



Municipality of McDougall

5.0 Fleet & Equipment

Asset Management Plan



5.0 FLEET & EQUIPMENT

January 2014

Contents

STATE OF INFRASTRUCTURE	4
5.1 Inventory	4
Figure 5.1: Fleet Inventory Summary.....	4
Figure 5.2: Equipment Inventory Summary.....	5
5.2 Valuation	6
Figure 5.3: Fleet Historical & Replacement Value	6
Figure 5.4: Equipment Historical & Replacement Value	6
5.3 Condition Assessment	7
Figure 5.5: Fleet High Level Condition Assessment.....	7
Figure 5.6: Equipment High Level Condition Assessment.....	8
5.4 Lifecycle Activities	9
Figure 5.7: Fleet & Equipment Lifecycle Activities	9
5.5 Life Expectancy.....	10
Figure 5.8: Fleet Useful Lives.....	10
Figure 5.9: Fleet Remaining Useful Life	11
Figure 5.10: Equipment Useful Lives	11
Figure 5.11: Equipment Remaining Useful Life	12
DESIRED LEVEL OF SERVICE	12
5.6 Target Levels of Service.....	12
Figure 5.12: Fleet & Equipment Community Levels of Service 2012.....	13
Figure 5.13: Fleet & Equipment Operational Levels of Service 2012	14
ASSET MANAGEMENT STRATEGY	15
5.7 Non Infrastructure Solution – Asset Hierarchy.....	15
Figure 5.14: Critical Assets.....	16
5.8 Maintenance & Operations Plan	16
5.9 Renewal & Replacement Plan.....	17
Figure 5.15: Capital Planning Tool	18
5.10 Disposal Plan	19

5.0 FLEET & EQUIPMENT

5.11 Procurement Methods	19
5.12 Risks Involved with the Plan	19
Figure 5.16: Optimal vs. Budgeted Funding Strategies	20
Figure 5.17: Service Consequences & Mitigation	21
FINANCING STRATEGY	21
5.13 Ten year Building Expenditure Projections	21
Figure 5.18: Projected Operating & Capital Expenditure	22
Figure 5.19: Historical Fleet & Equipment Expenditures	22
5.14 Fleet & Equipment Funding Projections	22
Figure 5.20: Fleet & Equipment Funding Projections	23
Figure 5.21: Historic Fleet & Equipment Funding	24
5.15 Sustainability of Service Delivery	24
APPENDIX	25
1.0 CONDITION ASSESSMENT CRITERIA.....	25
2.0 LEVELS OF SERVICE CRITERIA.....	26
3.0 DATA CONFIDENCE.....	27
4.0 FUNDING SCENARIOS – HISTORIC VS. OPTIMAL.....	27
5.0 PROJECTED 10 YEAR CAPITAL PROGRAM - Fleet.....	29
6.0 PROJECTED 10 YEAR CAPITAL PROGRAM – Equipment.....	30

5.0 FLEET & EQUIPMENT

STATE OF INFRASTRUCTURE

5.1 Inventory

The Municipality's fleet and equipment inventory spans all Municipal departments. McDougall currently has 40 vehicles in its fleet and 263 pieces of equipment. Note that water works equipment is included in the perspective Asset Management Plans (Drinking, Leachate and Waste Water).

The current fleet inventory is broken down in Figure 5.1 and equipment inventory is shown in Figure 5.2. The source of the information is the Asset Inventory Registry. The Municipality referred to its Tangible Capital Asset Policy in determining the equipment to be included in this Plan. For analysis, the Municipality relied on internal knowledge of the system, and invoices.

Figure 5.1: Fleet Inventory Summary

Asset Type	Asset Component	Inventory
Central Fleet	Medium Trucks	2
	Light Trucks	6
	Snow Removal	4
	Construction Vehicles	7
	Waste Management Vehicles	5
	Property Maintenance Vehicles	2
	Ice Surface Vehicles	1
	Emergency Vehicles	8
	Trailers	5
	Total Vehicle Inventory	40

