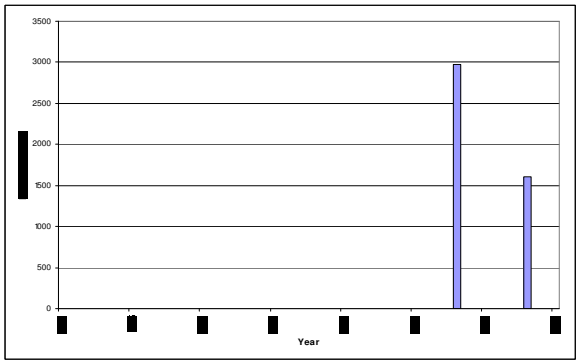
1.0 Doyleston Sewage Scheme

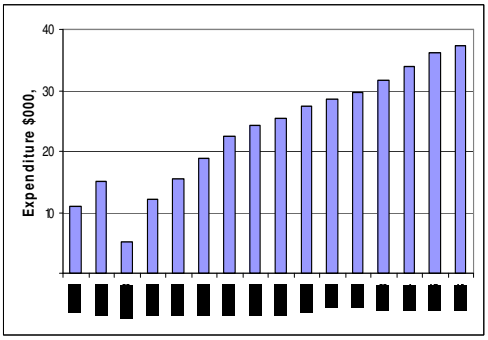
1.1 Executive Summary

Description		Quantity
Population Served		190 (estimate)
Deprivation Index		NA
Physical Statistics	Reticulation Length (km)	4.58
	Manholes	27
	Pump Stations	2
Value ($)	Replacement	$558,984
	Depreciated Replacement	$454,512
Flows	Annual average over 6 years	8,034 m^3/yr
	Average daily	22 m^3/day
	Peak daily	494 m^3/day
	Minimum daily	? m^3/day
Treatment	Via Leeston WWTP	
Disposal	Via Leeston WWTP	
Infiltration		Unknown
Properties	Connected	68
	Not connected	10

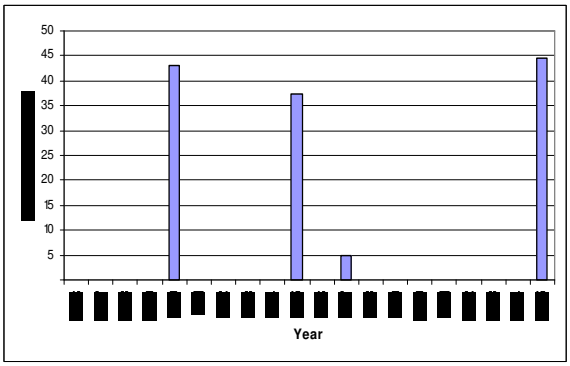
Pipework Replacement Dates



Operating and Maintenance Financial Requirements



Renewals Financial Requirements



New Capital Financial Requirements

There are no capital requirements

There are no key issues for the Doyleston wastewater scheme

1.2 Introduction

1.2.1 Overview and History

The reticulation was installed in the township in 1996 and replaced a variety of disposal systems i.e. septic tanks (with disposal to adjacent drains) and chemical toilets etc. High groundwater levels during winter made disposal via standard soak holes difficult and there was a significant amount of discharge to local waterways.

Wastewater is reticulated to a central pump station in Doyleston, then pumped approximately 2.8 km to Leeston wastewater treatment plant (refer Leeston sewerage scheme section of supplementary)

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

	Pump Station				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
Pump station	Leeston Rd	Serves all the community
Rising main	Leeston Rd	Single main 2.9km long serving all the community

1.2.4 Design

Design of the reticulation is based on 320 people with peak flows of 1,000L/p/day. This translates to a peak flow of 3.5L/sec.

There are presently 78 connections within Doyleston. This gives an assumed population of 190 (using 2.8 people/house). With the original design of the scheme being 320 people this gives a spare allocation of 130 people or 46 connections.

