CARTERTON
DISTRICT COUNCIL

CARTERTON COMMUNITY WATER SUPPLY
Asset Management Plan

MARCH 2009

Contents

1 INTRODUCTION

This asset management plan describes the strategies and programmes for the water supply activity so as to meet the required level of service to existing and future users in the most cost effective way.

The plan informs the Councils Long term Community Plan (LTCCP) and contributes to meeting the identified community outcomes,

The plan covers:

- A description of the activity
- The strategic environment, including legislative, future demand and risk management issues
- A statement of the intended service levels and performance targets
- Information on the asset scope and statements on the estimated expense for achieving and maintaining the target levels of service.
- How maintenance and renewal of the assets will be undertaken and how they will be funded
- How capital expenditure resulting in a additional asset capacity will be delivered and funded
- How consideration has been given to the impacts of national sustainability objectives upon the ability of the asset to adequately meet the current and future levels of service that the community has requested

It aims to put in place systems and processes that will improve documentation, the creation and maintenance of an asset register, improved asset condition assessment, and cost monitoring and control and risk management. This asset plan will be reviewed and updated by 30 November 2008, and revised every three years thereafter.

2 THE ACTIVITY

2.1 Description

The purpose of the water supply activity is to provide a safe and reliable supply to residential, industrial and commercial properties. The activity also includes the development of planning and policy to cater for the differing consumer needs and requirements and advocacy for water conservation.

The Council's water supply services the Carterton urban community and various extra-ordinary consumers within and external to the town urban boundaries. There are 2,296 properties connected to the public water supply.

2.2 Rationale

The Carterton public water supply aims to provide water suitable for drinking for the general well being and health of its community. It also supports community and property safety through the fire fighting capability of the water supply system.

Council's continued involvement in the water supply activity and ownership of assets is contained in:

● The Local Government Act 2002(Section130) which requires Council to continue to provide water services and maintain its capacity to do so

AND

● The Health Act 1956 and subsequent amendments which requires Council to provide adequate sanitary works; the definition of which includes “water works”.

The services provided by the activity contribute positively to certain community outcomes adopted by Council as follows:

Community Outcome	Contribution
A safe District	The firefighting capability of the water supply supports a safe community
A vibrant and prosperous community	Reliable water supply is a requirement for the efficient operation of existing and new business infrastructure
A healthy District	High quality water supply is fundamental to community health
A District which promotes sustainable infrastructure and services	A sustainably derived community supply managed to protect and enhance where achievable, other Council owned assets and the environment.
A District which values and protects its natural environment	The adoption of conservation based strategies to encourage appropriate usage of the water resource

In order to achieve a balanced focus toward activity effects rather than attempting to influence outcomes, Council is aware that it needs to manage all effects whether planned, forecasted or otherwise.

In terms of good practice therefore, adopting a precautionary approach, which is commonly associated with sustainable development, the significant effects of the activity both positive and negative in terms of the four well beings can be summarised as follows:

Well Being	Positive	Negative
Social	Community health benefits arising from a secure, quality supply	Health and Safety Risks associated with asset operations
Environmental	A community supply offers a more collective and sustainable environmental footprint, complying with current consent requirements	The effects of water extraction from the Kaipatangata Stream and the aquifer
Economic	Affordable potable water promoting an encouraging environment for residential and commercial development	Possible Property damage arising from main failure
Cultural	Potable water is non discriminatory in benefit for all community and ethnic groupings	Potential community and iwi concerns in regard to waterway health and associated values

Council is not considering any significant changes to the activity that may be at variance to the intentions of this plan.

3 STRATEGIC ENVIRONMENT

Council vision is described as" A safe, attractive and vibrant community within a healthy and sustainable environment"

The Council in addition has an expectation for Carterton that infill and other development as regulated by finalised draft structure plans and the Combined District Plan in spite of standard population increase projections to the contrary, generally will result in growth over the timeframe of the new LTCCP to be adopted in 2009. This plan seeks to cater for that expectation by providing a programme of initiatives (including a demand management strategy) aimed at maintaining the required level of service over the required time frame. Concurrently certain capital capacity and treatment enhancement works are in progress, however they relate more to providing for current rather than future needs.

Other important factors requiring consideration include:

3.1 Social

That investment is required to extend and increase the headworks to meet capacity and drinking water compliance standards has been already recognized in current and forward capital works programmes.

In an effort to offset the increase in the use of domestic water consumption on a per capita basis, Council has been promoting best water conservation practice for its citizens and has already implemented a comprehensive water metering programme for the serviced area. It is anticipated that comprehensive metering and other strategies will over time result in reduced consumption and the deferral of future capacity enhancement work.

3.2 Environmental

Climate Change predictions contemplate an increase in weather extremes over the next few decades, characterized by longer dryer periods and increase in the frequency of high intensity rainfall events. The longer dryer periods are expected to result in an increase in demand for water for garden irrigation.

3.3 Economic

A reliable, quality water supply supports successful economic activity in Carterton however Council acknowledges that the activity does impose a cost on the residents and business sector. Strategies and funding policies for asset maintenance and improvements will continue to focus on cost minimisation and equitable allocation of costs to users.

3.4 Other

There are key legislative and statutory requirements relating to the management of water supply assets. In relation to this activity asset management policy and strategy, future demand drivers in relation to growth, and risk issues and assessments are referenced in **Appendix 1**.

4 LEVELS OF SERVICE

A level of service is described as the quality of the service that Council intends to deliver and the performance measures that will be used to monitor this. The adopted levels of service will support Council strategic goals and are based on user expectations, statutory requirements and tailored to the scale and relative simplicity of Council's asset.

Levels of Service have been based on:

- User Consultation and Survey
- Strategic and Corporate Goals
- Statutory requirements and Environmental Standards
- Community Outcomes

The relevant community outcomes as derived from community consultation are:

1) A safe District
2) A vibrant and prosperous economy
3) A healthy District
4) A District which promotes sustainable infrastructure and services
5) A District which values and protects its natural environment

These community outcomes assist with the detailing of the activity key performance indicators and technical performance measures which are contained in **Appendix 2.**

5 ASSETS

Re-valuation of the infrastructural assets relevant to this activity was undertaken in July 2008.by Opus International Consultants Ltd, Strategic Management Services.

Replacement cost is the cost of re-building the existing asset to an equivalent level of service. The assets have been depreciated on a straight line basis and provide a reasonable basis for the "return of capital" over the economic life of the asset.

The broad asset sub groupings and respective values are shown in the table below. To be noted that due to an increase in construction costs over the period and new asset acquisition, the general increase in valuation is some 37% since the previous assessment undertaken in 2005.