5.0 FLEET & EQUIPMENT

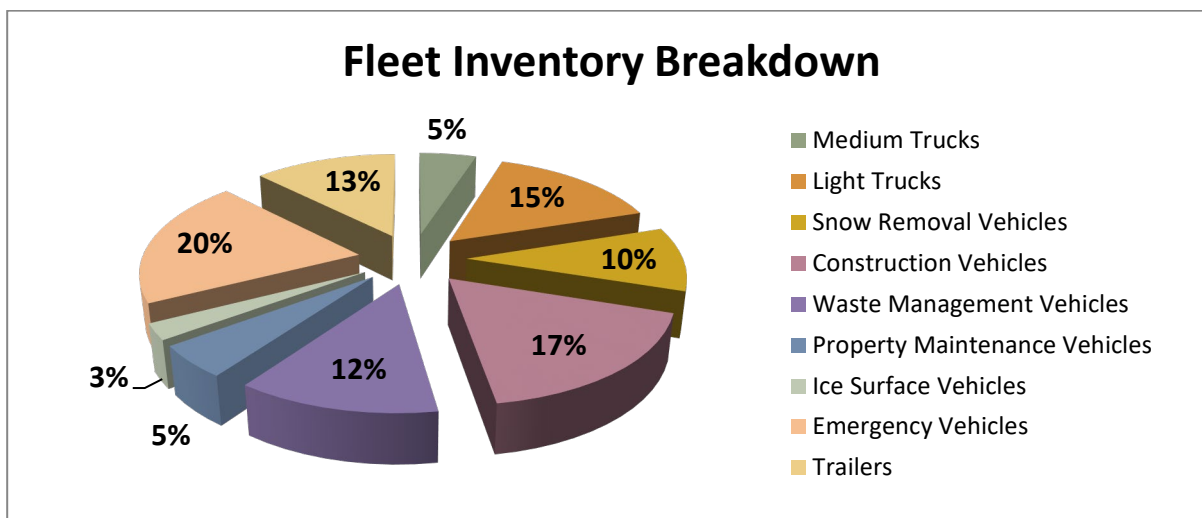
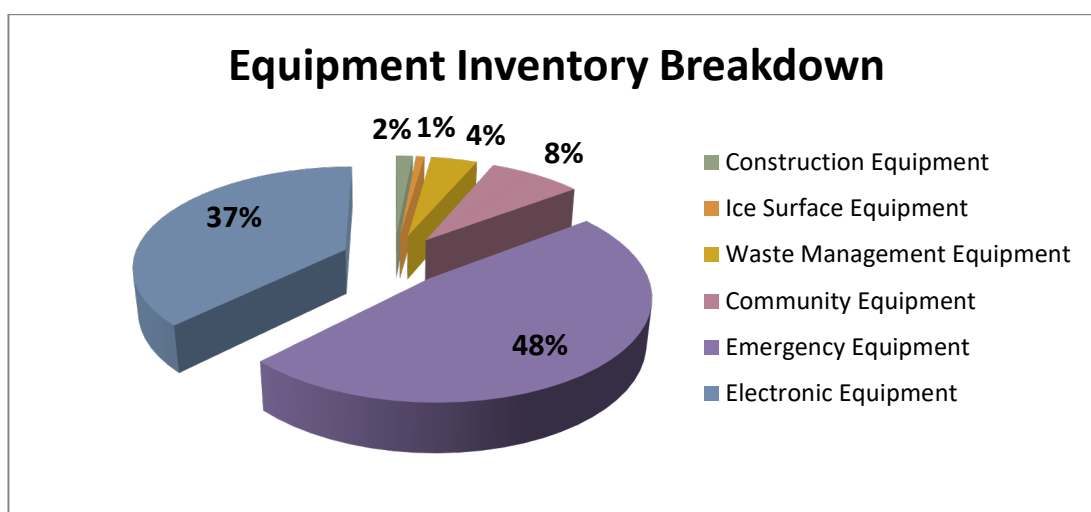


Figure 5.2: Equipment Inventory Summary

Asset Type	Asset Component	Inventory
Equipment	Construction Equipment	4
	Ice Surface Equipment	2
	Waste Management Equipment	11
	Community Equipment	22
	Emergency Equipment	126
	Electronic Equipment	99
	Total Equipment Inventory	264



5.0 FLEET & EQUIPMENT

5.2 Valuation

The historical cost of the fleet and equipment is shown at its carrying value on the Municipality's Capital Asset Summary without inflation.

The estimated replacement value of the asset is based on the purchase of the asset in the year of acquisition, inflated using CPI figures to 2013 values when replacement quotes were not available. The estimated current replacement value (2013) of the fleet and equipment is \$6,037,519 or \$2,318 per household in McDougall. Figure 5.3 shows the breakdown of historical and replacement costs for the fleet and Figure 5.4 shows the equipment.

Figure 5.3: Fleet Historical & Replacement Value

Asset Type	Asset Component	Historical Cost 2012	Replacement Value 2013	Percent of Replacement
Central Fleet	Medium Trucks	\$177,322	\$207,287	4.5%
	Light Trucks	\$247,601	\$254,143	5.5%
	Snow Removal	\$718,145	\$930,514	20.1%
	Construction Vehicles	\$558,354	\$750,580	16.2%
	Waste Management Vehicles	\$979,021	\$1,073,784	23.2%
	Property Maintenance Vehicles	\$29,884	\$28,000	0.6%
	Ice Surface Vehicles	\$18,166	\$16,000	0.3%
	Emergency Vehicles	\$97,551	\$1,303,000	28.2%
	Trailers	\$32,010	\$56,000	1.0%
	Total Vehicle Inventory	\$2,858,054	\$4,619,308	100%

Figure 5.4: Equipment Historical & Replacement Value

Asset Type	Asset Component	Historical Cost 2012	Replacement Value 2013	Percent of Replacement
Equipment	Construction Equipment	\$119,551	\$119,551	8.4%
	Ice Surface Equipment	\$18,938	\$18,000	1.3%
	Waste Management Equipment	\$482,513	\$621,560	43.8%
	Community Equipment	\$7,398	\$193,409	13.6%
	Emergency Equipment	\$218,089	\$338,500	23.9%

5.0 FLEET & EQUIPMENT

	Electronic Equipment	\$137,387	\$127,191	9.0%
	<i>Total Equipment Inventory</i>	\$983,876	\$1,418,211	100%

5.3 Condition Assessment

The fleet condition report in Figure 5.5 and equipment report in Figure 5.6 were developed by Municipal Staff with consideration of current legislative requirements. The Municipality chose to rely on Municipal Staff and Mechanic reports in determining the condition of the system due to the number of external variables and high degree of internal knowledge of the assets. Condition assessment criteria are available in the Appendix 1.0.

Figure 5.5: Fleet High Level Condition Assessment

Asset Type	Asset Component	Condition
Central Fleet	Medium Trucks	A
	Light Trucks	A
	Snow Removal	B
	Construction Vehicles	A
	Waste Management Vehicles	B
	Property Maintenance Vehicles	B
	Ice Surface Vehicles	A
	Emergency Vehicles	A
	Trailers	A