1.3 Treatment and Disposal

1.3.1 Overview

All wastewater is pumped from main pump station to the Leeston WWTP for treatment and disposal.

1.4 Pump Stations

1.4.1 Overview

1.4.2 Pump Station Details

The following table is an overview of the two pump stations.

Table 1-3: Schedule of Pump Stations

Pump Station	Description	Year installed	Capacity (m^3/day)	Condition	Performance	Criticality	SCADA	Storage (hours storage at average flow)
Leeston Rd (main pump station)	Two submersible pumps with variable speed control	1996		1	3	High	Yes	
Leeston Rd	Single pump	1996		1	3	Low	No	

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

1.4.3 Pump Station Issues

Soft starts for the submersible pumps were installed in 2002 to reduce rising main failures due to over stressing mains at starts/stopping of pumps.

1.5 Supply Reticulation

1.5.1 Overview

A schedule of the pipe asset statistics is shown in Table 1-4 below.

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

Diameter mm	uPVC
50	101
80	2872
150	1,603
Total	**4,576**

1.5.2 Condition

The condition of the township reticulation (installed in 1996) is thought to be very good. The majority of the rising main to Leeston WWTP was replaced in 2005 with the remaining section of main considered by Council engineers as good.

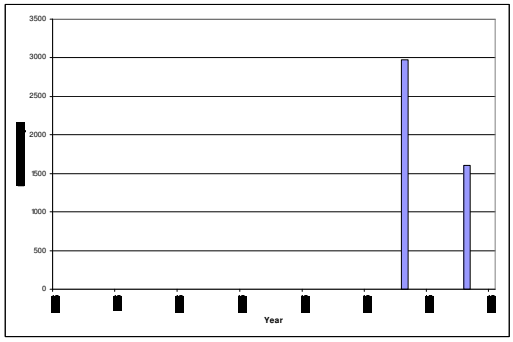
1.5.3 Performance

The performance of the reticulation is considered by Council engineers as 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 Graph



- No mains replacement is required until 2053

1.5.5 Infiltration

The level of infiltration is unknown, further monitoring of the system will be ongoing to ascertain the extent of infiltration and if it is at an acceptable level.

1.5.6 Property Inspections

Every property was inspected by Council staff in 2003 with the next inspections programmed for 2010/11 and 20015/16. These inspections will be undertaken to determine the existence of and if necessary works required to redirect roof stormwater discharges away from the sewage system.

1.6 Environmental Management

1.6.1 Rights to Take and Discharge Permits

No resource consents are required as disposal is via the Leeston Wastewater Treatment Plant.

1.7 Maintenance and Operating

1.7.1 Maintenance Contract

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

1.7.2 Maintenance Issues

There are no issues for the maintenance of the Doyleston Wastewater scheme.

1.7.3 SCADA

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

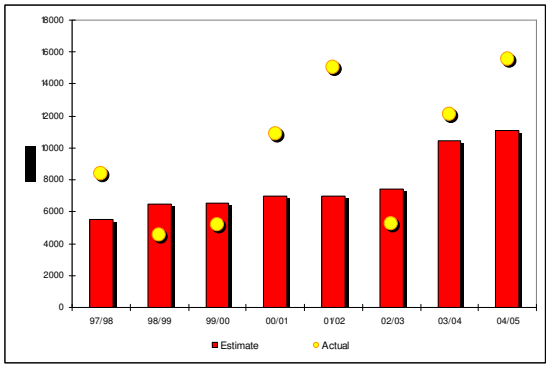
[1] Infrastructure Asset Guidelines 1999

Site Name	Phase Failure	Pump Operation	Well Level and High Alarm	Total Outflow	Generator Operation	Dissolved Oxygen
Main pump Station	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 1997/98 – 2004/05



