an overall picture of the remaining life of the network. For example if the RC of a network is $100 million and the DRC is $66 million, we could say that, for the network as a whole, it is one-third through its life. This, of course, doesn't pinpoint individual assets or classes of assets within a network that may be in either earlier or later stages of its assumed life.
- The Annual Depreciation (AD). In each valuation the annual depreciation (or 'loss of service potential') for a network is calculated from the replacement cost and the total useful lives assigned to the assets. This information is built up at an asset component level, where components having different useful lives are assessed separately.

Who performs valuations and how often are they conducted?

Valuations of assets are required to be conducted by qualified valuers or persons familiar with the relevant networks who are independent of council. Generally councils value their networks every three years at the end of a financial year. Increasingly councils are moving to yearly re-valuations (particularly for roads) as the movements in Annual Depreciation are easier to assimilate into the financial and funding strategies.

What did we learn from the 10 Case Study Councils?

Appendix A shows the RC, DRC and Annual Depreciation for all three water networks for all 10 councils. The data, which was extracted from council Asset Management Plans or the actual valuation reports, shows:

- All councils regularly re-value their asset networks - this is an Accounting Standard requirement so it is to be expected that valuations would be provided in 100% of cases.
- The dates of the latest valuations were either 2009 or 2008. As valuation information feeds into the 2009-19 LTCCPs, most council valuations need to be reasonably up to date to provide robust information for the 10 year LTCCP period from 1 July 2009.

The following table shows the raw financial figures in a more meaningful light.

Table 2-1: Valuation Statistics for the Three Waters

	Water Supply	Wastewater	Stormwater
Average DRC / RC (Remaining Network Life)	62%	61%	65%
Range DRC / RC (Remaining Network Life)	44% - 74%	48% - 78%	26% - 87%
Derived Average Network-Through Life	38%	39%	35%
Derived Range of Network-Through Life	26% - 56%	22% - 52%	13% - 74%

The inferences that can be drawn from the table are:

- There is nothing to suggest, from the valuation outputs, that any of the three water networks for all 10 councils are, overall, nearing the end of their lives. It is important to stress that this information captures the picture for the networks as a whole. It may be that specific parts or localities of a network may be nearing the end of the life.

- For **Water Supply** networks:
  - The DRC values are, on average, 62% of the RC. This suggests that, on average, water supply networks are just over one-third through their lives.
  - There was only one council where the DRC was less than half of the RC suggesting that the council's network as a whole is over half way through its life.
  - The percentage range of remaining network life for the 10 councils is 44% (low) to 74%(high).
- For **Wastewater** networks:
  - DRC values are, on average, 61% of the RC. This suggests that, on average, wastewater networks are nearly two-fifths through their lives.
  - There was only one council where the DRC was slightly less than half of the RC suggesting that the council's network as a whole is about half way through its life.
  - One council had a very high ratio of DRC to RC (78%). This is a high growth council which reflects that wastewater capital investment and assets vested in council has been relatively high in the last few years.
  - The percentage range of remaining network life for the 10 councils is 48% (low) to 78%(high).
- For **Stormwater** networks:
  - DRC values are, on average, 65% of the RC. This suggests that, on average, stormwater networks are one-third through their lives.
  - There was only one council where the DRC was less than half of the RC (21%) suggesting that the council's network as a whole is nearly 80% way through its life.
  - One council had a very high ratio of DRC to RC (87%). This is a high growth council which may reflect that stormwater capital investment and assets vested in council has been relatively high in the last few years.
  - The percentage range of remaining network life for the 10 councils is 21% (low) to 87%(high)
  - Excluding the low result (21%) the DRC to RC average is 70%. This is a higher percentage than water supply or wastewater networks but seems intuitively correct as stormwater networks have a higher proportion of non-depreciable assets (e.g. open drains) and fewer short-lived assets such as treatment plants.

2.4 Condition of Water Networks (Questions 3a, 3b and 4)

What is asset condition?

The International Infrastructure Management Manual (IIMM) has the following definition "Asset condition reflects the physical state of the asset, which may or may not affect its performance. At a basic level, councils will assess the condition of their assets by using a "top-down" approach based on knowledge of staff, maintenance records and remaining asset life." The condition rating standards will tend to be simple (i.e. the standard industry 1 to 5 rating scale).

Why is condition data important?

Condition data is used to determine the need and timing of preventative or remedial action to prevent loss of service (for example maintenance or renewals). If a council does not know the current condition (along with performance) of an asset, this may lead to premature failure which will leave council with only one option, to replace the asset (which is generally the most expensive option).

What did we learn from the 10 Case Study Councils?

The full tables of condition data are provided in Appendix A. All councils that reported asset condition ratings used a 1 to 5 condition rating system. Typically this was based on the International Infrastructure Management Manual (IIMM) as follows:

1=Excellent
2=Good
3=Fair
4=Poor
5= Very Poor

There were local variations in the source of the condition ratings, with one council using the 1999 New Zealand Water and Waste Association Infrastructure Grading Guidelines to rate pipes and another council using the % through the asset life to assign the 1 to 5 condition ratings for pipes.

Confidence in the condition ratings varies, especially for buried assets such as pipes. Above ground assets can be assessed more easily, and therefore more often, than below ground assets. Below ground assessment is more expensive and less conclusive, particularly for pressurized pipes including water mains and pumped sewer pipes.

Figure 2-4, Figure 2-5 and Figure 2-6 show the average condition ratings for each council by key asset types. Where an overall average was assessed as being between two condition grades, half grades were given (for example, pipes from condition 2 to 3 were given an average condition grade of 2.5). Note that these average condition ratings are an aggregation of multiple assets typically within multiple schemes in each council and a retrospective view of asset condition (compared to forecasts for renewal expenditure which are clearly forward views). There may be pockets of poor condition assets within each council that are not captured in these average condition ratings but these are not expected to impact on the financial forecasts for the water service as a whole. For example, through a council boundary restructure the Palmerston North City Council acquired a small scheme that needed renewal investment. The required investment was minor for the council as a whole and did not impact on financial sustainability.

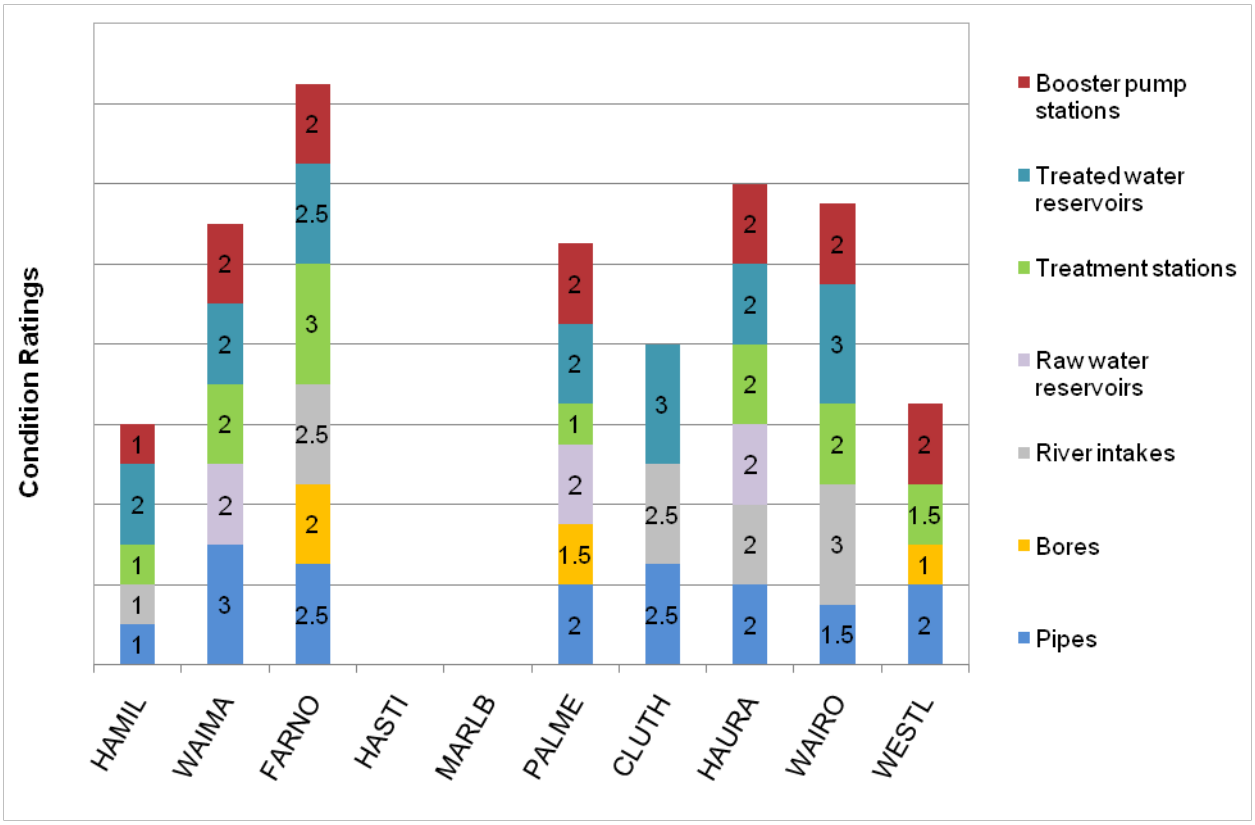

Figure 2-4: Water Supply Network Average Condition Ratings by Key Asset Types

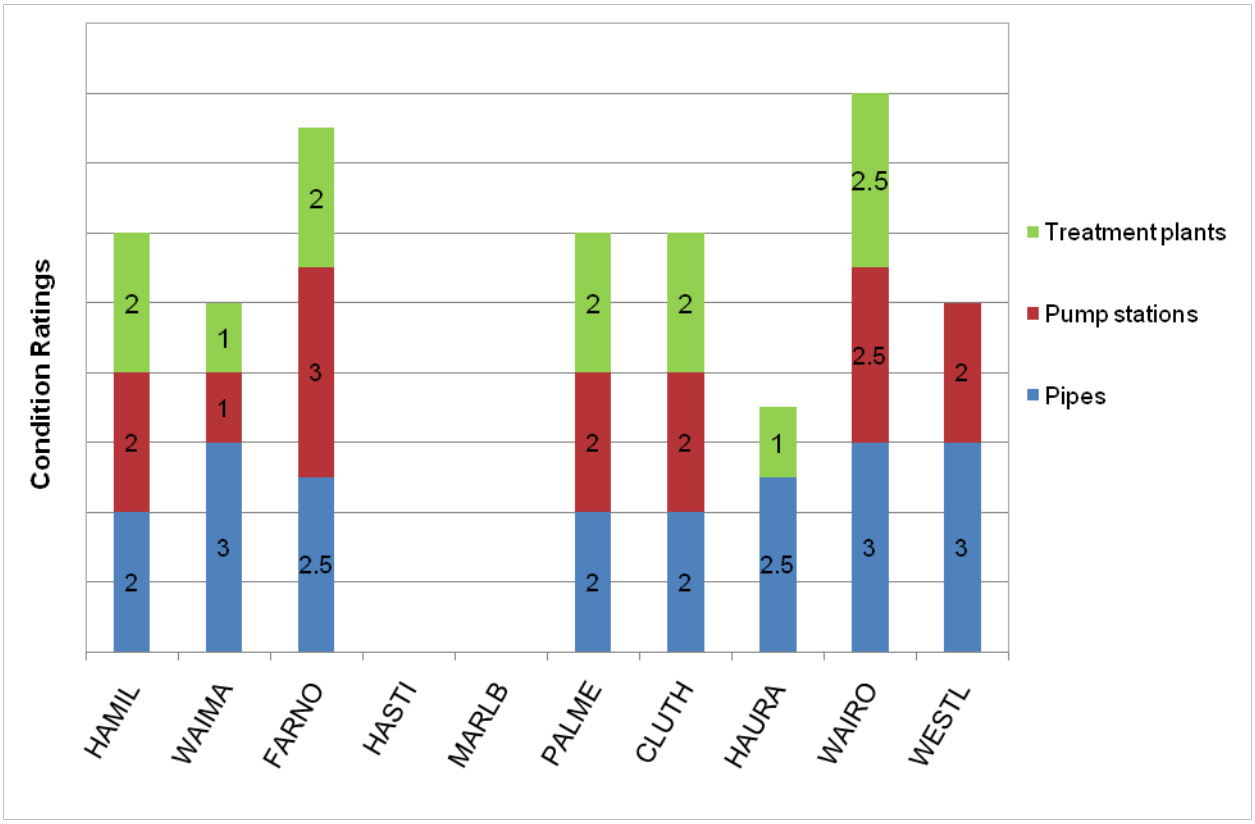

Figure 2-5: Wastewater Network Average Condition Ratings by Key Asset Types

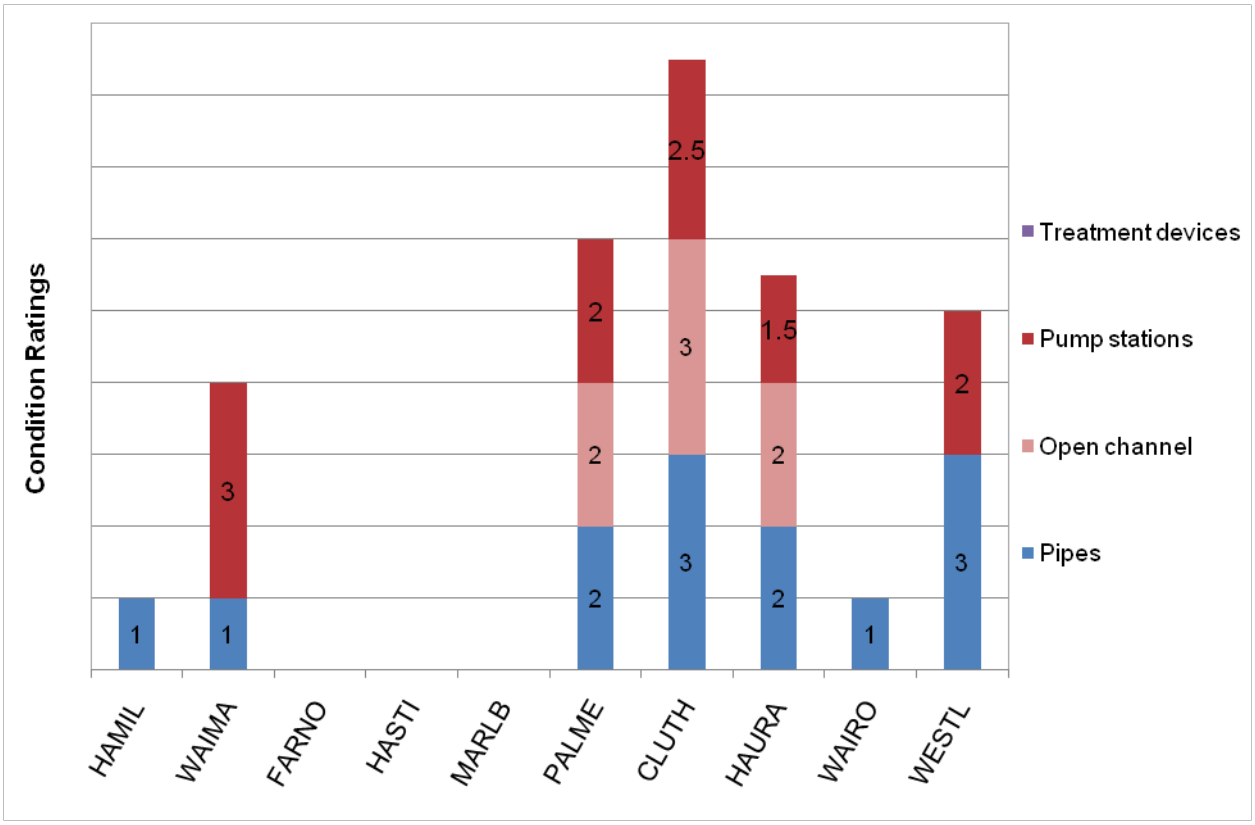

Figure 2-6: Stormwater Network Average Condition Ratings by Key Asset Types

The graphs above show the following:

- Water supply mains had a wide range of average condition grades from 1 to 3.
- Wastewater sewer pipes had a narrow range of average condition grades from 2.5 to 3.
- Stormwater sewer pipes had a wide range of average condition grades from 1 to 3.
- Four councils reported only good to excellent average condition grades for their water supply assets (i.e. either 1 or 2).
- Three councils reported only good to excellent average condition grades for their wastewater assets.
- Three councils reported only good to excellent average condition grades for their stormwater assets.
- The worst condition rating reported for any of the three water network asset types was 3, which equates to a "Fair" rating. No councils reported an average "Poor" or "Very Poor" condition rating for any of their key asset types, however there were instances of individual assets with these lower rating within the key asset types.
- Two councils were unable to provide condition ratings for all three water networks and one council was unable to provide condition ratings for their stormwater network.
- There are limitations with these average condition ratings related to the data confidence and the aggregated average approach that does not identify if there are pockets of poor condition assets. However we do not believe these pockets of poor condition assets will have a material impact on the long term financial sustainability of each council.

Question 3b "Are there any identified areas of unacceptable risk?" was assessed qualitatively and the results are provided in Appendix A. Most of the ten councils have not yet fully developed their risk management frameworks to identify specific risks. A few of the councils have undertaken or are planning to undertake a criticality assessment of their assets. Specific risks associated with poor condition assets were often identified under each scheme's description in the AMP.

Question 4 "How does the condition assessment relate to the observed state of the assets in terms of breakages, losses, ingress or overflows?" was assessed qualitatively and the results are provided in Appendix A. Most of the ten councils did not report on the observed state of the assets nor the relationship between condition assessment and the observed state of the assets in their AMPs. The following conclusions can be drawn from the few councils that do report on observed state of their assets:

- The observed water supply pipe condition can be linked to leakage levels.
- The observed wastewater sewer condition can be linked to Closed Circuit Television surveys (CCTV) and infiltration levels.
- The observed stormwater sewer condition can be linked to CCTV surveys.

2.5 Condition Performance of Water Networks (Questions 5a, 5b, 5c and 5d)

What is asset performance?

The International Infrastructure Management Manual (IIMM) has the following definition "The performance of the asset is the ability to provide the required level of service to customers. Generally this can be measured in terms of reliability, availability, capacity and meeting customer demands and needs."

Why is performance data important?

Performance monitoring is undertaken to compare actual performance with service standards or design criteria. If a council does not know the current performance (along with condition) of an asset, this may lead to premature failure which will leave council with only one option, to replace the asset (which is generally the most expensive option).

What did we learn from the 10 Case Study Councils?

For Question 5a to address the condition performance measures used, we assessed each council's condition related performance measures reported in the Annual Report against the identified condition related performance measures from the New Zealand National Asset Management Steering (NAMS) Group's manual "Developing Levels of Service and Performance Measures" (2007). Generally there are very few condition related performance measures in this manual as shown in Table 2-2.

Table 2-2: List of Condition Related Performance Measures from the NAMS Levels of Service Manual

Network	Level of Service	Customer or Technical PM	Condition Related PMs from the NAMS Levels of Service Manual
Water Supply	A reliable water supply is provided	Technical	Operative risk management in place and planned mitigation measures completed.
	A reliable water supply is provided	Technical	Less than (x) water mains breaks per 100km of water network.
	Water resources are used efficiently and sustainability	Technical	Less than (x) % of water losses in pipe network.
Wastewater	Sewage is managed without risk to public health.	Customer	No sewage overflows into habitable buildings due to faults in the public wastewater system.
	Sewage is managed without risk to public health.	Technical	Less than (x) sewage overflows each year from the public wastewater network.
	A reliable service is provided.	Customer	Fewer than (x) recorded dry weather overflows from the wastewater network.
	Sewage is managed without adversely affecting the quality of receiving environment.	Technical	Operative risk management plan in place for pump stations and treatment plants, and adopted mitigation measures implemented in accordance with the plan.
Stormwater	A reliable service is provided	Technical	Risk assessment undertaken and adopted. Residual risks identified and appropriate management and response plans adopted

The results of this assessment are shown in Appendix A. The following conclusions can be drawn from the information collected:

- Six of the ten councils used at least one of the water supply condition related performance measures identified in Table 2-2.
- Only one of the ten councils used one of the wastewater condition related performance measures identified in Table 2-2.
- None of the ten councils used the stormwater condition related performance measure identified in Table 2-2.

For Questions 5b, 5c and 5d to address how the condition related performance measures are measured, reported to customers and how actual performance relates to projected performance, we widened the performance measures to include all condition related performance measures reported in the AMP, LTCCP or Annual Report. The results of this assessment are shown in Appendix A. The following conclusions can be drawn from the information collected:

- There are no consistent condition performance measures used by all or even most of the ten councils.
- In addition to the three condition related performance measures from the NAMS Levels of Service Manual, there are 11 other water supply condition related performance measures used, 10 other

wastewater condition related performance measures used and 9 other stormwater condition related performance measures used.

- The additional water condition related performance measures relate to leaks per asset type, reduction in water loss, volume of water loss per connection per hour, duration and frequency of unplanned system interruptions, renewal expenditure compared to depreciation expense and development of a condition assessment programme.
- The additional wastewater condition related performance measures relate to overflows, reduction of discharge volume, health restrictions due to leaks or overflows, frequency of sewer blockages, renewal expenditure compared to depreciation expense and frequency of failing on-site treatment systems.
- The additional stormwater condition related performance measures relate to frequency of sewer blockages, flooding events caused by drain collapse or blockage, surface flooding and renewal expenditure compared to depreciation expense.
- Few councils met their target performance for all of their reported condition related performance measures.

Water New Zealand identified the need for a water performance benchmarking tool for the industry and has recently completed two pilot National Performance Reviews based on the Auckland Water Group's annual performance review indicators. There is the expectation that this will expand to become a national-scale initiative.

2.6 Forecast Renewal Expenditure for Water Networks (Questions 6a, 6b, 8a and 11)

What are renewals?

The International Infrastructure Management Manual (IIMM) defines renewals as "works to upgrade, refurbish or replace existing facilities with facilities of equivalent capacity or performance capability". The term "upgrade" might seem to imply that renewals include expenditure that 'add to the assets'. However in this context upgrade means that it is restoring the asset's service capacity or capability to its original level. In the Local Government Act 2002 there is no definition of renewals but Schedule 10, Clause 2(1) (d) (vii) provides that councils must state, in their LTCCP, "how the costs of maintenance, renewal and replacement of assets will be met".

Renewals expenditure is part of the capital expenditure of a council.

Why are renewals important?

Renewal expenditure is important in order to ascertain whether an asset-intensive organisation is maintaining its service capacity and capability by re-investing in its asset stock. It's the "putting back". This is particularly important in infrastructure owning entities and even more so in long-lived networks which are relatively 'steady- state' in terms of technology. For example renewals may not be so vital in short-lived networks with rapidly evolving technology- such as telecommunications. But in the NZ local authority scene, all territorial councils own long-lived asset networks where the technology advances are more gradual.

Thus it is important for councils to identify renewals expenditure as it occurs and to forecast renewal expenditure as robustly as possible. It is not always easy to separate renewal expenditure from other categories of capital expenditure such as expenditure to meet growth or expenditure that will provide an enhanced level of service. Often a typical project might involve elements of all three types of capex expenditure so councils may have to make an assessment of the split.

It is also relevant to note that renewal expenditure doesn't occur evenly. If a network is relatively young in its lifecycle then renewal expenditure will be light. If the network is old then renewals are likely to be high. Because a network is made up of many different assets and asset components, there are multiple life-cycles within a network.

What did we seek to learn from the 10 case study councils?

We wanted to establish, for each water service:

- Whether all councils had identified forecast renewals in both their AMPs and in the LTCCP for the period 2009-19;
- The quantum of renewals for each of the years and cumulatively;
- The level of renewals in the first year of the LTCCP (2009-10) as a percentage of the replacement cost of the network;
- The average yearly level of renewals over the 10 years of the LTCCP (2009-19) as a percentage of the replacement cost of the network;
- To compare the forecast renewals to the broad long term renewal needs, using the weighted average useful lives for network valuations as a proxy measure;
- Whether any council AMP had noted whether their actual renewals were falling behind scheduled renewals.

What did we learn from the case study councils?

The full tables of data are provided in Appendix A and Appendix B. Figure 2-7, Figure 2-8 and Figure 2-9 below show the forecast renewals expenditure (both the first year 2009/2010 and the 10 year annual average) as % of the latest reported replacement cost and the theoretical long term renewal needs. The calculation for the **theoretical long term renewal needs** is:

Annual depreciation / Replacement cost

This is also equivalent to the inverse of the overall weighted average useful life (years) where the overall weighted average useful life (years) is calculated as the Replacement cost / Annual depreciation.

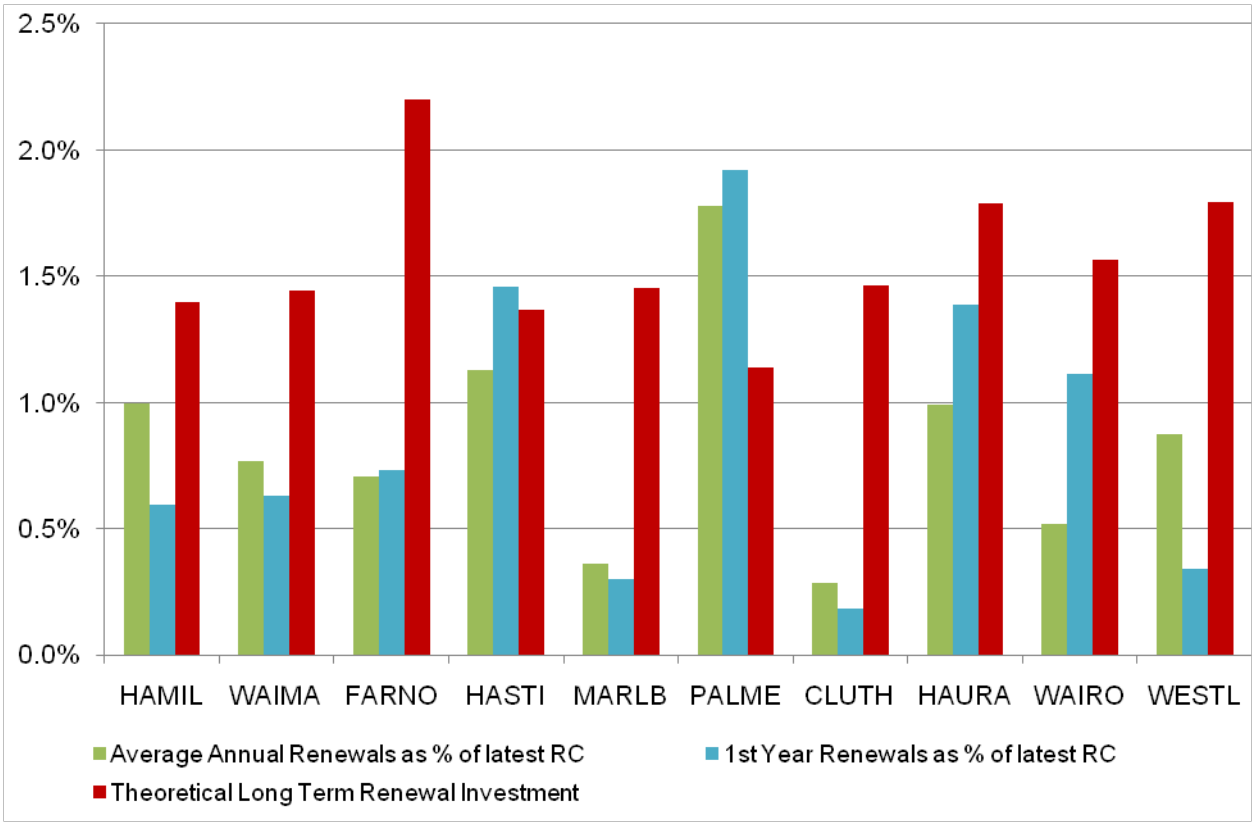

Figure 2-7: Water Network Renewals Expenditure as % of Latest Reported Replacement Cost

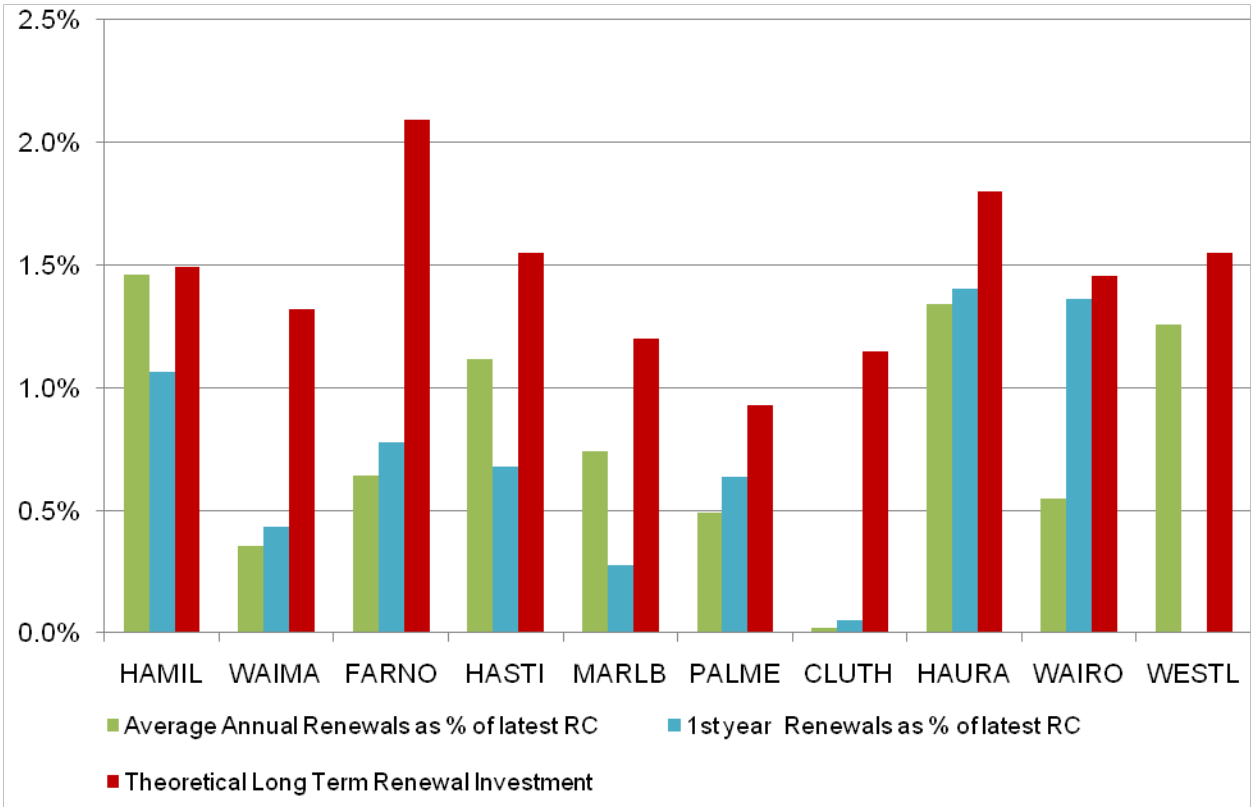

Figure 2-8: Wastewater Network Renewals Expenditure as % of Latest Reported Replacement Cost

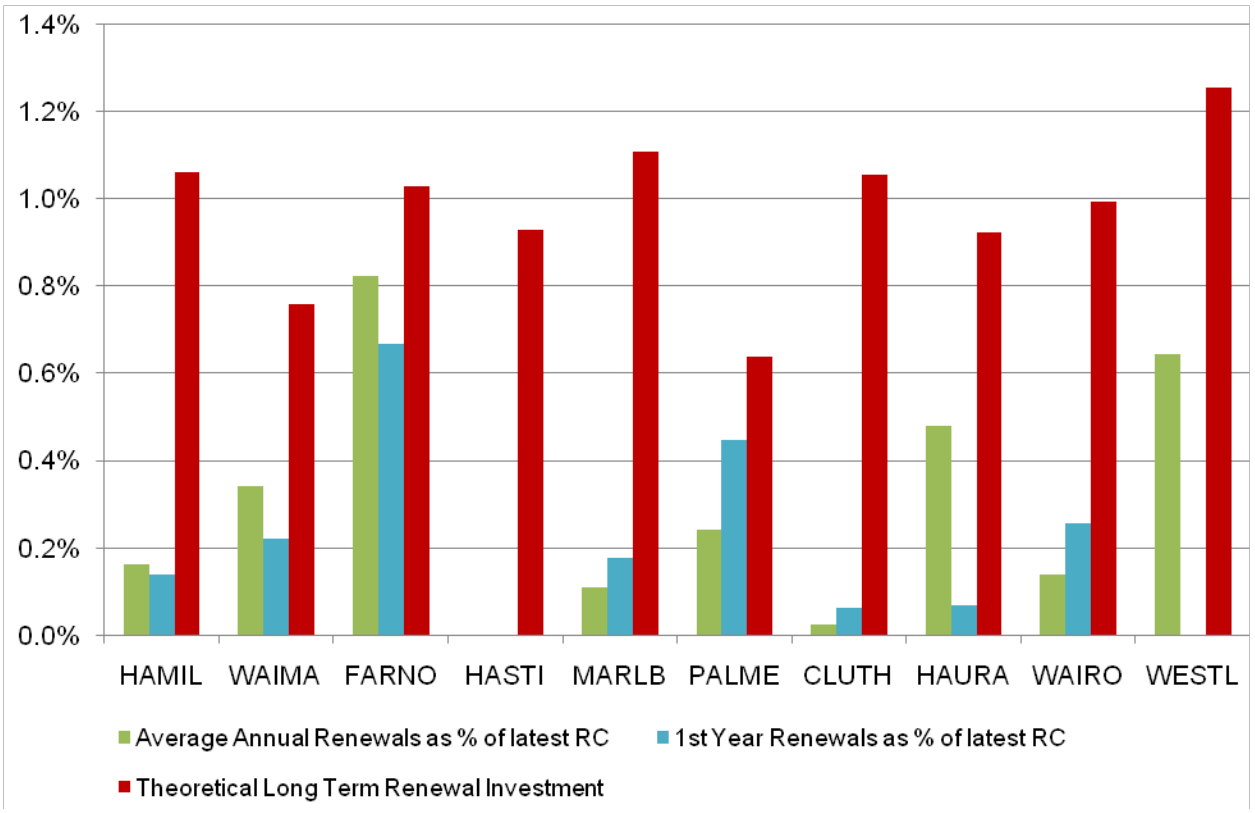

Figure 2-9: Stormwater Network Renewals Expenditure as % of Latest Reported Replacement Cost

Table 2-3 shows a statistical summary of the results presented in the above graphs.