5.0 FLEET & EQUIPMENT

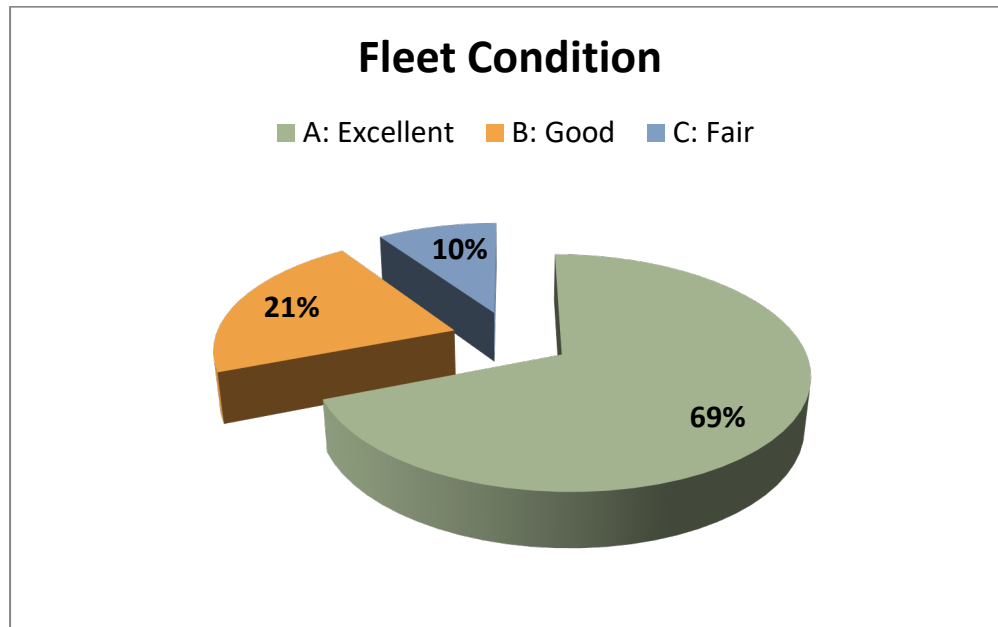
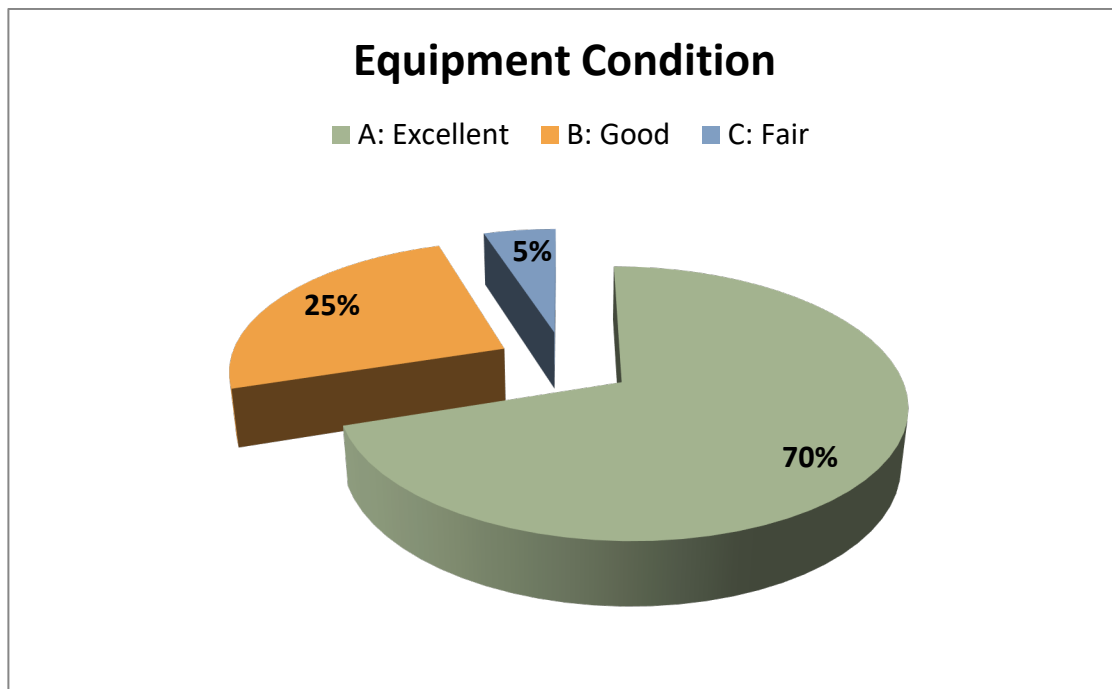


Figure 5.6: Equipment High Level Condition Assessment

Asset Type	Asset Component	Condition
Equipment	Construction Equipment	A
	Ice Surface Equipment	A
	Waste Management Equipment	A
	Community Equipment	B
	Emergency Equipment	B
	Electronic Equipment	C

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5.4 Lifecycle Activities

The fleet and equipment assets can be split into four categories of life with corresponding asset management activities. These activities are described in Figure 5.7.

Figure 5.7: Fleet & Equipment Lifecycle Activities

Activity	Definition	Life Remaining
Minor Maintenance	Planned activities: inspections, monitoring, cleaning, testing, etc.	75-100%

5.0 FLEET & EQUIPMENT

Major Maintenance	Unplanned maintenance & repair: repairing breaks, replacing parts, etc.	50 - 75%
Rehabilitation	Upgrades & rehabilitation: upgrading parts, re constructing parts, etc.	25 - 50%
Replacement	End of asset life: decommission, remove old asset and install a new asset that does the same job	0 -25%



5.5 Life Expectancy

There are numerous direct and indirect variables that affect useful lives of vehicles and equipment such as climate, and maintenance practices. With this in mind, the Municipality chose to rely on Municipal Staff and Mechanic reports in gauging useful life and life remaining for McDougall's fleet and equipment.

Figure 5.8 shows the average useful life of the fleet assets; Figure 5.9 shows the remaining lives and the lifecycle activities that are being applied. Figures 5.10 and 5.11 show the average useful lives and activities for the equipment assets. Note electronic equipment is excluded from Figure 5.11 due to its short life span.

