THE CORPORATION OF THE TOWN OF MARKHAM

REVIEW OF RESERVES AND RESERVE FUNDS

NOVEMBER 4, 2004

PLANNING FOR GROWTH

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1. INTRODUCTION

1. INTRODUCTION

1.1 Background

C.N. Watson and Associates Ltd. was retained by the Town of Markham to review existing specific reserve and reserve fund policies of the Town and to recommend appropriate balance levels as well as policies to guide future contributions/uses, to ensure that the Town is able to meet future financial obligations.

The Town's last comprehensive reserve review was undertaken in 1993 and passed by Council as By-law 226-93. Subsequently, some reserve/reserve fund policies have been introduced, however, on a more ad hoc basis. In addition, staff had undertaken preliminary work in 1999/2000 to review reserve and reserve fund policies, however this was used for more internal purposes.

The scope of the work provided herein includes a review of most of its tax related reserves. Excluded from this review are water and wastewater reserves (which will be considered further with the passage of Bill 195 -*The Safe Water Drinking Act* and Bill 175 - *Sustainable Water and Sewer Systems Act*), Cash-in-lieu of Parkland Reserve, insurance/liability related reserves and reserve funds relating to development charges (established under the *Development Charges Act*).

1.2 Reserves and Reserve Funds Reviewed in this Analysis

The following provides a summary of the existing reserves and reserve funds which were considered as part of this undertaking:

Working Funds/Stabilization Reserves

- Working Capital
- Corporate Rate Stabilization
- Winter Maintenance
- Contingencies

- Corporate Rate Stabilization
- Debt Charge Payment Reserve Fund

General Capital Reserves

- General Capital
- Planning Studies

Specific Capital Reserves

- Facility Ramp-up Reserve
- Heritage Preservation
- Markham Heritage Loans
- Tree Replacement
- Environmental Land Acquisition Reserve Fund
- Environmental Sustainability Reserve Fund
- City Centre Infrastructure
- Raymerville Park Construction
- Valleylands Revitalization
- Peace Garden
- Parks Vaughan/Gallanou
- Fred Varley Art Centre
- Elson Park
- Tennis Court Repairs Reserve Fund
- Walden Pond Maintenance Reserve Fund

Lifecycle Replacement Reserves

- Firefighter Bunker Gear
- Major Capital Repairs/Replacement
- Recreation and Culture Capital Replacement

2. OVERVIEW OF RESERVES AND RESERVE FUNDS

2. OVERVIEW OF RESERVES AND RESERVE FUNDS

Municipalities in Ontario use fund accounting as the basis for recording and reporting their financial matters. There are three funds, those being the operating fund (to address day-to-day expenditures), capital fund (to record expenditures on the acquisition or construction of large assets) and Reserve/Reserve Funds (accumulation of funds set aside for specific purposes).

2.1 Reserves

In its simplest form, a reserve represents monies which are set aside for future known expenditures or for contingent purposes. The establishment of a reserve is at the discretion of Council and represents a financial management tool for smoothing out fluctuations in taxes and rates over a period of time.

Reserves are authorized under the provisions set out in the *Municipal Act*. As noted, a reserve may be established for a predetermined purpose and applied for that purpose at the discretion of council.

A reserve may be created by:

- including in the current estimates bylaw the amount that is to be designated as reserves during the fiscal year. This is normally set out under the heading "Provision for Reserves" or it may name the reserve itself such as "provision for a reserve for working funds."
- transferring unexpended funds identified prior to the end of the fiscal year to a reserve account. In this instance a Council direction/resolution would be required prior to the end of the fiscal year, to segregate a specified amount from the available operating revenues.

While reserves may be established for any municipal purpose, the most common types are:

1. **Reserve for working funds/stabilization.** In most municipalities, expenditures are incurred before taxes, grants and other revenues become available, including taxes and rates still to be collected for the previous year.

   A municipality can obtain a short-term loan to meet this need, however borrowing results in interest charges. In order to reduce, and, if possible avoid short-term borrowing, a working fund reserve is one financial management technique that is often employed. It is also a cash management device to enhance cash flow.

2. **Reserve for contingencies.** A reserve is established in anticipation of unknown expenditures or potential liabilities such as damage claims, shortfalls in forecast operating revenues, etc. Without contingency reserves, municipalities may experience either significant tax/rate increases should an unforeseen event occur which may necessitate short or long term borrowings.

3. **Reserve for equipment replacement.** Major items of equipment such as fire vehicles and snowplows often have to be replaced on a recurring basis. This type of reserve eliminates the need to levy for the full cost of the equipment in the year of acquisition. This avoids the resulting fluctuation in the tax levy from year to year or the issuance of short/long-term debt.

2.2 Reserve Funds

Reserve funds are similar to reserves in that monies are set aside for a future expenditure. However, reserve funds normally are created by statutory authority and are restricted to specific uses.

There are two types of reserve funds: obligatory reserve funds and discretionary reserve funds.

1. **Obligatory reserve funds** shall be created whenever a statute requires revenue received for special purposes to be segregated from the general revenues of the municipality. Examples include:

- currency exchange premiums received on debentures expressed in a foreign currency as set out in the *Municipal Act*

- contributions received in consideration of expenses incurred or to be incurred as the result of a proposed subdivision;
- "surplus" parking revenues set out by the *Municipal Act*;
- monies received from special charges to provide additional sewer or water supply;
- monies received in lieu of land for park purposes as set out in the *Planning Act*;
- monies received in lieu of land for park purposes under a subdivision agreement as set out in the *Planning Act*;
- monies received as development charges as set out under Sections 33 to 37 of the *Development Charges Act.*

Obligatory reserve funds are to be used solely for the purpose prescribed for them by statute.

2. **Discretionary reserve funds** are created under the *Municipal Act.* Discretionary reserve funds are established whenever a municipal council wishes to earmark revenues to finance a future expenditure, and physically set aside a certain portion of any year's revenues so that the funds are available as required.

Discretionary reserve funds may be used for a number of different purposes. Some examples of these are:

- future expenditures for land acquisition;
- buildings and other capital projects;
- vehicle self insurance;
- industrial promotion;
- future sick leave commitments

There are two major advantages to discretionary reserve funds:

- Similar to a reserve, they help to stabilize the general municipal tax levy. In a year when a large amount of revenue is required to finance capital projects, a previously established discretionary reserve fund can enable a municipality to

spend money without affecting the general municipal levy or the need to incur debt.

- The assets of the reserve fund can be invested to earn income, thus helping to reduce the amount of money to be set aside.

Based on the above, the structure of the report will provide discussion on the following groupings of reserves (note that most reserve funds were not included as part of this undertaking with the exception of the Markham Environmental Sustainability Reserve Fund):

- Working Funds/Stabilization Reserves (Chapter 4)
- General Capital Reserves (Chapter 5)
- Specific Capital Reserves (Chapter 6)
- Lifecycle Reserves (Chapter 7)

The specific reserves which pertain to the above groupings are presented on Table 2-1. The final reserve balances are projected to December 31, 2004.

Table 2-1
Town of Markham
Reserve Balances projected to 12/31/04

Fund Group		Balance
Working Funds/Stabilization Reserves		
Working Capital	$	2,149,303
Corporate Rate Stabilization		27,389,088
Winter Maintenance		343,000
Contingencies		19,587
Special Corp Rate Stabilization		705,176
Debt Charge Payment		3,153
Subtotal		30,609,307
General Capital		
General Capital		5,248,710
Planning Studies		539
Subtotal		5,249,249
Specific Capital		
Facility Ramp-up Reserve		4,807,878
Heritage Preservation		93,687
Markham Heritage Loans		348,452
Tree Replacement		7,030
Environmental Land Acquisition RF		3,036,728
Environmental Sustainability RF		163,218
City Centre Infrastructure		3,253
Raymerville Park Construction		23,563
Valleylands Revitalization		5,180
Peace Garden		8,415
Parks Vaughan/Gallanou		6,445
Fred Varley Art Centre		-
Elson Park		1,772
Tennis Court Repairs		(142)
Walden Pond Maintenance		3,574
Subtotal		8,509,053
Lifecycle Replacement		
Firefighter Bunker Gear		274,000
Major Capital Repairs/Replacement		17,052,751
Rec & Culture Capital Replacement		774,953
Subtotal		18,101,704
Total		62,469,313

3. COMPARATIVE SURVEY OF OTHER MUNICIPALITIES

3. COMPARATIVE SURVEY OF OTHER MUNICIPALITIES

To provide a broader perspective on current practices of other municipalities, a survey was undertaken to compare the reserve and reserve fund policies of larger municipalities in the GTA and surrounding area. The survey summarizes several types of reserves and reserve funds (stabilization reserves, general capital/unallocated reserves, contingencies, other reserve/ reserve funds, lifecycle replacement reserves, and specific capital program reserves) and provides guidelines and parameters for use of or maintenance of the funds.