Table 2-3: Renewals Statistics for the Three Waters

	Average Annual Renewals as % of latest RC		1st Year Renewals as % of latest RC		Theoretical Long Term Renewal Investment	
	Range	Average	Range	Average	Range	Average
Water	0.05% - 1.78%	0.82%	0.18% - 1.92%	0.87%	1.14% - 2.20%	1.56%
Wastewater	0.02% - 1.46%	0.80%	0.00% - 1.41%	0.67%	0.93% - 2.09%	1.45%
Stormwater	0.00% - 0.82%	0.30%	0.00% - 0.67%	0.20%	0.64% - 1.26%	0.98%

The inferences that can be taken from the above graphs and table are:

- There is an extremely wide variation in the level of forecast renewals – both in terms of actual quantum and in forecast renewals as a percentage of the replacement value of the networks. We noted;
  - For **Water Supply** networks average annual renewals forecast over the 10 years 2009-19 ranged from 0.05 % to 1.78% of the latest replacement cost of the networks. The theoretical long term annual renewal investment (using the proxy mentioned above) averaged 1.56% over the 10 councils.
  - For **Wastewater** networks average annual renewals forecast over the 10 years 2009-19 ranged from 0.02 % to 1.46% of the latest replacement cost of the networks. The theoretical long term annual renewal investment (using the proxy mentioned above) averaged 1.45% over the 10 councils.
  - For **Stormwater** networks average annual renewals forecast over the 10 years 2009-19 ranged from 0.00 % to 0.82% of the latest replacement cost of the networks. The theoretical long term annual renewal investment (using the proxy mentioned above) averaged 0.98% over the 10 councils. No councils were forecast to invest, in the annual average over 10 years, more than 1% of the replacement cost of the stormwater network. This is perhaps understandable as stormwater networks have a higher proportion of non-depreciable assets (e.g. open drains) and fewer short-lived assets such as treatment plants.
- Current replacement rates may be low due to the relatively young life of assets.
- There was no particular evidence that councils were “front- loading” more renewals in the first year of the LTCCP period or “back ending” forecast renewals toward the end of the LTCCP period. The reason why councils may identify more renewals in the first year of the LTCCP is that they have a much clearer picture of the short term replacement needs compared to a more clouded longer term picture. Back loading renewals may reflect variously renewals needing to be done later or perhaps a reluctance to face the funding issues in the shorter term.
- One issue that often arises with renewal forecasts is that councils sometimes forecast a yearly ‘dollar envelope’ for renewals – often the same amount each year - that is driven by the funding constraints rather than renewal needs. Several of the councils in the study had what looked to be ‘dollar envelope’ renewal forecasts, but there was no evidence that this was solely driven by funding constraints.
- We did not find any evidence in council AMPs that the networks had deferred renewals i.e. that the networks were not delivering the required service capability or capacity because of renewals that had been deferred in the past. In other parts of this report, we have noted that council AMPs do refer to assets at risk or in poorer condition, but that these issues will be addressed within the timeframe of the AMP.
- There were differences between renewals identified in the AMPs for the period 2009-19 to those identified in the LTCCPs for the same period. However the differences were small rather than dramatic. Surprisingly the renewals forecast in the LTCCPs were, in half of the cases where they were different, higher than the AMP forecasts. In previous LTCCPs there was some evidence that the reverse situation was more common i.e. that AMP renewal forecasts were higher but that the renewal budgets were squeezed when final LTCCP finances were decided.

2.7 Forecast Maintenance Expenditure for Water Networks (Question 8b)

What is maintenance?

The International Infrastructure Management Manual (IIMM) defines maintenance as "work that needs to be done to ensure assets deliver the standard of services that the asset owner requires. Maintenance does not increase the service potential or life of the asset, but rather ensures that the asset provides service for the expected amount of time". In the Local Government Act 2002 there is no definition of maintenance but Schedule 10, Clause 2(1) (d) (vii) provides that councils must state, in their LTCCP, "how the costs of maintenance, renewal and replacement of assets will be met".

Maintenance expenditure is part of the operating expenditure of a council and is often grouped with operations expenditure as "operations and maintenance costs". For the purpose of this study, we defined maintenance as "the expenditure on planned (routine), preventive and unplanned (reactive) maintenance on council assets. Maintenance excludes operating expenses such as energy costs and consumables and indirect costs such as overheads."

Why is maintenance important?

Maintenance is important to ensure that assets continue to deliver the required standard of services. The main challenge for the asset manager is to strike the right balance between planned/preventative maintenance (inspections, scheduled maintenance etc) and unplanned maintenance (arising from unexpected failures).

What did we seek to learn from the 10 case study councils?

We wanted to establish, for each of the three water services:

- Whether all councils had identified forecast maintenance costs in both their AMPs and in the LTCCP for the period 2009-19;
- The quantum of maintenance for each of the years;
- The level of maintenance in the first year of the AMP (2009-10) as a percentage of the replacement cost of the network; and
- The average yearly level of maintenance over the 10 years of the AMP (2009-19) as a percentage of the replacement cost of the network.

What did we learn from the 10 case study councils?

The full tables of data are provided in Appendix B. We expected to obtain the maintenance component of the forecast operating expenditure but in most cases councils only provide operations and maintenance or direct operating forecasts in their AMPs and LTCCPs and were unable to separate out the maintenance component. Those councils that separated out the maintenance component of their forecast operating expenditure did so in their AMPs but not always in their LTCCPs, therefore the AMP data was used for this analysis.

Three councils provided the maintenance component of the forecast water supply operating expenditure in their AMPs as shown in Figure 2-10. For these three councils, the maintenance cost forecasts as a percentage of the latest reported replacement cost ranged from 0.1% to almost 1%. Of the remaining seven councils, three provided combined operations and maintenance (O&M) cost forecasts, one provided combined O&M and renewals cost forecasts, two provided operating cost forecasts (i.e. including indirect costs such as depreciation) and one did not complete the cost forecasts in their AMP.

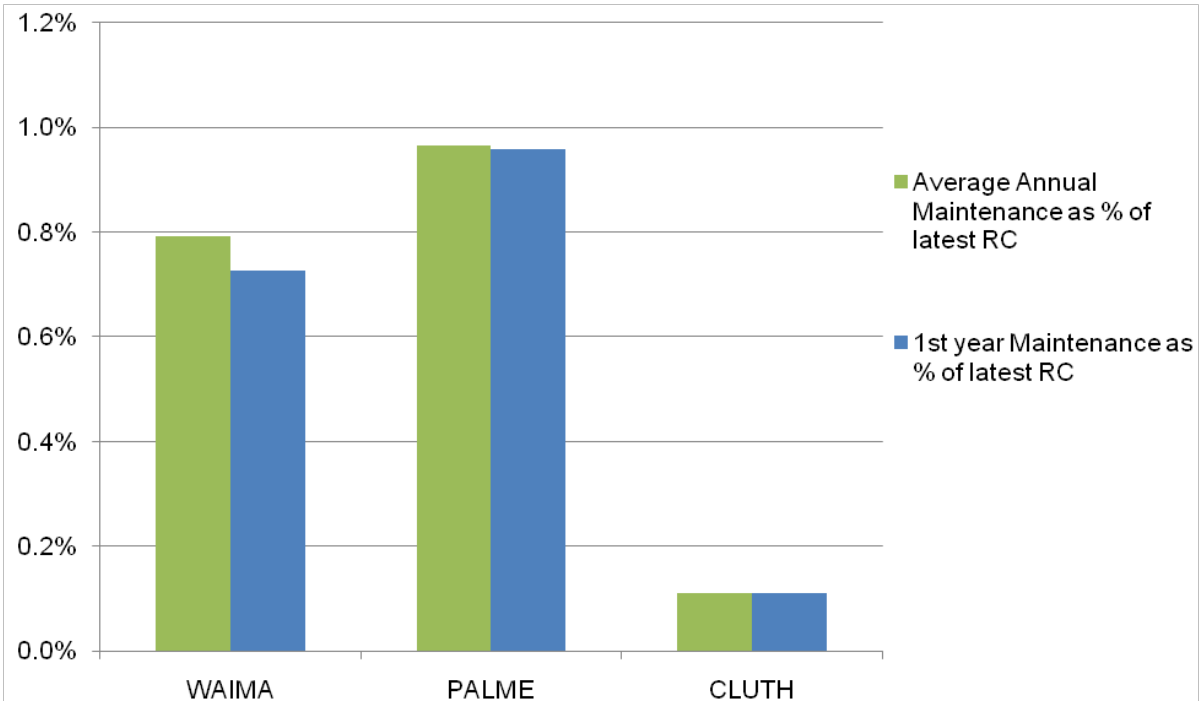

Figure 2-10: Water Supply Maintenance Expenditure as % of Latest Reported Replacement Cost

Three councils provided the maintenance component of the forecast wastewater operating expenditure in their AMPs as shown in Figure 2-11. For these three councils, the average maintenance cost forecasts as a percentage of the latest reported replacement cost ranged from 0.15% to 0.5%. Of the remaining seven councils, three provided combined operations and maintenance (O&M) cost forecasts, one provided combined O&M and renewals cost forecasts, two provided operating cost forecasts (i.e. including indirect costs such as depreciation) and one did not complete the cost forecasts in their AMP.

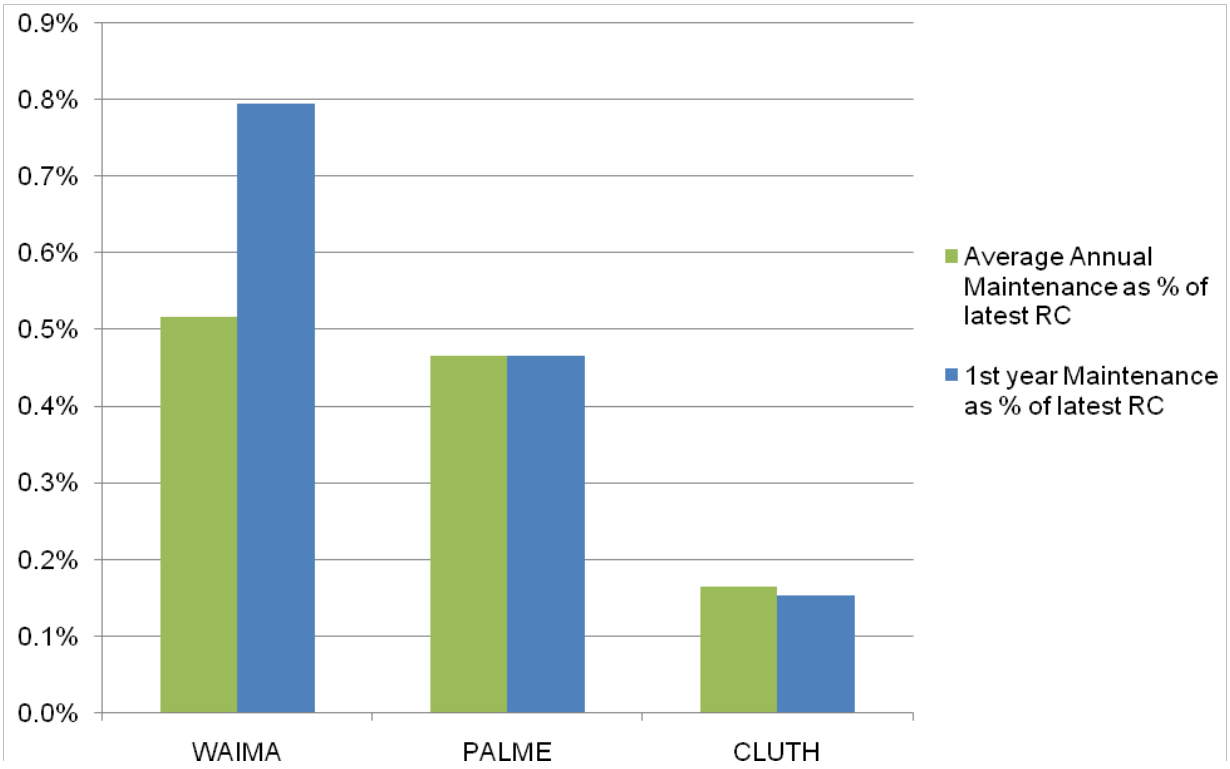

Figure 2-11: Wastewater Maintenance Expenditure as % of Latest Reported Replacement Cost

Four councils provided the maintenance component of the forecast stormwater operating expenditure in their AMPs as shown in Figure 2-12. For these four councils, the average maintenance cost forecasts as a percentage of the latest reported replacement cost ranged from 0.04% to 1.4%. Of the remaining six councils, three provided combined operations and maintenance (O&M) cost forecasts, two provided operating cost forecasts (i.e. including indirect costs such as depreciation) and one did not complete the cost forecasts in their AMP.

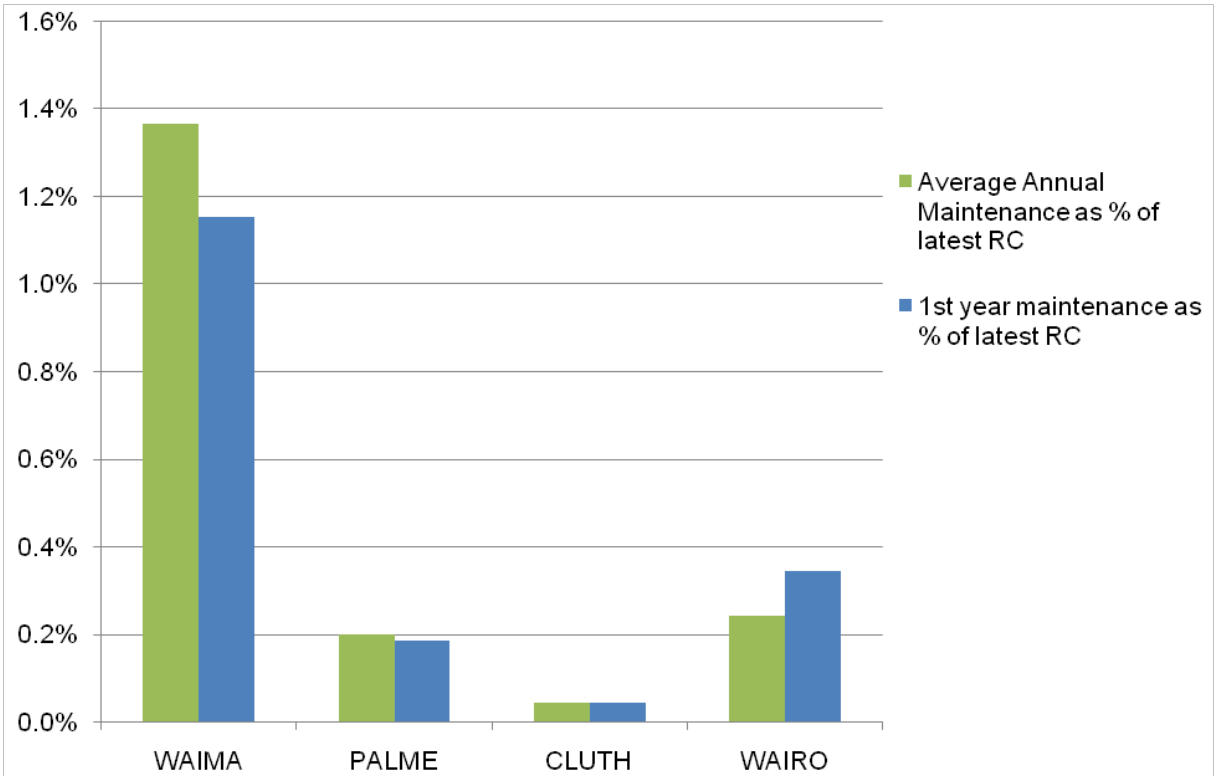

Figure 2-12: Stormwater Maintenance Expenditure as % of Latest Reported Replacement Cost

2.8 The Relationship between Renewals and the Depreciation Expense (Question 9)

What is depreciation?

The IIMM defines depreciation as “the wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for by the allocation of the cost (or revalued amount) of the asset less its residual value over its useful life”.

Why is depreciation important?

An organisation has to assess, each year, the consumption or loss of service of its physical assets for that year. It is a requirement of financial reporting standards as well as being sound business practice.

In the NZ local authority sector depreciation is a major expense, principally because the value of its physical assets is so huge. The depreciation expense of a typical territorial council is around 25% of total operating expenses. Forecast yearly depreciation is rising as a proportion of council operating expenses and is set to exceed the annual payroll costs of local authorities in the near future.

How is forecast depreciation assessed?

Forecast depreciation in the LTCCPs is assessed in two parts. Firstly a revaluation of assets by a suitably qualified and independent valuer will provide the depreciation expense of the existing asset stock for the

ensuing year. Secondly, for arriving at the expected depreciation in years 2-10 of the LTCCP period, the council asset managers and finance staff need to assess the depreciation of the new assets that will be constructed or vested to council in the LTCCP period and then adjust the depreciation using industry predictions about inflation over the LTCCP period.

It is important to stress that the depreciation expense is a separate consideration to the depreciation expense that is funded by a council. In this part of the report we deal purely with the depreciation expense.

How are renewal forecasts related to the depreciation expense?

The depreciation expense is most likely an even allocation of the consumption of assets for each year that the asset provides service as it is predominantly a time based calculation. Renewals, on the other hand, will not occur evenly over the life of the asset network. Therefore, if we were to inherit a brand new network, depreciation would be recognised from day one but renewals will not begin until the shortest-lived asset within the network needs replacing – maybe 10-15 years later. Thus depreciation would exceed renewals. The opposite would happen for the network near the end of its life – renewals would be higher than the depreciation charge. Over the very long term we may see an approximate matching of cumulative depreciation and cumulative renewals for a network, but at any one point – or even in a LTCCP time window of 10 years – there is unlikely to be a match.

What did we seek to learn from the 10 case study councils?

We sought to learn the following in relation to depreciation and renewals:

- The forecast depreciation for each of the three water networks for each year for all 10 case study councils.
- The forecast depreciation compared to renewals over the same period.
- Whether there are any inferences that can be drawn from the data.

What did we learn from the case study councils?

The full tables of data are provided in Appendix B. Figure 2-13, Figure 2-14 and Figure 2-15 show the ten year total forecast renewals and depreciation by council for each of the three water networks. Figure 2-16, Figure 2-17 and Figure 2-18 show the cumulative forecast renewals and depreciation by year (summed for the eight councils that provided data) for each of the three water networks. Figure 2-19 shows the three water network total cumulative forecast renewals and depreciation by year.

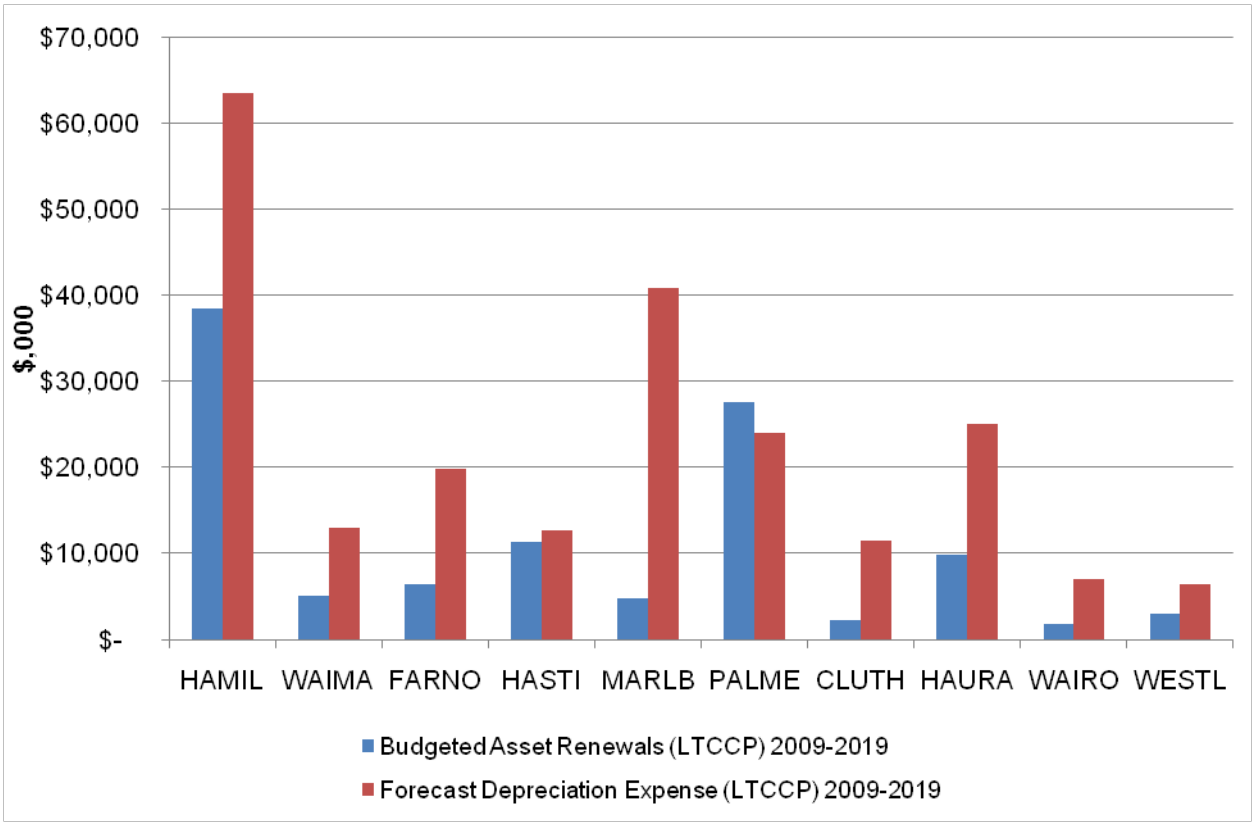

Figure 2-13: Comparison of Water Supply Budgeted Asset Renewals and Forecast Depreciation

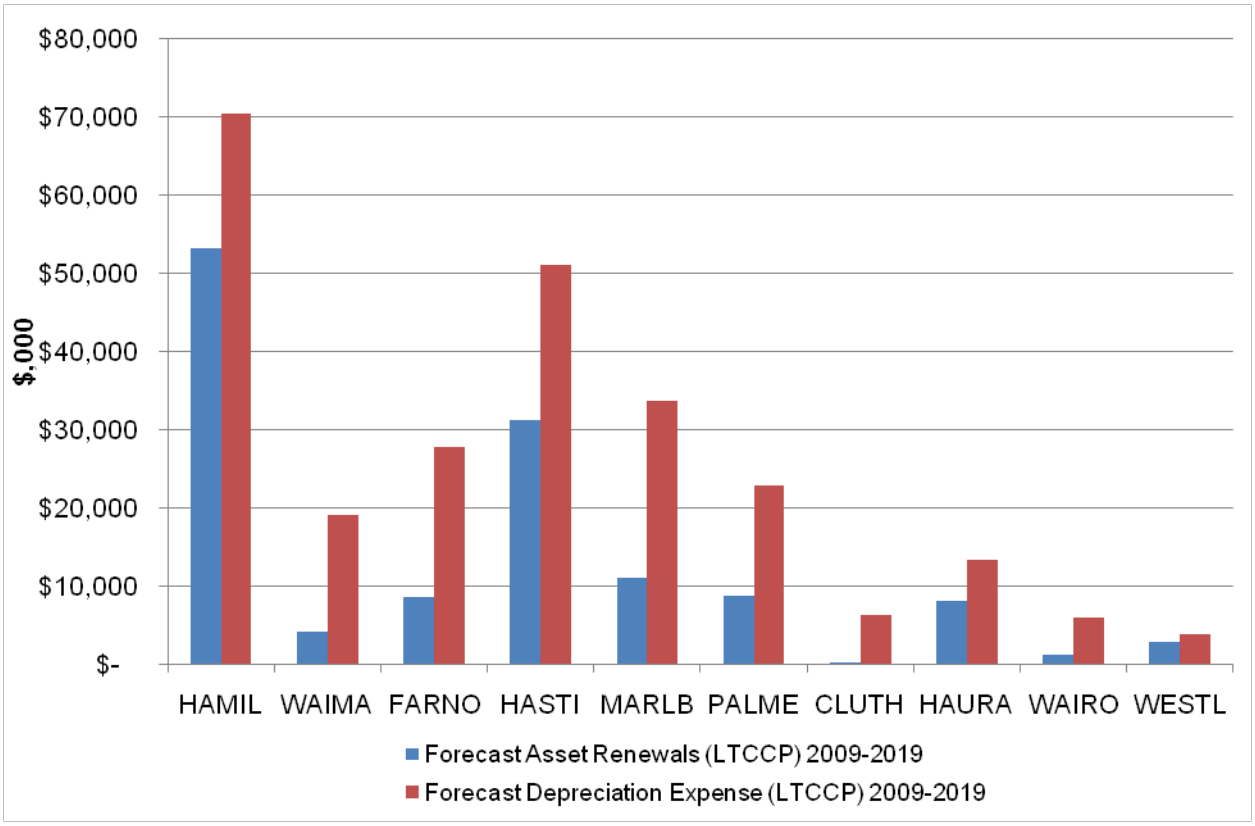

Figure 2-14: Comparison of Wastewater Budgeted Asset Renewals and Forecast Depreciation

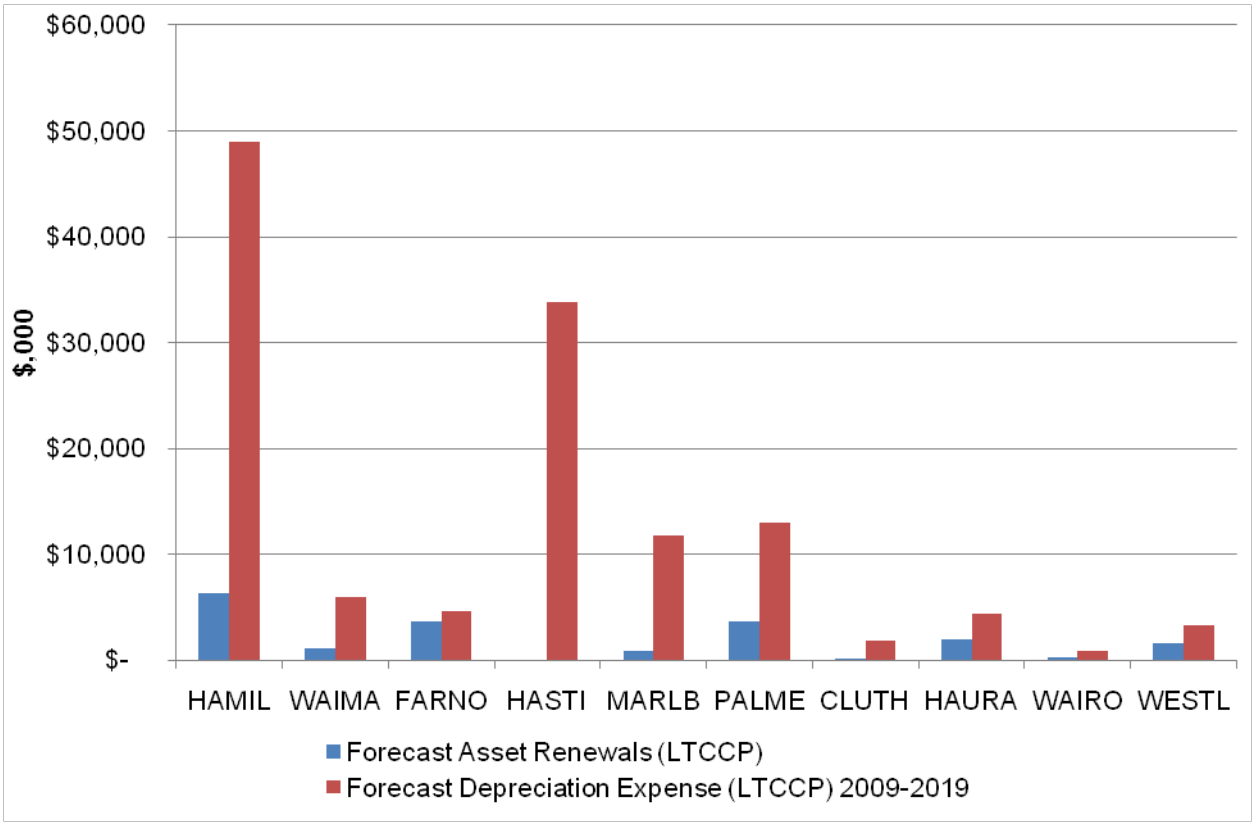

Figure 2-15: Comparison of Stormwater Budgeted Asset Renewals and Forecast Depreciation

