Municipality of McDougall

3.0 Waste Water System

Asset Management Plan

December 2013

3.0 WASTE WATER SYSTEM

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3.0 WASTE WATER SYSTEM

STATE OF INFRASTRUCTURE

3.1 Inventory

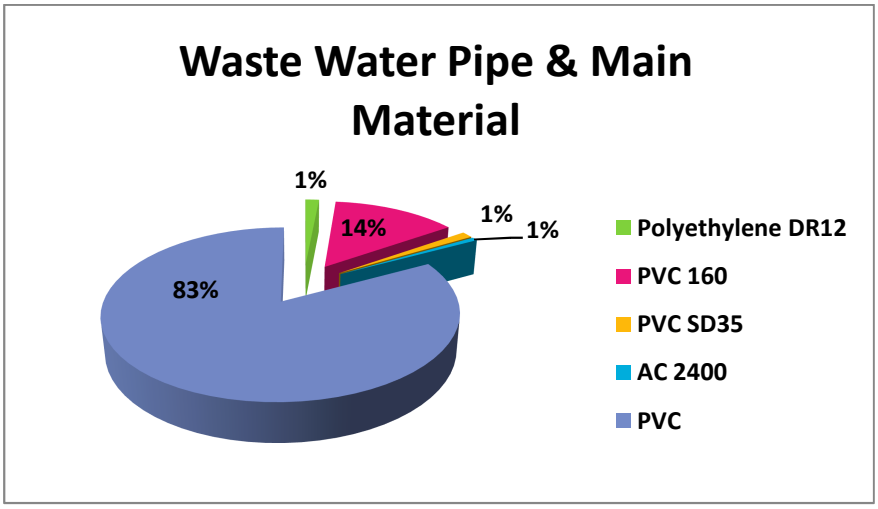
The Municipality's waste water system is a septic bed and consists of a network of force mains and pipes, maintenance holes, valves, a pumping station and a storage tank.

The current inventory is broken down in Figure 3.1. The source of the information is the Asset Inventory Registry.

For analysis, the Municipality relied on internal knowledge of the system, contract documents, and Engineering reports.

Figure 3.1: Waste Water Inventory Summary

Asset Type	Asset Component	2012 Inventory
Linear	**Force mains** 50mm 100mm	 55m 500m
	Local Sewers 100mm 200mm	 3,000m 69m
	Maintenance Holes	15
	Pumping Station Equipment	42
Facilities	Pumping Station Structures	1
	Storage Tanks	1



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3.2 Valuation

The waste water system was installed in 1988 as a septic bed for 27 households. From 2001 to 2002, the existing septic bed was re-piped, the distribution lines, distribution boxes and force mains were replaced by installing new lines between the old lines. In 2002, the sanitary collection system was repaired reducing the flows to the system which extended its life and repaired it.

The historical cost of the waste water system is shown at 2002 values when the last construction was done on the system. The historical cost is shown without inflation apart from 1982 assets for which no 2002 or 2013 value was available; these assets have been inflated using CPI values to 2002 values. In some cases replacement value is less than historical value because the historical figure includes renewal and maintenance work such as lining the pipes; activities that will not be repeated in the future.

The estimated replacement value of the system is based on 2002 and inflated using CPI figures to 2012 values. Quoted 2013 values were also used for the assets that are targeted for renewal in the next 5 years.

The estimated current replacement value (2013) of the waste water system is $641,315 or $23,752 per waste water user in McDougall. This value does not include any auxiliary costs such as disposal of the old assets, Engineering, etc. this type of information can be found in the Financial Strategy Section 3.12. Figure 3.2 below shows the breakdown of historical and replacement costs.

Figure 3.2: Waste Water System Historical & Replacement Value

Asset Type	Asset Component	Historical Cost 2002	Replacement Value 2013	Percent of Replacement
Linear	**Force mains** 50mm 100mm	 $2,000 $3,158	 not being replaced $2,000	 0.0% 0.3%
	Local Sewers 100mm 200mm	$68,075 $139,420	$91,832 $25,460	14.3% 4.0%
	Maintenance Holes	$23,670	$28,357	4.4%
	Pumping Station Equipment	$244,718	$435,709	67.9%
	Value Sub Total	***$481,041***	***$583,357***	***90.9%***
Facilities	Pumping Station Structures	$60,000	$39,475	6.2%
	Storage Tanks	$15,150	$18,483	2.9%
	Value Sub Total	***$75,150***	***$57,958***	***9.1%***
Total Value		***$556,191***	***$641,315***	***100%***

3.0 WASTE WATER SYSTEM

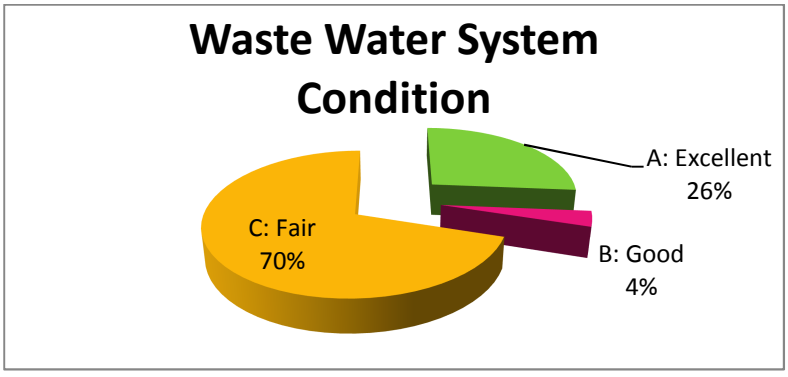
3.3 Condition Assessment

The condition report in Figure 3.3 was developed by Municipal Staff with consideration of current legislative requirements, and Engineering reports. The Municipality chose to rely on Municipal Staff and Engineering reports in determining the condition of the system due to the number of environmental variables and high degree of internal knowledge of the system. Condition assessment criteria are available in the Appendix 1.0.

