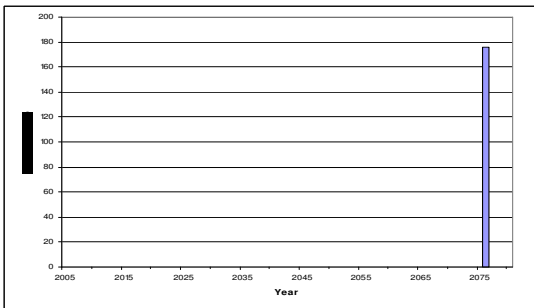
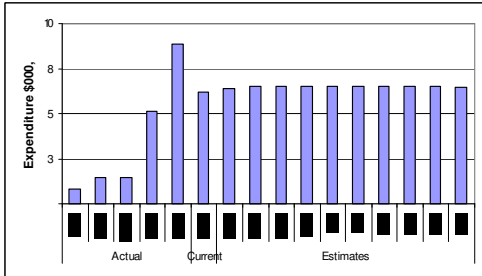


## 1.0 Arthur's Pass Sewage Scheme

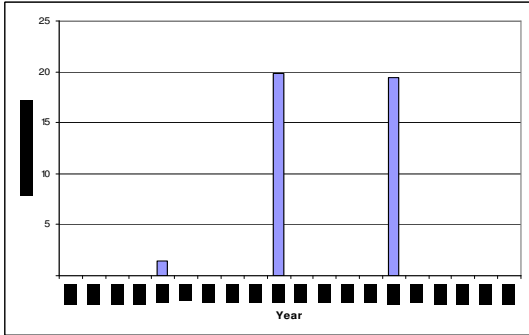
### 1.1 Executive Summary

Description		Quantity
<b>Population Served</b>		10 -142 (estimate)
<b>Deprivation Index</b>		NA
<b>Physical Statistics</b>	Reticulation Length (km)	0.18
	Manholes	3
	Pump Stations	Nil
<b>Value (\$)</b>	Replacement	\$223,873
	Depreciated Replacement	\$198,642
<b>Flows</b>	Annual average over last 3 years	825
	Average daily	2.3m <sup>3</sup> /day
	Peak daily	13.9 m <sup>3</sup> /day
	Minimum daily	? m <sup>3</sup> /day
<b>Treatment</b>	Primary and secondary septic tank	
<b>Disposal</b>	Sand soakage bed	
<b>Infiltration</b>	Unknown	
<b>Properties</b>	Connected	9
	Not connected	1

<b>Pipework Replacement Dates</b> 	<b>Operating and Maintenance Financial Requirements</b> 
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<b>Renewals Financial Requirements</b> 	<b>New Capital Financial Requirements</b> There are no capital requirements
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The key issues for the Arthur's Pass wastewater scheme are:

- Small rating area. Unlikely that rating base will increase
- High cost of operation, maintenance and compliance monitoring as treatment plant in isolated area

## 1.2 Introduction

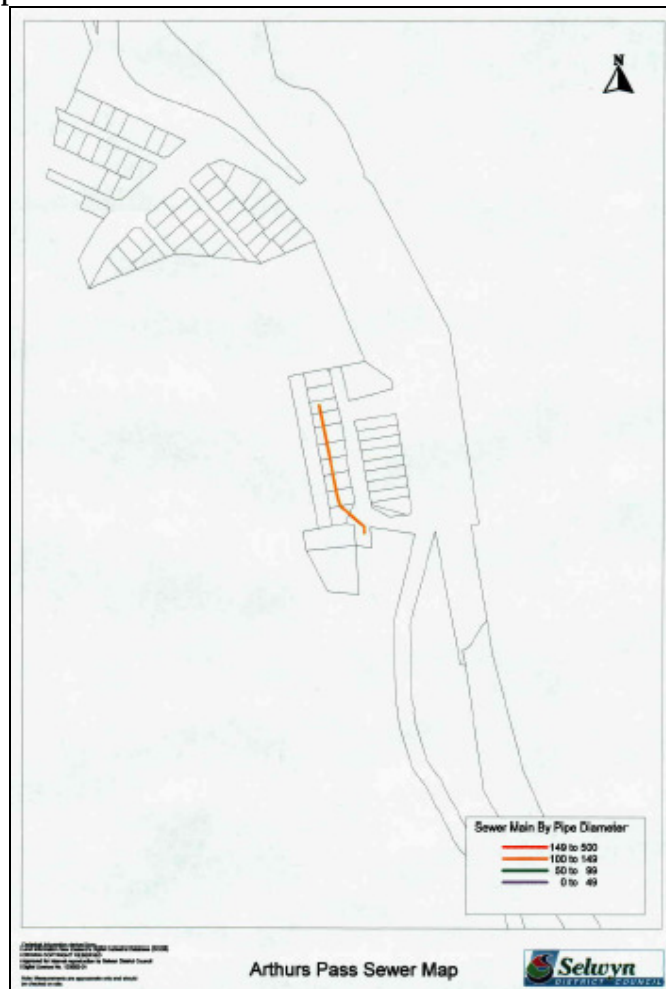
### 1.2.1 Overview and History

The 14 sections on the southern side of Sunshine Terrace along with one of the DOC houses are connected to a sewer network that gravitates to a large septic tank and field tile disposal area. It is presumed that the system was installed when the houses on Sunshine Terrace were built in the early 1950's.