Figure 5.8: Fleet Useful Lives

5.0 FLEET & EQUIPMENT

Asset Type	Asset Component	Useful Lives
Central Fleet	Medium Trucks	15
	Light Trucks	10
	Snow Removal	10
	Construction Vehicles	21
	Waste Management Vehicles	18
	Property Maintenance Vehicles	10
	Ice Surface Vehicles	15
	Emergency Vehicles	24
	Trailers	16

Figure 5.9: Fleet Remaining Useful Life

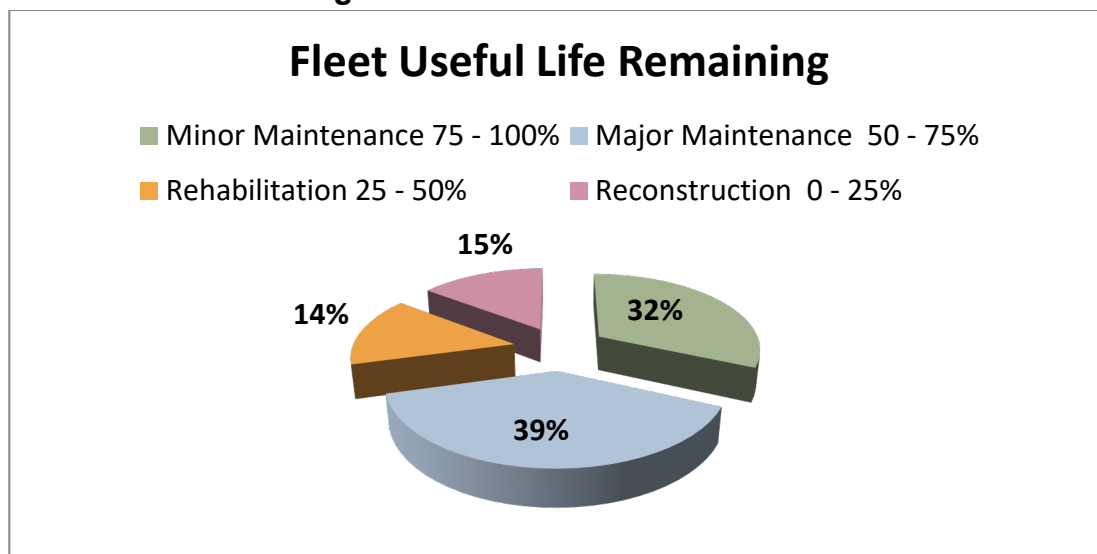
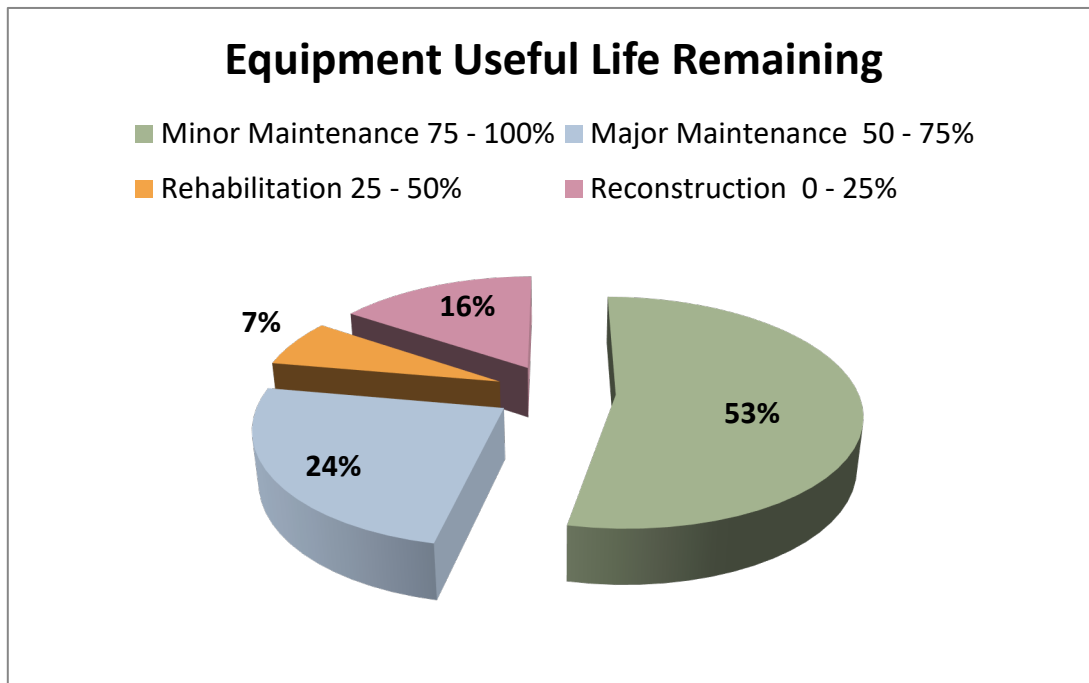


Figure 5.10: Equipment Useful Lives

Asset Type	Asset Component	Useful Lives
Equipment	Construction Equipment	11
	Ice Surface Equipment	18
	Waste Management Equipment	19
	Community Equipment	20
	Emergency Equipment	17
	Electronic Equipment	5

5.0 FLEET & EQUIPMENT

Figure 5.11: Equipment Remaining Useful Life



DESIRED LEVEL OF SERVICE

5.6 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.

5.0 FLEET & EQUIPMENT

Figures 5.12 and 5.13 cover fleet and equipment. These figures identify target levels of service, and current performance relative to measures identified. Future demand drivers, forecasts and effects are discussed in the Asset Management Plan Introduction Section 8.0 and includes all of the assets covered in the plan.



Figure 5.12: Fleet & Equipment Community Levels of Service 2012

Performance Measure	Level of Service Objective	Performance Measure Process	2012 Performance Measured	Desired Level of Service
Purpose	Provide equipment and vehicles that are designed to ensure ease of use and efficiency.	Customer service complaints regarding efficiency of fleet and equipment operation.	2012- Minimal complaints.	0 complaints.

5.0 FLEET & EQUIPMENT

Reliability	Perform maintenance and services required.	Departmental requests for additional vehicles and equipment to expand services.	0 requests.	0 requests.
		Incidents of over or under servicing areas of the Municipality.	0 requests.	0 incidents.
Quality	Provide safe and reliable equipment and vehicles for intended purpose, as expected by public.	Number of customer service complaints related to equipment breakdowns.	2012- Minimal complaints	0 complaints.