Asset Category	Optimised Replacement Cost	Optimised Depreciated Replacement Cost	Annual Depreciation
Pipe Reticulation	7,072,000	2,953,000	99,000
Reticulation Fittings	2,141,000	1,271,00	154,000
Headworks	526,000	249,000	18,000
Treatment Plant	1,347,000	159,000	8,000
Supplementary Supply	576,000	812,000	47,000
Totals	**11,662,000**	**5,444,000**	**326,000**

Additional detail in regard valuation and inventory is contained in **Appendix 3**

5.1 Life Cycle Management

An asset's useful life cycle is finite in time terms and depending on type can range from ten to one hundred years depending on the nature of the asset.

Successful life cycle management encompasses the adoption of appropriate:

- Target Levels of Service
- Risk Management systems
- Demand Management Regimes
- Routine operations and maintenance plan
- Asset renewal programmes
- Asset Improvement Programmes
- Levels of Funding

5.2 Asset Description and Condition

The town is primarily serviced by a gravity supply sourced from the Kaipatangata Stream some 10 kilometres to the west of the Carterton. This supply however is supplemented according to need i.e. in the event of shut-down due to turbidity conditions or conservation needs, from the bore-field supply situated in Frederick Street/ Lincoln Road.

Ministry of Health Grading in December 2007 in terms of the NZDWS 2005 assessed the Carterton Public Water Supply as E and D for the source and treatment (Kaipatangata and Frederick Street respectively).The distribution and reticulation were graded at level c

The current grading of E and D refers to water as it leaves the treatment plant(s) and is considered by definition as an “Unacceptable level of risk.” Distribution and reticulation current grading at c is considered by definition to be” marginally satisfactory, with a moderate level of risk.”

In order to contribute to the relevant community outcomes (a healthy and safe district) Council has embarked on a programmed plant(s) upgrade and this is expected to lift the grading to Bc which represents a significant improvement capable of meeting the desired community outcomes.

5.3 Headworks and Trunking

a) Kaipatangata Intake

The Kaipatangata Stream Intake and falling main to treatment was constructed in the early 1960’s and its condition can be described as average based upon the minimal maintenance required during the intervening period

b) Supplementary Bore resource

These production bores and associated infrastructure have been in place since the early 1990’s and have been progressively upgraded since then. Three of the four supply bores can be described as being in good operable condition, the fourth requiring redevelopment as resourcing allows. This source is considered to be “insecure” as defined in the Drinking Water Standards

c) Trunking

The town is supplied by a delivery main from the Kaipatangata intake via a 380 mm dia. pipeline of composite materials, concrete lined steel and asbestos –cement pipe. The pipeline is of a similar age to the intake and little condition information is available although the low maintenance history would suggest that that the pipeline is in good average condition for age with a condition assessment for the asbestos cement component to be undertaken within the timeframe of this plan given that the useful life of the AC component will conclude around 2020 (useful life of 60 -65 years).

5.4 Treatment and Pumping

Treatment facilities for the two systems consist of pH correction and chlorination with primary and secondary filtration being provided at the gravity supply. only

Both sets of treatment infrastructure are relatively modern (1996 Kaipatangata) and (2002-2006 Frederick /Lincoln Road Supplementary) and in good average condition.

Pressure Booster pumping infrastructure to the town network at Lincoln Road is relatively new and in good condition.

5.5 Storage

Some 1000 cubic metres of treated water storage is available via two relatively new timber reservoirs at the supplementary plant and one older reinforced concrete reservoir at the Kaipatangata Plant. The older reservoir is operable but in less than average condition with remedial relining work expected to be undertaken late in 08/09 year.

5.6 Reticulation

Pipeline Inventory

Description	Size	Length	Life	Build Date	Age
Conc Lined Steel	380	200	70	1,950	58
Cast Iron	150	90	70	1,940	68
Cast Iron	125	5,000	70	1,940	68
Cast Iron	75	600	70	1,940	68
Cast Iron	40	700	70	1,940	68
A/C	380	9,800	70	1,963	45
A/C	300	900	70	1,963	45
A/C	250	1,200	70	1,963	45
A/C	200	1,000	70	1,950	58
A/C	200	1,000	70	1,960	48
A/C	200	500	70	1,970	38
A/C	150	1,100	70	1,970	38
A/C	150	900	70	1,980	28
A/C	100	2,100	70	1,950	58
A/C	100	5,300	70	1,960	48
A/C	100	3,700	70	1,970	38
A/C	100	1,500	70	1,980	28
A/C	50	500	60	1,950	58
PVC	200	1,300	80	1,989	19
PVC	200	2,750	80	2,000	8
PVC	150	350	80	2,001	7
PVC	150	500	80	1,991	17
PVC	150	400	80	1,992	16
PVC	150	400	80	1,993	15
PVC	150	500	80	1,996	12
PVC	150	700	80	1,997	11
PVC	150	515	80	2,007	1
PVC	100	880	80	2,001	7
PVC	100	400	80	1,990	18
PVC	100	400	80	1,993	15
PVC	100	400	80	1,994	14
PVC	100	400	80	1,995	13
PVC	100	250	80	2,000	8
PVC	100	553	80	2,007	1
PVC	37	600	80	1,980	18
PVC	19	100	80	1,980	18
Alkathene	50	275	55	2,001	7
Alkathene	40	100	55	1,960	48
Alkathene	25	500	55	1,960	48
Alkathene	20	100	55	1,960	48
Copper	25	100	60	1,960	48
Galvanised	19	400	45	1,960	48

As above, the age of the reticulation ranges from some 70 years old to current and hence aged based condition varies throughout the network. Older pipeline types include asbestos cement,

with some older steel reticulation pipeline in Chester Road. Newer pipelines are of uPVC materials and service connections are typically copper, plastic and galvanized iron. Some asbestos –cement pipe in the 50 to 100mm size range, some galvanised iron and cast iron pipe will need replacing before 2018 (high lighted in red above).

Recent network modelling has developed a clearer understanding of network capability and capacity .The model has assisted with the evaluation of new infill development proposals ensuring that developer should carry their fair share of infrastructural upgrade cost if this is required.

An associated leak detection exercise has identified relatively significant levels of leakage within the network and some effort has been directed toward reducing the level of leakage. A significant proportion of leakage was identified as occurring on private property.

Investigation, identification and repair work continues and is being catered for in current and forthcoming operational budgets with inputs in this area having already reduced lossage and hence the unit cost of producing potable water.

