CARTERTON
DISTRICT COUNCIL

CARTERTON COMMUNITY WASTEWATER
Asset Management Plan

MARCH 2009

Contents

1 INTRODUCTION

This asset management plan describes the strategies and programmes for the community wastewater system 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

A statement of the intended service levels,, compliance 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 and increased levels of service 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

How environmental impacts arising from leakage and other pollution incidents are managed to produce minimal adverse effect

It puts in place systems and processes that will improve documentation, the creation and maintenance of an asset register, regular 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 waste water activity is to provide effective, reliable and environmentally compliant infrastructure for the effective collection and disposal of sewage generated from residential, industrial and commercial properties within the scheme‘s area of benefit .

The Council’s wastewater system services the Carterton urban community and commercial properties both within and external to the town urban boundaries. There are 2280 properties connected to the system.

2.2 Rationale

The Carterton wastewater activity aims to provide an effective reticulated collection and environmentally sustainable treatment system for its community.

This supports community well being and health values by providing a sanitary robust reticulation system and treatment plant capable of meeting the required performance targets and consent conditions.

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

The Local Government Act 2002(Section130) which requires Council to continue to provide wastewater and sanitary 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 "sanitary services".

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

Community Outcome	Contribution
A vibrant and prosperous community	Effective wastewater infrastructure will support a vigorous residential and commercial community.
A healthy District	Efficient collection and disposal of treated wastewater contributes to community health and minimises public health risk
A district which promotes sustainable infrastructure and services	Reticulation and wastewater treatment infrastructure capable of meeting consent requirements and sustainable environmental outcomes
A District which values and protects its natural environment	Striving to identify and adopt leading edge wastewater treatment technology resulting in a minimal environmental footprint

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

By adopting a precautionary approach, commonly associated with sustainable development and asset delivery, the significant effects of the activity both positive and negative in terms of the four well beings can be summarized as follows:

Well Being	Positive	Negative
Social	Community health benefits arising from a secure collection and disposal system	Health and Safety Risks associated with asset operations and overflow incidents
Environmental	Community based treatment infrastructure offers a minimal and sustainable environmental footprint complying with current consent requirements	The effects of treated waste water disposal upon the surface receiving waters and groundwater values
Economic	Affordable cost of infrastructure participation promoting an appropriate environment for residential and commercial development	Possible loss of income and business in the event of excessive participation costs and infrastructure failure
Cultural	Wastewater collection and disposal services are non discriminatory in benefit for all community and ethnic groupings	Potential community and iwi concerns in regard to waterway health and associated values arising from the disposal of treated waste water

Council is not considering any significant changes to the activity that may be inconsistent with 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 work 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 Asset Stewardship

That investment is required to upgrade wastewater treatment processes has been already recognised in current and forward capital works programmes.

Council has been promoting best water conservation practice for its citizens and has already implemented a comprehensive water metering programme for the serviced area. As wastewater volumes are a function of water consumption it is anticipated that comprehensive water metering will reduce discharged volumes on a per capita basis.

3.2 Environmental

Consents for the waste water treatment plant discharges expire in 2009 and the renewal processes for these consents is currently under way.

In addition proposals are under consideration for irrigation of treated effluent to suitable privately owned adjacent farm land as an alternative or supplement to existing land/ waterway discharges. To this end a higher level of tertiary treatment is proposed to ensure that environmental impacts are minimized which ever method of discharge is proposed.

The comprehensive, communal approach to collection and treatment for the community provides the optimum environmental footprint which individual on site waste disposal systems cannot achieve on a collective basis.

Population growth will increase wastewater discharge volumes and the impacts of this upon consent conditions and plant capacity will need to be carefully managed.

3.3 Economic

Reliable effective waste water reticulation and treatment infrastructure supports successful economic activity. It also allows small lot development in the Carterton Urban area subject to the constraints imposed by the District Plan land subdivision rules to occur.

Whilst Council acknowledges that the activity imposes a cost on the residents and business sector. Strategies and funding policies for asset maintenance and improvements will focus on cost minimisation and equitable allocation of costs to users.

3.4 Other

In additional there are key legislative and statutory requirements relating to the management of wastewater assets.

These requirements, asset management strategy and future demand drivers in relation to growth, trends, losses, consumption, 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 community outcomes as below where they apply drive the delivery goals and assist with the detailing of the activity performance measures which are contained in Appendix 2

4.1 Community Outcomes

1) A safe District
2) A vibrant and prosperous community
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.**

The levels of service for the wastewater asset has been developed taking into account the following general considerations:

a) Community expectations and Council's response to customer feedback
b) Legislative and Consent requirements
c) Sustainable health and environmental matters embodied in the community outcomes
d) Community affordability

Potential new consent requirements and enhanced environmental objectives have driven the forthcoming capital works programme (detailed in **Appendix 3**) proposed for enhanced treatment.