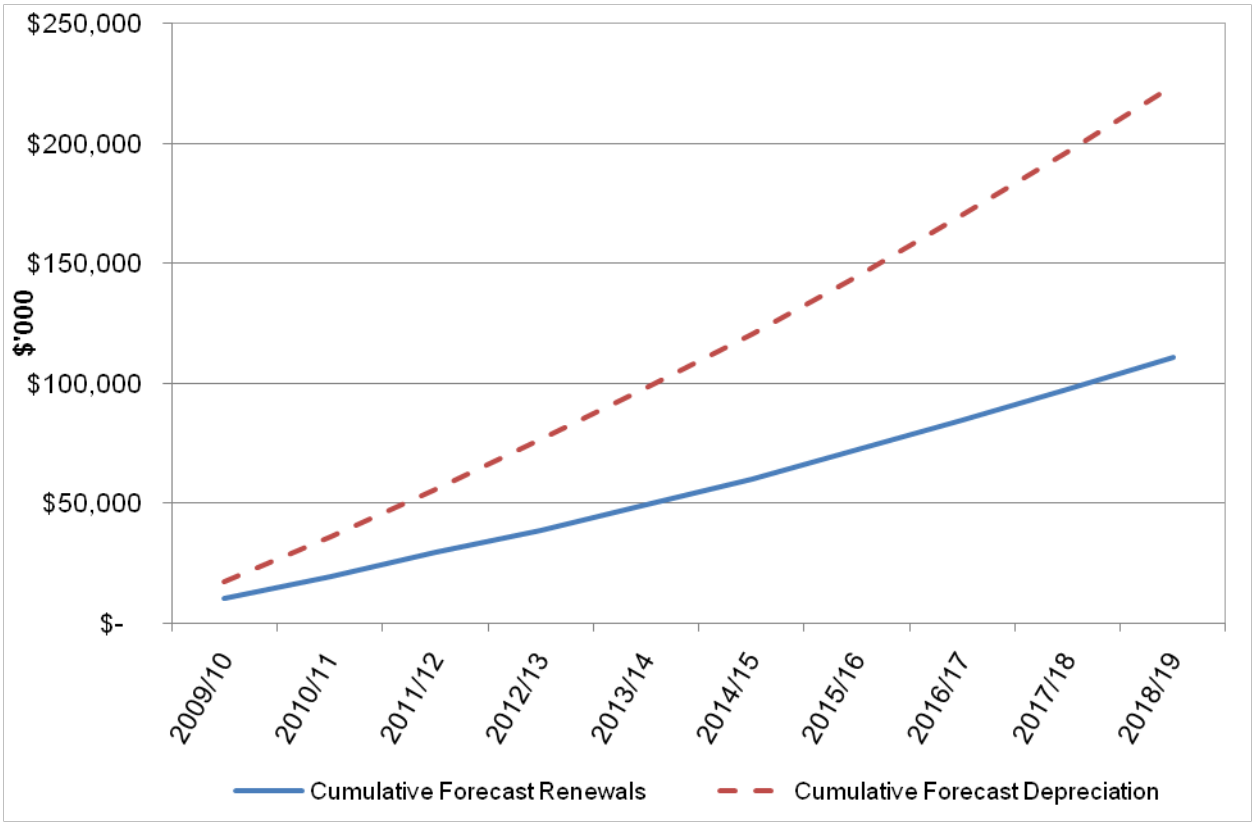

Figure 2-16: Cumulative Water Supply Forecast Depreciation and Renewals for the 10 Councils

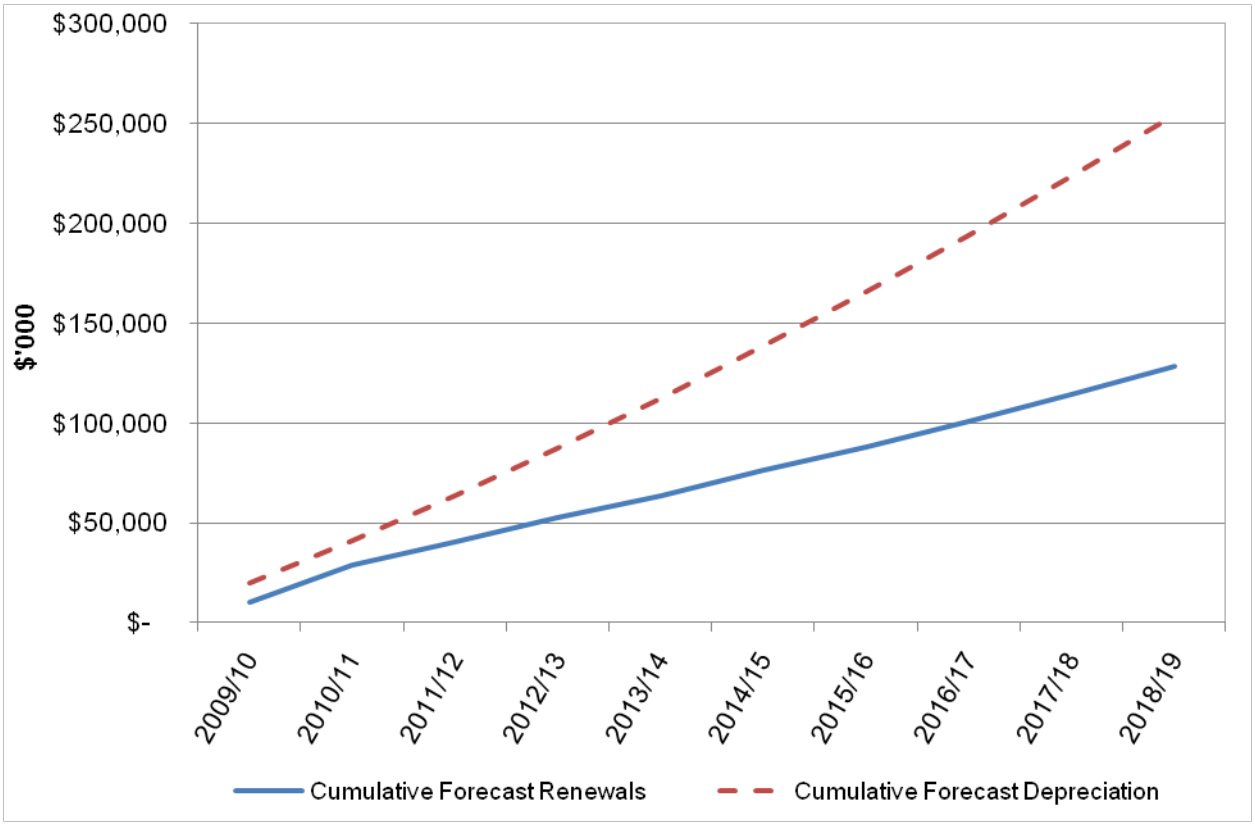

Figure 2-17: Cumulative Wastewater Forecast Depreciation and Renewals for the 10 Councils

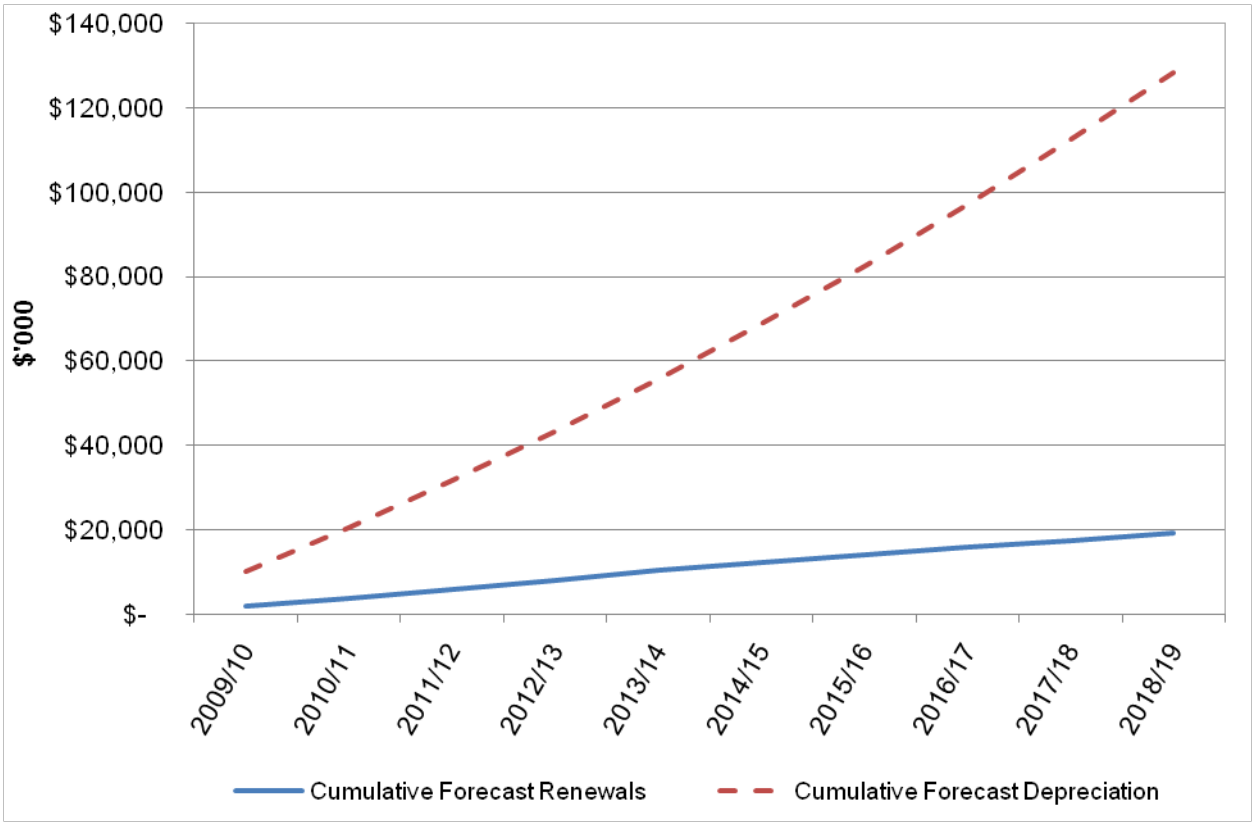

Figure 2-18: Cumulative Stormwater Forecast Depreciation and Renewals for the 10 Councils

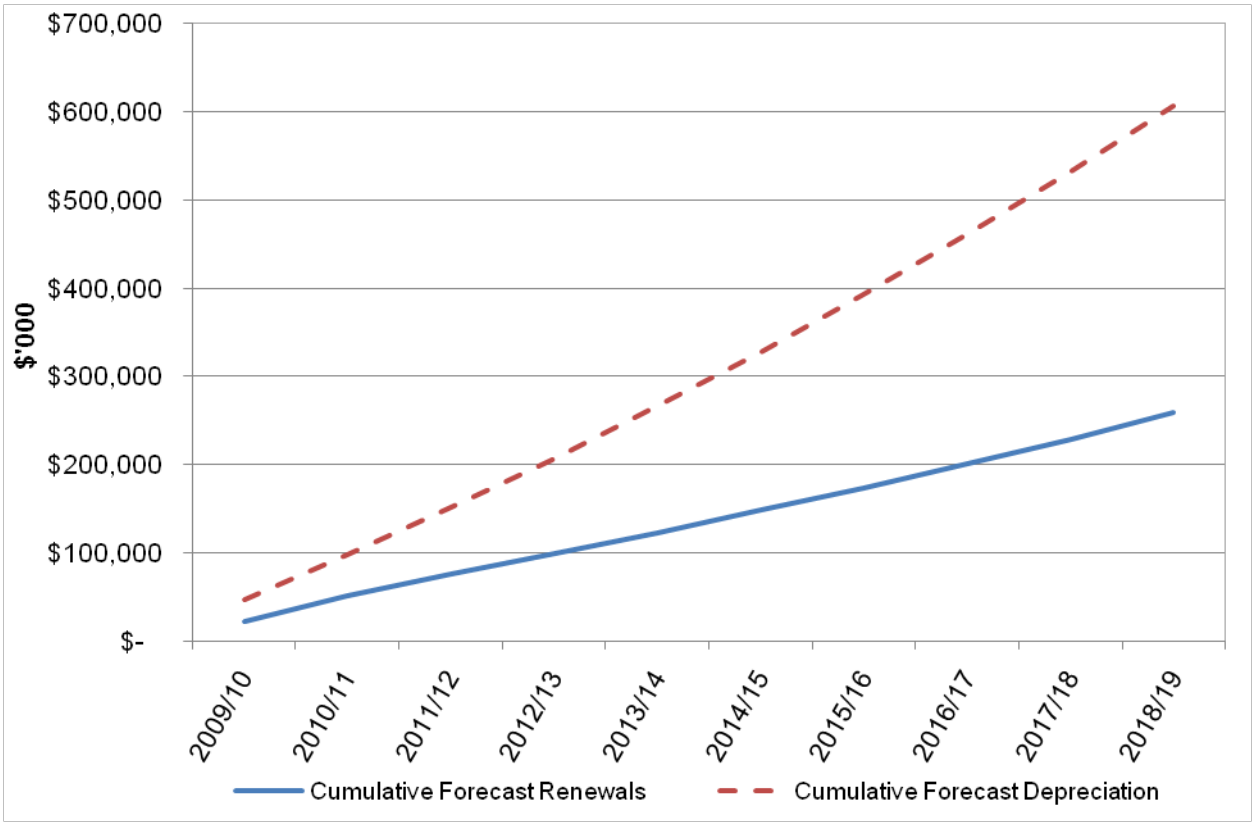

Figure 2-19: Cumulative Three Water Forecast Depreciation and Renewals for the 10 Councils

The inferences that can be taken from the above are:

- **Water supply network assets** - as an overall average, the total forecast water network renewals for the 10 years to 2019 was 50% of the total depreciation forecasts for the water supply network for the same period. There was one council where the 10 year renewal forecasts exceeded the forecast depreciation (by 15%). For the remaining 9 councils the renewals to depreciation proportion ranged from 3% to 89%, so there was a huge variation.
- **Wastewater network assets** - as an overall average, the total forecast wastewater network renewals for the 10 years to 2019 was 54% of the total depreciation forecasts for the wastewater network for the same period. No council showed forecast renewals exceeding forecast depreciation. The renewals to depreciation proportion ranged from 1.6% to 75%, so again there was a huge variation.
- **Stormwater network assets** - as an overall average, the total forecast stormwater network renewals for the 10 years to 2019 was 17% of the total depreciation forecasts for the stormwater network for the same period. No council showed forecast renewals exceeding forecast depreciation. The renewals to depreciation proportion ranged from 0% (no renewals forecast at all) to 44%, so again there was huge variation.
- Looking at the results of the above as a whole, the water supply and wastewater forecast depreciation is around double that of the forecast renewals. Stormwater depreciation was about 6 times the forecast renewals for the 10 years to 2019. This suggests that more substantive renewals for stormwater will occur much later than the 2009-19 LTCCP period.
- The infrastructure gap has been defined as “equal to the difference between the needed investment in renewals and maintenance and the funds available for renewals and maintenance over the 10 year LTCCP period to meet the current levels of service.” We have been unable to obtain maintenance forecasts for the majority of the councils so are only able to report on the infrastructure gap for renewals. The plots above show that for all councils and all three waters (with the exception

of Palmerston North water supply), the forecast depreciation expense is greater than the forecast renewal needs over the 10 year LTCCP period.

2.9 Overall Level of Capital Expenditure (Question 7)

What is capital expenditure?

Capital expenditure (capex) is expenditure which will provide a benefit or service beyond one financial period.

In the local authority context, capex includes:

- Renewal expenditure
- Expenditure on new or existing assets that will increase the level of service arising from those assets
- Expenditure on new assets arising from growth

The IIMM has defined capex as "expenditure to create or acquire new physical assets or to increase the capacity of existing assets beyond their most recently assessed design capacity or service potential".

The Local Government Act 2002, Schedule 10 also states that councils must separately identify in their LTCCPs, for each group of activities, what additional asset capacity is required for:

- demand for (or consumption of) services; and
- service provision levels and standards.

As well as "identifying" the council must also show the estimated costs of each capex category and how those costs will be met.

What did we seek to learn from the 10 case study councils?

In addition to renewal data, which has already been covered in the report, we sought information from each of the councils for all three water networks on:

- The quantum of forecast capex for each year of the 2009-19 LTCCP period on Levels of Service capex and growth capex.
- Whether councils, in their LTCCPs, gave a brief description of major capex projects.
- Whether the information in the LTCCP on capex was congruent with any comments in the LTCCP or AMPs on any strategies for demand management.

What did we learn from the case study councils?

The full tables of capital forecast data are provided in Appendix A. Figure 2-20, Figure 2-21 and Figure 2-22 provide the forecast ten year capex (2009 to 2019) and population growth (2006 to 2016 as provided by the DIA) for each of the ten councils. Where possible, the new capex forecasts are broken down into level of service separately from growth (but this was generally only available for two of the ten councils).

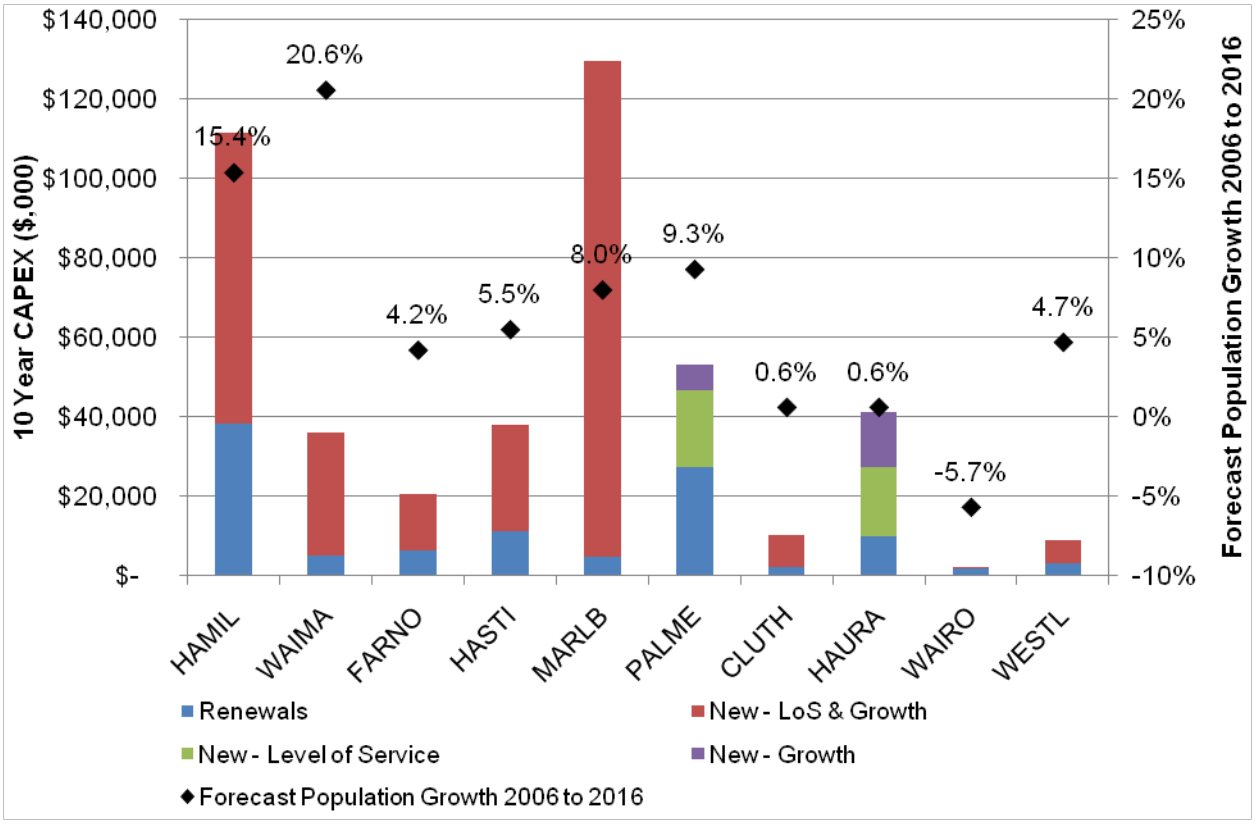

Figure 2-20: 10 Year Total Water Supply Capex by Council

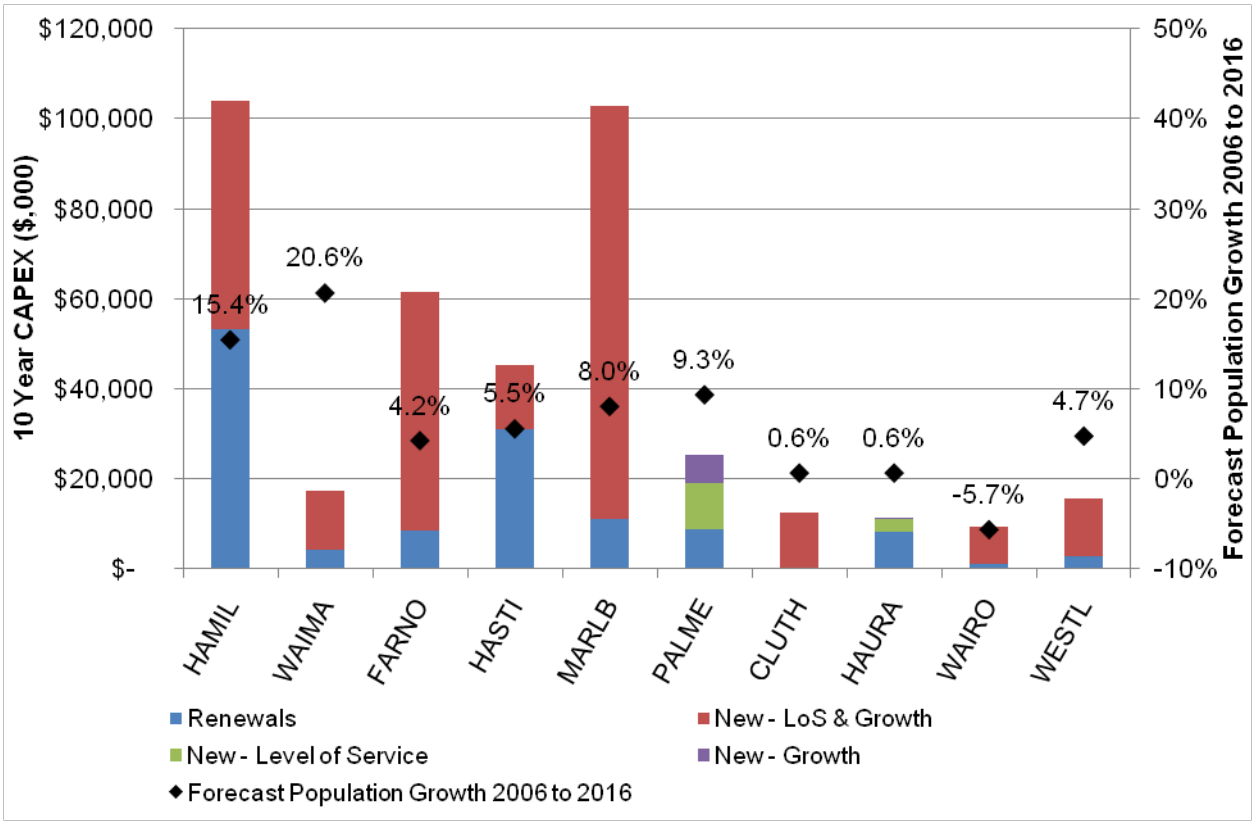

Figure 2-21: 10 Year Total Wastewater Capex by Council

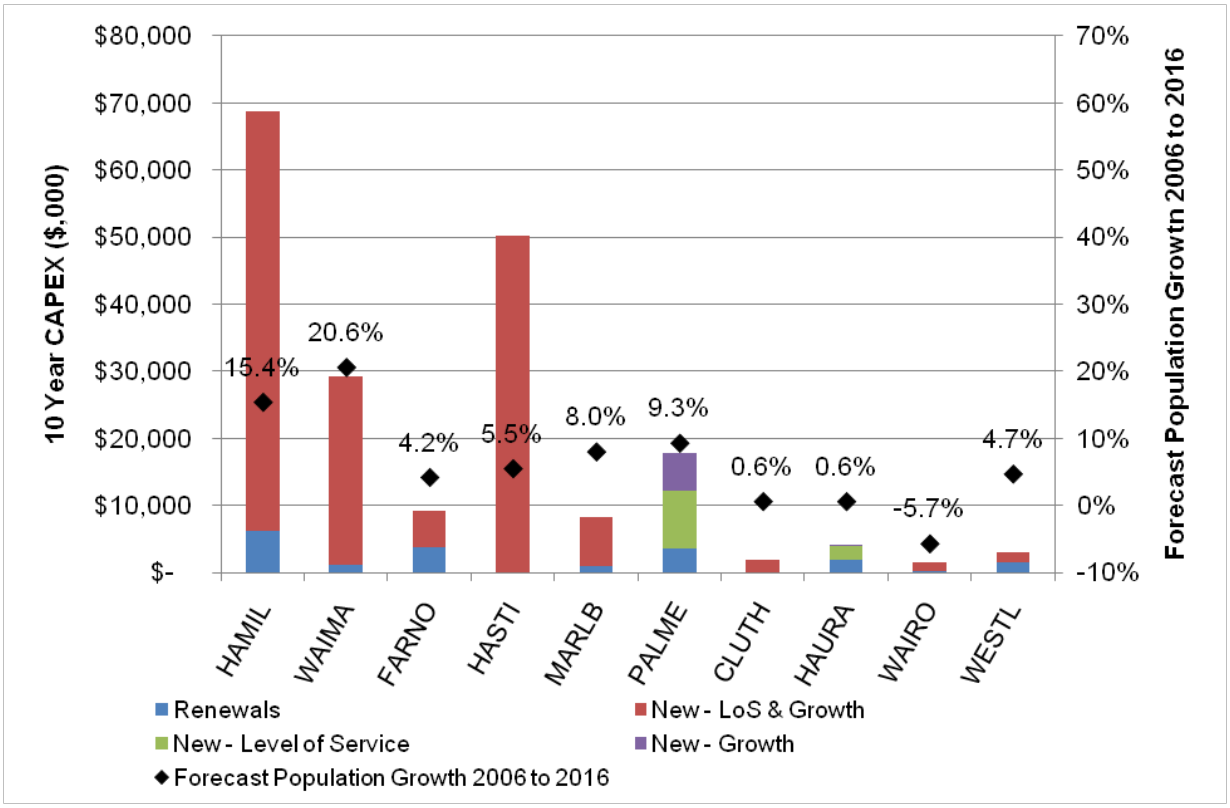

Figure 2-22: 10 Year Total Stormwater Capex by Council

Figure 2-23, Figure 2-24 and Figure 2-25 provide the total and cumulative 10 year capex forecasts by year (summed for the ten councils).

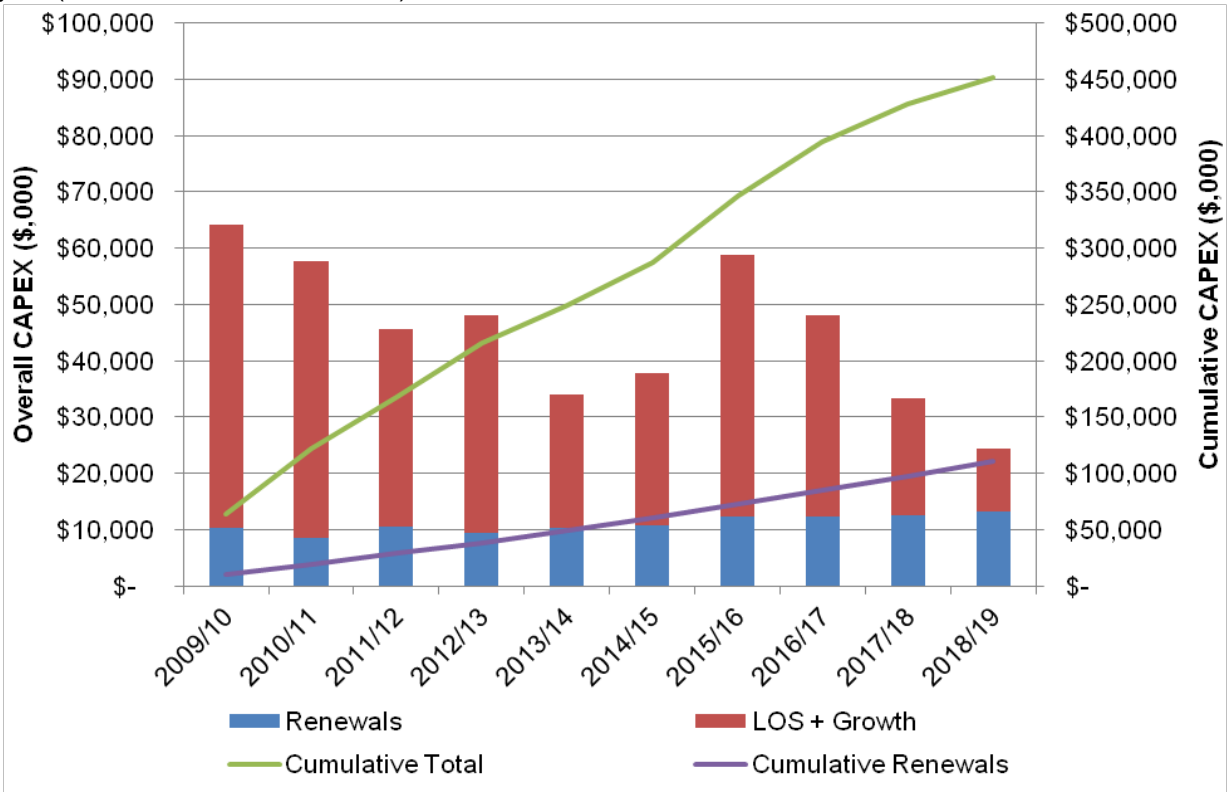

Figure 2-23: Total and Cumulative 10 Year Forecasts for Water Supply Capex

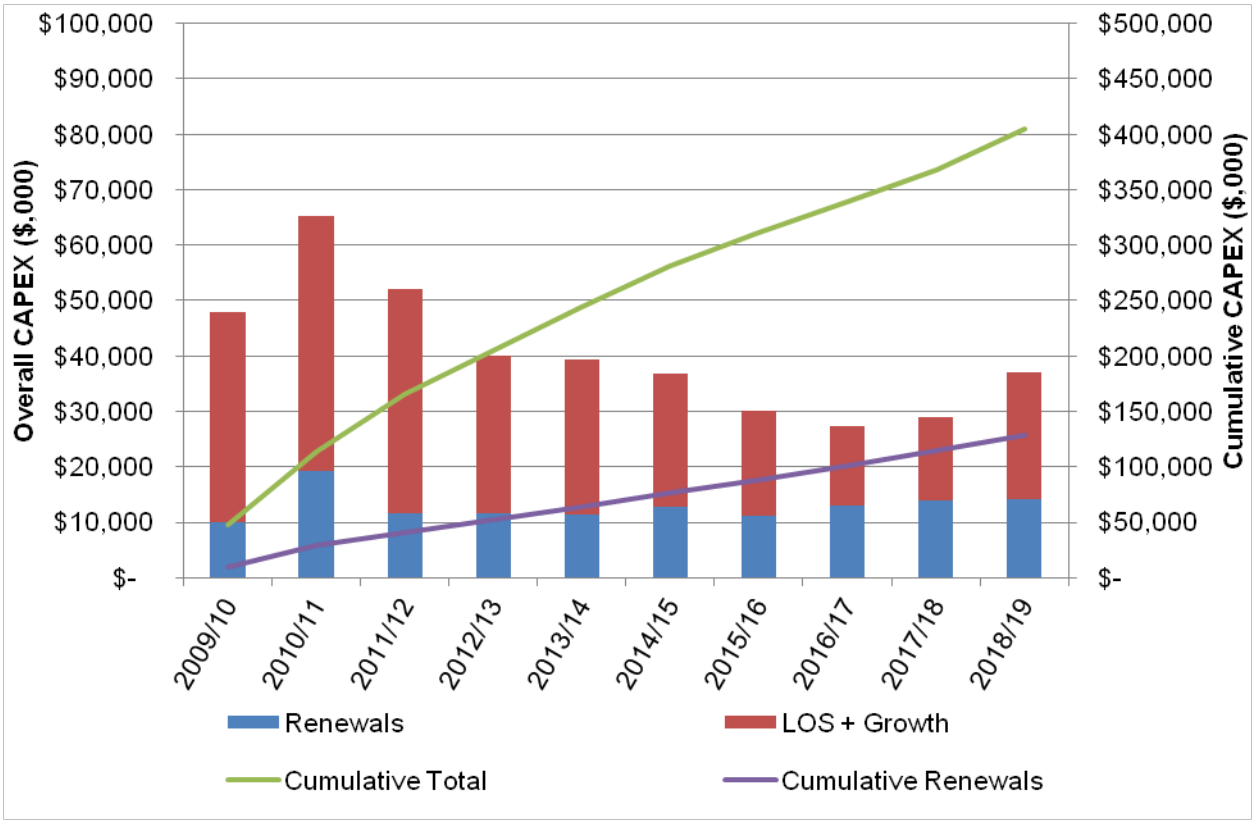

Figure 2-24: Total and Cumulative 10 Year Forecasts for Wastewater Capex

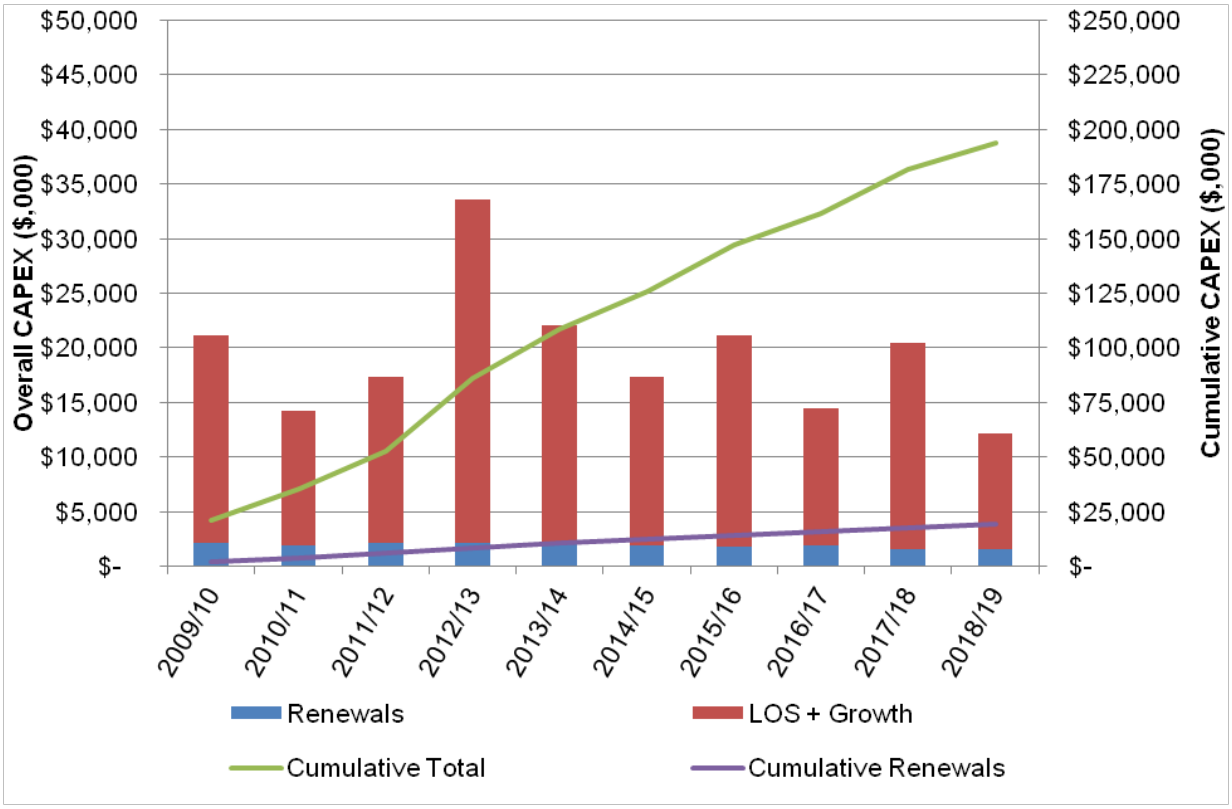

Figure 2-25: Total and Cumulative 10 Year Forecasts for Stormwater Capex

Figure 2-26 provides a summary of the ten year new capital forecasts for the three waters as a percentage of the latest replacement cost by council.

