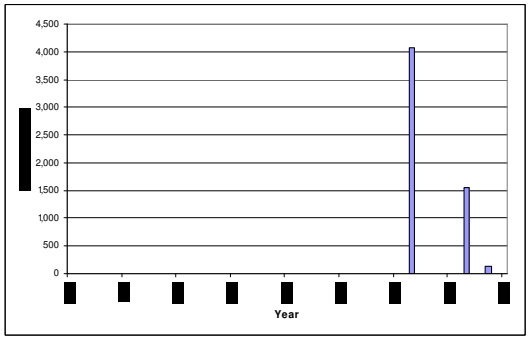
1.0 Springston Sewage Scheme

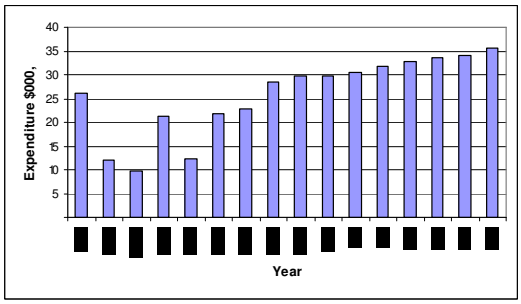
1.1 Executive Summary

Description		Quantity
Population Served		300 (estimate)
Deprivation Index		Unknown
Physical Statistics	Reticulation Length (km)	5.77
	Manholes	22
	Pump Stations	1
Value ($)	Replacement	$1,163,274
	Depreciated Replacement	$958,152
Flows	Annual average over last 6 years	17,251 m^3/yr
	Average daily	55.8 m^3/day
	Peak daily	81 m^3/day
	Minimum daily	- m^3/day
Treatment & Disposal	Pumped to Christchurch City	
Infiltration		Low
Properties	Connected	97
	Not connected	64

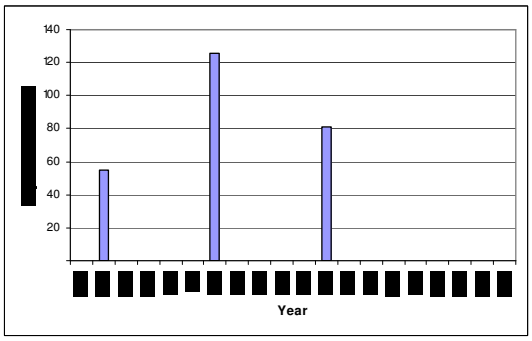
Pipework Replacement Dates



Operating and Maintenance Financial Requirements



Renewals Financial Requirements



New Capital Financial Requirements

There are no capital requirements

The key issue relating to the management of the Springston sewerage scheme are:

- Ensuring infiltration is monitored and minimised

1.2 Introduction

1.2.1 Overview and History

An agreement between Selwyn District Council and Christchurch City Council was signed in November 1997 allowing the pumping of Raw Sewage to Christchurch City reticulation from Springston.

A sewer reticulation was installed into Springston Township in 1998. Prior to this, wastewater from each property was disposed of by individual septic tanks. Due to the high ground water levels in Springston during winter periods septic tanks had a high percentage of failure in certain areas and health hazards were existing.

Wastewater Map

1.2.2 Knowledge of Assets

The following table details the confidence in information for facilities and reticulation.

Table 1-1: Data Confidence

	Reticulation				Pump Station			
	Age	Condition	Performance	Location	Age	Condition	Performance	Location
Highly Reliable								
Reliable								
Uncertain								
Very Uncertain								

1.2.3 Criticality

The following is a preliminary assessment of the critical assets within the scheme.

Table 1-2: Critical Assets

Facility or Main	Location	Reason
Main Pump Station	Leeston Rd	No standby generator and services the Springston community
Rising main to Christchurch	Springs and Shands Roads	Single main over 19 Km long serving the Springston community

1.2.4 Design

The scheme was designed with a peak flow of 6Lts/sec. This was based on a peak daily flow of 1,000 Lts/p/day. This equates to 518 people or 185 properties (using 2.8 people/house).

The existing Township has 105 connections plus the Selwyn District Council's subdivision on Ellesmere Junction Road of 29. In early 2002 a developer (Aylesford Management Ltd) requested if the spare allocation could be used for a 68 lot development on Blakes and Shands Roads Prebbleton. The developer's consultant reported that the peak daily flow of 1,000 Litres/p/day could be reduced. Council agreed with the developer's engineer's conclusion and accepts that a maximum of 246 connections could be sustained, provided that short and long term infiltration of groundwater is minimised.