5.7 Operations and Maintenance (O&M)

The O&M strategy aims to generally retain the current levels of service by implementing a balanced programme of planned and reactive works for reticulation and headwork's operations. Leak detection and repairs now forms an integral and on going component of the O&M activity which is performed largely by Council staff.

In addition Council in the future will consider mains pressure management as part of an overall demand management strategy to reduce water demand and water leakage without compromising levels of service and further drive down operational costs.

5.8 Asset Renewal Reticulation

Asset renewal in the form of replacement has been specifically reported as part of Council's formal works programme expenditure in the LTCCP.

It is proposed to, during the currency of this AMP and beyond, to obtain condition information so that a rolling programme of renewal work can be devised and funded.

Based on age it is probable that the older AC pipe will remain the priority work. A section of 100 mm dia. AC pipeline in Pembroke Street is programmed for renewal in 09/10.

5.9 Asset Development

To improve security of supply, meet higher disinfection requirements in order to qualify for an improved MoH grading, Council has adopted an upgrade programme at both the Kaipatangata Intake and plant and the Lincoln Road supplementary groundwater sourced plant.

The improvements provide for increased treated water storage (an additional 1000 cubic metres) at Kaipatangata and UV disinfection at both plants. The work will be subsidised by way of MoH government grant and is due to be completed during the 09/10 financial year. It is anticipated that the grading review will result in a higher level of compliance and subsequent system grading as reported earlier in the plan.

Details of the planned capital expenditure are detailed in Appendix 3.

6 KEY ASSET MANAGEMENT PLAN ASSUMPTIONS

Assumptions in the preparation of this Water Asset Management Plan include:

- That water supply assets will remain in Council ownership through out the planning period (10 years) and that there will be an ongoing requirement for this activity
- The recommended actions from previous design reports for headwork's improvements have been included in Council's capital works programme.
- All new subdivision applications are assessed in accordance with the current District Plan and the New Zealand Standard NZS 4404:2004, "Land Development and Subdivision Engineering". All designs are in accordance with the standards, they are checked and agreed to by Council's engineers before construction commences and are inspected during construction, including witnessing of the relevant tests. The developer is expected to meet all costs of the works including the connection to Council's existing network
- Whilst the demand upon this activity will increase due to anticipated growth (which cannot be quantified) the operational requirements for this activity will remain similar for the next ten years. Council has not signalled what it would consider to be an acceptable rate of growth.
- Maintenance works will continue to be delivered by Council's Works Department staff, while renewal, upgrade and new works will normally be completed by contractors selected by competitive tender or day work rates.
- Funding will be required to provide this activity as described elsewhere in this Asset Management Plan. That funding of maintenance and renewal works will be by annual rates charges and depreciation, while funding for all capital works will be from loans and development contributions as appropriate.
- The dollar values shown in this Plan are as at 1 July 2008 dollars. It is assumed that each year following 2008 the dollar amounts for expenditure will be adjusted for, at least, the rate of inflation as notified by the BERL Indices applicable to this activity.
- Financial and future work forecasts are based on the currently available knowledge of asset condition and performance, to the levels of service that have been undertaken to be delivered. More detailed evaluation of asset renewal requirements will be undertaken in the near future to identify programmes of work.

7 IMPROVEMENTS TO ASSET MANAGEMENT PLANNING

The following are seen as priority actions to deliver improved asset management planning:

- Improved data collection and recording processes for new and existing infrastructure for incorporation into Council's GIS data base. This may require optimisation of Councils existing data base systems and additional staff training to ensure that existing and new asset information is captured in a manner that will allow easy retrieval in the future.
- Strengthening of performance monitoring and risk assessment processes to identify and prioritise work and programme needs

- Level of Service review via stakeholder consultation to be undertaken regularly to best understand customer need and expectation
- Self Review on a regular basis of the operation and maintenance activities to ensure services are delivered in a reliable and cost effective manner
- Prioritisation of renewal works based on age and condition

8 FINANCIAL PROJECTIONS AND TRENDS

8.1 Financial Forecast

Appendix 4 contains information in tabular form which sets out the anticipated operations, renewals and capital expenditure for the 10 year period beyond the adoption of the LTCCP in 2009.

In addition source funding for the various activities is identified as indicated within this table. To be given consideration in the future is the ability of Council to levy development beyond what might be able to recovered through the current provisions of the Wairarapa Combined District Plan.

8.2 Trends

Of significance in the 10 year forecast is:

- The relatively heavy front end capital requirement to provide capital infrastructure (additional formal water storage and improved treatment). over years 1, 2, and 3. Beyond this capital work funding levels are expected to remain relatively modest and constant
- That maintenance activity expenditure is expected to increase annually in line with asset growth, age profile and asset performance plus inflation.
- The additional levels of funded depreciation due to a 17 % increase in asset value and increase in asset acquisition will negatively impact on the ability to fund the activity. An additional allowance for funded depreciation can be anticipated in 2011 when the asset base will be again revalued.

8.3 Funding

Whilst the focus of the plan is to identify actions and optimum costs required to deliver the required levels of service, method and quantum of funding must be given consideration.

Appendix 4 will provide some additional detail in regard to the cash flow requirements that are predicted to occur over the next ten years.

9 APPENDICES

1) Strategic Future Demand Drivers, Population Trends/ Projection Indicators, Risk Identification and Management

2) Detailed Levels of Service, Community Outcomes and resident satisfaction survey summaries

3) Asset Description, Planned improvements, Valuation and Inventory Information

4) Expenditure Analysis and Funding model

9.1 Appendix 1

Strategic Environment

This section sets out the framework from which water supply assets are managed in terms of:

- Council's Vision
- Statutory requirements
- Asset Management Plan Strategy
- Future Demand Drivers
- Risk Issues

Council's Vision

Council's vision for the future is stated as "A safe attractive and vibrant community providing and encouraging a healthy and sustainable environment."

Strategic and Corporate Goals

The Local Government Act 2002 requires local authorities to identify *Community Outcomes* for their districts. For Carterton these outcomes are images of the type of community people want to live in over the next 10 to 15 years. The whole community has ownership of these outcomes.

These outcomes have been developed through community consultation and are supported by other core policies adopted by Council viz.

- Policy on Significance
- Policy on Development or Financial Contributions
- Policy on partnerships with the private Sector(as that might apply)

The policy related to development contributions is seen as particularly significant as it requires input from those who promote development and growth to provide for capital and capacity improvements to the water supply asset.