Figure 5.13: Fleet & Equipment Operational Levels of Service 2012

Performance Measure	Level of Service Objective	Performance Measure Process	2012 Performance Measured	Desired Level of Service
Operations	Ensure fleet & equipment is operating at an adequate level.	Annual condition and defect inspections.	2012- Daily inspections of equipment and fleet.	Daily inspections of equipment and fleet.

5.0 FLEET & EQUIPMENT

Maintenance	Ensure asset is kept in operable condition throughout its lifecycle.	Perform scheduled maintenance in accordance with manufacturer instructions.	2012 - 100% compliance	100% compliance with manufacturer instructions and timely attention to unscheduled maintenance.
Disposals	Ensure assets are disposed of when useful life has been exceeded.	Number of units with expired useful lives. Expected disposal proceeds received.	2012 – 4 vehicles & 4 pieces of equipment expired. 2012 -Greatest value obtained.	All disposals made when useful life is expired. Greatest value was obtained.
Renewal	Purchase equipment when useful life is expired.	Fleet and equipment useful lives should be increasing with renewals.	2012 avg. useful life fleet- 60% 2012 avg. useful life equipment- 77%	Fleet and equipment are replaced within their useful lives.
Upgrade/New	Purchase additional equipment to develop efficiencies.	Number of equipment efficiencies proposed solutions identified but not implemented.	2012 –unknown	All efficiencies achieved with new equipment.

ASSET MANAGEMENT STRATEGY

5.7 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 prioritizing work on critical assets over low risk ones ensures

5.0 FLEET & EQUIPMENT

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 5.14 identifies critical fleet and equipment assets.

Figure 5.14: Critical Assets

Ranking	Service Hierarchy	Service Level Objective	Critical Risk
1	Emergency Fleet & Equipment	Provide safe, reliable, and efficient fire fighting vehicles and equipment.	<ul style="list-style-type: none"> • Unable to effectively fight fires and perform rescues. • Break downs. • Incorrect use. • Damage to other assets as result of malfunctioning equipment. • Injury or loss of life. • Loss of equipment.
2	Road Maintenance & Snow Removal Fleet & Equipment	Provide safe, dependable and efficient road maintenance and snow removal vehicles and equipment.	<ul style="list-style-type: none"> • Unable to effectively care for roads. • Break downs. • Incorrect use. • Damage to other assets as result of malfunctioning equipment. • Injury or loss of life. • Loss of equipment.
3	Remaining Fleet and Equipment Classes	Provide safe, efficient and reliable vehicles and equipment for the overall operation of the Municipality.	<ul style="list-style-type: none"> • Break downs. • Incorrect use. • Damage to other assets as result of malfunctioning equipment. • Injury or loss of life. • Loss of equipment.

5.8 Maintenance & Operations Plan

Maintenance Activities: includes all actions necessary for keeping assets at their operable capacity. These actions were previously discussed in Figure 5.4 relative to useful life remaining.

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

5.0 FLEET & EQUIPMENT

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 leachate system. These activities determine facility quality, 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 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.
- Undertaking capital activities through a planned replacement and renewal system.



5.9 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 1.10 criteria will act as McDougall's guide to determining whether major work on an asset should be considered.

5.0 FLEET & EQUIPMENT

Figure 5.15: 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	15%
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	5%
Where replacement with modern equivalent asset would yield material savings	5%
Total	100%



5.0 FLEET & EQUIPMENT

5.10 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. The following procedures are followed by the Municipality when disposing of assets.

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

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

5.11 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.

5.12 Risks Involved with the Plan

Optimal Capital Funding vs. Budgeted Capital Funding

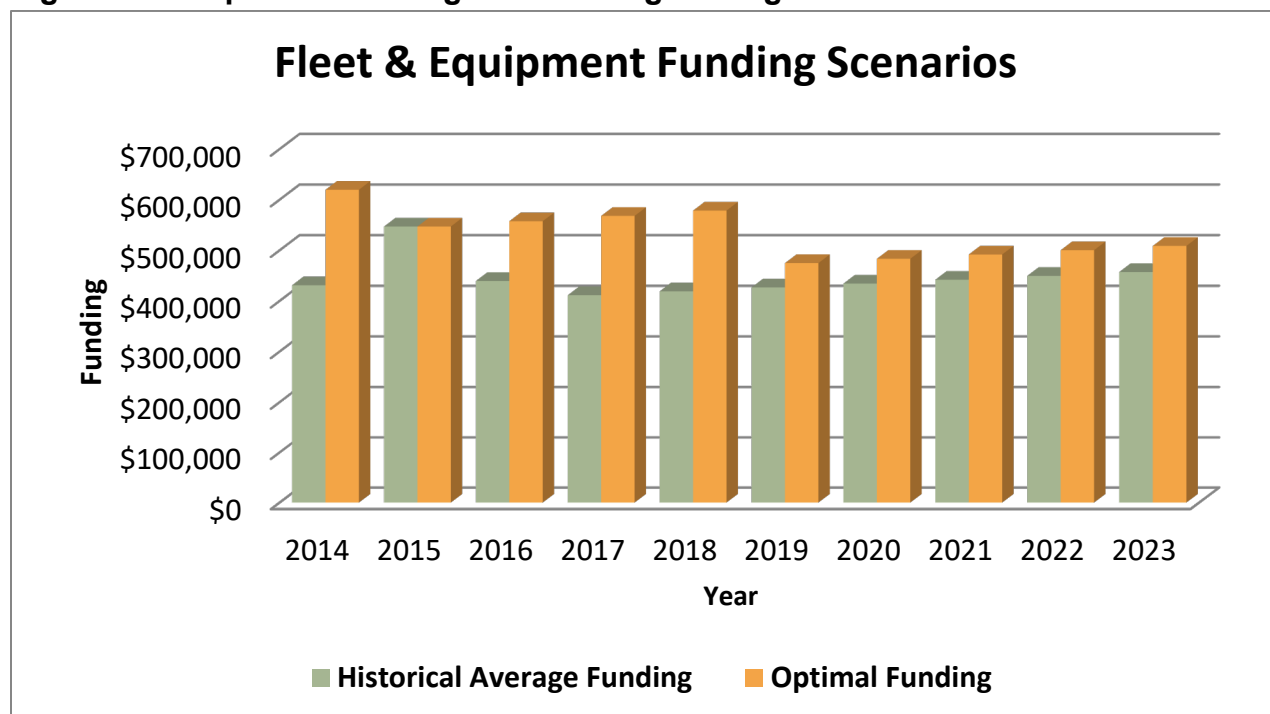
Note that the computer system was not included in the Funding Scenarios nor is it included in any part of the Financing Strategy; an Electronic Asset Replacement Plan is being developed separately. The Municipality has adopted this Asset Management Plan to obtain efficiency in operation. The decision to pursue the Plan was based on the following two scenarios in Figure 5.16.