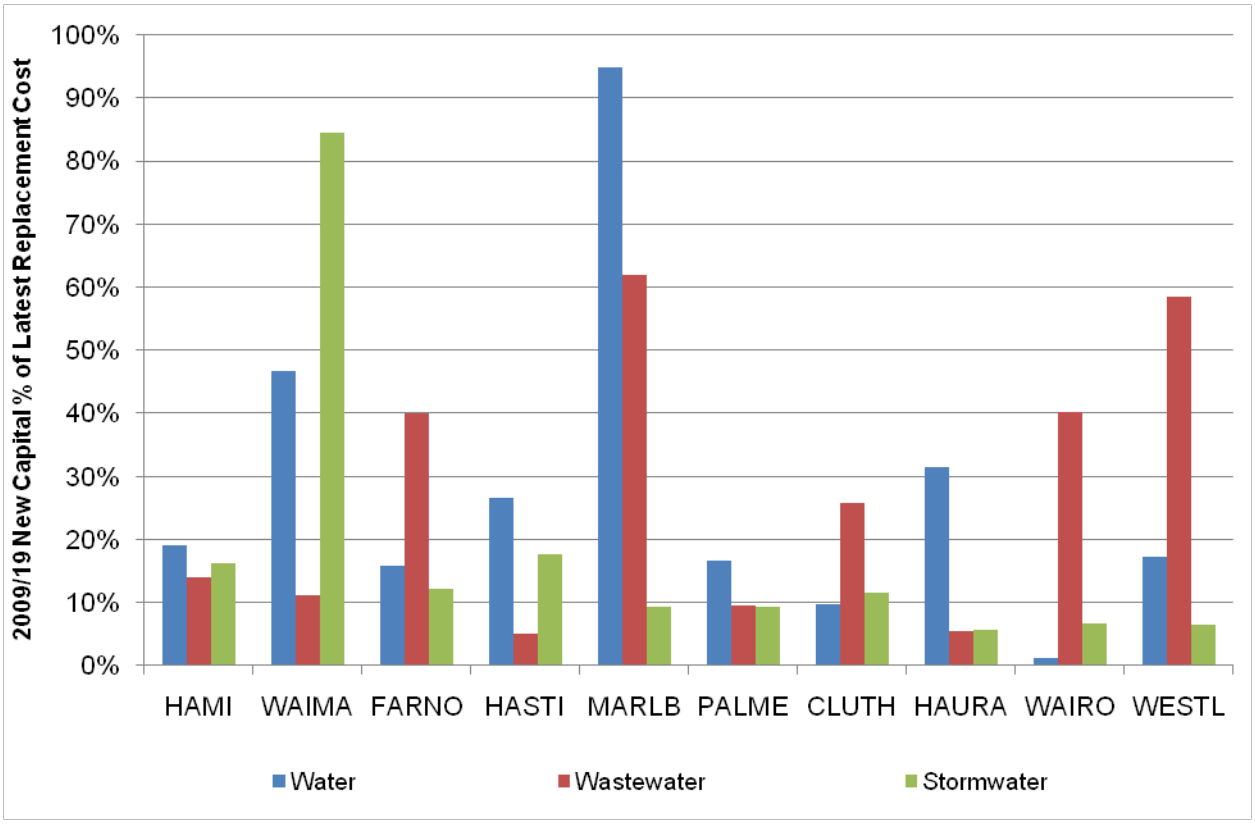

Figure 2-26: New Capital Forecasts 2009/19 as a % of Latest Replacement Cost

The inferences that can be taken from the above graphs are:

- For **Water Supply** networks, over the 10 year period to 2019 for all case study councils, forecast new capital expenditure is $342 million. One council (Marlborough) accounts for $125 million or 36% of this total. Marlborough is a higher growth council. At the other extreme Wairoa (a reverse growth council) has forecast new capex of only $433k for the 10 years to 2019.
- For **Wastewater** networks, over the 10 year period to 2019 for all case study councils, forecast new capital expenditure is $276 million. One council (Marlborough again) accounts for $92 million or 33% of this total followed by Far North ($53 million) and Hamilton ($51 million). At the other extreme Hauraki has forecast new capex of $3.3 million for the 10 years to 2019.
- For **Stormwater** networks, over the 10 year period to 2019 for all case study councils, forecast new capital expenditure is $106 million. Hamilton City accounts for $66 million or 62% of this total followed by Hastings at $50 million. At the other extreme Westland has forecast new capex of only $610k for the 10 years to 2019.
- Most of the councils (eight out of ten) had not clearly separated Levels of Service capex forecasts from Growth Forecasts. The above figures include both types of capex.
- Figure 2-20, Figure 2-21 and Figure 2-22 superimpose the expected growth rate of each council for the period 2006-16 in comparison to the new capital investment for the period 2009-19. Generally there is a correlation between growth councils and the projected level of investment. Because we could not identify the growth category of capex for every council we could not drill down further to tie the council projected growth to just the growth category of projected new capex. Marlborough has high forecast expenditure for water supply, but we are aware that this is mainly work to meet Drinking Water Standards (levels of service related) rather than pure growth.

- Figure 2-26 tracks each Council's new capex forecast costs for each network for the 10 years to 2019 in comparison to the latest replacement cost of the relevant network. It gives an idea of the relative investment in the networks in the next 10 years compared to the existing 'stock' of network assets.

2.10 Funding of Capital Expenditure (Questions 8c, 9, 10, 12 and 13)

What are the legislative provisions relating to Funding considerations?

Under section 103 of the Local Government Act 2002, local authorities must prepare a Revenue and Financing Policy and disclose this in the LTCCP. Section 103(1) (b) specifically provides that the policy must state "the local authority's policies in respect of the funding of capital expenditure from the sources mentioned in sub section (2)". Sub section (2) lists 11 funding source types including general rates, targeted rates, borrowing, development contributions etc.

In addition councils prepare a "Cost of Service Statement" for each activity or group of activities. This shows the forecast operating and capital expenditure of the activity for each of the 10 years of the LTCCP period and the funding sources and quantum of funding.

What did we seek to learn from the 10 case study councils?

We sought information from the 10 councils for each of the three water networks for 2009-19 to ascertain:

- The funding rationale and sources of funding for the renewals category of Capital expenditure.
- The funding rationale and sources of funding for the 'new capital' category of Capital expenditure, i.e. expenditure related to Levels of Service improvements and growth.
- Whether the funding rationale and funding sources was markedly different between the three water networks.

What did we learn from the case study councils?

The full tables of data are provided in Appendix B. Figure 2-27, Figure 2-28 and Figure 2-29 provide the forecast funding sources for renewal expenditure for each of the ten councils (as reported in the LTCCPs). Figure 2-30, Figure 2-31 and Figure 2-32 provide the forecast funding sources for new capital expenditure for each of the ten councils (as reported in the LTCCPs).

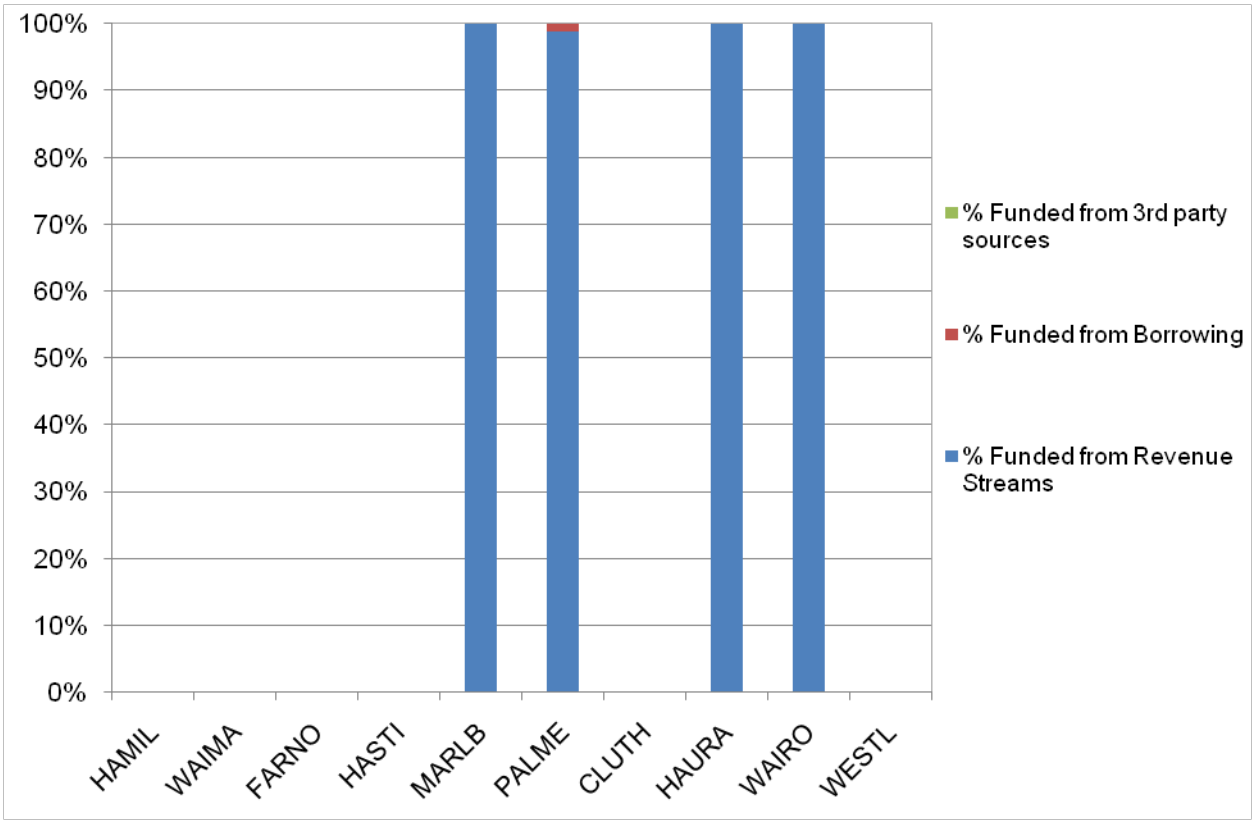

Figure 2-27: Funding Sources for Water Supply Renewal Expenditure

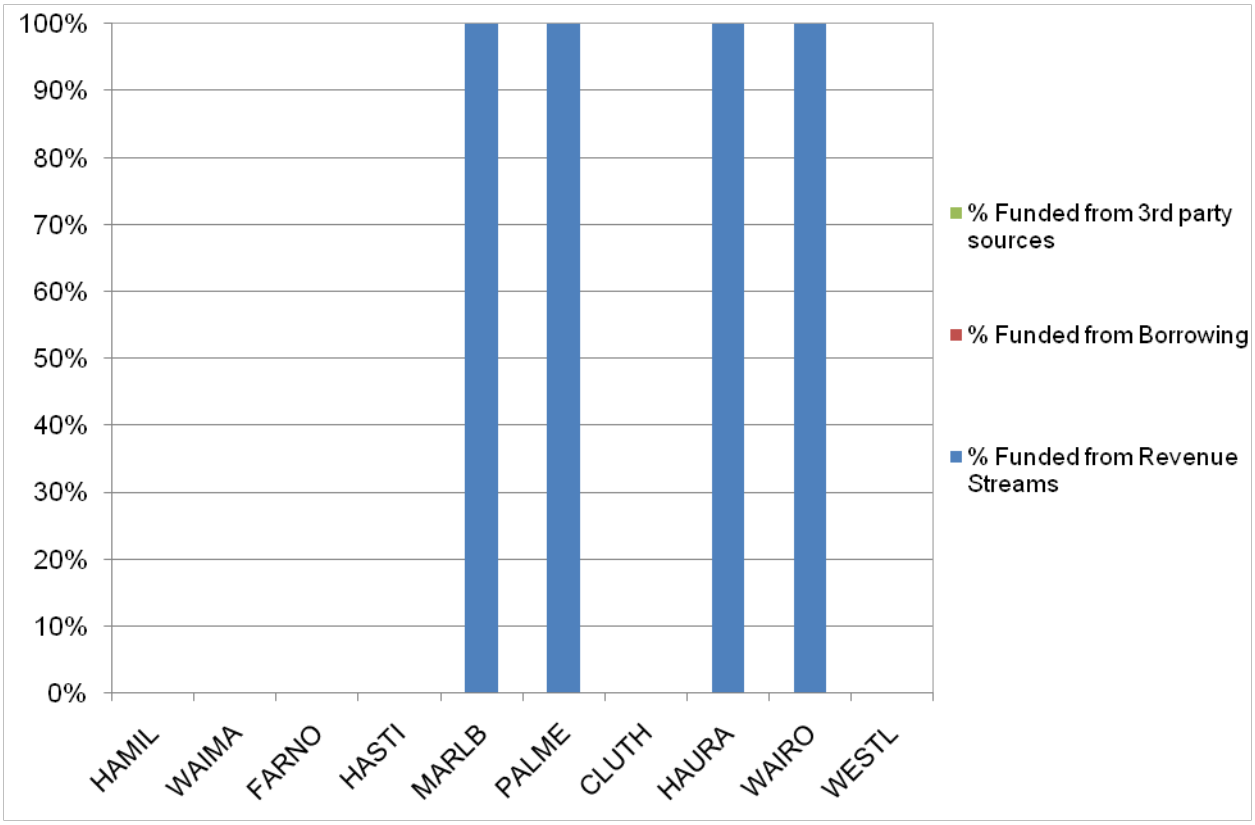

Figure 2-28: Funding Sources for Wastewater Renewal Expenditure

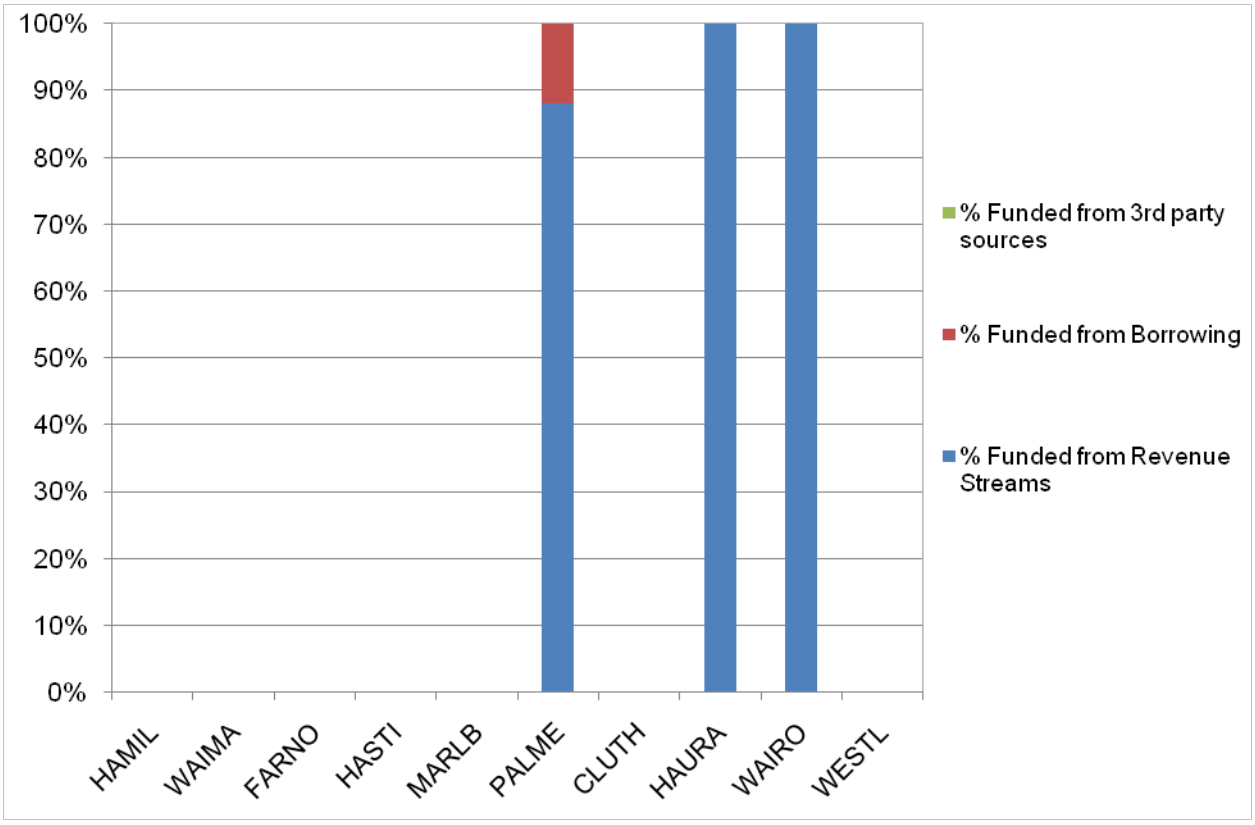

Figure 2-29: Funding Sources for Stormwater Renewal Expenditure

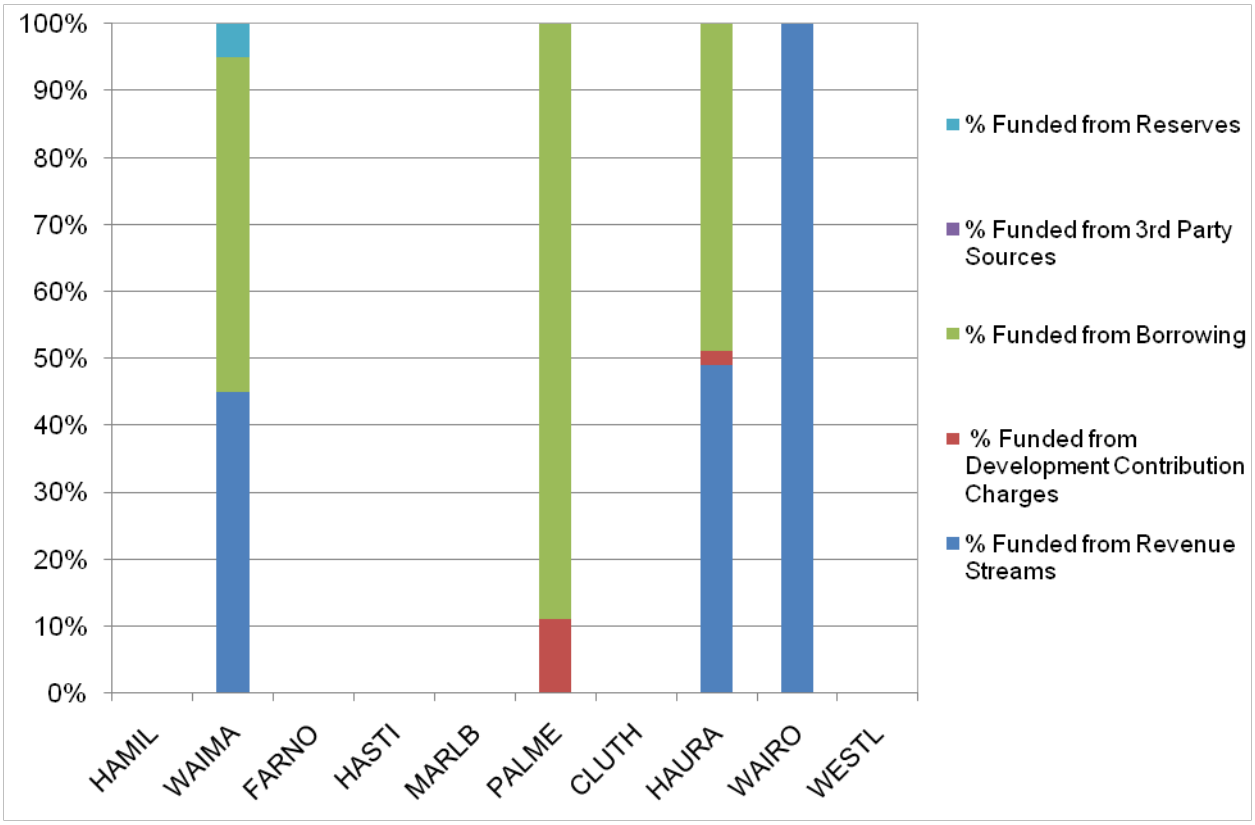

Figure 2-30: Funding Sources for Water Supply New Capital Expenditure

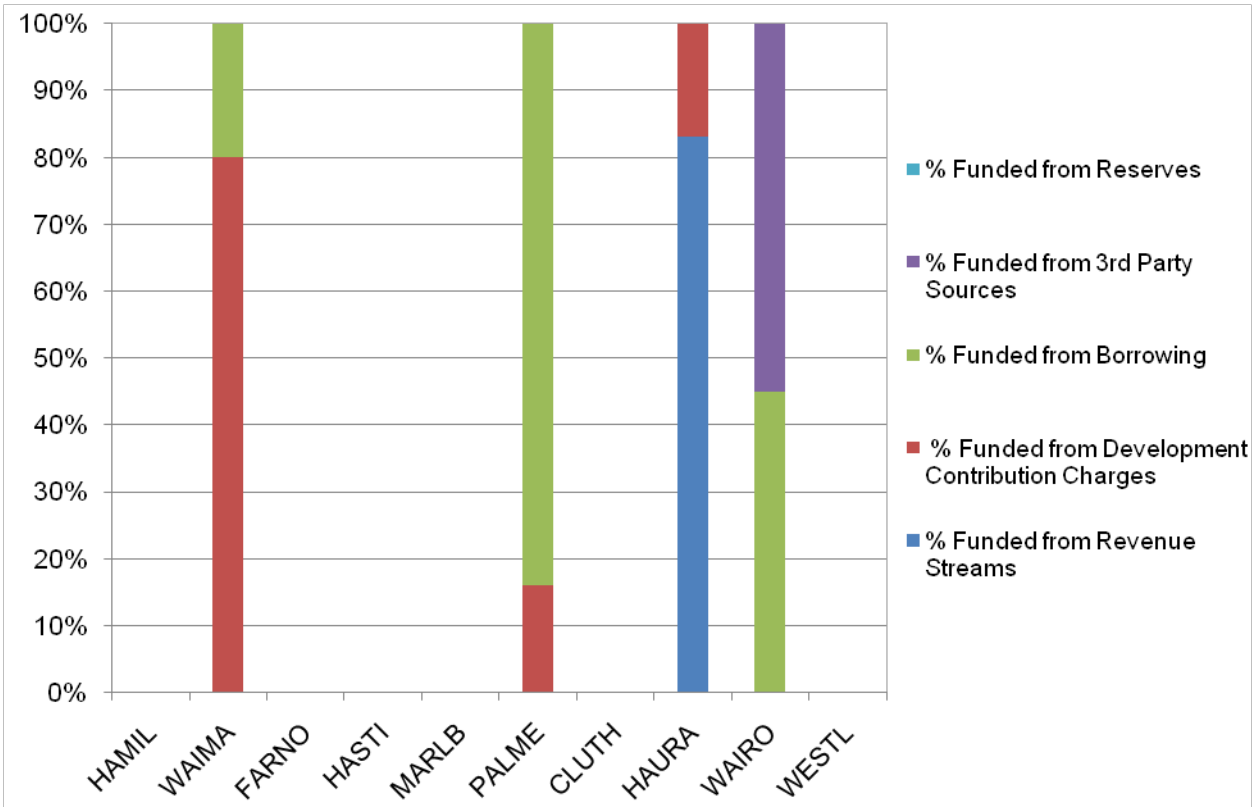

Figure 2-31: Funding Sources for Wastewater New Capital Expenditure

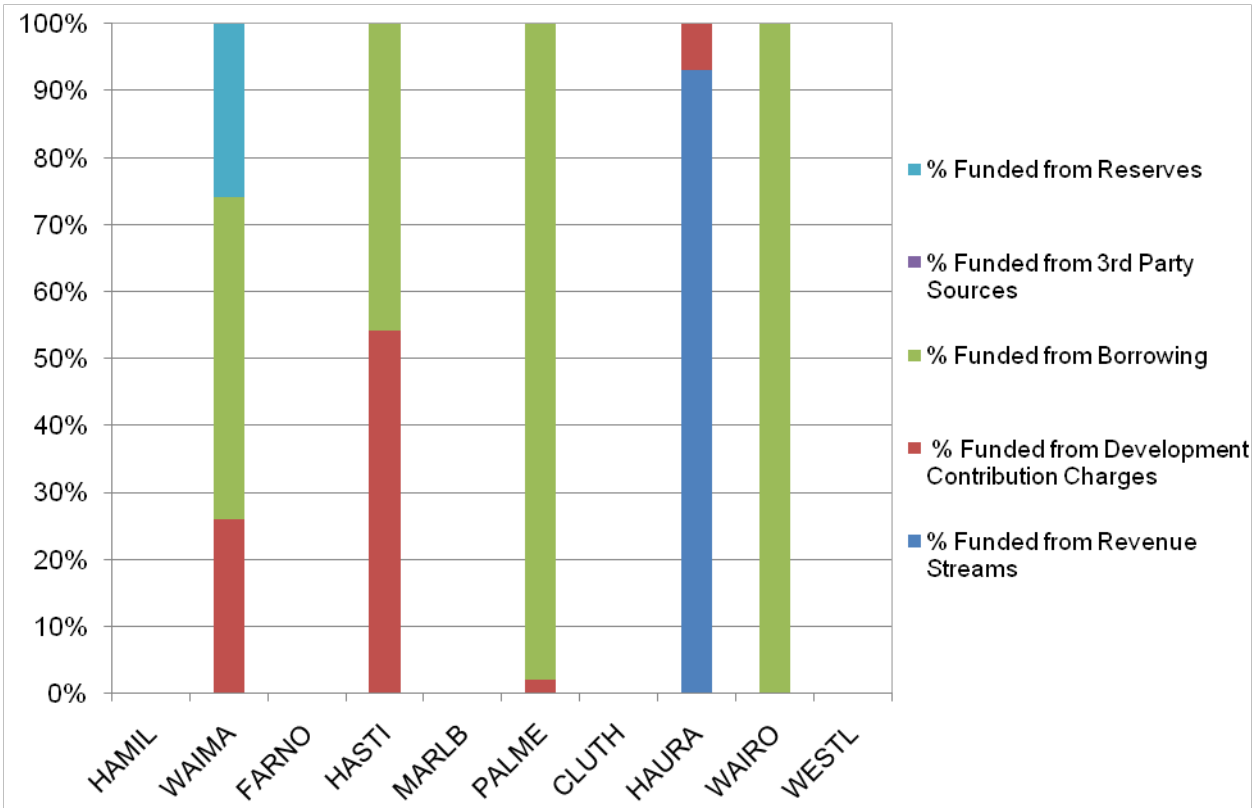

Figure 2-32: Funding Sources for Stormwater New Capital Expenditure

The inferences that can be taken from the above graphs are:

- Unfortunately there is often a lack of specificity in the LTCCP data which precludes a meaningful analysis or commentary. The lack of information is due to:
  - Three case study councils combining all three waters into a combined Cost of Service Statements, thereby making analysis of individual water networks impossible.
  - Most councils not separately describing, in the LTCCP, the rationale for funding renewal expenditure. While this is not required specifically in the Local Government Act, it would be good practice to do so.
  - Few councils providing, in their Revenue and Financing Policies, the expected proportion of funding sources. While this can sometimes be deduced from the Cost of Service Statements, the variety of formats and taxonomy used make it difficult to analyse with certainty. Anecdotally many councils have been unwilling to be prescriptive in their funding proportion allocations in their Revenue and Financing Policies for fear that variations between actual funding and forecast funding proportions may trigger an amendment to the LTCCP.
  - Different terminology of funding sources. For example descriptions included funding from "Capital Funding Reserves", "Depreciation", "Depreciation Reserves" and "Reserves". It was unclear whether the reserves originated from operating revenue (rates, user fees), loans or development contributions.
- From the data that has been returned, there is evidence that Councils are not planning to borrow to finance their forecast renewals. Only one council is planning to do so, and then only for a small proportion of their forecast renewals. This council has a high renewal profile in the next 10 years.
- Funding for 'new' capital is, for the councils able to be analysed, mainly from borrowing. Development contributions are a relatively small proportion of new capital funding.
- There was no appreciable differences in the funding rationale and funding proportions between the three waters other than that the anticipated funding for stormwater new capital appears to be predominantly from borrowing (with the notable exception of one council).

2.11 Other Factors (Questions 14, 15 and 16)

The other factors identified by the DIA are related to forecast population changes and demand management strategies and are defined by the following questions:

- How does the council measure and account for prospective changes to population (increase of decrease) in terms of asset management and funding for water network assets?
- What analysis has the council carried out to determine the relationship between forecast population and future assets? What actions has the council taken on the basis of this analysis?
- What impact might any identified demand management strategies have on future funding requirements and distribution by the council?

These questions were investigated through research into the Future Demand/Demand Forecast and Demand Management sections of the councils' AMPs.

What is demand forecasting and demand management?

Demand forecasts reflect predicted population growth (or decline) and the impact of other demand drivers. Other demand drivers will include climate patterns/climate change, usage efficiency, implementation of demand management measures, pricing changes, demographic changes including reducing household size etc. Basic demand forecasts are developed from the top-down and focus only on major forecast variables such as population. More sophisticated demand forecasts are developed from the bottom-up and based on a lot of information on sectoral (e.g. residential demand) or end-uses (e.g. toilets). For more detail on demand forecasts, see the Auditor-General publication "Local Authorities: Planning to meet the forecast demand for drinking water".

Demand management aims to improve the overall efficiency of demand for an asset over the long term and to deliver services matched to the needs of end users.

Why are demand forecasting and demand management important?

Demand forecasts are essential for forecasting future demand for assets and services. It is recognised that there will always be uncertainty and risks associated with forecasting future demands.

Demand management is recognised as a key strategy for infrastructure management as it can delay or reduce the forecasted need for future assets and services (hence it is sometimes called non-asset solutions). Some of the many benefits associated with demand management include:

- Reduced environmental impacts from water withdrawals, wastewater effluent and stormwater disposal;
- Increased capacity of utility to maintain drinking water quality standards;
- Increased capacity of the reticulation system;
- Avoidance of supply limitations; and
- Deferral of capital costs for infrastructure expansions.

