

## **Report No. 99.717**

30 November 1999

File: B/5/2/1

[ceh]reports[us990717-the water group long-term financial strategy-djb

Report to the Utility Services Committee  
from David Benham, Divisional Manager, Utility Services and  
Murray Kennedy, Strategy and Asset Manager

### **The Water Group Long Term Financial Strategy**

#### **1. Purpose**

To provide information to assist in the development of the Council's Long Term Financial Strategy in relation to future water levies.

#### **2. Introduction**

Over the last 25 years a large part of the wholesale water supply system has been rebuilt or enhanced. This supplemented the Kaitoke scheme constructed in the 1950s. The result is a relatively modern water supply infrastructure. Accordingly, given the long life of many of the assets, capital expenditure will be in a cyclic trough during the next 20 years.

Funds were borrowed to construct many of the assets and, as at June 1999, The Water Group's long-term debt stood at \$65.72 M, a reduction of \$4.22 M over the previous financial year. An issue to be considered is the wholesale water charges over the next few years and the rate at which debt should be reduced. This is sometimes referred to as the "intergenerational equity" issue.

This report considers the various factors that impact on operational costs and future capital expenditure. A financial model has been prepared which includes these variables and allows several scenarios to be explored. The results from running the model included a number of combinations of future debt levels and wholesale water charges.

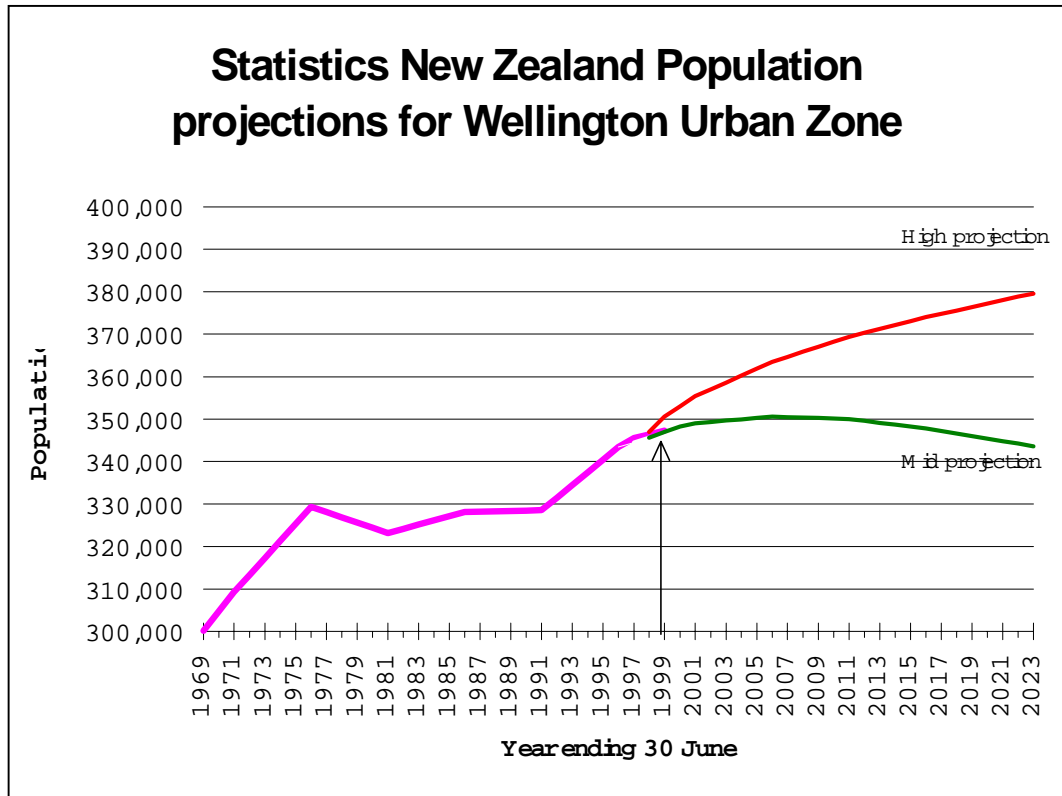
#### **3. Assumptions**

A number of assumptions were made in order to run the model. Like any model, if the variables over time are different from the assumptions; then the model results are likely to be incorrect. A number of key assumptions have been changed to

provide a range of scenarios.