Landcorp applied for a resource consent in the early 1990s for the subdivision of these properties so that individual titles could be given to the individual house owners. A condition of the resource consent was that the insitu system be upgraded. This included an upgraded treatment plant along with associated resource consent and gifting of land to Selwyn District Council for sewage purposes.

The scheme was installed in 1999 and given to the Selwyn District Council in August 2001.

### Wastewater Map



### 1.2.2 Knowledge of Assets

Table 1.1 details the level of confidence with respect to facilities and reticulation information.

**Table 1-1: Data Confidence**

	Treatment Plant				Reticulation			
	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
Pumping facility within Treatment Plant	SH73	Failure of pumping will cause sewer overflows with associated environmental effects

A further more detailed condition assessment is not believed to be required in the short term

### 1.2.4 Design

The scheme was designed with the requirements as detailed in Table 1-3.

**Table 1-3: Sunshine Terrace Design**

Occupancy	Population	Flow Litres/day	Flow/capita
Full time	22	5,500	250
Lodge	78	9,360	120
Holiday houses	42	7,560	180
<b>Total</b>	<b>142</b>	<b>22,420</b>	

## 1.3 Treatment and Disposal

### 1.3.1 Overview

The sewer gravitates through a sewer line located in the back of all the properties in Sunshine Terrace through to a treatment plant. Access to the treatment plant is directly via SH73. The treatment plant consists of:

- Primary septic tank
- Secondary septic tank
- Pump chamber installed in secondary tank
- Sand soakage bed

The system is under-used as the occupancy rate within the houses that the scheme serves is low. There are however peak periods, but no monitoring has been undertaken to confirm what duration / loadings these provide.

### 1.3.2 Treatment and Disposal

Table 1.4 provides an overview of the treatment and disposal components.

**Table 1-4: Schedule of Treatment Plant**

Treatment Area	Description	Year installed	Condition	Performance	Criticality
Primary septic tank	23m <sup>3</sup> tank	1999	1	1	Medium
Secondary septic tank with two fitters	16m <sup>3</sup> concrete tank with two Zabel filters	1999	1	1	Medium
Pump chamber in secondary chamber	Two submersible pumps (1 duty, 1 standby)	1999	1	1	High
Sand soakage bed	23m x 10m x 800mm deep Also contains 3 Plate lysimeters for monitoring purposes	1999	1	1	Medium

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

### 1.3.3 Treatment and Disposal Issues

There are no issues with the treatment and disposal.

## 1.4 Pump Stations

There are no pump stations within the reticulation.

## 1.5 Supply Reticulation

### 1.5.1 Overview

A schedule of the pipe asset statistics is shown in Table 1.5 below.

**Table 1-5: Schedule of Pipework Length (m)**

Diameter (mm)	uPVC	Total (m)
100	176	176
<b>Total</b>	<b>176</b>	<b>176</b>

### 1.5.2 Condition

The condition of the mains installed in early 1990's are considered still be very good. All other mains are assumed to be earthenware. Their condition is unknown.

### 1.5.3 Performance

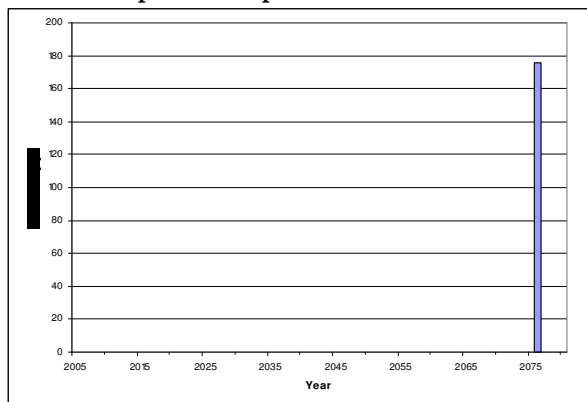
The performance of the reticulation is considered by Council engineers as moderate<sup>1</sup>.

<sup>1</sup> Infrastructure Asset Guidelines 1999

### 1.5.4 Pipe Network Replacement Date

Table 1-6 details the expected year of mains replacement.