Overall condition of the infrastructure is fair, some system components are older and in worse condition than others. Principally 2438m of pipe, septic sand and 100m of force main are in need of replacement as their useful life was exceeded in 2012. The Municipality will continue to operate an intensive monitoring program to ensure that the system is operating adequately and meeting service standards for the next 10 years

Figure 3.3: Waste Water System High Level Condition Assessment

Asset Type	Asset Component	Condition
Linear	**Force mains** 50mm 100mm	 A C
	Local Sewers 100mm 200mm	 A B
	Maintenance Holes	A
	Pumping Station Equipment	B
Facilities	Pumping Station Structures	A
	Storage Tanks	B



3.0 WASTE WATER SYSTEM

3.4 Lifecycle Activities

The waste water assets can be split into four categories of life with corresponding asset management activities. These activities are described in Figure 3.4.

Figure 3.4: Waste Water System Lifecycle Activities

Activity	Definition	Life Remaining
Minor Maintenance	Planned activities: inspections, monitoring, cleaning, testing, etc.	75-100%
Major Maintenance	Unplanned maintenance & repair: repairing water main breaks, repairing pumps, replacing pipes, etc.	50 - 75%
Rehabilitation	Upgrades & rehabilitation: lining pipes, protection in piping, upgrading pumps, etc.	25 - 50%
Replacement	End of asset life: removal of old asset and install of a new asset that does the same job	0 -25 %

3.5 Life Expectancy

There are numerous direct and indirect variables that affect useful lives of water assets such as climate, soil condition, and installation practices. With this in mind, the Municipality chose to rely on Municipal Staff and Engineering reports in gauging useful life and life remaining for McDougall's waste water system.

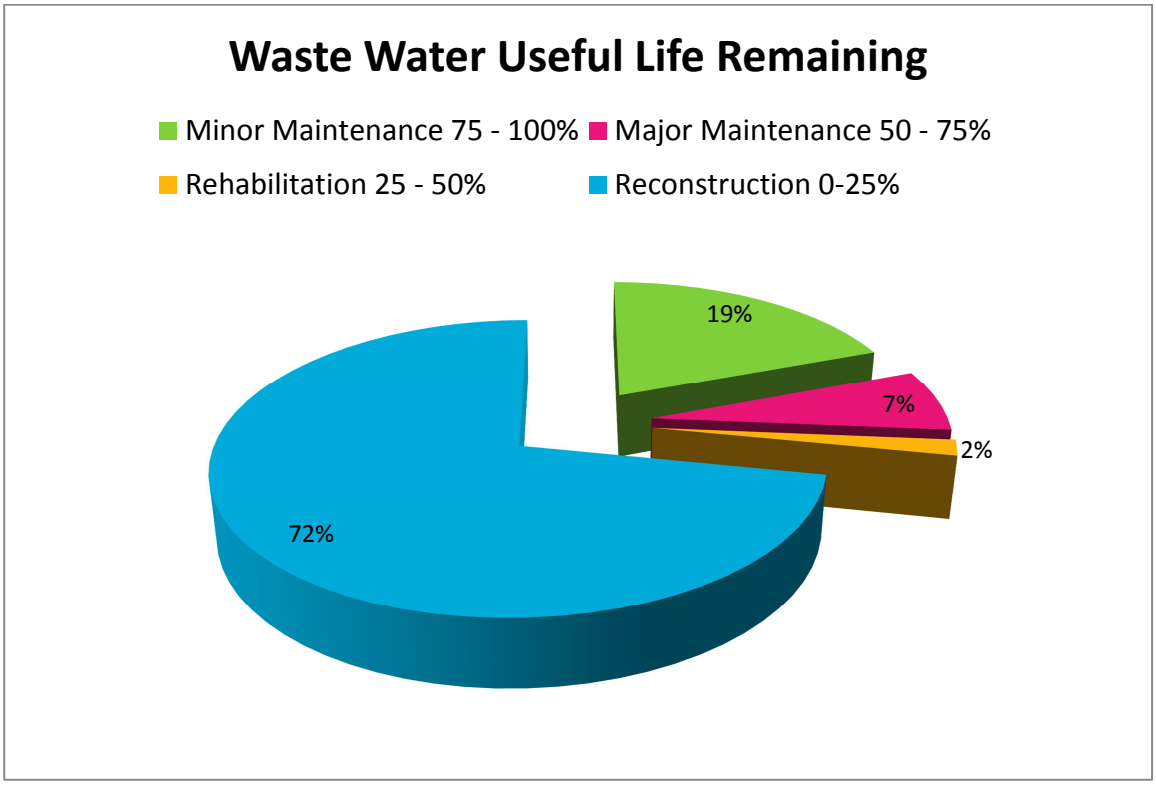
Figure 3.5 shows the useful life of the waste water assets; Figure 3.6 shows the remaining lives and the lifecycle activities that are being applied.

3.0 WASTE WATER SYSTEM

Figure 3.5: Waste Water System Useful Life

Asset Type	Asset Component	Useful Life
Linear	**Force mains** 50mm 100mm	 50 30
	Local Sewers 100mm 200mm	 60 52
	Maintenance Holes	75
	Pumping Station Equipment	42
Facilities	Pumping Station Structures	75
	Storage Tanks	50

Figure 3.6: Waste Water System Remaining Useful Life



3.0 WASTE WATER SYSTEM

DESIRED LEVEL OF SERVICE DESIRED LEVEL OF SERVICE

3.6 Target Levels of Service

The service levels in this plan are defined by two overarching performance measures community and operational.

Community Levels of Service: Community levels of service indicate how the community perceives the service and determines whether or not the service is valuable to the public.

Operational Levels of Service: Operational levels of service are the technical activities that bring community levels of service into action. They include resource allocations to create and maintain service levels that users expect and value**.**

Figures 3.7 and 3.8 below cover both leachate and sanitary waste (waste water) and were previously discussed in Section 1.6. These Figures identify target levels of service, and current performance relative to the measures identified. Future demand drivers, forecasts and effects were discussed in the Asset Management Plan Introduction Section 8.0 which includes all assets covered in the plan. Levels of service definitions are available in the Appendix 2.0.