The community outcomes that are supported by the water supply activity are as follows:

Community Outcome	Contribution
A safe District	The firefighting capability of the water supply supports a safe community
A vibrant and prosperous community	Reliable water supply is a requirement for the efficient operation of existing and new business infrastructure
A healthy District	High quality water supply is fundamental to community health
A District which promotes sustainable infrastructure and services	A sustainably derived community supply managed to protect and enhance where achievable, other Council owned assets and the environment.
A District which values and protects its natural environment	The adoption of conservation based strategies to encourage appropriate usage of resources

Statutory Requirements

Key legislation relating to the management of water supply assets is listed below:

- *Local Government Act 2002*. This act defines the purpose of local authorities as enabling local decision making by and on behalf of the community and allows local authorities the power of general competence. To assist exercising this power of general competence, the Act requires that significant consultation takes place with the community including:

  - Council must every six years carry out a process to identify community outcomes for its district
  - Council is required to consult with the community on a range of specific issues including changes to service delivery and transfer to or from Councils assets
  - Arising from the above Council must prepare an Asset Management policy that is likely to outline how the asset management implications of changes to levels of service and standards are to be assessed and managed

- Resource Management Act 1991 requires Council to:

  - Sustain the potential of natural and physical resources to meet the reasonable foreseeable needs of the next generation
  - Comply with the Combined District and Regional Plans
  - To avoid , remedy or mitigate any adverse effect on the environment
  - Comply with resource consents issued by Greater Wellington Regional Council for water quality and land use e.g. water treatment plants and intakes
  - Take into account the principles of the Treaty of Waitangi in exercising functions and powers under the act relating to the use, development and protection of natural and physical resources

- *Health Act 1956 and its amendments* which gives Council a general responsibility "to improve, promote and protect public health within its district." This responsibility extends to public water supplies because of the importance of adequate water supplies to public health

- *Building Act 1991,* which requires every local authority to enforce the provisions of the New Zealand Building Code. The code requires that "buildings provided with water outlets, sanitary fixtures or sanitary appliances must have safe and adequate water supplies

- Health and safety in Employment Act 1992
- Construction Contracts Act 2002
- The Local Government Official Information and Meetings Act 1987
- Carterton District Council Water Supply By-Law August 2008

In addition the 2005 "Water and Sanitary Services Assessment" as required in accordance with Part 7 of the Local Government Act 2002 was undertaken for Carterton District Council. This document seeks to assess how its community is served and more specifically whether any adverse health or environmental impacts require attention.

The assessment identified several generic issues and the role that Council would be required to play. The important issues identified were:

- Monitoring of relevant public health issues. Council to meet the monitoring requirements of current legislation
- Drinking water Standards. Council to review role when details of new standards are confirmed
- Development in the District. Council to monitor/respond to growth in line with the levels of service
- Funding of asset management, investigations, design, physical works. Council to manage funding for capital works requirements in line with capital expenditure programme

Asset Management Strategy

Asset Management policy and strategy provide a framework for guiding and integrating asset management practice within the Council consistent with Councils vision and community outcomes and capable of meeting the adopted levels of service.

Asset Management Policy intentions are as follows:

- The discipline of the AM plan will be directed to the achievement of Council's Community Outcomes and strategic goals as stated in the Long Term Council Community Plan
- Applicable legislation, regulatory and statutory requirements will be complied with
- The outputs of the AP process will be communicated to all relevant employees, third parties to ensure that they are aware of their asset management responsibilities. It will also be available to all other stake holders
- The AM plan will be reviewed regularly to ensure it remains relevant and consistent with Council's LTCCP

To deliver Asset Management Policy and Objectives, the output elements are as follows:

- Levels of Service. Three yearly reviews of Levels of Service following community engagement seeking satisfaction levels and desired improvements. The level of service review will inform the levels of service adopted by Council
- Demand Forecasting and Planning. To invest in capacity enhancement works in a timely manner based on actual and predicted population increases and extensions to the serviced area as they may occur. Consideration to be given to demand management measures
- Risk Management (RM). Manage exposure to risk though an annual review of the RM Plan and implement RM measures where exposure is in-compatible with Councils objectives
- Operational. Ongoing self review of operations management methodology to ensure activity performance measures achieve alignment from the operational level to the LTCCP
- Annual checks of the adopted water distribution model against operational performance to assess and remedy water lossage and any introduced network deficiencies
- Data collection programmes (condition, asset ands service performance) and inventory updating for renewal, additional infrastructure be developed according the scale of the asset. Track achievement of service targets for reporting purposes
- The AM plan will remain as a "living" document, subject to regular review, ensuring alignment with current Council and organizational policy. This plan will be adopted by Council before inclusion into Councils LTCCP

Future Demand Drivers

These are driven by:

- Growth
- Changes in water usage patterns i.e. water consumption for domestic, commercial and industrial users; increase in irrigation requirements resulting from seasonal and climate change as it occurs
- Water Loss rates

It is anticipated that these factors are expected to be reflected in changes in domestic and non domestic water usage as follows:

Water Demand Drivers	DOMESTIC	COMMERCIAL	INDUSTRIAL
GROWTH	Population change in reticulated areas	Increase in commercial areas	Minimal expansion only
CONSUMPTION	Domestic usage	Commercial water usage	Extent of "wet" industries
USAGE IRRIGATION	Domestic garden watering	Park Irrigation mainly	NIL
LOSSES	ALL	ALL	ALL

Growth Trends.

a) Residential Growth

Areas available for uptake of residential development within the urban area (In terms of the Proposed Combined District Plan rules) can potentially provide in the range some 870 to 1600 serviceable parcels (et al Boffa Miskell 2007).

The extent of future development will depend on the outcome of certain statutory structure planning processes currently under way and associated confirmation of minimum lot sizes. This is a mixture of potential "green fields" and "infill" type development available in the township.

Growth forecasts generally are based on the following trends and assumptions:

- Population Growth. medium growth scenarios produced by Statistics NZ

- Household growth

Area Population projections (ex NZ Stat.) for low, medium and high growth have been obtained and
based upon the recommended "medium series" analysis, projections indicate negative growth from 2011 through to 2031 of some 10% over the period commencing from 2011 onwards.
Not withstanding the above, household growth/decline can be a direct function of population growth/decline, although future occupancy rates are expected to decline on a person's per household basis over time due to an increasing elderly population, and an increase in couple only households.