Scenario 1: Optimal funding for capital renewals, maintenance activities required by the fleet and equipment assets over the next 10 years is \$5,329,883 this figure is inflated by 2% annually. An annual capital budget of \$532,988 would be required to cover all expenses for the next 10 years. No contributions to the reserve or operation expenses are included in Scenario 1.

Scenario 2: Over the last three years the Municipality spent a total of \$1,142,887 maintaining and renewing its fleet and equipment. Based on this average, McDougall projects an annual average budget of \$445,760 with inflation. This budget does not provide sufficient funding to rehabilitate all assets that require work in the coming years. The scenario does not allow for any expansion. This funding shortfall is approximately \$100,000 annually. No contributions to the reserve or operations expenses are included in Scenario 2.

5.0 FLEET & EQUIPMENT

Figure 5.16: Optimal vs. Budgeted Funding Strategies



What McDougall Cannot Do

The Municipality is not able to rehabilitate and replace all assets that require work in the coming years within budget. It cannot financially meet all the renewals and replacements required leaving some assets open to rapid deterioration while others can operate successfully beyond their useful lives. It is important that the Municipality operates a replacement strategy based on critical assets as discussed in section 5.7 to meet the essential needs in a priority sequence.

Service Consequences

Consequences occur when the Municipality decides not to undertake asset lifecycle activities after considering the strategies above. These consequences may impact users' service experience and are explored in Figure 5.17.

5.0 FLEET & EQUIPMENT

Figure 5.17: Service Consequences & Mitigation

Action	Consequence	Mitigation Strategy
Critical assets will be maintained to higher standards than low risk assets.	<ul style="list-style-type: none">○ Increase in minor repair billings.○ Stress on resources.○ Reactive maintenance.○ Decrease in operating efficiency and effectively.	<ul style="list-style-type: none">○ Scheduled regular inspections of minor assets.○ Ensure critical parts are in stock.○ Where possible purchase assets with extended warranties.○ Renewal and maintenance programs.
Fleet and equipment assets will continue to deteriorate and will only be repaired if a breakage occurs.	<ul style="list-style-type: none">○ Increase in breakages○ Service interruption○ Safety risk to Public	<ul style="list-style-type: none">○ Routine, scheduled preventative maintenance on minor assets in poor condition and intensive monitoring.

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.

5.13 Ten year Fleet & Equipment Expenditure Projections

The optimal expenditure forecast for the next 10 years is shown in Figure 5.18. It includes projections for renewal, and maintenance activities. Note that all costs are shown with 2% annual inflation on 2010 - 2012 values.

The total renewal, maintenance and replacement expenditure is \$5,964,361 or \$2,290 per McDougall household over the next 11 years. Note neither of these totals includes operating expense.

For comparative purposes Figure 5.19 shows fleet and equipment expenditures from 2010 to 2012. Note that all costs are shown without inflation.