### 3.1 Changes in Population

The last population census was in 1996 and the next is in 2001. Current population of the four cities is therefore an estimate. Population changes over the next 20 years will be driven by economic security, amongst other factors. Two scenarios are shown in the graph below.



The mid-projection growth will not create a water supply problem in the next 20 years as the population peaks in about 2005 and gradually decreases. For modelling purposes the high growth-projection has been chosen. While this approach may be conservative, planning will proceed for developing a new water source, but if the growth does not eventuate, then the construction of a new source can be deferred.

### 3.2 Consumption Forecasts

Consumption has been separated into four types for forecasting purposes:

- ? Residential use
- ? Commercial use
- ? Industrial use
- ? System losses and unaccounted for water (metering error)

Only commercial and industrial users are metered to any significant extent by the four cities. Information on average residential use has been obtained from an ongoing consumption monitoring survey. Household use is predicted to fall slightly over the next 20 years in line with the trend to smaller households. Conversely, the

amount consumed per person in each household is expected to rise in accordance with population projections. Industrial use has been forecast to fall along a slow recovery/recession cycle. This analysis suggests that the average daily demand would surpass the estimated sustainable yield in 2020. The sustainable yield from the year 2000 onwards will be lower than it was in the 1990s because of the restrictions in the Council's Freshwater Plan. For the year ended March 1999 the average daily demand was 153 ML.

### 3.3 **Raw Water Availability**

Raw water availability is governed by resource consents and structure limitations to take the water from the aquifer and rivers.

The resource consent for the aquifer source allows a daily annual average take of 80.5 ML/d. Subject to an aquifer test in March 2001, this will increase to 85 ML/d. Resource consents for the Hutt and Wainuiomata/Orongorongo Rivers have to be renewed by October 2001. It is assumed that the water available from the rivers will be the maximum allowable under the Council's Freshwater Plan.

### 3.4 **Risk of Shortfall**

Population projections with their associated demand, and the raw water availability constraints, are analysed in The Water Group's Sustainable Yield Model. This indicates that, with a high population growth scenario and a 90 percent confidence level, sufficient raw water is available from existing sources until the year 2020. This is based on a 2 percent risk of shortfall event. An "event" is defined as a year that contains at least one shortfall day.

Customers have been consulted about the 2 percent shortfall risk. As at November 1999 two customers have accepted the level of risk and two are still considering the issue.

However, the main driver for development of a new source will be an increase in population.

Results from the Hutt aquifer pump test and the allocation from the surface water consent process could impact on the shortfall risk. This would either bring forward the development of a new source or push the development past the planning period of 2020. Either way there is some uncertainty with this aspect until the raw water availability issues are resolved within the next 18 months.

Details are shown in Attachments 1 and 2.

### 3.5 **Development of a New Water Source**

Many investigations have been carried out into future water sources over the years. Reports prepared in 1980 by Mandeno Chitty and Bell, Consulting Engineers, were very comprehensive. The more viable options from these reports and recent information was reviewed by Beca Steven, Consulting Engineers, in 1999. In addition, Water Group staff calculated the capital cost of universal metering. A summary of the capital cost of the options is:

Option	Estimated Capital Cost \$ (M)
1. Akatarawa river intake and water treatment plant (20 ML/d)	15.3
2. Hutt intake near Te Marua pumping station (up to 200 ML/d)	2.9
3. Upper Hutt aquifer development and treatment plant (20 ML/d)	13.9
4.(a) Wainuiomata river storage - Dam 3 (90 days at 20 ML/d)	48.6
4.(b) Wainuiomata river storage - Dam 2 (90 days at 20 ML/d)	66.1
5. Hutt recharge to the Waiwhetu aquifer (20 ML/d)	
(1) Assuming no treatment, with raw water injection	3.3
(2) Assuming water treatment is required prior to artificial recharge	15.5
6. Universal metering, assume demand reduced 20%, i.e., 30 ML/d (including replacement meters after 15 years)	42.9

A brief explanation of each project and the advantages/disadvantages is included in Attachment 3. Options 2 or 5(1) are currently preferred to provide additional water.