After consultation with the community approval was given for the proposal to connect to the Springston/Lincoln - Christchurch rising main. In April 2006, Aylesford Management obtained the necessary approvals to develop their land, and hence take up 59 Springstons sewer connections.

1.3 Treatment and Disposal

1.3.1 Overview

No treatment is carried out with all wastewater pumped to Christchurch City.

1.3.2 Issues

The issues for Springston Treatment and Disposal are:

- High cost of disposal requires that flows are minimised by ensuring infiltration levels are low

1.4 Pump Stations

1.4.1 Overview

Wastewater from the individual properties gravitates to a single pump station on Leeston/Springston Road. Wastewater is pumped from the pump station to Christchurch via a rising main from the pump station to Springs and Ellesmere Junction Road corner where it joins into the rising main from the Lincoln pump station that goes to Christchurch.

1.4.2 Pump Station Details

The following table is an overview of the pump station.

Table 1-3: Schedule of Pump Stations

Pump Station	Description	Year installed	Capacity (m^3/day)	Condition	Performance	Criticality
Leeston Springston Rd	Two surface mounted mono pumps with munches (mechanical screens before pumping).	1998	40	1	1	High

1 = Very Good (Industry Standard) 2 = Good 3 =Moderate 4 =Poor 5 =Very Poor

1.4.3 Pump Station Issues

The pump station contains a high degree of sophistication with munches and high head pumps. These units require special attention due to their inability to take "large and hard" items.

1.5 Supply Reticulation

1.5.1 Overview

Due to the very flat grades within the township there is a need for flushing on a regular basis of the reticulation. This is carried out by the use of three flush tanks. A schedule of the pipe asset statistics is shown in Table 11.5 below.

Table 1-4: Schedule of Pipework Length (m)

Diameter mm	MPVC	UPVC	Total
100	4,073	0	4,073
150	0	1,696	1,696
Total	**4,073**	**1,696**	**5,769**

1.5.2 Condition

The condition of the reticulation installed in 1998 will be very good.

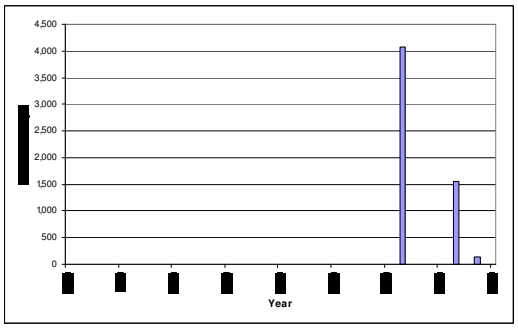
1.5.3 Performance

The performance of the reticulation is considered by Council engineers to be very good[1].

1.5.4 Pipe Network Replacement Date

Table 1-5 details the expected year of mains replacement.

Table 1-5 Pipework Replacement Dates



1.5.5 Infiltration

The levels of infiltration are required to be monitored on an ongoing basis due to:

- Council agreement to reduce the design flow from 1000 to 750 litres/person/day, provided that short and long term infiltration of groundwater is minimised
- High cost of disposal requires that flows are minimised by ensuring infiltration levels are low

1.5.6 Property Inspections

Property inspections were carried out in 1998, at the time of connection to the sewerage scheme. The next full township property inspections will be in 2010.

1.5.7 CCTV

No CCTV is required in the foreseeable future.

1.6 Environmental Management and Agreements

1.6.1 Agreements

Under the agreement to pump untreated wastewater to CCC the permitted hours of pumping is 24 hours per day with a maximum flow rate of 6 L/second.

1.6.2 Consenting Issues

There are no requirements for resource consents.

[1] Infrastructure Asset Guidelines 1999

1.7 Maintenance and Operating

1.7.1 Maintenance Contract

Maintenance of the reticulation and pump station is carried out by SICON Ltd under Maintenance Contract 849. The Springston wastewater scheme Operation Manual has been assessed as moderate. Enhancement of the existing manual is programmed for 2006/07.