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Figure 3.7: Waste Water Community Levels of Service 2012

Performance Measure	Level of Service Objective	Performance Measure Process	2012 Performance Measured	Desired Level of Service
Purpose	Waste and leachate water is collected, treated and disposed of in accordance with all applicable legislation.	Number of contamination cases.	0 Contamination cases.	0 Contamination cases.
Reliability	Minimize equipment failure and blockages in piping.	Number of equipment failures Number of blockages.	0 Equipment failures. 0 Blockages.	0 Equipment failures. 0 Blockages.
Safety	Provide users with a safe collection of waste and leachate water.	Number of pipe line breaks per 100km. Repair time after pipe breaks. Customer service request response time.	0 Pipe line breaks per 100km. No breaks. Completed within 24 hours in 2012	0 Pipe line breaks per 100km. 12 hour repair time after pipe breaks. 12 hour response time.
Quality	Waste and leachate water system is operating effectively.	Number of customer service requests regarding quality of collection.	0 Customer service requests regarding quality of collection.	1 Customer service requests regarding quality collection.
Capacity	Supply enough piping and mains for collecting and expelling leachate and waste water.	Occurrences of inflow and filtration volumes surpassing limits. Number of backups.	0 Inflow and filtration incidents. 0 Backups.	0 Inflow and filtration incidents. 0 Backups.

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Figure 3.8: Waste Water Operational Levels of Service 2012

Performance Measure	Level of Service Objective	Performance Measure Process	2012 Performance Measured	Desired Level of Service
Operations	Waste and leachate water is treated in accordance with legislated standards.	Number of inspections. Waste and leachate water flushing and cleanings.	All inspections and sampling completed daily. 2012 flushing and cleanings completed.	Daily inspections and samplings (M.O.E. regulation). Annual flushing and cleaning (M.O.E. regulation).
Maintenance	Respond to customer service requests and provide scheduled maintenance.	Work related to customer requests and scheduled maintenance completion times.	All maintenance completed within 24 hours of beginning/notice.	All maintenance completed within 12 hours of beginning/notice.
Renewal	Useful lives of infrastructure should be increasing with the replacement of components.	Infrastructure useful lives.	Average useful life is increasing with renewals. Average Asset Life: Waste Water: 54% Leachate Water: 67%	Infrastructure components are replaced before the end of the assets' lifecycle.
Upgrade/New	M.O.E. does not permit McDougall to add any users to the Septic System; deemed at capacity. Wastewater treatment assets at the landfill meet solid waste inflow.	Capacity of the Leachate collection assets.	Leachate collection assets exceed inflow.	Wastewater treatment infrastructure at the landfill is sufficient for amount of solid waste.

3.0 WASTE WATER SYSTEM

ASSET MANAGEMENT STRATEGY

3.7 Non Infrastructure Solution – Asset Hierarchy

An asset hierarchy provides a base for planning renewal, maintenance and rehabilitation. The structure allows the Municipality to focus its resources on assets that have been identified as critical assets. These assets have a high consequence of failure but not necessarily high risk of failure. Since not all assets can be maintained at the desired level of service due to financial constraint prioritizing work on critical assets over low risk ones ensures that the system is protected against the most severe risks. Implementation of this strategy in the planning process has inherent cost savings and efficiencies. Figure 3.9 identifies critical assets in the waste water system.

Figure 3.9: Critical Assets

Ranking	Service Hierarchy	Service Level Objective	Critical Risk
1	Pump Station	Continuously pump waste water.	Waste water back up, service interruption and/or environmental contamination.
2	Collection Network	Collect and move waste water through the system.	Waste water back up, service interruption and/or environmental contamination.
3	Storage Tank	Hold waste water.	Waste water back up, service interruption and/or environmental contamination.

3.8 Non Infrastructure Solution – Monitoring

The waste water system was designed in 2001/2002 with a useful life of 10 years. The useful life was surpassed in 2011 and the septic bed is now functioning effectively beyond its life. The waste water system is expected to last until 2019. For more information about life extension projection see Appendix 4.0.The Municipality will continue to operate an intensive monitoring program to ensure that the system is operating effectively and meeting service standards for the next 10 years. These actions include:

- Pipe biopsy
- Engineering report on life extension projections
- Engineering report on possible activities to extend life
- Municipal Staff testing and routine inspections

3.0 WASTE WATER SYSTEM

3.9 Maintenance & Operations Plan

Maintenance Activities: includes all actions necessary for keeping assets at their operable capacity. These actions were previously discussed in Figure 3.4 relative to useful life remaining.

Reactive Maintenance: unplanned repair work carried out in response to service request, break down or disruption.

Planned Maintenance: identified repair work indicated by the asset's useful life remaining in the Asset Inventory Registry. These activities include inspection, assessing condition based on asset's past performance, scheduling and tracking work to establish a centralized maintenance history and improve service delivery data collection.

Operational Activities: affect service levels by determining day to day servicing of the waste water system. These activities determine safety of the system, life of equipment, etc.

The Municipality will operate and maintain assets to the desired level of service identified above. These activities will be within approved budgets. Strategies being considered include:

- Annual inspections to determine up to date condition status, maintenance and planned renewals for incorporation into the annual Environment Budget.
- Scheduling maintenance activities in a priority sequence to ensure that the highest risk assets are addressed before lower risk assets.
- Maintaining the Asset Inventory Registry.
- Maintaining service risk and mitigation strategy database.
- Undertaking capital activities through a planned replacement and renewal system**.**

3.10 Renewal & Replacement Plan

The Municipality will undertake renewal and replacement activities to maintain desired levels of service and minimize infrastructure related risks. The following Figure 3.10 criteria will act as McDougall's guide to determining whether major work on an asset should be considered.

Figure 3.10: Capital Planning Tool

Criteria	Weighting
High consequence of failure	20%
High utilization	20%
Identified in critical asset hierarchy	15%
Total value represents the highest net value to Municipality	10%
Has highest age relative to assets in group	10%
Has high operational or maintenance costs	10%
Replacement cost is less than maintenance and/or operating cost	10%
Where replacement with modern equivalent asset would yield material savings	5%
Total	**100%**

3.11 Disposal Plan

Disposal includes any activity associated with removing a decommissioned asset from the Municipality. These activities include sale, demolition or relocation to another department. A majority of the waste water assets have been identified in this Plan as requiring disposal; however they will all be retained until there is a breakage in the system or Engineering reports indicate that system is no longer viable.