The following are general observations arising from this review:

- All municipalities maintain stabilization reserves to minimize changes in the tax levy and to smooth out fluctuations in the operating budget
- Most municipalities have general capital or unallocated capital reserves to use as a source of funding for their capital program
- Some provide for contingent liabilities through a reserve. Those who do not use annual operating budget provisions or rely on sufficient reserve balances in other areas
- Many municipalities have reserves related to specific Council initiatives
- All have reserves for (wholly or partially) lifecycle replacement – funds for the ongoing maintenance and replacement of various capital items

Survey for the Town of Markham of Selected Municipal Reserve and Reserve Fund Policies (Fall 2003)

Stabilization Reserves – used to minimize changes in Tax Levy; to smooth out fluctuations due to increased one time expenditures or to phase expenditures into the operating budget

Markham (Working Capital, Waste Management Stabilization/Capital, Corporate Rate Stabilization, Insurance, Winter Maintenance, Facility Ramp-up Reserve)

Markham (existing)	Brampton	Halton Region	Kitchener	Mississauga	Oakville	Oshawa	York Region
√	√	√	√	√	√	√	√
• Corporate rate stabilization 10% of current revenues • Waste – one year's budget for sale of recyclables plus $1 million • Winter maintenance – 25% of operating budget • Insurance target balance $700k	• Tax stabilization target 10% of gross budget funded by tax base • Winter control	• Tax stabilization 10% of gross operating expenditures	• Tax stabilization, no target, policy sets out contributions from various year end surpluses	• Hydro reserve used to mitigate tax increases • Winter control target 50% operating budget	• Tax stabilization, insurance, winter maintenance; all policies currently under review	• No target • Insurance from actuarial valuation	• Tax stabilization 5% of net revenues

General Capital/Unallocated Reserves – to maintain cash flow and minimize need for short-term borrowing; to provide funding to capital program

Markham (General Capital)

Markham (existing)	Brampton	Halton Region	Kitchener	Mississauga	Oakville	Oshawa	York Region
√	√	√	√	√	√	X	√
• General capital – initially $4.4m contribution per year historically, however contribution was eliminated	• Community Investment (internal borrowing), Community Dividend (non-recurring expenditures)	• Water Capital, Wastewater Capital, Tax Capital and Capital Investment Revolving Fund	• No specific policy	• No specific policy	• No specific policy	• No general reserves, all program specific	• No specific policy

Contingencies – to fund unforeseen liabilities; contingent liabilities related to claims and settlements

Markham (Contingencies Reserve – Civic Centre)

Markham (existing)	Brampton	Halton Region	Kitchener	Mississauga	Oakville	Oshawa	York Region
√	√	X	√	√	X	√	√
• Created to fund potential liability relating to construction of Civic Centre	• for Brampton Hydro only	• historically held reserves which have since been consolidated into the tax stabilization reserve	•	• Reserve for labour settlements, assessment appeals, legal settlements	• Annual operating budget provision for corporate contingency • Litigation reserve	• No specific policy	• Property tax write offs funded by supplementary taxes

Other Reserve/Reserve Funds – to fund specific Council-directed initiatives

Markham (Heritage Preservation, Heritage Loans, Debt Charge Payment)

Markham (existing)	Brampton	Halton Region	Kitchener	Mississauga	Oakville	Oshawa	York Region
√	√	√	X	X	√	√	√
• No specific targets	• Legacy reserve endowment fund, Community Dividend fund	• Similar reserves for other programs			• for specific heritage projects	• Heritage loans to community groups	• Land acquisition

Lifecycle Replacement Reserve – to provide funds for the ongoing maintenance and replacement of various capital items

Markham (Major Capital Repairs/Replacement, Recreation and Culture Capital Replacement, Firefighter Bunker Gear)

Markham (existing)	Brampton	Halton Region	Kitchener	Mississauga	Oakville	Oshawa	York Region
√	√	√	√	√	√	√	√
• Recreation and culture 12% surcharge on ice rates	• Transit and fleet, no specific policy	• based on lifecycle costing for vehicles, equipment , facility - maintenance and replacement	• no specific targets	• fire vehicles 25% of inventory value • fleet 30% inventory value • transit every 12 to 18 years • corporate facilities twice the annual operating budget provision	• as % of value subject to op. budget; 60 year amortization of facilities plus 28% of facility op. budget per year • firefighter gear funded from op • Rec and culture part of corporate reserves	• based on lifecycle for various programs, subject to budget	• Building repairs • infrastructure refurbishment based on 5% of operating expenditures • vehicle repairs based on fleet usage charge

Specific Capital Reserves – to fund the construction of specific capital projects as directed by Council

Markham (City Centre Infrastructure, Environmental Land Acquisition, Raymerville Park, Valleyland Revitalization, Peace Garden, Parks Vaughan/Gallanou, Fred Varley Art Centre, Elson Park, Tennis Court repairs, Walden Pond)

Markham (existing)	Brampton	Halton Region	Kitchener	Mississauga	Oakville	Oshawa	York Region
√	√	√	√	√	√	√	√
• no specific policies	• no specific policies	• Program specific only if established financial plans (social housing, Ontario Works, Agreement Forests)	• various	• Planning process updates; Developer contributions	• Reserve fund for tree planting	• Some program specific	• Under review

4. WORKING FUNDS/STABILIZATION RESERVES

4. WORKING FUNDS/STABILIZATION RESERVES

Rate stabilization reserves and/or working funds are amounts set aside:

- To maintain the Town's cash flow
- Minimize the need for short-term borrowing
- To fund urgent expenditure requirements
- Minimize changes in the tax or rate levy
- To smooth out fluctuations due to one time expenditures or to phase ongoing expenditures into the operating budget
- Also commonly used to fund operating budget shortfalls

The Town of Markham currently has several reserves that function as working capital or stabilization funds. These include:

- Working Capital
- Corporate Rate Stabilization
- Special Corporate Rate Stabilization
- Winter maintenance

In addition, there are two other reserves (Contingency and Debt Charge Payments) which were established for specific contingent purposes. The intent of these reserves has now been fulfilled and minor residual balances remain.

A summary of each reserve, its purpose, funding source and balance is provided on Table 4-1. In total, the balance in this category of reserves is $30.6 million as at December 31, 2004.

Table 4-1

Town of Markham Working Funds/Stabilization Reserves

Name	Working Capital	Corporate Rate Stabilization	Winter Maintenance	Contingencies	Special Corporate Rate Stabilization	Debt Charge Payment	Total Working Funds/ Stabilization Reserves
Purpose	Day-to-day expenditures, cash flow, mitigate tax increases, contingency	Mitigate tax increases and lost revenue sources	Shortfalls in operating costs due to winter maintenance	Fund contingent liabilities relating to construction of Civic Centre	Segregate funds from refundable deposit accounts which are no longer refundable	Fund outstanding debenture re: 8911 Woodbine Avenue	
Balance as at Dec. 31/04	$2,149,303	$27,389,088	$343,000	$19,587	$705,176	$3,153	$30,609,307
Recommend	Retain, establish target balance of 15%	Close to Working Capital, surplus to Major Capital	Close to Major Capital	Close to Major Capital	Close to Major Capital	Close to Major Capital	

As presented in Chapter 2, many municipalities provide a consolidated reserve which is intended to address the principles of the working fund and the principles of a tax stabilization reserve. The Government Finance Officers Association (an international body which recommends policies related to government finance) recommends that municipalities maintain working capital funds in the area of 5% to 15% of annual tax revenue. The lower benchmark is commonly used by municipalities who have a large number of unallocated reserves whereas the higher rate is recommended for those who use consolidated reserves. Generally the consolidated reserve is preferred as it pools funds at a higher level and funds are available more broadly for use as well, the reserve would be easier to administer and ensure that an over-allocation is not made for this purpose.