1.7.5 Future Maintenance Financial Programme

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

1.8 Renewals Capital Expenditure and Depreciation

1.8.1 Overview

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	2172	3303	3416	3514	3822	3984	4254	4555	4815	5122
Consultants Fees	1053	1107	1160	1267	1320	1375	1486	1596	1707	1762
Consultants Fees - other	316	332	348	380	396	413	446	479	512	529
Insurance and Rates	120	120	120	120	120	120	120	120	120	120
Electricity	1685	1771	1856	2026	2112	2200	2377	2554	2731	2819
Maint. - Pump Station	7900	8300	8699	9499	9899	10313	11143	11972	12801	13215
Maint. - Reticulation	3053	3208	3362	3671	3826	3986	4307	4627	4948	5108
Routine Checks	850	850	850	850	850	850	850	850	850	850
Share of Treatment & Disposal	5227	5370	5581	6027	6181	6343	6771	7190	7587	7742
Total Expenses	22377	24359	25393	27354	28526	29584	31752	33943	36070	37267
Scheme Improvements										
Operations Manuals & Procedures	1500									
Improvement Plan items	1696									
IP I1 CCTV		3500								
Property Inspections					1000					1000
Total Scheme Improvements	3196	3500	0	0	1000	0	0	0	0	1000

Table 1-8: 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																				
SERVICELINES																				
MANHOLES																				
SEWER VALVES																				
HIGH LEVEL ALARM FLOAT										1										1
PUMP UNIT TWO					12															12
ELECTRICAL EQUIPMENT										18										
SOFT STARTS												5								
PUMP UNIT SUBMERSIBLE					12															12
ALARM SYSTEM					2															2
PUMP UNIT SUBMERSIBLE					6															6
ELECTRICAL EQUIPMENT										18										
SCADA SYSTEM					10															10
SCADA RT					1															1
LEVEL PROBE										1										1
TOTAL					43					37		5								44

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

Excluding: Depreciation and Loan Interest

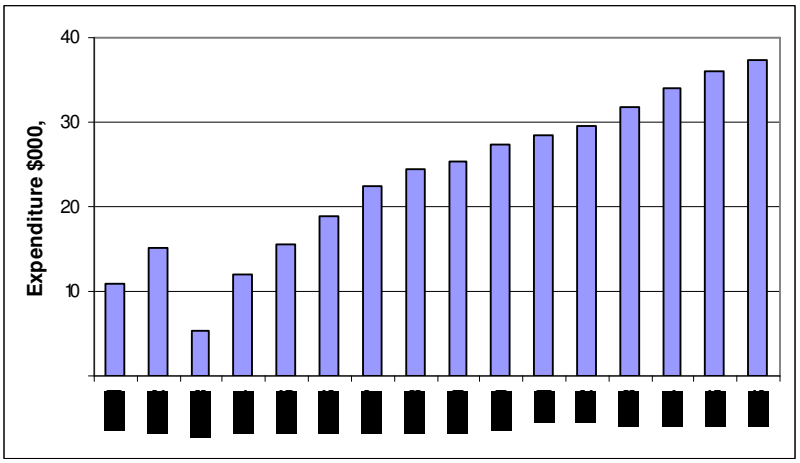
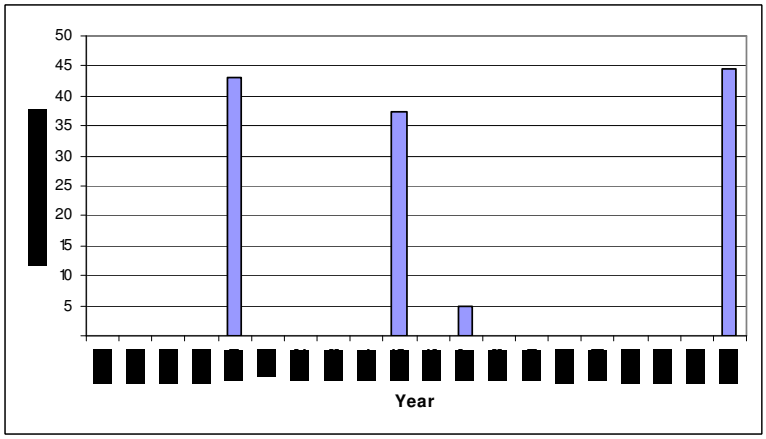