Surplus capital assets will be disposed of in the following manner:

- Disposals will be authorized by C.A.O and Management Staff
- Competitive bid process through a Request for Quotations
- Public auction
- Trade-In

Invitations to bid on capital assets offered for sale by the Municipality will be:

- Posted on the Municipality's website for at least 14 days before the closing date of the invitation to bid
- Published in at least one edition of the local newspapers

3.12 Procurement Methods

The Municipality will refer to its internal Procurement Policy (By-Law 2007-09) and Tender Policy (By-Law 2007-10) when purchasing new assets. McDougall will endeavor to where possible follow sustainable purchasing strategies and consider costs based on the lifecycle of the asset.

3.0 WASTE WATER SYSTEM

3.13 Risks Involved with the Plan

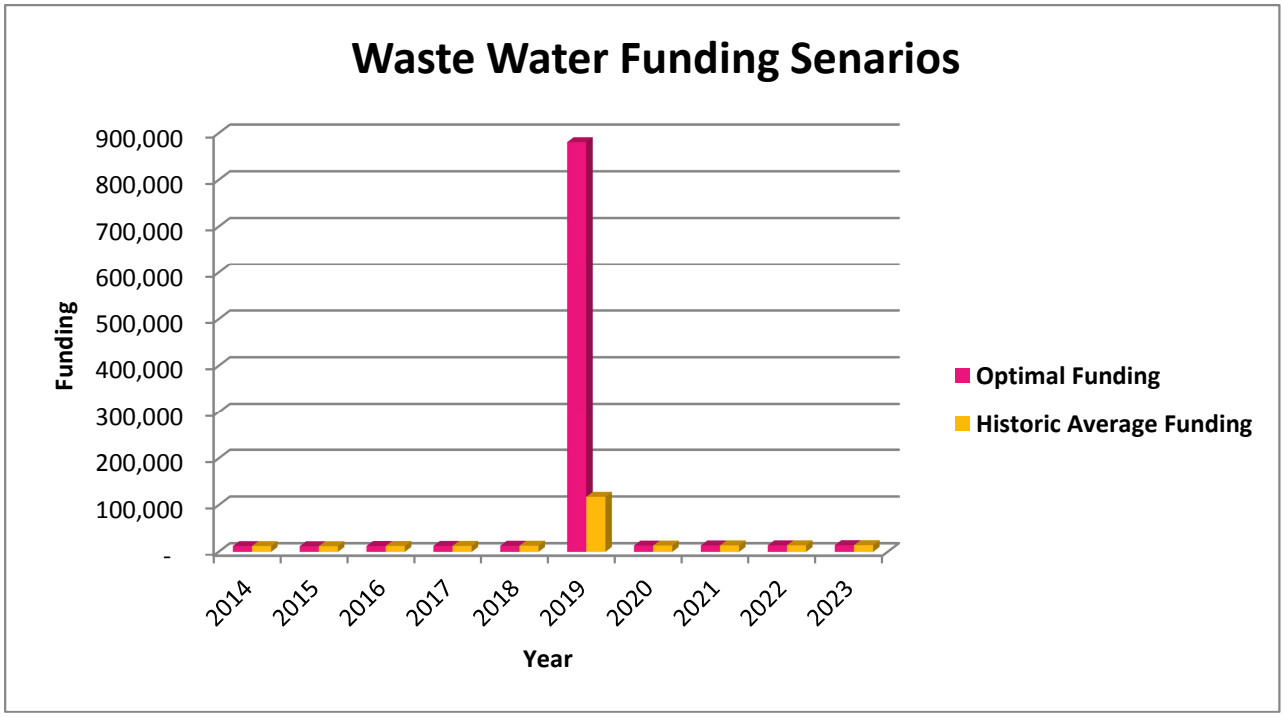
Optimal Capital Funding vs. Budgeted Capital Funding

The Municipality has adopted this Asset Management Plan to obtain efficiency in operation. The decision to pursue the Plan was based on the following two scenarios in Figure 3.11.

Scenario 1: Optimal funding for capital renewals, maintenance and operation activities required by the waste water assets over the next 10 years is $1,000,368 including inflation of 2% annually. An average annual budget of $13,404 for all years is required in addition to $763,054 of external funding for 2019 replacements that are not covered by the $100,000 of reserves.

Scenario 2: Over the last three years the Municipality has spent an average of $26,365 operating, maintaining and renewing the waste water system. In years where capital spending is required the waste water system relies on modest reserve draws downs because the system can only generate approx. $15,000 in revenue. Over the next 10 years McDougall is able to sustain an average budget of $13,404 with an extra $100,000 of reserves for use in 2019 if the Municipality continues to contribute an average of $9,964 to reserves annual. This funding projection does not provide sufficient funding to replace all assets that need it, impacting the risk factor at the facility and its ability to service users.

Figure 3.11: Optimal vs. Budgeted Funding Strategies



3.0 WASTE WATER SYSTEM

What McDougall Cannot Do

The Municipality cannot afford to allocate enough funds to reserves to cover the anticipated renewals because the system does not generate enough revenue from the 27 users. McDougall will apply for a loan from Infrastructure Ontario in 2019 on behalf of the system users to cover the replacement of the following assets: septic sand (equipment), and piping. The users will be asked to sign an agreement to pay back the loan over the next 10-15 years.

Service Consequences

Asset lifecycle activities that the Municipality decides not to undertake after consideration of the asset hierarchy, planned maintenance strategy and replace/renewal ranking guide may impact users' service experience. These consequences are explored in Figure 3.12.

Figure 3.12: Service Consequences & Mitigation

Action	Consequence	Mitigation Strategy
Critical assets will be maintained to higher standards than low risk assets.	o More minor repair work for Municipal Staff o Stress on resources o Reactive maintenance	o Regular inspections of minor assets
The Municipality will only stock basic replacement parts for critical assets.	o Long wait times for replacement parts o Service interruptions	o Routine preventative maintenance on minor assets in poor condition o Scheduled maintenance on minor assets
Waste water assets will continue to deteriorate and they will only be repaired or replaced when breakage occurs despite planning due to financial constraint.	o Stress on resources o Service interruption o Waste water backups o Reactive maintenance o Possible contamination	o Identification and monitoring of equipment in poor condition o Pipe biopsy o Engineering inspections

3.0 WASTE WATER SYSTEM

FINANCING STRATEGY

This section contains the financial requirements of the Asset Management Plan discussed in the previous sections. For data confidence information see Appendix 3.0.