Area population projections are tabulated below:

Series		Low						Medium						High					
Year		2006	2011	2016	2021	2026	2031	2006	2011	2016	2021	2026	2031	2006	2011	2016	2021	2026	2031
Sex		Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex	Total Sex
Area	Age																		
579400 Waingawa	Total All Ages	320	320	320	310	310	300	320	330	340	350	350	360	320	340	360	380	400	420
579501 Mt Holdsworth	Total All Ages	1,210	1,240	1,260	1,290	1,310	1,350	1,210	1,270	1,320	1,370	1,420	1,480	1,210	1,300	1,380	1,470	1,560	1,670
579502 Te Wharau	Total All Ages	1,520	1,560	1,590	1,620	1,630	1,610	1,520	1,590	1,660	1,720	1,760	1,770	1,520	1,630	1,740	1,840	1,920	2,000
579700 Carterton	Total All Ages	4,210	4,090	3,940	3,750	3,540	3,290	4,210	4,220	4,170	4,080	3,970	3,810	4,210	4,340	4,420	4,460	4,470	4,460

The Wairarapa region in part has been noted in recent times for an increase in rateable assessments but accompanied by a decline in census population.

The asset management plan and its managers will record actual development on an annual basis and its impacts on the activity asset base.

b) Industrial Growth

Significant industrial growth is not anticipated to occur within the Carterton township as provision for such growth and land use is provided elsewhere to the north at Waignawa.

c) Legislative Change

Legislative Change can significantly affect Council's ability to meet minimum levels of service with changes likely to require improvements to infrastructure. This is not forecasted to occur in the short/ medium term.

d) Customer expectations

Customers require a high standard of water supply. Water quality and availability issues are currently being addressed through the identified programme of a capital works referenced elsewhere in this plan.

There are also ongoing expectations for water supply network extension beyond the urban area. Council presently treats such requests on a case by case basis.

Beyond that Council is aware that it needs to assess which areas will be serviced by public supply (even on a restricted basis) and which areas remain on private supply. This matter is currently being considered by Council.

e) User pays

In addition to a standard annual charge Council has introduced comprehensive metering for its supply customers effective 01 July 2008.

The regime adopted provides for a user pay charge of $0.50 per cubic metre usage in excess of an assessed annual usage of 300 cubic metres per property which is covered by the annual charge.

Other extra-ordinary supply users such as commercial and industrial entities are charged for the water they consume on the same basis.

The adoption of universal metering is expected to reduce the magnitude of peak demand and overall water consumption. These anticipated outcomes are consistent with Council's objectives of encouraging sustainable usage of the resource.

Water Consumption Patterns

There has been a general increase of the use of water for domestic purposes over time due to an increase in the number of connected properties (2296). In addition there are 175 properties that pay the passing charge (one-half of the annual charge).

To counter this Council plans to introduce additional active water conservation programmes and a demand management strategy and asset management practices and it is not anticipated that increased per capita usage will significantly occur within the time frame of this asset management plan.

In addition dual water supply systems such as reticulated water being used only for potable purposes and stored impervious surface runoff water for non potable use are currently being considered by Council to establish in life cycle cost terms the most sustainable solution for the Carterton community.

Water Losses

Council is actively engaged in a programme of leak detection and repair following the earlier reporting and conclusions arising from the development of a network distribution model in 2007.

Significant levels of Unaccounted for Water (UFW) or leakage were detected during the model construction and calibration (estimated at 18 %) of daily usage). This lossage is be addressed by undertaking a programme of repair work both on public and private land on a regular basis with measurable reductions in water lossage to be reported in due course.

Risk Issues

Risk Management processes aim to be generally consistent with the intentions of AS/NZS 4360: 2004 "Risk Management" Standard however of a scale appropriate to the asset.

In the context of this, Carterton's risk management mitigation criteria are:

- The fulfilment of legal and statutory obligations
- Identification of Critical Assets where this is appropriate (in Council's case all assets for this activity are equally critical to the function of each other)
- The safeguarding of public and employee's Health and Safety requirements
- Asset, 3rd Party Property Damage &Losses Insurances
- Loss of Service-Extent and Duration, impacts of natural disasters
- Contingency Planning for foreseeable emergency situations

Hence appropriate to the scale of Carterton's activity, probability and impact management of risk is tabulated as follows

Risk Type	Typical Events	Risk Probability	Impact	How Managed
Legal and Statutory	Extraction Consent breach Environmental Damage	Moderate Low	Med Med	Regular monitoring and reporting
Health and Safety	Product Quality Non compliance Infectious Disease outbreak	Moderate Low	Low High	Manage utilizing in house Standard Operating and QA procedures. Notification to relevant authorities
3rd Party Property Damage Liability	Inundation, damage from failed pipelines	Low	Med	Routine procedures and insurance cover
Service Delivery Failure	Service Restoration, failure to meet KPI's Asset condition failure Unforeseen natural disaster resulting in loss of infrastructure	Moderate Moderate Low	Low/Med Low High	Manage by routine procedures Active Replacement Programme based on acquired knowledge Regional Civil Defence and in house emergency management plans
Financial	Un-planned loss or cost to reinstate infrastructure	Low	High	Adequate Disaster Insurance in place
Contingency Planning	Supplementary measures/ actions to ensure continuity of supply e.g. due to drought/ supply constraints	Moderate	Medium	Well maintained supplementary supply Infrastructure Demand Management Strategies and methodologies in place and approved by Council

9.2 Appendix 2

Levels of Service

This section defines the Levels of Service or the qualities of the service that Council intends to deliver and the measures to monitor this. The levels of service provided by the asset support Councils' community outcomes and are based on user expectations and goals

The adopted levels of service also reflect the level of funding that is required to maintain, renew and upgrade the water infrastructure to provide the users with the adopted levels of service.

Introduction

Levels of Service for this activity were adopted by Council in….. 2009 and are based upon:

- Community Outcomes and the four well beings i.e. Social, Environmental, Economic and Cultural
- User Consultation and Survey
- Statutory requirements and Environmental Standards

User Consultation and Survey

In June 2008 Council commissioned a NRB Communitrak Survey seeking public opinion in respect of the services offered to the community.

In respect of water the satisfaction measure for reporting purposes was 74% of those surveyed. This compares with 76% for the Peer Group (Rural) average and 90% for the National Average.

Resident dis-satisfaction was raised in the following areas:

- Summer water shortages and restrictions
- Need more infrastructure to cater for increasing demand
- Quality of water in respect to taste and turbidity
- Opposition to comprehensive metering

In response to the survey feedback the levels of service in this section have taken account of these concerns by adopting the relevant performance measures that that reflect the user view where that can be established.