What did we seek to learn from the 10 case study councils?

We sought information from the 10 councils' AMPs for each of the three water networks to ascertain:

- Have the councils identified prospective changes to population that will determine future asset requirements?
- Have the councils identified prospective changes to growth and demand that will determine future asset requirements?
- Have the councils identified future demand management strategies that will determine future asset requirements?

What did we learn from the case study councils?

The results are summarised in the table in Appendix C. We have the following comments on the information gathered:

- All of the councils have identified future population growth/decline and the impact on future asset requirements.
- Most councils have considered the impact of other demand drivers but some have only described other demand drivers and not quantified their impact.
- Most councils have considered demand management but some have only described potential demand management measures and have not defined what they will implement to reduce future asset requirements.
- Demand management planning is generally most advanced for water supply, followed by wastewater. There is very little demand management planning for stormwater.

3 High Level Observations

From the above analysis, graphs and commentary what are the overall observations that can be made?

We will look at this under three questions:

1. Is there an adequacy of planning and funding with regard to water network infrastructure (e.g. a potential "gap")? If so what is the extent now, and into the future? How do the observations of a potential variation differ between the case study councils?
2. What is the relationship between any "gap" or variation observed and the situation a council is (or is likely to be) operating in (e.g. considering population growth or population decline or any other factors)?
3. Given the attributes of the case study councils, what are the possible implications of this research for water networks and the local government sector as a whole?

3.1 Is there an adequacy of planning and funding with regard to water network infrastructure (e.g. a potential infrastructure gap?)

Contextually there are many positive aspects in New Zealand's local government planning and funding strategies and management actions in relation to water infrastructure. Briefly these are:

- A positive legislative framework in relation to longer term planning and accountability requirements.
- Industry guidance and training in relation to Asset Management Planning (NAMS Group) and financial management (SOLGM).
- A fourteen year history (from 1996 when the then Local Government Act was amended) of planning long term for infrastructure services.

In the case study councils we can positively state:

- All councils had Asset Management Plans (AMPs) for all three water networks. However not all the AMPs were fully completed or up to date at the point when the 2009-19 LTCCPs were prepared
- Generally the information in the AMPs was congruent to information in the respective LTCCPs.
- There was good valuation information on networks.

For the particular questions we traversed with case study councils we observed:

- In relation to ***physical descriptions and financial valuations*** there is persuasive information that councils have a good grasp on the size, extent and physical attributes of their networks and the resultant financial valuations. The valuations indicated that, overall, networks are about one-third through their weighted average life.
- In relation to the ***condition of assets***, almost all councils had recorded the condition of their three water assets in their AMPs. Overall the described condition of assets did not suggest that key or significant parts of networks are about to fail imminently or in the near future. This observation is tempered by low confidence factors some councils have in the reliability or currency of their condition assessments.
- In relation to ***risk assessments*** of networks, council had generally described the potential risk factors that may impact on the ability of networks to provide the required service. The risks described were theoretical risks rather than risks that had eventuated.
- In relation to ***condition related performance measures***, we observed that few of the case study councils had performance measures and targets that related predominantly to the condition of the three water networks. While all councils are required to prepare levels of service and accompanying performance measures/targets, few of these were directly related to asset condition. This may be because performance targets are oriented toward service 'output' or 'outcome' customer based measures rather than technical input measures on the physical assets. For those that did have measures relevant to asset failures, roughly half reported that they were achieving their target but the remainder had not measured their performance.

- In relation to **forecast asset renewals**, we observed that most case study councils had prepared renewal forecasts, both in the AMPs and the LTCCPs, for the ten years 2009- 10. The forecasts were largely consistent between the AMPs and LTCCPs. The renewal forecasts varied widely between councils and between the three networks, both in actual quantum and as a proportion of network replacement costs. Stormwater renewal forecasts were particularly small. When we measured 10 year forecast renewals as a percentage of each network's replacement cost, and then compared this to theoretical long term replacement percentage (derived from network valuations) all Councils renewal forecasts over the ten years to 2019 were less than the theoretical long term replacement needs.
- In relation to ***maintenance information***, we were unable to ascertain any meaningful information on forecast maintenance on the three water network assets. Maintenance is a crucial 'first step' to ensuring service and asset integrity is kept at optimal levels. We expected that we would be able to analyse projected routine (planned) maintenance and reactive (unplanned maintenance) for the AMP and LTCCP periods. This did not prove to be the case, except for three councils. Maintenance forecasts are summed into overall 'operating and maintenance' budgets that do not drill down to the expected work on pure maintenance of assets. Unfortunately we cannot draw any comparisons from this to the maintenance forecasts of case study councils.
- In relation to the ***relationship between forecast renewals and forecast depreciation costs***, we observed that the depreciation expense forecasts greatly exceeded the renewal forecasts in the 10 years to 2019 for those councils we had complete data. As previously explained, it is unlikely that depreciation will match renewals in any one year or even (as we see from the data from this case study) over a 10 year window. We can postulate that the networks are not, overall, nearing the end of their lifecycle because the renewals forecasts are less than the forecast depreciation expense. The gap is exacerbated through forecast depreciation expense including depreciation on assets to be added in the next 10 years and the effect of inflation assumptions on depreciation. We were unable to clearly determine, for most case study councils, the extent of 'unfunded depreciation' i.e. the difference, for each water network, between the forecast depreciation expense and the forecast level of funding of the depreciation expense. This is partly because some councils packaged all water networks into one forecast Cost of Service Statement.
- In relation to ***'new capital' forecasts***, we observed that the case study councils had identified new capital requirements and, generally, had reasonable narrative descriptions of intended major projects. Not many councils had separated (or transparently earmarked) forecast capital expenditure to enhance levels of service from capital expenditure to meet future growth. Most councils had considered demand management strategies in their AMPs; these strategies often suppress or even cut the demand for services thus avoiding or delaying new capital projects. Only a few councils had clearly identified future demand management strategies.
- In relation to ***funding of renewals and new capital projects***, we observed that case study data was not sufficient to reach firm conclusions on the rationale, nature and relative proportions of funding sources. Some of the councils packaged the three water network forecast financial information into one Cost of Service statement making analysis difficult. Most councils rationale for funding capital expenditure did not categorise the rationale into the three different elements of capital expenditure (renewals, growth-related and levels of service related). Specificity in relative proportions of funding sources was often lacking, or difficult to interpret. Varying taxonomy also clouded the picture.

Taking all of the above into consideration, we were not able to determine that there is an "infrastructure deficit" or "infrastructure gap" for the three water networks of case study councils. The signals we obtained from the existing data are that the networks are not, overall, nearing the end of their effective lives. The information on condition and risk do not point to any lurking crisis in the networks now or in the next 10 years. While the extent of current forecast renewals is below the long term average that may be necessary, and below the depreciation that is being independently assessed on the networks, this may be because networks are, overall, still in the early to middle stages of their life. As the networks age, more renewals will be necessary.

One important 'missing signal' is the lack of information about levels of forecast maintenance on network assets. This is a concern because maintenance is the first and foremost action to keep assets in good condition and to meet required performance standards.

None of the AMPs indicated that the networks have, up to this point, substantive arrears of maintenance or renewals. No 'bow wave' of deferred maintenance or renewals was identified. However, the lack of transparent specificity in maintenance projections and the low level of projected renewals in the next ten years may suggest 'ripple waves' of additional maintenance and renewals from 2020 onwards.

3.2 What is the relationship between any "infrastructure gap" and the present or future operating environment of Councils?

As noted above we have not identified any infrastructure gap or deficit. We have, however, pointed to a potential infrastructure gap in the medium to long term (10 to 50 years). This will only become apparent with time and with more complete information on maintenance. It is worth noting that other countries (for example Australia and Canada) prepare asset management plans for these assets over the long term (50 to 100 years).

The future operating environment for all three water networks in all councils will make management of services and the assets they employ more complex. Some of the influencing factors include:

- More stringent environmental standards generally.
- Pressure for high graded potable water.
- More communities demanding reticulated supplies and integrated services.
- Greater emphasis on water conservation and reducing water loss.
- Greater demand for enhanced treatment of stormwater run-off.
- Greater emphasis on low impact urban design.
- Facing climate change issues including more frequent intense storm events.

The case study councils included a mixture of high growth councils and low growth (or reverse growth) councils.

It is evident that the weight of dealing with influencing factors mentioned above will fall disproportionately on small and static populated rural councils with large geographical areas.

The challenges and disadvantages these councils face include:

- Dealing with the number of small, discrete networks for different communities
- Upgrading of potable water standards
- Diffusion of asset management effort because of the diverse and varied nature of the network schemes
- Funding issues such as;
  - Small communities finding difficulty in meeting capital costs of new or upgraded schemed (i.e. diseconomies of small scale)
  - Funding sources unlikely to include Development Contributions
  - Even where central government subsidies are obtained for the capital cost, the need to meet locally the consequent maintenance, renewal and depreciation costs
  - Loan interest rates at a margin above large councils

3.3 What are the possible implications of this study for water networks and the local government sector as a whole?

The implications from this study appear to be mainly in the rigour, transparency and specificity of information used to plan, manage, fund and provide accountability on the three water network assets. This assertion would undoubtedly apply to other asset-intensive activities of councils.

Aside from the question of whether there are infrastructure gaps or not, better information appears to be needed for ongoing sound asset and financial management.

We have the following suggestions for improving three water service related information:

- *Longer term asset management planning (50 to 100 years)* – asset management plans should have longer forecasts, particularly for maintenance and renewals. This would enable councils to determine if there will be an infrastructure gap in the medium to long term.
- *Greater emphasis on defining and detailing maintenance forecasting* – we were unable to identify 'pure' maintenance on assets, or the component parts of maintenance for most of the councils. This weakness has been identified by NAMS and an impending revision of the International Infrastructure Manual may address this shortcoming from an industry guidance perspective.
- *Ensure separate reporting of each of Water Supply, Wastewater and Stormwater in the public accountability documents* – we were constrained in our analysis because three councils combined financial and funding information of the three water networks into one forecast Cost of Service statement. While this is permissible under present legislation (reporting by 'Groups of Activities') it does not aid information transparency of networks that are usually significant in their own right and different enough from each other to be separately reported. We understand the LGA Amendment Bill will address this issue.
- *More transparent and understandable funding information* – it was not easy to readily fathom the nature, quantum and rationale for funding decisions on forecast capital expenditure. While council Revenue and Financing Policies are usually detailed in respect of operating expenditure, they appear rather opaque and generalised in respect of the different elements of capital expenditure.
- *Greater standardisation of taxonomy and presentational formats* – we were struck by the variety of ways that forecast financial information for the three water networks is presented in the LTCCP Cost of Service statements. Operating expenditure is often expressed as a 'one- line' item. Often we could not easily assess depreciation or indirect costs. There are different ways of showing the funding of expenditure and a variety of terms for sourcing of funds, particularly from 'reserves'. The Auditor-General has suggested 2-3 format versions of the Cost of Service statement. We think more prescriptive (and more detailed) formats are a must which would allow for cross-sector comparison and analysis.
- *Enhanced reporting of performance targets and measures in relation to asset condition* – we are aware that in buildings and facility related activities of councils there are often performance measures such as "maintain the Art Gallery to at least a condition 2 grading" We did not observe the same in the three water networks. While asset condition rating may be implicit within other network performance measures, there is a case for more dedicated asset condition targets and measures. We are aware that proposed changes to the Local Government Act may include the introduction of a common or standard set of measures for many council activities, including water services. Such measures could include asset condition targets and measures. Australia has a clearly defined performance reporting process for water services. This reporting is now standard and the process for gathering data is audited every 3 years. This ensures consistency of reporting and comparisons.
- *Assessing and reporting reliability or precision factors for capital expenditure forecasts* – one common problem in LTCCP or forecast documents (and not just for case study councils) is the lack of context and underlying assumptions around capital expenditure forecasts, particularly for major projects. It would seem a sound idea for councils to state the basis of significant project cost projections, and their precision factor (e.g. + or – 10%). Several leading councils are now doing so in the background documents to LTCCPs but this is not yet common or accepted practice.

4 Areas for Possible Future Research

We recommend the following areas for possible future research:

1. Investigation into the potential for an infrastructure gap over a longer planning horizon (for example 50 years or even 100 years).
2. Investigation into renewal needs by asset types, for example pipes, plant etc.
3. Investigation into the maintenance cost component of the operating cost forecasts, and ideally the split of maintenance costs into planned and unplanned.
4. Investigation into reliability or precision factors for major capital expenditure forecasts. This would include providing guidance to all councils based on pathfinder councils who have already completed this.
5. Investigation into applying the Australian National Reporting Performance Framework to NZ water authorities.

Appendix A: Survey Results for Asset Description and Conditions

Number	Question	Comment
1	What is the scale of water, wastewater and stormwater infrastructure assets (reticulation and treatment) assets (i.e. length of pipe, number treatment stations, pumps, etc.)?	Quantitative analysis
2	What is the current value and replacement value of the water network infrastructure assets?	Quantitative analysis
3a	What is the condition of water network infrastructure assets? (note this should be evaluated using standard industry parameters for measuring and reporting on asset condition).	Quantitative analysis
3b	Are there any identified areas of unacceptable risk?	Qualitative analysis
4	How does the condition assessment relate to the observed state of the assets in terms of breakages, losses, ingress or overflows?	Qualitative analysis
5a	What performance measures does the council use for its water network assets?	Qualitative analysis
5b	How are they measured?	Qualitative analysis
5c	How well does actual performance relate to projected performance?	Qualitative analysis
5d	How are these results reported to customers?	Qualitative analysis
6a	What level of future renewals and maintenance work has been identified in relation to the various water network infrastructure assets?	Quantitative analysis
6b	How does this compare with the remaining useful lives and asset values?	Quantitative analysis
7	What is the overall level of capital expenditure identified for water network infrastructure? What major capital projects are being planned in relation these types of assets?	Quantitative analysis

Appendix A: Water

Asset Description and Condition
Q1 Scale of the assets

Water	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Date of data	2008	2009	2009	2009	2008	2008	2009	2009	2006 & 2008	2009
# of water schemes	1	17	9	10	7	2	22	9	3	10
Population served	141,500	40,102	22,382	70,839	44,000	79,300	13,648	15,305	8,481	5,878
# of raw water reservoirs/dams	0	8	12	5	0	2	2	7	0	27
# of bores	0	35	7	24	21	5	5	5	1	4
# of river intakes	1	3	10	0	1	1	14	12	1	8
# of treatment stations	1	16	10	6	8	1	16	10	1	4
# of treated water reservoirs	7	35	20	18	56	5	52	6	13	27
Length of pipes (km)	1,040	681	315	498	409	514	2,089	575	101	117
# of booster pump stations	6	29	12	5	17	2	45	4	2	9

Appendix A: Water

Asset Description and Condition
Q2 Value and Replacement Value of the assets

Council Name	Date of valuation	Replacement cost/value (RC or ORC)	Depreciated Replacement cost/value (DRC or ODRC)	Annual depreciation
Hamilton City Council	2007 (retic.) & 2009 (plant and res.)	$ 385,537,259	$ 243,999,759	$ 5,385,115
Waimakariri District Council	30-Jun-08	$ 66,181,708	$ 46,766,180	$ 956,062
Far North District Council	30-Jun-08	$ 90,135,024	$ 57,896,279	$ 1,981,978
Hastings District Council	30-Jun-09	$ 100,616,903	$ 56,900,524	$ 1,373,867
Marlborough District Council	30-Jun-08	$ 131,925,205	$ 85,693,284	$ 1,918,194
Palmerston North City Council	1-Jul-08	$ 154,961,558	$ 98,645,578	$ 1,759,549
Clutha District Council	1-Jul-09	$ 81,171,008	$ 49,384,903	$ 1,185,632
Hauraki District Council	1-Jul-08	$ 99,417,700	$ 54,488,700	$ 1,776,100
Wairoa District Council	30-Jun-08	$ 35,803,000	$ 15,656,000	$ 560,000
Westland District Council	30-Jun-09	$ 35,089,187	$ 25,997,532	$ 629,599

Appendix A: Water

Asset Description and Condition
Q3a Condition of the assets

Water	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Condition grading description	Pipes rated by: 1999 Infrastructure Grading Guidelines (NZWWA),	Condition score based on % of life elapsed 1 = 0% - 29% of asset life reached 2 = 30% - 49%, 3 = 50% - 69%, 4 = 70% - 89%, 5 = 90% -109%, 5+ = 110% or more of asset life reached	1=Very Good, 2=Good, 3=Moderate, 4=Poor, 5=Very Poor	Not assessed	Not assessed	1=Excellent, 2=Good, 3=Moderate, 4=Poor, 5= Very Poor	1 = Very good, 2 = Good, 3 = Fair, 4 = Poor, 5 = Very poor	1=Very Good, 2=Good, 3=Moderate, 4=Poor, 5=Very Poor	1=Excellent, 2=Good, 3=Fair, 4=Poor, 5= Very Poor (NZIAMM system)	1=Excellent, 2=Good, 3=Fair, 4=Poor, 5= Very Poor
Bores	Not applicable	Not provided	2	Not Assessed	Not Assessed	1.5	Not applicable	Not reported	n/a	1.0
River intakes	1.0	Not provided	2.5	Not Assessed	Not Assessed	Not reported	2.5	2.0	3.0	Not reported
Raw water reservoirs/dams	Not applicable	2.0		Not Assessed	Not Assessed	2.0	Not applicable	2.0	n/a	Not reported
Treatment stations	1.0	2.0	3	Not Assessed	Not Assessed	1.0	Not available	2.0	2.0	1.5
Treated water reservoirs	2.0	2.0	2.5	Not Assessed	Not Assessed	2.0	3.0	2.0	3.0	Not reported
Pipes (includes rider mains)	1.0	3.0	2.5	Not Assessed	Not Assessed	2.0	2.5	2.0	1.5	2.0
Booster pump stations	1.0	2.0	2	Not Assessed	Not Assessed	2.0	Not available	2.0	2.0	2.0
Comments		Also use a criticality rating for pipes based on % through useful life. One rating provided for all above ground assets (rating 2). Above-ground assets (Plant) are visited on a scheduled program by WDC staff and any condition deterioration with the potential of service failure will be detected in time.		AC watermains have been evaluated against the Watermain Manual for assessing deterioration related to pressure. Also have identified the different types of AC and rated them according to their manufacture date and method of manufacture in terms of a risk rating.	Formal scoring and ranking of asset condition has not been undertaken to date but improved data capture and retrieval will be incorporated into the next generation of asset management information system. The most significant and reliable factor affecting performance of pipes in the reticulation is age. The age profile data is reasonably good and has proved satisfactory for expenditure planning. Additional data is collected during routine maintenance and inspections to detect specific condition issues.		There are 21 schemes so it is difficult to get an overall "weighted average" of condition. The 2009 AMP suggests that there is a v. wide range in pipe condition ("1" thru "5"). The assessed condition ratings are probably biased towards the poorer end of the scale, as they are generally based on inspection of failed pipe which has been dug up for repair. Most pipes are relatively young, so low data confidence rating is realistic but not highly significant. Data confidence is significantly higher for above-ground assets.	Low confidence for this assessment. However, the incidence of breaks and failures would suggest that this overall condition assessment is acceptable.		

Appendix A: Water

Q3b Risks associated with poor condition assets

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Risks relating to poor condition assets identified in AMP	Major assets will fail is identified as a risk in the AMP (not specific)	0% of pipes with AA criticality are >70% through expected life. 0.8% of pipes with A criticality are >70% through expected life.	No risks associated with poor condition assets identified in AMP	Not identified in draft AMP.	2008 AMP states "The current rate of reticulation failure is low as maybe expected from a relatively young system".	Supply loss or water restrictions resulting from poor condition of dam pipework or earthquake damage to pipeline	No risks associated with poor condition assets identified in AMP	Expansion and contraction of pipes in plains reticulation resulted in failure of joints and loss of supply.	Risk framework developed but not yet populated with WDC risks.	AMP identifies as high risk "Major assets such as trunk mains will fail due to pipe bursts/blockages"
Comments on poor condition assets	The Ruakiwi reservoir has serious corrosion issues and is in need of replacement			Historical information on failures has been used in the AC assessment as have records for other material pipe types. A lot of work has been progressed in terms of a pressure reduction programme and the establishment of reduced pressure zones.	Risk section of AMP identifies the following risks as High "Failure of pipes in the network due to asset condition/age" and "Maintenance/Equipment or systems failure due to asset condition/age" but no specific assets identified.	Supply loss or water restrictions/economic loss due to poor condition of raw bulk water pipeline material, or earthquake damage to pipeline	No widespread concerns on this issue. Balclutha water supply currently undergoing major upgrade.	Actual failures are attributed to this cause every year. During drought years, the incidence of such failures is notably higher.	Mechanical and electrical component of raw water intake of fair to poor condition. Trunk main has a condition ranking of 4 and is a priority for risk management.	This is a real risk as valve failure in 2009 caused loss of water. Line has failed 3 times in past 5years (these sections have now been upgraded).
	Major performance issues are used in the renewal decision making process. Council are embarking on a criticality exercise for water assets in 2010/11 to include criticality risks into their decision making process.				Water leakage continues to be investigated and evaluated. Interruptions from breakages remain at a low level.	Discoloured water supply, loss or restrictions due to poor condition and/or lack of maintenance of cast iron pipes in the reticulation network			The Mahanga pump systems have a rating from 2 to 4 and some of the ferro-cement storage tanks (Tuai and Mahanga) have ratings of 4. The Tawhara concrete reservoirs are prone to leakage from horizontal construction joints, which have been repaired to minimise water loss but are expected to reopen (no condition rating given for these assets).	

Appendix A: Water

Q4 Relationship between condition assessment and observed state of the assets
Asset Description and Condition

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Comments	Council are embarking on a criticality exercise for water assets in 2010/11 to include criticality risks into their decision making process.	Observed state of assets is not reported but Council planning to implement a system to record maintenance data relating to the frequency of failures and the cost of repairs.	Observed state of assets is not reported	Neither condition nor observed state of assets is reported	Very little information provided on asset condition and observed performance. Comment on page 48 of the AMP, “Preliminary investigation showed potential leakage problems in the Picton and Havelock systems and leak detection efforts have been concentrated on these areas.” On page 65, “Blenheim, Havelock and Renwick had a total of 81 watermains repairs over a three year period until July 2008 which equates to less than one leak per two kilometres of main over three years. This low level of mains failure indicates the relatively good condition of the reticulation system as would be anticipated by the young age profile of the pipework.”	Observed state of assets is not reported	The condition grading is generally in the 2 - 3 range (i.e. good - fair) but the observed state of assets is not reported	Observed state of assets is not reported	Very little information provided on asset performance (2007-2009 total of 377 minor valve leaks and hydrants, fittings appears high. Total of 114 Telemetry or busts Mains is ambiguous). Last leak survey 2007/08	Observed state of assets is not reported

Appendix A: Water

Asset Description and Condition
Q5a PMs used
This table only includes the condition related PMs from the NAMS Level of Service Manual

Level of Service	Customer or technical PM	Condition Related PMs from the NAMS Level of Service Manual	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
A reliable water supply is provided	Technical	Operative risk management in place and planned mitigation measures completed.	Not used	PM in Use	Not used	Not used	Not used	Not used	Not used	PM in Use	Not used	Not used
A reliable water supply is provided	Technical	Less than (x) water mains breaks per 100km of water network.	Not used	Not used	PM in Use	Not used	Not used	PM in Use	Not used	PM in Use	Not used	PM in Use
Water resources are used efficiently and sustainability	Technical	Less than (x) % of water losses in pipe network.	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	PM in Use	Not used

Appendix A: Water

Q5b How are PMs measured?

Q5c Comparison of actual performance to projected performance

Q5d Reporting of Results to Customers

Actual Performance	
☺	Better than target
😐	On target
☹	Not meeting target or not measured

This table includes the condition related PMs from the NAMS Level of Service Manual (listed first) followed by a collation of condition related PMs used by the 10 councils

#	Measures (as reported in Annual report, AMP or LTCCP)	How Measured	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
1	Operative risk management in place and planned mitigation measures completed.	PHRMPs	Not used	☹	Not used	Not used	Not used	Not used	Not used	☹	Not used	Not used
2	Number of water main breaks per 100km of water network per annum.	Water Supply Performance Reporting system	Not used	Not used	😐	Not used	Not used	Not used	Not used	☺	Not used	☺
3	Less than (x) % of water losses in pipe network.	Internal system	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	☺	Not used
4	Volume of water loss < 12 L/connection/hour	Night flow monitoring	Not used	☺	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used
5	Annually reducing trend in volume of water lost in the system	Leak detection survey	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	☹	Not used
6	Reduction in water loss compared to historic levels	Internal system	Not used	Not used	☺	Not used	Not used	Not used	Not used	Not used	Not used	Not used
7	Number of water main leaks per annum.	Customer service requests	Not used	Not used	Not used	Not used	Not used	☺	Not used	Not used	Not used	Not used
8	Number of service line and toby leaks per annum.	Customer service requests	Not used	Not used	Not used	Not used	Not used	☺	Not used	Not used	Not used	Not used
9	Number of valve leaks per annum.	Customer service requests	Not used	Not used	Not used	Not used	Not used	☺	Not used	Not used	Not used	Not used
10	Number of hydrant leaks per annum.	Customer service requests	Not used	Not used	Not used	Not used	Not used	☺	Not used	Not used	Not used	Not used
11	Average unplanned water supply interruptions are no more than (x) minutes per connection	Customer service requests	😐	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used
12	Unplanned water supply interruptions are less than # per year per connection	Customer service requests	Not used	Not used	Not used	Not used	☹	Not used	☺	Not used	Not used	Not used
13	To maintain asset capacity & integrity, renewals expenditure compared with depreciation provision to remain the same over time	Internal system	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	😐	Not used
14	Develop a condition assessment programme by a set date	Internal system	Not used	😐	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used

Appendix A: Water

Asset Description and Condition
Q6a Level of future renewals and maintenance

All $ in $,000s

	Cost Type	Data Source	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	SUBTOTALS
Hamilton City Council	O&M	AMP	$ 5,288	$ 5,267	$ 5,391	$ 7,173	$ 7,140	$ 8,302	$ 7,709	$ 8,604	$ 8,915	$ 9,301	$ 73,090
Hamilton City Council	Renewals	AMP	$ 2,486	$ 2,751	$ 2,976	$ 3,169	$ 4,061	$ 4,357	$ 4,533	$ 4,742	$ 4,941	$ 5,129	$ 39,145
Hamilton City Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$ -
Hamilton City Council	Renewals	LTCCP	$ 2,286	$ 2,733	$ 2,931	$ 3,120	$ 4,000	$ 4,290	$ 4,462	$ 4,670	$ 4,868	$ 5,056	$ 38,416
Waimakariri District Council	Maintenance	AMP	$ 407	$ 467	$ 480	$ 495	$ 514	$ 534	$ 553	$ 575	$ 595	$ 623	$ 5,241
Waimakariri District Council	Renewals	AMP	$ 373	$ 444	$ 415	$ 518	$ 533	$ 541	$ 487	$ 504	$ 536	$ 518	$ 4,871
Waimakariri District Council	Maintenance	LTCCP	$ 407	$ 467	$ 480	$ 495	$ 514	$ 534	$ 553	$ 575	$ 595	$ 623	$ 5,241
Waimakariri District Council	Renewals	LTCCP	$ 416	$ 346	$ 448	$ 557	$ 606	$ 547	$ 506	$ 525	$ 574	$ 559	$ 5,084
Far North District Council	Operating costs	AMP	$ 3,153	$ 3,303	$ 3,384	$ 3,466	$ 3,546	$ 3,283	$ 3,800	$ 3,893	$ 3,991	$ 4,284	$ 36,104
Far North District Council	Renewals	AMP	$ 1,052	$ 850	$ 462	$ 469	$ 433	$ 673	$ 799	$ -	$ -	$ -	$ 4,739
Far North District Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$ -
Far North District Council	Renewals	LTCCP	$ 660	$ 550	$ 675	$ 950	$ 525	$ 550	$ 650	$ 600	$ 550	$ 650	$ 6,360
Hastings District Council	Maintenance	AMP											
Hastings District Council	Renewals	AMP											
Hastings District Council	Maintenance	LTCCP											
Hastings District Council	Renewals	LTCCP	$ 1,464	$ 503	$ 806	$ 633	$ 445	$ 944	$ 1,075	$ 1,483	$ 1,311	$ 2,660	$ 11,324
Marlborough District Council	O&M	AMP	$ 2,587	$ 2,733	$ 3,262	$ 3,602	$ 3,907	$ 4,180	$ 4,329	$ 4,464	$ 4,703	$ 4,859	$ 38,626
Marlborough District Council	Renewals	AMP	$ 710	$ 344	$ 334	$ 346	$ 721	$ 437	$ 455	$ 641	$ 592	$ 481	$ 5,060
Marlborough District Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$ -
Marlborough District Council	Renewals	LTCCP	$ 393	$ 344	$ 333	$ 345	$ 720	$ 436	$ 455	$ 641	$ 592	$ 481	$ 4,740
Palmerston North City Council	Maintenance	AMP	$ 1,485	$ 1,485	$ 1,485	$ 1,498	$ 1,498	$ 1,498	$ 1,498	$ 1,498	$ 1,498	$ 1,498	$ 14,941
Palmerston North City Council	Renewals	AMP	$ 2,945	$ 2,495	$ 2,395	$ 2,385	$ 2,385	$ 2,940	$ 2,740	$ 2,740	$ 2,240	$ 1,740	$ 25,005
Palmerston North City Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$ -
Palmerston North City Council	Renewals	LTCCP	$ 2,975	$ 2,572	$ 2,536	$ 2,593	$ 2,678	$ 2,647	$ 3,637	$ 2,763	$ 2,853	$ 2,288	$ 27,542
Clutha District Council	Maintenance	AMP	$ 72	$ 78	$ 90	$ 90	$ 90	$ 92	$ 93	$ 93	$ 93	$ 93	$ 886
Clutha District Council	Renewals	AMP	$ 147	$ 707	$ 175	$ 21	$ 311	$ 288	$ 191	$ 207	$ 97	$ 387	$ 2,531
Clutha District Council	Maintenance	LTCCP	$ 72	$ 78	$ 90	$ 90	$ 90	$ 92	$ 93	$ 93	$ 93	$ 93	$ 886
Clutha District Council	Renewals	LTCCP	$ 147	$ 707	$ 175	$ 21	$ 311	$ 288	$ 191	$ 207	$ 97	$ 387	$ 2,531
Hauraki District Council	O&M	AMP	$ 1,918	$ 2,269	$ 2,402	$ 2,431	$ 2,561	$ 2,473	$ 2,554	$ 2,655	$ 2,736	$ 2,896	$ 24,895
Hauraki District Council	Renewals	AMP	$ 653	$ 924	$ 836	$ 725	$ 2,222	$ 917	$ 800	$ 955	$ 1,022	$ 970	$ 10,025
Hauraki District Council	Maintenance	LTCCP	$ 1,919	$ 2,269	$ 2,402	$ 2,431	$ 2,561	$ 2,474	$ 2,553	$ 2,655	$ 2,735	$ 2,897	$ 24,896
Hauraki District Council	Renewals	LTCCP	$ 1,379	$ 1,191	$ 917	$ 779	$ 833	$ 890	$ 772	$ 925	$ 1,120	$ 1,021	$ 9,827
Wairoa District Council	Maintenance	AMP											$ -
Wairoa District Council	Renewals	AMP											
Wairoa District Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$ -
Wairoa District Council	Renewals	LTCCP	$ 399	$ 131	$ 275	$ 132	$ 230	$ 133	$ 118	$ 141	$ 165	$ 136	$ 1,862.04
Westland District Council	Operating costs	AMP	$ 878	$ 959	$ 1,033	$ 1,064	$ 1,110	$ 1,149	$ 1,188	$ 1,244	$ 1,286	$ 1,331	$ 11,244
Westland District Council	Renewals	AMP	$ 120	$ 123	$ 845	$ 130	$ 358	$ 139	$ 384	$ 396	$ 281	$ 291	$ 3,067
Westland District Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Westland District Council	Renewals	LTCCP	$ 120	$ 123	$ 845	$ 130	$ 359	$ 139	$ 383	$ 396	$ 281	$ 291	$ 3,067

Appendix A: Water

Q6b Comparison of level of future renewals and maintenance with remaining useful lives and asset values