In association with this is the identified need to progressively implement a programme of reticulation pipe renewal work to reduce inflow and infiltration levels to ensure optimal operation of the treatment plant and its processes.

5 ASSETS

Re-valuation of the infrastructural assets relevant to this activity was undertaken in July 2008 by Opus International Consultants, 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 valuation is some 15 % less since the previous assessment undertaken in 2005.
Whilst there has been an increase in the number of wastewater assets owned by Council the change in valuation downwards can be attributed to an improvement in data quality. A

number of assumptions that were taken into consideration with the 2005 valuation for pipe reticulation and fittings have been removed. The Optimised Replacement Cost (ORC) for the asset in 2005 was $9,288,728.

Asset Category	Optimised Replacement Cost	Optimised Depreciated Replacement Cost	Annual Depreciation
Pipe Reticulation excluding service laterals)	4,446,000	1,506,000	62,000
Reticulation Fittings	988,000	213,000	20,000
Pump Stations	282,000	170,000	10,000
Sewage Treatment Plant	1,506,000	558,000	58,000
Wastewater Upgrade	638,000	504,000	34,000
TOTALS	**7,860,000**	**2,951,000**	**184,000**

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

5.1 Asset Description and Condition

a) Reticulation

The age of the reticulation ranges from some 50 years old to current and hence condition varies throughout the network. Older pipeline and lateral types include earthenware, concrete and asbestos cement. Newer pipelines and connection laterals are of UPVC materials.

Recent modelling work although not complete has indicated that the network has capacity for normal diurnal dry weather flows. However, surcharging occurs during prolonged rainfall events over the winter season in various locations due mainly to pipeline infiltration through faulty pipeline joints. High ground water levels over the winter season exacerbate these infiltration flows. The modelling indicates that the Wet Weather Flow (WWF) flows will result in surcharging in various locations particularly down catchment near the WWTP.

In order to address this issue, which imposes overload conditions at the wastewater treatment plant Council has adopted a pipe rehabilitation/ renewal programme with annual funding available as forecasted in the LTCCP. The level of funding proposed for renewals mean that renewals will take some fifteen years to complete. This will mean that buffering arrangements need to be considered during the planning and implementation phase for the wastewater treatment plant upgrade. if the new consent imposes discharge volume constraints.

Inventory extracts are tabled below, noting that the realistic life of concrete and earthenware sewer pipes has been re-assessed at 60 years. This assessment is at variance to the detail contained within the attached asset register but is based upon condition information obtained from inspection.

Description	Size	Length Number	Life	Const Date	Age
		31,899			

Concrete	380	1,168	60	1,940	68
Concrete	305	1,788	60	1,960	48
Concrete	225	908	60	1,940	68
Concrete	225	688	60	1,950	58
Concrete	150	620	60	1,940	68
Concrete	150	1,152	60	1,950	58
Concrete	150	448	60	1,960	48
Earthenware	225	4,348	60	1,940	68
Earthenware	150	372	60	1,940	68
Earthenware	150	3,194	60	1,950	58
Earthenware	150	720	60	1,960	48
Earthenware	100	488	60	1,950	58
A/C	225	860	60	1,970	38
A/C	150	308	60	1,940	68
A/C	150	1,648	60	1,950	58
A/C	150	3,561	60	1,960	48
A/C	150	4,288	60	1,970	38
A/C	100	84	60	1,950	58
A/C	100	404	60	1,960	48
PVC	250	424	80	1,990	18
PVC	150	1,094	80	1,990	18
PVC	150	964	80	2,003	5
PVC	150	476	80	2,007	1
PVC	150	171	80	2,007	1
PVC	150	237	80	2,007	1
PVC	150	251	80	2,007	1
PVC	150	150	80	2,006	2
PVC	100	200	80	1,990	18
PVC	100	284	80	2,007	1
PVC	100	143	80	2,007	1
PVC	100	208	80	2,007	1
PVC	100	50	80	2,007	1
PVC Pressure	80	200	80	1,990	18
PVC Pressure	60	60	80	2,007	1
PVC Pressure	60	180	80	2,007	1
Manholes		72	50	1,940	68
Manholes		60	50	1,950	58
Manholes		60	50	1,960	48
Manholes		48	50	1,970	38
Manholes		13	50	2,003	5
Manholes		9	50	2,007	1
Manholes		5	50	2,007	1
Manholes		2	50	2,007	1
Manholes		5	50	2,007	1

b) Pump Stations.