Target Levels of Service

a. <u>Community Outcomes</u>

Council's relevant community outcomes to the activity are tabulated as below and were identified earlier in Section 2 "The Activity" of the plan. These outcomes drive the delivery goals and subsequent detailed levels of service and performance measures.

Community Outcomes	Asset Contribution
1. A safe District	The firefighting capability of the water supply supports a safe community
2..A vibrant and prosperous economy	Reliable water supply is a requirement for the efficient operation of existing and new business infrastructure
3. A healthy District	High quality water supply is fundamental to community health
4. A District which promotes sustainable infrastructure and services	A sustainably derived community supply managed to protect and enhance where achievable, other Council owned assets and the environment.
5. A District which values and protects its natural environment	The adoption of conservation based strategies to encourage appropriate usage of the water resource

The water activity delivery goals in the following table link to the prescribed community outcomes as shown below. These are measures of the overall activity covering the aspects of service that are of most interest to the community and community survey satisfaction indicators at a level appropriate enabling external survey and internal feed back for reporting purposes.

No	Delivery Goals	Community Outcomes
1.	A cost effective water supply to customers in reticulated areas within the District.	1, 2, 3,
2.	Safe quality and reliable quantity of reticulated water.	1, 2, 3
3.	Community awareness of water conservation practices.	2, 3,4
4.	Sustainable water supply services with a programmed flexibility to cater for change and growth.	2,3,4,5

b. Detailed Target Levels of Service(LOS)

These detailed target levels of service and performance measures are enumerated as below and when achieved contribute to the successful delivery of the higher level outcomes. These technical performance measures require a strong operational focus for successful achievement.

1.	Potential Service Area	LOS Description	Measuring System	Performance Measures	Linkage to Community Outcomes
(i)	Operational efficiency	Final capex and opex is within approved budgets and on time for programmed works.	Regular financial reporting to Council	Annual Report	2,4
(ii)	Operational Efficiency	Review maintenance standards and priorities three yearly in association with AMP updates.	Internal Assessment	Updated Routine Maintenance Plan in AMP document.	2,4
		Energy Efficiency	Establish and monitor average kWh / unit volume produced. Review TOU practices e.g. night rate pumping		
2.	**Potential Service Area**	**LOS Description**	**Measuring System**	**Performance Measures**	**Linkage to Community Outcomes**
(i)	Water Quality	Drinking Water Standards.	No unresolved non-compliance issues.	100% compliance	2,3,4
		Microbiological	MoH Report.	No detectable faecal coliforms	
		Dis-infection	Routine in house testing	Maximum of 5 user complaints per year	
		Taste, colour and odour	User Complaints	Bc Grading	
		Achieve after capital improvements a MoH assessment grade of "Bc" or better.	MOH Assessment		
(ii)	Pressure	Static Pressure, desired minimum	Data Logger,	98% compliance with 200kpa	2,4,5

		200kPa except on northern fringes of serviced area	Telemetry records.	minimum pressure	
(iii)	Pressure and Flow	90% compliance with minimum fire fighting pressures at not less than 10 randomly selected hydrants tested annually.	Fire Hydrant/ flow test results	Annual Report	1,4
2.	**Potential Service Area**	**LOS Description**	**Measuring System**	**Performance Measures**	**Linkage to Community Outcomes**
(iv)	Reliability and Responsiveness	90% of water shut downs, due to operational defects, to be responded to and reinstated within 4 hours.	Operational Records.	Asset Management Plan(AMP) ,Customer Survey Responses	2
(v)	Reliability	100% compliance with completion of programmed capital/renewal works. 95% compliance with agreed Maintenance response times.	Operational Records.	Operational Records	2
(vi)	Reliability	76% residents' satisfaction level achieved for District water services. (Peer Group(Rural) National Average	Bi-ennial NRB Survey	Annual Report	1,2,3,4,5
Potential Service Area		**LOS Description**	**Measuring System**	**Performance Measures**	**Linkage to Community Outcomes**
Sustainability and water conservation Leakage Mitigation		Demonstrable and measurable reduction in true water usage per capita over time	Water meter reading analysis	Annual Report	4,5

	Potential Service Area	**LOS Description**	**Measuring System**	**Performance Measures**	**Linkage to Community Outcomes**
(i)	Effective Management of all relevant consents	100% compliance with abstraction requirements	No unresolved non-compliance issues.	Annual Report	4
(ii)	Manage Growth	Ensure equitable implementation of the Infrastructure (DC) Policy Include development works in activity budgets	Proposed Wairarapa Combined District Plan and Council Policies Forward Work Programme Implementation	Implement consent contribution conditions	2,4
(iii)	Implement identified Works	100% compliance with completion of approved works in annual budgets.	On time and to budget	Operational and Asset Records.	

9.3 Appendix 3

This section presents a summary of asset information, general condition, performance valuation and inventory information.

Asset Overview

a) Headworks Assets

Carterton District Council owns and operates two Water Treatment Plants. The primary plant is a gravity plant situated on the Kaipatangata Stream to the west of the town. A supplementary plant supplied by an underground bore field complete with booster pumps and storage reservoir is situated in Lincoln Road. The normal mode of operation is to supply all service requirements from the gravity system. However during rainfall events when turbidity is too high and/or during low flow in the stream, the supplementary plant is then automatically activated and has the added facility of standby power generation to maintain a service during power outages. The gravity system is treated with lime and chlorine, while the bore supplied system is treated with caustic soda and chlorine.

b) The Network

The gravity supply pressure generally runs between 600 to 700 kPa, while the bores operate at a lesser working pressure of some 500 to 600 kPa.

The network consists of 9.0 km of trunk supply main and 39.5 km of reticulation piping. Reticulation piping varies in diameter from 15 mm to 380 mm. The current network has more than adequate service capacity with the exception of the very northern fringe of the serviced area in Chester Road where increased ground elevation and working losses reduce the available pressure head. When the supplementary supply is in operation and demand is high minimum pressure service levels in this location cannot be easily achieved.

A hydraulic model of the network has been developed. The purpose of the model is to identify any deficiencies in the network and to more properly assess the impacts of infill and green field's development by targeting where appropriate, required capacity improvements and allocating funding responsibility. The modelling will require reviewing on an annual basis and will be additionally used as a reference point to assess the efficacy of leak and loss reduction measures.