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
	HAMIL	WAIMA	FARNO	HASTI	MARLB	PALME	CLUTH	HAURA	WAIRO	WESTL
Year of valuation data	2007 (retic.) & 2009 (plant and res.)	30-Jun-08	30-Jun-08	30-Jun-09	30-Jun-08	1-Jul-08	1-Jul-09	1-Jul-08	30-Jun-08	30-Jun-09
Replacement cost	$ 385,537,259	$ 66,181,708	$ 90,135,024	$ 100,616,903	$ 131,925,205	$ 154,961,558	$ 81,171,008	$ 99,417,700	$ 35,803,000	$ 35,089,187
Depreciated Replacement cost	$ 243,999,759	$ 46,766,180	$ 57,896,279	$ 56,900,524	$ 85,693,284	$ 98,645,578	$ 49,384,903	$ 54,488,700	$ 15,656,000	$ 25,997,532
Annual Depreciation	$ 5,385,115	$ 956,062	$ 1,981,978	$ 1,373,867	$ 1,918,194	$ 1,759,549	$ 1,185,632	$ 1,776,100	$ 560,000	$ 629,599
Maintenance cost (2009/10)	only O&M provided	$ 406,680	operating costs	operational costs	O&M	$ 1,485,000	$ 71,750	O&M	Not Available	Operating costs
Overall weighted average useful life (years)	72	69	45	73	69	88	68	56	64	56
Average % of maintenance		0.61%				0.96%	0.09%			
Remaining useful life (years)	45	49	29	41	45	56	42	31	28	41
Theoretical Long Term Renewal Investment %	1.40%	1.44%	2.20%	1.37%	1.45%	1.14%	1.46%	1.79%	1.56%	1.79%

Appendix A: Water

Asset Description and Condition
Q7a Overall level of capex from the LTCCP

All $ in $,000s

Council Name	Capital Expenditure Type	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	SUBTOTALS
Hamilton City Council	Renewals	$ 2,286	$ 2,733	$ 2,931	$ 3,120	$ 4,000	$ 4,290	$ 4,462	$ 4,670	$ 4,868	$ 5,056	$ 38,416
Hamilton City Council	New - LoS & Growth	$ 2,297	$ 2,942	$ 7,279	$ 12,688	$ 3,045	$ 3,003	$ 10,736	$ 16,068	$ 10,498	$ 4,687	$ 73,243
Hamilton City Council	**Total Capex**	**$ 4,584**	**$ 5,675**	**$ 10,210**	**$ 15,808**	**$ 7,045**	**$ 7,293**	**$ 15,198**	**$ 20,738**	**$ 15,365**	**$ 9,743**	**$ 111,659**
Waimakariri District Council	Renewals	$ 416	$ 346	$ 448	$ 557	$ 606	$ 547	$ 506	$ 525	$ 574	$ 559	$ 5,084
Waimakariri District Council	New - LoS & Growth	$ 14,461	$ 4,971	$ 1,820	$ 4,220	$ 940	$ 873	$ 526	$ 588	$ 423	$ 2,044	$ 30,866
Waimakariri District Council	**Total Capex**	**$ 14,877**	**$ 5,317**	**$ 2,268**	**$ 4,777**	**$ 1,546**	**$ 1,420**	**$ 1,032**	**$ 1,113**	**$ 997**	**$ 2,603**	**$ 35,950**
Far North District Council	Renewals	**$ 660**	**$ 550**	**$ 675**	**$ 950**	**$ 525**	**$ 550**	**$ 650**	**$ 600**	**$ 550**	**$ 650**	$ 6,360
Far North District Council	New - LoS & Growth	**$ 2,751**	**$ 2,685**	**$ 1,365**	**$ 840**	**$ 1,510**	**$ 2,167**	**$ 1,588**	**$ 1,090**	**$ 230**	**$ 25**	$ 14,250
Far North District Council	**Total Capex**	**$ 3,411**	**$ 3,235**	**$ 2,040**	**$ 1,790**	**$ 2,035**	**$ 2,717**	**$ 2,238**	**$ 1,690**	**$ 780**	**$ 675**	**$ 20,610**
Hastings District Council	Renewals	$ 1,464	$ 503	$ 806	$ 633	$ 445	$ 944	$ 1,075	$ 1,483	$ 1,311	$ 2,660	$ 11,324
Hastings District Council	New - LoS & Growth	$ 2,106	$ 4,721	$ 3,126	$ 3,271	$ 1,846	$ 3,372	$ 4,338	$ 986	$ 2,137	$ 907	$ 26,810
Hastings District Council	**Total Capex**	**$ 3,570**	**$ 5,224**	**$ 3,932**	**$ 3,904**	**$ 2,291**	**$ 4,316**	**$ 5,413**	**$ 2,469**	**$ 3,448**	**$ 3,567**	**$ 38,134**
Marlborough District Council	Renewals	$ 393	$ 344	$ 333	$ 345	$ 720	$ 436	$ 455	$ 641	$ 592	$ 481	$ 4,740
Marlborough District Council	New - LoS & Growth	$ 15,714	$ 21,953	$ 14,352	$ 8,196	$ 4,663	$ 13,945	$ 24,898	$ 13,308	$ 6,178	$ 1,866	$ 125,073
Marlborough District Council	**Total Capex**	**$ 16,107**	**$ 22,297**	**$ 14,685**	**$ 8,541**	**$ 5,383**	**$ 14,381**	**$ 25,353**	**$ 13,949**	**$ 6,770**	**$ 2,347**	**$ 129,813**
Palmerston North City Council	Renewals	$ 2,975	$ 2,572	$ 2,536	$ 2,593	$ 2,678	$ 2,647	$ 3,637	$ 2,763	$ 2,853	$ 2,288	$ 27,542
Palmerston North City Council	New - Level of Service	$ 1,280	$ 2,710	$ 4,288	$ 1,195	$ 1,382	$ 2,081	$ 3,111	$ 1,049	$ 1,083	$ 1,118	$ 19,297
Palmerston North City Council	New - Growth	$ 200	$ 206	$ 212	$ 1,848	$ 225	$ 231	$ 239	$ 2,714	$ 255	$ 263	$ 6,393
Palmerston North City Council	**Total Capex**	**$ 4,455**	**$ 5,488**	**$ 7,036**	**$ 5,636**	**$ 4,285**	**$ 4,959**	**$ 6,987**	**$ 6,526**	**$ 4,191**	**$ 3,669**	**$ 53,232**
Clutha District Council	Renewals	$ 147	$ 147	$ 707	$ 175	$ 21	$ 311	$ 288	$ 191	$ 207	$ 97	$ 2,291
Clutha District Council	New - LoS & Demand	$ 1,839	$ 1,839	$ 1,506	$ 2,060	$ 258	$ 58	$ 83	$ -	$ -	$ 250	$ 7,894
Clutha District Council	**Total Capex**	**$ 1,986**	**$ 1,986**	**$ 2,214**	**$ 2,235**	**$ 278**	**$ 369**	**$ 372**	**$ 191**	**$ 207**	**$ 347**	**$ 10,185**
Hauraki District Council	Renewals	$ 1,379	$ 1,191	$ 917	$ 779	$ 833	$ 890	$ 772	$ 925	$ 1,120	$ 1,021	$ 9,827
Hauraki District Council	New - Level of Service	$ 4,252	$ 1,443	$ 1,256	$ 2,512	$ 7,705	$ 180	$ 29	$ 29	$ 31	$ 32	$ 17,469
Hauraki District Council	New - Growth	$ 7,708	$ 4,780	$ -	$ -	$ 1,362	$ -	$ -	$ -	$ -	$ -	$ 13,850
Hauraki District Council	**Total Capex**	**$ 13,339**	**$ 7,414**	**$ 2,173**	**$ 3,291**	**$ 9,900**	**$ 1,070**	**$ 801**	**$ 954**	**$ 1,151**	**$ 1,053**	**$ 41,146**
Wairoa District Council	Renewals	$ 399	$ 131	$ 275	$ 132	$ 230	$ 133	$ 118	$ 141	$ 165	$ 136	$ 1,862
Wairoa District Council	New - LoS & Growth	$ -	$ 422	$ -	$ 12	$ -	$ -	$ -	$ -	$ -	$ -	$ 433
Wairoa District Council	**Total Capex**	**$ 399**	**$ 553**	**$ 275**	**$ 144**	**$ 230**	**$ 133**	**$ 118**	**$ 141**	**$ 165**	**$ 136**	**$ 2,295**
Westland District Council	Renewals	$ 120	$ 123	$ 845	$ 130	$ 359	$ 139	$ 383	$ 396	$ 281	$ 291	$ 3,067
Westland District Council	New - LoS & Growth	$ 1,265	$ 404	$ -	$ 1,794	$ 617	$ 1,100	$ 838	$ -	$ -	$ -	$ 6,018
Westland District Council	**Total Capex**	**$ 1,385**	**$ 527**	**$ 845**	**$ 1,925**	**$ 975**	**$ 1,239**	**$ 1,221**	**$ 396**	**$ 281**	**$ 291**	**$ 9,086**

Appendix A: Wastewater

Asset Description and Condition
Q1 Scale of the assets

Wastewater	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Date of data	2008	2009	2009	2,008	2008	2008	2006	2009	2008	2009
# of wastewater schemes	1	7	17	2	5	3	11	7	2	4
Population served	141,500	32,490	25,472	50,935	44,000	79,300	17,300	10,200	8,481	4,612
Length of pipes (km)	763	428	338	401	285	375	132	138	40	48
# of pump stations	127	38	150	46	55	25	25	43	6	10
# of treatment plants	1	10	16	2	6	3	11	7	2	4

Appendix A: Wastewater

Asset Description and Condition
Q2 Value and Replacement Value of the assets

Wastewater Values	Date of value	Replacement cost/value (RC or ORC)	Depreciated Replacement cost/value (DRC or ODRC)	Annual depreciation
Hamilton City Council	2007 (PS and retic.) & 2009 (plant)	$ 364,214,053	$ 224,843,255	$ 5,439,864
Waimakariri District Council	30-Jun-08	$ 117,173,711	$ 91,501,761	$ 1,546,308
Far North District Council	30-Jun-08	$ 132,692,015	$ 87,893,091	$ 2,778,527
Hastings District Council	30-Jun-09	$ 279,147,914	$ 150,799,899	$ 4,333,911
Marlborough District Council	30-Jun-08	$ 148,169,229	$ 96,933,906	$ 1,777,702
Palmerston North City Council	30-Jun-08	$ 177,380,532	$ 106,622,994	$ 1,646,612
Clutha District Council	1-Jul-09	$ 48,418,069	$ 30,215,442	$ 557,121
Hauraki District Council	1-Jul-08	$ 60,661,000	$ 36,259,000	$ 1,091,000
Wairoa District Council	30-Jun-08	$ 20,542,000	$ 9,765,000	$ 299,000
Westland District Council	30-Jun-09	$ 21,827,405	$ 12,523,457	$ 338,010

Appendix A: Wastewater

Asset Description and Condition
Q3a Condition of the assets

Wastewater	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Condition grading description	1=Excellent, 2=Good, 3=Moderate, 4=Poor, 5= Fail	Condition score based on % of life elapsed 1 = 0% - 29% of asset life reached 2 = 30% - 49%, 3 = 50% - 69%, 4 = 70% - 89%, 5 = 90% -109%, 5+ = 110% or more of asset life reached	1=Very Good, 2=Good, 3=Moderate, 4=Poor, 5=Very Poor	Not Assessed	Not Assessed	1=Excellent, 2=Good, 3=Moderate, 4=Poor, 5= Very Poor	1 = Very good, 2 = Good, 3 = Fair, 4 = Poor, 5 = Very poor	1=Perfect, 2=Minor defects only, 3=Significant maintenance required, 4=Major renewal required, 5=Asset unservicable	1= Sound, 2=Acceptable, 3= Significant deterioration. 4= Failure likely in short term, 5= Failed or failure imminent	1=Excellent, 2=Good, 3=Fair, 4=Poor, 5= Very Poor
Pipes	2	3	2.5	Not Assessed	Not Assessed	2	2	2.5	3	3
Pump stations	2	1	3	Not Assessed	Not Assessed	2	2	Not reported	2.5	2
Treatment plants	2	1	2	Not Assessed	Not Assessed	2	2	1	2.5	Not applicable
Comment	Old condition assessment-1998/2000	Also use a criticality rating for pipes based on % through useful life. One rating provided for all above ground assets (rating 2). Above-ground assets (Plant) are visited on a scheduled program by WDC staff and any condition deterioration with the potential of service failure will be detected in time. Ponds are not assessed as not depreciated		Assets have condition ratings applied to them from cctv and other data captured during maintenance activities. There is a backlog of data to be imported into our AMS. Renewals planning involves cctv inspection to determine whether spot repairs can extend asset lives rather than full replacement. This intervention strategy is a more recent approach and will be included in the next AMP.	Data on pipe condition is gathered through targeted CCTV surveys and opportunistically during maintenance. However, the most significant and reliable factor affecting performance of pipes in the reticulation is age. The age profile data is reasonably good and has proved satisfactory for expenditure planning. Additional data is collected during routine maintenance and inspections to detect specific condition issues. Formal scoring and ranking of asset condition is limited to CCTV evaluation but improved data capture and retrieval will be incorporated into the next generation of asset management information system		A subsequent comprehensive CCTV condition assessment has identified that most sewerage is in average condition for its age, which tends to confirm the ratings with increased confidence.	Low confidence for this assessment. However, the incidence of breaks and failures would suggest that this overall condition assessment is acceptable.		No pipe condition rating on pipes. Treatment plants are oxidation ponds so condition is not assessed.

Appendix A: Wastewater

Q3b Risks associated with poor condition assets

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Risks relating to poor condition assets identified in AMP	Risks identified in AMP include "Major assets will fail", "pump and/or line blockages may result in watercourse pollution" & "Pipes in boom "state housing" housing areas of poor quality due to poor construction practises at the time. Monitoring of these areas is required to determine future replacements"	0.1% of pipes with AA criticality are >70% through expected life. 0.7% of pipes with A criticality are >70% through expected life.	AMP Risk section identifies risk from contamination caused by sewage overflows as a result of individual pumping station failures or from pipe breaks or network flooding (but nothing related to the condition of specific assets).	Not identified in draft AMP. Identified as an area for further improvement.	High water tables and leaky infrastructure represents a significant risk in parts of Blenheim, which has a reasonably well integrated network.	Blockages or collapses of critical A pipelines in poor condition	No Summary risk table provided in AMP	AMP identifies a theoretical risk "Corrosion of WWTPs' assets resulting in equipment failure and impaired treatment with a possible public health risk."	AMP risk section identifies as a high risk "Inadequate maintenance and renewals fails to address deterioration of infrastructure resulting in infiltration and breach of consent". Other condition related risks are rated as low or moderate.	AMP identifies as high risk "Pump and/or line blockages will result in local watercourse pollution or sea pollution". This is an actual high risk.
Comments on poor condition assets	Major performance issues are used in the renewal decision making process. Council are embarking on a criticality exercise for wastewater assets in 2010/11 to include criticality risks into their decision making process.	A robust CCTV programme has already been started in 2010 which grades the pipes according to condition. A process is being developed to feed this data into the renewals programme.			Inflow and infiltration is a perennial problem in parts of the network. Good work has been undertaken to model and evaluate the extent of I&I in some sub-catchments.	Sewage overflows in the system caused by I&I problems in severe storms	A subsequent comprehensive CCTV condition assessment has identified that most sewerage is in average condition for its age, which tends to confirm the ratings with increased confidence.	AMP identifies a theoretical risk "Pump switchgear or mechanical gear failure/damaged resulting in sewer overflows leading to public health and environmental risk."	Some of the pump station components have a condition rating of 4 - failure likely in short term. 72% of pipe assets (by length) have a condition rating of 3 (rest are 2 or 1) and the AMP confirms this by stating that there is a significant infiltration/inflow (I&I) problem existing in the reticulation - although this is not evident through the performance measure results.	
					Work continues to identify and remedy the sources of I&I. Both inflow and infiltration make important contributions although only infiltration is related to the condition of the assets.			Evaluation to date of the Paeroa reticulation system has indicated that 40% (27km) of the glazed earthenware pipeline may require major maintenance		

Appendix A: Wastewater

Asset Description and Condition
Q4 Relationship between condition assessment and observed state of the assets

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Comments	Council are embarking on a criticality exercise for wastewater assets in 2010/11 to include criticality risks into their decision making process.	Observed state of assets is not reported but Council planning to increase CCTV and implement a system to record maintenance data relating to the frequency of failures and the cost of repairs.	Observed state of assets is not reported	Neither condition nor observed state of assets is reported.	Neither condition nor observed state of assets is reported	Observed state of assets is not reported	The condition grading is generally in the 2 - 3 range (i.e. good - fair) but the observed state of assets is not reported	Observed state of assets is not reported	72% of pipe assets (by length) have a condition rating of 3 (rest are 2 or 1) and the AMP confirms this by stating that there is a significant infiltration/inflow (I&I) problem existing in the reticulation - although this is not evident through performance measure results.	Observed state of assets is not reported

Appendix A: Wastewater

Asset Description and Condition

Q5a PMs used

This table only includes the condition related PMs from the NAMS Level of Service Manual

Level of Service	Customer or technical PM	Condition Related PMs from the NAMS Level of Service Manual	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Sewage is managed without risk to public health.	Customer	No sewage overflows into habitable buildings due to faults in the public wastewater system.	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used
Sewage is managed without risk to public health.	Technical	Less than (x) sewage overflows each year from the public wastewater network.	Not used	PM in Use	Not used	Not used	PM in Use	PM in Use	PM in Use	PM in Use	PM in Use	PM in Use
A reliable service is provided.	Customer	Fewer than (x) recorded dry weather overflows from the wastewater network.	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used
Sewage is managed without adversely affecting the quality of receiving environment.	Technical	Operative risk management plan in place for pump stations and treatment plants, and adopted mitigation measures implemented in accordance with the plan.	Not used	Not used	Not used	Not used	Not used	Not used	Not used	PM in Use	Not used	Not used

Appendix A: Wastewater

Actual Performance	
☺	Better than target
😐	On target
☹	Not meeting target or not measured

Q5b How are PMs measured?

Q5c Comparison of actual performance to projected performance

Q5d Reporting of Results to Customers

This table includes the condition related PMs from the NAMS Level of Service Manual (listed first) followed by a collation of condition related PMs used by the 10 councils

#	Measures (as per Annual report, AMP and LTCCP)	How Measured	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
1	No sewage overflows into habitable buildings due to faults in the public wastewater system.	Customer service requests	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used
2	Less than (x) sewage overflows each year from the public wastewater network.	Customer service requests	Not used	☹	Not used	Not used	Not used	☺	☺	☹	😐	😐
3	Fewer than (x) recorded dry weather overflows from the wastewater network.	Customer service requests	Not used	Not used	Not used	Not used	Not used	Not used	Not used	☹	Not used	Not used
4	Operative risk management plan in place for pump stations and treatment plants, and adopted mitigation measures implemented in accordance with the plan.	Risk Management Plan	Not used	Not used	Not used	Not used	Not used	Not used	Not used	😐	Not used	Not used
5	Zero overflows during a 1 in (x) year rainfall event	Customer service requests	Not used	Not used	Not used	Not used	☹	Not used	Not used	Not used	Not used	Not used
6	Number of overflows from pump stations due to mechanical or electrical equipment failure	Customer service requests	☹	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used
7	Less than (x) sewage overflows onto private land under any circumstances	Customer service requests	Not Used	☹	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used
8	A continuing reducing trend in the total volume of wastewater discharged per year	Internal system	Not Used	Not Used	Not Used	Not used	Not Used	Not Used	Not Used	Not Used	☹	Not Used
9	No restrictions to bathing or shellfish gathering in river or the sea due to leaks or overflows from the reticulated sewerage systems	Internal system	Not used	Not used	☹	Not used	Not used	Not used	Not used	Not used	Not used	Not used
10	Frequency of system blockages less than (x) per 100km of sewer per annum	Customer complaints	☹	Not used	Not used	Not used	Not used	😐	☺	Not used	Not used	😐
11	No more than (x) blockages per year at a specific location	Customer service requests	☹	Not used	Not used	Not used	😐	Not used	Not used	Not used	Not used	Not used
12	No more than (x) sewer collapses or breakages per 100km of sewer main per year	Customer service requests	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used	Not used
13	To maintain asset capacity & integrity, renewals expenditure compared with depreciation provision to remain the same over time	Internal system	Not Used	Not Used	☹	Not used	Not Used	Not Used	Not Used	Not Used	😐	Not Used
14	Number of failing on-site treatment systems	Customer service requests	Not Used	Not Used	Not Used	Not used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used

Appendix A: Wastewater

Asset Description and Condition
Q6a Level of future renewals and maintenance

All $ in $,000s

	Cost Type	Data Source	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	SUBTOTALS
Hamilton City Council	O&M	AMP	$ 11,862	$ 16,102	$ 18,552	$ 17,254	$ 18,028	$ 18,674	$ 19,327	$ 9,855	$ 10,256	$ 10,615	**$ 150,525**
Hamilton City Council	Renewals	AMP	$ 2,636	$ 3,226	$ 4,449	$ 4,455	$ 5,517	$ 6,298	$ 6,354	$ 6,570	$ 6,641	$ 6,241	**$ 52,386**
Hamilton City Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**$ -**
Hamilton City Council	Renewals	LTCCP	$ 3,886	$ 3,433	$ 4,382	$ 4,386	$ 5,434	$ 6,201	$ 6,254	$ 6,470	$ 6,543	$ 6,152	**$ 53,139**
Waimakariri District Council	Maintenance	AMP	$ 931	$ 828	$ 492	$ 488	$ 571	$ 546	$ 493	$ 562	$ 601	$ 544	**$ 6,056**
Waimakariri District Council	Renewals	AMP	$ 508	$ 576	$ 314	$ 498	$ 535	$ 304	$ 314	$ 360	$ 371	$ 481	**$ 4,259**
Waimakariri District Council	Direct operating	LTCCP	$ 931	$ 828	$ 492	$ 488	$ 571	$ 546	$ 493	$ 562	$ 601	$ 544	**$ 6,056**
Waimakariri District Council	Renewals	LTCCP	$ 508	$ 399	$ 301	$ 514	$ 552	$ 314	$ 324	$ 371	$ 402	$ 497	**$ 4,182**
Far North District Council	O&M	AMP	$ 3,550	$ 3,698	$ 3,873	$ 4,002	$ 4,122	$ 4,434	$ 4,632	$ 4,798	$ 4,972	$ 5,169	**$ 43,250**
Far North District Council	Renewals	AMP	$ 828	$ 686	$ 566	$ 591	$ 925	$ 525	$ 525	$ 525	$ 525	$ 527	**$ 6,224**
Far North District Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**$ -**
Far North District Council	Renewals	LTCCP	$ 1,035	$ 1,150	$ 1,000	$ 750	$ 750	$ 830	$ 750	$ 750	$ 750	$ 750	**$ 8,515**
Hastings District Council	Maintenance	AMP											
Hastings District Council	Renewals	AMP											
Hastings District Council	Maintenance	LTCCP											
Hastings District Council	Renewals	LTCCP	$ 1,900	$ 2,384	$ 4,037	$ 2,845	$ 2,859	$ 3,592	$ 2,159	$ 3,283	$ 3,907	$ 4,188	**$ 31,154**
Marlborough District Council	O&M	AMP	$ 2,060	$ 2,181	$ 2,458	$ 2,659	$ 2,867	$ 2,936	$ 3,139	$ 3,166	$ 3,275	$ 3,460	**$ 28,201**
Marlborough District Council	Renewals	AMP	$ 830	$ 9,278	$ 90	$ 76	$ 138	$ 128	$ 146	$ 46	$ 557	$ 202	**$ 11,493**
Marlborough District Council	Operating costs	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**$ -**
Marlborough District Council	Renewals	LTCCP	$ 409	$ 9,235	$ 74	$ 169	$ 149	$ 146	$ 46	$ 557	$ 201	$ 26	**$ 11,012**
Palmerston North City Council	Maintenance	AMP	$ 825	$ 825	$ 825	$ 825	$ 825	$ 825	$ 825	$ 825	$ 825	$ 825	**$ 8,250**
Palmerston North City Council	Renewals	AMP	$ 1,180	$ 1,180	$ 730	$ 730	$ 730	$ 580	$ 580	$ 580	$ 580	$ 900	**$ 7,770**
Palmerston North City Council	O&M	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Palmerston North City Council	Renewals	LTCCP	$ 1,130	$ 1,216	$ 773	$ 794	$ 821	$ 671	$ 694	$ 716	$ 739	$ 1,118	**$ 8,672**
Clutha District Council	Maintenance	AMP	$ 74	$ 74	$ 74	$ 74	$ 74	$ 74	$ 74	$ 74	$ 104	$ 104	**$ 798**
Clutha District Council	Renewals	AMP	$ 25	$ 15	$ 15	$ 20	$ 15	$ 15	$ -	$ -	$ -	$ -	**$ 106**
Clutha District Council	O&M	LTCCP	$ 74	$ 74	$ 74	$ 74	$ 74	$ 74	$ 74	$ 74	$ 104	$ 104	**$ 798**
Clutha District Council	Maintenance	LTCCP	$ 25	$ 15	$ 15	$ 20	$ 15	$ 15	$ -	$ -	$ -	$ -	**$ 106**
Hauraki District Council	O&M	AMP	$ 1,095	$ 1,096	$ 1,180	$ 1,234	$ 1,259	$ 1,243	$ 1,275	$ 1,331	$ 1,349	$ 1,489	**$ 12,551**
Hauraki District Council	Renewals	AMP	$ 853	$ 673	$ 793	$ 1,168	$ 641	$ 906	$ 701	$ 584	$ 949	$ 874	**$ 8,142**
Hauraki District Council	Maintenance	LTCCP	$ 1,095	$ 1,096	$ 1,180	$ 1,234	$ 1,259	$ 1,243	$ 1,275	$ 1,331	$ 1,349	$ 1,489	**$ 12,551**
Hauraki District Council	Renewals	LTCCP	$ 853	$ 673	$ 793	$ 1,168	$ 641	$ 906	$ 701	$ 584	$ 949	$ 874	**$ 8,142**
Wairoa District Council	Maintenance	AMP											**$ -**
Wairoa District Council	Renewals	AMP	$ 34	$ 35	$ 183	$ 46	$ 72	$ 49	$ 76	$ 51	$ 52	$ 53	**$ 651**
Wairoa District Council	Operational	LTCCP	$ 333	$ 265	$ 332	$ 404	$ 434	$ 427	$ 439	$ 454	$ 467	$ 482	**$ 4,038**
Wairoa District Council	Renewals	LTCCP	$ 280	$ 44	$ 183	$ 46	$ 72	$ 49	$ 76	$ 51	$ 52	$ 53	**$ 906**
Westland District Council	Operating costs	AMP	$ 352	$ 408	$ 433	$ 446	$ 460	$ 475	$ 491	$ 507	$ 524	$ 543	**$ 4,638**
Westland District Council	Renewals	AMP	$ -	$ 409	$ 106	$ 1,197	$ 112	$ 116	$ 120	$ 124	$ 384	$ 397	**$ 2,964**
Westland District Council	Maintenance	LTCCP											
Westland District Council	Renewals	LTCCP	$ -	$ 409	$ 106	$ 979	$ 112	$ 116	$ 120	$ 124	$ 384	$ 397	**$ 2,746**

Appendix A: Wastewater

Q6b Comparison of level of future renewals and maintenance with remaining useful lives and asset values

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Year of Data	2007 (PS and retic.) & 2009 (plant)	30-Jun-08	30-Jun-08	30-Jun-09	30-Jun-08	30-Jun-08	1-Jul-09	1-Jul-08	30-Jun-08	30-Jun-09
Replacement cost	$ 364,214,053	$ 117,173,711	$ 132,692,015	$ 279,147,914	$ 148,169,229	$177,380,532	$ 48,418,069	$ 60,661,000	$ 20,542,000	$ 21,827,405
Depreciated Replacement cost	$ 224,843,255	$ 91,501,761	$ 87,893,091	$ 150,799,899	$ 96,933,906	$106,622,994	$ 30,215,442	$ 36,259,000	$ 9,765,000	$ 12,523,457
Annual Depreciation	$ 5,439,864	$ 1,546,308	$ 2,778,527	$ 4,333,911	$ 1,777,702	$ 1,646,612	$ 557,121	$ 1,091,000	$ 299,000	$ 338,010
Maintenance cost (2009/10)	only O&M provided	$ 931,370	operating costs	operational costs	O&M	$ 2,536,000	$ 73,800	O&M	Not available	Operating costs
Overall weighted average useful life (years)	67	76	48	64	83	108	87	56	69	65
Average % of maintenance		0.79%				1.43%	0.15%			
Remaining useful life (years)	41	59	32	35	55	65	54	33	33	37
Theoretical Long Term Renewal Investmer	1.49%	1.32%	2.09%	1.55%	1.20%	0.93%	1.15%	1.80%	1.46%	1.55%