Since the 2005 inventory data was compiled an additional six (6) pump stations have been vested in Council as a consequence of fringe and infill development making a total of twelve

(12) pump stations.

The pump stations are generally small scale in nature servicing low lying sections of the serviced area. The infrastructure condition and servicing requirements are determined by installation type, age and duty. Weekly inspections are undertaken to ensure operational effectiveness and to identify maintenance requirements. New telemetry installations will be provided this year.

c) Treatment Plant

The treatment plant (WWTP) is situated on Council owned and appropriately designated land in Dalefield Road at the southern extremity of the community.

The treatment is based upon a two stage pond based system with the following refinements:

Pre-screening and clarification

Sludge removal and digestion

Wetland polishing prior to discharge to land or the Mangatarere Stream

Filtration and disinfection prior to sub-surface land disposal at certain times of the year

The WWTP in basic form is some thirty years old and has been the subject of improvement and refinement work over the period as consent requirements become more rigorous in nature reflecting the effects based framework relevant to such activity in NZ.

As referenced earlier, the plants inherent buffering capacity is seriously compromised over the winter months with higher than expected inflow due to infiltration.

Planning for improved final polishing treatment utilising MBR or similar technology requires that these infiltration issues be addressed over time to ensure the appropriate sizing of the new technology without imposing unnecessary capital cost and redundancy upon the serviced community.

d) Operations and Maintenance

The O&M strategy aims to generally retain the current levels of service by implementing a balanced programme of planned and reactive works according to the adopted response times for reticulation maintenance and headwork's operations.

5.2 Asset Renewal Reticulation

A planned condition based programme of renewal as referenced earlier will be undertaken commencing this financial year. This programme has been developed as a result of condition based investigation in recent times and is shown in some detail in **Appendix 3**

5.3 Asset Development

The number of pump stations Council is being asked to vest as a consequence of development is a concern in terms of sustainability and future opex costs. There is an intention to investigate further the viability of providing additional interceptor gravity mains east and west of High Street to maximise the potential of the gravity based system.

Outside of capacity improvements that might be required as a consequence of the above and infill residential development in the area of reticulation, the focus remains to enhance the quality of treated wastewater so as to provide the Council with the widest range of disposal options. Effective and sustainable irrigation to land disposal is the focus for the future.

6 KEY ASSET MANAGEMENT PLAN ASSUMPTIONS

Assumptions in the preparation of the Waste water Asset Management Plan includes:

That wastewater assets will remain in Council ownership through out the planning period and that there will be an ongoing requirement for this activity

The recommended actions from previous design reports submitted to and approved by Council for headwork's improvements has 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. Proposed pumped solutions for residential development are scrutinized to ensure that Council receives a sustainable solution without imposing unnecessary cost on scheme participants in the future.

Whilst the demand upon this activity will increase over time due to anticipated growth, the operational requirements for this activity are not expected to change significantly over the next ten years. Council has not signalled what it would consider to be an acceptable rate of growth.

The operational requirements for this activity will remain at a similar level for the next ten years.

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 **(Appendix 4).** 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 achieve improved future asset management planning:

Improved data collection and recording processes for new and existing infrastructure for incorporation into Council's data base

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 the operation and maintenance activities to ensure services are delivered in a reliable and cost effective manner

Prioritisation of renewal works based on age, condition and repair occurrence(refer to the draft LTCCP for planned sewer renewal work over the LTCCP time frame)

8 FINANCIAL PROJECTIONS AND TRENDS

a) Financial Forecast

Appendix 4 contains information in tabular form which sets out the anticipated operations, renewals and capital expenditure for the 10 year period of the LTCCP once adopted in 2009. In addition source funding is identified for these activities.

b) Trends

Of significance in the 10 year forecast is:

The heavy front end capital requirement to provided capital infrastructure over years 1, 2, and 3. Beyond which capital funding levels are expected to remain relatively constant

That maintenance Activity Expenditure is expected to increase annually in line with asset growth and inflation

The levels of funded depreciation due to a decrease in asset value and increase in asset acquisition will not have a negative effect on funding ability over the next three years. An additional allowance for funded depreciation can be anticipated in 2011 when the asset base will be re-valued.

9 APPENDICES

1) Strategic Future Demand drivers and 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

9.1.1 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

9.1.2 Council Vision

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

9.1.3 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 wastewater asset.