1.7.2 Maintenance Issues

The issues for the maintenance of the Springston Wastewater Services are

- Ensuring that inflow is kept to a minimum (stormwater)

1.7.3 SCADA

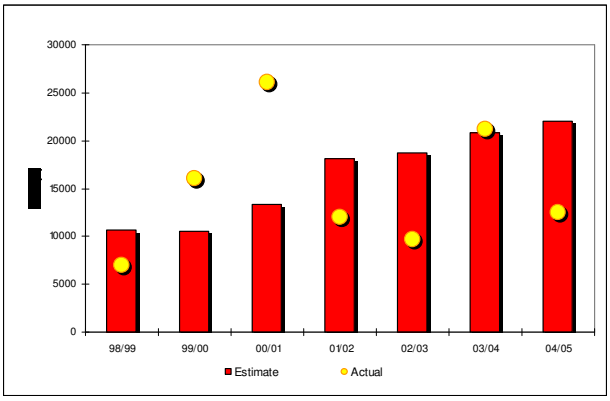
The pump station is monitored by Council's SCADA system and has the following alarm and monitoring capacity:

Site Name	Phase Failure	Pump Operation	Well Level and High Alarm	Total Outflow	Generator Operation
Springston Pump Station	Y	Y	Y	Y	-

1.7.4 Actual Operating versus Estimated Costs

The following table details the comparison between annual estimates and actual annual costs.

Table 1-6: Actual Costs versus Estimates 1998/99 – 2004/05



- Cost are understood to have reduced in 2004 due to no failure of major pumping infrastructure

1.7.5 Future Maintenance Financial Programme

Table 1-7 details the maintenance and operating costs (excluding depreciation).

1.8 Renewals Capital Expenditure

Table 1-8 details the renewals programme for the period 2006/07 to 2026/27.

Table 1-7: Future Operating and Maintenance Financial Requirements 2006/15

Excluding: Depreciation and Loan Interest

	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
Expenses										
Support Services	3314	7764	7717	7606	7685	7719	7956	8004	7983	8043
Consultants Fees	1398	1496	1594	1594	1649	1747	1803	1859	1915	2013
Consultants Fees - other	323	345	368	368	381	403	416	429	442	465
Insurance and Rates	398	398	398	398	398	398	398	398	398	398
Electricity	1075	1151	1226	1226	1269	1344	1387	1430	1473	1548
Maint. - Pump Station	3763	4027	4290	4290	4441	4704	4855	5005	5156	5419
Maint. - Reticulation	1825	1953	2081	2081	2154	2282	2355	2428	2501	2628
Routine Checks	800	800	800	800	800	800	800	800	800	800
CCC Disposal Fees	9892	10585	11277	11277	11673	12366	12761	13157	13553	14245
Total Expenses	22789	28518	29751	29640	30450	31763	32731	33510	34220	35560

Scheme Improvements

Operations Manuals & Procedures	2,500									
Improvement Plan items	1,700									
IP I1 CCTV		3,300								
Property Inspections					2,000					2,000
Total Scheme Improvements	4,200	3,300	0	0	2,000	0	0	0	0	2,000

Table 1-8: Future Renewals2006/07 to 2026/27 ($000,)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
PUMP UNIT 1		22										22								
PUMP MOTOR 1							11													
PUMP UNIT 2		22										22								
PUMP MOTOR 2							11													
ELECTRICAL SWITCHBOARD												27								
VARIABLE SPEED DRIVE		11										11								
MUNCHER 1							36													
MUNCHER 2							36													
PRESSURE RELIEF VALVE							3													
BACK FLOW PREVENTER							1													
SCADA SYSTEM							10													
SCADA RT							1													
FLOW METER							5													
PUMP3 COMPLETE							12													
TOTAL		55					126					82								

Table 1-9: Future Operating, Maintenance Forecasted Cost Trends

Excluding: Depreciation and Loan Interest

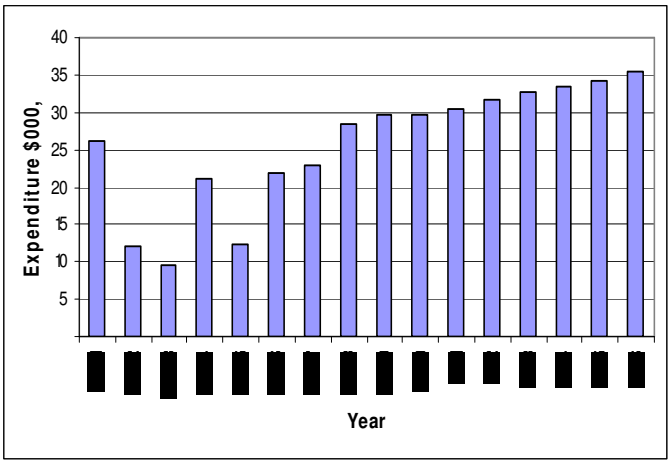
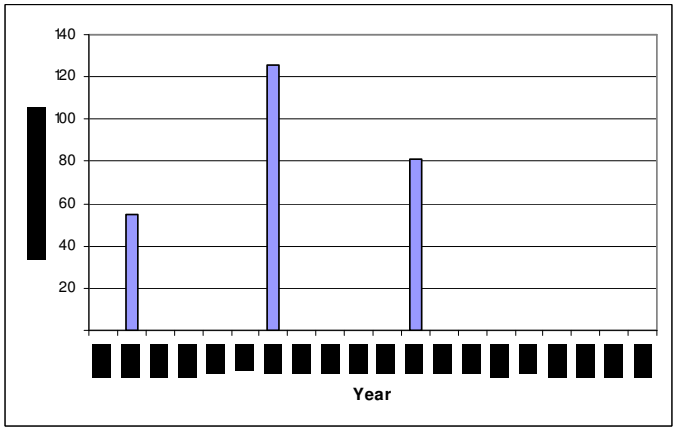