**Table 1-6: Pipework Replacement Dates**



- Replacement of mains not considered necessary until about 2076

### 1.5.5 Infiltration

Infiltration levels are unknown. However there is no indication that infiltration has resulted in detrimental effects to the treatment and disposal ie overloading.

### 1.5.6 Property Inspections

Property inspections were carried out as a condition of subdivision in about 1996-97. A further property inspection will be carried out in 2009/10.

### 1.5.7 CCTV

No CCTV has been carried out to ascertain condition of reticulation and is not considered necessary in the short term. Further property inspections (and CCTV) will therefore be delayed until 2009/10. A five yearly inspection is planned from then onwards.

## 1.6 Environmental Management

### 1.6.1 General

Table 1-7 details existing resource consents and compliance.

**Table 1-7: Schedule of Resource Consents**

Consent Number	Description	Date Issued	Expiry Date	Quantities	Compliance (last 12 months)
				Daily (m <sup>3</sup> /day)	
CRC917297	To discharge up to 23 cubic metres/day of septic tank effluent from a community sewage treatment and disposal system.	22-Oct-97	16-Oct-07	23	Minor non compliance. Delay in providing monitoring records to ECan.

### 1.6.2 Consenting Issues

There have been several minor non-compliances. In particular, there has been a delay in Council processing the monitoring data and providing this to ECan. However the actual performance of the treatment and disposal system is within the consent conditions.

## 1.7 Maintenance and Operating

### 1.7.1 Maintenance Contract

Maintenance of the reticulation and general work around the treatment plant is carried out by SICON Ltd under Maintenance Contract 849. The Arthur's Pass sewerage system (including the treatment plant) Operation Manual has been assessed as moderate. Enhancement of the existing manual is programmed for 2006/07.

### 1.7.2 SCADA

The treatment plant is not monitored by Council's SCADA system and connection to SCADA is not warranted due to the small population served.

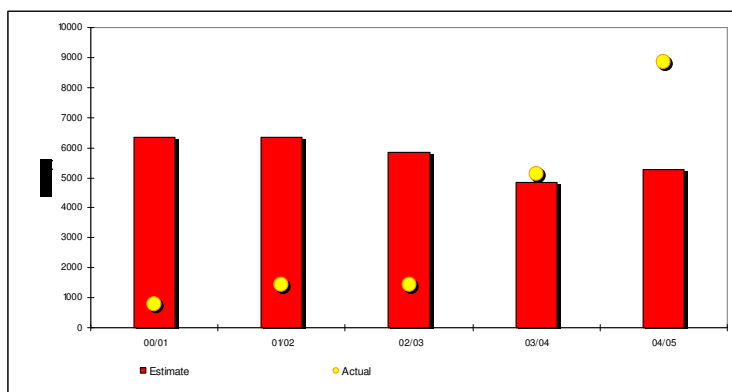
### 1.7.3 Maintenance Issues

There are no known issues for the maintenance of the Arthur's Pass wastewater scheme.

### 1.7.4 Actual Operating versus Estimated Costs

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

**Table 1-8: Actual Costs versus Estimates 2000/01 – 2004/05**



- The over expenditure that occurred in 2004/05 was caused by odour issues

### 1.7.5 Future Maintenance Financial Programme

Table 1-9 details the maintenance and operating costs (excluding depreciation).

## 1.8 Renewals Capital Expenditure

Table 1-10 details the renewals programme for period 2006/07 to 2026/27.

**Table 1-9: 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	278	408	401	393	395	394	404	404	401	404
Consultants Fees	700	700	700	700	700	700	700	700	700	700
Consultants Fees-Other	350	350	350	350	350	350	350	350	350	300
Insurance and Rates	68	68	68	68	68	68	68	68	68	68
Electricity	300	300	300	300	300	300	300	300	300	300
Maint. - General Rough Crk										
Maint - Reticulation	200	200	200	200	200	200	200	200	200	200
Maint. - Pump Stations	800	800	800	800	800	800	800	800	800	800
Maint. - Treatment	400	400	400	400	400	400	400	400	400	400
Routine Checks	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800
Monitoring Water Quality	250	250	250	250	250	250	250	250	250	250
Regional Council Compliance/Monitoring	250	250	250	250	250	250	250	250	250	250
<b>Total Expenses</b>	<b>6396</b>	<b>6526</b>	<b>6519</b>	<b>6511</b>	<b>6513</b>	<b>6512</b>	<b>6522</b>	<b>6522</b>	<b>6519</b>	<b>6472</b>

<b>Scheme Improvements</b>										
Operations Manuals & Procedures	500									
Improvement Plan items	2236									
Property Inspections				2000					2000	
IPI1 CCTV		550								
IP3 Pipe Performance/Condition Rating	2000									
Consent Renewal	5000									
<b>Total Scheme Improvements</b>	<b>9736</b>	<b>550</b>	<b>0</b>	<b>2000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2000</b>	<b>0</b>