Provision has been made for \$4 M to develop a new source in the years 2017 to 2020 on the basis of this information and on population projections. It is expected that no further major development would be required until 2030.

### 3.6 Quality and Operational Standards

At present the *New Zealand Drinking-Water Standards* set a maximum turbidity for treated water at the treatment plants of 0.5 NTU or a change of no more than 0.2 NTU in 10 minutes. It is possible that within the 20 year planning period the maximum turbidity requirement may reduce to 0.1 NTU. Optimisation work at the Wainuiomata Water Treatment Plant is working towards this requirement and it should be achieved during 2000. Treated water from the Te Marua Water Treatment Plant already complies. Turbidity measures are not relevant at the Waterloo Water Treatment Plant as it is a secure groundwater source.

Supernatant water from the surface water treatment and waste water recovery plants is currently returned to the raw water stream entering the plant. The Environmental Protection Agency in America is proposing to set a standard for this water by August 2000. In due course this standard may be reflected in New Zealand requirements. An outcome could be further processing requiring additional expenditure. No allowance has been made for this in the capital works programme.

### 3.7 **Grading of Treatment Plants**

Grading of water treatment plants is an ongoing process with higher standards expected over a period of time. The Regional Council's policy is to achieve an A or A1 grading for treatment plants, where practical to do so. Apart from the supernatant issue mentioned in the last section, it is expected the proposed capital works funds will be adequate to achieve this. Te Marua Water Treatment Plant is already graded A.

### 3.8 **Inflation and Interest Rates**

Values in the financial model are expressed in real dollars of today (i.e., not inflation adjusted). Changes in interest rates may not be linked to changes in inflation rates. For this reason three scenarios are considered with different interest rates.

### 3.9 **Operational Costs**

Direct and indirect expenditure has reduced by \$4 M per annum over the last two years. This, in part, has allowed a reduction in wholesale water charges of 4 percent (\$1 M) for 1999/2000 in addition to accelerated debt repayment. While further reductions in some facets of the operational costs are expected, for example, chemicals, costs in some other areas are expected to rise. Electrical energy costs increased by 17 percent from 1 October 1999 though network charges did not change. Once the surface water rights are renewed the minimum flow over the Kaitoke weir will increase. This results in greater pumping costs to use water from the two storage lakes in summer.

On balance, it has been assumed that increased efficiencies in some areas will slightly exceed increased costs in other areas. For this reason direct operating costs are reduced 0.5 percent a year over the planning period.

### 3.10 **Capital Expenditure**

Expenditure for 2000/01 is in the final stages of confirmation. Projects in subsequent years are subject to further detailed analysis. From 2008/9 onwards an amount is allowed for unspecified works in order to take the total expenditure to \$4.5 M. This total is lower than depreciation and slightly lower than capital expenditure over the last few years. It reflects that many parts of the system are less than 25 years old and have relatively long lives.

## 4. **Asset Valuation**

Rolle Hillier Parker Ltd, Registered Valuers, revalued fixed assets in November 1999. Their valuation was at a component level of some 6,000 individual assets. Land associated with the treatment plans and distribution network has also been revalued. The Audit Office has been consulted about the value of some of the more intangible assets, such as water rights that are valid for up to 35 years. The value of

the assets increased from \$192 M to \$256 M. Attachment 4 provides details of the valuation.

## 5. Depreciation

Depreciation values are arrived at by taking the current value of an asset and reducing its value on a straight line basis over the remaining life of the asset. In some circumstances technical obsolescence, rather than physical deterioration, may dictate the remaining asset life. Where this is the case all components are assigned a life that does not exceed the obsolescence date. Depreciation for the new assets is calculated from the planned cost. For the unspecified works an average life is assumed for depreciation purposes.