Appendix A: Wastewater

Asset Description and Condition
Q7a Overall level of capex from LTCCP

All $ in $,000s

	Capital Expenditure Type	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	SUBTOTALS
Hamilton City Council	Renewals	$ 3,886	$ 3,433	$ 4,382	$ 4,386	$ 5,434	$ 6,201	$ 6,254	$ 6,470	$ 6,543	$ 6,152	$ 53,139
Hamilton City Council	New - LoS & Growth	$ 11,687	$ 9,094	$ 10,956	$ 1,795	$ 5,702	$ 1,612	$ 2,722	$ 1,831	$ 2,941	$ 2,418	$ 50,758
Hamilton City Council	**Total Capex**	**$ 15,572**	**$ 12,527**	**$ 15,339**	**$ 6,181**	**$ 11,136**	**$ 7,812**	**$ 8,976**	**$ 8,301**	**$ 9,483**	**$ 8,570**	**$ 103,898**
Waimakariri District Council	Renewals	$ 508	$ 399	$ 301	$ 514	$ 552	$ 314	$ 324	$ 371	$ 402	$ 497	$ 4,182
Waimakariri District Council	New - LoS & Growth	$ 1,203	$ 326	$ 1,280	$ 1,321	$ 3,399	$ 707	$ 3,864	$ -	$ 1,034	$ -	$ 13,134
Waimakariri District Council	**Total Capex**	**$ 1,711**	**$ 725**	**$ 1,581**	**$ 1,835**	**$ 3,951**	**$ 1,021**	**$ 4,188**	**$ 371**	**$ 1,436**	**$ 497**	**$ 17,316**
Far North District Council	Renewals	$ 1,035	$ 1,150	$ 1,000	$ 750	$ 750	$ 830	$ 750	$ 750	$ 750	$ 750	$ 8,515
Far North District Council	New - Level of Service	$ 11,361	$ 8,320	$ 6,215	$ 8,406	$ 7,626	$ 3,645	$ 250	$ 1,881	$ 1,784	$ 3,577	$ 53,064
Far North District Council	**Total Capex**	**$ 12,396**	**$ 9,470**	**$ 7,215**	**$ 9,156**	**$ 8,376**	**$ 4,475**	**$ 1,000**	**$ 2,631**	**$ 2,534**	**$ 4,327**	**$ 61,579**
Hastings District Council	Renewals	$ 1,900	$ 2,384	$ 4,037	$ 2,845	$ 2,859	$ 3,592	$ 2,159	$ 3,283	$ 3,907	$ 4,188	$ 31,154
Hastings District Council	New - LoS & Growth	$ 2,354	$ 3,210	$ 1,819	$ 2,019	$ 214	$ 186	$ 1,588	$ 472	$ 202	$ 1,939	$ 14,003
Hastings District Council	**Total Capex**	**$ 4,254**	**$ 5,594**	**$ 5,856**	**$ 4,864**	**$ 3,073**	**$ 3,778**	**$ 3,747**	**$ 3,755**	**$ 4,109**	**$ 6,127**	**$ 45,157**
Marlborough District Council	Renewals	$ 409	$ 9,235	$ 74	$ 169	$ 149	$ 146	$ 46	$ 557	$ 201	$ 26	$ 11,012
Marlborough District Council	New - LoS & Growth	$ 5,703	$ 12,314	$ 11,164	$ 8,159	$ 7,120	$ 16,478	$ 3,696	$ 5,394	$ 7,319	$ 14,408	$ 91,755
Marlborough District Council	**Total Capex**	**$ 6,112**	**$ 21,549**	**$ 11,238**	**$ 8,328**	**$ 7,269**	**$ 16,624**	**$ 3,742**	**$ 5,951**	**$ 7,520**	**$ 14,434**	**$ 102,767**
Palmerston North City Council	Renewals	$ 1,130	$ 1,216	$ 773	$ 794	$ 821	$ 671	$ 694	$ 716	$ 739	$ 1,118	$ 8,672
Palmerston North City Council	Level of Service	$ 230	$ 464	$ 2,330	$ 3,480	$ 3,370	$ 81	$ 84	$ 86	$ 89	$ 132	$ 10,346
Palmerston North City Council	Growth/Demand	$ 200	$ 206	$ 212	$ 1,848	$ 225	$ 231	$ 239	$ 2,714	$ 255	$ 263	$ 6,393
Palmerston North City Council	Total Capex	**$ 1,560**	**$ 1,886**	**$ 3,315**	**$ 6,122**	**$ 4,416**	**$ 983**	**$ 1,017**	**$ 3,516**	**$ 1,083**	**$ 1,513**	**$ 25,411**
Clutha District Council	Renewals	$ 25	$ 15	$ 15	$ 20	$ 15	$ 15	$ -	$ -	$ -	$ -	$ 106
Clutha District Council	New - LoS & Growth	$ 3,354	$ 3,116	$ 1,284	$ -	$ 145	$ 567	$ 423	$ 2,112	$ 1,442	$ -	$ 12,443
Clutha District Council	**Total Capex**	**$ 3,379**	**$ 3,131**	**$ 1,300**	**$ 20**	**$ 161**	**$ 582**	**$ 423**	**$ 2,112**	**$ 1,442**	**$ -**	**$ 12,549**
Hauraki District Council	Renewals	$ 853	$ 673	$ 793	$ 1,168	$ 641	$ 906	$ 701	$ 584	$ 949	$ 874	$ 8,142
Hauraki District Council	New - Level of Service	$ 1,176	$ 580	$ 296	$ 139	$ 167	$ 212	$ 36	$ 22	$ 68	$ 159	$ 2,855
Hauraki District Council	New - Growth	$ 437	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 437
Hauraki District Council	**Total Capex**	**$ 2,466**	**$ 1,253**	**$ 1,089**	**$ 1,307**	**$ 808**	**$ 1,118**	**$ 737**	**$ 606**	**$ 1,017**	**$ 1,033**	$ 11,434
Wairoa District Council	Renewals	$ 280	$ 266	$ 183	$ 46	$ 72	$ 49	$ 76	$ 51	$ 52	$ 53	$ 1,127
Wairoa District Council	New - LoS & Growth	$ -	$ 3,083	$ 4,830	$ -	$ -	$ 346	$ -	$ -	$ -	$ -	$ 8,259
Wairoa District Council	**Total Capex**	**$ 280**	**$ 3,349**	**$ 5,013**	**$ 46**	**$ 72**	**$ 394**	**$ 76**	**$ 51**	**$ 52**	**$ 53**	**$ 9,386**
Westland District Council	Renewals	**$ -**	**$ 409**	**$ 106**	**$ 979**	**$ 112**	**$ 116**	**$ 120**	**$ 124**	**$ 384**	**$ 397**	$ 2,746
Westland District Council	New - LoS & Growth	**$ 130**	**$ 5,360**	**$ -**	**$ 1,305**	**$ -**	**$ -**	**$ 5,988**	**$ -**	**$ -**	**$ -**	$ 12,782
Westland District Council	**Total Capex**	**$ 130**	**$ 5,769**	**$ 106**	**$ 2,284**	**$ 112**	**$ 116**	**$ 6,107**	**$ 124**	**$ 384**	**$ 397**	**$ 15,528**

Appendix A: Stormwater

Asset Description and Condition
Q1 Scale of the assets

Stormwater	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Date of data	2008	2009	2009	2008	2008	2008	2006	2009	2006	209
# of stormwater schemes	1	11	23	Not Available	7	2	9	6	2	15
Population served	141,500	40,113	22,382	Not Available	44,000	79,300	9,320	11,400	8,481	5,684
Length of pipes (km)	612	132	109	360	150	255	40	80	36	52
Length of open channel (km)	90	482	32	22	0.4	36	17	41	26	7
# of pump stations	0	8	1	19	3	16	4	2	0	4
# of treatment devices	0	10	0	Not Available	0	0	0	0	0	0
Comments				32,000 properties served				Urban stormwater only, excludes land drainage assets of floodgates and stopbanks	Reconciliation needs to occur between stormwater assets in roading and in stormwater	

Appendix A: Stormwater

Asset Description and Condition
Q2 Value and Replacement Value of the assets

Stormwater Values	Date of value	Replacement cost/value (RC or ORC)	Depreciated Replacement cost/value (DRC or ODRC)	Annual depreciation	Comments
Hamilton City Council	1-Jul-07	$ 384,133,218	$ 262,539,024	$ 4,074,298	
Waimakariri District Council	30-Jun-08	$ 33,162,171	$ 28,779,851	$ 251,751	
Far North District Council	30-Jun-08	$ 44,903,446	$ 32,620,309	$ 461,860	
Hastings District Council	30-Jun-09	$ 282,732,993	$ 181,488,873	$ 2,626,063	
Marlborough District Council	30-Jun-08	$ 79,300,805	$ 59,659,898	$ 879,616	
Palmerston North City Council	1-Jul-08	$ 149,926,073	$ 117,135,360	$ 956,555	
Clutha District Council	1-Jul-09	$ 16,103,271	$ 8,007,351	$ 169,778	
Hauraki District Council	1-Jul-08	$ 39,304,000	$ 29,549,000	$ 363,000	Only urban reticulation excludes land drainage assets of rural drains, floodgates, stopbanks and pump stations
Wairoa District Council	30-Jun-08	$ 19,551,000	$ 5,105,000	$ 194,000	Reconciliation needs to occur between stormwater assets in roading and in stormwater
Westland District Council	30-Jun-09	$ 23,764,711	$ 13,815,871	$ 298,545	

Appendix A: Stormwater

Asset Description and Condition
Q3a Condition of the assets

Stormwater	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Condition grading description	1=Excellent, 2=Good, 3=Moderate, 4=Poor, 5= Fail	Condition score based on % of life elapsed 1 = 0% - 29% of asset life reached 2 = 30% - 49%, 3 = 50% - 69%, 4 = 70% - 89%, 5 = 90% -109%, 5+ = 110% or more of asset life reached	Not assessed	Not assessed	Not assessed	1=Excellent, 2=Good, 3=Moderate, 4=Poor, 5= Very Poor	1 = Very good, 2 = Good, 3 = Fair, 4 = Poor, 5 = Very poor	1=Very Good, 2=Good, 3=Moderate, 4=Poor, 5=Very Poor	NZIAMM Rating 1= Sound, 2=Acceptable, 3= significant deterioration. 4= Failure likely short term, 5= Failed or failure imminent	1=Excellent, 2=Good, 3=Fair, 4=Poor, 5= Very Poor
Pipes	1	1	Not assessed	Not assessed	Not assessed	2	3	2	1	3
Open channel	Not Assessed	Not assessed	Not assessed	Not assessed	Not assessed	2	3	2	Condition not assessed	Not reported
Pump stations	Not Applicable	3	Not assessed	Not assessed	Not assessed	2	2.5	1.5	Not Applicable	2
Treatment devices	Not Applicable	Not assessed	Not assessed	Not assessed	Not assessed	Not Applicable		Not Applicable	Not Applicable	Not applicable
Comments	The condition of HDC stormwater assets is commented on in their AMP as generally good.	Also use a criticality rating for pipes based on % through useful life. One rating provided for all above ground assets (rating 2). Above-ground assets (Plant) are visited on a scheduled program by WDC staff and any condition deterioration with the potential of service failure will be detected in time. Ponds and open channels are not assessed as not depreciated		HDC need to commence a condition inspection programme as the first of their ageing assets will be within the last 10% of remaining life. This will confirm their initial assessment based on age profiles alone.	A formalised system of scoring and ranking asset condition has not yet been developed but improved data capture and retrieval will be incorporated into the next generation of asset management information system. The most significant and reliable factor affecting performance of pipes in the reticulation is age. The age profile data is reasonably good and has proved satisfactory for expenditure planning. Additional data is collected during routine maintenance and inspections to detect specific condition issues.		A subsequent comprehensive CCTV condition assessment has identified that most drains are in average to good condition for their age, which generally confirms the assessed ratings with increased confidence.	condition assessment of underground assets is fair, although dated, and not updated regularly. Improvement programmes for performing regular condition assessments are in place. New Asset Information Management System (AIMS) is being implemented.		

Appendix A: Stormwater

Q3b Risks associated with poor condition assets

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Risks relating to poor condition assets identified in AMP	Risks identified in AMP include "Major Assets will fail" and "Blockages may result in excessive local flooding"	Use a criticality rating for pipes based on % through useful life but district wide averages not available.	AMP Risk section identifies risk from breaks in the pipe network caused by tree roots, pipe decay, geological failure or poor construction (but nothing related to the condition of specific assets).	Not identified in draft AMP.	No Summary risk table provided in AMP	Poor condition of pipes <2m causing flooding	No Summary risk table provided in AMP	AMP identifies a theoretical risk "Blocked drains prior to storm events causing flooding of houses and properties." Historically, no houses flooded from mains blockages. Property flooding generally due to insufficient capacity	Risk framework developed but not yet populated with WDC risks.	AMP identifies as high risk "Stormwater flooding due to pump failures" but this is a theoretical risk at the moment as no instances have yet occurred.
Comments on poor condition assets	Major performance issues are used in the renewal decision making process. Council are embarking on a criticality exercise for stormwater assets in 2010/11 to include criticality risks into their decision making process.			Little or no condition rating has been undertaken on stormwater assets. There are no major pump stations within HDC network. Small discrete pumping is provided to alleviate localised capacity issues. Some areas are below the stated LoS and upgrading has been implemented through the roading programme to increase pipe capacity as opportunities arise.	There is no significant performance issues related to the asset condition at this time.	Bank scour damage causing floding and property damage		Insufficient maintenance of open drains (Waihi), causing flooding of houses and properties	AMP doesn't identify any areas of high risk.	

Appendix A: Stormwater

Asset Description and Condition
Q4 Relationship between condition assessment and observed state of the assets

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Comments	Council are embarking on a criticality exercise for stormwater assets in 2010/11 to include criticality risks into their decision making process.	Observed state of assets is not reported but Council planning to start CCTV of stormwater pipes.	Observed state of assets is not reported	Neither condition nor observed state of assets is reported. There have been no identified issues relating to asset deterioration.	Observed state of assets is not reported but there are no significant performance issues related to the asset condition at this time.	Observed state of assets is not reported	The condition grading is generally in the 2 - 3 range (i.e. good - fair) but the observed state of assets is not reported	Observed state of assets is not reported	AMP states " The assets appear to be in good condition and performing reliably, therefore there is no indication that any significant increase in maintenance funding is planned at this time".	Observed state of assets is not reported

Appendix A: Stormwater

Asset Description and Condition
Q5a PMs used
This table only includes the condition related PMs from the NAMS Level of Service Manual

Level of Service	Customer or technical PM	Condition Related PMs from the NAMS Level of Service Manual	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
A reliable service is provided	Technical	Risk assessment undertaken and adopted. Residual risks identified and appropriate management and response plans adopted	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used

Appendix A: Stormwater

Q5b How are PMs measured?

Q5c Comparison of actual performance to projected performance

Q5d Reporting of Results to Customers

Actual Performance	
☺	Better than target
😐	On target
☹	Not meeting target or not measured

This table includes the condition related PMs from the NAMS Level of Service Manual (listed first) followed by a collation of condition related PMs used by the 10 councils

#	Measures (as per Annual report, AMP and LTCCP)	How Measured	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
1	Risk assessment undertaken and adopted. Residual risks identified and appropriate management and response plans adopted	Internal system	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
2	Number of reported blockages in stormwater drains and structures annually	Internal system	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	☹	Not Used	Not Used
3	Number of blockages per km of stormwater mains annually	Internal system	Not Used	Not Used	Not Used	Not Used	☺	Not Used	☹	Not Used	Not Used	Not Used
4	Number of reported blockages/failures (collapses or replacement of assets) in stormwater pipes	Service request database	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	☹	Not Used	Not Used
5	Blockages cleared within x hour of reporting	Customer complaints	Not Used	Not Used	Not Used	☹	Not Used	Not Used	Not Used	Not Used	Not Used	😐
6	Number of flooding events affecting a single property less than (x) per year caused by drain collapse or blockage	Customer complaints	Not Used	Not Used	Not Used	Not Used	Not Used	☺	Not Used	Not Used	Not Used	Not Used
7	Total number of flooding incidents affecting properties less than (x) per year caused by drain collapse or blockage	Customer complaints	Not Used	Not Used	Not Used	Not Used	Not Used	☺	Not Used	Not Used	Not Used	Not Used
8	Number of known incidences of flooding during the past year in total and by type reducing over time	Customer complaints	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	☹	Not Used
9	No surface flooding with an X year return period causing nuisance to residential property, commercial and industrial buildings.	Customer complaints	Not Used	☹	Not Used	Not Used	Not Used	☺	☹	Not Used	Not Used	Not Used
10	To maintain asset capacity & integrity, renewals expenditure compared with depreciation provision to remain the same over time	Internal system	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	😐	Not Used

Appendix A: Stormwater

Asset Description and Condition
Q6a Level of future renewals and maintenance

All $ in $,000s

	Cost Type	Data Source	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	SUBTOTALS
Hamilton City Council	O&M	AMP	$ 1,981	$ 1,865	$ 1,997	$ 2,075	$ 2,089	$ 2,147	$ 2,268	$ 2,312	$ 2,511	$ 2,611	**$ 21,856**
Hamilton City Council	Renewals	AMP	$ 538	$ 568	$ 600	$ 634	$ 666	$ 344	$ 359	$ 378	$ 397	$ 417	**$ 4,901**
Hamilton City Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**$ -**
Hamilton City Council	Renewals	LTCCP	$ 538	$ 559	$ 591	$ 895	$ 935	$ 626	$ 651	$ 679	$ 391	$ 411	**$ 6,276**
Waimakariri District Council	Maintenance	AMP	$ 382	$ 343	$ 393	$ 447	$ 466	$ 474	$ 483	$ 497	$ 513	$ 527	**$ 4,526**
Waimakariri District Council	Renewals	AMP	$ 3	$ 145	$ 86	$ 173	$ 119	$ 79	$ 97	$ 84	$ 87	$ 89	**$ 960**
Waimakariri District Council	Maintenance	LTCCP	$ 382	$ 343	$ 393	$ 447	$ 466	$ 474	$ 483	$ 497	$ 513	$ 527	**$ 4,526**
Waimakariri District Council	Renewals	LTCCP	$ 73	$ 86	$ 173	$ 116	$ 155	$ 207	$ 84	$ 87	$ 89	$ 66	**$ 1,136**
Far North District Council	Operating costs	AMP	$ 901	$ 931	$ 955	$ 979	$ 1,002	$ 1,027	$ 1,052	$ 1,079	$ 1,108	$ 1,137	**$ 10,169**
Far North District Council	Renewals	AMP	$ 300	$ 300	$ 300	$ 400	$ 400	$ 400	$ 400	$ 400	$ 400	$ 400	**$ 3,700**
Far North District Council	Operating costs	LTCCP	$ 540	$ 558	$ 571	$ 585	$ 599	$ 613	$ 628	$ 643	$ 659	$ 675	**$ 6,071**
Far North District Council	Renewals	LTCCP	$ 300	$ 300	$ 300	$ 400	$ 400	$ 400	$ 400	$ 400	$ 400	$ 400	**$ 3,700**
Hastings District Council	Maintenance	AMP											**$ -**
Hastings District Council	Renewals	AMP											**$ -**
Hastings District Council	Maintenance	LTCCP											**$ -**
Hastings District Council	Renewals	LTCCP	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
Marlborough District Council	Maintenance	AMP	$ 151	$ 157	$ 162	$ 166	$ 171	$ 176	$ 182	$ 188	$ 194	$ 201	**$ 1,747**
Marlborough District Council	Renewals	AMP	$ 140	$ 71	$ 75	$ 77	$ 77	$ 80	$ 82	$ 85	$ 88	$ 91	**$ 867**
Marlborough District Council	Maintenance	LTCCP	$ 151	$ 157	$ 162	$ 166	$ 171	$ 176	$ 182	$ 188	$ 194	$ 201	**$ 1,747**
Marlborough District Council	Renewals	LTCCP	$ 140	$ 71	$ 76	$ 77	$ 77	$ 80	$ 83	$ 85	$ 88	$ 91	**$ 868**
Palmerston North City Council	Maintenance	AMP	$ 280	$ 280	$ 280	$ 285	$ 295	$ 305	$ 315	$ 315	$ 320	$ 320	**$ 2,995**
Palmerston North City Council	Renewals	AMP	$ 770	$ 770	$ 770	$ 170	$ 170	$ 170	$ 170	$ 170	$ 170	$ 170	**$ 3,500**
Palmerston North City Council	O&M	LTCCP	$ 3,436	$ 3,623	$ 3,649	$ 3,711	$ 3,968	$ 4,066	$ 4,127	$ 4,373	$ 4,434	$ 4,395	**$ 39,782**
Palmerston North City Council	Renewals	LTCCP	$ 670	$ 691	$ 815	$ 185	$ 190	$ 197	$ 204	$ 210	$ 216	$ 224	**$ 3,602**
Clutha District Council	Maintenance	AMP	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 71
Clutha District Council	Renewals	AMP	$ 10	$ -	$ -	$ -	$ -	$ 31	$ -	$ -	$ -	$ -	**$ 41**
Clutha District Council	O&M	LTCCP	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	**$ 71**
Clutha District Council	Renewals	LTCCP	$ 10	$ -	$ -	$ -	$ -	$ 31	$ -	$ -	$ -	$ -	**$ 41**
Hauraki District Council	O&M	AMP	$ 231	$ 240	$ 241	$ 247	$ 254	$ 260	$ 267	$ 274	$ 281	$ 290	**$ 2,586**
Hauraki District Council	Renewals	AMP	$ 27	$ 80	$ 29	$ 321	$ 218	$ 225	$ 234	$ 243	$ 252	$ 260	**$ 1,889**
Hauraki District Council	O&M	LTCCP	$ 231	$ 240	$ 241	$ 247	$ 254	$ 260	$ 267	$ 274	$ 281	$ 290	**$ 2,586**
Hauraki District Council	Renewals	LTCCP	$ 27	$ 80	$ 29	$ 321	$ 218	$ 225	$ 234	$ 243	$ 252	$ 260	**$ 1,889**
Wairoa District Council	Maintenance	AMP	$ 68	$ 68	$ 68	$ 68	$ 68	$ 68	$ 68	$ -	$ -	$ -	**$ 473**
Wairoa District Council	Renewals	AMP	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
Wairoa District Council	O&M	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**$ -**
Wairoa District Council	Renewals	LTCCP	$ 50	$ 22	$ 23	$ 23	$ 24	$ 24	$ 25	$ 25	$ 26	$ 27	**$ 269**
Westland District Council	Operating costs	AMP	$ 131	$ 135	$ 139	$ 144	$ 148	$ 153	$ 158	$ 163	$ 169	$ 175	**$ 1,515**
Westland District Council	Renewals	AMP	$ -	$ 205	$ 106	$ 109	$ 235	$ 116	$ 120	$ 124	$ 141	$ 397	**$ 1,551**
Westland District Council	Maintenance	LTCCP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**$ -**
Westland District Council	Renewals	LTCCP	**$ -**	**$ 205**	**$ 106**	**$ 109**	**$ 224**	**$ 116**	**$ 120**	**$ 124**	**$ 128**	**$ 397**	$ 1,527

Appendix A: Stormwater

Q6b Comparison of level of future renewals and maintenance with remaining useful lives and asset values

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Year of Data	1-Jul-07	39629	30-Jun-08	39994	39629	1-Jul-08	1-Jul-09	1-Jul-08	30-Jun-08	30-Jun-09
Replacement cost	$ 384,133,218	$ 33,162,171	$ 44,903,446	$ 282,732,993	$ 79,300,805	$ 149,926,073	$ 16,103,271	$ 39,304,000	$ 19,551,000	$ 23,764,711
Depreciated Replacement cost	$ 262,539,024	$ 28,779,851	$ 32,620,309	$ 181,488,873	$ 59,659,898	$ 117,135,360	$ 8,007,351	$ 29,549,000	$ 5,105,000	$ 13,815,871
Annual Depreciation	$ 4,074,298	$ 251,751	$ 461,860	$ 2,626,063	$ 879,616	$ 956,555	$ 169,778	$ 363,000	$ 194,000	$ 298,545
Maintenance cost (2009/10)	O&M	$ 382,340	Operating costs	Not available	$ 150,500	$ 280,000	$ 7,073	only O&M avai	$ 67,500	Operating costs
Overall weighted average useful life (years)	94	132	97	108	90	157	95	108	101	80
Average % of maintenance		1.15%			0.19%	0.19%	0.04%		0.35%	
Remaining useful life (years)	64	114	71	69	68	122	47	81	26	46
Theoretical Long Term Renewal Investment %	1.06%	0.76%	1.03%	0.93%	1.11%	0.64%	1.05%	0.92%	0.99%	1.26%

Appendix A: Stormwater

Asset Description and Condition
Q7a Overall level of capex

All $ in $,000s

	Capital Expenditure Type	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	SUBTOTALS
Hamilton City Council	Renewals	$ 538	$ 559	$ 591	$ 895	$ 935	$ 626	$ 651	$ 679	$ 391	$ 411	$ 6,276
Hamilton City Council	LoS & Growth/Demand	$ 594	$ 5,134	$ 7,423	$ 7,981	$ 9,090	$ 6,740	$ 10,491	$ 2,214	$ 11,524	$ 1,360	$ 62,549
Hamilton City Council	**Total Capex**	**$ 1,132**	**$ 5,693**	**$ 8,013**	**$ 8,876**	**$ 10,025**	**$ 7,366**	**$ 11,141**	**$ 2,893**	**$ 11,915**	**1771.3**	**$ 68,826**
Waimakariri District Council	Renewals	$ 73	$ 86	$ 173	$ 116	$ 155	$ 207	$ 84	$ 87	$ 89	66	$ 1,136
Waimakariri District Council	LoS & Growth/Demand	$ 10,302	$ 333	$ 1,668	$ 4,582	$ 5,100	$ 1,874	$ 1,524	$ 903	$ 1,019	692	$ 27,997
Waimakariri District Council	**Total Capex**	**$ 10,375**	**$ 419**	**$ 1,841**	**$ 4,698**	**$ 5,255**	**$ 2,081**	**$ 1,608**	**$ 990**	**$ 1,108**	**758**	**$ 29,133**
Far North District Council	Renewals	**$ 300**	300	300	400	400	400	400	400	400	400	$ 3,700
Far North District Council	LoS & Growth/Demand	**$ 1,670**	**$ 1,487**	**$ 650**	**$ 350**	**$ 250**	**$ 200**	**$ 300**	**$ 200**	**$ 200**	**200**	$ 5,507
Far North District Council	**Total Capex**	**$ 1,970**	**$ 1,787**	**$ 950**	**$ 750**	**$ 650**	**$ 600**	**$ 700**	**$ 600**	**$ 600**	**600**	**$ 9,207**
Hastings District Council	Renewals	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	$ -
Hastings District Council	LoS & Growth/Demand	$ 3,745	$ 2,191	$ 2,280	$ 13,261	$ 3,612	$ 3,628	$ 5,693	$ 4,988	$ 4,727	$ 6,051	$ 50,176
Hastings District Council	**Total Capex**	**$ 3,745**	**$ 2,191**	**$ 2,280**	**$ 13,261**	**$ 3,612**	**$ 3,628**	**$ 5,693**	**$ 4,988**	**$ 4,727**	**$ 6,051**	**$ 50,176**
Marlborough District Council	Renewals	$ 140	$ 71	$ 76	$ 77	$ 77	$ 80	$ 83	$ 85	$ 88	91	$ 868
Marlborough District Council	New - LoS & Growth	$ 108	$ 1,466	$ 1,400	$ 1,224	$ 117	$ 1,288	$ 124	$ 1,388	$ 135	140	$ 7,390
Marlborough District Council	**Total Capex**	**$ 248**	**$ 1,537**	**$ 1,476**	**$ 1,301**	**$ 194**	**$ 1,368**	**$ 207**	**$ 1,473**	**$ 223**	**$ 231**	**$ 8,258**
Palmerston North City Council	Renewals	$ 670	$ 691	$ 815	$ 185	$ 190	$ 197	$ 204	$ 210	$ 216	$ 224	$ 3,602
Palmerston North City Council	Level of Service	$ 350	$ 619	$ 1,006	$ 1,850	$ 1,067	$ 1,099	$ 539	$ 431	$ 572	$ 1,119	$ 8,652
Palmerston North City Council	Growth/Demand	$ 222	$ 229	$ 235	$ 1,328	$ 249	$ 257	$ 266	$ 2,124	$ 283	$ 292	$ 5,485
Palmerston North City Council	**Total Capex**	**$ 1,242**	**$ 1,539**	**$ 2,056**	**$ 3,363**	**$ 1,506**	**$ 1,553**	**$ 1,009**	**$ 2,765**	**$ 1,071**	**$ 1,635**	**$ 17,739**
Clutha District Council	Renewals	$ 10	$ -	$ -	$ -	$ -	$ 31	$ -	$ -	$ -	$ -	$ 41
Clutha District Council	LoS & Growth/Demand	$ 1,162	$ 153	$ 26	$ 515	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,856
Clutha District Council	**Total Capex**	**$ 1,172**	**$ 153**	**$ 26**	**$ 515**	**$ -**	**$ 31**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,897**
Hauraki District Council	Renewals	$ 27	$ 80	$ 29	$ 321	$ 218	$ 225	$ 234	$ 243	$ 252	$ 260	$ 1,889
Hauraki District Council	Level of Service	$ 532	$ 408	$ 178	$ 160	$ 163	$ 130	$ 134	$ 138	$ 142	$ 154	$ 2,139
Hauraki District Council	Growth/Demand	$ 10	$ -	$ 108	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 118
Hauraki District Council	**Total Capex**	**$ 569**	**$ 488**	**$ 315**	**$ 481**	**$ 381**	**$ 355**	**$ 368**	**$ 381**	**$ 394**	**$ 414**	**$ 4,146**
Wairoa District Council	Renewals	$ 50	$ 22	$ 23	$ 23	$ 24	$ 24	$ 25	$ 25	$ 26	$ 27	$ 269
Wairoa District Council	Level of Service	$ 303	$ 110	$ 110	$ 110	$ 110	$ 110	$ 110	$ 110	$ 110	$ 110	$ 1,293
Wairoa District Council	Growth/Demand	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Wairoa District Council	**Total Capex**	**$ 353**	**$ 132**	**$ 133**	**$ 133**	**$ 134**	**$ 134**	**$ 135**	**$ 135**	**$ 136**	**$ 137**	**$ 1,562**
Westland District Council	Renewals	**$ -**	**$ 205**	**$ 106**	**$ 109**	**$ 224**	**$ 116**	**$ 120**	**$ 124**	**$ 128**	**$ 397**	$ 1,527
Westland District Council	New - LoS & Growth	**$ 190**	**$ 205**	**$ 158**	**$ 33**	**$ 11**	**$ -**	**$ -**	**$ -**	**$ 13**	**$ -**	$ 610
Westland District Council	**Total Capex**	**$ 190**	**$ 409**	**$ 264**	**$ 141**	**$ 235**	**$ 116**	**$ 120**	**$ 124**	**$ 141**	**$ 397**	**$ 2,137**

Appendix B: Survey Results for Funding

Number	Question	Comment
8a	What is the agreed level of funding for depreciation asset renewal, maintenance and development?	Quantitative analysis
8b	What rationale is given for the levels of funding observed?	Qualitative analysis
8c	How does this vary across the water, wastewater and stormwater asset groups?	Qualitative analysis
9	What is the relationship (if any) between depreciation funding and renewals? How does this impact on council budgets?	Quantitative analysis
10	What (if any) is the difference between levels of actual funding allocated, depreciation and the levels of funding identified through the asset management planning? What criteria does council use to balance or allocate these funding decisions?	Quantitative analysis
11a	When accounting for asset condition, what do the observed levels of funding say about the adequacy of infrastructure planning and funding at present? In the future?	Qualitative analysis
12a	How are funds raised to cover renewal requirements for water network infrastructure?	Quantitative analysis
12b	How are funds raised to cover new capital requirements for water network infrastructure?	Quantitative analysis
12c	Is this likely to change in the future, if so, how?	Qualitative analysis
13	What factors might change the observed situation? If so to what extent? What might the drivers for change be?	Qualitative analysis

Appendix B: Water

Q8a Agreed level of funding for asset renewal **All $ in $,000s**

Council	Label	LTCCP Renewals 10 Years	LTCCP Average Annual Renewals	Average Annual Renewals as % of latest RC	LTCCP 1st Year Renewals 2009/10	1st Year Renewals as % of latest RC	Theoretical Long Term Renewal Investment	Comment
Hamilton City Council	HAMIL	$ 38,416	$ 3,842	1.00%	$ 2,286	0.59%	1.40%	2007 & 2009 RC
Waimakariri District Council	WAIMA	$ 5,084	$ 508	0.77%	$ 416	0.63%	1.44%	
Far North District Council	FARNO	$ 6,360	$ 636	0.71%	$ 660	0.73%	2.20%	2008 RC
Hastings District Council	HASTI	$ 11,324	$ 1,132	1.13%	$ 1,464	1.46%	1.37%	
Marlborough District Council	MARLB	$ 4,740	$ 474	0.36%	$ 393	0.30%	1.45%	
Palmerston North City Council	PALME	$ 27,542	$ 2,754	1.78%	$ 2,975	1.92%	1.14%	2008 RC
Clutha District Council	CLUTH	$ 2,291	$ 229	0.28%	$ 147	0.18%	1.46%	
Hauraki District Council	HAURA	$ 9,827	$ 983	0.99%	$ 1,379	1.39%	1.79%	
Wairoa District Council	WAIRO	$ 1,862	$ 186	0.52%	$ 399	1.11%	1.56%	2008 RC
Westland District Council	WESTL	$ 3,067	$ 307	0.87%	$ 120	0.34%	1.79%	

Q8b Agreed level of funding for asset maintenance

Water Asset Maintenance **All $ in $,000s**
Define: Maintenance

Council	Label	AMP Maintenance 10 Years	AMP Average Annual maintenance	Average Annual Maintenance as % of latest RC	AMP 1st Year Maintenance	1st year Maintenance as % of latest RC	Comment
Hamilton City Council	HAMI	$ 73,090	$ 7,309	1.90%	$ 5,391	1.40%	O&M not maintenance
Waimakariri District Council	WAIMA	$ 5,241	$ 524	0.79%	$ 480	0.73%	Maintenance
Far North District Council	FARNO	$ 36,104	$ 3,610	4.01%	$ 3,384	3.75%	Operating costs not O&M nor maintenance
Hastings District Council	HASTI	$ -	$ -	0.00%	$ -	0.00%	No data provided in AMP
Marlborough District Council	MARLB	$ 38,626	$ 3,863	2.93%	$ 3,262	2.47%	O&M not maintenance
Palmerston North City Council	PALME	$ 14,941	$ 1,494	0.96%	$ 1,485	0.96%	Maintenance
Clutha District Council	CLUTH	$ 886	$ 89	0.11%	$ 90	0.11%	Maintenance
Hauraki District Council	HAURA	$ 24,895	$ 2,489	2.50%	$ 2,402	2.42%	O&M not maintenance
Wairoa District Council	WAIRO	$ -	$ -	0.00%	$ -	0.00%	Only combined O&M & renewals provided
Westland District Council	WESTL	$ 11,244	$ 1,124	3.20%	$ 1,033	2.95%	Operating costs not O&M nor maintenance

Appendix B: Water

Q9a Relationship between Depreciation Funding and Renewals

Forecast Depreciation Expense versus Forecast Asset Renewals
Water (for 10 years 2009 - 2019) All $ in $,000s