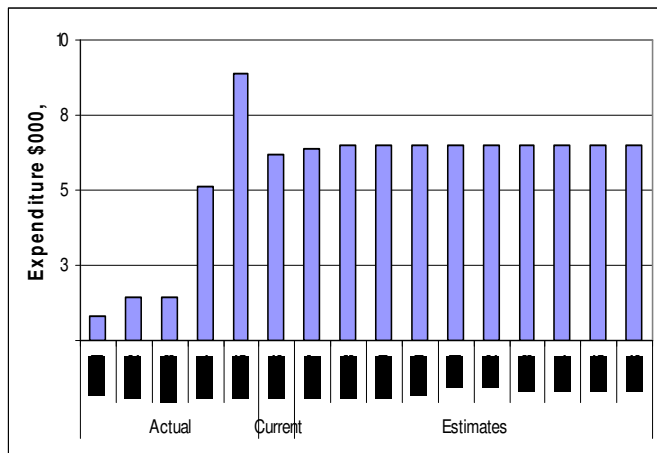
Table 1-10: Future Renewals 2006/07 to 2026/27 (\$000,)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SEWERMAINS																				
MANHOLES																				
SEWER VALVES																				
EFFLUENT FILTERS																				
PUMP SUBMERSIBLE 1										6										
PUMP SUBMERSIBLE 2										6										
BACK FLOW PREVENTOR										1										
ALARM SYSTEM										2										
ELECTRICAL SWITCHBOARD															18					
PROBES					1										1					
HIGHT LEVEL ALARM FLOAT					1										1					
FLOW METER										5										
<b>TOTAL</b>					1					20					19					

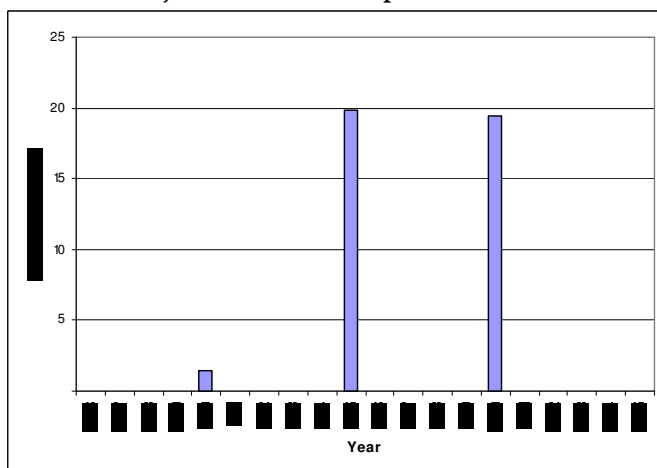


**Table 1-11: Future Operating, Maintenance Forecasted Cost Trends**

Excluding: Depreciation and Loan Interest

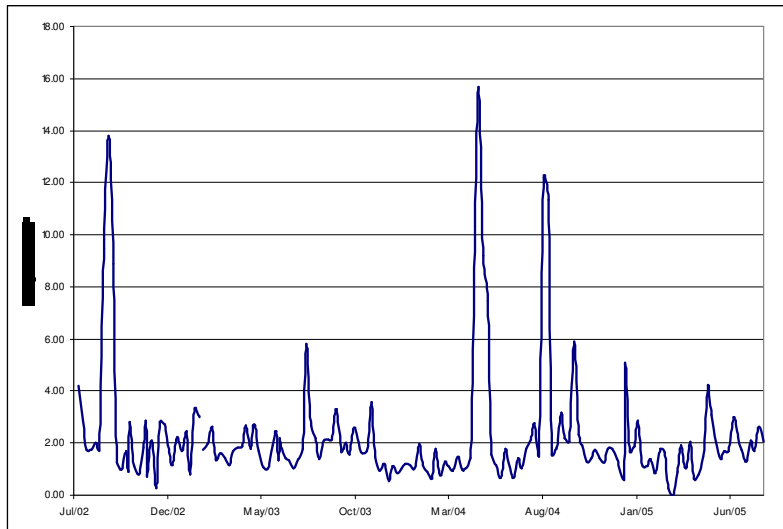


**Table 1-12 Projected Renewals Expenditure**



## 1.9 Daily Wastewater Quantities

The following table details the daily wastewater quantities for the Arthur's Pass sewerage scheme for the period July 2002 to July 2005. No confirmed explanation has been provided regarding the spikes in wastewater flows. However it is assumed that as these generally occurred in the autumn/winter period they resulted from a household water supply being left on over a period.



### 1.10 Future Demand and New Capital Expenditure

No further connections are anticipated for this wastewater scheme.

### 1.11 Disposal Programme

No disposal of assets are considered necessary over next 10 years