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

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

Community Outcome	Contribution
A vibrant and prosperous community	Effective wastewater reticulation will support a vigorous residential and commercial community.
A healthy District	Efficient collection and disposal of treated wastewater contributes to community health and minimises public health risk
A district which promotes sustainable infrastructure and services	Reticulation and wastewater treatment infrastructure capable of meeting consent requirements and sustainable environmental outcomes
A District which values and protects its natural environment	Striving to identify and adopt leading edge wastewater treatment technology resulting in a minimal environmental footprint

9.1.4 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 ion 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 treated effluent quality and TLA for land use
- 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." It requires Council to provide "sanitary works" which include wastewater works and all land, buildings, pipes and appliances used in connection with any such works.

Building Act 2004, 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. Sets requirements concerning disclosure of information

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 and risks require attention or management.

Recommended actions contained within this initial assessment are consistent with the objectives of this asset management plan.

The assessment in respect of sanitary services indicated that legislation updates required Council in its role to operate its facilities in accordance with current legislation.

In addition the assessment reinforced in asset management terms that Council adequately manage funding for capital work requirements consistent with the adopted levels of service.

Carterton District Council, Trade Wastes By-Law 2008. This bylaw controls the quantity and composition of industrial sewage flows to protect wastewater assets, sewage treatment processes and sewage staff(Council staff and contractors) and to ensure that waste generators contribute their fair share towards infrastructure costs

9.1.5 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 input 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 as they occur and extensions to the serviced area as they may occur.

Risk Management (RM). Manage exposure to risk and implement RM measures where exposure is in-compatible with Councils risk profile

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 waste water reticulation model against operational performance to assess 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 asset management 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

9.1.6 Future Demand Drivers

These are driven by:

- Growth, residential and other
- Changes in water usage patterns i.e. water consumption for domestic, commercial and industrial users
- Wastewater from private water supplies
- Wastewater from other sources (such as tanker discharges
- The extent of infiltration, inflow entry to the system
- Extensions to the system to service currently un-reticulated areas
- Technology Changes

a) Growth Trends.

1. 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 for low, medium and high growth are appended 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. Refer to the Population Projection table contained in the Water Supply Asset Management Plan

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.

The Wairarapa region in part has been noted in recent times for regular increases in the number of rateable assessments with little change between five yearly census population counts.

The asset management plan and its managers will continue to record actual development on Council GIS data base.

2. Industrial Growth

Significant industrial growth impacting upon waste water infrastructure is not anticipated to

occur within the Carterton township as provision for such growth and land use is provided elsewhere to the north at Waingawa.

3. 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.

b) Water Consumption Patterns

With the exception of potable water used for irrigation and unaccounted for water, most water is discharged into the wastewater reticulation. Changes in water consumption patterns will be reflected in changes in levels of discharges to the wastewater system.

c) Wastewater from Private Water Supplies

One industrial contributor discharges to Council's wastewater system and utilises bore water in part for its process activities.

d) Wastewater from Other Sources

Septic Tank solids and wastewater are discharged into the CDC wastewater treatment plant system. Disposal access is limited to Waste-track members, local septage contractors collective

e) Extent of Inflow/ Infiltration to Reticulation System

This is judged to be highly significant in terms of impact upon the reticulation and treatment infrastructure.

It is characterised by mainly infiltration through faulty pipe joints and manholes when ground water levels are at a high level over the winter months.

Inflow due to flooding/ or illegal stormwater connections to the sewers was the subject of investigation and community wide several years ago. Remedial work was undertaken mainly on private property in 2000, 2001 and 2005 as a consequence hence inflow is not considered to be a significant contributor to system flooding at the present time.

The impacts are:

Reticulation pipeline, surcharge or flooding… this can result in wastewater overflow usually at the lowest point of a catchment, where pump stations may not be able to cope.

Degradation of buffering volume at the wastewater treatment plant resulting in short circuiting, overflows and potentially illegal discharges

Recent Treatment Plant inflow records indicate under extreme conditions (high intensity rainfall) that inflow may increase up to six times that which would be normally expected from a typical community system, with inflow and infiltration at minimal levels.(Ref: NZET AEE, Consent Renewal Application September 2008).

The reticulation renewal programme, implemented over time therefore aims to minimize the

negative impacts of groundwater infiltration.