3.14 Ten year Waste Water System Expenditure Projections

A majority of the waste water assets surpassed their useful lives in 2011 the system is now being monitored with the intention of it lasting until 2019. The optimal expenditure forecast for the next 10 years is shown in Figure 3.13. It includes projections for reserve building, operating, renewal, and maintenance activities. Note that all costs are shown with 2% annual inflation on average 2010 - 2012 values.

The total renewal and maintenance expenditure excluding asset replacement reserve contributions is $896,358 or $33,198 per user over the next 10 years. If reserve contributions under $10,000 annually are included the total, it rises to $983,251 or $36,417 per user over 10 years with inflation. Note neither of these totals includes operating expense which is projected to be between $1,500 and $1,800 annually.

The infrastructure gap including capital reserve drawdown is approximately $763,054 or $28,261 per user.

For comparative purposes Figure 3.14 shows waste water expenditures from 2010 to 2012. Note that all costs are shown without inflation.

Figure 3.13: Projected Operating & Capital Expenditure

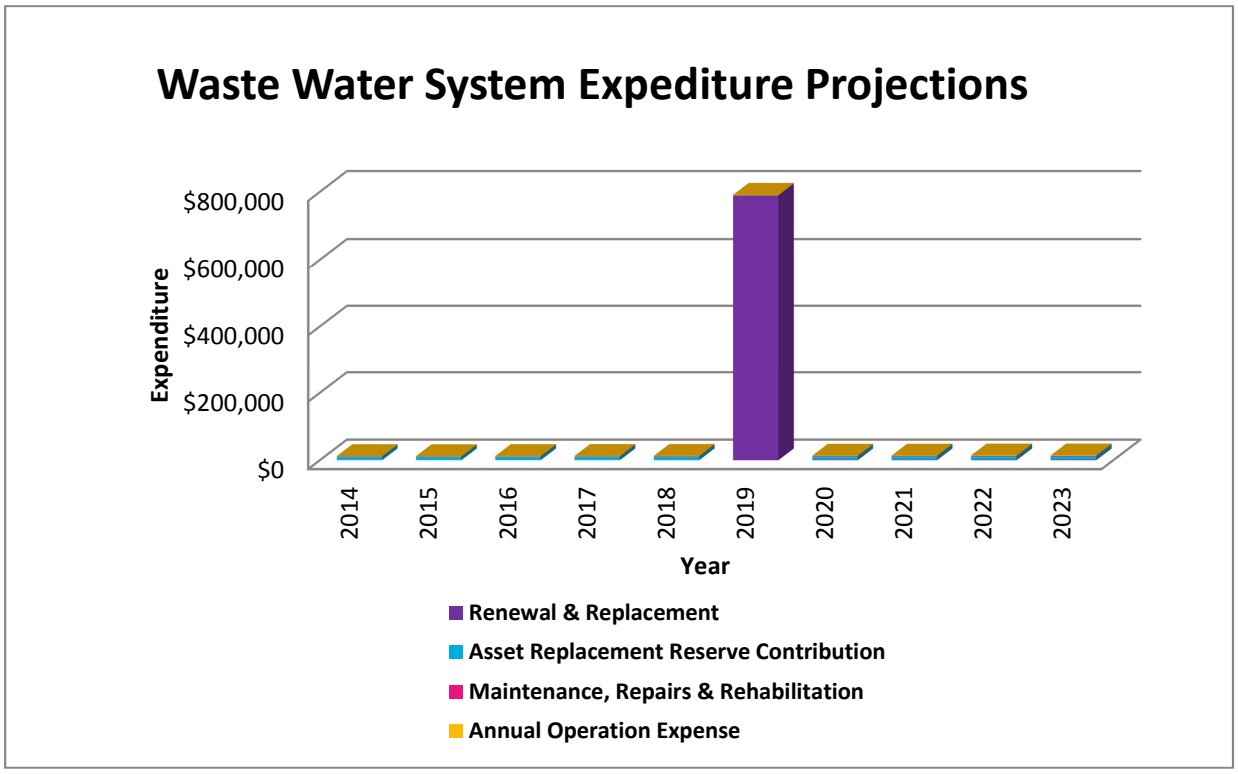
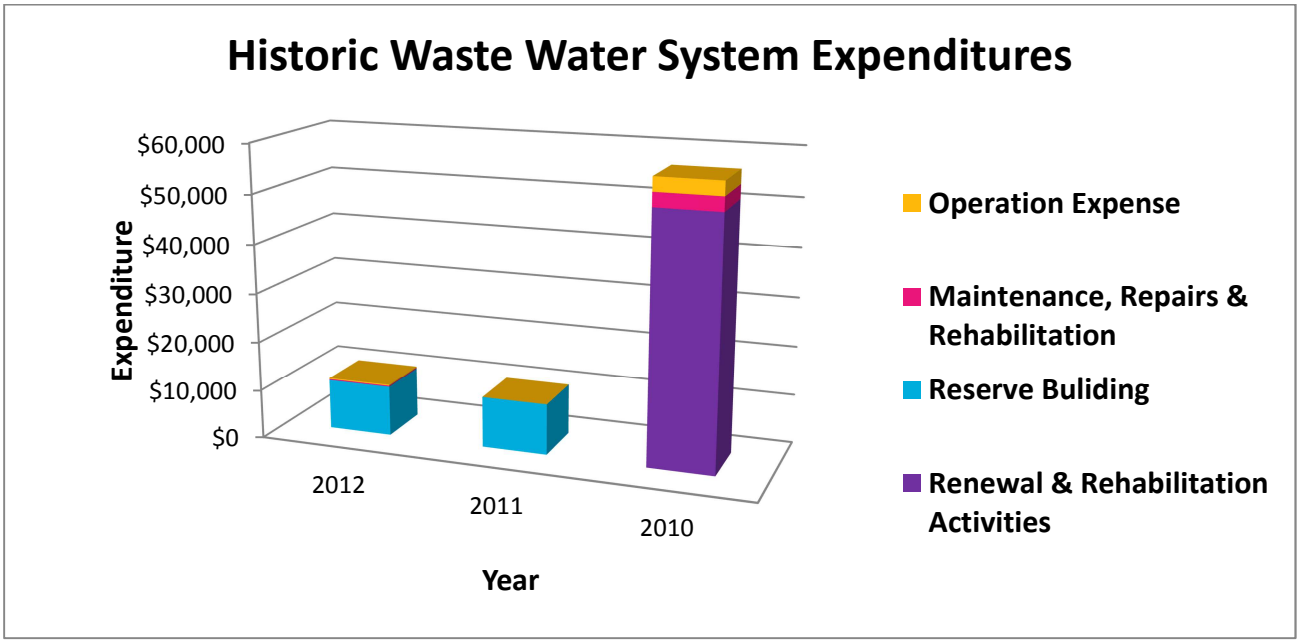