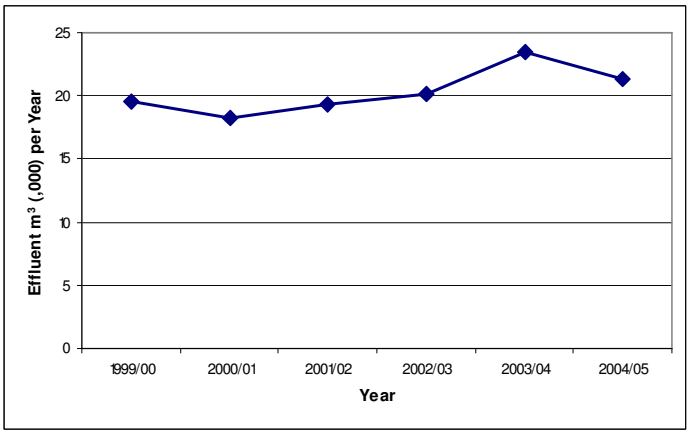
Table 1-10: Projected Renewals Expenditure



1.9 Annual Wastewater Quantities

The following table details the annual wastewater quantities for Springston sewerage scheme.

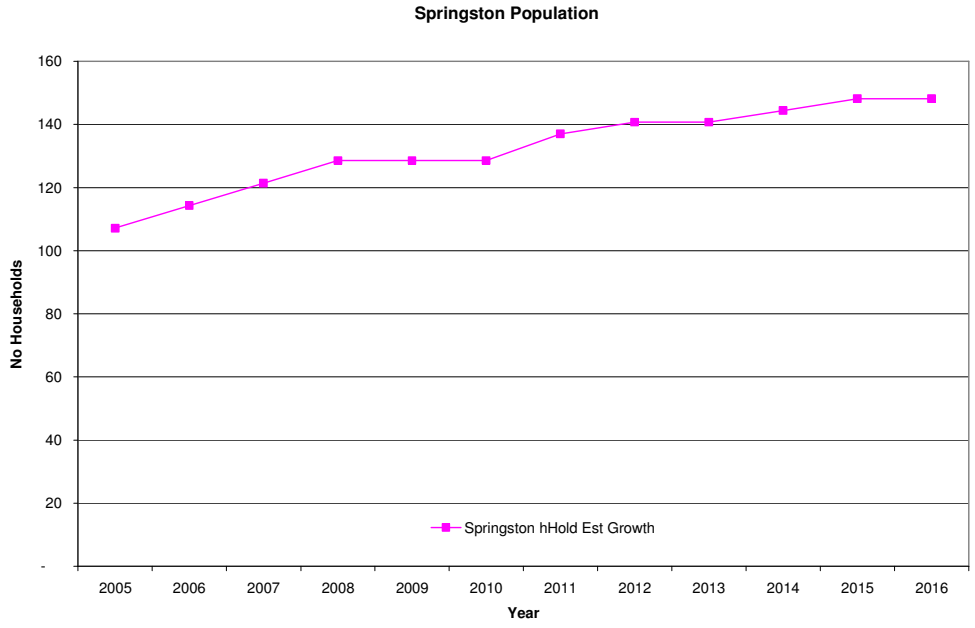
Table 1-11: Annual Wastewater Quantities



1.10 Future Demand and New Capital Expenditure

1.10.1 Future Demand

Based on an assessment completed in March 2006, and taking into account the allocation of Aylesford Managements allocation (Shands Road), all capacity to the Springston network has been allocated. This allows for servicing of a number of vacant lots within Springston.



1.10.2 Capacity/Future Asset Development Requirements

All capacity has been allocated based on a review in April 2006.

1.11 Disposal Programme

No disposal of assets are considered necessary over the next 10 years