5.0 FLEET & EQUIPMENT

Figure 5.18: Projected Operating & Capital Expenditure

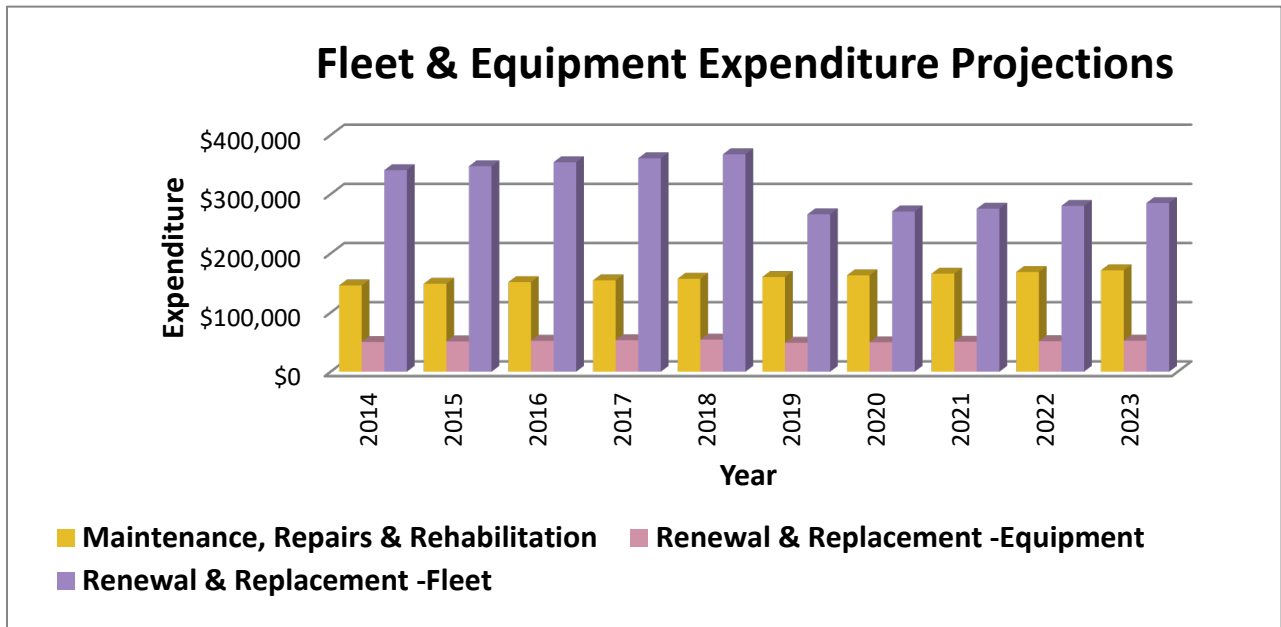
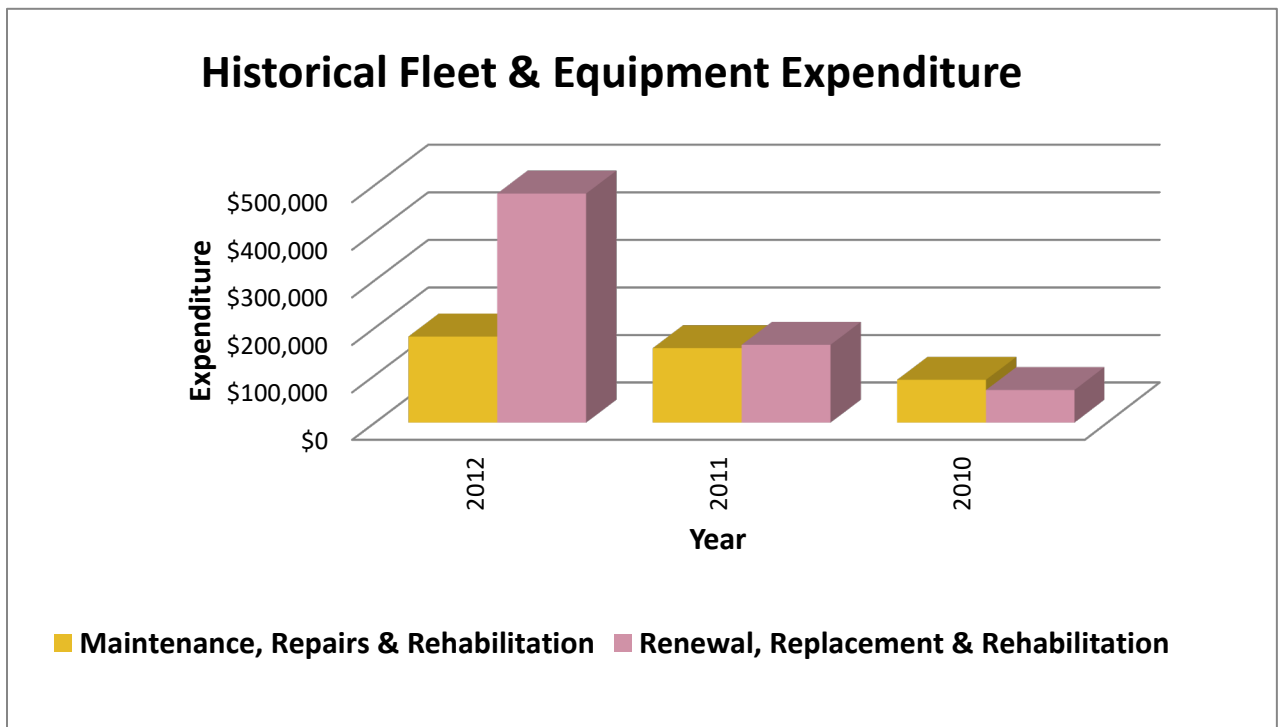


Figure 5.19: Historical Fleet & Equipment Expenditures



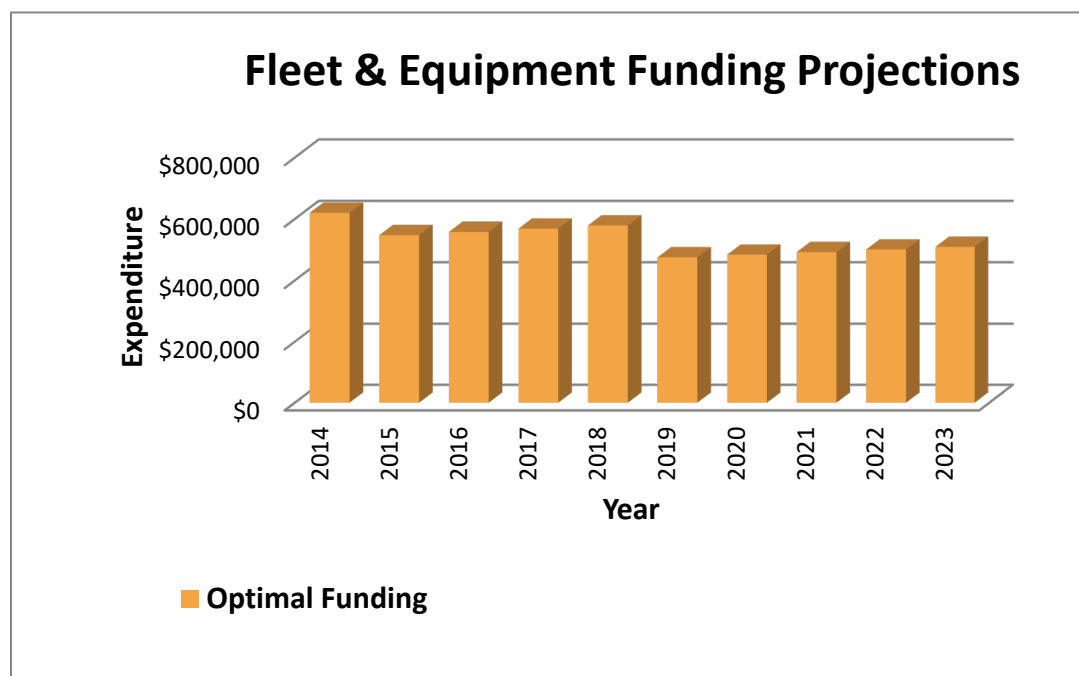
5.14 Fleet & Equipment Funding Projections

5.0 FLEET & EQUIPMENT

The optimal funding forecast for the next 11 years is shown in Figure 5.20. Funding requirements cover all renewal, replacement, and maintenance expenses. The fleet and equipment assets are an integral part of the Municipality however they do not generate significant direct revenues and are dependent on the net levy that is shared between multiple departments. All revenue allocated to fleet and equipment has been used to cover expenses. Note that projected revenues are shown with 2% annual inflation on 2010-2012 values.