The Town presently has a number of reserves which are used for purposes similar to the Working Capital Reserve. While appearing to provide a unique purpose, each reserve is broadly meant to stabilize the municipal tax rate. It is recommended that the Corporate Rate Stabilization, Winter Maintenance, Contingencies, Special Corporate Rate Stabilization and Debt Charge Payment reserves be closed and the balances be consolidated in the Working Capital Reserve. It is also recommended that the Town of Markham strive to maintain a consolidated working capital fund balance in the area of 15% of the annual tax levy. In the event that this reserve balance falls to 10% due to transfers out of the reserve to stabilize tax rates, it is recommended that budgeted transfers be made to replenish this reserve within a three-year period.

With a reserve balance of 15% for working capital, the Town should be in a position to use the funds to offset in-year winter maintenance over expenditures and to use the funds to mitigate property tax increases. Based on the above analysis, the 15% target balance for 2004 has been established at $11,650,000, which is higher than the present consolidated balances (presented below).

Working Funds/Stabilization Reserves	Balance Projected to Dec. 31, 2004
Working Capital	$2,149,303
Corporate Rate Stabilization	27,389,088
Winter Maintenance	343,000
Contingencies	19,587
Special Corp. Rate Stabilization	705,176
Debt Charge Payment	3,153
Total Balance – Working Funds and Stabilization Reserves	$ 30,609,307
Recommended Target	$11,650,000
Balance available to be redeployed	$18,959,307

As the present consolidated balance is in excess of $30 million it is recommended that $18,959,307 be reallocated from the Working Capital Reserve to the Major Capital Repairs/Replacement reserve to meet lifecycle costing expenditure needs (discussed further in Chapter 7).

5. GENERAL CAPITAL RESERVES

5. GENERAL CAPITAL RESERVES

The Town has two general capital reserves which provide a source of funding for the Town's capital budget. Table 5-1 below provides the background and specified purpose for these reserves.

Table 5-1
Town of Markham General Capital Reserves

Name	General Capital	Planning Studies	Total Capital Reserves
Purpose	Funding for capital program excluding water and wastewater	To fund various planning studies	
Balance as at Dec. 31/04	$5,248,710	$539	$5,249,249
Recommend	Retain	Close to General Capital Reserve	

The General Capital Reserve is used to fund the non-growth related component of development related projects for the Town. Under the *Development Charges Act*, there are portions of growth-related projects which must be funded by the Town, (e.g. the statutory 10% deduction for soft services, expenditures which exceed the calculated historic service standards, etc.) As well, the Town's DC By-law contains a number of mandatory and discretionary exemptions which may also need to be funded.

The need to contribute towards these projects and the amount to be funded will fluctuate from year to year due to a number of factors (e.g. the timing of project construction, the amount of exemptions provided each year, etc.) Hence this reserve is intended to smooth annual transfers. The Town has recently completed a Development Charges background study and Town staff have identified the amount and timing of non-DCable growth-related works that must be funded by Town sources. Table 5-2 provides the cash-flow requirements for this purpose, commencing January 1, 2005 and is extended out to the end of 2013.

Assumptions provided in this table include:

- Annual contribution to the reserve ($200,000 per year) will be available based upon the sale of Town owned lands. This assumption is based on a historic figure over five years.
- Transfers from the reserve provide for all non-DC costs for tax-supported services, including libraries but excluding Planning Studies and Urban Design – Parks. At this time staff are addressing this matter and a subsequent policy recommendation will be made to Council.

The Planning Studies reserve was established a number of years ago. Its original purpose was to put funds aside from annual operating surpluses to finance planning studies. As these studies can be large one-time expenditures, historically funds set aside year-to-year were found to be inadequate to properly fund these expenditures. Planning Studies are presently addressed through the capital budget process and hence, the reserve is no longer required. It is recommended that this reserve be closed and that the balance be transferred into the General Capital Reserve.

Table 5-2
Town of Markham
General Capital Reserve Cash Flow Projection
(in inflated $)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Beginning Balance (Jan 1)	5,249,249	4,174,009	4,527,099	4,509,080	4,603,742	4,971,873	5,352,889	5,747,240	6,155,394
Transfer In (a)	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Transfer Out (b)	(1,416,390)		(370,500)	(261,020)					(3,967,180)
Net Balance after transfers	4,032,859	4,374,009	4,356,599	4,448,060	4,803,742	5,171,873	5,552,889	5,947,240	2,388,214
Interest (@ 3.5%)	141,150	153,090	152,481	155,682	168,131	181,016	194,351	208,153	83,587
Ending Balance (Dec 31)	**4,174,009**	**4,527,099**	**4,509,080**	**4,603,742**	**4,971,873**	**5,352,889**	**5,747,240**	**6,155,394**	**2,471,801**

(a) based on net average proceeds from sale of lands transferred into this account over 5 year period 1999-2003 ($969k)
(b) assumes this reserve will not be used to fund Angus Glen Community Centre

6. SPECIFIC CAPITAL RESERVES

6. SPECIFIC CAPITAL RESERVES

The Town of Markham has several capital reserves for which Council has set aside funds for a specific capital purpose. Table 6-1 provides a description of the purpose, funding source and projected balance for each of the individual reserves. Based upon a detailed review with staff, there are some reserves which should be retained while other should be closed.

For the most part it is recommended that reserves which still have an intended use be maintained and that their balances (or future balances) be deemed sufficient to meet the specific capital obligations envisioned by Council. A brief summary is presented below:

- **Facility Ramp-up Reserve** - was initially established for the Angus Glen Community Centre and East Markham Fire Station to phase in operating budget expenditures for these two facilities and is still being utilized
- **Heritage Preservation** – the restoration and acquisition of heritage buildings and associated studies is still being undertaken by the Town, hence this reserve should be maintained
- **Markham Heritage Loans** – provides low interest loans in regards to historical restorations which is anticipated to continue

The Town continues to collect tree replacement funds as part of its development agreements. More recent collections for tree replacement are aggregated in a capital work-in-progress account. It is recommended that the Tree Replacement reserve be consolidated with the similar capital program and that this consolidated balance serve as the funding source for the Town's tree replacement program.

Walden Pond Maintenance was established to maintain areas surrounding Walden Pond. This reserve has not been utilized for a period of time and it appears that the purpose for which it was established has been fulfilled. As such, it is recommended that these funds be consolidated in the Major Capital Repairs/Replacement Reserve. In the event that future expenditure commitments reliant to this reserve are identified, it is recommended that any historic obligations be funded from the reserve into which these funds have been deposited. In a similar fashion, the Valleyland Revitalization and Park Vaughan/Gallanou reserves are no longer specifically required, but should funding obligations from these reserves be presented in

the future, it is recommended that such obligations be met from the Major Capital Repairs/Replacement Reserve.

Table 6-1

Town of Markham Specific Capital Reserves

Name	Facility Ramp-up Reserve	Heritage Preservation	Markham Heritage Loans	Tree Replacement	Environmental Land Acquisition	Environmental Sustainability	Walden Pond Maintenance
Purpose	To phase in operating budget expenditures; contingency	Restore or acquire heritage buildings and associated studies	Provide low interest loans for owners to repair, restore or reconstruct in authentic historic manner	Planting, replacing, repairing boulevard trees	To acquire environmentally sensitive property for the Town	To promote "green infrastructure" in the Town	Maintain areas surrounding Walden Pond
Balance as at Dec. 31/04	$4,807,878	$93,687	$348,452	$7,030	$3,036,728	$163,218	$3,574
Recommend	Retain	Retain	Retain	Consolidate with capital project	Retain, target balance of $10 million in 10 years	Target year-end balance of $300,000	Close

Table 6-1 (Cont'd)

Town of Markham Specific Capital Reserves

Name	Raymerville Park Construction	Valleylands Revitalization	Peace Garden	Parks Vaughan/ Gallanou	Fred Varley Art Centre	Elson Park	City Centre Infrastructure	Tennis Court Repairs	Total Specific Capital
Purpose	Capital costs associated with Morgan Park Redev't master Plan	Tree and shrub planting initiatives in valleys and ravines	Peace Garden expenditures	Maintain parks on the Yonge Street corridor	Planning and development of proposed art gallery	Construction of Elson Park	Infrastructure projects within the Town's city centre	Construct, repair and replace public tennis courts	
Balance as at Dec. 31/04	$23,563	$5,180	$8,415	$6,445	$0	$1,772	$3,253	$-142	$8,509,053
Recommend	Close	Close	Close	Close	Close	Close	Close	Close	

It is recommended that the Environmental Land Acquisition Reserve Fund and Environmental Sustainability Reserve Fund be maintained.