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 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

Appropriate to the scale of Carterton activity, probability and impact, management of risk is tabulated as follows:

Risk Type	Typical Events	Risk Probability	Impact Value	How Managed
Legal and Statutory	Discharge Consent breach	Moderate	Med	Regular monitoring and consistent operator management practices
	Environmental Damage	Low	Med	
Health and Safety	Non compliance	Moderate	Low	Manage utilizing in house SOP and QA procedures. Notification to relevant agencies
	Infectious Disease outbreak	Low	High	
3rd Party Property Damage Liability	Inundation, damage from overloaded or failed pipelines	Low	Med	Routine operations management procedures and insurance cover
Service Delivery Failure	Service Restoration, failure to meet KPI's	Low	Low/Med	Manage by routine SOP's
	Pipeline failure due to condition issues	Low	Low	Active Replacement Programme based on acquired knowledge
	Unforeseen natural disaster resulting in temporary loss of infrastructure	Low	High	Regional Civil Defence and in house emergency management plans
Financial	Un-planned disaster loss or cost to reinstate infrastructure	Low	High	Adequate Disaster Insurance in place
Contingency Planning	Supplementary measures/ actions to ensure continuity of service e.g. following plant failure	Moderate	Medium	Adequate back-up strategies and infrastructure e.g. stand by generation

9.2 Appendix 2

9.2.1 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.

9.2.2 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

9.2.3 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 wastewater services the satisfaction measure for reporting purposes was 77% of those surveyed. This compares with 87% for the Peer Group (Rural) average and 91% for the National Average.

Dissatisfaction was raised in the following areas:

The system needs upgrading to cater for growth

Odour Problems

Back ups and overflows of sewage

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.

9.2.4 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 "Wastewater Activity" of the plan. These outcomes drive the delivery goals and subsequent detailed levels of service and performance measures.

The services provided by the activity contribute positively to certain of the community

outcomes adopted by Council as follows:

Community Outcome	Contribution
3. A healthy District	Efficient collection and disposal of treated wastewater contributes to community health and minimises public health risk
4. A vibrant and prosperous community	Effective wastewater reticulation will support a vigorous residential and commercial community.
5. A district which promotes sustainable infrastructure and services	Reticulation and wastewater treatment infrastructure capable of meeting consent requirements and sustainable environmental outcomes
.6. A District which values and protects its natural environment	Striving to identify and adopt leading edge wastewater treatment technology resulting in a minimal environmental footprint

The 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.

Delivery Goals	Community Outcomes
Cost effective sewage infrastructure for customers in reticulated areas within the District.	4,5
Effective and reliable collection, treatment and disposal of wastewater	3,4,
Environmentally sensitive wastewater treatment and disposal systems.	3,6
Sustainable and affordable infrastructure with flexibility to cater for change, growth and the regulatory environment	5,6

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. They remain current for the term of the LTCCP however are subject to review every three years to reflect as required any changes to service levels.

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 and programme reporting to Council	Annual Report	5
(ii)	Operational Efficiency	Review maintenance standards and priorities three yearly in association with AMP updates. Energy Efficiency	Internal Assessment Establish and monitor average kWhr/unit volume produced. Review TOU practices e.g. night rate pumping	Updated Routine Maintenance Plan in AMP document.	5
(iii)	Future Expenditure	Develop future Opex and Capex programmes in regard to affordability	Independent Review of programme cash requirements and rating base ability to pay	Forward Work programmes in AMP	4,5
2.	**Potential Service Area**	**LOS Description**	**Measuring System**	**Performance Measures**	**Linkage to Community Outcomes**
(i)	Public Health	100% compliance	Meet monitoring requirements of the legislation e.g. the Health Act	No significant issues and incidents raised by DHB and MoH compliance	3
(ii)	Customer Satisfaction	Monitor customer satisfaction with reliability and standard of sewage systems and service	Achieve Peer Group National Average satisfaction levels of 87%	Annual Report	3,4,5,6
2.	**Potential Service Area**	**LOS Description**	**Measuring System**	**Performance Measures**	

(iii)	Responsiveness	90% of sewer blockages, due to operational defects, to be reinstated within 4 hours.	Operational Records.	Annual Report	3,5
(iv)	Reliability	95% compliance with agreed Maintenance response times.	Operational Records.	Activity Reporting	3,5
(v)	Reliability	Not more than fifteen sewage overflows per storm event due to inflow/infiltration	Operational Records		3,5,6
	Potential Service Area	**LOS Description**	**Measuring System**	**Performance Measures**	**Linkage to Community Outcomes**
(i)	Effective Management of all relevant consents	100% compliance with consent requirements	No unresolved non-compliance issues.	Annual Report	5,6
(ii)	System Operation	Operate reticulation and headwork's systems within known operating limits	No significant unresolved environmental damage or risk issues raised by GWRC	Operational Records	5,6
	Potential Service Area	**LOS Description**	**Measuring System**	**Performance Measures**	**Linkage to Community Outcomes**
(i)	Identify and action reticulation upgrade and renewals	Promote an active renewal programe	Complete condition surveys and sewer network modelling	Forward Work Programme	4,5

(ii	Plan for and confirm Capital Improvement Programme for Wastewater Treatment Upgrade	Obtain expert advice and reporting	Review if necessary and appropriate for within the Annual Plan and LTCCP. Successful consent acquisition	Forward Work Programme	4,5
(iii	Manage Growth	Process applications for subdivision and new development	NZS 4404: 2004. Land Development and Subdivision Engineering	Consent application conditions and records	3,4,5,6

9.3 Appendix 3

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

9.3.1 Asset Overview

a) Headworks Assets

The Carterton Wastewater Treatment Plant is located in Dalefield Road and was first established about 1940.