Figure 3.14: Historical Waste Water System Expenditures



Over the last three years the Municipality replaced pumping equipment at a value of approximately $50,000 in the waste water system. No assets in the waste water system will be replaced or rehabilitated until they break or there is a service disruption. The system is being monitored and the Municipality intends to avoid major renewals and replacements until 2019. The Municipality has invested in reserves for the system however reserves are not enough to cover all renewals necessary as previously discussed.

3.15 Ten year Waste Water System Funding Projections

The optimal funding forecast for the next 10 years is shown in Figure 3.15 and was previously discussed in Section 3.11. Funding requirements cover all renewal, maintenance, and operating and capital expenses. Since there are only 27 users of the system, service revenue is limited to less than $15,000 annually. There have been no capital charges to users since the last upgrade in 2002.

For comparative purposes Figure 3.14 shows waste water revenues from 2010 – 2012.

Figure 3.15: Waste Water System Funding Projections

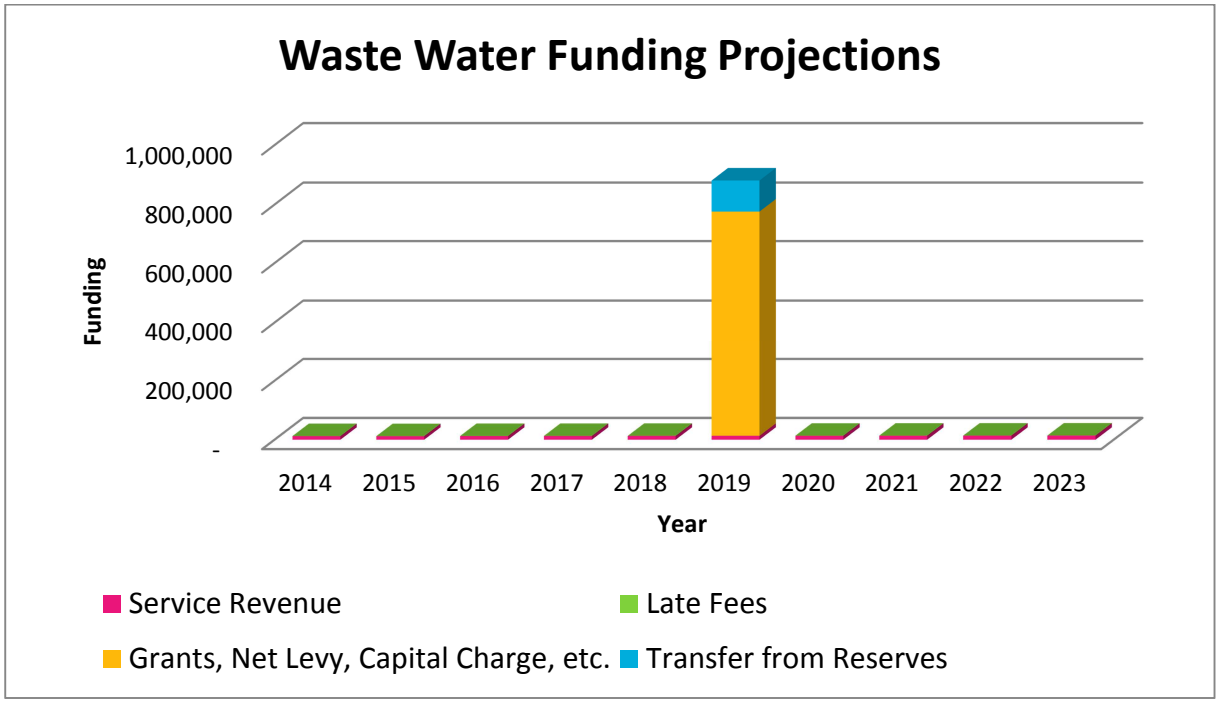
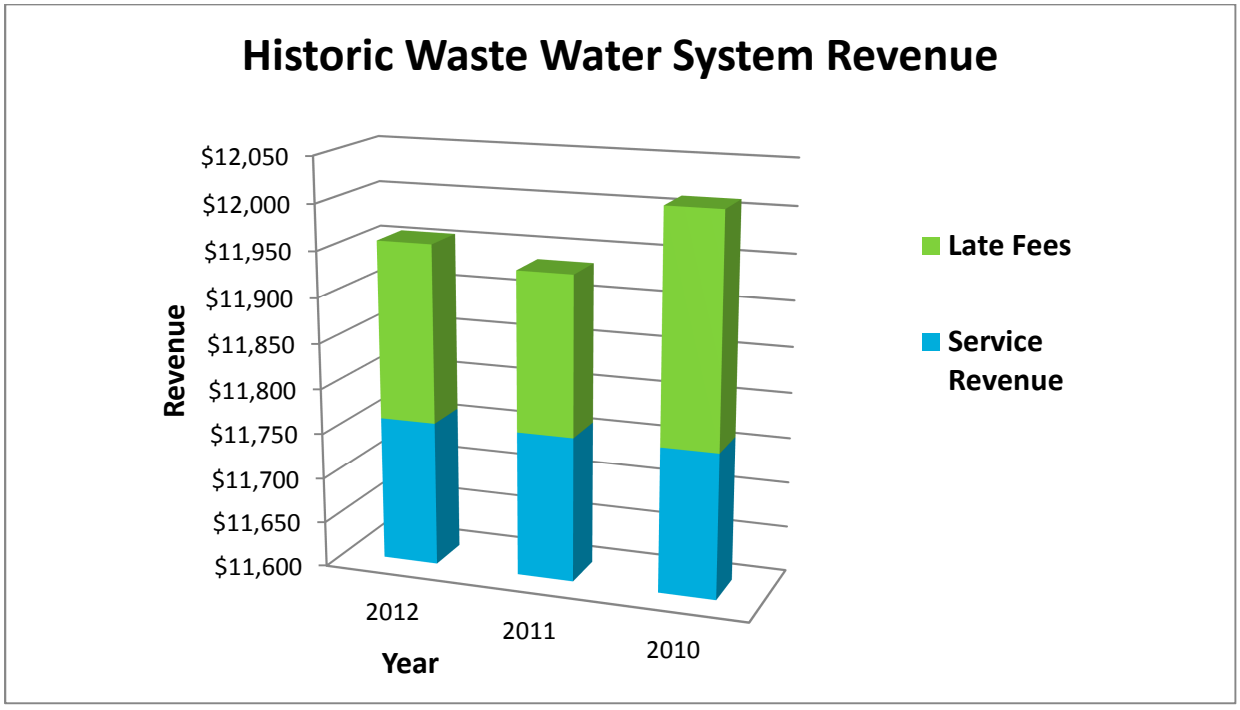