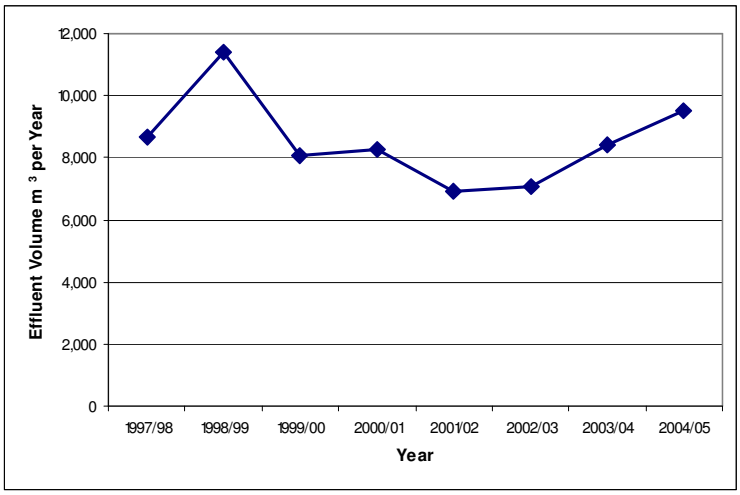
Table 1-10: Projected Renewals Expenditure



1.9 Annual Wastewater Quantities

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

Table 1-11: Annual Wastewater Quantities

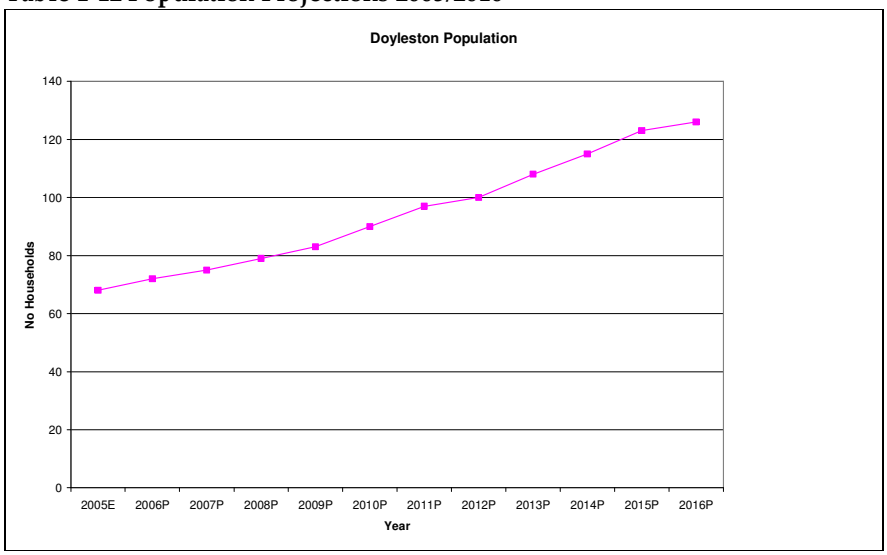


1.10 Future Demand and New Capital Expenditure

1.10.1 Population Projections

Population forecasts for all towns and selected rural-residential areas were developed by Max Barber (Planning Consultant) for the Asset Management Department in late 2005. These population predictions will be considered by Council in early 2006 as the official population predictions for the period 30th June 2005 to 30th June 2016. The following table details the population predictions for Doyleston.

Table 1-12 Population Projections 2005/2016



1.10.2 Future Demand

As shown in Section 3.2.4 there is presently spare allocation in the Doyleston sewer scheme for 130 people or 46 connections. This spare allocation is insufficient for the population projections for Doyleston township within the next ten years. Expansion of the sewerage scheme may be required by 2012. Investigations are planned for 2006/07 to further develop

the capacity matrix of all of Councils wastewater schemes requirements and capacity to service the future demands.

1.11 Disposal Programme

No disposal of assets is considered necessary over the next 10 years.