Currently it is configured as a two stage oxidation pond with front end screening and sludge removal enhancements and polishing infrastructure including wetlands prior to land and stream disposal.

The Network(Reticulation)

The reticulation services some 2280 properties including industrial and commercial entities with pipe sizes ranging from 80 to 380mm in diameter. The network consists of some 32 kilometres of underground piping. Within the network there are twelve (12) pump stations which are owned and maintained by Council.

Pipe line types are mainly asbestos cement, earthenware, concrete with only a small proportion of pipeline being the newer and more recently used PVC.

Pump Stations

Storage capacity within the wet wells and associated reticulation is minimal in some cases. Power outages combined with infiltration can result in overflows to receiving waters, however standby energy generation is available to maintain the service. As the system is largely gravity in type with relatively small pump catchments, the current contingency arrangements are deemed to be satisfactory.

Remote status and control monitoring systems as referenced earlier are to be provided in the near future. This will enable operational staff to pro-actively manage routine operations and contingency and emergency events.

9.3.2 Headworks

a) Asset Attributes

The system provides a relatively “low- tech” approach to waste water treatment with some refinements aimed at reducing sludge and other solid inflows to the oxidation ponds.

A conscious decision was made by Council in the past to remove solids prior to discharge to the oxidation ponds and refinements to this approach continue to be made. The approach will result in minimal sludge build up in the secondary and tertiary ponds extending useful pond storage life. Sludge digestion has posed some difficulty with odour issues and improvements are anticipated to be made to sludge management early in 2009.

A wet lands upgrade was completed in 2003 resulting in improved bacteria and nutrient removal prior to discharge to the Mangaterere Stream. The plant however is not permitted to discharge to this outfall at times of low flow over the summer period.

To cater for discharge over the summer period therefore a land treatment system has been provided utilizing surface and sub-surface irrigation and infiltration infrastructure. The effluent discharged to land is treated to a higher standard prior to discharge however limited land area imposes constraints upon the future development of this disposal option in this location.

The three existing consents held by Council for the treatment plant expire in March 2009. Consent renewals are now being sought and in addition, a new consent for stream discharge (when the land irrigation system is not available) offering a higher standard of treatment than presently exists

On going investigations continue into alternative and additional land disposal options to maintain the existing system's integrity and to cater for community growth.

b) Asset Performance and Capacity

Volumetric loading on the plant varies considerably due to excess inflow and infiltration into the reticulation during the winter months and at times of high rainfall intensity events. This has been estimated as high as six times the expected flow for the resident population. (i.e. up to 9,000 cubic metres per day)

In spite of this the plant is generally able to perform to the conditions of the current consent due to the diluted incoming wastewater during extreme events and the nature of the consent conditions.

In capacity terms, the existing treatment infrastructure is adequately sized for pre treatment purposes now and into the foreseeable future noting that the plant upgrade aims to highly treat prior to disposal, about 1500 cubic metres per day with any excess flow either by-passing treatment or going into pond storage.

The emphasis remains, as referenced elsewhere, to minimise infiltration to the reticulation network so as to avoid unnecessary additional upgraded capacity at the waste-water treatment plant.

Asset Condition

The assets generally can be described as average in condition given the variable age of assets, with some older infrastructure e.g. the Imhoff tank having being modified to fulfil a different purpose (sludge digestion).

The three ponds are unlined. Two of the newer ponds incorporate wavebands providing some ability to, without risk to embankment integrity; alter operating levels to suit operating conditions

Pumps and newer filtration and disinfection equipment are in above average condition.

Reticulation

Asset Attributes

The asset consists of 32 kilometres of underground pipe and twelve (12) pump-stations. Six (6) pump stations have been provided as part of development that has occurred since 2005. and generally provides an effective means of meeting the community's wastewater disposal requirements.

Asset Performance and Capacity

The reticulation system and associated pumps stations cater adequately for dry weather of normal flow but experiences the negative effects of mainly groundwater infiltration during times of high intensity and prolonged rainfall resulting in additional flow to the treatment plant.

As well as higher than would be expected flows to the treatment plant, in these conditions spillage does occur from the reticulation in lower lying sections of some pumped catchments when inflow exceeds pumping capacity.