1. Headworks

a) Asset Attributes

i) The primary source, the Kaipatangata asset (some 9 kilometres to the west) consists of the water source (Kaipatangata Stream) including some 100 hectares of forestry catchment, all weather access to a run of river intake, supplementary raw water dam storage, screening, treatment and formal storage prior to distribution to the reticulation.

ii) Production bores in Lincoln Road (situated within the town supply area) supplement the primary source in times of outage due to low flow, turbidity constraints and non serviceability of the primary source and consists of three operable supply bores and one additional current out of service, pumping storage, treatment and boosting infrastructure to the network.

iii). The purpose of the both assets is to extract, store in a manner that secures water from contamination, distributes, is reliable and complies with the relevant consent conditions.

b) Asset Performance and Capacity

River Intakes, Production Bores, Dams and Formal Storage

Raw water storage capacity at the Kaipatangata facility is some 4500 m3 when available and formal treated water storage is currently 500 cubic metres. In run of river configuration the maximum daily consented take is 5000 cubic metres indexed to the natural flow in the stream. Maximum instantaneous rate of net take is also indexed to the natural stream flow. This consent was granted in 2003 and remains in effect until March 2013. It is limited in time frame terms reflecting the opposition from a number of parties and interests e.g. DoC, Fish and Game and GWRC and in the longer term there remains the prospect of a potential limitation to the future of this source due to RMA issues. In order to mitigate this limitation, Council plans to allocate a generous timeframe to undertake the necessary pre application consultation with affected parties, assess future extraction requirements and other related matters, prior to consent expiry.

There is 500 cubic metres of formal treated water storage at the Lincoln Road site associated with the three production bores. The cumulative consented extraction rate from these bores is 75 litres/ sec. with a maximum daily extracted volume caps in place for each bore, however providing some 6500 cubic metres on a daily basis. Operationally the management regime seeks to reduce extraction rates allowing for some redundancy in the event of bore failure. These consents remain in effect until September 2014.

Average peak daily demand is assessed between 5000 to 6000 cubic metres unrestricted. With conservation measures in place this is able to be reduced by some 15%. However current treated water storage reserves with the Kaipatangata Intake out of service due to low flow conditions remains at a conservative 6hrs assuming demand overall does not exceed supply.

The conservation measures range from odd and even street numbers on alternate days for unrestricted usage to a total sprinkler and hosing ban in extreme circumstances.

c) Asset Condition

Part of the water supply catchment in Council's ownership is afforested with harvesting taking place on a managed and cyclical basis. The Kaipatangata Intake and basic infrastructure is some 35 years old and in average condition. A significant treatment up grade was undertaken in 1996 incorporating sand and bag filtration. The formal treated water storage reservoir leaks water and remedial work will be undertaken once it can be taken out of service. Associated underground infrastructure is understood to be in reasonable condition for age.

The supplementary supply system at Lincoln Road, bores and storage are relatively new having been provided in 1998 with an upgrade in 2001/ 2002 and 2006 providing additional treatment reliability and yield. The condition of this asset is above average; however one of the production bores requires reinstatement and re-commissioning works.

2. Treatment Facilities and Booster Stations

- Asset Attributes

The purpose of treatment facilities is to reliably produce water to the Drinking Water Standards in sufficient quantities to meet actual and projected demands.

Each plant has its treatment processes relevant and particular to the water source (surface and sub-surface aquifer). The current treatment processes although relatively modern are now unable to satisfy NZ Drinking Water Standards (Section 3.1.2 DWS NZ 2005) due to the lack of disinfection infrastructure that would cater for protozoan cyst removal. Source treatment because of this particular risk is graded D and E.

The supplementary plant in Lincoln Road incorporates pressure boosting by way of three variable speed drive pumps configured in parallel designed to maintain the required pressure and availability levels of service.

- Asset Performance and Capacity

Treatment at the Kaipatangata Intake offers sand and bag filtration, pH correction and chlorination. Post treatment the processed water is then lifted to the formal storage reservoir and gravitates to the distribution network via the 380mm dia. falling main.

Bore field treatment for the supplementary supply consist of pH correction and chlorination prior to pumped distribution to the network. The variable speed drive high lift pressure booster pumps are pressured controlled and configured in parallel to maintain a constant head upon the reticulated system.

The rated production capacity of the Kaipatangata Intake is 4800 cubic metres daily (subject to raw water availability and appropriate turbidity tolerances) and the Supplementary supply capacity is 5100 cubic metres daily subject to optimum bore(s) performance and conservative management.

- Asset Condition

Asset condition is a reflection of age and the level of routine and preventative maintenance that has been applied since new.

All routine maintenance and replacement regimes for pumping, filtration, and chemical dosing and disinfection equipment have been applied by Councils trained operator and external resources where appropriate.

- Asset Attributes, Condition and Performance

Pipelines

The purpose of water supply pipelines is to distribute water from formal storage reservoirs to customer supply points in a sufficient quantity to meet peak demand, fire fighting needs.

Collection Mains

The only collection main runs from the Kaipatangata Intake and treatment plant to Lincoln Road is 380 mm dia and some 9 kilometres in length. The Kaipatangata's operation is governed by conditions at the point of extraction. Auto actuating valving isolates the two systems when the supplementary supply is activated. The pipeline was commissioned in the late 1960's and remains in reasonable condition for age and appears to carry close to its design flow.

Reticulation

Reticulation comprises a mix of asbestos cement, uPVC, cast iron, alkathene, copper and galvanized pipe with appropriate valving and fire hydrant capabilities and vary in diameter from 300mm dia to 15mm dia., inclusive of service connections The reticulation hydraulics are enhanced by numerous ring feed connections within the network thereby minimizing working pressure losses. Reticulation varies in age from 70 years for the cast iron to current.

Condition is variable according to age, in particular copper service connections are replaced on a regular basis. Mains renewal has largely taken place on an as required basis. Because detailed condition information is not available a substantive renewal programme is not yet in place as referenced earlier however condition is relative to age usually depending on pipeline material and reducing levels of service, excessive repairs determine replacement priority.

3. Planned Improvements and Initiatives

Headworks

The following capital work programme is to be delivered by July 2010. Council has obtained MoH subsidy to enhance treatment of potable water to more closely meet the NZDWS (2005) guidelines in respect of protozoa removal. The treatment is required at both the Kaipatangata source and the supplementary bore supply.

Additional treated water storage is to be provided at the Kaipatangata of 1000 cubic metres. Elements of the work, associated costs and benefits are shown in tabular form:

Work Element	Cost Estimate(GST exclusive)	Benefit
Ultra-violet irradiation for both treatment plants	607,300	To meet DWSNZ 2005 standards for both plants

Additional formal treated water storage, Kaipatangata	306,100	More robust supply, allowing for flood and bore outage events
Additional telemetry systems	70,000	To cater for increase traffic from enhanced treatment processes
Increase Operator training	8,000	Appropriate skills to manage additional plant complexity

This represents capital worth programme of some $1.0M with approximately $365K of MoH funding available to assist.