Council	Label	Renewals (LTCCP)	Depreciation (LTCCP)	Difference	Comment
Hamilton City Council	HAMIL	$ 38,416	$ 63,536	$ 25,120	Depreciation provided directly from HDC
Waimakariri District Council	WAIMA	$ 5,084	$ 13,002	$ 7,918	Forecast depreciation exceeds the renewals budget due to the relatively young age of the assets.
Far North District Council	FARNO	$ 6,360	$ 19,820	$ 13,460	Used valuation data as depreciation not separated by activity in LTCCP
Hastings District Council	HASTI	$ 11,324	$ 12,694	$ 1,370	
Marlborough District Council	MARLB	$ 4,740	$ 40,801	$ 36,061	Depreciation from Figure 5.2 of the AMP (not provided in the LTCCP)
Palmerston North City Council	PALME	$ 27,542	$ 24,027	-$ 3,515	Renewals are higher than depreciation
Clutha District Council	CLUTH	$ 2,291	$ 11,473	$ 9,182	Depreciation provided directly from CDC. Most assets are relatively young therefore nowhere near the end of their nominal lives.
Hauraki District Council	HAURA	$ 9,827	$ 25,046	$ 15,219	Not due to young pipes – it is a component of the Improvement Plan to review this matter.
Wairoa District Council	WAIRO	$ 1,862	$ 7,035	$ 5,173	
Westland District Council	WESTL	$ 3,067	$ 6,429	$ 3,362	

Appendix B: Water

Q10a Difference between levels of actual funding allocated, Depreciation and the levels of funding identified through the AMP process

AMP versus Renewals budget from LTCCP
Water (for 10 years 2009 - 2019) **All $ in $,000s**

Council	Label	Renewals (AMP)	Renewals (LTCCP)	Difference	Comment
Hamilton City Council	HAMIL	$ 39,145	$ 38,416	-$ 729	
Waimakariri District Council	WAIMA	$ 4,871	$ 5,084	$ 213	LTCCP has higher funding than AMP
Far North District Council	FARNO	$ 4,739	$ 6,360	$ 1,621	LTCCP has higher funding than AMP
Hastings District Council	HASTI	$ -	$ 11,324	$ 11,324	Renewals not Provided in AMP
Marlborough District Council	MARLB	$ 5,060	$ 4,740	-$ 320	
Palmerston North City Council	PALME	$ 25,005	$ 27,542	$ 2,537	LTCCP has higher funding than AMP
Clutha District Council	CLUTH	$ 2,531	$ 2,531	$ -	
Hauraki District Council	HAURA	$ 10,025	$ 9,827	-$ 198	
Wairoa District Council	WAIRO	$ -	$ 1,862	$ 1,862	Couldn't separate renewals from O&M
Westland District Council	WESTL	$ 3,067	$ 3,067	$ 0	

Appendix B: Water

Q12a How are funds raised for water network asset expenditure - Renewals

Funding Sources for Renewal Expenditure
Water (for 10 years 2009-2019)

Council	Label	% Funded from Revenue Streams	% Funded from Borrowing	% Funded from 3rd party sources	Comment
Hamilton City Council	HAMIL	Not available	Not available	Not available	
Waimakariri District Council	WAIMA	Not available	Not available	Not available	Renewals are funded by either development contributions and surplus funds or loan funded which is paid for by rates. Each water supply scheme will be different.
Far North District Council	FARNO	Not available	Not available	Not available	
Hastings District Council	HASTI	Not available	Not available	Not available	Targeted rate and loans by scheme.
Marlborough District Council	MARLB	100%	0%	0%	Depreciation is fully funded from rates
Palmerston North City Council	PALME	99%	1%	0%	Targeted rate (fixed charge per connection or connection availability)
Clutha District Council	CLUTH	See comment	See comment	See comment	Depreciation is always funded from the operating account, i.e. essentially from rates income. Renewals are generally funded from the depreciation reserve fund where possible; otherwise from other 'special' reserve funds or else loans. Loan funding is utilised only where depreciation reserve is insufficient.
Hauraki District Council	HAURA	100%	0%	0%	Entirely funded from depreciation P41 of LTCCP
Wairoa District Council	WAIRO	100%	0%	0%	All water capex, including renewals, is funded from Capital Funding Reserves which is sourced from rates and water sales
Westland District Council	WESTL	Not available	Not available	Not available	Generally sourced from revenue streams, i.e. rates and industrial customers

Appendix B: Water

Q12b How are funds raised for water network asset expenditure - New Capital

Funding Sources for New Capital
Water (for 10 years 2009-2019)

Council	Label	% Funded from Revenue Streams	% Funded from Development Contribution Charges	% Funded from Borrowing	% Funded from 3rd Party Sources	% Funded from Reserves	Comment
Hamilton City Council	HAMIL	Not available	Not available	Not available	Not available	Not available	
Waimakariri District Council	WAIMA	45%	0%	50%	0%	5%	page 50 the funding for the overall capex for the 10 years appears to be sourced from loans (50%), Reserves (5%) and Operating Revenue (45%)
Far North District Council	FARNO	Not available	Not available	Not available	Not available	Not available	
Hastings District Council	HASTI	Not available	Not available	Not available	Not available	Not available	From page 82 it appears that new capital ($26,810k over 10 years) is mainly funded by Development Contributions ($10,187k) with the balance from loans but this may be for past not just future
Marlborough District Council	MARLB	Not available	Not available	Not available	Not available	Not available	General funding policy on page 164 of LTCCP but not provided as %
Palmerston North City Council	PALME	0%	11%	89%	0%	0%	
Clutha District Council	CLUTH	See comment	See comment	See comment	See comment	See comment	DC's are negligible, as there is virtually zero growth forecast in Clutha District.
Hauraki District Council	HAURA	49%	2%	49%	0%	0%	Depreciation 49% DC's 2%, Loans 49%
Wairoa District Council	WAIRO	100%	0%	0%	0%	0%	All water capex, including renewals, is funded from Capital Funding Reserves which is sourced from rates and water sales
Westland District Council	WESTL	Not available	Not available	Not available	Not available	Not available	Generally sourced from revenue streams, i.e. rates and industrial customers

Appendix B: Wastewater

Q8a Agreed level of funding for asset renewal **All $ in $,000s**

Council	Label	LTCCP Renewals 10 Years	LTCCP Average Annual Renewals	Average Annual Renewals as % of latest RC	LTCCP 1st Year Renewals 2009/10	1st year Renewals as % of latest RC	Theoretical Long Term Renewal Investment	Comment
Hamilton City Council	HAMIL	$ 53,139	$ 5,314	1.46%	$ 3,886	1.07%	1.49%	2007 & 2009 RC
Waimakariri District Council	WAIMA	$ 4,182	$ 418	0.36%	$ 508	0.43%	1.32%	
Far North District Council	FARNO	$ 8,515	$ 851	0.64%	$ 1,035	0.78%	2.09%	
Hastings District Council	HASTI	$ 31,154	$ 3,115	1.12%	$ 1,900	0.68%	1.55%	
Marlborough District Council	MARLB	$ 11,012	$ 1,101	0.74%	$ 409	0.28%	1.20%	
Palmerston North City Council	PALME	$ 8,672	$ 867	0.49%	$ 1,130	0.64%	0.93%	2008 RC
Clutha District Council	CLUTH	$ 106	$ 11	0.02%	$ 25	0.05%	1.15%	
Hauraki District Council	HAURA	$ 8,142	$ 814	1.34%	$ 853	1.41%	1.80%	
Wairoa District Council	WAIRO	$ 1,127	$ 113	0.55%	$ 280	1.36%	1.46%	2008 RC
Westland District Council	WESTL	$ 2,746	$ 275	1.26%	$ -	0.00%	1.55%	

Q8b Agreed level of funding for asset maintenance

Wastewater Asset Maintenance **All $ in $,000s**
Define: Maintenance

Council	Label	AMP Maintenance 10 Years	AMP Average Annual maintenance	Average Annual Maintenance as % of latest RC	AMP 1st Year Maintenance	1st year maintenance as % of latest RC	Comment
Hamilton City Council	HAMIL	$ 150,525	$ 15,053	4.13%	$ 11,862	3.26%	O&M not maintenance
Waimakariri District Council	WAIMA	$ 6,056	$ 606	0.52%	$ 931	0.79%	Maintenance
Far North District Council	FARNO	$ 43,250	$ 4,325	3.26%	$ 3,550	2.68%	Operating costs not O&M nor maintenance
Hastings District Council	HASTI	$ -	$ -	0.00%	$ -	0.00%	
Marlborough District Council	MARLB	$ 28,201	$ 2,820	1.90%	$ 2,060	1.39%	O&M not maintenance
Palmerston North City Council	PALME	$ 8,250	$ 825	0.47%	$ 825	0.47%	Maintenance
Clutha District Council	CLUTH	$ 798	$ 80	0.16%	$ 74	0.15%	Maintenance
Hauraki District Council	HAURA	$ 12,551	$ 1,255	2.07%	$ 1,095	1.81%	O&M not maintenance
Wairoa District Council	WAIRO	$ -	$ -	0.00%	$ -	0.00%	O&M & renewals. Only 7 years provided.
Westland District Council	WESTL	$ 4,638	$ 464	2.12%	$ 352	1.61%	Operating costs not O&M nor maintenance

Appendix B: Wastewater

Q9a Relationship between Depreciation Funding and Renewals

Forecast Depreciation Expense versus Forecast Asset Renewals
Wastewater (for 10 years 2009 - 2019) **All $ in $,000s**

Council	Label	Renewals (LTCCP)	Depreciation (LTCCP)	Difference	Comment
Hamilton City Council	HAMIL	$ 53,139	$ 70,490	$ 17,351	Depreciation provided directly from HDC
Waimakariri District Council	WAIMA	$ 4,182	$ 19,004	$ 14,822	Forecast depreciation exceeds the renewals budget due to the relatively young age of the assets.
Far North District Council	FARNO	$ 8,515	$ 27,785	$ 19,270	Used valuation data as depreciation not separated by activity in LTCCP
Hastings District Council	HASTI	$ 31,154	$ 51,095	$ 19,941	
Marlborough District Council	MARLB	$ 11,012	$ 33,703	$ 22,691	Depreciation from Figure 5.3 of the AMP (not provided in the LTCCP)
Palmerston North City Council	PALME	$ 8,672	$ 22,779	$ 14,107	p167 of LTCCP
Clutha District Council	CLUTH	$ 106	$ 6,312	$ 6,206	Depreciation provided directly from CDC. Most assets are relatively young therefore nowhere near the end of their nominal lives.
Hauraki District Council	HAURA	$ 8,142	$ 13,292	$ 5,150	Not due to young pipes – it is a component of the Improvement Plan to review this matter.
Wairoa District Council	WAIRO	$ 1,127	$ 5,975	$ 4,848	Depreciation higher as still catching up to depreciation
Westland District Council	WESTL	$ 2,746	$ 3,763	$ 1,017	

Appendix B: Wastewater

Q10a Difference between levels of actual funding allocated, depreciation and the levels of funding identified through the AMP process

Forecast Renewals in AMP versus Renewals budget from LTCCP
Wastewater (for 10 years 2009 - 2019) **All $ in $,000s**

Council	Label	Renewals AMP	Renewals LTCCP	Difference	Comment
Hamilton City Council	HAMIL	$ 52,386	$ 53,139	$ 754	LTCCP has higher funding than the AMP
Waimakariri District Council	WAIMA	$ 4,259	$ 4,182	-$ 77	
Far North District Council	FARNO	$ 6,224	$ 8,515	$ 2,291	LTCCP has higher funding than the AMP
Hastings District Council	HASTI	$ -	$ 31,154	$ 31,154	Renewals not Provided in AMP
Marlborough District Council	MARLB	$ 11,493	$ 11,012	-$ 481	
Palmerston North City Council	PALME	$ 7,770	$ 8,672	$ 902	LTCCP has higher funding than AMP
Clutha District Council	CLUTH	$ 106	$ 106	$ -	
Hauraki District Council	HAURA	$ 8,142	$ 8,142	$ -	
Wairoa District Council	WAIRO	$ 651	$ 906	$ 255	Couldn't separate renewals from O&M
Westland District Council	WESTL	$ 2,964	$ 2,746	-$ 218	

Appendix B: Wastewater

Q12a How are funds raised for wastewater network asset expenditure - Renewals

Funding Sources for Renewal Expenditure
Wastewater (for 10 years 2009-2019)

Council	Label	% Funded from Revenue Streams	% Funded from Borrowing	% Funded from 3rd party sources	Comment
Hamilton City Council	HAMI	Not available	Not available	Not available	
Waimakariri District Council	WAIMA	See comment	See comment	See comment	Renewals are funded by either surplus funds or loan funded which is paid for by rates. Each wastewater scheme will be different.
Far North District Council	FARNO	Not available	Not available	Not available	
Hastings District Council	HASTI	See comment	See comment	See comment	Targeted rate and loans.
Marlborough District Council	MARLB	100%	0%	0%	Depreciation is fully funded from rates
Palmerston North City Council	PALME	100%	0%	0%	Targeted rate (fixed annual charge)
Clutha District Council	CLUTH	See comment	See comment	See comment	Depreciation is always funded from the operating account, i.e. essentially from rates income. Renewals are generally funded from the depreciation reserve fund where possible; otherwise from other 'special' reserve funds or else loans. Loan funding is utilised only where depreciation reserve is insufficient.
Hauraki District Council	HAURA	100%	0%	0%	Entirely funded from depreciation P41 of LTCCP
Wairoa District Council	WAIRO	100%	0%	0%	Page 80 of the LTCCP, renewals are entirely met from Capital Funding Reserves
Westland District Council	WESTL	See comment	See comment	See comment	Generally sourced from revenue streams, i.e. rates and industrial customers

Appendix B: Wastewater

Q12b How are funds raised for wastewater network asset expenditure - New Capital

Funding Sources for New Capital
Wastewater (for 10 years 2009-2019)

Council	Label	% Funded from Revenue Streams	% Funded from Development Contribution Charges	% Funded from Borrowing	% Funded from 3rd Party Sources	% Funded from Reserves	Comment
Hamilton City Council	HAMIL	Not available	Not available	Not available	Not available	Not available	
Waimakariri District Council	WAIMA	0%	80%	20%	0%	0%	From page 59 of LTCCP the funding is sourced from loans (20%) and Operating Revenue/DCCs (80%)
Far North District Council	FARNO	Not available	Not available	Not available	Not available	Not available	
Hastings District Council	HASTI	See comment	See comment	See comment	See comment	See comment	page 81 it appears that new capex ($14,003k over 10 years) is mainly funded from Development Contributions of $15,511k
Marlborough District Council	MARLB	Not available	Not available	Not available	Not available	Not available	General funding policy on page 164 of LTCCP but not provided as %
Palmerston North City Council	PALME	0%	16%	84%	0%	0%	
Clutha District Council	CLUTH	See comment	See comment	See comment	See comment	See comment	Loan funding (bid 697) is required where depreciation reserve is insufficient. DC's are negligible, as there is virtually zero growth forecast in Clutha District.
Hauraki District Council	HAURA	83%	17%	0%	0%	0%	P41 of LTCCP 83% from depreciation, 17% from DCCs
Wairoa District Council	WAIRO	0%	0%	44%	54%	0%	Page 80 of the LTCCP, new capital is met from loans (44%) and subsidies (54%).
Westland District Council	WESTL	See comment	See comment	See comment	See comment	See comment	Generally sourced from revenue streams, i.e. rates and industrial customers

Appendix B: Stormwater

Q8a Agreed level of funding for asset renewal **All $ in $,000s**

Council	Label	LTCCP Renewals 10 Years	LTCCP Average Annual Renewals	Average Annual Renewals as % of latest RC	LTCCP 1st Year Renewals 2009/10	1st Year Renewals as % of latest RC	Theoretical Long Term Renewal Investment	Comment
Hamilton City Council	HAMIL	$ 6,276	$ 628	0.16%	538	0.14%	1.06%	2007 RC
Waimakariri District Council	WAIMA	$ 1,136	$ 114	0.34%	73	0.22%	0.76%	
Far North District Council	FARNO	$ 3,700	$ 370	0.82%	300	0.67%	1.03%	
Hastings District Council	HASTI	$ -	$ -	0.00%	0	0.00%	0.93%	No budgeted renewals in LTCCP
Marlborough District Council	MARLB	$ 868	$ 87	0.11%	140	0.18%	1.11%	
Palmerston North City Council	PALME	$ 3,602	$ 360	0.24%	670	0.45%	0.64%	2008 RC
Clutha District Council	CLUTH	$ 41	$ 4	0.03%	10	0.06%	1.05%	
Hauraki District Council	HAURA	$ 1,889	$ 189	0.48%	27	0.07%	0.92%	
Wairoa District Council	WAIRO	$ 269	$ 27	0.14%	50	0.26%	0.99%	2008 RC
Westland District Council	WESTL	$ 1,527	$ 153	0.64%	0	0.00%	1.26%	

Q8b Agreed level of funding for asset maintenance

Stormwater Asset Maintenance **All $ in $,000s**
Define: Maintenance

Council	Label	AMP Maintenance 10 Years	AMP Average Annual maintenance	Average Annual Maintenance as % of latest RC	AMP 1st Year Maintenance	1st year maintenance as % of latest RC	Comment
Hamilton City Council	HAMIL	$ 21,856	$ 2,186	0.57%	$ 1,981	0.52%	O&M not maintenance
Waimakariri District Council	WAIMA	$ 4,526	$ 453	1.36%	$ 382	1.15%	Maintenance
Far North District Council	FARNO	$ 10,169	$ 1,017	2.26%	$ 901	2.01%	Operating costs not O&M nor maintenance
Hastings District Council	HASTI	$ -	$ -	0.00%	$ -	0.00%	
Marlborough District Council	MARLB	$ 1,747	$ 175	0.22%	$ 151	0.19%	O&M not maintenance
Palmerston North City Council	PALME	$ 2,995	$ 300	0.20%	$ 280	0.19%	Maintenance
Clutha District Council	CLUTH	$ 71	$ 7	0.04%	$ 7	0.04%	Maintenance
Hauraki District Council	HAURA	$ 2,586	$ 259	0.66%	$ 231	0.59%	O&M not maintenance
Wairoa District Council	WAIRO	$ 473	$ 47	0.24%	$ 68	0.35%	Maintenance
Westland District Council	WESTL	$ 1,515	$ 152	0.64%	$ 131	0.55%	Operating costs not O&M nor maintenance

Appendix B: Stormwater

Q9a Relationship between Depreciation Funding and Renewals

Forecast Depreciation Expense versus Forecast Asset Renewals
Stormwater (for 10 years 2009 - 2019) **All $ in $,000s**

Council	Label	Renewals (LTCCP)	Depreciation	Difference	Comment
Hamilton City Council	HAMIL	$ 6,276	$ 48,976	$ 42,700	Depreciation provided directly from HDC
Waimakariri District Council	WAIMA	$ 1,136	$ 5,969	$ 4,833	Forecast depreciation exceeds the renewals budget due to the relatively young age of the assets.
Far North District Council	FARNO	$ 3,700	$ 4,619	$ 919	Used valuation data as depreciation not separated by activity in LTCCP
Hastings District Council	HASTI	$ -	$ 33,854	$ 33,854	Reflects young age of assets
Marlborough District Council	MARLB	$ 868	$ 11,716	$ 10,848	Depreciation provided directly from MDC.
Palmerston North City Council	PALME	$ 3,602	$ 12,970	$ 9,368	p160 of ltccp
Clutha District Council	CLUTH	$ 41	$ 1,768	$ 1,727	Depreciation provided directly from CDC. Most assets are relatively young therefore nowhere near the end of their nominal lives.
Hauraki District Council	HAURA	$ 1,889	$ 4,340	$ 2,451	p207 of ltccp
Wairoa District Council	WAIRO	$ 269	$ 834	$ 565	P60 of LTCCP
Westland District Council	WESTL	$ 1,527	$ 3,312	$ 1,784	

Appendix B: Stormwater

Q10a Difference between levels of actual funding allocated, depreciation and the levels of funding identified through the AMP process

Forecast Renewals in AMP versus Renewals budget from LTCCP
Stormwater (for 10 years 2009 - 2019) **All $ in $,000s**

Council	Label	Renewals AMP	Renewals LTCCP	Difference	Comment
Hamilton City Council	HAMIL	$ 4,901	$ 6,276	$ 1,375	LTCCP has higher funding than the AMP
Waimakariri District Council	WAIMA	$ 960	$ 1,136	$ 176	LTCCP has higher funding than the AMP
Far North District Council	FARNO	$ 3,700	$ 3,700	$ -	
Hastings District Council	HASTI	$ -	$ -	$ -	$0 budgeted in LTCCP, no data in AMP
Marlborough District Council	MARLB	$ 867	$ 868	$ 1	
Palmerston North City Council	PALME	$ 3,500	$ 3,602	$ 102	LTCCP has higher funding than the AMP
Clutha District Council	CLUTH	$ 41	$ 41	$ -	
Hauraki District Council	HAURA	$ 1,889	$ 1,889	$ -	
Wairoa District Council	WAIRO	$ -	$ 269	$ 269	No Stormwater Renewals in AMP
Westland District Council	WESTL	$ 1,551	$ 1,527	-$ 24	

Appendix B: Stormwater

Q12 How are funds raised for water network asset expenditure - Renewals

Funding Sources for Renewal Expenditure
Stormwater (for 10 years 2009-2019)

Council	Label	% Funded from Revenue Streams	% Funded from Borrowing	% Funded from 3rd party sources	Comment
Hamilton City Council	HAMIL	Not available	Not available	Not available	
Waimakariri District Council	WAIMA	See comment	See comment	See comment	Renewals are funded by either surplus funds or loan funded which is paid for by rates. Each stormwater scheme will be different.
Far North District Council	FARNO	Not available	Not available	Not available	
Hastings District Council	HASTI	Not available	Not available	Not available	Rates and loans.
Marlborough District Council	MARLB	Not available	Not available	Not available	Depreciation is fully funded.
Palmerston North City Council	PALME	88%	12%	0%	General Rates
Clutha District Council	CLUTH	See comment	See comment	See comment	Depreciation is always funded from the operating account, i.e. essentially from rates income. Renewals are generally funded from the depreciation reserve fund where possible; otherwise from other 'special' reserve funds or else loans. Loan funding is utilised only where depreciation reserve is insufficient.
Hauraki District Council	HAURA	100%	0%	0%	Renewals are entirely funded from depreciation which is funded from rates
Wairoa District Council	WAIRO	100%	0%	0%	From Page 60 of LTCCP, 100% of the funding for renewals is from "Reserves-capital funding".
Westland District Council	WESTL	See comment	See comment	See comment	Generally sourced from revenue streams, i.e. rates

Appendix B: Stormwater

Q12b How are funds raised for water network asset expenditure - New Capital

Funding Sources for New Capital
Stormwater (for 10 years 2009-2019)

Council	Label	% Funded from Revenue Streams	% Funded from Development Contribution Charges	% Funded from Borrowing	% Funded from 3rd Party Sources	% Funded from Reserves	Comment
Hamilton City Council	HAMIL	Not available	Not available	Not available	Not available	Not available	
Waimakariri District Council	WAIMA	0%	26%	48%	0%	26%	From page 66 of the LTCCP the funding for the overall capex for the 10 years appears to be sourced from loans (48%), Reserves (26%) and Operating Revenue/DCCs (26%)
Far North District Council	FARNO	Not available	Not available	Not available	Not available	Not available	
Hastings District Council	HASTI	0%	51%	43%	0%	0%	From page 80 it appears that new capital ($50,176k over 10 years) is mainly funded by Development Contributions ($25,559k) and Loans ($21,605).
Marlborough District Council	MARLB	Not available	Not available	Not available	Not available	Not available	The general rationale for funding of capital works is described on page 164 of the LTCCP. Development contributions are applied to stormwater.
Palmerston North City Council	PALME	0%	2%	98%	0%	0%	
Clutha District Council	CLUTH	See comment	See comment	See comment	See comment	See comment	Loan funding (bid 697) is required where depreciation reserve is insufficient. DC's are negligible, as there is virtually zero growth forecast in Clutha District.
Hauraki District Council	HAURA	93%	7%	0%	0%	0%	P41 of LTCCP 93% from depreciation, 7% from DCCs
Wairoa District Council	WAIRO	0%	0%	100%	0%	0%	From Page 60 of LTCCP, 100% of new capex is funded from borrowing.
Westland District Council	WESTL	See comment	See comment	See comment	See comment	See comment	Generally sourced from revenue streams, i.e. rates

Appendix C: Survey Results for Other Factors

Number	Question	Comment
14	How does the council measure and account for prospective changes to population (increase or decrease) in terms of asset management and funding for water network assets?	Qualitative analysis
15	What analysis has the council carried out to determine the relationship between forecast population and future assets? What actions has the council taken on the basis of this analysis?	Qualitative analysis
16	What impact might any identified demand management strategies have on future funding requirements and distribution by the council?	Qualitative analysis

Appendix C: Water

Other Factors
Questions 14, 15 and 16
Has the Council identified;
-prospective changes to population
-prospective changes to growth and demand
-future demand management strategies
that will determine future asset requirements?

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Comments on demand management	Council has identified future population growth and impact on consumption (Appx H). Link between growth and reticulation projects outlined in Strategic Action Plans for each capital project. Council has developed a water demand management plan which sets our future demand management measures (Appx P).	Council has identified future population growth and impact of other demand drivers to forecast future average and peak day demands. Council describes water demand management measures and has recently developed a water demand management plan for future implementation. Water Conservation strategy has been adopted and is being implemented.	Future demand based on the "Far North District Growth Strategy 2008 – 2038". The impact on future capital needs has been considered. Current demand management briefly described but future demand management implementation (eg leakage reduction) not well defined.	Council has identified future population growth and impact of other demand drivers. Council is investing in water demand management and considers that this may be sufficient to compensate for future growth. Current and future demand management measures are described. The Heretaunga Plains Urban Development Strategy growth strategy will inform the next AMP.	Council predicts reasonably high population growth and has a comprehensive growth forecasting model to predict future demands. Other demand factors are also described including leakage. Existing demand management measures are discussed but future implementation of other demand management measures is not clearly identified. Demand management techniques are considered in the forward planning of specific asset upgrade strategies. The design option report will evaluate demand management as a potential solution and viable options will be presented to Council for political approval of the community.	Council has identified future population growth and impact of other demand drivers on future demands. The impact on future capital needs has been considered. Council has developed a demand management plan and current measures are briefly described. Future demand management measures described as non asset solutions in Section 5.5.4.	Council has identified future population growth and impact of other demand drivers on future demands. Council considers the impact on future new capital using three categories "Catch-up", "Increased Level of Service" (or increased environmental standards) and "Growth". Council has developed a demand management plan and current measures are briefly described. Future demand management measures are not well defined.	Council predicts a modest population growth and little increase in demand for water infrastructure. Other demand factors are also described. Primary demand management measure is customer metering and charging for volume consumed. Future water demand management measures not well defined.	Council predicts a static or declining population and little increase in demand for water infrastructure. Other demand factors are also described. Examples of demand management measures are described but not future water demand management measures.Council states that their demand management philosophy is to examine alternatives that put capital, operational and maintenance costs of sewage collection and treatment in the hands of private individuals, before developing public infrastructure.	Council has identified future population growth (static except for Franz Josef and Fox Glacier) and industry growth in Hokitika. Expect demand to be static in all other schemes. Link between growth and demand in these 3 towns not well defined. Current water demand management measures outlined but not future.

Appendix C: Wastewater

Other Factors
Questions 14, 15 and 16
Has the Council identified;
-prospective changes to population
-prospective changes to growth and demand
-future demand management strategies
that will determine future asset requirements?

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Comments on demand management	Council has identified future population growth and impact on treatment plant capacity, including future requirements for capacity expansion (Appx H). Link between growth and capex outlined in Strategic Action Plans for each capital project. Demand management strategies include I/I reduction and education (Appx P).	Council has identified future population growth and impact of other demand drivers (such as inflow/infiltration to reduce demand) to forecast future average and peak day demands. Council does not describe future implementation of demand management measures.	Future demand based on the "Far North District Growth Strategy 2008 – 2038". The impact on future capital needs has been considered. Current demand management briefly described but future demand management implementation (eg inflow/infiltration reduction) not well defined.	Council has identified future population growth and impact of other demand drivers. Current and future demand management measures are described. An embargo has been placed on future development in some areas of the network that have inadequate capacity. The Heretaunga Plains Urban Development Strategy growth strategy will inform the next AMP.	Council predicts reasonably high population growth and has a comprehensive growth forecasting model to predict future demands. Other demand factors are also described including industry trade waste. Universal metering for water is the only demand management measures discussed and future implementation of other demand management measures is not identified. Demand management techniques are considered in the forward planning of specific asset upgrade strategies. The design option report will evaluate demand management as a potential solution and viable options will be presented to Council for political approval of the community.	Council has identified future population growth and impact of other demand drivers on future demands. The impact on future capital needs has been considered. Current demand management measures are briefly described. Future demand management measures mentioned as non asset solutions but not well defined.	Council has identified future population growth and impact of other demand drivers on future demands. Council considers the impact on future new capital using three categories "Catch-up", "Increased Level of Service" (or increased environmental standards) and "Growth". Council has considered demand management and options available are briefly described. Future demand management measures are not well defined.	Council predicts a modest population growth and little increase in demand for wastewater infrastructure. Other demand factors are also described. Primary demand management measure identified is charging (but flat rate not volume consumed). Possible wastewater demand management measures described but future implementation not identified.	Council predicts a static or declining population. Other demand factors are described (eg inflow and infiltration). Future wastewater demand management measures are not defined but Council states that their demand management philosophy is to examine alternatives that put capital, operational and maintenance costs of sewage collection and treatment in the hands of private individuals, before developing public infrastructure.	Council has identified future population growth (static except for Franz Josef and Fox Glacier) and industry growth in Hokitika. Expect demand to be static in all other schemes. Link between growth and demand in these 3 towns not well defined. Current wastewater demand management measures outlined but not future.

Appendix C: Stormwater

Other Factors
Questions 14, 15 and 16
Has the Council identified;
-prospective changes to population
-prospective changes to growth and demand
-future demand management strategies
that will determine future asset requirements?

	Hamilton City Council	Waimakariri District Council	Far North District Council	Hastings District Council	Marlborough District Council	Palmerston North City Council	Clutha District Council	Hauraki District Council	Wairoa District Council	Westland District Council
Comments on demand management	Council has identified future population growth (Appx H). Link between growth and reticulation projects outlined in Strategic Action Plans for each capital project. Council introduces demand management options but is unclear on how they might be implemented (Appx P). Council is also undertaking catchment management plan development for the new growth cells.	Council has identified future population growth and impact of other demand drivers. Council has not forecasted future average and peak day demands. Council does not describe future implementation of demand management measures but considers that implementation of stormwater management plan projects will reduce flooding risk.	Future demand based on the "Far North District Growth Strategy 2008 – 2038". Other demand drivers are described. The impact on future capital needs has been considered. Potential demand management briefly described but future demand management implementation not defined.	Council has identified future population growth and briefly described other demand drivers. Potential demand management measures are briefly described. An embargo has been placed on future development in some areas of the network that have inadequate capacity. The impacts of growth (new and infill) are being reassessed through the Heretaunga Plains Urban Development Strategy growth study to determine potential future capacity issues. This is a work in progress but will be reflected in the next AMP.	Council predicts reasonably high population growth and commissioned a strategy to predict growth future demands. Other demand factors are briefly described. Demand management measures are briefly but future implementation of demand management measures is not identified. The Blenheim Stormwater Strategy will be included in the next AMP and will have specific recommendations for the management of growth.	Council has identified future population growth and impact of other demand drivers on future demands. The impact on future capital needs has been considered. Current demand management measures are briefly described. Future demand management measures described as non asset solutions in Section 5.6.4.	Council has identified future population growth and impact of other demand drivers on future demands. Council considers the impact on future new capital using three categories "Catch-up", "Increased Level of Service" (or increased environmental standards) and "Growth". Council has considered demand management and options available are briefly described. Future demand management measures are not well defined.	Population growth projections are included in LTCCP and Council predicts a modest population growth and little increase in demand for stormwater infrastructure. Reducing household size has an impact on SW demand. Climate change has been included in future demand assessments. Demand management measures are well described but any future implementation not identified.	Council predicts a static or declining population. Other demand factors are described. Future wastewater demand management measures are not defined but Council states that their demand management philosophy is to examine alternatives that put capital, operational and maintenance costs of sewage collection and treatment in the hands of private individuals, before developing public infrastructure.	Council has identified future population growth (static except for Franz Josef and Fox Glacier). Expect demand to be static in all other schemes. Link between growth and demand in these 2 towns not well defined. No stormwater demand management measures described.