The Environmental Sustainability Reserve Fund is intended to provide a source of financing for the Town to acquire/protect environmentally sensitive land (such as the Oak Ridges Moraine, the Rouge Valley, or other lands). The Town's proposed 2005 budget includes a transfer to this reserve in the amount of $500,000 from interest earned by the Hydro reserve. Assuming the 2006 and forecast transfers are maintained at this level, a balance of $10.4 million will be attained by the end of 2014. This accumulated balance excludes any transfers out of the reserve. As future expenditure requirements are identified for this reserve, further consideration may need to be given to an appropriate level of funding. Table 6-2 sets out the cash flow forecast for the Environmental Land Acquisition reserve.

The Markham Environmental Sustainability Reserve Fund (Table 6-3) was established to provide financial assistance in funding Town internal and community-based projects and initiatives that promote environmental responsibility and innovation. A recent report to Council recommended that this reserve fund balance be increased to $300,000 in 2005. It is also recommended that this reserve be returned to that target balance (when funds have been used) annually through contributions from the tax levy.

Staff have recommended that a new reserve be established for Land Acquisition in addition to the Environmental Land Acquisition Reserve, as set out in Table 6-4. The purpose of this reserve is to set aside funding for land acquisitions intended for future Town use. This reserve is for non-growth and non-environmental land acquisitions. With an annual funding level of $500,000 from the hydro interest earnings, the overall revenue contributions (including interest) will total just over $6 million by the end of 2014, excluding expenditures out of the reserve. Forecast expenditure requirements are currently being reviewed by staff.

Table 6-2
Town of Markham
Environmental Land Acquisition Reserve Forecast
(In inflated $)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Environmental Land Acquisition										
Opening Balance	3,036,728	3,660,513	4,306,131	4,974,346	5,665,948	6,381,756	7,122,618	7,889,409	8,683,039	9,504,445
Hydro Interest Revenue	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Net Reserve Balance	3,536,728	4,160,513	4,806,131	5,474,346	6,165,948	6,881,756	7,622,618	8,389,409	9,183,039	10,004,445
Interest on Reserve Balance	123,785	145,618	168,215	191,602	215,808	240,861	266,792	293,629	321,406	350,156
Ending Reserve Balance	$ 3,660,513	$ 4,306,131	$ 4,974,346	$ 5,665,948	$ 6,381,756	$ 7,122,618	$ 7,889,409	$ 8,683,039	$ 9,504,445	$ 10,354,601

Table 6-3
Town of Markham
Environmental Sustainability Reserve Fund Forecast
(In inflated $)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Environmental Sustainability										
Opening Balance	163,218	309,691	320,530	331,748	343,360	355,377	367,815	380,689	394,013	407,803
Tax Levy funding	136,000	-	-	-	-	-	-	-	-	-
Net Reserve Balance	299,218	309,691	320,530	331,748	343,360	355,377	367,815	380,689	394,013	407,803
Interest on Reserve Balance	10,473	10,839	11,219	11,611	12,018	12,438	12,874	13,324	13,790	14,273
Ending Reserve Balance	$ 309,691	$ 320,530	$ 331,748	$ 343,360	$ 355,377	$ 367,815	$ 380,689	$ 394,013	$ 407,803	$ 422,077

Table 6-4
Town of Markham
Land Acquisition Reserve Forecast
(In inflated $)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Land Acquisition										
Opening Balance	-	517,500	1,053,113	1,607,471	2,181,233	2,775,076	3,389,704	4,025,843	4,684,248	5,365,697
Hydro Interest Revenue	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Net Reserve Balance	500,000	1,017,500	1,553,113	2,107,471	2,681,233	3,275,076	3,889,704	4,525,843	5,184,248	5,865,697
Interest on Reserve Balance	17,500	35,613	54,359	73,762	93,843	114,628	136,140	158,405	181,449	205,299
Ending Reserve Balance	$ 517,500	$ 1,053,113	$ 1,607,471	$ 2,181,233	$ 2,775,076	$ 3,389,704	$ 4,025,843	$ 4,684,248	$ 5,365,697	$ 6,070,996

7. LIFECYCLE REPLACEMENT RESERVES

7. LIFECYCLE REPLACEMENT RESERVES

Lifecycle costing typically addresses the ongoing capital replacement and preventive maintenance of capital assets over their useful life. In a municipal finance setting, it establishes a basis for planning for the long-term replacement of the asset through long term planning. A detailed discussion on Lifecycle Costing is provided in Appendix A to this report.

Within this study, lifecycle costing was undertaken on the Town of Markham's facilities, bridges, roads (resurfacing component), IT infrastructure, parks/recreation amenities, firefighter equipment and Town vehicles. The provision of lifecycle reserves ensures that sufficient funding is in place when needed to repair (to extend the useful life of the asset) or to replace these assets. As lifecycle reserve calculations take into account the future replacement costs of the assets, expenditures were forecast to increase by 2% per year for inflation. As well, for investment purposes interest earnings in the reserves were estimated at 3.5% annually.

For the lifecycle analysis, all identified capital asset replacements (based on those currently in inventory) have been forecasted on a detailed basis over a 20-year period. Certain assets were reviewed on a 60-year basis where sufficient data was available. All assets have been identified along with their present replacement value, average useful life and identified replacement/improvement costs. For budgetary planning purposes, the asset expenditures have been consolidated and are presented in Table 7-1. The following provides a discussion regarding the approach to determining this forecast.

Facility Lifecycle Costing

The replacement of facility major components was undertaken by C.N. Watson and Associates using the Means construction costs. The Means data provides details regarding the proportion of a building's total cost which would be attributable to various components (such as roofing, plumbing, electrical, HVAC, etc.) dependant upon building type and use. Assumptions were made with respect to the appropriate useful life for each component. These factors were then applied to the Town's current replacement cost per facility, resulting in a forecast expenditure per year. The resulting lifecycle costs were included in the calculation to assess the sufficiency of the Major Capital Repairs/Replacement Reserve.

The total estimated replacement cost of all Town-owned facilities (excluding the Museum) is $234.4 million.

Bridges

The Town's Asset Management staff are planning to undertake a detailed bridge survey in the near future. For this evaluation, specific data was provided by staff setting out the forecast capital expenditures relating to Bridges, Culverts, and Pedestrian Bridges. The basis for this data was a recent study which reviewed the assets within the Town (over 100 bridges and culverts) having an estimated replacement value of approximately $45 million.

Based on the information provided, annual expenditures range from $400,000 to $1.3 million in the first five years.

Roads Resurfacing

Information regarding the Town's road resurfacing needs have been provided. This information is based on the 2003 Capital Budget presentation made to Council (refer to Asphalt Resurfacing Program). Specific data was provided setting out the lifecycle, lane kilometres and cost per kilometre for resurfacing for each road.

The calculated replacement schedule resulted in substantial expenditures in several years. The forecast expenditure stream was smoothed by funding the replacement costs over a five-year time frame for each project. This results in a more consistent cash flow requirement from year to year. Generally the expenditures commence at $4 million per year to 2015, increase to $5 million for the period 2016 – 2018, then to $8 million per year thereafter. .

IT Infrastructure

A detailed review of information technology infrastructure replacement was undertaken based on data provided by the IT division. This analysis takes into consideration the average useful life of hardware as follows: PCs – 3 years, printers – 5 years, servers – 5 years, network devices as required, based on the Town's existing inventory of computer equipment. From the information provided, IT needs range from $973,000 to $1.6 million in the early years and then are maintained at $1.3 million for the balance of the forecast.