Figure 3.16: Historical Waste Water System Revenue



3.0 WASTE WATER SYSTEM

3.16 Sustainability of Service Delivery

The key indicator for service delivery sustainability that has been considered in the financing of the waste water system Asset Management Plan is the asset renewal funding ratio. This ratio is the most important indicator. It reveals how much of the capital renewals the Municipality will be able finance and how big the infrastructure gap is.

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio 12%

The ratio above indicates that only 12% rehabilitation activities, maintenance and replacements are fully funded for the next 10 years with the Asset Management Plan in place. The infrastructure gap is 88% wide.

APPENDIX

3.0 WASTE WATER SYSTEM

1.0 CONDITION ASSESSMENT CRITERIA

Condition		
A	**Excellent:** no noticeable defects, some aging or wear may be visible. Immediate action is not required	Normal PM
B	**Good:** Only minor deterioration or defects are evident. Immediate action is not required	Normal PM + Minor M.
C	**Fair:** Some deterioration or defects are visible; function is still adequate. Analysis of repair and/or replacement options is recommended.	Normal PM + Major M.
D	**Critical:** Extensive deterioration, barely functional. Immediate action required	Major Repair + Rehab.
F	**Failed:** No longer functioning. Immediate action required	Rehab. Unlikely = Replace

Capacity	
A	System can support over 100% of demand
B	System can support over 90-99% of demand
C	System can support over 80-89% of demand
D	System can support over 70-79% of demand
F	System can support less than 70% of demand

Performance	
A	Exceeds / Meets all Performance Targets
B	Minor Performance Deficiencies
C	Considerable Performance Deficiencies
D	Major Performance Deficiencies
F	Does not meet any Performance Targets

Reliability

A	As Specified by Manufacturer	Never Failed
B	Random Breakdown	Fails every 20 Years
C	Occasional Breakdown	Fails every 5 Years
D	Periodic Breakdown	Falls every 2 Years
F	Continuous Breakdown	Fails Annually

2.0 LEVELS OF SERVICE CRITERIA

Current Levels of Service

The service levels in this plan are defined by two overarching performance measures: community and operational. These performance measures will enable McDougall to track its progress against targeted outcomes and use those results to improve the Municipality's service delivery.

Community Levels of Service:

Community levels of service indicate how the community perceives the service and determines whether or not the service valuable to the public.

These performance measures include:

Purpose: Does the service satisfy users' needs?

Reliability: Does the service have the capability to maintain its functions on a routine basis?

Safety: Are the users protected from potential risks associated with the service?

Quality: Does the service fulfill its purpose to a high degree of excellence?

Capacity: Is the service at, under or over its capacity?

Operational Levels of Service

Operational levels of service are the technical activities that bring community levels of service into action. They include resource allocations to create and maintain service levels that users expect and value.

These activities affect the annual operating budget as the following performance measures:

3.0 WASTE WATER SYSTEM

Operations: routine activities that provide the service.

Maintenance: routine activities that keep the infrastructure functioning at the desired level of service.

Renewal: non-routine activities that extend the useful life of an infrastructure asset at the desired level of service.

Upgrade: non-routine activities that raise the level of service that the infrastructure can provide.

3.0 DATA CONFIDENCE

Confidence Grade	Description
A Very Reliable	Data is complete and estimated to be accurate ± 2%.
B Reliable	Data is complete and estimated to be accurate ± 10%.
C Uncertain	Data is substantially complete but up to 50 % is extrapolated and estimated to be accurate ± 25%.
D Very Uncertain	Data is over 50% incomplete; most data is extrapolated or estimated. Accuracy is estimated between ± 40%.
E Unknown	Little to no data is available at present.

Data	Confidence Assessment	Source
Operation Expenditure	A	Based on actual spending records. Consideration given to historical records.
Maintenance Expenditure	A	Based on actual spending records. Consideration given to historical records.
Projected Renewals	B	Taken from asset registry, Municipal Water Works Staff recommendations and industry standards
Asset Useful Lives	B	Based on Municipal Water Works Staff recommendations and industry standards

Georgian Engineering

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April 5, 2013

McDougall Township
5 Barager Drive,
McDougall, ON
P2A 2W9

Att: Mr. Tim Hunt, Director of Public Works

Re: Crawford Septic

Dear Sir,

Below is our budget estimate for the cost of replacement of the Crawford Subdivision communal septic bed. Our costs is based on replacement costs of a similar project in the area in 2011 / 2012. Costs can vary depending on the availability of septic sand and method of disposal of the existing septic material, and time of construction.