Council's monitoring systems currently do not provide early warning to operations staff in the event of reticulation flooding and pump-station overload, however stand by generation is available at times of power outage. As stated earlier remote monitoring and control systems are to be provided this year.

Initial reticulation capacity modelling has been undertaken for the network and it is proposed that this work be completed next year as funds become available. The modelling undertaken to this point has been available to assess the impacts of new development upon the asset.

c) Asset Condition

Piped reticulation condition varies with age. Some 30% (10km) of the pipe network consists of earthenware pipe which is up to 68 years old and variable in condition.

Condition survey work requiring camera inspection was undertaken in the late 1990's and has now provided a basis for a pipeline renewal programme. This programme indicating

location and extent of proposed renewal is shown below and has been largely acknowledged within the current LTCCP. Initial elements of this renewal programme will be delivered this financial year with draft LTCCP to continue to deliver the renewal intentions.

Pump station equipment condition varies with age; these installations are maintained on a regular basis and components replaced as necessary.

RENEWAL PROGRAMME

Description (Replacement Works)	Priority	ROC $	Year
Kent Street (west of railway line)	1	$160	08/09
Garrison St (South)	1	70K	08/09
High St CBD (Park to Wakelin)	1	350K	08/09
Wyndham St	1	167K	10/11
Kent St Extension	1	34K	10/11
Victoria St (Garrison to Railway)	2	132K	11/12
Pembroke to Victoria, Carter Court	2	110K	11/12
Belvedere Road (west of High St)	2	128K	12/13
Park Road (east of High St.)	2	92K	12/13
Taylor St.	2	165K	13/14
Rhodes St	2	154K	13/14
Broadway (3 sections)	2	220 K	14/15
Tasman Crescent	2	110K	14/15
Garrison St(North)	3	101K	15/16
Kent St (east)	3	110K	15/16
Noble Street	3	40k	15/16
SH2 (WWTP to Wakelin and north Park	3	1.82M	16/17 and17/18
Lincoln Road (WWTP to Victoria St).	3	1.25M	19/20 onwards

Planned Improvements and Initiatives

Headworks

Planned improvements include:

Sludge Digester Upgrade. The purpose of this upgrade is to mitigate the odour problems that have been occurring in recent times

Plant Upgrade. Tertiary treatment using membrane technology. Following trialling it has been recommended that the discharge from the wetlands be further treated prior to discharge to either the waterway or land

The additional treatment should meet new consent requirements. More over in terms of environmental impact, Council could reasonably expect that discharge to surface water would be acceptable through out the year should the existing land irrigation option not be available.

Other initiatives include the investigation of the acceptability or otherwise of surface irrigation of a higher standard effluent to privately owned farmland that may be subject to quality standards that might be imposed by Fonterra in relation to dairy products.

The budgeted allowance in the current Annual Plan for this work is $800K.

Reticulation

There is no capacity or increase in level of service improvements proposed over the period that this asset management plan seeks to encompass.

The pipeline renewal works referenced earlier simply seek to reinstate or restore the earlier level of service that was available when the pipelines were originally constructed. An investigation into the viability or otherwise of additional trunking will proceed next year. How this might impact upon the renewal programme will be given early consideration and any necessary adjustments made at the next review.