Parks Amenities

Information provided by staff for the purposes of this assessment was based on the December 2003 parks inventory. It is noted that all information as to the original acquisition year of these assets was not available and hence, it has been assumed that all assets are generally in good condition and would experience a useful life for several years to come. Replacement costs used in this assessment were deemed by staff to be reflective of current day pricing.

The data provides for assets such as play structure, playing fields, tennis courts, lighting, resurfacing, water play, etc. Over the period expenditures range annually from a low of $45,000 in 2010 to a high of $2.1 million in 2016.

Firefighter Equipment

Currently there is a reserve established for firefighter equipment. The purpose of this reserve is to provide sufficient funding to replace firefighter equipment and bunker gear on a recurring seven-year basis. Based on the current fire complement of 190 firefighters and a cost of $5,942 per unit (based on data provided in the Town's Development Charges Background Study), an annual expenditure of $160,000 is required to fund this program.

Vehicles

A detailed analysis was undertaken based on the existing inventory of licensed and unlicensed vehicles provided by the Fleet Supervisor. Information regarding the expected useful life for each vehicle and equipment and current replacement costs was also provided. The assessment considered the useful life of the vehicles in terms of age as well as usage expectations. Similar to roads, the expenditure stream was smoothed in the early years to provide a smoother forecast.

Existing Reserves

The Town currently has three reserves related to lifecycle costing expenditures and they are presented in Table 7-2.

Two of these reserves are specific to individual departments (Firefighter Equipment and Recreation and Culture Capital Replacement). The remaining reserve provides funds for the rest of the assets of the Town. It is recommended that the Firefighter Bunker Gear Reserve and Recreation and Culture Capital Replacement be combined into Major Capital Repairs/Replacement Reserve and that one reserve be used to address all costs of the Town. This approach would pool resources for a specific use and maximize the use of the funds.

A cash flow assessment has been undertaken to consider the expenditure needs relative to the present available funding in the reserves, along with current transfers being recommended to continue from the operating budget. In conjunction with staff, hydro interest earnings have been included as a source of funding to meet the financial obligations. Table 7-3 provides this analysis. Provided therein are the following assumptions:

- Reallocated opening balance of $20,060,320 from the Working Funds and several specific capital reserves (discussed in Chapter 4)
- Consolidated balance from Firefighter Bunker Gear reserve and Recreation and Culture Capital Replacement transferred to Capital Repairs/Replacement Reserve
- The existing (2005) operating budget transfers totalling $16,700,000 are maintained in constant dollars and transferred into the new Major Capital Repairs/Replacement.

Based on these assumptions, the initial analysis indicates that current transfers are not sufficient to fund the program expenditure requirements. In conjunction with staff, it is recommended that additional financing be contributed from hydro interest earnings. Including this additional funding, the Major Capital Repairs/Replacement Reserve will be maintained with a positive cash flow until the end of 2022, when it is expected that the reserve will have an unfunded balance of $5m to $6 million. At this time expenditures are expected to increase beyond the level of contribution into the reserve. Within the forecast period, this information will be subject to refinement and the expenditure forecast will be monitored wherein expenditures may be delayed to reflect the condition of specific assets or the remediation cost and method may be changed from that reflected herein.

It is suggested that 20 years is a suitable time frame over which to assess the sufficiency of the lifecycle costing reserve. It is recommended that all reserves and reserve funds be reviewed every three to five years since replacement costs, infrastructure due to renewal, budget

priorities and Council direction change over time. In reviewing the analysis, it would be appropriate to ??????

Table 7-1
Town of Markham
Lifecycle Costing Summary

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bridges	330,000	1,300,000	1,245,000	1,252,810	468,060	387,619	30,000	-	-	-	-
Roads Major Rehab	2,524,942	4,000,000	4,139,481	4,139,481	4,139,481	1,614,539	5,366,719	3,752,180	3,752,180	3,752,180	3,752,180
Streetlights		35,000	2,585,000	2,585,000	2,585,000	2,585,000	2,585,000	2,160,000	2,160,000	2,160,000	2,160,000
Traffic Signals		-	290,400	290,400	290,400	290,400	290,400	242,000	242,000	242,000	242,000
Storm Sewers		-	480,000	480,000	480,000	480,000	480,000	400,000	400,000	400,000	400,000
Facilities	4,710,195	3,977,000	1,067,773	5,339,614	4,089,529	1,493,694	3,413,120	6,163,137	16,310,213	4,350	17,752,156
IT infrastructure	1,461,166	973,000	1,371,530	1,238,908	1,323,408	1,140,622	1,151,167	1,641,202	1,245,280	1,247,380	1,279,366
Parks	102,600	1,091,000	60,200	784,200	69,400	108,800	44,800	113,600	144,000	1,909,400	421,600
Firefighter Bunker Gear	160,434	414,000	109,721	109,721	109,721	109,721	109,721	160,434	160,434	160,434	160,434
Vehicles	1,277,880	962,000	2,981,316	1,549,616	1,787,316	1,431,236	1,896,536	762,800	1,366,200	4,735,000	4,860,100
Total Annual Expenditure	10,567,216	12,752,000	14,330,420	17,769,749	15,342,314	9,641,631	15,367,463	15,395,352	25,780,307	14,610,744	31,027,836
Inflated by 2% per year	1.00	1.00	1.02	1.04	1.06	1.08	1.10	1.13	1.15	1.17	1.20
Inflated expenditures	10,567,216	12,752,000	14,617,029	18,487,647	16,281,387	10,436,412	16,966,921	17,337,667	29,613,469	17,118,815	37,081,136

Table 7-1
Town of Markham
Lifecycle Costing Summary

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Bridges	-	-	-	-	-	-	-	-	-	-
Roads Major Rehab	4,766,668	4,766,668	4,766,668	4,766,668	7,893,654	8,006,113	8,006,113	8,006,113	8,006,113	5,980,262
Streetlights	2,160,000	2,160,000	2,160,000	2,160,000	2,160,000	2,160,000	2,160,000	2,160,000	2,160,000	2,160,000
Traffic Signals	242,000	242,000	242,000	242,000	242,000	242,000	242,000	242,000	242,000	242,000
Storm Sewers	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Facilities	4,821,068	4,874,831	1,112,283	2,424,615	164,830	11,992,070	21,865,549	6,348,227	73,875	1,828,803
IT infrastructure	1,261,186	1,261,186	1,261,186	1,261,186	1,261,186	1,261,186	1,261,186	1,261,186	1,261,186	1,261,186
Parks	1,826,000	2,147,400	1,573,000	460,000	180,800	728,947	728,947	728,947	728,947	728,947
Firefighter Bunker Gear	160,434	160,434	160,434	160,434	160,434	160,434	160,434	160,434	160,434	160,434
Vehicles	1,646,400	2,533,800	538,700	1,618,500	1,152,500	1,356,400	1,227,400	1,897,500	1,897,500	1,897,500
Total Annual Expenditure	17,283,755	18,546,319	12,214,271	13,493,403	13,615,404	26,307,150	36,051,630	21,204,407	14,930,055	14,659,132
Inflated by 2% per year	1.22	1.24	1.27	1.29	1.32	1.35	1.37	1.40	1.43	1.46
Inflated expenditures	21,068,801	23,060,017	15,490,648	17,455,155	17,965,236	35,405,960	49,491,162	29,691,289	21,323,796	21,355,588

Table 7-2

Town of Markham Lifecycle Costing Reserves

Name	Firefighter Bunker Gear	Major Capital Repairs/ Replacement	Recreation and Culture Capital Replacement
Purpose	Replacement of bunker gear every seven years	To fund corporate vehicles, equipment including roads and parks, excluding water and wastewater	Replacement of parks and recreation capital items
Balance as at Dec. 31/04	$274,000	$17,052,751	$774,953
Recommend	Close to major Capital Repairs/ Replacement	Retain	Close to Major Capital Repairs/Replacement