Cost of Replacement

Septic System capacity - 70,000 litre / day conventional trench type leaching bed

8,000 c.m. septic sand @ $ 40 / c.m.	$ 320,000.00
3,000 l.m. piping @ $ 25.00 / l.m.	$ 75,000.00
Topsoil, hydroseed 6,000 s.m. @ $6.00 / s.m.	$ 36,000.00
Disposal of existing 8,000 @ $ 10.00 / c.m.	$ 80,000.00*
Septic haulage during construction 6 loads / day x 30 days @ $ 1,000 / load	$ 180,000.00
Engineering, Tender, Permit	$ 20,000.00
Contingency	$ 70,000.00
TOTAL	$ 781,000.00

* costs vary depending on location of disposal site

All prices plus H.S.T.

Associates
J. R. Hawes P.Eng
Robert Hughes P. Eng.

Georgian Engineering
Division of Sharwin Holdings

3.0 WASTE WATER SYSTEM

6.0 Funding Scenarios – Optimal vs. Historic Average

Waste Water Financing	Scenario One - Optimal Funding										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
REVENUE											
Service Revenue	12,230	11,995	12,466	12,701	12,936	13,171	13,406	13,642	13,877	14,112	14,347
Grants, Capital Charge, etc.	-	-	-	-	-	763,054	-	-	-	-	-
Increase Development Fees %											
Increase Service Fees %											
USER											
Connection Sales & Fees											
Late Fees	212	216	220	225	229	233	237	241	245	250	254
RESERVES											
Transfer from Reserves	-	-	-	-	-	104,469	-	-	-	-	-
TOTAL REVENUE	**12,443**	**12,212**	**12,686**	**12,925**	**13,165**	**880,927**	**13,644**	**13,883**	**14,122**	**14,362**	**14,601**
OPERATION EXPENSE											
Annual Operation Expense	1,573	1,604	1,635	1,665	1,696	1,727	1,758	1,789	1,820	1,850	1,881
Debt Repayment - Development Charge											
CAPITAL EXPENSE											
Renewal & Replacement	-	-	-	-	-	789,600	1,685	1,715	1,745	1,774	1,804
Maintenance, Repairs & Rehabilitation	1,047	1,067	1,088	1,108	1,129	-	1,170	1,190	1,211	1,231	1,252
Non Infrastructure Solutions											
Disposal Activities	-	-	-	-	-	89,600	-	-	-	-	-
Expansion Activities											
RESERVE BULIDING											
Asset Replacement Reserve Contribution	9,823	9,541	9,964	10,152	10,340	-	9,031	9,189	9,347	9,506	9,664
Calculated Contribution											
Contribution Smoothing %											
Contribution Smoothing $											
Contributed Reserve	54,649	64,472	74,013	83,977	94,129	104,469	-	9,031	18,220	27,567	37,073
TOTAL EXPENSE	**12,442**	**12,212**	**12,686**	**12,925**	**13,165**	**880,927**	**13,644**	**13,883**	**14,122**	**14,362**	**14,601**
NET INCOME (deficit)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

***All figures shown in CAD $**
****Inflation assumption is 2 %**
***** Forecasted revenues, reserve contributions & expenditures are based on 2010 - 2012 actual spending averages**

Waste Water Financing	Scenario Two Historic Funding										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
REVENUE											
Service Revenue	12,230	11,995	12,466	12,701	12,936	13,171	13,406	13,642	13,877	14,112	14,347
Grants											
Increase Development Fees %											
Increase Service Fees %											
USER											
Connection Sales & Fees											
Late Fees	212	216	220	225	229	233	237	241	245	250	254
RESERVES											
Transfer from Reserves	-	-	-	-	-	104,469	-	-	-	-	-
TOTAL REVENUE	**12,443**	**12,212**	**12,686**	**12,925**	**13,165**	**117,873**	**13,644**	**13,883**	**14,122**	**14,362**	**14,601**
OPERATION EXPENSE											
Annual Operation Expense	1,573	1,604	1,635	1,665	1,696	1,727	1,758	1,789	1,820	1,850	1,881
Debt Repayment - Development Charge											
CAPITAL EXPENSE											
Renewal & Replacement	-	-	-	-	-	789,600	1,685	1,715	1,745	1,774	1,804
Maintenance, Repairs & Rehabilitation	1,047	1,067	1,088	1,108	1,129	-	1,170	1,190	1,211	1,231	1,252
Non Infrastructure Solutions											
Disposal Activities	-	-	-	-	-	89,600	-	-	-	-	-
Expansion Activities											
RESERVE BULIDING											
Asset Replacement Reserve Contribution	9,823	9,541	9,964	10,152	10,340	-	9,031	9,189	9,347	9,506	9,664
Calculated Contribution											
Contribution Smoothing %											
Contribution Smoothing $											
Contributed Reserve	54,649	64,472	74,013	83,977	94,129	104,469	-	9,031	18,220	27,567	37,073
TOTAL EXPENSE	**12,442**	**12,212**	**12,686**	**12,925**	**13,165**	**880,927**	**13,644**	**13,883**	**14,122**	**14,362**	**14,601**
NET INCOME (deficit)	**-**	**-**	**-**	**-**	**-**	**763,054**	**-**	**-**	**-**	**-**	**-**

***All figures shown in CAD $**
****Inflation assumption is 2 %**
***** Forecasted revenues, reserve contributions & expenditures are based on 2010 - 2012 actual spending averages**

7.0 PROJECTED 10 YEAR CAPITAL RENEWAL & REPLACEMENT PROGRAM

Asset Component	Size (mm)	Quantity	Unit	Useful Life	Life Remaining	2012 Replacement Cost	Renewal Year
Pipe	100	2438	m	30	-3%	$ 75,000	2019
Pipe	200	24	m	40	23%	$ 7,392	2022
Septic Sand	-	8000	cm^2	30	-3%	$ 320,000	2019
Topsoil & Hydro seeding	-	6000	m^2	10	-10%	$ 36,000	2019
Force main	100	500	m	30	-3%	$ 2,000	2019
Pump Station - repairs	-	1	Bldg.	75	59%	$ 2,000	2019
Disposal of Existing	-	-	-	-	-	$ 80,000	2019
Septic Haulage during Construction	-	-	-	-	-	$ 180,000	2019
Engineering, Tender, Permit	-	-	-	-	-	$ 20,000	2019
Contingency	-	-	-	-	-	$ 70,000	2019
					Program Total	**$ 792,392**	