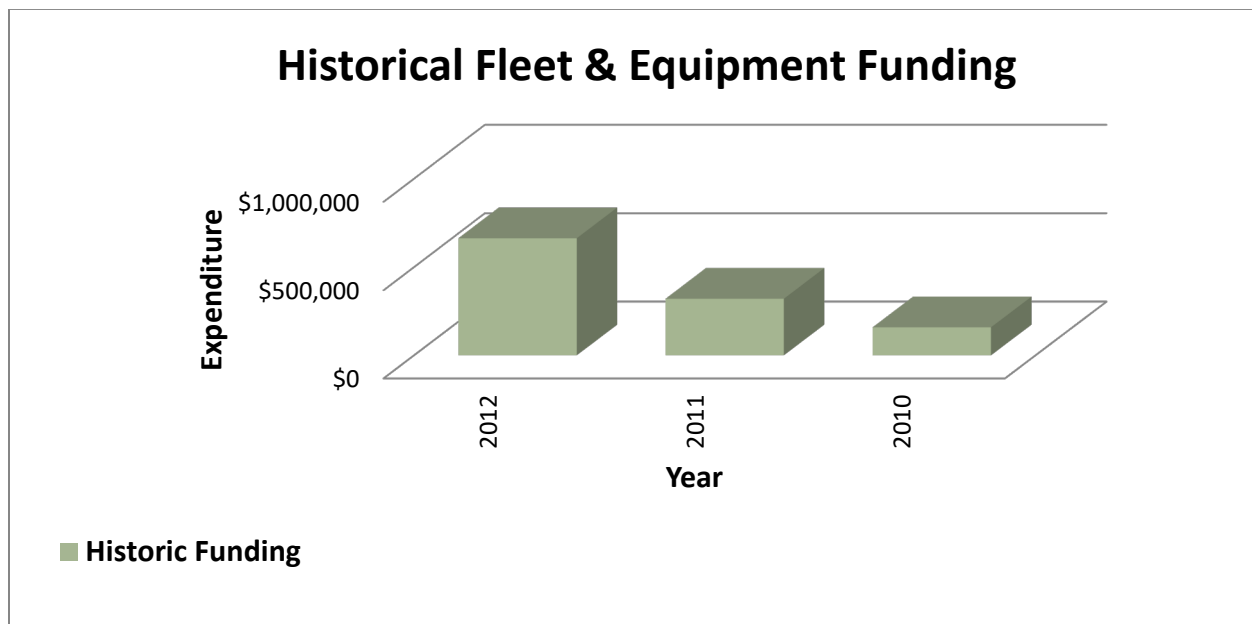
For comparative purposes Figure 6.16 shows net levy funds allocated to fleet and equipment activities from 2010 – 2012. Note that historical revenue is shown without inflation.

Figure 5.20: Fleet & Equipment Funding Projections



5.0 FLEET & EQUIPMENT

Figure 5.21: Historic Fleet & Equipment Funding



5.15 Sustainability of Service Delivery

The key indicator for service delivery sustainability that has been considered in the financing of the Fleet and Equipment 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 81%

The ratio above indicates that all renewals are not fully funded for the next 11 years with the Asset Management Plan in place. The infrastructure gap is 19% wide.

5.0 FLEET & EQUIPMENT

APPENDIX

1.0 CONDITION ASSESSMENT CRITERIA

Fleet Condition Rating System	
A	Excellent: vehicle exterior and interior look new, and needs no reconditioning or repair. This vehicle is free of rust and will pass e-test and safety inspection. The engine is clean, with no fluid leaks and is free of visible defects. This vehicle has a clean operating history. An 'excellent' vehicle will need no reconditioning to be sold at retail.
B	Good: Vehicle is free of any major defects. The paint, body and interior have only minor areas of deterioration, and there are no major mechanical problems. Little or no rust on this vehicle. A "good" vehicle will need minor reconditioning and repair work to be sold at retail.
C	Fair: Vehicle has major defects - cosmetic and/or mechanical BUT is still in adequate running condition. The paint, body and/or interior have major areas of deterioration in addition to mechanical problems. A 'fair' vehicle will require major reconditioning to be sold at retail.
D	Poor: Vehicle has major defects - mechanical and/or cosmetic defects AND is in inadequate running condition. The vehicle has problems that cannot be easily repaired by mechanic on Staff (e.g. rusted through frame, fire damage). A 'poor' vehicle may require an independent appraisal to determine its value.

Equipment Condition Rating System	
A	Excellent: no noticeable defects, some aging or wear may be visible. Immediate action is not required
B	Good: Only minor deterioration or defects are evident. Immediate action is not required
C	Fair: Some deterioration or defects are visible; function is still adequate. Analysis of repair and/or replacement options is recommended
D	Critical: Extensive deterioration, barely functional.
F	Failed: No longer functioning.

5.0 FLEET & EQUIPMENT

Computer - Age Based Condition Index	
A	Excellent: 80 - 100% useful life remaining
B	Good: 60 - 79% useful life remaining
C	Fair: 40 - 60% useful life remaining
D	Critical: 20 - 40% useful life remaining
F	Failed: 20 % or less useful life remaining

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 is 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:

5.0 FLEET & EQUIPMENT

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

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