Table 7-3
Town of Markham
Major Capital Repairs/Replacement Reserve Forecast
(In Inflated $)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Opening Balance	$ 37,113,071	$ 40,949,849	$ 43,409,018	$ 42,364,595	$ 43,981,503	$ 52,116,896	$ 54,188,192	$ 56,356,355	$ 46,300,857	$ 49,229,059
Transfer to:										
Major Cap Rep/Repl Reserve	16,700,000	17,200,000	17,700,000	18,200,000	18,700,000	19,200,000	19,700,000	20,200,000	20,700,000	21,200,000
Recreation and Culture	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
Firefighter Bunker Gear	41,000	41,000	41,000	41,000	41,000	41,000	41,000	41,000	41,000	41,000
Add'l funding from hydro interest income	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*
Available Funding	**$ 57,104,071**	**$ 61,440,849**	**$ 64,400,018**	**$ 63,855,595**	**$ 65,972,503**	**$ 74,607,896**	**$ 77,179,192**	**$ 79,847,355**	**$ 70,291,857**	**$ 73,720,059**
Less transfers for Other Capital Mtce/Repairs	(4,787,000)	(4,882,740)	(4,980,395)	(5,080,003)	(5,181,603)	(5,285,235)	(5,390,940)	(5,498,758)	(5,608,733)	(5,720,908)
Less Infl Transfer to Capital Projects (Table 7-1)	(12,752,000)	(14,617,029)	(18,487,647)	(16,281,387)	(10,436,412)	(16,966,921)	(17,337,667)	(29,613,469)	(17,118,815)	(37,081,136)
Net Reserve Balance	$ 39,565,071	$ 41,941,080	$ 40,931,976	$ 42,494,206	$ 50,354,489	$ 52,355,741	$ 54,450,585	$ 44,735,128	$ 47,564,309	$ 30,918,015
Interest Earnings	$ 1,384,777	$ 1,467,938	$ 1,432,619	$ 1,487,297	$ 1,762,407	$ 1,832,451	$ 1,905,770	$ 1,565,729	$ 1,664,751	$ 1,082,131
Ending Reserve Balance	**$ 40,949,849**	**$ 43,409,018**	**$ 42,364,595**	**$ 43,981,503**	**$ 52,116,896**	**$ 54,188,192**	**$ 56,356,355**	**$ 46,300,857**	**$ 49,229,059**	**$ 32,000,146**

Table 7-3
Town of Markham
Major Capital Repairs/Replacement Reserve Forecast
(In Inflated $)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total Opening Balance	$ 32,000,146	$ 31,140,064	$ 28,585,680	$ 34,170,481	$ 38,309,315	$ 42,248,148	$ 28,897,050	$ 1,373,092	(6,445,329)	(5,963,132)
Transfer to:										
Major Cap Rep/Repl Reserve	21,700,000	22,200,000	22,700,000	23,200,000	23,700,000	24,200,000	24,700,000	25,200,000	25,700,000	26,200,000
Recreation and Culture	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
Firefighter Bunker Gear	41,000	41,000	41,000	41,000	41,000	41,000	41,000	41,000	41,000	41,000
Add'l funding from hydro interest income	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*	*3,000,000*
Available Funding	**$ 56,991,146**	**$ 56,631,064**	**$ 54,576,680**	**$ 60,661,481**	**$ 65,300,315**	**$ 69,739,148**	**$ 56,888,050**	**$ 29,864,092**	**$ 22,545,671**	**$ 23,527,868**
Less transfers for Other Capital Mtce/Repairs	(5,835,326)	(5,952,033)	(6,071,073)	(6,192,495)	(6,316,345)	(6,442,672)	(6,571,525)	(6,702,956)	(6,837,015)	(6,973,755)
Less Infl Transfer to Capital Projects (Table 7-1)	(21,066,801)	(23,060,017)	(15,490,648)	(17,455,155)	(17,965,236)	(35,405,960)	(49,491,162)	(29,691,289)	(21,323,796)	(21,355,588)
Net Reserve Balance	30,087,018	$ 27,619,014	$ 33,014,958	$ 37,013,831	$ 41,018,734	$ 27,890,516	$ 825,363	(6,530,153)	(5,615,139)	(4,801,475)
Interest Earnings	1,053,046	$ 966,665	$ 1,155,524	$ 1,295,484	1,229,414	1,006,534	547,729	84,824	(347,993)	-$ 168,052
Ending Reserve Balance	**$ 31,140,064**	**$ 28,585,680**	**$ 34,170,481**	**$ 38,309,315**	**$ 42,248,148**	**$ 28,897,050**	**$ 1,373,092**	**$ (6,445,329)**	**$ (5,963,132)**	**$ (4,969,527)**

8. SUMMARY AND RECOMMENDATIONS

8. SUMMARY AND RECOMMENDATIONS

In general, the Town's reserves and reserve funds considered in this review are financially sound. With some additional contributions from the tax levy, the estimated needs of the Town should be fully funded.

Arising from this review there are a number of adjustments recommended to the present reserve and reserve fund accounts as follows:

1. Close Corporate Rate Stabilization, Winter Maintenance, Contingencies, Special Corporate Rate Stabilization and Debt Charge Payment reserves to the Working Capital Reserve;
2. Close Planning Studies Reserve to the General Capital Reserve;
3. Close City Centre Infrastructure, Raymerville Park Construction, Valleylands Revitalization to the Major Capital Repairs/Replacement Reserve'
4. Close Peace Garden, Parks Vaughan/Gallanou, Fred Varley Art Centre, Elson park, Tennis Court Repairs and Walden Pond Maintenance Reserves to the Working Capital Reserve;
5. Close Tree Replacement Reserve to existing capital project;
6. Create new Land Acquisition reserve to be funded from hydro interest earnings;
7. Consolidate Firefighter Bunker Gear Reserve and Recreation and Culture Capital Replacement into Major Capital Repairs/Replacement Reserve
8. $18,959,307 be redeployed from the Working Capital Reserves to the Major Capital Repairs/Replacement reserve.

The recommended changes provided above are reflected in Table 8-1.

In regard to maintaining certain reserves at adequate levels to address the Town's financial needs over time, the following recommendations are provided.

1. That the Working Capital Reserve be maintained at a level equal to 15% of the annual tax levy. Should this reserve balance reduce below the target level, that it be replaced by any annual surplus experienced at the fiscal year end and/or be budgeted for in the subsequent budget year.

2. Reserves and Reserve Funds be reviewed every 3 to 5 years to ensure their continued adequacy over time

Lastly, there are additional contributions required from the tax levy and hydro interest earnings which need to be included to finance several reserves. The future funding amounts and the reserves to which these transfers relate are summarized on Table 8-2 based on the findings of this report.

1. That the annual contributions for certain reserve funds presented on Table 8-2 be included in future operating budgets and transferred to the appropriate reserve.

Table 8-1
Town of Markham
Recommended Redeployed Reserve Balances Projected to 12/31/04

Fund Group	Balance	Recommended Transfers In	Out	Balance
Working Funds/Stabilization Reserves				
Working Capital	2,149,303		(2,149,303)	-
Corporate Rate Stabilization	27,389,088		(15,739,088)	11,650,000
Winter Maintenance	343,000		(343,000)	-
Contingencies	19,587		(19,587)	-
Special Corp Rate Stabilization	705,176		(705,176)	-
Debt Charge Payment	3,153		(3,153)	-
Subtotal	30,609,307	-	(18,959,307)	11,650,000
General Capital				
General Capital	5,248,710	539		5,249,249
Planning Studies	539		(539)	-
Subtotal	5,249,249	539	(539)	5,249,249
Specific Capital				
Facility Ramp-up Reserve	4,807,878			4,807,878
Heritage Preservation	93,687			93,687
Markham Heritage Loans	348,452			348,452
Tree Replacement	7,030	a)	- 7,030	-
Environmental Land Acquisition RF	3,036,728			3,036,728
Environmental Sustainability RF	163,218			163,218
City Centre Infrastructure	3,253		(3,253)	-
Raymerville Park Construction	23,563		(23,563)	-
Valleylands Revitalization	5,180		(5,180)	-
Peace Garden	8,415		(8,415)	-
Parks Vaughan/Gallanou	6,445		(6,445)	-
Fred Varley Art Centre	-			-
Elson Park	1,772		(1,772)	-
Tennis Court Repairs	- 142		142	-
Walden Pond Maintenance	3,574		(3,574)	-
Subtotal	8,509,053	-	(59,090)	8,449,963
Lifecycle Replacement				
Firefighter Bunker Gear	274,000		(274,000)	-
Major Capital Repairs/Replacement	17,052,751	20,060,320		37,113,071
Rec & Culture Capital Replacement	774,953		(774,953)	-
Subtotal	18,101,704	20,060,320	(1,048,953)	37,113,071
Capital Project - Tree Replacement		7,030		7,030
Total	62,469,313	20,067,889	(20,067,889)	62,469,313

a) Redeploy to existing capital project

Table 8-2
Town of Markham
Impact of Recommended Reserve Transfers
Proposed Funding from Tax Levy and Hydro Interest Earnings
(In Inflated $)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Additional funding from Tax Levy:										
Environmental Sustainability	136,000									
Subtotal: Funding from Tax Levy	136,000	-	-	-	-	-	-	-	-	-
Additional funding from Hydro Interest Earnings										
Major Capital Repairs/Replacement	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Environmental Land Acquisition	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Land Acquisition	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Subtotal: Funding from Hydro Interest	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Total Additional Contribution to Reserves	4,136,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000

APPENDIX A

C.N. WATSON AND ASSOCIATES LTD.