Annual depreciation for the fixed assets, as a result of the revaluation, will be \$4.729 M in the current year. This is being reconciled with the depreciation schedule for the year ended 30 June 1999. It is expected the reconciliation will show an increase in the depreciation for the fixed assets of approximately \$0.5 M a year. However, even with the increased depreciation, there will still be a net surplus. This means the expenditure funding requirements of the *Local Government Amendment Act (No. 3) 1996* are complied with (i.e., depreciation is fully funded by the levy).

## 6. Debt Management

Significant modernisation of the facilities has taken place in the last 15 years and this has obviously not come without cost. The result in absolute terms is relatively high debt, \$66 M as at June 1999. The recently completed asset revaluation exercise has placed a value of \$256 M on our water supply network.

### Issues When Considering Appropriate Levels of Debt

The question then is *What should our debt levels be over the medium-term?* Without doubt, in any sector the level of debt is a judgement call but in the local authority environment a number of factors need to be considered. These include:

#### (1) *Intergenerational Equity*

Generally, this principle derives from the fact that infrastructural assets, like most in water supply, have a long life and hence, where possible, the costs of such assets should be shared across the generations that benefit from them. This is entirely consistent with Council's treasury management and funding policies. Debt has traditionally been seen as having the benefit of spreading those asset costs by applying interest and principal repayment across a period of time. This Council has adopted a 30 year debt repayment term for the water supply assets that are loan funded. This then determines the debt repayment programme across the years. It could be argued that this life has been set rather conservatively and arbitrarily, and may not in fact reflect the life of the asset, i.e., the life may be longer.

However, on the other side of the coin, 30 years is at the upper end of debt life in local government generally.

(2) ***Future Debt Requirements***

As outlined in section 3.5, our next significant amount of capital expenditure is not expected until approximately 2026. Our best estimates are that this would be in the order of \$15 M. This, of course, will depend on what happens to the demand for water over the next 25 years. If demand increases, the expenditure will be required earlier. If demand diminishes, it may never be required. The timeframe for bringing a new source, such as the Upper Hutt aquifer, on stream would be something like 3-5 years.

If at all possible, it would be preferable to have repaid all debt some years before a major new debt loading is required so as to reduce the impact of servicing the new debt. This also more fairly spreads the burden across the generations.

The question, of course, is *When will the new source be required?*

(3) ***Funding Annual Capital Expenditure Requirements***

Generally, outside the provision for a new source of water, enhancement of the system, annual capital expenditure should be met by annual depreciation charges. As outlined in other sections, our annual capital requirements can be met by depreciation. We also put into a reserve each year \$885,000 to cover capital expenditure that is of a refurbishment nature.

(4) ***Interest Rate Risk***

Clearly, the higher the level of debt carried the higher exposure to interest cost increases if interest rates rise. Other things being equal, if interest rates rise, then the higher the debt, the larger the levy increase required to meet increased interest costs. Alternatively, the debt repayment period could be extended and therefore not require a levy increase. Hence the higher the debt, the higher the interest rate risk in absolute terms.

Notwithstanding the above, this Council's treasury management is such that any increases in external interest rates would not affect The Water Group's interest costs for at least a year. Beyond then the impact would begin to be felt progressively.

(5) ***Treasury Management Policy***

The Council recently reconsidered its Treasury Management Policy and the following ratios pertaining to water supply were approved:

- ? Net debt to levy not to exceed 300 percent
- ? Net financial costs to levy not to exceed 40 percent



As part of this process, the Council's treasury advisor, Bancorp, reviewed and confirmed that those benchmark ratios were consistent with the Council's overall external borrowing limits (see Attachment 5).

In addition to the internal borrowing limits, the Council has set internal "targets" for each of its departments with significant borrowing. The rationale for two separate ratio levels is to differentiate between maximum borrowing limits that set borrowing caps (these may be difficult to justify in a purely commercial sense) and target ratios, that establish more commercially focused borrowing goals, which have been set as guidance for management on an ongoing basis for the long-term.