These improvements concur and are compatible with the community's wishes for a secure and sustainable public water supply.

Reticulation

The water model requires revisiting following the leak detection follow up and should be checked on an annual basis thereafter.

Funding of $25,000 has been allowed in the current Annual Plan for this work. This includes an allowance for additional valving within the network to facilitate more effective operational management of the asset. Funding for renewal works is indicated in the current LTCCP starting 2011/12.

Detailed Asset Inventory, Revaluation and Depreciation Information

This data is separately available upon request in electronic form

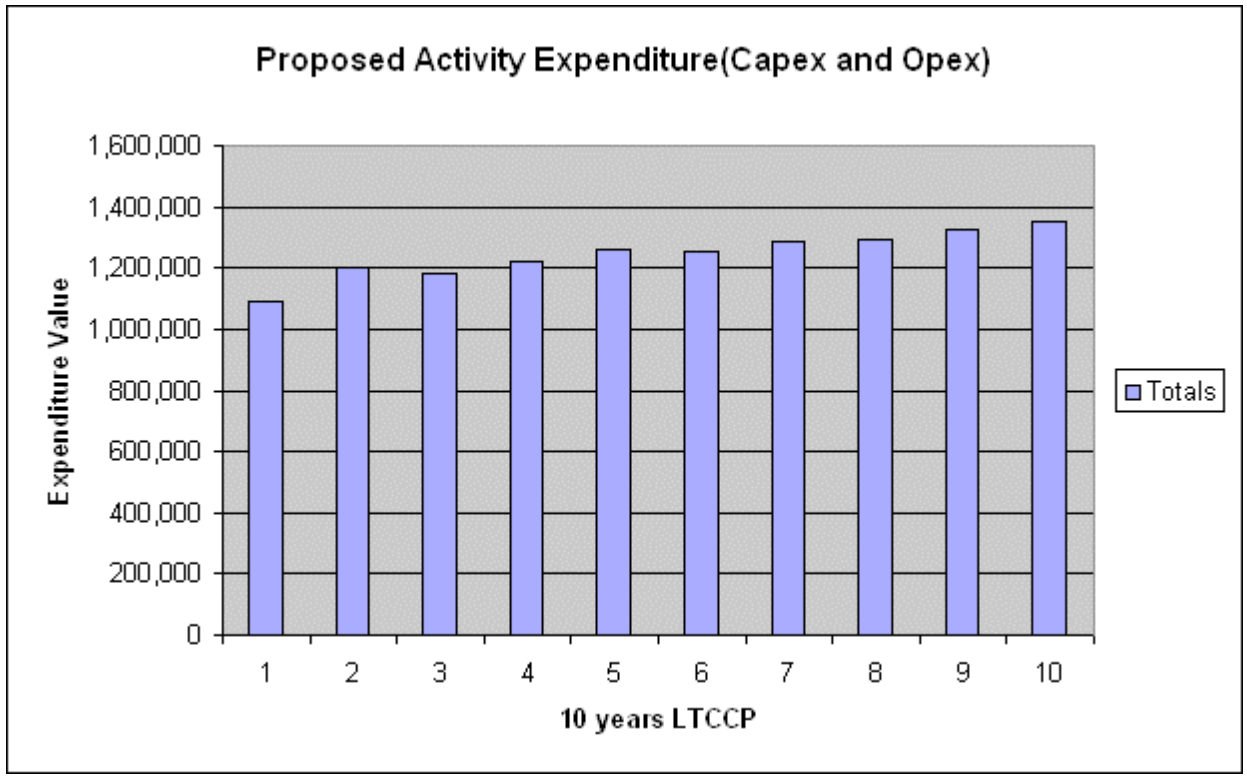
9.4 Appendix 4

Expenditure and Funding Models

The attached tables and charts summarise the forecasted expenditure and funding costs relevant to the activity provisions of the proposed LTCCP

Urban Water **Proposed Expenditure and Funding Model**

1. Capital Expenditure	30/06/2010	30/06/2011	30/06/2012	30/06/2013	30/06/2014	30/06/2015	30/06/2016	30/06/2017	30/06/2018	30/06/2019
Chester Road Pressure Investigation										
and Upgrade	10,800	112,189								
Chlorine Dosing Pump				2,748						
DM Strategy Development, Infrastructure										
and education	10,000	15,510								
Investigate Moreton Road, Premier										
to Johnsons Road					68,340					
Investigate Works from Water Model	54,000									
Kaipatangata Plant UV Treatment	150,000									
New Valving to improve Network Management	5,500	5,687	5,869	6,045	6,265	6,468	6,716	6,947	7,194	7,458
Mains Upgrade/Replacement			181,390	186,830	193,630	199,920	207,570	214,710	222,360	230,520
Portable Pump				3,847						
Supplementary Plant UV Treatment	150,000									
	380,300	133,386	181,390	199,470	268,235	206,388	214,286	221,657	229,554	237,978
2. Operational Expenditure										
a) Reticulation	792,181	866,079	839,675	856,370	863,937	881,475	905,771	898,227	922,768	945,809
b)New Water Connections	40,061	41,395	42,790	43,799	45,174	46,630	48,016	49,602	51,308	52,894
c) Underground	82,756	86,303	90,370	106,498	94,156	97,401	99,046	101,959	105,729	105,345
d) Filtration Plant	178,655	206,696	211,525	217,317	254,073	229,918	230,920	242,487	244,524	245,920
Totals	1,093,653	1,200,473	1,184,360	1,223,984	1,257,340	1,255,424	1,283,753	1,292,275	1,324,329	1,349,968



3. Funding

UAGC and general rates	90,372	95,184	98,237	101,409	106,556	105,747	107,148	107,893	110,310	111,560
Targeted rates	813,346	856,658	884,137	912,680	959,003	951,722	966,758	971,035	992,790	1,004,044
Total Rates	903,718	951,842	982,374	1,014,089	1,065,559	1,057,469	1,073,906	1,078,928	1,103,100	1,115,604
Depreciation Transfers	83,595	133,386	187,259	199,469	268,234	206,388	214,285	224,814	229,554	237,978

Other Transfers (loan etc)	228,463	78,688	72,789	71,001	48,922	53,148	58,767	60,603	61,999	70,752
Totals	1,215,776	1,163,916	1,242,422	1,284,559	1,382,715	1,317,005	1,346,958	1,364,345	1,394,653	1,424,334