LIFE CYCLE COSTING

Overview of Life Cycle Costing

Definition

For many years, life cycle costing has been used in the field of maintenance engineering and to evaluate the advantages of using alternative materials in construction or production design. The method has gained wider acceptance and use in the areas of industrial decision-making and the management of physical assets.

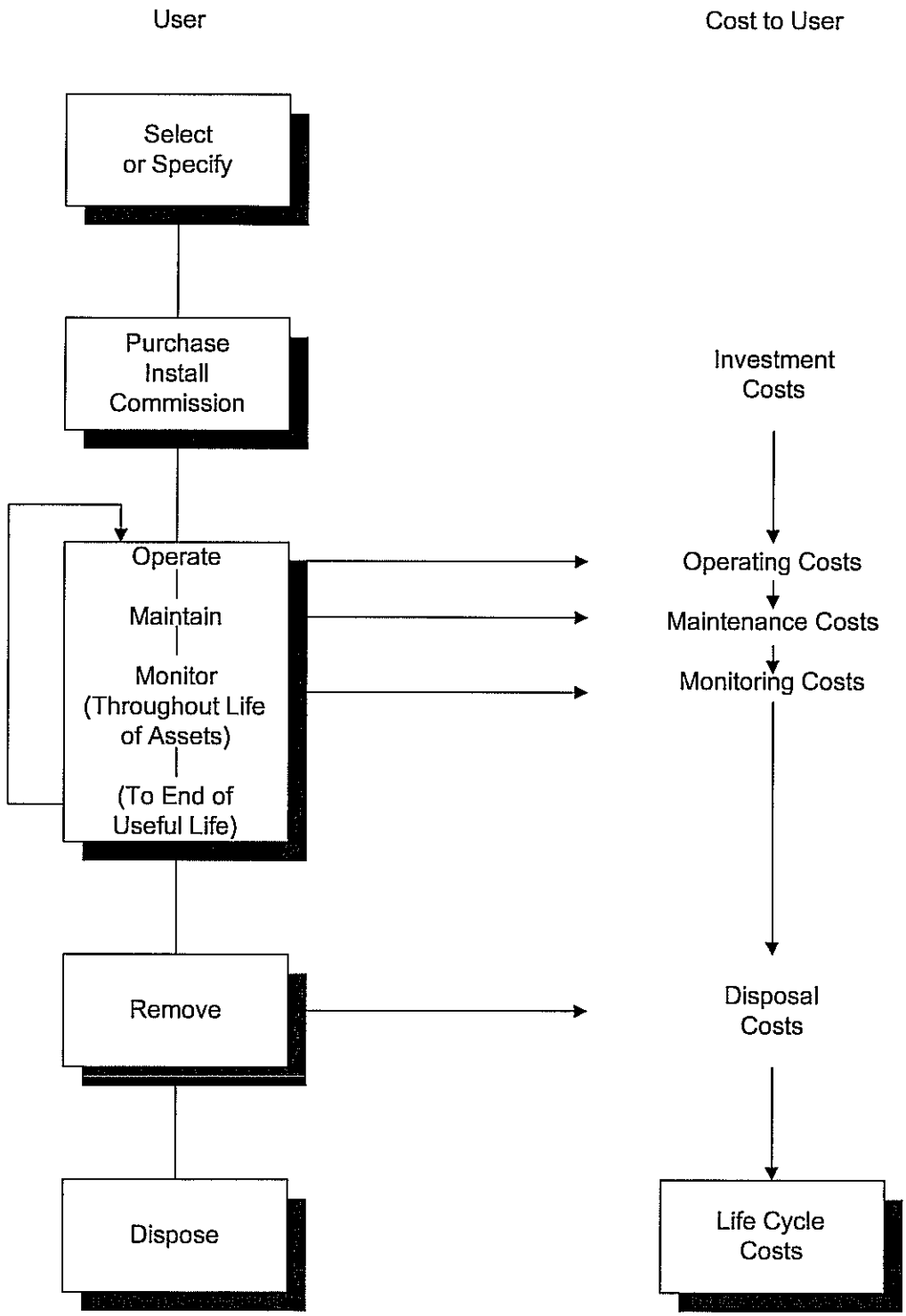
By definition, life cycle costs are all the costs which are incurred during the life cycle of a physical asset, from the time its acquisition is first considered, to the time it is taken out of service for disposal or redeployment. The stages which the asset goes through in its life cycle are specification, design, manufacture (or build), install, commission, operate, maintain and disposal. Figure 1 depicts these stages in a schematic form.

Financing Costs

This section will focus on financing mechanisms in place to fund the costs incurred throughout the asset's life.

In a municipal context, services are provided to benefit tax/rate payers. Acquisition of assets is normally timed in relation to direct needs within the community. At times, economies of scale or technical efficiencies will lead to oversizing an asset to accommodate future growth within the municipality. Over the past few decades, new financing techniques such as development charges have been employed, based on the underlying principle of having tax/rate payers who benefit directly from the service paying for that service. Operating costs which reflect the cost of the service for that year, are charged directly to all existing tax/rate payers who have received the benefit. Operating costs are normally charged through the tax base or user rates.

Life Cycle Costing



Drawing1

Capital expenditures are recouped through several methods; operating budget contributions, development charges, reserves, developer contributions and debentures, being the most common.

New construction related to growth could produce development charges and developer contributions (e.g. works internal to a subdivision which are the responsibility of the developer to construct) to fund a significant portion of projects, where new assets are being acquired to allow growth within the municipality to continue. As well, debentures could be used to fund such works, with the debt charge carrying costs recouped from taxpayers in the future.