Detailed Asset Inventory, Revaluation and Depreciation Information

This data is separately available in electronic form

9.4 Appendix 4

Expenditure and Funding Models

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

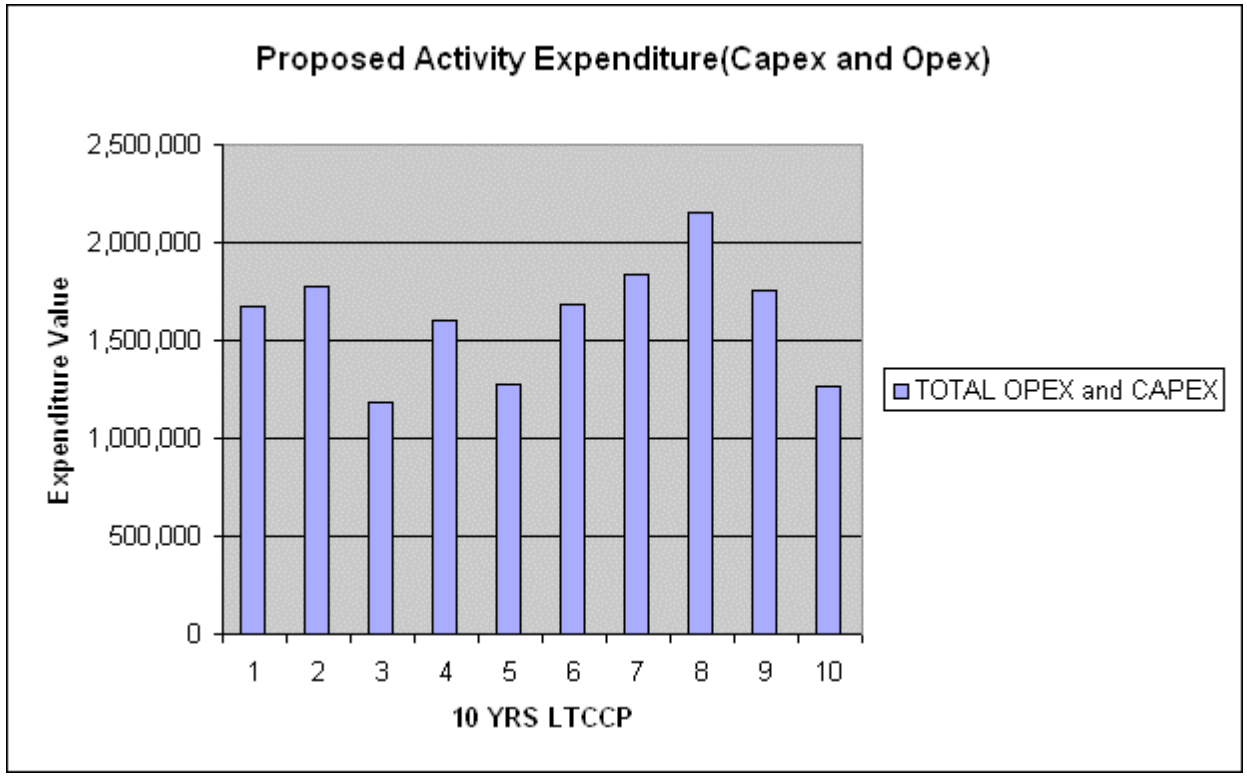
/asteWater **Proposed Expenditure and Funding Model**

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
etic. Renewals (RR). Belvedere Road					145,792					
R Broadway (3 sections)						258,720				
alibrate Sewer Model										
R Garrison Street North								127,563		
rout Manholes	5,200	5,377	5,548	5,715	5,923	6,115	6,349	6,568	6,802	7,051
R High Street (Plant to North End)				439,600			488,400	505,200	523,200	
R Kent Street East								138,930		
R Kent Street Extension			36,278							
R Park Road (East)					104,788					
R Pembroke-Victoria(Carter Court)				120,890						
R Nobel Street							48,840			
R Rhodes Street								194,502		
R Tasman Crescent							134,310			
R Taylor Street						194,040				
R Victoria Street(Garrison to Railway)						155,232				
R Wyndham Street			178,189							
outh Carterton(Trunking U/G Investigation)	15,000		16,005							
ewer Condition Assessment(NZWWA)		33,998								
elemetry Upgrade (PS)	110,000									
/WTP Digester Upgrade	37,240									
/WTP Treatment Area Extension	750,000	850,000								
alibrate Sewer Model	20,500									
oad Cones & Signage Upgrade	5,000	5,170	5,335	5,495	3,417	5,880	3,663	6,315	3,924	6,780
otal CAPEX	942,940	894,545	241,355	571,700	259,920	619,987	681,562	979,078	533,926	13,831

Operational Expenditure

eticulation	428,971	544,328	571,418	608,123	593,556	624,994	689,101	720,986	766,557	771,971
ew WW connections	30,307	31,336	32,337	33,239	34,277	35,337	36,463	37,712	38,964	40,291
umping Station	33,878	35,137	36,451	37,308	38,477	39,726	40,862	42,209	43,682	44,618
/WTP	239,050	272,898	305,445	346,674	351,829	359,405	387,208	367,987	376,168	392,754
otal OPEX	732,206	883,699	945,651	1,025,344	1,018,139	1,059,462	1,153,634	1,168,894	1,225,371	1,249,634
OTAL OPEX and CAPEX	1,675,146	1,778,244	1,187,006	1,597,044	1,278,059	1,679,449	1,835,196	2,147,972	1,759,297	1,263,465



Funding

AGC, General and Targeted Rates	593,395	791,770	840,180	885,746	905,707	965,818	1,040,774	1,061,386	1,122,365	1,145,276
oan and Transfers	935,850	1,092,351	303,610	633,716	301,502	668,530	738,503	1,038,694	597,007	86,464
otal Funding	1,529,245	1,884,121	1,143,790	1,519,462	1,207,209	1,634,348	1,779,277	2,100,080	1,719,372	1,231,740