Bancorp states:

*We support this approach as enhancing one of the primary reasons for section 3.8 [the internal borrowing limits] - that of establishing internal management guidelines (rather than caps).*

Attachment 6 details Bancorp's view and rationale for the borrowing targets for water supply of:

- ? Net debt to levy not to exceed 220 percent
- ? Net financial costs to levy not to exceed 20 percent

Attachment 7 translates that into a target debt level of \$53 m based on the current level of water levy. This then compares with a current debt level of \$66 m, some \$13 m higher than the target.

The question then is *How quickly should we attempt to reach the target level of \$53 M?*

(6) ***Efficiency and Interest Savings***

Over the last three years significant savings have been generated by operational improvements and a lower interest rate environment. This Council has maintained a policy of applying additional surpluses achieved to debt reduction. **This has meant water surpluses have been used to reduce water related debt.** This has had a further compounding effect in providing additional interest savings. This has enabled the levy to be held steady for three years from 1996/7 and reduced by 4 percent (\$1 M) in the 1999/0 year. It would be fair to say that our budgeting has been conservative in that we have not adjusted budgeted costs downwards until the savings have been achieved. However, as the attached table in Attachment 8 shows, our budgets for this year and 2000/1 and beyond reflect the lower cost structure of the operation.

Once again, the question is *How much of the savings achieved is applied to debt reduction and how much to levy reduction?*

7. **Financial Model**

## 7.1 **Description**

The financial model allows the following variables to be considered:

- ? Operational expenses
- ? Depreciation
- ? Interest payments
- ? Debt
- ? Capital expenses
- ? Wholesale water levy

The model allows two output variables to be evaluated, debt level, and wholesale water levy.

## 7.2 **Scenarios**

Average interest on borrowings is currently 8.5 percent. Three interest rate scenarios are status quo, increasing this to 9.5 and 10.5 percent from two years out.

Wholesale water supply levy was reduced 4 percent in 1999/2000. Levy scenarios are: status quo (1999/0 levy), 2, 4 and 6 percent levy reductions.

Output from the model is a series of graphs showing the impact on wholesale water debt for varying interest rates and wholesale levies. These are included as Attachment 9.

## 8. **Future Wholesale Water Charges : Discussion**

When making the judgement on next year's levy, and future levies, the above factors should be taken into account. Your personal point of view, and to an extent your view of what the future holds, will determine whether you favour accelerated debt repayment or levy reduction now, or a combination of both. Adjustments can obviously be made each year as circumstances change.

Making a trade-off between the levy and the debt repayments can be reviewed against a number of drivers, including:

- ? Provision of a quality water supply in accordance with changing standards
- ? Providing the required quantity of water to meet future demand
- ? Stability in the levy so that any changes between years is minor
- ? Ensuring there is no deferred maintenance
- ? Funding future capital works
- ? Providing for intergenerational equity

- ? Prudent interest rate risk management
- ? Compliance with the *Local Government Amendment Act (No. 3) 1996* with regarding to fully funding depreciation

Taking into account the above, the undersigned officers are of the view that a future levy reduction of up to 4 percent on the current level is sustainable. When the Council sets the proposed levy for 2000/1 in March 2000, further information will be available as to how we are tracking in this financial year. Further, when the levy is finally set in June 2000, the operating performance for the current year will be able to be forecast with confidence.

## 9. **Recommendations**

- (1) *That the report be received and the information noted.*
- (2) *That the report be sent to our four customers for comment prior to Council finalising its proposed Long Term Financial Strategy in March 2000.*
- (3) *That the four customers be asked to comment on future water levies and debt levels having regard to the report, in particular the drivers in section 8.*

Report prepared by:

Approved for submission:

DAVID BENHAM  
Divisional Manager, Utility Services

GREG SCHOLLUM  
Chief Financial Officer

MURRAY KENNEDY  
Strategy and Asset Manager

HOWARD STONE  
General Manager

Attachments : 9