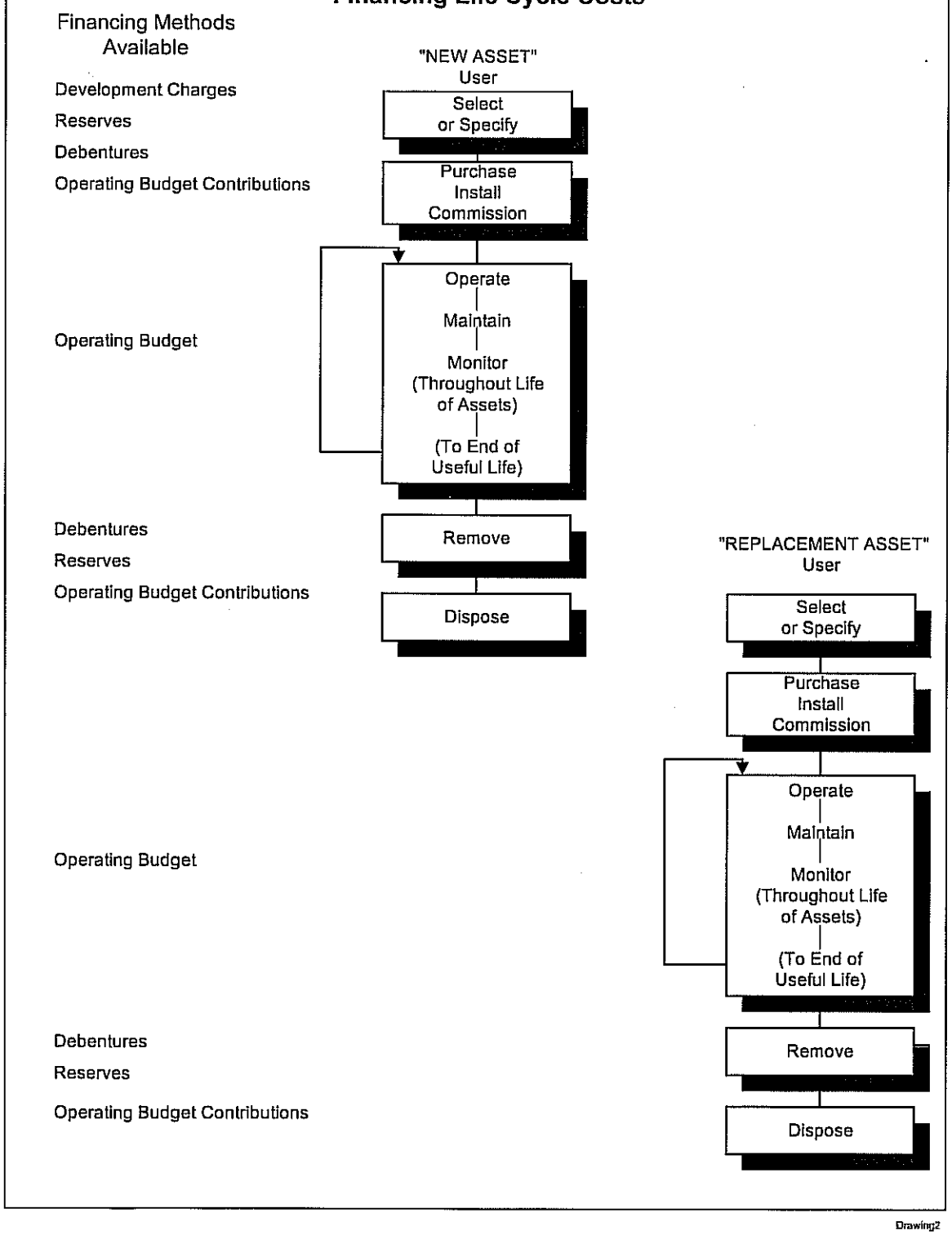
However, capital construction to replace existing infrastructure is largely not growth-related and will therefore not yield development charges or developer contributions to assist in financing these works. Hence, a municipality will be dependent upon debentures, reserves and contributions from the operating budget to fund these works.

Figure 2 depicts the costs of an asset from its initial conception through to replacement and then continues to follow the associated costs through to the next replacement.

As referred to earlier, growth-related financing methods such as development charges and developer contributions could be utilized to finance the growth-related component of the new asset. These revenues are collected (indirectly) from the new homeowner who benefits directly from the installation of this asset. Other financing methods may be used as well to finance the non-growth related component of this project; reserves which have been collected from past tax/rate payers, operating budget contributions which are collected from existing tax/rate payers and debenturing which will be carried by future tax/rate payers. Ongoing costs for monitoring, operating and maintaining the asset will be charged annually to the existing tax/rate payer.

When the asset requires replacement, the sources of financing will be limited to reserves, debentures and contributions from the operating budget. At this point, the question is raised; "If the cost of replacement is to be assessed against the tax/rate payer who benefits from the replacement of the asset, should the past tax/rate payer pay for this cost or should future rate payers assume this cost?" If the position is taken that the past user has used up the asset, hence he should pay for the cost of replacement, then a charge should be assessed annually, through the life of the asset to have funds available to replace it when the time comes.

Financing Life Cycle Costs



Drawing2

If the position is taken that the future tax/rate payer should assume this cost, then debenturing and, possibly, a contribution from the operating budget should be used to fund this work.

Charging for the cost of using up of an asset is the fundamental concept behind depreciation methods utilized by the private sector. This concept allows for expending the asset as it is used up in the production process. The tracking of these costs forms part of the product's selling price and hence end users are charged for the asset's depreciation. The same concept can be applied in a municipal setting to charge existing users for the asset's use and set those funds aside in a reserve to finance the cost of replacing the asset in the future.

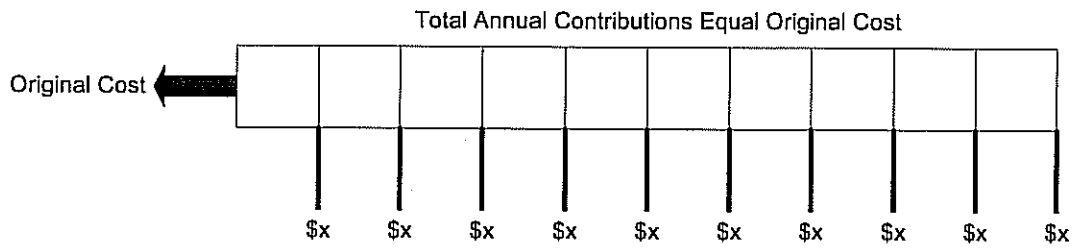
Costing Methods

There are two fundamental methods of calculating the cost of the usage of an asset and for the provision of the revenue required when the time comes to retire and replace it. The first method is the Depreciation Method. This method recognizes the reduction in the value of the asset through wear and tear, and aging. There are two commonly used forms of depreciation: the straight-line method and the reducing balance method.

The straight line method is calculated by taking the original cost of the asset, subtracting its estimated salvage value (estimated value of the asset at the time it is disposed of) and dividing this by the estimated number of years of useful life. The reducing balance method is calculated by utilizing a fixed percentage rate and this rate is applied annually to the undepreciated balance of the asset value.

The second method of life cycle costing is the sinking fund method. This method first estimates the future value of the asset at the time of replacement. This is done by inflating the original cost of the asset at an assumed annual inflation rate. A calculation is then performed to determine annual contributions (equal or otherwise) which, when invested, will grow with interest to equal the future replacement cost.

STRAIGHT LINE DEPRECIATION

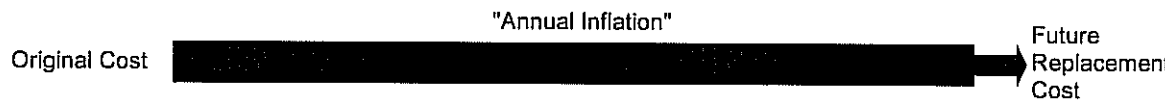


Formula:

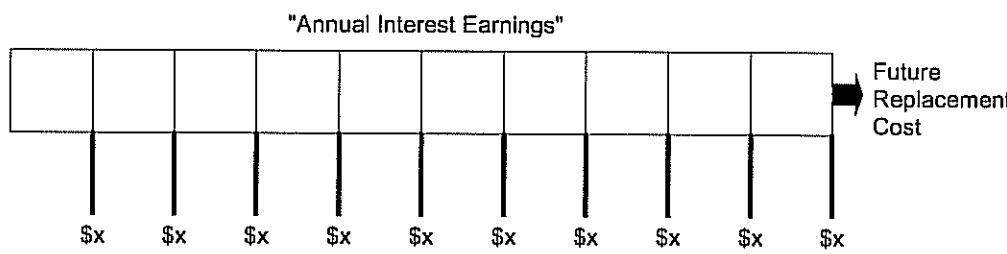
$$\frac{\text{Original Cost - Salvage Cost}}{\text{Number of Years of Useful Life}}$$

SINKING FUND METHOD

1. "Estimate Future Replacement Cost"



2. "Estimate Annual Contribution which will Grow with Interest to Equal Future Replacement Cost"



Formula:

$$\frac{\text{Interest Rate}}{(1 + \text{Interest Rate})^{\text{Term}} - 1} \times \text{Original Cost}$$

Note: Interest Rate used would be the Investment Rate - Inflation Rate,
e.g. 4% - 2% = 2% and is presented as 0.02.

Drawing3

Both the straight-line depreciation method and the sinking fund method are presented in a schematic form on Figure 3. The formula for calculating the annual contributions is also presented. This figure demonstrates the fundamental principles behind both methods. The straight-line method focuses on the original acquisition of the asset. Each year as the asset is being used, the users contribute toward the original purchase of the asset. The sinking fund method focuses on the replacement of the asset. The original purchase of the asset is accepted as a given level of service. Each year, as the asset is used, a contribution is made toward its replacement at a time when the asset is no longer functional.

Of the two methods presented, the sinking fund method is recommended as it provides for potential investment income to be earned over the period and hence, has a lower impact on rates.